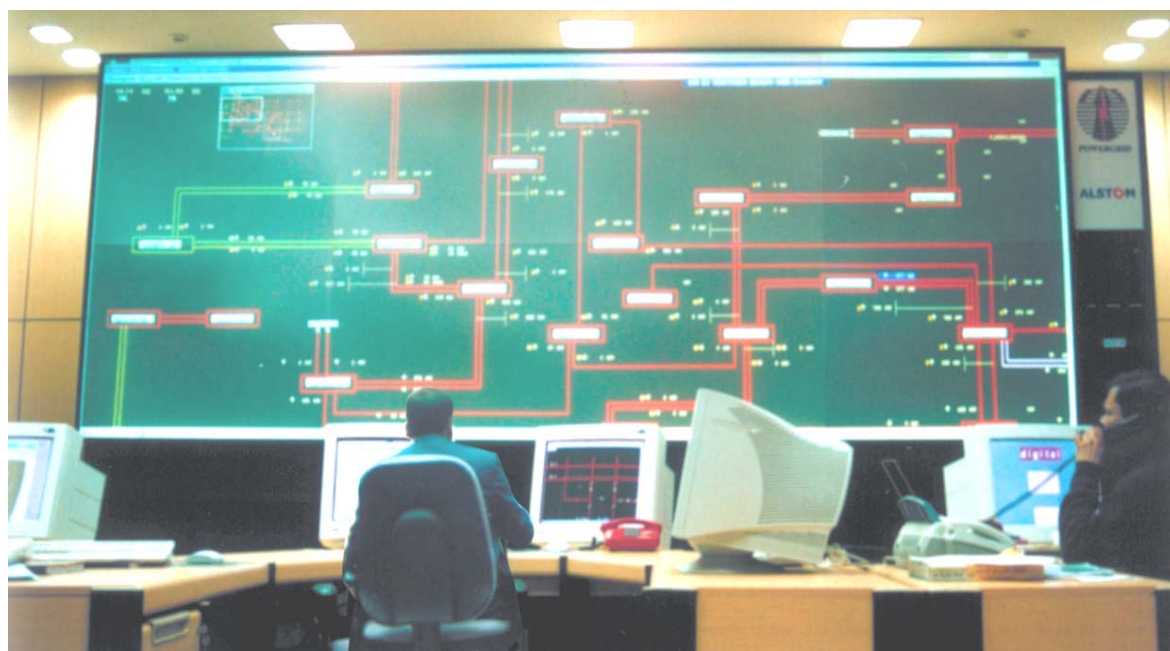


ANNUAL REPORT 2002-2003



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SALIENT FEATURES OF NORTHERN REGION

S. No.	Parameters	2002-03	2001-02	Increase	% Increase
1	Effective capacity (on the last day of the year) (MW)	28249.77	27901.67	348.10	1.25
2	Average energy (MU/day net)				
2(a)	Demand met	389.80	383.57	6.23	1.62
2(b)	Requirement	425.78	405.57	20.21	4.98
2(c)	Shortage	35.98	22.00	13.98	63.54
2(d)	% shortage	8.45	5.42		
3	Peak MW				
3(a)	Demand met	21767	21586	181	0.84
3(b)	Requirement	24092	22589	1503	6.65
3(c)	Shortage (non-coincidental)	2325	1003		
3(d)	%Shortage (non-coincidental)	9.65	4.44		
3(e)	Demand met at max. reqt. Hrs.	21767	20182		
3(f)	Shortage (coincidental)	2325	2407		
3(g)	%Shortage (coincidental)	9.65	10.66		
4	Frequency (Hz)				
4 (a)	Average	49.90	49.77		
4 (b)	% of time above 50.5 Hz	15.92	12.60		
4 (c)	% of time below 49.0 Hz	7.08	11.17		
4 (d)	% of time between 49.0 to 50.5 Hz	77.00	76.23		
4 (e)	% of time below 48.5 Hz	0.79	1.87		
5	Generation at the time of regional peak demand met				
5 (a)	Hydro (MW)	6080	6053	27	0.45
5 (b)	Thermal (MW) coal Fired	12501	12052	449	3.73
5(c)	Thermal (MW) gas Fired	2245	2238	7	0.31
5(d)	Nuclear (MW)	811	1013	-202	-19.94
5(e)	Inter regional exchange (MW)	-130	-230	100	
5(f)	Total (MW)	21767	21586	181	0.84

SALIENT FEATURES OF NORTHERN REGION

S. No.	Parameters	2002-03	2001-02	Increase	% Increase
6	Gross generation (MU/day Average)				
6 (a)	Hydro	82.58	79.77	2.81	3.52
6 (b)	Thermal (coal fired)	272.08	263.29	8.79	3.34
6 (c)	Thermal (Gas fired)	47.22	48.26	-1.04	-2.16
6 (d)	Nuclear	23.48	21.92	1.56	7.14
6 (e)	Total	425.35	413.24	12.11	2.93
7	PLF (%)				
7 (a)	Thermal (coal fired)	71.69	71.57	0.12	
7 (b)	Thermal (Gas fired)	65.63	70.81	-5.18	
7 (c)	Nuclear	82.93	77.39	5.54	
7 (d)	Total (coal+gas+nuclear)	69.68	71.82	-2.14	
7 (e)	Central sector (Coal)	85.38	85.80	-0.42	
7 (f)	Central sector (gas`)	72.63	79.55	-6.92	
7 (g)	Central sector (Nuclear)	82.93	77.39	5.54	
7 (h)	Central sector (Total)	81.87	83.17	-1.30	
7 (i)	State sector (gas fired)	40.22	29.49	10.73	
7 (j)	State sector (coal fired)	62.65	62.18	0.47	
7 (k)	State sector (total)	59.99	60.44	-0.45	
8	Water level on Last day of the year (In Mtrs.)				
8 (a)	Bhakra	460.86	458.66	2.20	
8 (b)	Pong	399.28	394.77	4.51	
8 (c)	Rihand	258.50	259.48	-0.98	
8 (d)	R.P.S.	346.97	345.40	1.57	
8 (e)	G.S.	379.18	380.35	-1.17	

HIGHLIGHTS

1.1 Power supply position:

During the year 2002-2003, the power supply position in the region by & large has been satisfactory. The increase in effective generation capacity was only 1.25% and the energy & peak MW availability was increased by 1.62% and 0.84% respectively (energy from 383.57 MU/day average to 389.80 MU/day & peak MW from 21586 MW in 2001-2002 to 21767 MW in 2002-2003). Due to very meagre addition in the generation capacity the energy shortages & peak shortages during the year were 8.45% and 9.65% respectively as against the corresponding figures of 5.42% and 4.44% during last year.

1.2 Frequency regime:

. Frequency profile during the year 2002-2003 was better than the last year i.e. 2001-2002 due to concerted efforts of NRLDC and active co-operation by the constituents. The frequency remained below 49.0 Hz for 7.08 % of total time against 11.17% last year and above 50.5Hz for 15.92% of total time against 12.60% during last year. There was marked improvement in the frequency profile particularly with respect to the trend below 49.0 Hz due to effectively load regulatory measures taken by different states. The high frequency period also could have further improved had all generating stations resorted to backing down to the designated level during high frequency .There was a remarkable improvement in the frequency profile particularly after the implementation of ABT (Availability Based Tariff) in the Region w. e .f 1st December 2002.

1.3 Voltage profile:

The month wise maximum & minimum voltage recorded at Dadri during the year 2002-2003 are given under section 9.3. The voltage regime was also better than the last year except for few occasions in the month of July 2002 wherein at certain instances the voltages had gone down to low level mainly due to increase in reactive energy requirements (drawal) of the constituents with non-commensurate increase in installed capacitors. The voltage profile has also improved with the implementation of ABT (Availability Based Tariff)w.e.f 1st December 2002.The constituent wise installation of shunt capacitor vis-à-vis the projected requirement as on 31st March 2003 is given in section 10.2.

1.4 Grid incidents:

The summary of incidents that occurred during 2002-2003 in the region is given as Annex. A1.

1.5 System improvements:

- (i) Commissioning of Pragati GT #1 (108 MW) on 25.05.2002 resulted in increased availability of power in Delhi as well as in the region.
- (ii) Commissioning of 315 MVA, 400/220 kV ICT-IV at Ballabgarh sub-station on 30.06.2002 resulted in system strengthening in Haryana system.
- (iii) Commissioning of FACTS in 400 kV Kanpur-Ballabgarh line on 02.07.2002 enhanced the power carrying capacity in the east-west corridor.
- (iv) Commissioning of HVDC Pusoli inter connector between ER-NR on 25.09.2002 resulted in increased power exchange between ER and NR.
- (v) Commissioning of Pragati GT #2 (108 MW) on 14.11.2002 resulted in increased availability of power in Delhi as well as in the region.
- (vi) 400 kV Allahabad-Sasaram charged for the first time on 26.11.2002 resulted in system strengthening in U.P. system.
- (vii) Commissioning of Pragati ST (114 MW) on 04.02.2003 resulted in increased availability of power in Delhi as well as in the region.
- (viii) Commissioning of 400 kV Mandola-Meerut-II on 29.03.2003 resulted in system Strengthening in U.P. system.
- (ix) Commissioning of LILO work of 220 kV Anta-Dausa ckt.-I at Swaimadhopur resulted in system strengthening in Rajasthan system.

1.6 Other Important Developments

Implementation of availability based tariff (ABT) in Northern Region

ABT was implemented in Northern region w.e.f 01.12.2002. ABT is a three part tariff for inter utility active energy and a scheme for reactive energy exchanges as under.

- Fixed charges to central sector generators linked to availability of Station.
- Energy charges to central sector generators based on the schedule . requisitions given by the states
- A frequency linked unscheduled interchange (UI) based on difference between schedule and actual drawal on the prevailing frequency.
- Tariff for reactive energy exchanges from the grid below 97% and above 103% of the voltage.

NRLDC-AN OVER VIEW

2.1 NRLDC is the nodal centre for co-ordinating operation of the Northern Regional power system. The Northern Regional power system is the largest amongst the five regional power system in the country and has several unique features as mentioned below:

Largest in geographical area amongst the five regions, covering 30.7% of the area and approx 28% of the country's population.

Largest number of constituents (9 states/UT's, 3 central generating companies, one central transmission Utility and Bhakra Beas Management Board) and IPP's.

Largest sized hydro unit (180 MW at Chamera) in the country.

Establishment of the first super thermal power station (Singrauli SSTPS) and 400kV transmission system in the country.

Establishment of the first High Voltage Direct Current (HVDC) long distance transmission system in the country (2x750 MW, 500kV Rihand-Dadri HVDC bipole).

First HVDC back-to-back interconnection with Western Region (2x250 MW back-to-back HVDC station at Vindhyachal).

First 400kV Static Var Compensators (SVC's) in the country (2x ± 140 MVAR SVC at Kanpur).

Largest capacity of combined cycle gas power station amongst the five regions (2626.04 MW) located along the 700 Kms. long Hazira-Bijapur-Jagdishpur (HBJ) natural gas pipeline of GAIL.

Real time operation of such a vast and complex power system, with region specific peculiarities of load pattern and power demand, needs special commitment of the team dedicated to this task. Real time data from various generating stations and power control centres are telemetered to this centre (NRLDC, New Delhi) via state load despatch centres (SLDCs) situated at various locations of the region and are made available for display and monitoring in the NRLDC control room to ensure security and integrity of the Northern Grid. Computer based telemetry, display, data logging and associated auxiliary system are kept operational round the clock through out the year backed up by reliable communication system.

2.2 Salient Features of Northern Regional Power System:

1)	Installed generation capacity (as on 31 st March, 2003)		28761.93 MW
2)	Effective generation capacity (as on 31 st March, 2003)		28249.77MW
3)	Largest Generating Stations		
	--Thermal (coal fired)	Singrauli STPS (NTPC)	2000 MW
	--Hydro	Bhakra Complex (BBMB)	1490.15 MW
	--Nuclear	RAPS Complex (NPC)	740 MW
	--Thermal (gas fired)	Dadri GPS (NTPC)	829.78 MW
4)	Largest generating unit size		
	--Thermal (coal fired)	Singrauli/Rihand/Anpara	500 MW
	--Nuclear	Narora APS/RAPS-B	220 MW
	--Hydro	Chamera	180 MW
	--Thermal (gas fired)	Faridabad GPS	138 MW
5)	Largest transmission elements		
	Longest-400 kV line-- Singrauli-Lucknow		408 Kms.
	Largest ICT-400/220 kV ICTs at Bhiwani/Dadri/S/Stn.		500 MVA
6)	Transmission system (as on 31 st March 2003)	± 500 kV HVDC 400 kV 220 kV Total	1630 ckt. kms. 15056 ckt. kms. 26966 ckt. kms. 42553 ckt. kms.
7)	No. of generating units (Thermal/nuclear)	500 MW 200/210/220/250 MW 100/110 MW 50/55/60/62.5/67.5 MW	6 nos. 47 nos. 26 nos. 18 nos.
8)	Regional peak met (2002-2003)	21767 MW	
9)	Regional Peak demand (2002-2003)	24092 MW	
10)	Average energy consumption (2002-2003)	389.80MU / day	
11)	Average energy requirement (2002-2003)	425.78 MU / day	

2.3 Land marks in development of the Northern Grid:

1964	Formation of Northern Regional Electricity Board (NREB).
1970	BBMB & Delhi systems interconnected.
1975	Rajasthan system interconnected with Delhi/BBMB system.
1976-82	UP system intermittently synchronised with rest of the Northern Grid.
1982	Total integration of entire Northern Regional power system.
1984	First Supervisory Control & Data Acquisition (SCADA) system commissioned in Northern Region.
1990	2x250 MW HVDC back-to-back link with Western Grid commissioned. Pole-2 of Rihand-Dadri HVDC bipole (750 MW capacity) commissioned.
1991	Pole-1 of Rihand-Dadri HVDC bipole (750 MW capacity) commissioned.
1992	2x $\pm$ 140 MVAR Static Var Compensator (SVC) commissioned at Kanpur.
1996	Transfer of NRLDC from CEA to POWERGRID
1998	Electricity Laws (Amendment) Act 1998 passed by Parliament designating RLDC as apex body to ensure integrated operation in concerned region.
1999	Approval of the Indian Electricity Grid Code (IEGC) by the CERC.
1999	Series Compensation commissioned on 220 kV Kishenpur – Pampore D/C.
2000	Indian Electricity Grid Code (IEGC) in force w.e.f. 1 st February.
2001	Preparation of ABT based schedule w.e.f. 01.08.2001.
2002	Unified Load Despatch Centre inaugurated by honourable Prime Minister of India at NRLDC, New Delhi.
2002	Uttaranchal carved out of U.P. and joined the Northern Region as new constituent w.e.f 01.04.2002.
2002	Implementation of ABT in the Northern Region w.e.f 01.12.2002.
2002	Series compensation commissioned on 400 kV Kanpur-Ballabgarh line.
2002	1 X 500 MW HVDC back to back link with eastern Grid commissioned .

2.4 Functions of NRLDC:

The functions presently being discharged by NRLDC are:

- Round-the-clock system operation and control including Inter-State / Inter-Regional transfer of power, contingency evaluation and analysis and operational planning.
- Operation and maintenance of the Northern Regional Power Control Centre and associated computing & communication facilities.
- Scheduling and rescheduling of generation and drawal schedule under ABT regime.
- Co-ordination of maintenance programme for generating units and transmission lines on short term and on real time basis.
- Analysis of tripping/disturbances in the power system and facilitating implementation of remedial measures.
- System restoration following grid disturbance.
- Preparation of daily, weekly, monthly, quarterly and annual reports for use by management, planners and energy administrators.
- System studies for resolving operational problems.
- Augmentation of telemetry, computing and communication facilities in the region.
- Metering and data collection and compiling and furnishing data pertaining to system operation.

2.5 Present Status of Northern Grid:

The Northern Regional power system has to cater to the high demand in the different parts of the region which includes domestic load, heavy industries load, commercial load and as well as agriculture load particularly to the agriculture bowl of Punjab, Haryana & Western U.P. The agriculture sector forms a considerable part of the total demand met i.e. around 35% of the total power produced. Therefore the demand in the region is highly sensitive to weather and any western disturbance during seasonal changes results in a sharp drop in demand at times as much as 7000-8000 MW. During peak summer and winter period, the Northern Region has been found to be a power deficit region and the average shortage in region during the year 2002-2003 has been 8.45 % and 9.65 % in terms of energy and peak requirements, respectively. Further due to absence of free governor operation on the generating units, the wide frequency fluctuations in the region continue to persist.

During 2002-2003, two severe load crashes were experienced, one on 27/28th May 2002 and other on 18/19th 2003 in which number of line tripping occurred due to high voltage and the system size reduced to 8000-10000 MW. The grid collapse was however averted due to prompt action taken by NRLDC.

Electrically, the power system of Northern Region consists of two major generation pockets and one major load centre. The generation pockets are the coal based thermal power stations located in the south-eastern part of the region near Singrauli coal mines having a generation capacity of around 6000 MW and the hydro stations at the north/north-west part of the region in Himalayan belt having a capacity of around 5000 MW. The load Centre is in the central part of the Region comprising Delhi, Haryana, Punjab, Western U.P. & Northern Rajasthan. Typically, the power has to be transmitted over distances of 800-900 kms. emphasising the importance of a strong transmission system and adequate reactive power compensation devices in the system.

The Northern Regional power system also caters to the strategically important National Capital Territory of Delhi and railway traction loads on the busy Delhi-Calcutta, Delhi-Mumbai and Delhi-Chennai railway routes traversing through the region.

In order to increase the capability of power transfer , flexible AC transmission system (FACTS) was commissioned on 400 kV Kanpur-Ballabgarh line on 02.07.2002 by which line capability has been increased by around 30%. A similar FACTS is under commission on 400 kV Panki-Muradnagar line. The work on 400 kv Ballabgarh-Bamnoli D/C is also under progress and is expected to be completed shortly. With the commissioning of this line, the 400 kV D/C ring around Delhi will be completed which in turn would greatly enhance the reliability of power to Delhi system.

2.6 The task before NRLDC in the days ahead:

With the implementation of ABT (Availability Based Tariff) in the Northern Region w.e.f 1st December, 2002; one can see the perceptible changes in the overall system parameter profile. Though overall system voltage and frequency profile has improved a lot, still there are wide excursion in frequency from low to high and vice-versa and reminds the need of implementation of free governor mode of operation on all generating units in the region at the earliest. NRLDC has to play a very active role in this regard, particularly in light of diverse technical problem and administrative difficulties.

Implementation of ABT in Northern Region has opened the gate to constituents for optimising their resources on power front. Constituents of Northern Region now managing their system more actively by entering in bilateral agreements for Power trading among themselves and/or with the constituents of other regions directly or through PTC (Power Trading Corporation). This activeness on the part of constituents on this front, besides maintaining grid parameters is also resulting into financial gain to states. However, for NRLDC, the role is increasing day by day in facilitating all these transactions in real time, updation of scheduling software for incorporating all type of transaction etc., The activity of intra/inter trading/transfer of power has enormous scope to further rise in future, NRLDC has to equip itself for future vibrant power market in India in overall National interest.

DEVELOPMENTS IN SYSTEM OPERATION & ASSOCIATED AREAS

1. Commissioning of new generation units/ Transmission lines/ transformers:

New generating units & transmission lines /ICTs commissioned/ de-rated/ up-rated during the year 2002-2003 are given below:

A. Generating Units:

S.NO	Generating unit	Agency	Capacity addition (MW)	Date of commissioning	Remarks
1.	Pragati GT (#1)	Delhi	108	25.05.2002	-
1.	Pragati GT (#2)	Delhi	108	14.11.2002	-
2.	Pragati ST.	Delhi	114	04.02.2003	-

Total addition in effective capacity during the year : 330 MW

B. Transmission Lines:

S. No.	Transmission line	Ckt. Km.	Agency	Date of Commissioning
	<u>400kV Lines:</u>			
1.	Allahabad-Sasaram	215	POWERGRID	26.11.2002
2.	Allahabad-Sarnath	144	POWERGRID	03.12.2003
3.	Ballabgarh-Bhiwadi	60.20	POWERGRID	04.02.2003
4.	Bhiwadi-Bassi	235	POWERGRID	04.02.2003
5.	Mandola-Meerut ckt-II	59.90	POWERGRID	29.03.2003
	<u>220kV Lines:</u>			
1.	Allahabad-Rewa Road-I	3.00	POWERGRID	31.12.2003
2.	Bhiwadi (PG)-Bhiwadi (Rajasthan)	6.95	RRVPNL	14.02.2003
3.	Bhiwadi (PG)-Alwar (Rajasthan)	83.13	RRVPNL	14.02.2003
4.	Meerut-Modipuram	30	UPPCL	29.03.2003

5.	Meerut-Nara	35.98	UPPCL	29.03.2003
6.	LILO of Anta-Dausa ckt-I at Swaimadhopur	119.30	POWERGRID	30.03.2003
7.	HVDC B/B inter connector at Pusoli		POWERGRID	25.09.2002

400/220kV, ICT,s

S. No.	ICTs	Capacity.	Agency	Date of Commissioning
1.	ICT-I V at Ballabgarh	315MVA	POWERGRID	30.06.2002
2.	ICT-II at Allahabad	315 MVA	POWERGRID	07.12.2002
3.	ICT-I at Allahabad	315 MVA	POWERGRID	03.01.2003
4.	ICT-I at Bhiwadi	315 MVA	POWERGRID	04.02.2003
5.	ICT-II at Bhiwadi	315 MVA	POWERGRID	05.02.2003
6.	ICT-II at Meerut	315 MVA	POWERGRID	29.03.2003

COMPUTING & COMMUNICATION FACILITIES AT NRLDC

The Northern Regional Load Despatch Centre (NRLDC) is the apex body to ensure the integrated operation of Northern Region at all the time with security, economy & efficiency. To achieve these objectives, a state of the art Supervisory Control And Data Acquisition System/Energy Management System (SCADA/EMS) with a fast communication network was commissioned in the Northern Region in January, 2002. Details of facilities are described in the following sections.

4.1 Unified System Control & Co-ordination (SC&C) Scheme:

Manifold expansion of the power system network and the need for monitoring network on real time basis to ensure optimum system operation necessitated establishment of modern computerised Load Despatch Centres. To achieve this and in order to have uniform Supervisory Control & Data Acquisition (SCADA) facilities in all power utilities in the Northern Region & the RLDC, a unified System Control and Co-ordination (SC&C) scheme was envisaged & planned by POWERGRID.

Communication network under the project is designed to have performance level of 99.99%. Some of the existing RTUs, Microwave hops & PLCC channels have been used.

In spite of the phenomenal volume of work and a number of diversities involved, the Project was successfully commissioned in record time and the RSCC system at NRLDC was inaugurated by the Hon'ble Prime Minister of India on 11.01.2002.

Highlights of the ULDC Project

- Most Complex System covering 15 Electrical utilities spread over 10 Lakh Sq. km with 33 control centres and 369 Remote Terminal Units (RTUs).
- Three Level Hierarchical Control Centers.
- Advanced Training Simulator.
- Hybrid Dedicated Communication Infrastructure.
- Live line Fibre Optic Stringing.
- Highly complex system first time attempted in the world as a single project.

Benefits of ULDC Scheme.

- Real time monitoring, supervision and control of Power System.
- Improved system security, reliability and reduction of undelivered energy. Saving in the Operation cost.
- Avoidance/minimisation of Grid disturbances/failures.
- Quick restoration during Grid disturbances/failures.
- Capital Investment Saving.
- Better Management Information.
- Better System Operation and Control.
- Real Time Environment for Operator Training.
- Optimal utilisation of Resources and Economic Despatch of Power.

Package wise details of ULDC scheme.

SCADA/ EMS:

RTUs	285+63*+21**
RSCC	One
SLDCs	8
sub-LDCs	24+1***

* 63 RTUs of Siemens make to be provided by Constituents (Rajasthan 58, J&K 3, Haryana 2)

** 21 RTUs of CDAC make to be provided by Punjab.

*** 1 Moga sub-LDC to be provided by Punjab.

Apart from data acquisition, EMS functions envisaged are Operational Scheduling, Load Forecasting, Inflow Forecasting, Hydro-Thermal coordination, Inter-change Scheduling, Disturbance Data Collection etc.

2. Fibre Optic Communication:

Optical Fibre Ground Wire (OPGW)	1815 km
Terminal Stations	56 nos.

3. Microwave Communication:

Microwave Hops	78 nos.
New Towers	46 nos.
Radio Equipment	156 nos.

4. Power Line Carrier Communication (PLCC):

PLCC Terminals	218 nos.
EPABX	63 nos.

5. Auxiliary Power Supply:

DG Sets	28 nos.
UPS system	33 nos.
DC Supply (48 volts)	59 nos.

4.2 Communication Facilities:

- a) Under the ULDC scheme, in addition to the data, voice communication using own optical fibre and microwave facilities has been provided at all the control centres commissioned under the scheme.

b) V-SAT Communication System:

Very Small Aperture Terminals (V-SAT) links are operational between NRLDC and 18 other locations (important SLDCs/400 kV substations/Generating stations), for reliable and efficient communication system. These VSATs operating as a Closed User Group (CUG) have been supplied by M/s HCL Comnet Systems & Services Limited.

Apart from the above V-SAT communication network, NRLDC has nodes of other two V-SAT communication networks viz NHPC's V-SAT network connecting NHPC's corporate centre & hydro stations (Uri, Salal, Chamera, Bairasiul & Tanakpur) to NRLDC and POWERGRID's V-SAT communication network connecting all other Regional Load Despatch Centres (RLDCs) of the country & all the regional head quarters of the POWERGRID to NRLDC. Every node in these two networks has access to all other nodes in the network.

4.3 In-House Developed Software Package

a) NRLDC Website

NRLDC has developed its own website named www.nrldc.org in order to have a quick and user friendly exchange of information with the constituents and other agencies in the Government/Power sector. With the implementation of Availability Based Tariff in the Northern Region, it became absolutely essential to have web based scheduling and availability of whole lot of data related to ABT and other grid operational aspects, therefore timely development of NRLDC Website facilitated smooth implementation of ABT in the Northern Region.

b) Scheduling Software

In order to have total flexibility with respect to factionality and report generation/data transfer, scheduling software was developed in-house. This package has been integrated with the NRLDC website so that all information related to day-ahead, currant day as well as implemented schedule is available at the website.

4.4 Auxiliary Facilities:

- 2x40 kVA Uninterrupted Power Supply System (UPS) supported by two DG sets of 350 kVA and 125 kVA capacity.
- Centralised Air Conditioning plant comprising of 3 compressors each of 80 TR.
- Microprocessor based intelligent fire detection and alarm system.

5.1 DETAILS OF INSTALLED AND EFFECTIVE CAPACITY IN NORTHERN REGION AS ON 31.03.2003

	STATION	INSTALLED CAPACITY		EFFECTIVE CAPACITY	
(MW)					
1 CENTRAL SECTOR					
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 -I TPS	2x210	= 420.00	2x210	= 420.00
(f)	Unchahar -II TPS	2x210	= 420.00	2x210	= 420.00
(g)	Tanda TPS	4x110	= 440.00	4x110	= 440.00
(h)	Anta GPS	3x88.71+1x153.20	= 419.33	3x88.71+1x153.20	= 419.33
(i)	Auraiya GPS	4x111.19+2x109.30	= 663.36	4x111.19+2x109.30	= 663.36
(j)	Dadri GPS	4x130.19+2x154.51	= 829.78	4x130.19+2x154.51	= 829.78
(k)	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	1x60+5x66	= 390.00	2x60+4x66	= 390.00
	Total BBMB		2870.15		2870.15

	<u>STATION</u>	<u>INSTALLED CAPACITY</u> (MW)		<u>EFFECTIVE CAPACITY</u>	
3	CHANDIGARH				
(a)	Diesel Gen Set		2.00		1.40
4	DELHI				
	<u>THERMAL</u>				
(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)	I.P.Gas Turbines	6x30+3x34	= 282.00	6x30+3x34	= 282.00
(d)	Pragati Gas Turbines	2x108+1x114	<u>330.00</u>	2x108 +1x114	<u>330.00</u>
	Total DELHI		1009.50		1008.50
5	HARYANA				
	<u>HYDRO</u>				
(a)	Western Yamuna Canal (WYC)	6x8	= 48.00	6x8	= 48.00
	Total Hydro		<u>48.00</u>		<u>48.00</u>
	<u>THERMAL</u>				
(b)	Faridabad (New)	3x60	= 180.00	3x55	= 165.00
(c)	Panipat	4x110+2x210	= 860.00	4x110+2x210	= 860.00
	Total Thermal		<u>1040.00</u>		<u>1025.00</u>
(d)	Magnum Diesel (IPP)	4x6.3	= 25.20	4x6.3	= 25.20
	Total HARYANA		1113.20		1098.20
6	HP				
	<u>HYDRO</u>				
(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	3x40.00	= 120.00	3x40.00	= 120.00
(i)	Baner	3x 4.00	= 12.00	3x 4.00	= 12.00
(j)	Gaj	3x 3.50	= 10.50	3x 3.50	= 10.50
(k)	Sal -2	1x2	= 2.00	1x2	= 2.00
(l)	Gumma	1x3	= 3.00	1x3	= 3.00
(m)	Ghanvi	2x11.25	= 22.50	2x11.25	= 22.50
(n)	Malana(IPP)	2x43.00	= 86.00	2x43.00	= 86.00
	Total HP		412.20		412.20
7	J & K				
	<u>HYDRO</u>				
(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)	Sewa	3x3.0	= 9.00	3x3.0	= 9.00
(h)	Small Hydel		3.54		3.54
	Total Hydro		<u>311.69</u>		<u>311.69</u>

	<u>STATION</u>	<u>INSTALLED CAPACITY</u>		<u>EFFECTIVE CAPACITY</u>	
		<u>(MW)</u>			
J & K (Contd.)					
	<u>GAS TURBINES</u>				
(h)	Pampore GT St - I	3x25.0	= 75.00	3x25.0	= 75.00
	Pampore GT St - II	4x25.0	= 100.00	4x25.0	= 100.00
	Total Gas		<u>175.00</u>		<u>175.00</u>
(I)	Diesel Gen. Set		<u>8.94</u>		<u>7.18</u>
	Total J & K		<u>495.63</u>		<u>493.87</u>

8 PUNJAB

<u>HYDRO</u>					
(a)	Jogindernagar/ Shanan	4x15+1x50	= 110.00	4x15+1x50	= 110.00
(b)	Upper Behari Doab Canal (UBDC)	3x15+3x15	= 90.00	3x15+3x15	= 90.00
(c)	Mukerian	6x15+6x19.5	= 207.00	6x15+6x19.5	= 207.00
(d)	Anandpur Sahib (APS)	4x33.5	= 134.00	4x33.5	= 134.00
(e)	Ranjit Sagar (Thein Dam)	4x150	= 600.00	4x150	= 600.00
(f)	Small Hydrel		= 4.10		= 4.10
	Total Hydro		<u>1145.10</u>		<u>1145.10</u>
<u>THERMAL</u>					
(g)	Guru Nanak Dev TPS (Bhatinda)	4x110	= 440.00	4x110	= 440.00
(h)	Guru Gobind Singh TPS (Ropar)	6x210	= 1260.00	6x210	= 1260.00
(i)	Lehra Mohabbat TPS	2x210	= 420.00	2x210	= 420.00
(j)	Jhalkeri Rice Straw Fired	1x10	= 10.00	1x10	= 10.00
	Total Thermal		<u>2130.00</u>		<u>2130.00</u>
	Total PUNJAB		<u>3275.10</u>		<u>3275.10</u>

9 RAJASTHAN

<u>HYDRO</u>					
(a)	Mahi Bajaj Sagar	2x25+2x45	= 140.00	2x25+2x45	= 140.00
(b)	Rana Pratap Sagar (RPS)	4x43	= 172.00	4x43	= 172.00
(c)	Jawahar Sagar (JS)	3x33	= 99.00	3x33	= 99.00
(d)	Anoopgarh	6x1.5	= 9.00	6x1.5	= 9.00
(e)	Small Hydro		14.86		14.86
	Total Hydro		<u>434.86</u>		<u>434.86</u>
<u>THERMAL</u>					
(f)	Kota TPS	2x110+3x210	= 850.00	2x110+3x210	= 850.00
(g)	Suratgarh TPS	4x250	= 1000.00	4x250	= 1000.00
(g)	RAMGARH GT	1x3	= 3.00	1x3	= 3.00
(h)	RAMGARH GT EXT	1x35.5	= 35.50	1x35.5	= 35.50
	Total Thermal		<u>1888.50</u>		<u>1888.50</u>
(I)	Wind Farm		<u>14.00</u>		<u>14.00</u>
	Total RAJASTHAN		<u>2337.36</u>		<u>2337.36</u>

	<u>STATION</u>	<u>INSTALLED CAPACITY</u>	<u>EFFECTIVE CAPACITY</u>
		(MW)	
10 UP			
	<u>HYDRO</u>		
(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
	<u>THERMAL</u>		
(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 UTTARANCHAL			
	<u>HYDRO</u>		
(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
(h)	Total Hydro	980.85	980.85
	Total Region (1 to 9)	28761.93	28249.77

- NOTE:** 1. The ownership & control of Tanda TPS (4x110 MW capacity) was transferred from erstwhile Uttar Pradesh State Electricity Board (UPSEB) to National Thermal Power Corporation (NTPC) Ltd. w.e.f. 15th January 2000.
2. Indraprastha unit # 1 (30 MW) & Panki unit # 1 (32 MW) were permanently retired during 1999-2000.
3. Installed Capacity of each unit of NAPP declared to be 235 MW instead of 220 MW.
4. Uttaranchal carved out from UP, joined the Northern Region as new constituent w.e.f 01.04.2002.

THE SUMMARY OF EFFECTIVE GENERATING CAPACITY IN THE NORTHERN REGION

Agency/ Source	Hydro	Thermal	Gas/Diesel/W ind	Nuclear	Total	% of Total
NTPC	---	5825.00	2344.04	---	8169.04	28.92%
NHPC	1984.20	---	---	---	1984.20	7.02%
NPC	---	---	---	1180.00	1180.00	4.18%
BBMB	2870.15	---	---	---	2870.15	10.16%
CHANDIGARH	---	---	1.40	---	1.40	0.00%
DELHI	---	396.50	612.00	---	1008.50	3.57%
HARYANA	48.00	1025.00	25.20	---	1098.20	3.89%
HIMACHAL	412.20	---	---	---	412.20	1.46%
J&K	311.69	---	182.18	---	493.87	1.75%
PUNJAB	1145.10	2130.00	---	---	3275.10	11.59%
RAJASTHAN	434.86	1850.00	52.50	---	2337.36	8.27%
UP	529.90	3909.00	---	---	4438.90	15.71%
UTARANCHAL	980.85	---	---	---	980.85	3.47%
Total	7736.10	15135.50	3217.32	1180.00	28249.77	100.00%
% of TOTAL	27.38%	53.58%	11.39%	4.18%	100.00%	

Notes The above table doesn't 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 UPCL viz. 111.20 MW. It also has a 20 % share in the Kulhal (UPCL) and Khara (UPPCL) hydro power houses viz. 20.40 MW. However, these shares are subject to actual physical drawals over designated transmission lines.
- (iii) HP has a fixed energy share every month in the Shanan 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 Punjab.
- (v) The shares of Rajasthan in Chambal and Satpura projects are as under :

CHAMBAL

PROJECTS	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 these 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

5.2 BREAKUP OF EFFECTIVE HYDRO CAPACITY (MW) IN NORTHERN REGION AS ON 31st March 2003

Agency / Source	Run-of -the -river	Reservoir	Total
NHPC	1444.20	540.00	1984.20
BBMB	1155.15	1715.00	2870.15
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	262.86	172.00	434.86
UP	229.90	300.00	529.90
UTTARANCHAL	782.85	198.00	980.85
Total	5191.95	3525.00	8716.95

Includes Malana HEP (86 MW)

5.3 GROWTH OF INSTALLED CAPACITY IN NORTHERN REGION DURING PAST DECADE

S. NO.	YEAR	THERMAL	HYDRO	GAS/DIESEL/WIND	NUCLEAR	TOTAL INSTALLED CAPACITY
1	1993-94	12673.00	6463.00	2187.00	880.00	22203.00
2	1994-95	13170.60	7311.50	2377.00	880.00	23739.10
3	1995-96	13272.60	7336.50	2377.00	880.00	23866.10
4	1996-97	13358.10	7645.80	2377.50	880.00	24261.40
5	1997-98	13358.10	7782.23	2407.97	880.00	24428.30
6	1998-99	14373.30	7817.40	2407.97	880.00	25478.67
7	1999-2000	14778.00	7868.18	2693.74	1130.00	26469.92
8	2000-01	14988.00	8560.22	2841.56	1350.00	27739.78
9	2001-02	15488.00	8725.22	2851.31	1350.00	28414.53
10	2002-03	15488.00	8742.74	3181.19	1350.00	28761.93
Compound Annual Growth Rate (CAGR)%		2.25	3.41	4.25	4.87	2.92

6.1 SUMMARY OF 2002-03 POWER SUPPLY POSITION IN THE NORTHERN REGION

A. Average Energy/day (Net)

State / U.T.	Availability MU/Day	Requirement MU/Day	Shortage MU/Day	Shortage %
Chandigarh	3.04	3.04	0.00	0.00
Delhi	52.99	54.16	1.18	2.17
Haryana	51.47	53.21	1.74	3.27
H.P.	9.17	9.17	0.00	0.00
J & K	17.02	19.28	2.26	11.71
Punjab	76.03	81.55	5.52	6.77
Rajasthan	68.79	70.25	1.46	2.08
U.P.	100.14	122.66	22.52	18.36
U'CHAL	9.81	10.10	0.29	2.86
N.F.F./Rail	1.65	1.65	0.00	0.00
Total	389.80	425.78	35.98	8.45

B. Peak MW

State / U.T.	MAX. Availability MW	MAX. Requirement MW	Shortage MW	Shortage %
			ARITHMETICAL	ARITHMETICAL
			C=B-A	(C/B)*100
Chandigarh	206	206	0	0.00
Delhi	3101	3367	266	7.90
Haryana	3325	3411	86	2.52
H.P. *	696	696	0	0.00
J & K *	1042	1250	208	16.64
Punjab	5387	5771	384	6.65
Rajasthan	3735	3735	0	0.00
U.P.	5699	6700	1001	14.94
U'CHAL	692	771	79	10.25
N.F.F. *	83	83	0	0.00
Region	21767	24092	2325	9.65

Diversity Factor = **1.15**

* Approximate and Estimated

**6.2(a) MONTHWISE POWER SUPPLY POSITION (average energy in MU/day)
IN NORTHERN REGION DURING 2002-03**

(ALL FIGS. IN NET MU / DAY AVERAGE)

State / U.T.->	CHANDIGARH				DELHI			
Month	Demand met (MU/day)	Requirement (MU/day)	Shortage (MU/day)	Shortage %	Demand met (MU/day)	Requirement (MU/day)	Shortage (MU/day)	Shortage %
APR - 2002	2.92	2.92	0.00	0.00	54.00	54.78	0.78	1.42
MAY - 2002	3.62	3.62	0.00	0.00	59.77	61.09	1.32	2.16
JUN - 2002	3.59	3.59	0.00	0.00	60.92	62.58	1.66	2.65
JUL - 2002	3.72	3.72	0.00	0.00	63.56	65.68	2.12	3.23
AUG - 2002	3.46	3.46	0.00	0.00	58.81	59.89	1.08	1.80
SEP - 2002	2.88	2.88	0.00	0.00	52.19	52.64	0.45	0.85
OCT - 2002	2.56	2.56	0.00	0.00	48.26	49.27	1.01	2.05
NOV - 2002	2.35	2.35	0.00	0.00	46.15	46.31	0.16	0.35
DEC - 2002	2.62	2.62	0.00	0.00	46.44	47.38	0.94	1.98
JAN - 2003	2.85	2.85	0.00	0.00	52.94	56.16	3.22	5.73
FEB - 2003	2.80	2.80	0.00	0.00	47.11	48.05	0.94	1.96
MAR - 2003	3.08	3.08	0.00	0.00	45.16	45.52	0.36	0.79
2002-03	3.04	3.04	0.00	0.00	52.99	54.16	1.18	2.17

State / U.T.->	HARYANA				HIMACHAL PRADESH			
Month	Demand met (MU/day)	Requirement (MU/day)	Shortage (MU/day)	Shortage %	Demand met (MU/day)	Requirement (MU/day)	Shortage (MU/day)	Shortage %
APR - 2002	43.56	43.72	0.16	0.37	8.82	8.82	0.00	0.00
MAY - 2002	49.53	49.53	0.00	0.00	9.13	9.13	0.00	0.00
JUN - 2002	55.26	55.96	0.70	1.25	9.23	9.23	0.00	0.00
JUL - 2002	62.31	65.36	3.05	4.67	9.22	9.22	0.00	0.00
AUG - 2002	62.83	64.81	1.98	3.06	9.39	9.39	0.00	0.00
SEP - 2002	54.87	55.07	0.20	0.36	8.95	8.95	0.00	0.00
OCT - 2002	52.10	54.18	2.08	3.84	8.86	8.86	0.00	0.00
NOV - 2002	48.21	48.74	0.53	1.09	9.31	9.31	0.00	0.00
DEC - 2002	47.04	52.64	5.60	10.64	9.59	9.59	0.00	0.00
JAN - 2003	44.21	48.00	3.79	7.90	9.30	9.30	0.00	0.00
FEB - 2003	44.48	46.00	1.52	3.30	9.06	9.06	0.00	0.00
MAR - 2003	52.40	53.50	1.10	2.06	9.12	9.12	0.00	0.00
2002-03	51.47	53.21	1.74	3.27	9.17	9.17	0.00	0.00

**6.2(a) MONTHWISE POWER SUPPLY POSITION (average energy in MU/day)
IN NORTHERN REGION DURING 2002-03**

(ALL FIGS. IN NET MU / DAY AVERAGE)

State / U.T.->	JAMMU & KASHMIR				PUNJAB			
Month	Demand met (MU/day)	Requirement (MU/day)	Shortage (MU/day)	Shortage %	Demand met (MU/day)	Requirement (MU/day)	Shortage (MU/day)	Shortage %
APR - 2002	17.42	19.12	1.70	8.89	65.80	69.65	61.21	87.88
MAY - 2002	16.74	18.68	1.94	10.39	80.34	82.89	2.55	3.08
JUN - 2002	15.91	18.41	2.50	13.58	99.83	104.65	4.82	4.61
JUL - 2002	15.29	18.39	3.10	16.86	104.42	113.70	9.28	8.16
AUG - 2002	15.12	18.45	3.33	18.05	99.78	111.29	11.51	10.34
SEP - 2002	15.73	18.39	2.66	14.46	81.77	87.20	5.43	6.23
OCT - 2002	15.71	18.58	2.87	15.45	69.37	75.84	6.47	8.53
NOV - 2002	19.06	19.79	0.73	3.69	62.63	66.22	3.59	5.42
DEC - 2002	19.06	21.48	2.42	11.27	61.63	69.35	7.72	11.13
JAN - 2003	18.12	20.00	1.88	9.40	63.89	68.00	4.11	6.04
FEB - 2003	17.11	20.11	3.00	14.92	57.14	62.00	4.86	7.84
MAR - 2003	19.02	20.00	0.98	4.90	64.13	66.00	1.87	2.83
2002-03	17.02	19.28	2.26	11.71	76.03	81.55	5.52	6.77

State / U.T.->	RAJASTHAN				UTTAR PRADESH			
Month	Demand met (MU/day)	Requirement (MU/day)	Shortage (MU/day)	Shortage %	Demand met (MU/day)	Requirement (MU/day)	Shortage (MU/day)	Shortage %
APR - 2002	65.18	65.28	0.10	0.15	97.75	124.04	26.29	21.19
MAY - 2002	66.93	68.28	1.35	1.98	97.33	121.32	23.99	19.77
JUN - 2002	65.59	65.59	0.00	0.00	97.84	123.79	25.95	20.96
JUL - 2002	69.39	70.91	1.52	2.14	103.95	131.75	27.80	21.10
AUG - 2002	68.22	68.90	0.68	0.99	99.79	124.42	24.63	19.80
SEP - 2002	70.00	72.34	2.34	3.23	92.35	115.56	23.21	20.08
OCT - 2002	70.69	71.27	0.58	0.81	100.40	125.28	24.88	19.86
NOV - 2002	72.69	72.82	0.13	0.18	100.84	127.09	26.25	20.65
DEC - 2002	68.00	74.51	6.51	8.74	102.23	129.35	27.12	20.97
JAN - 2003	68.38	69.79	1.41	2.02	104.92	130.00	25.08	19.29
FEB - 2003	67.06	70.00	2.94	4.20	97.48	105.62	8.14	7.71
MAR - 2003	73.18	73.18	0.00	0.00	106.12	112.00	5.88	5.25
2002-03	68.79	70.25	1.46	2.08	100.14	122.66	22.52	18.36

**6.2(a) MONTHWISE POWER SUPPLY POSITION (average energy in MU/day)
IN NORTHERN REGION DURING 2002-03**

(ALL FIGS. IN NET MU / DAY AVERAGE)

State / U.T.->	N.F.F./RAIL				REGION			
Month	Demand met (MU/day)	Requirement (MU/day)	Shortage (MU/day)	Shortage %	Demand met (MU/day)	Requirement (MU/day)	Shortage (MU/day)	Shortage %
APR - 2002	1.39	1.39	0.00	0.00	365.92	399.12	33.20	8.32
MAY - 2002	1.33	1.33	0.00	0.00	394.48	425.97	31.49	7.39
JUN - 2002	1.45	1.45	0.00	0.00	418.96	454.92	35.96	7.90
JUL - 2002	1.53	1.53	0.00	0.00	443.18	490.42	47.24	9.63
AUG - 2002	1.72	1.72	0.00	0.00	429.08	472.69	43.61	9.23
SEP - 2002	1.61	1.61	0.00	0.00	389.56	424.31	34.75	8.19
OCT - 2002	1.67	1.67	0.00	0.00	379.07	417.26	38.19	9.15
NOV - 2002	1.71	1.71	0.00	0.00	372.83	404.45	31.62	7.82
DEC - 2002	1.99	1.99	0.00	0.00	368.91	429.36	60.45	14.08
JAN - 2003	1.91	1.91	0.00	0.00	375.52	417.21	41.69	9.99
FEB - 2003	1.46	1.46	0.00	0.00	353.59 *	375.00	21.41	5.71
MAR -2003	1.97	1.97	0.00	0.00	382.63	393.08	10.45	2.66
2002-03	1.65	1.65	0.00	0.00	389.80	425.78	35.98	8.45

* Severe load crash on 18/19 th
February 2003.

State / U.T.->	UTTARANCHAL			
Month	Demand met (MU/day)	Requirement (MU/day)	Shortage (MU/day)	Shortage %
APR - 2002	9.08	9.40	0.32	3.40
MAY - 2002	9.76	10.09	0.33	3.27
JUN - 2002	9.34	9.67	0.33	3.41
JUL - 2002	9.79	10.15	0.36	3.55
AUG - 2002	9.96	10.36	0.40	3.86
SEP - 2002	9.21	9.67	0.46	4.76
OCT - 2002	9.45	9.75	0.30	3.08
NOV - 2002	9.88	10.11	0.23	2.27
DEC - 2002	10.27	10.45	0.18	1.72
JAN - 2003	10.79	11.00	0.21	1.91
FEB - 2003	9.89	10.00	0.11	1.10
MAR -2003	10.27	10.50	0.23	2.19
2002-03	9.81	10.10	0.29	2.86

6.2 (b) MONTHWISE POWER SUPPLY POSITION (Peak MW) IN NORTHERN REGION DURING 2002-03

State / U.T.->	CHANDIGARH				DELHI			
Month	Demand met MW	Requirement MW	Shortage MW	Shortage %	Demand met MW	Requirement MW	Shortage MW	Shortage %
APR - 2002	179	179	0	0.00	2770	2917	147	5.04
MAY - 2002	200	200	0	0.00	3066	3285	219	6.67
JUN - 2002	185	185	0	0.00	3037	3265	228	6.98
JUL - 2002	206	206	0	0.00	3101	3347	246	7.35
AUG - 2002	194	194	0	0.00	3090	3231	141	4.36
SEP - 2002	164	164	0	0.00	2864	2914	50	1.72
OCT - 2002	160	160	0	0.00	2812	2853	41	1.44
NOV - 2002	145	145	0	0.00	2720	2769	49	1.77
DEC - 2002	155	155	0	0.00	2588	2905	317	10.91
JAN - 2003	145	145	0	0.00	3042	3367	325	9.65
FEB - 2003	140	140	0	0.00	2810	2980	170	5.70
MAR - 2003	130	130	0	0.00	2605	2656	51	1.92
2002-03	206	206	0	0.00	3101	3367	266	7.90

State / U.T.->	HARYANA				HIMACHAL PRADESH			
Month	Demand met MW	Requirement MW	Shortage MW	Shortage %	Demand met MW	Requirement MW	Shortage MW	Shortage %
APR - 2002	2590	2590	0	0.00	511	511	0	0.00
MAY - 2002	2793	2793	0	0.00	565	565	0	0.00
JUN - 2002	3070	3070	0	0.00	549	549	0	0.00
JUL - 2002	3325	3411	86	2.52	505	505	0	0.00
AUG - 2002	3250	3358	108	3.22	511	511	0	0.00
SEP - 2002	3077	3094	17	0.55	516	516	0	0.00
OCT - 2002	3013	3043	30	0.99	551	551	0	0.00
NOV - 2002	2746	2746	0	0.00	531	531	0	0.00
DEC - 2002	2641	2962	321	10.84	696	696	0	0.00
JAN - 2003	2647	2981	334	11.20	696	696	0	0.00
FEB - 2003	2561	2650	89	3.36	614	614	0	0.00
MAR - 2003	2688	2800	112	4.00	588	588	0	0.00
2002-03	3325	3411	86	2.52	696	696	0	0.00

6.2 (b) MONTHWISE POWER SUPPLY POSITION (Peak MW) IN NORTHERN REGION DURING 2002-03

State / U.T.->	JAMMU & KASHMIR				PUNJAB			
Month	Demand met MW	Requirement MW	Shortage MW	Shortage %	Demand met MW	Requirement MW	Shortage MW	Shortage %
APR - 2002	940	1169	229	19.59	3712	3834	122	3.18
MAY - 2002	935	1141	206	18.05	4533	4533	0	0.00
JUN - 2002	917	1150	233	20.26	5387	5741	354	6.17
JUL - 2002	938	1160	222	19.14	5281	5691	410	7.20
AUG - 2002	907	1141	234	20.51	5184	5771	587	10.17
SEP - 2002	926	1114	188	16.88	5024	5274	250	4.74
OCT - 2002	891	1158	267	23.06	3841	4281	440	10.28
NOV - 2002	1041	1250	209	16.72	3619	3813	194	5.09
DEC - 2002	980	1199	219	18.27	3552	4052	500	12.34
JAN - 2003	939	1200	261	21.75	3582	3582	0	0.00
FEB - 2003	931	1100	169	15.36	3414	3650	236	6.47
MAR - 2003	1042	1100	58	5.27	3468	3700	232	6.27
2002-03	1042	1250	208	16.64	5387	5771	384	6.65

State / U.T.->	RAJASTHAN				UTTAR PRADESH			
Month	Demand met MW	Requirement MW	Shortage MW	Shortage %	Demand met MW	Requirement MW	Shortage MW	Shortage %
APR - 2002	3412	3412	0	0.00	5414	6215	801	12.89
MAY - 2002	3539	3539	0	0.00	5594	6138	544	8.86
JUN - 2002	3383	3383	0	0.00	5566	6240	674	10.80
JUL - 2002	3610	3610	0	0.00	5626	6685	1059	15.84
AUG - 2002	3580	3580	0	0.00	5513	6311	798	12.64
SEP - 2002	3625	3625	0	0.00	5434	5846	412	7.05
OCT - 2002	3716	3716	0	0.00	5577	6665	1088	16.32
NOV - 2002	3735	3735	0	0.00	5699	6527	828	12.69
DEC - 2002	3453	3453	0	0.00	5024	6700	1676	25.01
JAN - 2003	3535	3535	0	0.00	5018	6228	1210	19.43
FEB - 2003	3525	3525	0	0.00	5061	6250	1189	19.02
MAR - 2003	3466	3466	0	0.00	4846	6000	1154	19.23
2002-03	3735	3735	0	0.00	5699	6700	1001	14.94

6.2 (b) MONTHWISE POWER SUPPLY POSITION (Peak MW) IN NORTHERN REGION DURING 2002-03

State / U.T.->	N.F.F.				REGION			
Month	Demand met MW	Requirement MW	Shortage MW	Shortage %	Demand met MW	Requirement MW	Shortage MW	Shortage %
APR - 2002	66	66	0	0.00	18779	20798	2019	9.71
MAY - 2002	64	64	0	0.00	20173	21758	1585	7.28
JUN - 2002	68	68	0	0.00	20773	22384	1611	7.20
JUL - 2002	75	75	0	0.00	21767	24092	2325	9.65
AUG - 2002	78	78	0	0.00	21708	24005	2297	9.57
SEP - 2002	76	76	0	0.00	20545	22755	2210	9.71
OCT - 2002	83	83	0	0.00	19471	22186	2715	12.24
NOV - 2002	79	79	0	0.00	20130	22047	1917	8.70
DEC - 2002	75	75	0	0.00	19490	21455	1965	9.16
JAN - 2003	75	75	0	0.00	20109	22040	1931	8.76
FEB - 2003	70	70	0	0.00	19307	21000	1693	8.06
MAR - 2003	67	67	0	0.00	20044	20622	578	2.80
2002-03	83	83	0	0.00	21767	24092	2325	9.65

State / U.T.->	UTTARANCHAL			
Month	Demand met MW	Requirement MW	Shortage MW	Shortage %
APR - 2002	587	647	60	9.27
MAY - 2002	604	684	80	11.70
JUN - 2002	581	641	60	9.36
JUL - 2002	681	771	90	11.67
AUG - 2002	672	732	60	8.20
SEP - 2002	649	709	60	8.46
OCT - 2002	640	700	60	8.57
NOV - 2002	692	712	20	2.81
DEC - 2002	626	750	124	16.53
JAN - 2003	680	695	15	2.16
FEB - 2003	645	662	17	2.57
MAR - 2003	642	665	23	3.46
2002-03	692	771	79	10.25

6.3 (a) MONTHWISE MAXIMUM AND MINIMUM ENERGY CONSUMPTION WITH CORRESPONDING DATES IN NORTHERN REGION DURING 2002-03

State / U.T.->	CHANDIGARH				DELHI			
Month	Max. Consumption MU/Day	Date	Min. Consumption MU/Day	Date	Max. Consumption MU/Day	Date	Min. Consumption MU/Day	Date
APR - 2002	3.45	24.04.2002	2.46	07.04.2002	61.26	24.04.2002	49.58	02.04.2002
MAY - 2002	4.33	16.05.2002	2.60	26.05.2002	67.71	16.05.2002	39.67	28.05.2002
JUN - 2002	4.10	10.06.2002	2.98	02.06.2002	65.55	14.06.2002	52.75	02.06.2002
JUL - 2002	4.18	16.07.2002	3.09	21.07.2002	66.46	19.07.2002	60.75	21.07.2002
AUG - 2002	4.08	02.08.2002	2.66	15.08.2002	66.10	08.08.2002	48.24	13.08.2002
SEP - 2002	3.30	06.09.2002	2.26	08.09.2002	61.48	02.09.2002	42.84	13.09.2002
OCT - 2002	3.01	11.10.2002	1.72	21.10.2002	52.95	10.10.2002	44.31	13.10.2002
NOV - 2002	2.58	30.11.2002	2.04	05.11.2002	50.87	01.11.2002	44.36	10.11.2002
DEC - 2002	2.57	31.12.2002	1.90	23.12.2002	51.24	31.12.2002	35.10	23.12.2002
JAN - 2003	3.20	14.01.2003	2.29	26.01.2003	56.67	14.01.2003	46.57	26.01.2003
FEB - 2003	2.62	04.02.2003	2.13	23.02.2003	53.12	02.02.2003	44.02	19.02.2003
MAR - 2003	2.52	26.03.2003	1.92	19.03.2003	50.25	31.03.2003	38.57	19.03.2003
2002-03	4.33		1.72		67.71		35.10	

State / U.T.->	HARYANA				HIMACHAL PRADESH			
Month	Max. Consumption MU/Day	Date	Min. Consumption MU/Day	Date	Max. Consumption MU/Day	Date	Min. Consumption MU/Day	Date
APR - 2002	50.37	30.04.2002	41.52	07.04.2002	9.47	23.04.2002	7.52	25.04.2002
MAY - 2002	57.32	16.05.2002	29.19	28.05.2002	9.93	17.05.2002	7.97	28.05.2002
JUN - 2002	66.73	28.06.2002	44.00	01.06.2002	9.65	15.06.2002	8.59	12.06.2002
JUL - 2002	67.45	22.07.2002	59.87	06.07.2002	9.73	17.07.2002	8.61	06.07.2002
AUG - 2002	71.80	20.08.2002	54.37	13.08.2002	9.83	09.08.2002	8.84	04.08.2002
SEP - 2002	66.37	01.09.2002	41.47	13.09.2002	9.77	02.09.2002	8.45	30.09.2002
OCT - 2002	58.33	06.10.2002	51.04	12.10.2002	9.54	25.10.2002	7.96	04.10.2002
NOV - 2002	53.58	02.11.2002	47.40	23.11.2002	9.91	15.11.2002	8.07	05.11.2002
DEC - 2002	50.89	13.12.2002	34.78	31.12.2002	11.06	31.12.2002	8.45	23.12.2002
JAN - 2003	50.07	26.01.2003	38.41	02.01.2003	10.92	05.01.2003	7.87	24.01.2003
FEB - 2003	50.66	16.02.2003	32.97	19.02.2003	9.99	21.02.2003	6.71	19.02.2003
MAR - 2003	58.75	18.03.2003	44.07	02.03.2003	10.02	04.03.2003	7.62	31.03.2003
2002-03	71.80		29.19		11.06		6.71	

6.3 (a) MONTHWISE MAXIMUM AND MINIMUM ENERGY CONSUMPTION WITH CORRESPONDING DATES IN NORTHERN REGION DURING 2002-03

State / U.T.->	JAMMU & KASHMIR				PUNJAB			
Month	Max. Consumption MU/Day	Date	Min. Consumption MU/Day	Date	Max. Consumption MU/Day	Date	Min. Consumption MU/Day	Date
APR - 2002	18.92	13.04.2002	14.52	24.04.2002	74.70	30.04.2002	61.66	25.04.2002
MAY - 2002	18.24	03.05.2002	13.11	29.05.2002	95.78	18.05.2002	60.57	28.05.2002
JUN - 2002	17.70	28.06.2002	12.39	17.06.2002	113.79	30.06.2002	81.71	03.06.2002
JUL - 2002	16.84	12.07.2002	11.82	04.07.2002	118.49	03.07.2002	97.51	23.07.2002
AUG - 2002	16.45	18.08.2002	11.12	13.08.2002	113.57	20.08.2002	96.65	10.08.2002
SEP - 2002	16.78	24.09.2002	14.35	04.09.2002	101.16	11.09.2002	61.58	14.09.2002
OCT - 2002	16.25	04.10.2002	13.98	13.10.2002	76.06	21.10.2002	68.07	15.10.2002
NOV - 2002	20.20	24.11.2002	16.01	01.11.2002	73.21	02.11.2002	59.65	05.11.2002
DEC - 2002	20.10	28.12.2002	15.16	23.12.2002	69.32	11.12.2002	39.45	23.12.2002
JAN - 2003	22.84	07.01.2003	18.23	03.01.2003	75.01	25.01.2003	57.00	02.01.2003
FEB - 2003	19.82	13.02.2003	6.82	19.02.2003	71.52	14.02.2003	32.38	19.02.2003
MAR - 2003	21.53	19.03.2003	15.62	03.03.2003	79.18	22.03.2003	46.54	01.03.2003
2002-03	22.84		6.82		118.49		32.38	

State / U.T.->	RAJASTHAN				UTTAR PRADESH			
Month	Max. Consumption MU/Day	Date	Min. Consumption MU/Day	Date	Max. Consumption MU/Day	Date	Min. Consumption MU/Day	Date
APR - 2002	72.97	29.04.2002	63.91	07.04.2002	108.83	30.04.2002	100.18	02.04.2002
MAY - 2002	74.60	21.05.2002	54.95	28.05.2002	113.89	14.05.2002	75.65	28.05.2002
JUN - 2002	72.86	15.06.2002	62.50	30.06.2002	109.97	30.06.2002	93.99	15.06.2002
JUL - 2002	76.60	28.07.2002	65.59	01.07.2002	117.28	26.07.2002	105.45	04.07.2002
AUG - 2002	75.70	19.08.2002	68.32	23.08.2002	118.99	09.08.2002	91.10	13.08.2002
SEP - 2002	77.39	11.09.2002	66.96	30.09.2002	112.87	02.09.2002	75.63	13.09.2002
OCT - 2002	77.73	31.10.2002	69.27	25.10.2002	112.48	10.10.2002	97.52	13.10.2002
NOV - 2002	79.27	03.11.2002	72.26	30.11.2002	115.61	04.11.2002	103.04	15.11.2002
DEC - 2002	74.74	21.12.2002	54.19	31.12.2002	115.94	19.12.2002	87.60	31.12.2002
JAN - 2003	75.54	25.01.2003	62.29	31.01.2003	117.10	15.01.2003	92.80	01.01.2003
FEB - 2003	75.30	12.02.2003	38.18	19.02.2003	109.76	05.02.2003	73.87	19.02.2003
MAR - 2003	76.48	23.03.2003	69.03	18.03.2003	125.21	14.03.2003	94.83	05.03.2003
2002-03	79.27		38.18		125.21		73.87	

6.3 (a) MONTHWISE MAXIMUM AND MINIMUM ENERGY CONSUMPTION WITH CORRESPONDING DATES IN NORTHERN REGION DURING 2002-03

State / U.T.->	N.F.F./RAIL				REGION			
Month	Max. Consumption MU/Day	Date	Min. Consumption MU/Day	Date	Max. Consumption MU/Day	Date	Min. Consumption MU/Day	Date
APR - 2002	1.57	25.04.2002	1.22	18.04.2002	379.11	30.04.2002	337.89	08.04.2002
MAY - 2002	1.53	29.05.2002	0.90	04.05.2002	411.63	18.05.2002	276.50	28.05.2002
JUN - 2002	1.61	07.06.2002	1.16	26.06.2002	440.90	28.06.2002	363.41	02.06.2002
JUL - 2002	1.80	29.07.2002	0.99	05.07.2002	453.35	10.07.2002	429.60	06.07.2002
AUG - 2002	1.87	28.08.2002	1.21	06.08.2002	437.01	20.08.2002	371.63	13.08.2002
SEP - 2002	1.82	20.09.2002	1.00	15.09.2002	418.19	01.09.2002	322.11	13.09.2002
OCT - 2002	1.98	26.10.2002	1.24	07.10.2002	384.19	10.10.2002	349.63	13.10.2002
NOV - 2002	1.89	18.11.2002	1.49	27.11.2002	379.84	02.11.2002	325.89	05.11.2002
DEC - 2002	2.17	30.12.2002	1.71	10.12.2002	384.31	13.12.2002	314.89	23.12.2002
JAN - 2003	2.16	31.01.2003	1.67	17.01.2003	390.24	25.01.2003	347.13	31.01.2003
FEB - 2003	2.18	22.02.2003	1.73	21.02.2003	381.79	14.02.2003	244.37	19.02.2003
MAR - 2003	2.12	19.03.2003	1.65	30.03.2003	410.65	23.03.2003	344.43	02.03.2003
2002-03	2.18		0.90		453.35		244.37	
State / U.T.->	UTTRANCHAL							
Month	Max. Consumption MU/Day	Date	Min. Consumption MU/Day	Date				
APR - 2002	10.07	17.04.2002	6.80	26.04.2002				
MAY - 2002	10.57	19.05.2002	7.96	28.05.2002				
JUN - 2002	10.61	08.06.2002	6.45	12.06.2002				
JUL - 2002	10.94	30.07.2002	8.52	04.07.2002				
AUG - 2002	10.74	09.08.2002	8.11	11.08.2002				
SEP - 2002	10.66	02.09.2002	6.93	13.09.2002				
OCT - 2002	10.02	04.10.2002	8.40	13.10.2002				
NOV - 2002	10.61	04.11.2002	9.28	30.11.2002				
DEC - 2002	10.90	27.12.2002	9.52	20.12.2002				
JAN - 2003	11.95	23.01.2003	8.61	26.01.2003				
FEB - 2003	10.82	01.02.2003	7.08	19.02.2003				
MAR - 2003	10.36	01.03.2003	9.12	02.03.2003				
2002-03	11.95		6.45					

**6.3(b) MONTHWISE MAXIMUM AND MINIMUM ENERGY REQUIREMENT WITH CORRESPONDING DATES
IN NORTHERN REGION DURING 2002-03**

State / U.T.->	CHANDIGARH				DELHI			
Month	Max.Requirement MU/Day	Date	Min. Requirement MU/Day	Date	Max.Requirement MU/Day	Date	Min. Requirement MU/Day	Date
APR - 2002	3.45	24.04.2002	2.46	07.04.2002	62.41	24.04.2002	50.08	02.04.2002
MAY - 2002	4.33	16.05.2002	2.60	26.05.2002	69.97	16.05.2002	40.46	28.05.2002
JUN - 2002	4.10	10.06.2002	2.98	02.06.2002	67.52	13.06.2002	52.86	02.06.2002
JUL - 2002	4.18	16.07.2002	3.09	21.07.2002	69.28	19.07.2002	61.84	21.07.2002
AUG - 2002	4.08	02.08.2002	2.66	15.08.2002	67.18	08.08.2002	48.57	15.08.2002
SEP - 2002	3.30	06.09.2002	2.26	08.09.2002	61.94	02.09.2002	43.04	13.09.2002
OCT - 2002	3.01	11.10.2002	1.72	21.10.2002	54.64	11.10.2002	44.63	13.10.2002
NOV - 2002	2.58	30.11.2002	2.04	05.11.2002	51.21	01.11.2002	44.77	10.11.2002
DEC - 2002	2.57	31.12.2002	1.90	23.12.2002	51.40	27.12.2002	45.12	01.12.2003
JAN - 2003	3.20	14.01.2003	2.29	26.01.2003	61.69	20.01.2003	47.01	26.01.2003
FEB - 2003	2.62	04.02.2003	2.13	23.02.2003	54.08	02.02.2003	44.57	19.02.2003
MAR - 2003	2.52	26.03.2003	1.92	19.03.2003	50.69	31.03.2003	38.64	19.03.2003
2002-03	4.33		1.72		69.97		38.64	

State / U.T.->	HARYANA				HIMACHAL PRADESH			
Month	Max.Requirement MU/Day	Date	Min. Requirement MU/Day	Date	Max.Requirement MU/Day	Date	Min. Requirement MU/Day	Date
APR - 2002	50.37	30.04.2002	41.52	07.04.2002	9.47	23.04.2002	7.52	25.04.2002
MAY - 2002	57.32	16.05.2002	29.19	28.04.2002	9.93	17.05.2002	7.97	28.05.2002
JUN - 2002	66.88	28.06.2002	44.00	01.06.2002	9.65	15.06.2002	8.59	12.06.2002
JUL - 2002	73.00	28.07.2002	59.87	05.07.2002	9.73	17.07.2002	8.61	06.07.2002
AUG - 2002	71.80	20.08.2002	54.37	13.08.2002	9.83	09.08.2002	8.84	04.08.2002
SEP - 2002	66.37	01.09.2002	41.47	13.09.2002	9.77	02.09.2002	8.45	30.09.2002
OCT - 2002	60.40	07.10.2002	52.50	13.10.2002	9.54	25.10.2002	7.96	04.10.2002
NOV - 2002	55.24	01.11.2002	48.47	25.11.2002	9.91	15.11.2002	8.07	05.11.2002
DEC - 2002	50.89	13.12.2002	34.78	31.12.2002	11.36	31.12.2002	8.45	23.12.2002
JAN - 2003	50.07	26.01.2003	38.41	02.01.2003	11.22	05.01.2003	7.87	24.01.2003
FEB - 2003	50.66	16.02.2003	32.97	19.02.2003	10.29	21.02.2003	6.71	19.02.2003
MAR - 2003	58.75	18.03.2003	44.07	02.03.2003	10.32	04.03.2003	7.62	31.03.2003
2002-03	73.00		29.19		11.36		6.71	

**6.3(b) MONTHWISE MAXIMUM AND MINIMUM ENERGY REQUIREMENT WITH CORRESPONDING DATES
IN NORTHERN REGION DURING 2002-03**

State / U.T.->	JAMMU & KASHMIR				PUNJAB			
Month	Max.Requirement MU/Day	Date	Min. Requirement MU/Day	Date	Max.Requirement MU/Day	Date	Min. Requirement MU/Day	Date
APR - 2002	19.70	05.04.2002	17.52	24.04.2002	79.32	23.04.2002	62.46	25.04.2002
MAY - 2002	19.52	02.05.2002	16.11	29.05.2002	97.60	18.05.2002	60.57	28.05.2002
JUN - 2002	19.38	07.06.2002	16.28	16.06.2002	120.82	30.06.2002	83.21	03.06.2002
JUL - 2002	19.13	13.07.2002	16.82	05.07.2002	122.26	19.07.2002	106.03	05.07.2002
AUG - 2002	19.16	16.08.2002	17.72	25.08.2002	122.67	20.08.2002	105.21	13.08.2002
SEP - 2002	18.79	21.09.2002	17.72	14.09.2002	107.97	10.09.2002	63.73	14.09.2002
OCT - 2002	19.10	31.10.2002	17.83	09.10.2002	83.87	05.10.2002	71.87	15.10.2002
NOV - 2002	20.50	24.11.2002	18.65	06.11.2002	76.26	02.11.2002	60.20	05.11.2002
DEC - 2002					74.22	11.12.2002	39.45	23.12.2002
JAN - 2003					80.01	25.01.2003	57.00	02.01.2003
FEB - 2003					76.12	14.02.2003	32.38	19.02.2003
MAR -2003					79.18	22.03.2003	46.54	01.03.2003
2002-03	20.50		16.11		122.67		32.38	

State / U.T.->	RAJASTHAN				UTTAR PRADESH			
Month	Max.Requirement MU/Day	Date	Min. Requirement MU/Day	Date	Max.Requirement MU/Day	Date	Min. Requirement MU/Day	Date
APR - 2002	72.97	30.04.2002	63.91	07.04.2002	135.07	30.04.2002	123.00	28.04.2002
MAY - 2002	74.60	21.05.2002	54.95	28.05.2002	140.25	25.05.2002	91.32	28.05.2002
JUN - 2002	72.86	15.06.2002	62.50	30.06.2002	140.04	21.06.2002	118.34	15.06.2002
JUL - 2002	79.70	30.07.2002	65.59	01.07.2002	148.17	26.07.2002	133.99	21.07.2002
AUG - 2002	76.36	21.08.2002	69.05	09.08.2002	144.19	09.08.2002	106.07	13.08.2002
SEP - 2002	78.62	18.09.2002	72.22	03.09.2002	138.11	02.09.2002	95.86	13.09.2002
OCT - 2002	77.73	31.10.2002	72.92	25.10.2002	138.39	04.10.2002	114.50	13.10.2002
NOV - 2002	79.27	03.11.2002	72.26	30.11.2002	138.87	04.11.2002	129.37	10.11.2002
DEC - 2002	74.74	21.12.2002	54.19	31.12.2002	144.43	14.12.2002	87.60	31.12.2002
JAN - 2003	76.20	25.01.2003	62.29	31.01.2003	147.71	23.01.2003	92.80	01.01.2003
FEB - 2003	75.77	12.02.2003	38.18	19.02.2003	135.57	16.02.2003	73.87	19.02.2003
MAR -2003	76.48	23.03.2003	69.07	18.03.2003	125.21	14.03.2003	94.83	05.03.2003
2002-03	79.70		38.18		148.17		73.87	

**6.3(b) MONTHWISE MAXIMUM AND MINIMUM ENERGY REQUIREMENT WITH CORRESPONDING DATES
IN NORTHERN REGION DURING 2002-03**

State / U.T.->	N.F.F./RAIL				REGION			
Month	Max.Requirement MU/Day	Date	Min. Requirement MU/Day	Date	Max.Requirement MU/Day	Date	Min. Requirement MU/Day	Date
APR - 2002	1.57	25.04.2002	1.22	18.04.2002	410.42	23.04.2002	367.78	07.04.2002
MAY- 2002	1.53	29.05.2002	0.90	04.05.2002	450.23	16.05.2002	294.46	28.05.2002
JUN - 2002	1.61	07.06.2002	1.16	26.06.2002	482.29	28.06.2002	392.97	02.06.2002
JUL - 2002	1.80	29.07.2002	0.99	05.07.2002	507.83	26.07.2002	466.21	05.07.2002
AUG - 2002	1.87	28.08.2002	1.21	06.08.2002	483.21	01.08.2002	401.98	13.08.2002
SEP - 2002	1.82	20.09.2002	1.00	15.09.2002	453.21	01.09.2002	347.48	13.09.2002
OCT - 2002	1.98	26.10.2002	1.24	07.10.2002	420.39	11.10.2002	373.59	13.10.2002
NOV - 2002	1.89	18.11.2002	1.49	27.11.2002	411.03	02.11.2002	377.26	05.11.2002
DEC - 2002	2.17	30.12.2002	1.71	10.12.2002	413.51	13.12.2002	352.07	31.12.2002
JAN - 2003	2.16	31.01.2003	1.67	17.01.2003	476.60	23.01.2003	389.34	31.01.2003
FEB - 2003	2.18	22.02.2003	1.73	21.02.2003	417.96	15.02.2003	274.92	19.02.2003
MAR -2003	2.12	19.03.2003	1.65	30.03.2003	435.65	23.03.2003	354.44	02.03.2003
2002-03	2.18		0.90		507.83		274.92	

State / U.T.->	UTTRANCHAL			
Month	Max. Consumption MU/Day	Date	Min. Consumption MU/Day	Date
APR - 2002	10.31	15.04.2002	7.13	26.04.2002
MAY- 2002	10.89	19.05.2002	8.28	28.05.2002
JUN - 2002	10.93	08.06.2002	6.77	12.06.2002
JUL - 2002	11.26	30.07.2002	8.87	20.07.2002
AUG - 2002	11.22	09.08.2002	8.54	11.08.2002
SEP - 2002	11.06	03.09.2002	7.25	13.09.2002
OCT - 2002	10.48	11.10.2002	8.82	13.10.2002
NOV - 2002	10.77	04.11.2002	9.56	30.11.2002
DEC - 2002	11.20	28.12.2002	9.52	20.12.2002
JAN - 2003	12.14	21.01.2003	8.61	26.01.2003
FEB - 2003	11.08	16.02.2003	7.08	19.02.2003
MAR -2003	10.64	01.03.2003	9.12	02.03.2003
2002-03	12.14		6.77	

6.4 MONTHWISE PEAK DEMAND MET (MW) AND REQUIREMENT (MW) WITH CORRESPONDING DATES IN NORTHERN REGION DURING 2002-03

State / U.T.->	CHANDIGARH				DELHI			
Month	Peak Met MW	Date	Peak Reqt MW	Date	Peak Met MW	Date	Peak Reqt MW	Date
APR - 2002	179	18.04.2002	179	18.04.2002	2770	24.04.2002	2917	22.04.2002
MAY - 2002	200	16.05.2002	200	16.05.2002	3066	16.05.2002	3285	16.05.2002
JUN - 2002	185	10.06.2002	185	10.06.2002	3037	11.06.2002	3265	21.06.2002
JUL - 2002	206	03.07.2002	206	03.07.2002	3101	18.07.2002	3347	16.07.2002
AUG - 2002	194	02.08.2002	194	02.08.2002	3090	01.08.2002	3231	07.08.2002
SEP - 2002	164	06.09.2002	164	06.09.2002	2864	02.09.2002	2914	02.09.2002
OCT - 2002	166	03.10.2002	166	03.10.2002	2812	23.10.2002	2853	10.10.2002
NOV - 2002	145	08.11.2002	145	08.11.2002	2720	02.11.2002	2769	02.11.2002
DEC - 2002	148	30.12.2002	148	30.12.2002	2817	30.12.2002	2926	27.12.2002
JAN - 2003	191	15.01.2003	191	15.01.2003	3042	14.01.2003	3367	23.01.2003
FEB - 2003	160	04.02.2003	160	04.02.2003	2810	14.02.2003	2980	02.02.2003
MAR - 2003	142	28.03.2003	142	28.03.2003	2605	04.03.2003	2656	04.03.2003
2002-03	206		206		3101		3367	

State / U.T.->	HARYANA				HIMACHAL PRADESH			
Month	Peak Met MW	Date	Peak Reqt MW	Date	Peak Met MW	Date	Peak Reqt MW	Date
APR - 2002	2590	29.04.2002	2590	29.04.2002	511	01.04.2002	511	01.04.2002
MAY - 2002	2793	10.05.2002	2793	10.05.2002	565	24.05.2002	565	24.05.2002
JUN - 2002	3070	28.06.2002	3070	28.06.2002	549	15.06.2002	549	15.06.2002
JUL - 2002	3325	22.07.2002	3411	27.07.2002	505	09.07.2002	505	09.07.2002
AUG - 2002	3250	20.08.2002	3358	24.08.2002	511	30.08.2002	511	30.08.2002
SEP - 2002	3077	12.09.2002	3094	30.09.2002	516	07.09.2002	516	07.09.2002
OCT - 2002	3013	09.10.2002	3043	01.10.2002	551	10.10.2002	551	10.10.2002
NOV - 2002	2746	29.11.2002	2746	29.11.2002	531	30.11.2002	531	30.11.2002
DEC - 2002	2734	23.12.2002	2950	23.12.2002	581	31.12.2002	581	31.12.2002
JAN - 2003	2647	26.01.2003	2950	26.01.2003	515	22.01.2003	515	22.01.2003
FEB - 2003	2666	26.02.2003	2900	26.02.2003	594	13.02.2003	594	13.02.2003
MAR - 2003	2786	27.03.2003	2900	27.03.2003	587	05.03.2003	587	05.03.2003
2002-03	3325		3411		594		594	

6.4 MONTHWISE PEAK DEMAND MET (MW) AND REQUIREMENT (MW) WITH CORRESPONDING DATES IN NORTHERN REGION DURING 2002-03

State / U.T.->	JAMMU & KASHMIR				PUNJAB			
Month	Peak Met MW	Date	Peak Reqt MW	Date	Peak Met MW	Date	Peak Reqt MW	Date
APR - 2002	940	30.04.2002	1169	26.04.2002	3712	30.04.2002	3834	19.04.2002
MAY - 2002	935	18.05.2002	1141	13.05.2002	4533	23.05.2002	4533	23.05.2002
JUN - 2002	917	29.06.2002	1150	09.06.2002	5387	30.06.2002	5741	29.06.2002
JUL - 2002	938	23.07.2002	1160	14.07.2002	5281	04.07.2002	5691	04.07.2002
AUG - 2002	907	14.08.2002	1141	09.08.2002	5184	21.08.2002	5771	06.08.2002
SEP - 2002	926	14.09.2002	1114	30.09.2002	4611	23.09.2002	5066	11.09.2002
OCT - 2002	891	21.10.2002	1158	30.10.2002	3841	03.10.2002	4281	04.10.2002
NOV - 2002	1041	24.11.2002	1199	29.11.2002	3619	02.11.2002	3813	01.11.2002
DEC - 2002	980	13.12.2002	1250	28.12.2002	3552	06.12.2002	3552	06.12.2002
JAN - 2003	939	12.01.2003	1200	07.01.2003	3582	09.01.2003	3582	09.01.2003
FEB - 2003	931	26.02.2003	1100	13.02.2003	3414	07.02.2003	3414	07.02.2003
MAR - 2003	1042	01.02.2003	1100	19.03.2003	3770	21.03.2003	3770	21.03.2003
2002-03	1042		1250		5387		5771	

State / U.T.->	RAJASTHAN				UTTAR PRADESH			
Month	Peak Met MW	Date	Peak Reqt MW	Date	Peak Met MW	Date	Peak Reqt MW	Date
APR - 2002	3412	19.04.2002	3412	19.04.2002	5414	25.04.2002	6215	29.04.2002
MAY - 2002	3539	10.05.2002	3539	10.05.2002	5549	21.05.2002	6138	21.05.2002
JUN - 2002	3383	07.06.2002	3383	07.06.2002	5566	02.06.2002	6240	14.06.2002
JUL - 2002	3610	13.07.2002	3610	13.07.2002	5626	14.07.2002	6685	15.07.2002
AUG - 2002	3580	12.08.2002	3580	12.08.2002	5513	01.08.2002	6311	01.08.2002
SEP - 2002	3625	12.09.2002	3625	12.09.2002	5434	30.09.2002	5846	01.09.2002
OCT - 2002	3716	29.10.2002	3716	29.10.2002	5577	12.10.2002	6665	05.10.2002
NOV - 2002	3735	08.11.2002	3735	08.11.2002	5699	01.11.2002	6527	08.11.2002
DEC - 2002	3448	06.12.2002	3448	06.12.2002	5763	01.12.2002	5947	01.12.2002
JAN - 2003	3506	16.01.2003	3506	16.01.2003	5833	22.01.2003	6850	19.01.2003
FEB - 2003	3466	05.02.2003	3466	05.02.2003	5061	06.02.2003	6018	01.02.2003
MAR - 2003	3542	26.03.2003	3542	26.03.2003	5722	20.03.2003	6328	03.03.2003
2002-03	3735		3735		5833		6850	

6.4 MONTHWISE PEAK DEMAND MET (MW) AND REQUIREMENT (MW) WITH CORRESPONDING DATES IN NORTHERN REGION DURING 2002-03

State / U.T.->	N.F.F.				REGION			
Month	Peak Met MW	Date	Peak Reqt MW	Date	Peak Met MW	Date	Peak Reqt MW	Date
APR - 2002	66	25.04.2002	66	25.04.2002	18832	23.04.2002	21124	13.04.2002
MAY - 2002	64	31.05.2002	64	31.05.2002	20255	11.05.2002	21953	10.05.2002
JUN - 2002	68	07.06.2002	68	07.06.2002	20638	22.06.2002	22399	27.06.2002
JUL - 2002	75	29.07.2002	75	29.07.2002	21767	27.07.2002	24092	30.07.2002
AUG - 2002	78	28.08.2002	78	28.08.2002	21708	17.08.2002	24005	09.08.2002
SEP - 2002	76	20.09.2002	76	20.09.2002	20885	01.09.2002	22775	01.09.2002
OCT - 2002	83	26.10.2002	83	26.10.2002	19855	09.10.2002	22186	09.10.2002
NOV - 2002	79	18.11.2002	79	18.11.2002	20404	03.11.2002	22047	03.11.2002
DEC - 2002	75	30.12.2002	75	30.12.2002	19490	30.12.2002	21455	11.12.2002
JAN - 2003	75	31.01.2003	75	31.01.2003	20109	25.01.2003	22311	08.01.2003
FEB - 2003	70	22.02.2003	70	22.02.2003	19307	12.02.2003	21492	12.02.2003
MAR -2003	67	19.03.2003	67	19.03.2003	20044	14.03.2003	20663	13.03.2003
2002-03	83		83		21767		24092	

State / U.T.->	UTTRANCHAL			
Month	Peak Met MW	Date	Peak Reqt MW	Date
APR - 2002	587	06.04.2002	639	09.04.2002
MAY - 2002	604	23.05.2002	684	23.05.2002
JUN - 2002	581	11.06.2002	641	11.06.2002
JUL - 2002	681	31.07.2002	771	31.07.2002
AUG - 2002	672	09.08.2002	742	09.08.2002
SEP - 2002	649	30.09.2002	709	30.09.2002
OCT - 2002	640	05.10.2002	700	05.10.2002
NOV - 2002	692	03.11.2002	712	03.11.2002
DEC - 2002	645	29.12.2002	695	30.12.2002
JAN - 2003	681	27.01.2003	718	03.01.2003
FEB - 2003	653	04.02.2003	693	04.02.2003
MAR -2003	642	28.03.2003	665	24.03.2003
2002-03	692		771	

6.5 MONTHWISE MINIMUM DEMAND MET (MW) WITH CORRESPONDING DATES OF MAJOR STATES IN NORTHERN REGION DURING 2002-03

State / U.T.->	DELHI			HARYANA			PUNJAB		
Month	Minimum Demand Met MW	Date	Time	Minimum Demand Met MW	Date	Time	Minimum Demand Met MW	Date	Time
APR - 2002	1599	06.04.2002	03.00	803	25.04.2002	19.00	1637	25.04.2002	15.00
MAY - 2002	846	27.05.2002	24.00	329	28.05.2002	03.00	1111	29.05.2002	04.00
JUN - 2002	1894	07.06.2002	13.00	1186	01.06.2002	15.00	2265	11.06.2002	22.00
JUL - 2002	2209	21.06.2002	12.00	1641	27.07.2002	14.00	2991	05.07.2002	05.00
AUG - 2002	1652	13.08.2002	06.00	1761	13.08.2002	08.00	3238	31.08.2002	17.00
SEP - 2002	1349	13.09.2002	04.00	1471	19.09.2002	01.00	2158	14.09.2002	04.00
OCT - 2002	1400	28.10.2002	03.00	1414	30.10.2002	09.00	2305	03.10.2002	05.00
NOV - 2002	1094	30.11.2002	03.00	1251	05.11.2002	10.00	2006	14.11.2002	03.00
DEC - 2002	1054	18.12.2002	02.00	778	26.12.2002	08.00	1922	25.12.2002	01.00
JAN - 2003	1078	01.01.2003	04.00	1076	02.01.2003	12.00	1851	01.01.2003	04.00
FEB - 2003	814	19.02.2003	03.00	519	19.02.2003	04.00	605	19.02.2003	02.00
MAR -2003	1162	13.02.2003	04.00	1443	02.03.2003	02.00	1552	02.03.2003	03.00
2002-03	814	19.02.2003	03.00	329	28.05.2002	03.00	605	19.02.2003	02.00

State / U.T.->	RAJASTHAN			UTTAR PRADESH			REGION		
Month	Minimum Demand Met MW	Date	Time	Minimum Demand Met MW	Date	Time	Minimum Demand Met MW	Date	Time
APR - 2002	2011	29.04.2002	19.00	3238	03.04.2002	18.00	13943	07.04.2002	16.00
MAY - 2002	1431	28.05.2002	05.00	2287	28.05.2002	06.00	9301	28.05.2002	05.00
JUN - 2002	2277	03.06.2002	19.00	3325	06.06.2002	07.00	15197	02.06.2002	19.00
JUL - 2002	2368	26.07.2002	09.00	3893	01.07.2002	19.00	17678	22.07.2002	18.00
AUG - 2002	2743	07.08.2002	18.00	3244	13.08.2002	14.00	15694	13.08.2002	08.00
SEP - 2002	2381	30.09.2002	13.00	2945	14.09.2002	10.00	13656	14.09.2002	08.00
OCT - 2002	2543	04.10.2002	05.00	3627	27.10.2002	16.00	14956	13.10.2002	03.00
NOV - 2002	2849	05.11.2002	17.00	3168	14.11.2002	16.00	13907	05.11.2002	16.00
DEC - 2002	2109	31.12.2002	06.00	3099	31.12.2002	11.00	13906	31.12.2002	05.00
JAN - 2003	2821	31.01.2003	18.00	3594	31.01.2003	24.00	13503	01.01.2003	04.00
FEB - 2003	715	19.02.2003	04.00	1241	19.02.2003	05.00	7462	19.02.2003	05.00
MAR -2003	2368	16.03.2003	18.00	3515	04.03.2003	14.00	13774	02.03.2003	04.00
2002-03	715	19.02.2003	04.00	1241	19.02.2003	05.00	7462	19.02.2003	05.00

6.6 AVERAGE ENERGY REQUIREMENT/DEMAND MET (MU/DAY) OF STATES IN THE NORTHERN REGION DURING THE PAST DECADE

(ALL FIGS. IN MU/DAY AVERAGE)

SL. NO.	YEAR	CHANDIGARH		DELHI		HARYANA		H.P.		J & K		PUNJAB		RAJASTHAN		U.P.		UTTRANCHAL *	
		REQT.	AVAIL.	REQT.	AVAIL.	REQT.	AVAIL.	REQT.	AVAIL.	REQT.	AVAIL.	REQT.	AVAIL.	REQT.	AVAIL.	REQT.	AVAIL.	REQT.	AVAIL.
1	93-94	1.83	1.83	30.02	29.76	31.56	28.74	4.25	4.25	10.07	8.14	50.78	49.16	43.22	40.93	93.91	84.79	0.00	0.00
2	94-95	1.95	1.95	32.98	32.69	31.15	30.01	5.11	5.09	10.95	8.77	53.75	51.95	45.70	43.50	101.80	89.48	0.00	0.00
3	95-96	2.11	2.11	35.53	35.22	34.31	33.59	6.00	5.94	12.00	9.02	54.83	53.62	51.77	49.90	106.20	93.99	0.00	0.00
4	96-97	2.33	2.33	38.13	37.22	37.14	34.92	6.54	6.49	12.92	10.53	58.99	58.04	53.63	49.98	112.99	97.24	0.00	0.00
5	97-98	2.49	2.49	40.63	40.02	35.35	34.77	7.07	7.06	14.12	13.78	60.32	59.93	55.72	54.82	112.58	98.88	0.00	0.00
6	98-99	2.85	2.85	44.36	43.53	36.99	36.34	7.86	7.85	15.42	14.48	66.02	65.00	62.33	60.90	115.08	103.91	0.00	0.00
7	99-00	2.70	2.70	47.20	45.89	42.08	41.15	8.25	8.22	16.46	13.13	70.44	69.92	66.86	63.86	121.25	105.65	0.00	0.00
8	00-01	2.78	2.78	49.95	47.57	45.76	44.38	8.42	8.24	16.88	14.35	74.38	72.02	66.97	64.99	126.40	109.76	0.00	0.00
9	01-02	2.89	2.89	52.10	50.55	48.10	47.06	8.84	8.79	17.60	15.71	76.92	74.05	65.75	65.05	131.82	118.81	0.00	0.00
10	02-03	3.04	3.04	54.16	52.99	53.21	51.47	9.17	9.17	19.28	17.02	81.55	76.03	70.25	68.79	122.66	100.14	10.10	9.81
RATE OF GROWTH		5.80	5.80	6.78	6.62	5.98	6.69	8.92	8.92	7.48	8.54	5.40	4.96	5.55	5.94	3.01	1.87		
(% PER ANNUM)		7.35	7.35	8.94	8.67	7.62	8.79	12.85	12.85	10.16	12.13	6.73	6.07	6.95	7.56	3.40	2.01		

C: COMPOUND A: AVERAGE

6.7 PEAK REQUIREMENT / DEMAND MET (MW) OF STATES IN THE NORTHERN REGION DURING THE PAST DECADE

(ALL FIGS. IN MW)

SL. NO.	YEAR	CHANDIGARH		DELHI		HARYANA		H.P.		J & K		PUNJAB		RAJASTHAN		U.P.		UTTRANCHAL *	
		REQT.	AVAIL.	REQT.	AVAIL.	REQT.	AVAIL.	REQT.	AVAIL.	REQT.	AVAIL.	REQT.	AVAIL.	REQT.	AVAIL.	REQT.	AVAIL.	REQT.	AVAIL.
1	93-94	135	135	1850	1639	2050	1843	365	365	668	550	3600	3484	2600	2476	6238	5227	0.00	0.00
2	94-95	140	140	1884	1869	2025	1947	450	450	748	846	4200	3548	2700	2585	6676	5296	0.00	0.00
3	95-96	147	147	2123	2000	2150	2012	506	506	825	600	3925	3820	2950	2818	6793	5420	0.00	0.00
4	96-97	166	166	2234	2078	2187	2090	525	525	900	750	3868	3864	3145	2972	6833	5873	0.00	0.00
5	97-98	179	179	2448	2355	2273	2273	593	593	1076	1035	4371	4371	3262	3229	6616	5666	0.00	0.00
6	98-99	197	197	2710	2491	2449	2331	585	585	1150	973	4559	4559	3718	3589	6864	5926	0.00	0.00
7	99-00	180	180	2854	2591	2575	2575	618	618	1207	1004	5013	5013	3672	3672	7017	5960	0.00	0.00
8	00-01	171	171	3077	2670	2709	2709	585	585	1172	974	4997	4897	3754	3663	7311	6119	0.00	0.00
9	01-02	180	180	3118	2879	2966	2900	562	562	1209	999	5357	4936	3657	3657	7584	6887	0.00	0.00
10	02-03	206	206	3367	3101	3411	3325	696	696	1250	1042	5771	5387	3735	3735	6700	5699	771	692
RATE OF GROWTH		4.81	4.81	6.88	7.34	5.82	6.78	7.44	7.44	7.21	7.36	5.38	4.96	4.11	4.67	0.80	0.97		
(% PER ANNUM)		5.84	5.84	9.11	9.91	7.38	8.93	10.08	10.08	9.68	9.94	6.70	6.07	4.85	5.65	0.82	1.00		

C: COMPOUND A: AVERAGE

* POWER SYSTEM DATA IN RESPECT OF UTTRANCHAL TAKEN SEPERATELY W.E.F 01.04.2002.

6.8 DEMAND MET / REQUIREMENT OF ENERGY AND PEAK POWER IN NORTHERN REGION DURING PAST DECADE

SL. NO.	YEAR	ENERGY IN MU (NET)			PEAK POWER IN MW		
		DEMAND MET	REQUIREMENT	% SHORTAGE	DEMAND MET	REQUIREMENT	% SHORTAGE
1	1993-94	90525.00	97135.00	6.80	13714	15633	8.43
2	1994-95	96323.50	103623.50	7.04	14296	16375	12.28
3	1995-96	103834.20	110938.26	6.40	15804	17729	12.70
4	1996-97	108504.70	117906.00	7.97	16109	18201	10.86
5	1997-98	113929.91	119962.88	5.03	17091	19016	11.49
6	1998-99	122300.02	128168.04	4.58	18372	20183	10.12
7	1999-2000	128366.54	137412.29	6.58	19341	21083	8.97
8	2000-01	133389.65	143433.09	7.00	19860	21479	8.26
9	2001-02	140003.11	148033.72	5.42	21586	22589	4.44
10	2002-03	142277.59	155409.69	8.45	21767	24092	9.65
COMPOUND ANNUAL GROWTH RATE (CAGR) %		5.15	5.36		5.27	4.92	

6.9 MONTHWISE ENTITLEMENT VIS -A -VIS ACTUAL IMPORT BY CONSTITUENTS FROM NORTHERN GRID DURING 2002-03

All figs. in MU

State / U.T.->	CHANDIGARH			DELHI (Excl. BTPS)		
Month	ENTITLEMENT	ACTUAL	O/D(+)/U/D(-)	ENTITLEMENT	ACTUAL	O/D(+)/U/D(-)
APR - 2002	84.10	87.47	3.37	908.77	938.96	30.19
MAY - 2002	113.03	112.33	-0.70	1025.32	942.26	-83.06
JUN - 2002	107.10	102.23	-4.87	1046.75	1009.66	-37.09
JUL - 2002	116.94	110.86	-6.08	1205.09	1154.67	-50.42
AUG - 2002	111.36	103.19	-8.17	1134.28	1006.68	-127.60
SEP - 2002	97.67	81.26	-16.41	896.86	787.94	-108.92
OCT - 2002	91.66	79.49	-12.17	837.53	760.05	-77.48
NOV - 2002	78.60	70.66	-7.94	826.38	751.74	-74.64
DEC - 2002	85.64	81.65	-3.99	763.10	715.72	-47.38
JAN - 2003	82.25	101.81	19.56	823.16	857.84	34.68
FEB - 2003	71.34	76.63	5.29	727.10	665.04	-62.06
MAR -2003	88.47	78.22	-10.25	793.53	753.32	-40.21
2002-03	1128.16	1085.80	-42.36	10987.87	10343.88	-643.99

State / U.T.->	HARYANA (Excl. FBD GAS)			HIMACHAL PRADESH		
Month	ENTITLEMENT	ACTUAL	O/D(+)/U/D(-)	ENTITLEMENT	ACTUAL	O/D(+)/U/D(-)
APR - 2002	693.04	714.11	21.07	122.24	123.79	1.55
MAY - 2002	958.02	957.47	-0.55	169.27	179.21	9.94
JUN - 2002	951.25	984.05	32.80	171.34	182.38	11.04
JUL - 2002	1033.09	1134.05	100.96	164.59	165.64	1.05
AUG - 2002	983.98	1076.28	92.30	166.44	163.74	-2.70
SEP - 2002	904.77	942.57	37.80	155.24	151.22	-4.02
OCT - 2002	764.28	862.32	98.04	107.00	113.20	6.20
NOV - 2002	602.24	650.27	48.03	172.63	175.14	2.51
DEC - 2002	653.06	760.03	106.97	231.92	263.78	31.86
JAN - 2003	585.37	685.28	99.91	240.01	256.53	16.52
FEB - 2003	519.29	591.98	72.69	219.15	224.13	4.98
MAR -2003	706.82	833.93	127.11	240.79	227.52	-13.27
2002-03	9355.21	10192.34	837.13	2160.62	2226.28	65.66

NOTE:- The above figures are based on operational data available at NRLDC.

6.9 MONTHWISE ENTITLEMENT VIS -A -VIS ACTUAL IMPORT BY CONSTITUENTS FROM NORTHERN GRID DURING 2002-03

All figs. in MU

State / U.T.->	JAMMU & KASHMIR			PUNJAB		
Month	ENTITLEMENT	ACTUAL	O/D(+)/U/D(-)	ENTITLEMENT	ACTUAL	O/D(+)/U/D(-)
APR - 2002	471.86	488.19	16.33	813.40	817.41	4.01
MAY- 2002	468.59	498.78	30.19	1101.69	1038.88	-62.81
JUN - 2002	463.20	491.83	28.63	1280.57	1267.16	-13.41
JUL - 2002	436.52	499.05	62.53	1353.33	1329.79	-23.54
AUG - 2002	405.58	441.24	35.66	1291.94	1323.90	31.96
SEP - 2002	436.34	446.54	10.20	1172.65	1130.48	-42.17
OCT - 2002	396.92	449.80	52.88	899.36	854.75	-44.61
NOV - 2002	350.61	428.32	77.71	794.10	780.48	-13.62
DEC - 2002	480.10	566.15	86.05	670.46	692.92	22.46
JAN - 2003	472.07	550.32	78.25	609.74	533.20	-76.54
FEB - 2003	430.99	441.55	10.56	555.18	538.15	-17.03
MAR -2003	620.73	526.36	-94.37	829.24	944.29	115.05
2002-03	5433.51	5828.13	394.62	11371.66	11251.41	-120.25

State / U.T.->	RAJASTHAN			UTTAR PRADESH (Excl. TANDA)		
Month	ENTITLEMENT	ACTUAL	O/D(+)/U/D(-)	ENTITLEMENT	ACTUAL	O/D(+)/U/D(-)
APR - 2002	749.85	780.41	30.56	1132.03	1068.59	-63.44
MAY- 2002	887.35	976.09	88.74	980.97	1046.58	65.61
JUN - 2002	1041.81	1013.94	-27.87	1241.48	1279.36	37.88
JUL - 2002	1079.13	1095.40	16.27	1367.51	1285.61	-81.90
AUG - 2002	990.71	1025.82	35.11	1268.71	1291.90	23.19
SEP - 2002	911.95	1025.03	113.08	1055.42	1079.05	23.63
OCT - 2002	924.81	952.20	27.39	1282.35	1256.57	-25.78
NOV - 2002	863.23	835.25	-27.98	1320.99	1307.24	-13.75
DEC - 2002	859.12	850.36	-8.76	1394.97	1251.05	-143.92
JAN - 2003	840.23	818.70	-21.53	1385.64	1320.60	-65.04
FEB - 2003	773.29	794.58	21.29	1182.77	1131.04	-51.73
MAR -2003	939.11	889.92	-49.19	1424.38	1488.69	64.31
2002-03	10860.59	11057.70	197.11	15037.22	14806.28	-230.94

NOTE:- The above figures are based on operational data available at NRLDC.

6.9 MONTHWISE ENTITLEMENT VIS -A -VIS ACTUAL IMPORT BY CONSTITUENTS FROM NORTHERN GRID DURING 2002-03

All figs. in MU

State / U.T.->	UTTRANCHAL		
Month	ENTITLEMENT	ACTUAL	O/D(+)/U/D(-)
APR - 2002	64.12	34.94	-29.18
MAY - 2002	83.49	60.59	-22.90
JUN - 2002	130.63	109.77	-20.86
JUL - 2002	187.85	186.80	-1.05
AUG - 2002	188.23	182.43	-5.80
SEP - 2002	141.53	127.22	-14.31
OCT - 2002	162.88	150.49	-12.39
NOV - 2002	131.16	131.93	0.77
DEC - 2002	140.89	162.28	21.39
JAN - 2003	183.49	203.48	19.99
FEB - 2003	151.90	157.08	5.18
MAR -2003	147.06	101.68	-45.38
2002-03	1713.23	1608.69	-104.54

NOTE:- The above figures are based on operational data available at NRLDC.

6.10 INTER REGIONAL EXCHANGES DURING 2002-03

(All figs. in MU)

IR EXCHG VIA -->	WR			ER	
	VINDHYACHAL HVDC B/B		220kV AURIYA MALANPUR EXPORT	BIHAR TO U.P. (IMPORT)	U.P. TO BIHAR (EXPORT)
	IMPORT	EXPORT			
APR - 2002	1.55	188.41	10.59	119.51	0.00
MAY- 2002	4.97	97.33	9.71	114.58	0.00
JUN - 2002	46.09	30.91	11.06	119.54	0.75
JUL - 2002	24.01	18.23	12.70	101.01	0.00
AUG - 2002	37.18	27.88	13.32	154.32	0.00
SEP - 2002	17.40	99.35	14.83	167.89	0.00
OCT - 2002	0.44	93.60	29.25	146.50	0.00
NOV - 2002	0.00	121.12	42.74	96.18 *	0.79
DEC - 2002	0.24	134.43	44.62	205.24 *	9.24
JAN - 2003	0.00	160.65	5.08	34.07 *	4.69
FEB - 2003	8.76	71.48	26.27	101.35 *	38.26
MAR -2003	0.15	144.27	15.60	159.83 *	0.00
2002-03	140.78	1187.65	235.77	1520.02	53.73
2001-02	355.86	404.96	158.27	1699.30	22.55
2000-01	450.69	385.71	124.65	446.00	15.08
1999-2000	587.30	215.11	110.13	418.29	26.47

* Impoort on Pusoli HVDC B/B.

6.11 UTILISATION OF VINDHYACHAL HVDC B/B STATION (500 MW) DURING PAST DECADE

Sl. No.	Year	Vindhyachal HVDC B/B		Utilisation Factor (%)
		Import (MU)	Export (MU)	
1	1993-94	1281.99	20.05	29.73
2	1994-95	578.37	53.64	14.43
3	1995-96	189.02	301.05	11.19
4	1996-97	252.05	151.61	9.19
5	1997-98	472.83	352.78	18.85
6	1998-99	442.96	587.30	23.52
7	1999-2000	587.30	215.11	18.32
8	2000-01	450.69	385.71	19.04
9	2001-02	355.86	404.96	17.37
10	2002-03	140.78	1187.65	30.33

7.1 PERFORMANCE OF GENERATING STATIONS IN THE NORTHERN REGION DURING 2002-2003

MONTH --> SL. NO.	Power Station	Effective Capacity MW	Apr'02 Gross MU	May'02 Gross MU	Jun'02 Gross MU	Jul'02 Gross MU	Aug'02 Gross MU	Sep'02 Gross MU	Oct'02 Gross MU	Nov'02 Gross MU	Dec'02 Gross MU	Jan'03 Gross MU	Feb'03 Gross MU	Mar'03 Gross MU	2002-03 Gross MU Ex bus MU	
1	CENTRAL SECTOR NTPC															
(a)	Badarpur TPS	705.00	452.44	465.05	424.41	488.41	471.06	411.97	472.80	410.04	439.87	482.37	376.16	372.55	5267.12	4801.20
(b)	Singrauli STPS	2000.00	1240.08	1084.13	1307.93	1442.43	1408.43	1328.76	1408.21	1364.97	1435.54	1458.91	1298.41	1377.82	16155.61	15087.69
(c)	Rihand STPS	1000.00	650.11	653.35	645.42	746.73	728.17	398.74	441.13	674.22	705.07	729.94	649.56	712.95	7735.38	7124.15
(d)	Dadri NCTPS	840.00	405.32	493.33	523.28	620.11	600.46	453.66	478.54	494.49	511.75	576.72	471.56	402.51	6031.70	5568.71
(e)	Unchahar - I TPS	420.00	282.47	218.44	248.51	294.70	313.28	282.26	105.01	207.32	291.12	301.15	253.50	255.67	3053.43	2791.83
(f)	Unchahar - II TPS	420.00	200.66	271.16	249.59	304.64	161.27	236.00	313.82	268.06	259.33	297.27	251.87	286.65	3100.32	2832.00
(g)	Tanda TPS	440.00	207.06	182.91	170.11	197.31	219.07	195.68	215.57	206.75	152.96	143.55	131.88	199.63	2222.49	1944.64
(h)	Anta GPS	419.33	165.90	208.21	216.50	262.77	213.79	210.44	262.36	231.09	204.08	290.87	237.87	244.73	2748.60	2691.31
(i)	Auraiya GPS	663.36	236.06	331.66	358.87	432.32	429.86	331.34	436.82	324.14	347.54	378.63	294.23	358.21	4259.67	4198.80
(j)	Dadri GPS	829.78	330.42	410.75	342.47	460.13	363.45	334.72	570.00	524.79	522.64	517.77	397.78	427.86	5202.78	5075.77
(k)	Faridabad GPS	431.57	158.60	212.69	236.49	266.43	292.84	222.67	233.65	249.15	182.29	161.53	190.12	295.55	2702.01	2634.40
	Total NTPC	8169.04	4329.11	4531.67	4723.56	5515.97	5201.68	4406.22	4937.90	4955.01	5052.19	5338.71	4552.94	4934.13	58479.09	54750.50
B	NHPC															
(a)	Bairasiul	180.00	98.12	89.13	59.49	53.89	76.43	80.86	36.24	20.16	15.08	9.56	31.99	100.72	671.67	668.69
(b)	Salal	690.00	270.18	408.48	450.44	487.09	443.17	346.45	163.44	94.53	80.90	67.57	103.43	226.39	3142.07	3131.49
(c)	Tanakpur HPS	94.20	26.26	43.88	45.10	46.83	45.90	44.75	45.18	30.56	24.14	20.59	21.74	26.64	421.56	418.55
(d)	Chamera HPS	540.00	206.52	328.42	300.07	248.46	300.00	300.10	89.93	66.05	71.10	61.07	63.11	218.70	2253.53	2249.75
(e)	Uri HPS	480.00	347.03	355.89	341.55	227.22	196.06	245.84	126.41	72.59	66.93	56.20	63.25	349.20	2448.16	2427.88
	Total NHPC	1984.20	948.11	1225.80	1196.64	1063.49	1061.56	1017.99	461.21	283.89	258.15	214.99	283.52	921.65	8936.99	8896.35
C	NPC															
(a)	RAPS -A	300.00	247.41	125.04	98.18	142.07	56.74	102.12	115.88	137.44	104.80	141.29	127.29	141.16	1539.42	1386.12
(b)	RAPS -B	440.00	213.75	152.10	286.62	324.55	275.50	313.91	299.81	326.13	318.94	327.09	286.04	335.96	3460.40	3122.88
(c)	NAPS	440.00	271.79	285.47	294.31	178.55	319.32	305.78	332.39	315.74	348.56	303.64	278.42	338.13	3572.10	3222.14
	Total NPC	1180.00	732.96	562.62	679.11	645.17	651.55	721.81	748.08	779.31	772.30	772.02	691.75	815.25	8571.92	7731.14
2	JOINTLY OWNED (BBMB)															
(a)	Bhakra Complex	1490.15	357.04	496.80	699.96	838.18	615.70	602.66	582.06	524.44	602.72	474.08	335.85	401.52	6531.01	6501.06
(b)	Dehar	990.00	290.80	444.31	446.41	465.83	449.41	396.96	198.57	122.13	96.50	82.72	83.62	175.84	3253.10	3243.69
(c)	Pong	390.00	11.95	66.51	98.39	76.31	75.52	50.79	71.84	105.86	77.98	36.63	29.08	63.00	763.85	763.85
	Total BBMB	2870.15	659.79	1007.62	1244.75	1380.32	1140.63	1050.41	852.47	752.43	777.20	593.43	448.55	640.36	10547.96	10508.60

7.1 PERFORMANCE OF GENERATING STATIONS IN THE NORTHERN REGION DURING 2002-2003

MONTH --> SL. NO.	Power Station	Effective Capacity MW	Apr'02 Gross MU	May'02 Gross MU	Jun'02 Gross MU	Jul'02 Gross MU	Aug'02 Gross MU	Sep'02 Gross MU	Oct'02 Gross MU	Nov'02 Gross MU	Dec'02 Gross MU	Jan'03 Gross MU	Feb'03 Gross MU	Mar'03 Gross MU	2002-03 Gross MU Ex bus MU	
3	DELHI															
(a)	Indra Prastha	247.50	61.36	60.29	40.54	43.01	52.54	29.23	47.43	50.37	54.98	60.92	81.53	39.03	621.22	549.00
(b)	Rajghat	149.00	76.70	81.90	63.75	72.51	69.31	41.79	80.65	80.30	69.34	63.60	62.63	87.59	850.07	753.55
(c)	Gas Turbines	282.00	88.49	124.39	88.14	106.59	107.64	102.70	103.01	90.24	99.57	113.07	92.67	97.53	1214.04	1181.96
(d)	Pragati Gas	330.00	0.00	2.82	42.26	62.76	65.23	33.34	74.43	80.00	115.49	129.88	106.03	110.32	822.55	809.87
	Total DELHI	1008.50	226.54	269.40	234.69	284.87	294.71	207.06	305.52	300.91	339.38	367.47	342.86	334.47	3507.88	3294.37
4	HARYANA															
(a)	WYC	48.00	21.01	27.66	24.29	26.19	25.43	27.69	27.18	15.39	6.20	12.81	12.50	19.40	245.75	243.31
(b)	Faridabad (New)	165.00	72.91	61.26	83.47	84.36	86.43	74.27	86.37	92.00	90.65	87.48	73.96	79.05	972.20	841.79
(c)	Panipat	860.00	383.16	309.20	377.71	427.04	469.21	403.72	426.28	392.49	456.51	478.96	405.33	448.40	4978.00	4389.66
(d)	Magnum Diesel (IPP)	25.20	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.50	0.00	9.79	5.96	6.36	81.74	80.99
	Total HARYANA (Hydro)	48.00	21.01	27.66	24.29	26.19	25.43	27.69	27.18	15.39	6.20	12.81	12.50	19.40	245.75	243.31
	Total HARYANA (thermal)	1050.20	463.52	377.90	468.63	518.85	563.09	485.44	520.10	491.98	547.16	576.23	485.25	533.81	6031.95	5312.44
	Total HARYANA	1098.20	484.52	405.56	492.92	545.04	588.53	513.13	547.28	507.37	553.36	589.04	497.75	553.21	6277.70	5555.75
5	HP															
(a)	Giri	60.00	11.90	6.79	8.61	8.39	24.91	39.98	20.12	10.58	8.42	7.65	10.04	12.48	169.89	168.43
(b)	Bassi	60.00	33.85	39.77	38.17	29.06	33.16	37.19	19.42	10.02	7.48	6.21	6.33	11.81	272.46	271.90
(c)	Binwa	6.00	2.76	2.25	2.01	1.81	1.97	3.08	2.32	1.29	0.97	0.80	1.32	3.83	24.40	24.30
(d)	Rongtong (+ Nogli + Micro+Thirot)	13.25	2.04	1.61	1.53	1.87	2.03	2.90	2.32	2.65	2.26	1.98	1.37	1.98	24.52	24.14
(e)	Andhra	16.95	9.76	10.64	8.32	5.30	7.67	10.18	6.13	3.17	2.25	1.70	1.49	3.93	70.53	70.31
(f)	Bhabha (H)	120.00	31.33	54.74	73.14	83.29	87.18	69.10	44.50	28.38	21.29	17.88	12.70	17.00	540.51	536.98
(g)	Baner (H)	12.00	2.78	3.32	2.61	2.85	4.04	6.35	2.56	1.34	0.97	0.71	1.56	4.31	33.40	32.91
(h)	Gaj (H)	10.50	2.72	2.73	3.06	4.38	6.66	6.77	2.94	1.40	0.94	0.77	2.14	5.51	40.03	39.91
(i)	Gumma	3.00	1.77	1.76	1.78	0.38	1.45	1.91	1.06	0.60	0.41	0.28	0.28	0.50	12.17	12.05
(j)	Gharvi	22.50	7.71	9.80	8.53	11.11	10.75	12.61	6.59	3.73	2.59	2.15	1.84	3.41	80.82	80.20
(k)	Malana(IPP)	86.00	21.99	47.25	50.05	64.11	64.72	37.06	16.03	8.83	0.00	5.59	4.69	9.20	329.52	329.51
	Total HP	410.20	128.61	180.64	197.80	212.55	244.55	227.12	123.98	71.99	47.58	45.72	43.76	73.96	1598.25	1590.63
6	J & K															
(a)	Lower Jhelum	105.00	3.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.62	9.98	9.88
(b)	Upper Sindh	127.60	21.35	22.69	37.33	45.53	34.62	45.27	29.27	16.69	15.57	14.02	11.03	17.18	310.55	307.45
(c)	Ganderbal	15.00	2.62	2.36	1.91	2.36	1.71	2.23	2.47	1.43	1.52	1.36	1.20	1.59	22.75	22.52
(d)	Mohra	9.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(e)	Chenani	32.80	7.86	9.76	7.81	5.39	5.80	7.21	5.83	3.11	2.11	1.66	3.42	3.85	63.81	63.17
(f)	Stakna	9.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(g)	Small Hydel	3.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(h)	Pampore GT St - I Pampore GT St - II } Total J & K(hydro) Total J & K(thermal)	175.00 302.69 175.00	0.00 35.20 0.00	0.00 34.80 0.00	0.00 47.05 0.00	0.00 53.28 0.00	0.00 42.13 0.00	0.00 54.71 0.00	0.00 37.57 0.00	2.92 21.23 2.92	6.14 19.19 6.14	5.93 17.04 5.93	4.46 15.65 4.46	0.39 29.24 0.39	19.84 407.09 19.84	19.64 403.02 19.64
	Total J & K	477.69	35.20	34.80	47.05	53.28	42.13	54.71	37.57	24.15	25.33	22.97	20.11	29.63	426.93	422.66

7.1 PERFORMANCE OF GENERATING STATIONS IN THE NORTHERN REGION DURING 2002-2003

MONTH --> SL. NO.	Power Station	Effective Capacity MW	Apr'02 Gross MU	May'02 Gross MU	Jun'02 Gross MU	Jul'02 Gross MU	Aug'02 Gross MU	Sep'02 Gross MU	Oct'02 Gross MU	Nov'02 Gross MU	Dec'02 Gross MU	Jan'03 Gross MU	Feb'03 Gross MU	Mar'03 Gross MU	2002-03 Gross MU Ex bus MU	
7	PUNJAB															
(a)	Jogindernagar/ Shanan	110.00	58.09	67.34	62.25	50.62	58.33	66.54	32.92	16.86	11.20	10.62	11.02	11.02	456.81	459.50
(b)	UBDC	90.00	31.58	45.15	55.88	45.24	47.81	22.17	25.23	21.94	25.50	29.82	21.97	21.97	394.27	392.82
(c)	Mukerian	207.00	14.43	69.13	116.56	94.50	87.26	50.13	67.84	108.91	73.71	38.54	33.45	33.45	787.90	781.76
(d)	Anandpur Sahib (APS)	134.00	31.92	89.22	91.25	94.61	83.94	76.92	64.43	47.81	81.22	43.16	15.77	15.77	736.02	734.70
(e)	Ranjit Sagar HPS	600.00	99.47	155.83	162.49	124.26	120.71	57.87	70.88	58.55	71.60	86.31	66.98	66.98	1141.93	1139.51
(f)	Small Hydel	4.10	0.64	0.83	0.85	0.93	1.04	0.79	0.54	0.99	0.81	0.54	0.34	0.34	8.63	8.52
(g)	GNDTPS (Bhatinda)	440.00	230.36	202.23	207.75	257.17	245.10	162.49	194.02	197.58	210.44	218.48	200.28	200.28	2526.18	2290.83
(h)	GGSTPS (Ropar)	1260.00	627.74	649.32	755.60	879.35	807.59	616.18	706.23	674.02	687.53	791.84	532.20	532.20	8259.80	7578.01
(i)	Jhalkeri Rice Straw Fired	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(k)	Lehra Mohabbat TPS	420.00	155.05	260.04	260.59	310.16	312.96	255.28	299.27	209.48	151.63	296.38	168.96	168.96	2848.76	2593.90
	Total PUNJAB (hydro)	1145.10	236.12	427.50	489.28	410.16	399.08	274.43	261.84	255.06	264.05	208.99	149.53	149.53	3525.55	3516.82
	Total PUNJAB (thermal)	2130.00	1013.15	1111.59	1223.94	1446.68	1365.65	1033.95	1199.52	1081.08	1049.60	1306.70	901.44	901.44	13634.74	12462.74
	Total PUNJAB	3275.10	1249.27	1539.09	1713.22	1856.83	1764.73	1308.38	1461.36	1336.13	1313.65	1515.69	1050.97	1050.97	17160.29	15979.55
8	RAJASTHAN															
(a)	Mahi Bajaj Sagar	140.00	1.82	0.00	0.00	0.02	0.00	0.00	0.00	8.43	3.88	7.87	0.00	0.00	22.01	21.87
(b)	Rana Pratap Sagar (RPS)	172.00	0.99	2.39	0.40	0.79	0.00	0.00	0.62	1.11	2.01	0.18	1.09	0.27	9.84	9.50
(c)	Jawahar Sagar (JS)	99.00	1.30	1.75	1.66	0.83	5.39	0.65	1.18	0.75	1.41	0.14	1.30	0.39	16.73	16.60
(d)	Anoopgarh	9.00	0.12	0.93	0.57	0.39	0.26	0.62	0.39	0.00	0.67	0.62	0.19	0.28	5.02	5.00
(e)	Small Hydro	14.86	0.43	0.09	0.23	0.35	0.21	0.12	0.27	0.92	1.50	1.57	0.72	0.77	7.18	7.00
(f)	Kota TPS	850.00	585.07	601.40	458.39	482.37	499.13	378.04	566.19	610.78	612.33	615.71	516.03	627.66	6553.08	5914.00
(g)	RAMGARH GT	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(h)	RAMGARH GT EXT	35.50	0.00	11.45	14.85	21.32	21.41	22.71	22.68	22.24	20.28	19.60	20.19	22.33	219.05	215.00
(i)	Suratgarh TPS	1000.00	470.80	471.10	478.08	523.08	614.79	676.82	599.40	708.27	716.91	736.32	580.91	710.38	7286.85	6619.00
(j)	Wind farm	14.00	2.12	6.23	5.91	8.19	5.26	3.53	1.19	1.40	1.69	1.87	2.43	2.60	42.40	42.00
	Total RAJ (hydro)	434.86	4.65	5.16	2.86	2.37	5.85	1.38	2.45	11.21	9.46	10.38	3.30	1.71	60.78	59.97
	Total RAJ (thermal)	1902.50	1055.87	1083.95	951.31	1026.76	1135.33	1077.57	1188.27	1341.29	1349.51	1371.63	1117.13	1360.37	14058.98	12748.00
	Total RAJASTHAN	2323.36	1060.51	1089.11	954.18	1029.13	1141.17	1078.96	1190.72	1352.49	1358.97	1382.01	1120.43	1362.08	14119.75	12807.97

7.1 PERFORMANCE OF GENERATING STATIONS IN THE NORTHERN REGION DURING 2002-2003

MONTH --> SL. NO.	Power Station	Effective Capacity MW	Apr'02 Gross MU	May'02 Gross MU	Jun'02 Gross MU	Jul'02 Gross MU	Aug'02 Gross MU	Sep'02 Gross MU	Oct'02 Gross MU	Nov'02 Gross MU	Dec'02 Gross MU	Jan'03 Gross MU	Feb'03 Gross MU	Mar'03 Gross MU	2002-03	
															Gross MU	Ex bus MU
9	UP															
	<u>HYDRO</u>															
(a)	Rihand	300.00	91.17	73.96	63.95	39.98	2.83	29.61	55.97	53.43	51.39	42.04	46.74	72.66	623.74	617.50
(b)	Obra	99.00	36.47	30.51	27.72	17.73	4.61	12.16	21.47	20.35	20.17	17.34	18.70	29.34	256.56	254.00
(c)	Matatilla	30.00	4.04	9.13	6.04	1.54	0.58	9.16	19.79	21.87	12.38	7.53	7.47	0.00	99.52	98.53
(l)	Khara	72.00	38.64	49.37	40.02	44.80	49.17	51.02	41.12	22.09	17.77	15.46	16.82	25.20	411.47	407.36
	Total UP (Hydro)	501.00	170.33	162.96	137.73	104.05	57.18	101.96	138.35	117.73	101.70	82.37	89.73	127.20	1391.30	1377.38
	<u>THERMAL</u>															
(m)	Obra	160.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(n)	Obra Extn. - I	282.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(o)	Obra Extn. - II	1000.00	628.75	611.70	563.60	602.63	525.28	456.18	430.00	496.73	538.88	582.33	522.59	585.83	6544.50	5726.44
(p)	Panki	32.00	} 42.06	52.75	40.95	56.42	109.26	96.59	88.67	108.21	104.01	112.19	96.96	105.25	1013.32	886.65
(q)	Panki Extn.	210.00														
(r)	Harduaganj - A	0.00	} 84.59	66.06	52.77	69.83	67.58	90.19	60.74	69.31	77.35	39.83	41.32	48.77	768.34	672.30
(s)	Harduaganj - B	150.00														
(t)	Harduaganj - C	225.00														
(u)	Paricha	220.00	89.52	82.89	40.67	90.72	89.36	77.92	87.12	55.29	47.34	92.76	77.73	64.29	895.61	783.66
(v)	Anpara - A	630.00	} 880.21	1081.74	872.20	1081.42	1077.33	913.91	1093.12	905.99	850.85	1130.45	828.53	908.23	11623.99	10170.99
(w)	Anpara - B	1000.00														
	Total UP (Thermal)	3909.00	1725.13	1895.15	1570.20	1901.02	1868.80	1634.79	1759.66	1635.52	1618.43	1957.56	1567.13	1712.37	20845.75	18240.03
	Total UP	4410.00	1895.45	2058.11	1707.92	2005.08	1925.98	1736.75	1898.00	1753.25	1720.14	2039.93	1656.86	1839.57	22237.05	19617.41
9	UTTRANCHAL															
	<u>HYDRO</u>															
(a)	Khatima	41.40	6.94	15.31	16.22	14.57	17.00	18.37	19.22	12.92	10.82	9.66	9.16	12.88	163.08	161.51
(b)	Ramganga	198.00	31.94	24.36	25.11	0.00	0.00	0.00	0.01	1.27	18.07	30.41	21.31	31.22	183.70	182.63
(c)	Ganga Canal	32.70	10.28	11.52	11.74	13.13	13.35	10.31	13.08	11.74	12.62	10.31	9.00	11.25	138.31	136.69
(d)	Yamuna (I & IV)	114.75	53.78	70.92	59.29	68.54	75.38	76.97	56.71	31.09	24.24	20.27	23.32	36.09	596.59	591.03
(e)	Chibro	240.00	81.37	112.53	92.57	95.63	118.95	124.30	69.58	41.11	31.75	26.07	29.88	47.54	871.29	863.19
(f)	Khodri	120.00	39.11	51.32	43.58	45.82	53.64	55.05	32.67	19.49	15.52	13.14	15.30	24.01	408.64	404.92
(g)	Chilla	144.00	49.48	52.29	55.90	77.88	76.94	72.83	74.00	46.25	33.91	28.51	9.91	29.42	607.32	602.07
(h)	Maneri Bhali	90.00	56.56	68.51	61.47	6.08	0.00	36.19	65.17	44.24	34.56	27.79	23.65	33.17	457.38	453.77
	Total Uttranchal (Hydro)	980.85	329.46	406.76	365.87	321.64	355.26	394.02	330.44	208.11	181.49	166.16	141.53	225.58	3426.31	3395.81
11	Total Region	28187.29	12079.53	13311.17	13557.70	14913.36	14412.48	12716.56	12894.53	12325.03	12399.73	13048.14	10851.02	12780.86	155290.13	144550.74

Notes :

- 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% Nuclear stations-----12.5%
 - 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%
 - Lehra Mohabbat-----10.5% KTPS-----10% UPSEB-----12.5%
- Generation at small hydro & Sobla in UP and at small diesel Gen. Sets in UT Chandigarh, H.P. & J&K has been neglected.

7.2 SUMMARY OF REGIONAL ENERGY GENERATION DURING 2002-2003

Sr. No.	Constituent	Gross MU					Ex-bus MU				
		Hydro	Thermal	Gas / Diesel	Nuclear	Total	Hydro	Thermal	Gas / Diesel	Nuclear	Total
1	NTPC	---	43566.04	14913.06	---	58479.09	---	40150.22	14600.28	---	54750.50
2	NHPC	8936.99	---	---	---	8936.99	8896.35	---	---	---	8896.35
3	NPC	---	---	---	8571.92	8571.92	---	---	---	7731.14	7731.14
4	BBMB	10547.96	---	---	---	10547.96	10508.60	---	---	---	10508.60
5	DELHI	---	1471.30	1214.04	---	2685.33	---	1302.55	1181.96	---	2484.51
6	HARYANA	245.75	5950.20	81.74	---	6277.70	243.31	5231.45	80.99	---	5555.75
7	HP	1598.25	---	---	---	1598.25	1590.63	---	---	---	1590.63
8	J&K	407.09	---	19.84	---	426.93	403.02	---	19.64	---	422.66
9	PUNJAB	3525.55	13634.74	---	---	17160.29	3516.82	12462.74	---	---	15979.55
10	RAJASTHAN	60.78	13839.93	219.05	---	14119.75	59.97	12533.00	215.00	---	12807.97
11	UP	1391.30	20845.75	---	---	22237.05	1377.38	18240.03	---	---	19617.41
12	UTTRANCHAL	3426.31	---	---	---	3426.31	3395.81	---	---	---	3395.81
	Region	30139.99	99307.95	16447.73	8571.92	154467.59	29991.88	89919.99	16097.86	7731.14	143740.88

INTER-REGIONAL EXCHANGES

A Import into the region MU

(i) from Western Grid over HVDC back-to-back at Vindhyachal	131.64
(ii) supply from M.P. to Rajasthan on 200 kV Ujjain - Kota	0.00
(iii) supply from M.P. to Rajasthan (Unmetered and assumed as 0.15 MU/day)	54.75
(iv) from Eastern Grid	1019.53

Total Import 1205.92

B Export from the region MU

(i) to Western Grid over HVDC back-to-back at Vindhyachal	676.83
(ii) 220 kV Auraiya - Malanpur (M.P.)	144.20
(iii) to Bihar	1.54
(iv) Rajasthan to MP	0.00
(v) Tanakpur to Mahendragarh (NEPAL)	75.00

Total Export 897.57

Net Regional energy consumption (including transmission losses) = **144049.23 MU**

7.3 SOURCE WISE CONTRIBUTION TO MONTHLY GENERATION IN 2002-2003

(All Figs. In MU/day, Gross)

Month	Hydro	Thermal		Total	Nuclear	Total	% age Contribution			
		Coal fired	Gas Fired				Hydro	Thermal	Nuclear	Total
APR - 2002	91.07	260.88	32.65	293.53	24.43	409.03	22.26	71.76	5.97	100.00
MAY - 2002	117.29	256.78	42.00	298.78	18.15	434.22	27.01	68.81	4.18	100.00
JUN - 2002	128.60	262.18	43.32	305.50	22.64	456.74	28.16	66.89	4.96	100.00
JUL - 2002	122.13	292.72	52.01	344.73	20.81	487.67	25.04	70.69	4.27	100.00
AUG - 2002	113.84	287.99	48.20	336.19	21.02	471.04	24.17	71.37	4.46	100.00
SEP - 2002	109.67	252.66	41.93	294.59	24.06	428.31	25.60	68.78	5.62	100.00
OCT - 2002	77.56	264.53	54.93	319.47	24.13	421.16	18.42	75.85	5.73	100.00
NOV - 2002	63.76	275.89	51.17	327.05	25.98	416.79	15.30	78.47	6.23	100.00
DEC - 2002	59.68	273.04	48.74	321.78	24.91	406.37	14.69	79.18	6.13	100.00
JAN - 2003	49.70	299.91	52.56	352.47	24.90	427.07	11.64	82.53	5.83	100.00
FEB - 2003	48.80	272.21	48.35	320.56	24.71	394.07	12.38	81.35	6.27	100.00
MAR - 2003	76.35	264.96	50.23	315.19	26.30	417.84	18.27	75.43	6.29	100.00
2002-03	82.58	272.08	47.22	319.29	23.48	425.35	19.41	75.07	5.52	100.00

7.4 MONTHWISE PLANT LOAD FACTORS OF THERMAL /NUCLEAR UNITS DURING 2002-2003

(ALL FIGS. IN %)

S.No.	Power Station	Effective Capacity MW	APR - 02	MAY - 02	JUN - 02	JUL - 02	AUG - 02	SEP - 02	OCT - 02	NOV - 02	DEC - 02	JAN - 03	FEB - 03	MAR - 03	2002-03
A	CENTRAL SECTOR (CS)														
1	NTPC														
(a)	Badarpur TPS	705.00	89.13	88.66	83.61	93.11	89.81	81.16	90.14	80.78	83.86	91.96	79.40	71.03	85.29
(b)	Singrauli STPS	2000.00	86.12	72.86	90.83	96.94	94.65	92.28	94.64	94.79	96.47	98.05	96.61	92.60	92.21
(c)	Rihand STPS	1000.00	90.29	87.82	89.64	100.37	97.87	55.38	59.29	93.64	94.77	98.11	96.66	95.83	88.30
(d)	Dadri NCTPS	840.00	67.02	78.94	86.52	99.22	96.08	75.01	76.57	81.76	81.89	92.28	83.54	64.41	81.97
(e)	Unchahar TPS -I	420.00	93.41	69.91	82.18	94.31	100.25	93.34	33.61	68.56	93.16	96.37	89.82	81.82	82.99
(f)	Unchahar TPS -II	420.00	66.36	86.78	82.54	97.49	51.61	78.04	100.43	88.64	82.99	95.13	89.24	91.73	84.27
(g)	Tanda TPS	440.00	65.36	55.87	53.70	60.27	66.92	61.77	65.85	65.26	46.73	43.85	44.60	60.98	57.66
	Total NTPC (Coal)														
	CS (coal)	5825.00	81.98	77.72	85.10	94.47	90.03	78.85	79.26	86.45	87.58	92.06	87.70	83.25	85.38
(h)	Anta GPS	419.33	54.95	66.74	71.71	84.22	68.53	69.70	84.10	76.54	65.41	93.23	84.41	78.44	74.83
(i)	Auraiya GPS	663.36	49.42	67.20	75.14	87.60	87.10	69.37	88.51	67.87	70.42	76.72	66.00	72.58	73.30
(j)	Dadri GPS	829.78	55.30	66.53	57.32	74.53	58.87	56.03	92.33	87.84	84.66	83.87	71.34	69.31	71.58
(k)	Faridabad GPS	431.57	51.04	66.24	76.11	82.98	91.20	71.66	72.77	80.18	56.77	50.31	65.56	92.05	71.47
	Total NTPC (Gas)														
	CS (gas)	2344.04	52.79	66.70	68.40	81.52	74.54	65.13	86.17	78.76	72.05	77.34	71.10	76.05	72.63
	Total NTPC	8169.04	73.60	74.56	80.31	90.76	85.59	74.91	81.25	84.24	83.13	87.84	82.94	81.18	81.72
2	NPC														
(a)	RAPS -A	300.00	114.54	56.02	45.45	63.65	25.42	47.28	51.92	63.63	46.95	63.30	63.14	63.24	58.58
(b)	RAPS -B	440.00	67.47	46.46	90.47	99.14	84.16	99.09	91.58	102.95	97.43	99.92	96.74	102.63	89.78
(c)	NAPS	440.00	85.79	87.20	92.90	54.54	97.54	96.52	101.54	99.67	106.48	92.75	94.16	103.29	92.68
	Total NPC	1180.00	86.27	64.08	79.93	73.49	74.22	84.96	85.21	91.73	87.97	87.94	87.24	92.86	82.93
Total Central Sector (CS)		9349.04	75.20	73.24	80.26	88.58	84.15	76.18	81.75	85.19	83.74	87.85	83.48	82.66	81.87

7.4 MONTHWISE PLANT LOAD FACTORS OF THERMAL /NUCLEAR UNITS DURING 2002-2003

(ALL FIGS. IN %)

S.No.	Power Station	Effective Capacity MW	APR - 02	MAY - 02	JUN - 02	JUL - 02	AUG - 02	SEP - 02	OCT - 02	NOV - 02	DEC - 02	JAN - 03	FEB - 03	MAR - 03	2002-03
B STATE SECTOR															
1	DELHI														
(a)	Indra Prastha	247.50	34.43	32.74	22.75	23.36	28.53	16.40	25.76	28.27	29.86	33.08	49.02	21.20	28.65
(b)	Rajghat	149.00	71.50	73.88	59.42	65.41	62.52	38.96	72.75	74.85	62.55	57.37	62.55	79.01	65.13
	Total DELHI (coal fired)	396.50	48.36	48.20	36.53	39.16	41.31	24.88	43.42	45.77	42.14	42.21	54.10	42.92	42.36
(c)	Delhi GT	282.00	43.58	59.29	43.41	50.80	51.30	50.58	49.10	44.45	47.46	53.89	48.90	46.49	49.14
(d)	Pragati GT	330.00	---	15.54	54.34	78.11	81.18	42.88	92.63	65.67	71.86	80.82	49.65	44.93	62.45
	Total DELHI (gas fired)	612.00	43.58	55.81	46.44	58.36	59.58	48.45	61.15	52.40	58.04	65.57	49.30	45.65	53.77
	Total DELHI	1008.50	46.37	51.52	41.44	48.68	50.37	36.57	52.21	49.30	50.99	55.22	51.21	44.58	48.31
2	HARYANA														
(a)	Faridabad (New)	165.00	61.37	49.90	70.26	68.72	70.41	62.51	70.36	77.44	73.84	71.26	66.70	64.39	67.26
(b)	Panipat	860.00	81.87	63.94	80.71	68.91	73.33	65.20	66.62	63.39	71.35	74.86	70.14	70.08	70.56
	Total HARYANA	1025.00	77.72	61.09	78.59	68.88	72.86	64.77	67.22	65.65	71.75	74.28	69.58	69.16	70.00
3	J & K														
(a)	Pampore GT	175.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.32	4.72	4.55	3.79	0.30	1.29
	Total J & K	175.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.32	4.72	4.55	3.79	0.30	1.29
4	PUNJAB														
(a)	GNDTPS (Bhatinda)	440.00	72.71	61.78	65.58	78.56	74.87	51.29	59.27	62.37	64.28	66.74	67.74	61.18	65.54
(b)	GGSTPS (Ropar)	1260.00	69.20	69.27	83.29	93.80	86.15	67.92	75.34	74.30	73.34	84.47	62.85	56.77	74.83
(c)	Lehra Mohabbat TPS	420.00	51.27	83.22	86.17	99.26	100.15	84.42	95.77	69.27	48.53	94.85	59.86	54.07	77.43
	Total PUNJAB	2120.00	66.38	70.48	80.18	91.72	86.58	67.74	76.05	70.83	66.55	82.85	63.27	57.15	73.42
5	RAJASTHAN														
(a)	Kota TPS	850.00	95.60	95.10	74.90	76.28	78.93	61.77	89.53	99.80	96.83	97.36	90.34	99.25	88.01
(b)	RAMGARH GT	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(c)	RAMGARH GT EXT	35.50	0.00	43.35	58.09	80.72	81.06	88.86	85.87	86.99	76.76	74.21	84.63	84.54	70.44
(d)	Suratgarh TPS	1000.00	65.39	63.32	66.40	70.31	82.63	94.00	80.56	98.37	96.36	98.97	86.44	95.48	83.18
	Total RAJASTHAN	1888.50	77.65	77.15	69.96	73.08	80.80	79.25	84.57	98.64	96.05	97.62	88.03	96.82	84.98

7.4 MONTHWISE PLANT LOAD FACTORS OF THERMAL /NUCLEAR UNITS DURING 2002-2003

(ALL FIGS. IN %)

S.No.	Power Station	Effective Capacity MW	APR - 02	MAY - 02	JUN - 02	JUL - 02	AUG - 02	SEP - 02	OCT - 02	NOV - 02	DEC - 02	JAN - 03	FEB - 03	MAR - 03	2002-03
6	UP														
(a)	Obra														
(b)	Obra Extn. - I														
(c)	Obra Extn. - II	1442.00	60.56	57.02	54.28	56.17	48.96	43.94	40.08	47.84	50.23	54.28	53.93	54.61	51.81
(d)	Panki	32.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(e)	Panki Extn.	210.00	27.82	33.76	27.09	36.11	69.93	63.88	56.75	71.56	66.57	71.81	68.71	67.36	55.08
(f)	Harduaganj - A	0.00													
(g)	Harduaganj - B	150.00													
(h)	Harduaganj - C	225.00	31.33	23.68	19.55	25.03	24.22	33.40	21.77	25.67	27.72	14.28	16.40	17.48	23.39
(i)	Paricha	220.00	56.52	50.64	25.68	55.42	54.59	49.19	53.23	34.90	28.92	56.67	52.58	39.28	46.47
(j)	Anpara - A														
(k)	Anpara - B	1630.00	75.00	89.20	74.32	89.17	88.84	77.87	90.14	77.20	70.16	93.22	75.64	74.89	81.41
	Total UP	3909.00	61.29	65.16	55.79	65.37	64.26	58.09	60.50	58.11	55.65	67.31	59.66	58.88	60.88
	State Sector (gas fired)	825.50	24.80	35.85	33.43	42.46	43.27	36.54	44.57	40.83	45.62	50.72	40.87	37.54	40.22
	State Sector (coal fired)	9300.50	58.50	59.55	57.02	68.28	67.37	56.75	63.63	62.22	59.06	67.88	59.32	57.49	62.65
	State Sector (total)	10126.00	59.09	60.80	58.46	65.08	64.30	54.17	60.97	59.70	57.40	65.86	57.73	55.84	59.99
	Region (coal fired)	15125.50	70.87	69.83	71.17	78.73	76.39	65.55	69.85	71.87	70.27	77.35	70.44	67.54	71.69
	Region (gas fired)	3169.54	47.91	61.10	61.24	73.52	68.14	59.27	77.66	70.38	65.90	71.14	63.31	66.02	65.63
	Region (nuclear)	1180.00	86.27	64.08	79.93	73.49	74.22	84.96	85.21	91.73	87.97	87.94	87.24	92.86	82.93
	Region (Coal+Gas+Thermal)	19475.04	65.78	65.58	67.56	75.46	73.01	64.08	70.18	70.99	69.55	76.02	69.39	68.16	69.68

Notes:

The following have been considered while working out Plant Load Factor (PLF):

- (i) The effective capacity in MW not the Installed capacity.
- (ii) Actual generation and not deemed generation.
- (iii) Effective capacity of new generating units has been considered from their respective synchronisation dates.

7.5 GROWTH OF ENERGY GENERATION AND P.L.F. IN NORTHERN REGION DURING PAST DECADE

S. NO.	YEAR	THERMAL (MU)	HYDRO (MU)	GAS / DIESEL (MU)	NUCLEAR (MU)	TOTAL ENERGY GENERATION (MU)	ANNUAL P.L.F. (THERMAL + NUCLEAR)
1	1993-94	63075.36	23980.30	8172.89	1517.13	96745.68	55.30
2	1994-95	62324.00	27672.30	8894.52	1312.40	100203.22	52.49
3	1995-96	71042.68	28952.06	11057.94	2740.40	113793.08	59.49
4	1996-97	73875.52	29363.53	11399.28	2809.70	117448.03	60.43
5	1997-98	76206.33	30760.98	12307.33	3932.40	123207.04	65.24
6	1998-99	78351.64	36830.65	13179.48	4545.56	132907.33	65.26
7	1999-2000	86265.92	31735.87	15513.19	5329.07	138844.06	69.02
8	2000-01	91566.77	29072.65	16979.93	6668.12	144287.47	70.00
9	2001-02	96100.84	29117.68	17716.60	7999.59	150934.71	71.82
10	2002-03	99307.95	30139.99	16447.73	8571.92	154467.59	69.68
COMPOUND ANNUAL GROWTH RATE (CAGR %)		5.17	2.57	8.08	21.22	5.34	

8.1 HOURLY GENERATION / LOAD FOR THE REGIONAL PEAK DEMAND MET DAY IN APRIL 2002

DATE : 30.04.2002

HOUR	GENERATION					INTER REGIONAL EXCHANGE Export(+)/Import(-) 'I'	TOTAL DEMAND MET 'P' = 'A' - 'I'	FREQ. 'F'	FREQUENCY CORRECTED DEMAND 'P _f ' =P/(1+0.03(F-50))	LOAD SHEDDING 'L _s '	REQUIREMENT	
	HYDRO	THERMAL			TOTAL 'A'						WITHOUT FREQ.	WITH FREQ.
		NUCLEAR	COAL FIRED	GAS FIRED							'P+L _s '	'P _f +L _s '
											(MW)	(MW)
1	4083	971	11253	1885	18192	50	18142	50.24	18012	1253	19395	19265
2	4063	971	10970	1882	17886	50	17836	50.32	17666	1069	18905	18735
3	3770	975	11119	1883	17747	50	17697	50.32	17529	944	18641	18473
4	3853	974	10920	1884	17631	150	17481	50.48	17233	994	18475	18227
5	3972	974	11009	1881	17836	150	17686	49.88	17750	964	18650	18714
6	3830	969	10868	1876	17543	150	17393	50.08	17351	1479	18872	18830
7	3280	972	10813	1770	16835	150	16685	50.48	16448	1534	18219	17982
8	3155	977	10696	1727	16555	275	16280	50.68	15955	1064	17344	17019
9	3132	980	10709	1735	16556	130	16426	50.24	16309	1334	17760	17643
10	2997	981	11230	1726	16934	130	16804	50.16	16724	864	17668	17588
11	3134	981	11464	1762	17341	150	17191	50.04	17170	1233	18424	18403
12	3243	990	11127	1862	17222	130	17092	50.20	16990	1215	18307	18205
13	3410	1026	11136	1825	17397	230	17167	50.20	17065	1060	18227	18125
14	3456	967	11303	1760	17486	355	17131	49.48	17402	1170	18301	18572
15	3452	1028	11588	1848	17916	285	17631	50.12	17568	1568	19199	19136
16	3515	959	11554	1791	17819	245	17574	50.16	17490	1707	19281	19197
17	3273	1022	11349	1719	17363	232	17131	50.44	16908	1630	18761	18538
18	3312	953	10982	1758	17005	275	16730	50.52	16473	1226	17956	17699
19	3840	968	10968	1754	17530	275	17255	50.68	16910	1425	18680	18335
20	4518	967	11473	1779	18737	175	18562	50.16	18473	1480	20042	19953
21	4478	965	11454	1777	18674	75	18599	50.08	18554	1427	20026	19981
22	4451	967	11401	1831	18650	55	18595	50.20	18484	1418	20013	19902
23	4430	967	11448	1964	18809	30	18779	50.16	18689	1239	20018	19928
24	4391	958	11383	1942	18674	34	18640	49.76	18775	858	19498	19633

8.1 HOURLY GENERATION / LOAD FOR THE REGIONAL PEAK DEMAND MET DAY IN MAY 2002

DATE : 23.05.2002

HOUR	GENERATION					INTER REGIONAL EXCHANGE Export(+)/Import(-) 'I'	TOTAL DEMAND MET 'P' = 'A' - 'I'	FREQ. 'F'	FREQUENCY CORRECTED DEMAND 'P _f ' = P/(1+0.03(F-50))	LOAD SHEDDING 'L _s '	REQUIREMENT	
	HYDRO	THERMAL			TOTAL 'A'						WITHOUT FREQ.	WITH FREQ.
		NUCLEAR	COAL FIRED	GAS FIRED							WITHOUT FREQ.	WITH FREQ.
											CORRECTION	CORRECTION
	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(HZ)	(MW)	(MW)	(MW)	(MW)
1	5195	808	11140	1910	19053	-210	19263	49.16	19761	1202	20465	20963
2	5137	805	11404	1919	19265	-210	19475	49.56	19736	1970	21445	21706
3	4975	817	9434	1929	17155	-210	17365	49.80	17470	2140	19505	19610
4	4928	817	9423	1937	17105	-210	17315	50.28	17171	2140	19455	19311
5	5064	815	9466	1923	17268	-220	17488	49.28	17874	2280	19768	20154
6	4917	818	9613	1911	17259	-220	17479	50.20	17375	2020	19499	19395
7	4815	808	9641	1892	17156	-220	17376	49.28	17760	1540	18916	19300
8	4485	803	9924	1895	17107	-220	17327	50.28	17183	1282	18609	18465
9	4396	798	10353	1881	17428	-215	17643	49.84	17728	1402	19045	19130
10	4730	806	10728	1886	18150	-210	18360	50.00	18360	1142	19502	19502
11	4870	800	10961	1871	18502	-295	18797	49.84	18888	890	19687	19778
12	4885	793	10942	1866	18486	-285	18771	49.32	19162	983	19754	20145
13	4857	791	11096	1877	18621	-365	18986	49.80	19101	1285	20271	20386
14	4893	789	11379	1876	18937	-331	19268	49.24	19718	936	20204	20654
15	4805	791	11364	1876	18836	-221	19057	49.32	19454	935	19992	20389
16	4920	793	11418	1876	19007	-231	19238	49.44	19567	962	20200	20529
17	4928	790	11377	1876	18971	-220	19191	50.72	18785	1021	20212	19806
18	4474	792	10739	1802	17807	-215	18022	51.00	17497	933	18955	18430
19	4498	797	10154	1781	17230	-115	17345	50.48	17099	1075	18420	18174
20	5796	792	10805	1913	19306	-215	19521	49.48	19830	1071	20592	20901
21	5771	801	11447	1929	19948	-225	20173	50.00	20173	1205	21378	21378
22	5682	803	11529	1913	19927	-215	20142	50.32	19950	1198	21340	21148
23	5698	800	11412	1866	19776	-205	19981	49.80	20102	923	20904	21025
24	5263	802	11513	1926	19504	-215	19719	49.68	19910	975	20694	20885

8.1 HOURLY GENERATION / LOAD FOR THE REGIONAL PEAK DEMAND MET DAY IN JUNE 2002

DATE : 28.06.2002

HOUR	GENERATION					INTER REGIONAL EXCHANGE Export(+)/Import(-) 'I'	TOTAL DEMAND MET 'P' = 'A' - 'I'	FREQ. 'F'	FREQUENCY CORRECTED DEMAND 'P _f ' =P/(1+0.03(F-50))	LOAD SHEDDING 'L _s '	REQUIREMENT	
	HYDRO	THERMAL			TOTAL 'A'						WITHOUT FREQ.	WITH FREQ.
		NUCLEAR	COAL FIRED	GAS FIRED							CORRECTION	CORRECTION
											'P+L _s '	'P _f +L _s '
(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(HZ)	(MW)	(MW)	(MW)	(MW)	
1	5927	1024	11874	1739	20564	-209	20773	50.28	20600	945	21718	21545
2	5795	1025	11736	1751	20307	-208	20515	50.28	20344	1042	21557	21386
3	5704	1023	11677	1744	20148	-209	20357	50.52	20044	1040	21397	21084
4	5645	1019	11654	1747	20065	-209	20274	50.64	19892	940	21214	20832
5	5563	1020	11458	1737	19778	-209	19987	50.24	19844	1340	21327	21184
6	5252	1014	11162	1821	19249	-190	19439	50.36	19231	2135	21574	21366
7	5075	1019	10934	1972	19000	-169	19169	50.32	18987	2355	21524	21342
8	4585	1027	10944	1902	18458	-187	18645	50.76	18229	2465	21110	20694
9	4746	1025	10994	1842	18607	-147	18754	50.48	18488	2115	20869	20603
10	5203	1019	10790	1824	18836	-166	19002	49.84	19094	1570	20572	20664
11	5473	1018	10955	1818	19264	-165	19429	49.56	19689	1626	21055	21315
12	5882	1018	10841	1811	19552	-171	19723	49.56	19987	2146	21869	22133
13	5505	1002	10839	1800	19146	-192	19338	49.28	19765	1655	20993	21420
14	5634	997	11156	1881	19668	-215	19883	50.00	19883	2043	21926	21926
15	5567	1014	11137	1795	19513	-215	19728	50.36	19517	2036	21764	21553
16	5459	1006	10930	1819	19214	-65	19279	50.32	19096	1655	20934	20751
17	5208	1006	10816	1925	18955	123	18832	50.56	18521	1602	20434	20123
18	4924	1016	10835	1936	18711	225	18486	50.80	18053	1526	20012	19579
19	4888	1019	10846	1915	18668	275	18393	51.00	17857	1312	19705	19169
20	6066	1014	11028	1970	20078	325	19753	50.00	19753	2188	21941	21941
21	6161	1021	11196	1975	20353	325	20028	49.16	20546	1630	21658	22176
22	6084	1024	10954	1966	20028	125	19903	49.64	20120	2055	21958	22175
23	6009	1022	11372	1978	20381	25	20356	50.00	20356	1493	21849	21849
24	5870	1029	11627	1975	20501	25	20476	49.68	20674	1477	21953	22151

8.1 HOURLY GENERATION / LOAD FOR THE REGIONAL PEAK DEMAND MET DAY IN JULY 2002

DATE : 13.07.2002

HOUR	GENERATION					INTER REGIONAL EXCHANGE Export(+)/Import(-) 'I'	TOTAL DEMAND MET 'P' = 'A' - 'I'	FREQ. 'F'	FREQUENCY CORRECTED DEMAND 'P _f ' =P/(1+0.03(F-50))	LOAD SHEDDING 'L _s '	REQUIREMENT	
	HYDRO	THERMAL			TOTAL 'A'						WITHOUT FREQ. CORRECTION 'P+L _s '	WITH FREQ. CORRECTION 'P _f +L _s '
		NUCLEAR	COAL FIRED	GAS FIRED								
(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(HZ)	(MW)	(MW)	(MW)	(MW)	
1	5389	817	12275	2275	20756	-250	21006	49.30	21457	1441	22447	22898
2	5356	817	12254	2283	20710	-250	20960	49.08	21555	1488	22448	23043
3	5287	817	12182	2287	20573	-250	20823	49.24	21309	1388	22211	22697
4	5259	814	12187	2281	20541	-210	20751	48.68	21607	1763	22514	23370
5	4810	815	12260	2296	20181	-210	20391	49.20	20892	2135	22526	23027
6	4487	820	12280	2307	19894	-230	20124	49.52	20418	2377	22501	22795
7	4071	818	12298	2298	19485	-220	19705	49.36	20091	2242	21947	22333
8	4115	808	12363	2294	19580	-220	19800	49.40	20163	2102	21902	22265
9	4013	806	12320	2270	19409	-220	19629	49.72	19795	1937	21566	21732
10	4325	807	12269	2250	19651	-220	19871	48.64	20716	2162	22033	22878
11	4604	812	12201	2251	19868	-210	20078	48.36	21117	1930	22008	23047
12	4865	808	12267	2267	20207	-210	20417	49.36	20817	2279	22696	23096
13	4495	817	12276	2236	19824	-210	20034	49.40	20401	2113	22147	22514
14	4519	809	12198	2226	19752	-220	19972	49.04	20564	2100	22072	22664
15	4587	802	12208	2218	19815	-220	20035	48.88	20732	2177	22212	22909
16	4696	809	12283	2205	19993	-240	20233	48.92	20911	2212	22445	23123
17	4244	806	12271	2215	19536	-190	19726	48.84	20437	2142	21868	22579
18	4234	806	12405	2235	19680	-188	19868	49.20	20357	2056	21924	22413
19	5007	804	12415	2269	20495	-200	20695	50.04	20670	1973	22668	22643
20	6080	811	12501	2245	21637	-130	21767	50.72	21307	2264	24031	23571
21	5949	811	12462	2271	21493	20	21473	49.64	21707	2273	23746	23980
22	5659	814	12358	2273	21104	120	20984	49.16	21526	2291	23275	23817
23	5506	801	12310	2249	20866	-50	20916	49.08	21510	1983	22899	23493
24	5499	805	12345	2279	20928	-149	21077	48.48	22084	1335	22412	23419

8.1 HOURLY GENERATION / LOAD FOR THE REGIONAL PEAK DEMAND MET DAY IN AUGUST 2002

DATE : 20.08.2002

HOUR	GENERATION					INTER REGIONAL EXCHANGE Export(+)/Import(-) 'I'	TOTAL DEMAND MET 'P' = 'A' - 'I'	FREQ. 'F'	FREQUENCY CORRECTED DEMAND 'P _f ' =P/(1+0.03(F-50))	LOAD SHEDDING 'L _s '	REQUIREMENT	
	HYDRO	THERMAL			TOTAL 'A'						WITHOUT FREQ.	WITH FREQ.
		NUCLEAR	COAL FIRED	GAS FIRED							'P+L _s '	'P _f +L _s '
(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(HZ)	(MW)	(MW)	(MW)	(MW)	
1	4950	641	12861	1967	20419	-179	20598	50.00	20598	1285	21883	21883
2	4810	643	12857	1966	20276	-39	20315	50.08	20266	1190	21505	21456
3	4830	642	12845	1969	20286	-99	20385	49.68	20583	956	21341	21539
4	4769	638	12871	1964	20242	-89	20331	49.88	20404	956	21287	21360
5	4935	637	12884	1971	20427	-79	20506	49.88	20580	1374	21880	21954
6	5040	638	12917	1977	20572	-169	20741	50.35	20525	2084	22825	22609
7	4298	640	12745	1807	19490	121	19369	50.08	19323	2271	21640	21594
8	4162	740	12714	1811	19427	151	19276	50.88	18780	2174	21450	20954
9	4278	738	12759	1801	19576	51	19525	49.68	19714	2122	21647	21836
10	4409	749	12733	1954	19845	-99	19944	50.32	19754	2151	22095	21905
11	4392	744	12664	1947	19747	-98	19845	49.88	19917	2110	21955	22027
12	4474	750	12702	1942	19868	-232	20100	49.52	20394	1877	21977	22271
13	4719	782	12805	1927	20233	-323	20556	49.36	20958	1962	22518	22920
14	4914	784	12640	1919	20257	-95	20352	50.04	20328	1918	22270	22246
15	4839	779	12708	1932	20258	-95	20353	49.24	20828	1391	21744	22219
16	4653	815	12832	1932	20232	-135	20367	49.48	20690	1394	21761	22084
17	4638	817	12773	1927	20155	-145	20300	49.68	20497	1294	21594	21791
18	4636	820	12840	1899	20195	-145	20340	49.92	20389	1372	21712	21761
19	4571	838	12810	1938	20157	-195	20352	49.84	20450	1250	21602	21700
20	5251	837	12851	1908	20847	-245	21092	49.92	21143	1570	22662	22713
21	5827	840	12924	1937	21528	-245	21773	50.64	21363	1707	23480	23070
22	5596	855	12831	1961	21243	-245	21488	50.64	21083	1676	23164	22759
23	5468	862	12848	1963	21141	-245	21386	50.76	20909	1478	22864	22387
24	5080	868	12866	1964	20778	-155	20933	50.24	20783	1280	22213	22063

8.1 HOURLY GENERATION / LOAD FOR THE REGIONAL PEAK DEMAND MET DAY IN SEPTEMBER 2002

DATE : 01.09.2002

HOUR	GENERATION					INTER REGIONAL EXCHANGE Export(+)/Import(-) 'I'	TOTAL DEMAND MET 'P' = 'A' - 'I'	FREQ. 'F'	FREQUENCY CORRECTED DEMAND 'P _f ' =P/(1+0.03(F-50))	LOAD SHEDDING 'L _s '	REQUIREMENT	
	HYDRO	THERMAL			TOTAL 'A'						WITHOUT FREQ.	WITH FREQ.
		NUCLEAR	COAL FIRED	GAS FIRED							CORRECTION	CORRECTION
											'P+L _s '	'P _f +L _s '
(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(HZ)	(MW)	(MW)	(MW)	(MW)	
1	4819	1032	12121	1852	19824	-540	20364	50.68	19957	1078	21442	21035
2	4354	1029	12204	1844	19431	-770	20201	49.72	20372	1075	21276	21447
3	4323	1034	12049	1849	19255	-770	20025	49.44	20367	885	20910	21252
4	4193	1052	12040	1851	19136	-785	19921	49.60	20163	885	20806	21048
5	4327	1055	12129	1852	19363	-475	19838	50.36	19626	1160	20998	20786
6	4229	1054	12226	1860	19369	-336	19705	50.40	19471	1830	21535	21301
7	3833	1050	12127	1864	18874	-326	19200	50.88	18706	2170	21370	20876
8	3921	1049	11748	1758	18476	-325	18801	50.64	18447	2240	21041	20687
9	3973	1040	11989	1748	18750	-316	19066	50.20	18952	2140	21206	21092
10	4087	1039	11585	1752	18463	-185	18648	51.00	18105	2312	20960	20417
11	4343	1009	11584	1700	18636	-305	18941	49.64	19148	1658	20599	20806
12	4688	1028	11526	1705	18947	-365	19312	49.88	19382	1368	20680	20750
13	4206	1024	11335	1737	18302	-235	18537	50.08	18493	1451	19988	19944
14	4138	1030	11054	1792	18014	-265	18279	50.48	18020	1311	19590	19331
15	4010	1023	11237	1794	18064	-225	18289	49.68	18466	1441	19730	19907
16	4033	1029	11454	1794	18310	-228	18538	50.56	18232	1465	20003	19697
17	3908	1037	11554	1797	18296	-230	18526	50.13	18454	1025	19551	19479
18	3715	1042	11076	1792	17625	-230	17855	50.68	17498	1175	19030	18673
19	4872	1036	11599	1826	19333	-78	19411	50.24	19272	1285	20696	20557
20	5825	1029	11732	1840	20426	-199	20625	49.92	20675	1670	22295	22345
21	5676	1023	11762	1832	20293	-194	20487	49.76	20636	1617	22104	22253
22	5364	1028	11753	1835	19980	-205	20185	50.12	20113	1824	22009	21937
23	5253	1023	11700	1837	19813	-290	20103	50.28	19936	1689	21792	21625
24	4882	1019	11696	1837	19434	-355	19789	49.92	19837	1370	21159	21207

8.1 HOURLY GENERATION / LOAD FOR THE REGIONAL PEAK DEMAND MET DAY IN OCTOBER 2002

DATE : 09.10.2002

HOUR	GENERATION					INTER REGIONAL EXCHANGE Export(+)/Import(-) 'I'	TOTAL DEMAND MET 'P' = 'A' - 'I'	FREQ. 'F'	FREQUENCY CORRECTED DEMAND 'P _f ' =P/(1+0.03(F-50))	LOAD SHEDDING 'L _s '	REQUIREMENT	
	HYDRO	THERMAL			TOTAL 'A'						WITHOUT FREQ.	WITH FREQ.
		NUCLEAR	COAL FIRED	GAS FIRED							CORRECTION	CORRECTION
											'P+L _s '	'P _f +L _s '
	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(HZ)	(MW)	(MW)	(MW)	(MW)
1	2820	1044	11221	2079	17164	-190	17354	49.36	17694	1450	18804	19144
2	2743	1044	11291	2090	17168	-180	17348	50.12	17286	1399	18747	18685
3	2849	1046	11366	2085	17346	-180	17526	50.36	17339	739	18265	18078
4	2788	1044	11484	2090	17406	-180	17586	50.08	17544	726	18312	18270
5	3392	1045	11526	2099	18062	-180	18242	49.56	18486	836	19078	19322
6	3540	1045	11669	2086	18340	-180	18520	49.08	19046	1636	20156	20682
7	3147	1050	11541	2063	17801	-140	17941	49.84	18028	1829	19770	19857
8	2340	1049	11474	2058	16921	-140	17061	51.00	16564	2182	19243	18746
9	2306	1049	11557	2048	16960	-100	17060	50.52	16798	1988	19048	18786
10	2454	1040	11616	2042	17152	-34	17186	49.88	17248	1683	18869	18931
11	2807	1041	11614	2033	17495	-14	17509	49.80	17615	1596	19105	19211
12	2918	1046	11600	2033	17597	-30	17627	49.68	17798	1612	19239	19410
13	2894	1024	11663	2045	17626	-50	17676	50.08	17634	1913	19589	19547
14	2856	1021	11634	2035	17546	-55	17601	49.48	17880	1842	19443	19722
15	2841	1034	11582	2040	17497	-60	17557	49.60	17770	1917	19474	19687
16	2444	1028	11593	2039	17104	-10	17114	49.76	17238	1837	18951	19075
17	2592	1024	11629	2044	17289	41	17248	49.96	17269	1962	19210	19231
18	3225	1027	11647	2041	17940	-5	17945	49.48	18229	1643	19588	19872
19	4710	1023	11644	2064	19441	-30	19471	48.88	20148	2230	21701	22378
20	4532	1026	11664	2063	19285	-130	19415	49.40	19771	1906	21321	21677
21	4509	1036	11665	2078	19288	-130	19418	49.52	19702	1266	20684	20968
22	4045	1041	11692	2071	18849	-55	18904	50.28	18747	1227	20131	19974
23	3897	1038	11617	2081	18633	-55	18688	49.68	18869	1129	19817	19998
24	3605	1032	11601	2079	18317	-55	18372	49.56	18618	1105	19477	19723

8.1 HOURLY GENERATION / LOAD FOR THE REGIONAL PEAK DEMAND MET DAY IN NOVEMBER 2002

DATE : 03.11.2002

HOUR	GENERATION					INTER REGIONAL EXCHANGE Export(+)/Import(-) 'I'	TOTAL DEMAND MET 'P' = 'A' - 'I'	FREQ. 'F'	FREQUENCY CORRECTED DEMAND 'P _f ' = P/(1+0.03(F-50))	LOAD SHEDDING 'L _s '	REQUIREMENT	
	HYDRO	THERMAL			TOTAL 'A'						WITHOUT FREQ.	WITH FREQ.
		NUCLEAR	COAL FIRED	GAS FIRED							CORRECTION	CORRECTION
											'P+L _s '	'P _f +L _s '
	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(HZ)	(MW)	(MW)	(MW)	(MW)	
1	2350	1059	11611	2046	17066	-50	17116	50.00	17116	590	17706	17706
2	2167	1062	11876	2054	17159	-50	17209	49.72	17355	880	18089	18235
3	2024	1062	11865	2041	16992	-50	17042	50.44	16820	870	17912	17690
4	1904	1065	11857	2053	16879	-50	16929	50.08	16888	875	17804	17763
5	2670	1064	11923	2059	17716	140	17576	49.60	17789	1065	18641	18854
6	3181	1071	11956	2062	18270	-250	18520	50.52	18236	1645	20165	19881
7	2818	1086	11869	2056	17829	-160	17989	50.60	17671	1870	19859	19541
8	1837	1084	11737	2052	16710	150	16560	50.88	16134	1840	18400	17974
9	1560	1087	11755	2068	16470	190	16280	50.72	15936	1770	18050	17706
10	1624	1075	11728	2050	16477	190	16287	50.32	16132	1980	18267	18112
11	1741	1071	11970	2039	16821	190	16631	50.24	16512	1735	18366	18247
12	1851	1070	11954	2043	16918	140	16778	50.48	16540	1560	18338	18100
13	1809	1058	11766	2028	16661	190	16471	50.88	16047	1910	18381	17957
14	1722	1063	11653	1931	16369	140	16229	50.56	15961	1720	17949	17681
15	1952	1062	11556	1931	16501	240	16261	50.80	15880	1130	17391	17010
16	2018	1059	11263	1867	16207	350	15857	50.40	15669	1080	16937	16749
17	2074	1058	11427	2004	16563	100	16463	50.48	16229	980	17443	17209
18	3366	1050	11783	2056	18255	-49	18304	50.20	18195	898	19202	19093
19	4711	1057	12083	2071	19922	-208	20130	50.00	20130	1433	21563	21563
20	4626	1063	12164	2077	19930	-195	20125	50.04	20101	1453	21578	21554
21	4305	1069	12228	2019	19621	-190	19811	49.88	19883	1448	21259	21331
22	3967	1072	12242	2019	19300	-180	19480	50.80	19023	1294	20774	20317
23	3447	1078	11979	2019	18523	-80	18603	50.32	18426	1262	19865	19688
24	3307	1067	11868	2019	18261	-30	18291	50.40	18074	898	19189	18972

8.1 HOURLY GENERATION / LOAD FOR THE REGIONAL PEAK DEMAND MET DAY IN DECEMBER 2002

DATE : 14.12.2002

HOUR	GENERATION					INTER REGIONAL EXCHANGE Export(+)/Import(-) 'I'	TOTAL DEMAND MET 'P' = 'A' - 'I'	FREQ. 'F'	FREQUENCY CORRECTED DEMAND 'P _f ' = P/(1+0.03(F-50))	LOAD SHEDDING 'L _s '	REQUIREMENT	
	HYDRO	THERMAL			TOTAL 'A'						WITHOUT FREQ.	WITH FREQ.
		NUCLEAR	COAL FIRED	GAS FIRED							WITHOUT FREQ.	WITH FREQ.
											CORRECTION	CORRECTION
	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(HZ)	(MW)	(MW)	(MW)	(MW)
1	1607	1080	11389	1839	15915	-792	16707	50.00	16707	510	17217	17217
2	1541	1087	11490	1838	15956	-794	16750	50.28	16610	510	17260	17120
3	1489	1091	11601	1839	16020	-793	16813	50.40	16614	510	17323	17124
4	1676	1091	11765	1845	16377	-791	17168	50.88	16726	510	17678	17236
5	2378	1087	11793	1860	17118	-788	17906	50.20	17799	620	18526	18419
6	3392	1092	12379	1889	18752	-595	19347	50.00	19347	940	20287	20287
7	3682	1095	12486	1897	19160	-496	19656	50.08	19609	1735	21391	21344
8	2874	1097	12482	1889	18342	-128	18470	50.00	18470	2042	20512	20512
9	2349	1102	12479	1745	17675	-24	17699	49.84	17784	2434	20133	20218
10	2610	1093	12400	1772	17875	-37	17912	49.76	18042	1931	19843	19973
11	2504	1092	12446	1766	17808	-258	18066	49.80	18175	2003	20069	20178
12	2509	1091	12427	1752	17779	-222	18001	49.96	18023	1776	19777	19799
13	2269	1085	12405	1750	17509	-264	17773	50.12	17709	1533	19306	19242
14	1923	1085	12156	1745	16909	-208	17117	49.80	17220	1434	18551	18654
15	1835	1090	12009	1726	16660	-178	16838	49.84	16919	1183	18021	18102
16	1891	1088	11960	1730	16669	-165	16834	49.72	16977	803	17637	17780
17	1891	1092	12262	1737	16982	-286	17268	49.92	17310	565	17833	17875
18	3439	1089	12175	1854	18557	-140	18697	48.96	19299	732	19429	20031
19	3488	1087	12318	1853	18746	-238	18984	49.68	19168	1174	20158	20342
20	3273	1085	12510	1872	18740	-186	18926	50.08	18881	1068	19994	19949
21	2423	1093	12138	1804	17458	-86	17544	49.64	17736	1590	19134	19326
22	2097	1081	12109	1760	17047	-206	17253	50.04	17232	1390	18643	18622
23	1745	1087	11968	1770	16570	-500	17070	49.72	17215	1070	18140	18285
24	1659	1086	11826	1766	16337	-503	16840	49.92	16881	720	17560	17601

8.1 HOURLY GENERATION / LOAD FOR THE REGIONAL PEAK DEMAND MET DAY IN JANUARY 2003

DATE : 08.01.2003

HOUR	GENERATION					INTER REGIONAL EXCHANGE Export(+)/Import(-) 'I'	TOTAL DEMAND MET 'P' = 'A' - 'I'	FREQ. 'F'	FREQUENCY CORRECTED DEMAND 'P _f ' =P/(1+0.03(F-50))	LOAD SHEDDING 'L _s '	REQUIREMENT	
	HYDRO	THERMAL			TOTAL 'A'						WITHOUT FREQ.	WITH FREQ.
		NUCLEAR	COAL FIRED	GAS FIRED							CORRECTION	CORRECTION
(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(HZ)	(MW)	(MW)	(MW)	(MW)	
1	1327	1098	12155	2031	16611	470	16141	50.00	16141	1085	17226	17226
2	1389	1103	12106	2024	16622	468	16154	50.28	16019	985	17139	17004
3	1383	1105	11931	2039	16458	469	15989	49.88	16047	785	16774	16832
4	1383	1101	11999	2065	16548	473	16075	49.92	16114	785	16860	16899
5	1853	1099	12344	2056	17352	471	16881	49.96	16901	1275	18156	18176
6	2843	1099	12634	2168	18744	169	18575	49.76	18710	1758	20333	20468
7	2779	1091	12689	2157	18716	15	18701	49.12	19208	2564	21265	21772
8	2131	1082	12562	2127	17902	18	17884	49.40	18212	2704	20588	20916
9	1956	1088	12603	2154	17801	29	17772	48.64	18528	2651	20423	21179
10	2214	1082	12626	2105	18027	19	18008	49.48	18293	2421	20429	20714
11	2311	1082	12652	2112	18157	28	18129	49.84	18216	2308	20437	20524
12	2035	1086	12654	2130	17905	25	17880	49.28	18275	2074	19954	20349
13	1845	1083	12784	2150	17862	24	17838	49.72	17989	1683	19521	19672
14	1553	1079	12742	2161	17535	25	17510	49.16	17963	1575	19085	19538
15	1391	1081	12666	2159	17297	28	17269	49.04	17781	1591	18860	19372
16	1438	1088	12650	2213	17389	21	17368	49.12	17839	1438	18806	19277
17	1482	1086	12760	2206	17534	76	17458	49.52	17713	1242	18700	18955
18	2683	1091	12986	2208	18968	28	18940	49.84	19031	1400	20340	20431
19	3479	1090	13115	2197	19881	80	19801	48.92	20464	1846	21647	22310
20	2829	1091	13062	2198	19180	33	19147	49.08	19690	2107	21254	21797
21	2370	1092	13020	2196	18678	22	18656	48.76	19377	1804	20460	21181
22	2077	1087	13075	2183	18422	280	18142	49.04	18680	2139	20281	20819
23	1632	1091	13090	2174	17987	485	17502	49.08	17999	1847	19349	19846
24	1449	1096	13066	2169	17780	472	17308	50.16	17225	1285	18593	18510

8.1 HOURLY GENERATION / LOAD FOR THE REGIONAL PEAK DEMAND MET DAY IN FEBRUARY 2003

DATE : 28.02.2003

HOUR	GENERATION					INTER REGIONAL EXCHANGE Export(+)/Import(-) 'I'	TOTAL DEMAND MET 'P' = 'A' - 'I'	FREQ. 'F'	FREQUENCY CORRECTED DEMAND 'P _f ' =P/(1+0.03(F-50))	LOAD SHEDDING 'L _s '	REQUIREMENT	
	HYDRO	THERMAL			TOTAL 'A'						WITHOUT FREQ.	WITH FREQ.
		NUCLEAR	COAL FIRED	GAS FIRED							CORRECTION	CORRECTION
											'P+L _s '	'P _f +L _s '
	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	
1	1560	1083	11555	1733	15931	290	15641	50.10	15594	625	16266	16219
2	1560	1086	11115	1725	15486	263	15223	50.50	14998	465	15688	15463
3	1537	1082	11055	1726	15400	262	15138	50.46	14932	465	15603	15397
4	1608	1084	11090	1727	15509	262	15247	49.70	15385	465	15712	15850
5	1796	1081	11438	1776	16091	281	15810	49.90	15858	595	16405	16453
6	2459	1072	12062	1818	17411	211	17200	49.34	17547	1075	18275	18622
7	3158	1081	12256	1839	18334	174	18160	49.82	18259	1672	19832	19931
8	3071	1085	12250	1824	18230	219	18011	50.26	17872	1767	19778	19639
9	2248	1082	12046	1800	17176	268	16908	50.14	16837	1493	18401	18330
10	2777	1083	12007	1801	17668	268	17400	50.02	17390	817	18217	18207
11	2340	1079	11785	1799	17003	168	16835	50.22	16725	667	17502	17392
12	2139	1081	11752	1785	16757	-7	16764	50.02	16754	637	17401	17391
13	1972	1070	11397	1769	16208	-115	16323	50.02	16313	276	16599	16589
14	2028	1074	11359	1767	16228	-116	16344	50.22	16237	286	16630	16523
15	2049	1067	11301	1760	16177	-118	16295	49.74	16423	288	16583	16711
16	2024	1073	10816	1762	15675	-119	15794	49.74	15918	331	16125	16249
17	1876	1079	11186	1770	15911	-118	16029	50.10	15981	390	16419	16371
18	2127	1080	11439	1802	16448	-119	16567	50.70	16226	390	16957	16616
19	3412	1075	12266	1815	18568	-117	18685	50.30	18518	1035	19720	19553
20	3805	1085	12370	1814	19074	-118	19192	50.34	18998	1075	20267	20073
21	3153	1083	12440	1814	18490	-118	18608	49.90	18664	1072	19680	19736
22	2592	1075	11974	1785	17426	179	17247	50.70	16892	1013	18260	17905
23	1951	1069	11780	1768	16568	183	16385	49.78	16494	833	17218	17327
24	2000	1076	11436	1772	16284	185	16099	50.14	16032	825	16924	16857

8.1 HOURLY GENERATION / LOAD FOR THE REGIONAL PEAK DEMAND MET DAY IN MARCH 2003

DATE : 26.03.2003

HOUR	GENERATION					INTER REGIONAL EXCHANGE Export(+)/Import(-) 'I'	TOTAL DEMAND MET 'P' = 'A' - 'I'	FREQ. 'F'	FREQUENCY CORRECTED DEMAND 'P _f ' = P/(1+0.03(F-50))	LOAD SHEDDING 'L _s '	REQUIREMENT	
	HYDRO	THERMAL			TOTAL 'A'						WITHOUT FREQ.	WITH FREQ.
		NUCLEAR	COAL FIRED	GAS FIRED							CORRECTION	CORRECTION
											'P+L _s '	'P _f +L _s '
	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(HZ)	(MW)	(MW)	(MW)	(MW)
1	2746	1071	11394	2359	17570	223	17347	50.20	17244	625	17972	17869
2	2740	1076	11351	2393	17560	224	17336	50.40	17130	625	17961	17755
3	2715	1076	11343	2318	17452	224	17228	50.44	17004	425	17653	17429
4	2653	1076	11391	2314	17434	223	17211	50.10	17160	955	18166	18115
5	2996	1075	11561	2367	17999	221	17778	50.02	17767	1135	18913	18902
6	3554	1067	11704	2334	18659	-179	18838	49.96	18861	1815	20653	20676
7	3655	1077	11723	2283	18738	36	18702	49.70	18872	1343	20045	20215
8	3656	1074	11520	2242	18492	-15	18507	49.72	18664	1342	19849	20006
9	3349	1079	11525	2164	18117	-163	18280	49.80	18390	1176	19456	19566
10	3154	1067	11582	2200	18003	-165	18168	50.00	18168	977	19145	19145
11	3159	1072	11580	1884	17695	-161	17856	50.20	17750	1644	19500	19394
12	2632	1073	11541	2125	17371	-240	17611	50.10	17558	1715	19326	19273
13	2949	1047	11265	2065	17326	-255	17581	50.22	17466	1681	19262	19147
14	2906	1043	11434	2068	17451	-257	17708	50.22	17592	1410	19118	19002
15	2814	1054	11448	2064	17380	-230	17610	50.22	17495	987	18597	18482
16	2942	1057	11374	2023	17396	97	17299	50.22	17186	657	17956	17843
17	2774	1062	11233	1994	17063	-11	17074	50.62	16762	999	18073	17761
18	2785	1063	11206	1958	17012	-163	17175	50.94	16704	1009	18184	17713
19	3865	1084	11501	2262	18712	-262	18974	50.26	18827	1067	20041	19894
20	4627	1080	11867	2539	20113	-163	20276	50.14	20191	1095	21371	21286
21	4493	1072	12014	2471	20050	-112	20162	50.02	20150	1070	21232	21220
22	3793	1077	11847	2572	19289	-21	19310	50.38	19092	1067	20377	20159
23	2387	1074	11951	2578	17990	29	17961	48.74	18667	1157	19118	19824
24	3244	1079	11942	2535	18800	147	18653	50.22	18531	875	19528	19406

8.2 LOAD DURATION DATA OF THE NORTHERN REGION FOR THE YEAR 2002-03

UNRESTRICTED DEMAND IN MW	% OF TIME
ABOVE 24000	0.00
ABOVE 23500	0.00
ABOVE 23000	0.00
ABOVE 22500	0.00
ABOVE 22000	0.05
ABOVE 21500	0.72
ABOVE 21000	3.21
ABOVE 20500	7.07
ABOVE 20000	13.93
ABOVE 19500	22.39
ABOVE 19000	32.19
ABOVE 18500	41.54
ABOVE 18000	52.67
ABOVE 17500	65.15
ABOVE 17000	77.48
ABOVE 16500	88.03
ABOVE 16000	93.41
ABOVE 15500	96.31
ABOVE 15000	97.84
ABOVE 14500	98.64
ABOVE 14000	99.27
ABOVE 13500	99.45
ABOVE 13000	99.55
ABOVE 12500	99.63
ABOVE 12000	99.68
ABOVE 11500	99.75
ABOVE 11000	99.82
ABOVE 10500	99.89
ABOVE 10000	99.91
ABOVE 9500	99.94
ABOVE 9000	99.95
ABOVE 8500	99.97
ABOVE 8000	99.99
ABOVE 7500	100.00
ABOVE 7000	100.00

REGIONAL LOAD DURATION CURVE FOR THE YEAR 2002-03 IS ENCLOSED (Graph G6)

FREQUENCY ANALYSIS FOR 2002-03

Month ----> ITEM	Apr'02	May'02	Jun'02	Jul'02	Aug'02	Sep'02	Oct'02	Nov'02	Dec'02	Jan'03	Feb'03	Mar'03	2002-03
Avg. freq. Hz	50.04	50.13	49.92	49.40	49.76	50.01	49.82	50.14	49.94	49.55	49.94	50.13	49.90
Std Dev Hz	0.44	0.59	0.65	0.50	0.65	0.65	0.50	0.50					0.46
Maximum Instant Freq. Hz	51.40	51.56	51.48	51.44	51.32	51.28	51.40	51.36	51.44	51.28	51.44	51.36	51.56
Minimum Instant Freq. Hz	48.20	48.20	48.20	48.20	48.20	48.24	48.16	48.20	48.16	48.16	48.16	48.44	48.16
Frequency Variation Index(FVI)	2.78	3.41	4.28	6.72	3.83	2.57	3.15	2.78	2.15	5.02	2.15	1.91	3.41
Above 50.5 %	18.90	29.09	21.90	4.25	9.11	17.83	11.26	27.24	15.04	4.36	15.04	17.63	15.92
50.5 - 49.0 %	77.47	68.56	68.77	70.42	78.61	79.26	83.10	70.69	82.95	79.65	82.95	81.74	77.00
Below 49.0 %	3.63	2.35	9.33	25.33	12.28	2.91	5.64	2.07	2.01	15.99	2.01	0.63	7.08
Below 48.5 %	0.48	0.14	0.83	3.23	1.86	0.17	0.37	0.16	0.11	1.86	0.11	0.01	0.79
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

9.2 FREQUENCY SPECTRUM OF THE NORTHERN REGION DURING PAST DECADE

SL . NO.	YEAR	% OF TIME FREQUENCY REMAINED				AVERAGE FREQ (Hz) DURING YEAR
		BELOW 48.5 Hz	BELOW 49.0 Hz	BETWEEN 49.0 Hz TO 50.5 Hz	ABOVE 50.5 Hz	
1	1993-94	20.53	44.33	43.80	11.87	49.21
2	1994-95	14.71	32.73	53.01	14.26	49.37
3	1995-96	8.71	22.77	53.82	23.41	49.63
4	1996-97	25.26	44.93	41.17	13.90	49.14
5	1997-98	15.43	28.16	40.74	31.10	49.61
6	1998-99	14.12	27.81	39.70	32.49	49.64
7	1999-2000	24.83	43.91	43.20	12.89	49.27
8	2000-01	15.19	34.13	55.84	10.03	49.38
9	2001-02	1.87	11.17	76.23	12.60	49.38
10	2002-03	0.79	7.08	77.00	15.92	49.90

**MONTHWISE MAXIMUM & MINIMUM VOLTAGE RECORDED
AT 400 KV DADRI BUS DURING THE YEAR 2002-03**

MONTH	MAXIMUM VOLTAGE		MINIMUM VOLTAGE	
	(KV)	Date	(KV)	Date
APR - 2002	422	07.04.2002	374	16.04.2002
MAY - 2002	434	28.05.2002	368	14.05.2002
JUN - 2002	414	02.06.2002	348	11.06.2002
JUL - 2002	412	01.07.2002	340	09.07.2002
AUG - 2002	420	13.08.2002	356	08.08.2002
SEP - 2002	428	14.09.2002	374	20.09.2002
OCT - 2002	422	13.10.2002	378	04.10.2002
NOV - 2002	420	05.11.2002	380	08.11.2002
DEC - 2002	428	31.12.2002	380	23.12.2002
JAN - 2003	422	03.01.2003	384	11.01.2003
FEB - 2003	436	19.02.2003	384	24.02.2003
MAR - 2003	426	01.03.2003	378	14.03.2003
2002-03	436	19.02.2003	340	09.07.2002

9.4 RESERVOIR DATA FOR 2002-03

Reservoir ----->	Bhakra			Pong		
End of the Month	Reservoir Level (Mtr)	Live Capacity (Mhmt)	Energy Content (MU)	Reservoir Level (Mtr)	Live Capacity (Mhmt)	Energy Content (MU)
APR - 2002	454.99	0.05	180	395.17	0.11	140
MAY - 2002	468.42	0.15	500	394.32	0.09	125
JUN - 2002	479.46	0.26	900	390.14	0.05	60
JUL - 2002	486.75	0.33	1240	393.28	0.09	110
AUG - 2002	500.37	0.50	1950	403.52	0.23	310
SEP - 2002	505.14	0.55	2200	408.36	0.44	440
OCT - 2002	501.40	0.52	2020	407.29	0.27	380
NOV - 2002	495.78	0.42	1700	404.05	0.24	325
DEC - 2002	486.04	0.33	1220	403.93	0.23	275
JAN - 2003	476.92	0.25	870	400.26	0.18	255
FEB - 2003	469.88	0.17	610	400.14	0.17	250
MAR - 2003	460.86	0.10	300	399.28	0.17	225
Max. Level	505.32			408.41		
(DATE)	23.09.2002			04.10.2002		
Min. Level	453.74			390.08		
(DATE)	05.05.2002			24.06.2002		
Full Reservoir Level (FRL)	514.50			433.12		
Min. Draw Down Level (MDDL)	445.62			384.05		

9.4 RESERVOIR DATA FOR 2002-03

Resrvoir ----->	Rana Pratap Sagar			Gandhi Sagar		
Month	Reservoir Level (Mtr)	Live Capacity (Mhmt)	Energy Content (MU)	Reservoir Level (Mtr)	Live Capacity (Mhmt)	Energy Content (MU)
APR - 2002	345.14	0.03	55	380.16	0.00	0
MAY - 2002	344.68	0.02	35	379.98	0.00	0
JUN - 2002	344.76	0.03	40	379.66	0.00	0
JUL - 2002	344.56	0.02	40	379.57	0.00	0
AUG - 2002	345.59	0.03	60	380.87	0.00	0
SEP - 2002	345.45	0.03	59	383.26	0.04	110
OCT - 2002	345.77	0.03	80	381.63	0.01	70
NOV - 2002	346.43	0.04	84	383.37	0.04	72
DEC - 2002	347.21	0.06	118	379.94	0.00	0
JAN - 2003	347.09	0.06	107	379.63	0.00	0
FEB - 2003	347.11	0.06	100	379.62	0.00	0
MAR - 2003	346.97	0.06	97	379.18	0.00	0
Max. Level	347.21			383.37		
(DATE)	31.12.2002			06.10.2002		
Min. Level	344.45			379.18		
(DATE)	05.08.2002			31.03.2003		
Full Reservoir Level (FRL)	352.65			402.64		
Min. Draw Down Level (MDDL)	342.90			381.00		

9.4 RESERVOIR DATA FOR 2002-03

Reservoir ----->	Rihand		
Month	Reservoir Level (Mtr)	Live Capacity (Mhmt)	Energy Content (MU)
APR - 2002	257.46	0.13	575
MAY - 2002	255.64	0.07	125
JUN - 2002	254.66	0.04	75
JUL - 2002	254.33	0.04	50
AUG - 2002	259.75	0.24	375
SEP - 2002	263.90	0.41	695
OCT - 2002	263.44	0.35	635
NOV - 2002	262.59	0.31	585
DEC - 2002	261.61	0.26	525
JAN - 2003	260.82	0.23	475
FEB - 2003	260.02	0.22	425
MAR - 2003	258.50	0.17	325
Max. Level	263.93		
(DATE)	04.10.2002		
Min. Level	253.87		
(DATE)	15.07.2002		
Full Reservoir Level (FRL)	268.22		
Min. Draw Down Level (MDDL)	252.98		

Notes :

Energy content of Bhakra : Total energy content at Bhakra, Ganguwal and Kotla Power Stations.

Energy content of Rihand : Total energy content at Rihand and Obra Power Stations.

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

Energy Content of G. Sagar : Total energy content at Gandhi Sagar, R. P. Sagar and Jawahar Sagar Power Stations.

**10.1 SETTING OF FLAT UNDERFREQUENCY AND df/dt RELAYS
IN NORTHERN REGION AS APPROVED BY NREB
(AS ON 31.03.2003)**

CONSTITUENTS	Flat Under Frequency			df/dt relay setting						
	at 48.2 Hz	at 48.0 Hz	TOTAL	To be initialised at 50.0 Hz		To be initialised at 49.0 Hz		To be initialised at 48.5 Hz		TOTAL
	MW	MW	MW	Setting Hz/sec	Load relief MW	Setting Hz/sec	Load relief MW	Setting Hz/sec	Load relief MW	MW
Chandigarh	5	5	10	---	---	---	---	---	---	---
Delhi	75	115	190	---	---	0.22	581	0.20	166	747
Haryana	70	105	175	---	---	0.22	519	0.20	148	667
H.P.	15	25	40	---	---	---	---	---	---	---
J & K	25	35	60	---	---	---	---	---	---	---
Punjab	110	165	275	---	---	0.20	656	0.20	328	984
Rajasthan	105	160	265	---	---	0.22	655	0.20	327	982
U.P.	195	290	485	0.30	1586	---	---	---	---	1586
TOTAL	600	900	1500		1586		2411		969	4966

10.2 SHUNT CAPACITORS INSTALLATION IN NORTHERN REGION DURING 2002-03

CONSTITUENT	INSTALLED		WORKING AS ON 31.03.2003	REQUIREMENT AT AT THE END OF 2002-03	BACKLOG AS ON 31.03.2002
	AS ON 31.03.2003	DURING 2002-03			
	A	B	D	E	G=E-C
Chandigarh	92	0	92	116	24
Delhi	2755	122	2755	2932	177
Haryana	2489	137	2489	2797	308
H.P.	278	73	278	319	41
J & K	147	0	147	924	777
Punjab	4706	76	4706	5107	401
Rajasthan	2711	234	2711	2695	-16
U.P.	4965	274	4965	5225	260
Uttaranchal.	123	0	123	286	163
BBMB	381	0	381	360	-21
TOTAL	18647	916	18647	20761	2114

SOURCE : Minutes of the 339th OCC meeting of the NREB.

10.3 STATUS OF IMPORTANT TRANSMISSION LINES UNDER CONSTRUCTION

S. NO.	NAME OF LINE/ICT	NO. OF CKTS.	Revised TARGET DATE	LENGTH IN Kms.	TOTAL LOCATIONS	STUBS COMPLETED	ERECTION OF TOWERS COMPLETED	STRINGING COMPLETED IN Ckt. Kms.	REMARKS
800 KV LINES									
POWERGRID									
1	Tehri - Meerut - I	S/C	Dec-2003	186	466	437	376	121	
2	Tehri - Meerut - II	S/C	Mar-2004	184	466	415	396	115	
400 KV LINES									
POWERGRID									
1	Agra(PGCIL)-Agra(UPPCL)	D/C	Aug-2002	60	89	88	88	60	Completed in 06/03
2	LILO of Chamera-Kishanpur at Chamera-II	S/C	May-2003	70	79	79	79	70	Completed in 06/03
3	Kishanpur-Wagoora	D/C	Jul-2006	368	560	71	2	0	
4	Rihand-Allahabad	D/C	Dec-2005	596	809	49	0	0	
5	Allahabad-Kanpur	D/C	Dec-2005	406	549	46	0	0	
6	Kanpur-Mainpuri	D/C	Dec-2005	404	549	33	0	0	
7	Mainpuri-Ballabgarh	D/C	Dec-2005	460	618	0	0	0	
8	Malerkotla-Patiala	S/C	Dec-2005	146	297	8	0	0	
9	Dadri-Panipat-II	S/C	Dec-2005	111	297	0	0	0	
UPPCL									
1	LILO of Rishikesh-Muradnagar at Kashipur	D/C	Sep-2005	40	0	0	0	0	
DTL									
1	Ballabgarh-Bamnauli	D/C	May-2004	104	149	149	147		Ckt.-I completed Ckt.-II under progress
HPSEB									
1	Nalagarh-Kunihar	S/C	Sep-2004	33	0	0	0	0	

10.3 STATUS OF IMPORTANT TRANSMISSION LINES UNDER CONSTRUCTION

S. NO.	NAME OF LINE/ICT	NO. OF CKTS.	Revised TARGET DATE	LENGTH IN Kms.	TOTAL LOCATIONS	STUBS COMPLETED	ERECTION OF TOWERS COMPLETED	STRINGING COMPLETED IN Ckt. Kms.	REMARKS
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RRVPL

1	Heerapura-Roopnagar	S/C	Dec-20003	86	232	212	169	39	
2	Roopnagar-Merta	S/C	Dec-20003	82	218	218	190	56	
3	Merta-mandore (Jodhpur)	S/C	Dec-20003	116	281	278	238	71	

220 KV LINES

POWERGRID

1	LILO of Panki-Naubasta at kanpur	D/C	July-2003	30	78	78	77	18	
2	Allahabad-Phulpur	S/C	July-2003	38	143	142	141	36	
3	Meerut(PGCIL)-Shatabadinagar	S/C	Aug-2003	8	32	29	24	2	

DTL

1	Ghazipur -NOIDA	D/C	Mar-2005	16	48	38	28	0	
2	Bawana -Rohini	D/C	Dec-2004	21	55	41	28	5	
3	LILO of Mandola -Patparganj at S.O.W.	D/C	Dec-2002	3	6	2	1	0	Contatual problem

10.3 STATUS OF IMPORTANT TRANSMISSION LINES UNDER CONSTRUCTION

S. NO.	NAME OF LINE/ICT	NO. OF CKTS.	Revised TARGET DATE	LENGTH IN Kms.	TOTAL LOCATIONS	STUBS COMPLETED	ERECTION OF TOWERS COMPLETED	STRINGING COMPLETED IN Ckt. Kms.	REMARKS
PSEB									
1	Jalandhar(PGCIL) -Nakodar	S/C on D/C	May-2003	36	115	115	115	36	Completed in 4/03
2	GHTP - Bajakhana (2nd ckt strg.)		Jun-2004	29	-	0	0	0	
3	Muktsar -GNDTP	S/C on D/C	Sep-2004	52	152	32	0	0	
4	Muktsar -Abohor	S/C on D/C	Dec-2004	50	-	0	0	0	
5	Civil Lines - Khassa (2nd ckt strng.)	D/C	May-2003	24	0	0	0	14	
6	LILO of Moga -Muktsar at Bajakhana	D/C	Sep- 2003	48	71	71	68	17	
7	Sarna -Kotli Suratmalli	S/C on D/C	Dec-2004	62	185	70	0	0	
8	LILO of Patiala-Patran at Rajla	D/C	Jun-2004	5	-	0	0	0	
9	LILO of GGSSTP-sahnewal at Kohara	D/C	Jun-2003	6	12	12	11	2	
10	Nalaharh-Mohali	S/C on D/C	Dec-2004	50	-	0	0	0	
11	Patran-Sunam	S/C on D/C	Sep-2004	34	108	93	21	0	
RAJASTHAN									
1	Merta-Bhopalgarh	S/C	May-2003	57	168	168	168	57	Completed in 5/03
2	Ramgarh-Phalodi	S/C	Mar -2004	209	640	548	330	60	
3	STPS-Bikaner A) Bikaner end	S/C on D/C	Dec-2004	100	321	320	242	20	
	B) Suratgarh end	S/C on D/C	Dec-2004	60	197	63	0	0	
4	Ratangarh-Khetri	D/C	Dec-2004	240				0	
5	Ratangarh-Sujargarh	S/C	Dec-2004	50				0	
6	LILO of Jodhpur-Bhilwara at Pali	D/C	Jun-2003	19	30	30	30	19	Completed in 5/03

10.3 STATUS OF IMPORTANT TRANSMISSION LINES UNDER CONSTRUCTION

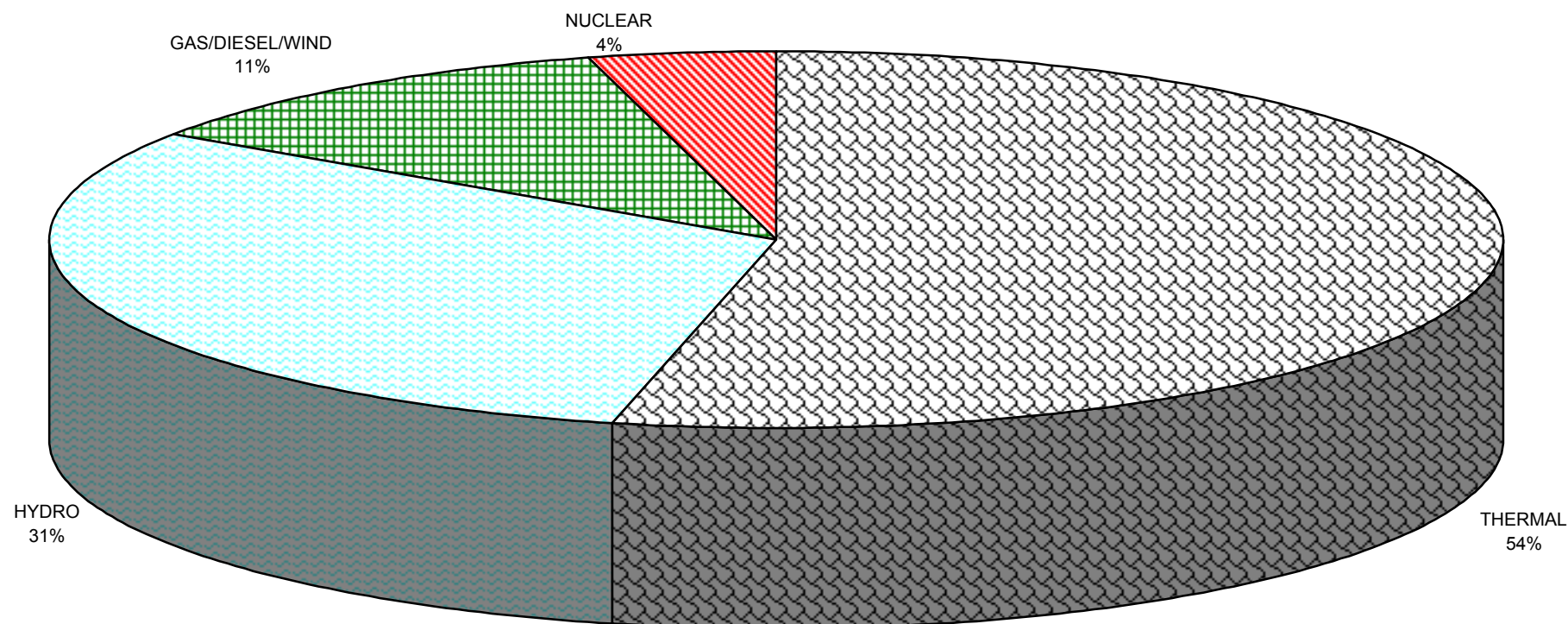
S. NO.	NAME OF LINE/ICT	NO. OF CKTS.	Revised TARGET DATE	LENGTH IN Kms.	TOTAL LOCATIONS	STUBS COMPLETED	ERECTION OF TOWERS COMPLETED	STRINGING COMPLETED IN Ckt. Kms.	REMARKS
UPPCL									
1	Bareilly -Shahjahanpur	S/C	Dec-2003	91	257	257	257	35	
2	Shahjahanpur-Hardoi	D/C	Jun -2005	140	208	180	0	0	
3	Gorakhpur-Deoria	S/C	Dec-2003	35	101	101	99	0	
HARYANA									
1	Palli - Badshahpur	D/C	Jan -2004	45	86	83	50	0	
2	Badshahpur -Manesar	S/C on D/C	Sep -2003	12	50	45	35	3	
3	Hissar(PGCIL)-Fatehabad	D/C	Dec-2003	130	205	200	172	36	
4	Dadri(BBMB)-Mohindergarh	S/C on D/C	Sep -2003	41	154	154	154	41	completed in 4/03
5	Abdullapur-Tepla	D/C	Dec-2003	61	99	99	73	0	
6	Fatehabad-Rania	S/C on D/C	Dec-2003	61	187	187	186	56	
7	Kaithal-Cheeka	S/C on D/C	Dec-2003	40	114	113	113	23	
8	Badshahpur-Rewari(2nd ckt strg.)	S/C	Jun -2004	50	-	0	0	0	
9	PTPP-Rohtak(2nd ckt strg.)	S/C	Jun -2004	63	-	0	0	0	
10	PTPP-Sonepat(2nd ckt strg.)	S/C	Jun -2004	51	-	0	0	0	

Source: CEA report on "Status of construction progress of transmission works as on 30.06.200

10.4 STATUS OF NEW GENERATING UNITS UNDER CONSTRUCTION

SL. NO.	NAME OF SCHEME	NAME OF UNIT	CAPACITY (MW)	COMMISSIONING SCHEDULE	
				ORIGINAL	REVISED
1.	<u>NHPC</u>				
	(i) DULHASTI HPS	1	130	94-95	2003-04
		2	130	94-95	2003-04
		3	130	94-95	2003-04
	(ii) CHAMERA STAGE -II HPS	1	100	----	2003-04
		2	100	----	2003-04
		3	100	----	2003-04
	(iii) DHAULIGANGA HPS	1	70	----	2004-05
		2	70	----	2004-05
		3	70	----	2004-05
		4	70	----	2004-05
2.	<u>NJPC</u>				
	(i) NATHPA JHAKRI HPS	1	250	95-97	2003-04
		2	250	95-97	2003-04
		3	250	95-97	2003-04
		4	250	95-97	2003-04
		5	250	95-97	2003-04
		6	250	95-97	2003-04
3.	<u>THDC</u>				
	(i) TEHRI STAGE -I HPS	1	250	81-82	2003-04
		2	250	81-82	2003-04
		3	250	81-82	2003-04
		4	250	81-82	2003-04
4.	<u>HPSEB</u>				
	(i) BASPA - II HPS (P)	1	100	2001-2002	12.05.2003 (commissioned)
		2	100	2001-2002	14.05.2003 (commissioned)
		3	100	2001-2002	27.05.2003 (commissioned)

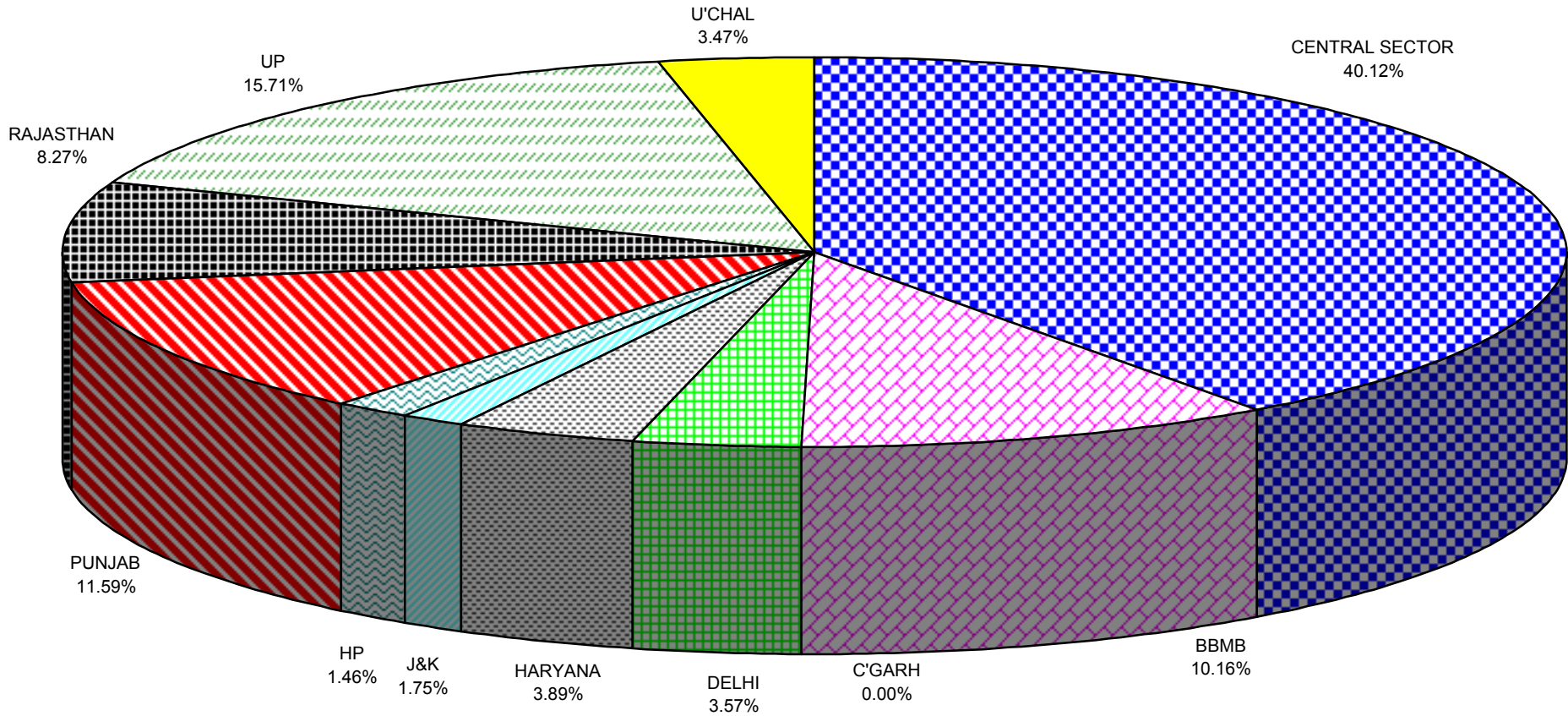
BREAK UP OF EFFECTIVE GENERATING CAPACITY (SOURCE WISE)
AS ON 31st MARCH 2003



GENERATION SOURCE EFFECTIVE CAPACITY (MW)

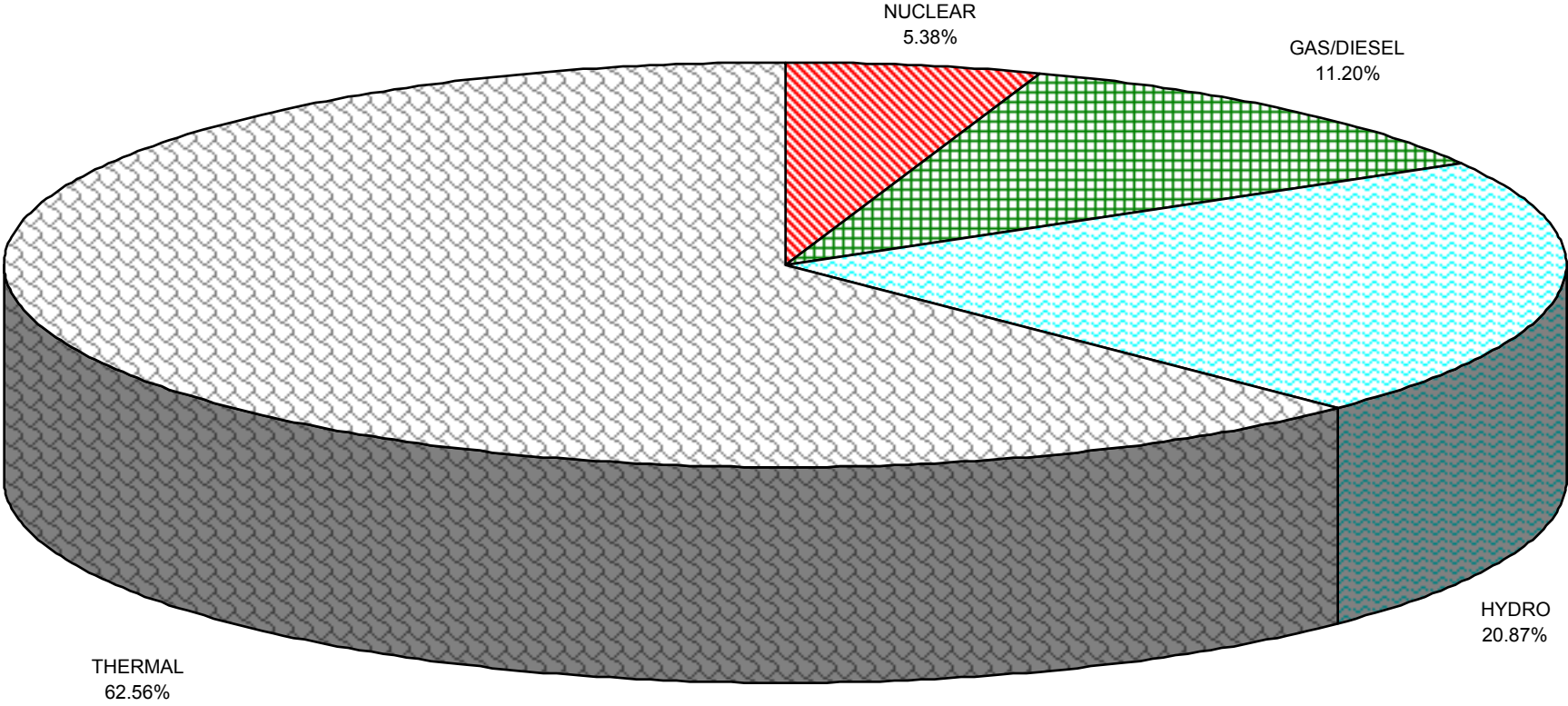
THERMAL	15135.50
HYDRO	8716.82
GAS/DIESEL/WIND	3217.45
NUCLEAR	1180.00
TOTAL REGION	28249.77

**BREAKUP OF EFFECTIVE GENERATING CAPACITY (CONSTITUENT WISE)
AS ON 31st MARCH 2003.**



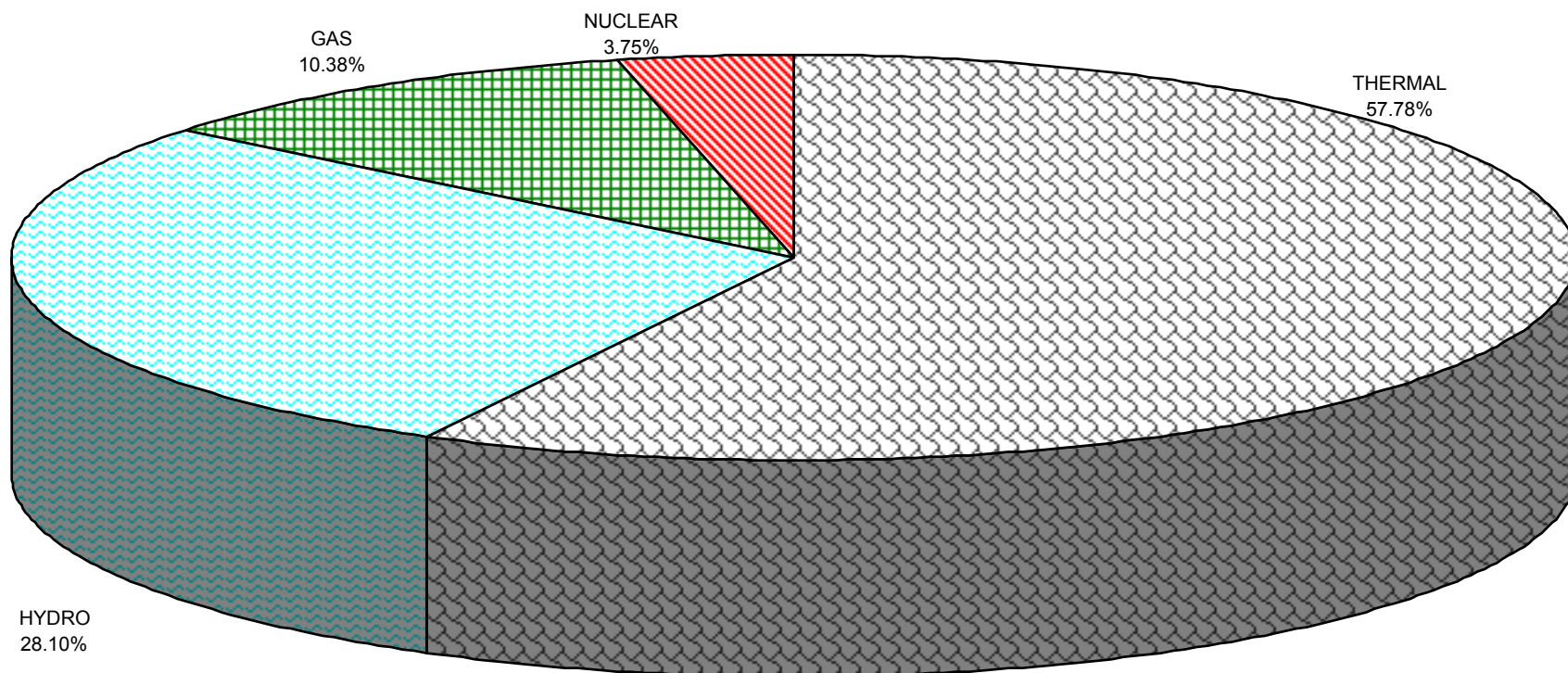
Control Area	CENTRAL SECTOR	BBMB	C'GARH	DELHI	HARYANA	HP	J&K	PUNJAB	RAJASTHAN	UP	U'CHAL	Total
Capacity	11333.24	2870.15	1.40	1008.50	1098.20	412.20	493.87	3275.10	2337.36	4438.90	980.85	28249.77

SOURCE WISE CONTRIBUTION TO NET REGIONAL ENERGY DURING 2002-03



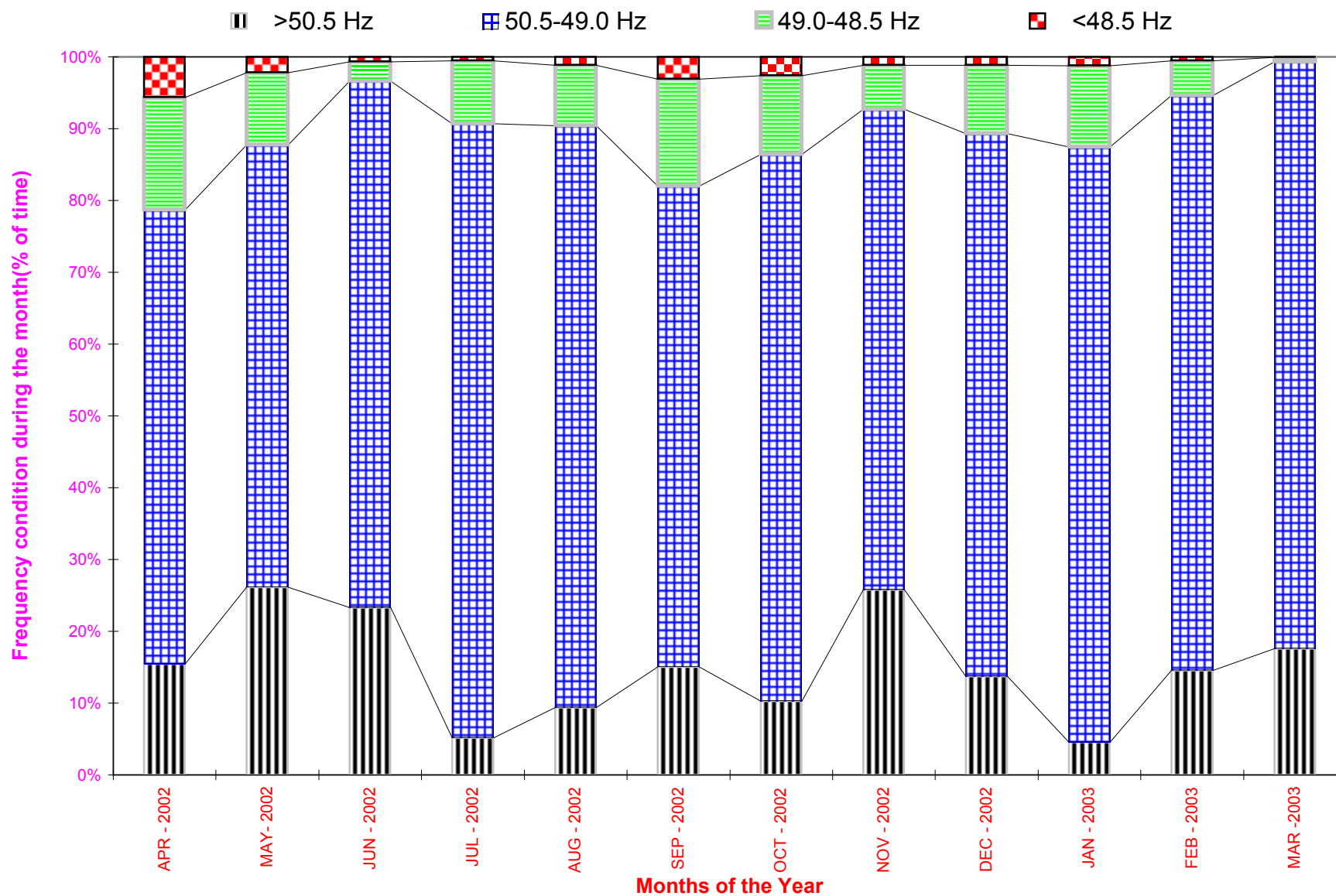
SOURCE	NUCLEAR	GAS/DIESEL	HYDRO	THERMAL	TOTAL REGIONAL
NET ENERGY (MU)	7731.14	16097.86	29991.88	89919.99	143740.88

**SOURCE WISE CONTRIBUTION TO REGION'S PEAK MET DURING
2002-03**

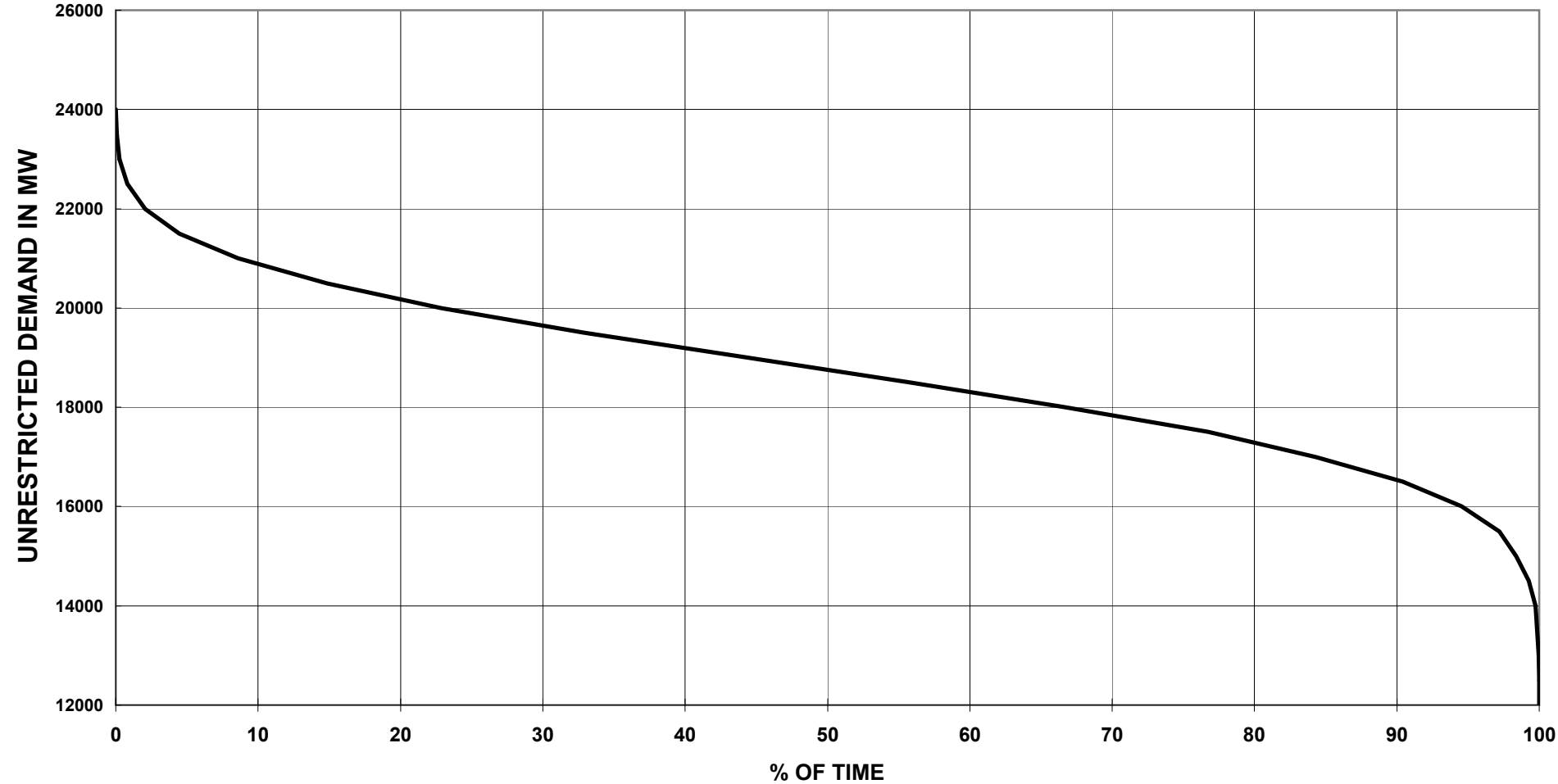


SOURCE	CONTRIBUTION (MW)
THERMAL	12501
HYDRO	6080
GAS	2245
NUCLEAR	811
TOTAL GENERATION	21637
LESS EXPORT	-130
ADD IMPORT	0
REGIONAL PEAK	21767

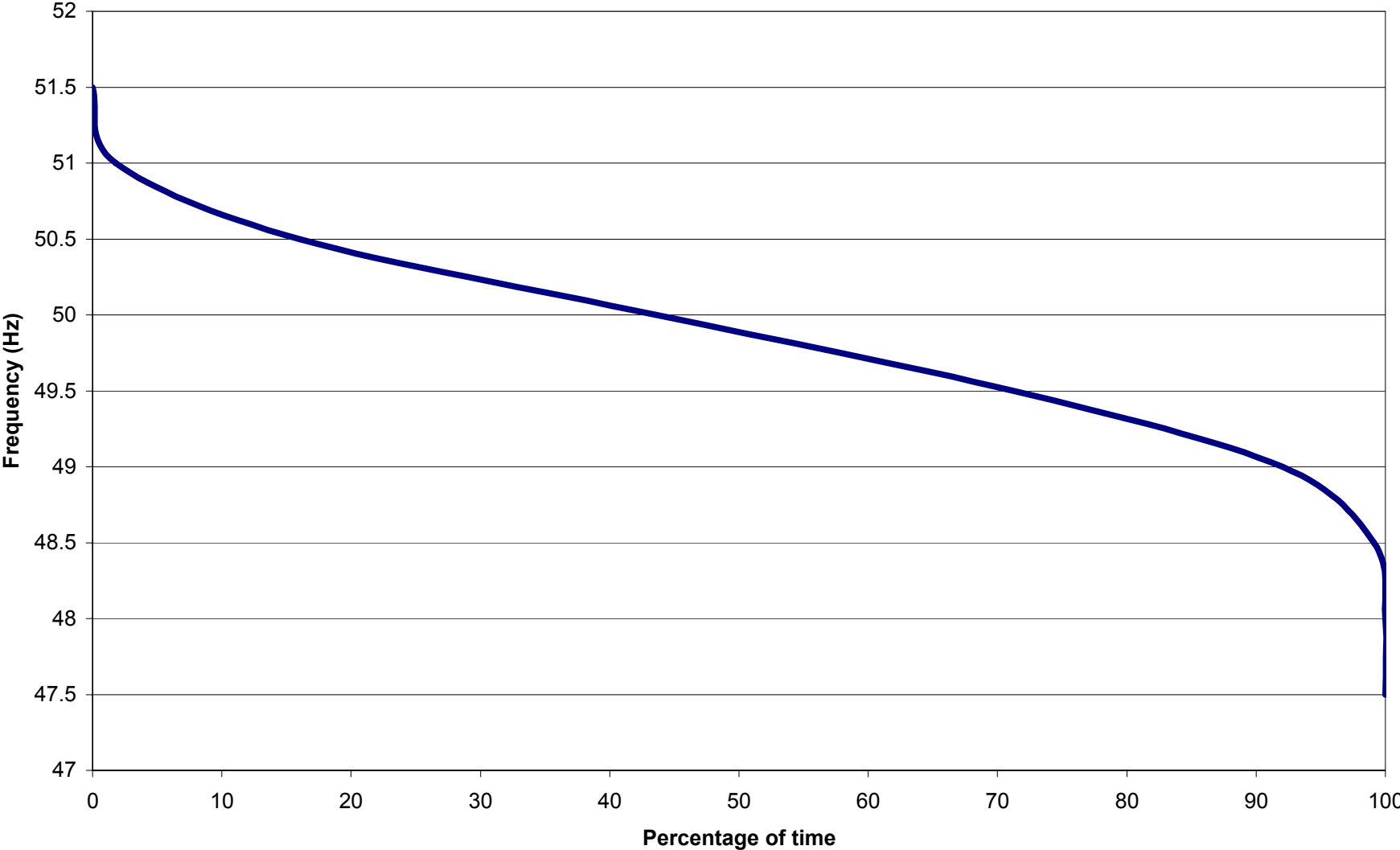
FREQUENCY SPECTRUM OF NORTHERN REGION DURING 2002-03



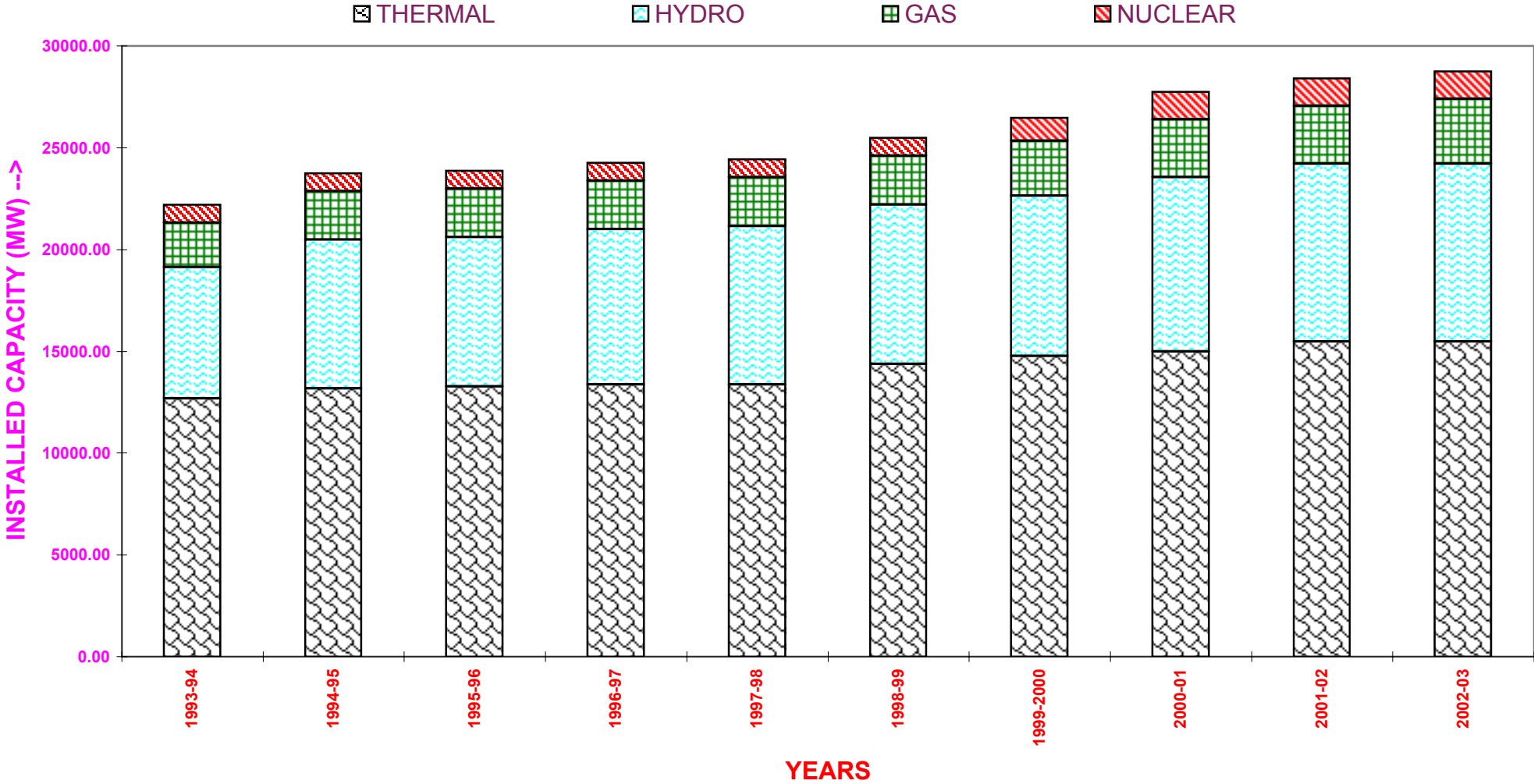
LOAD DURATION CURVE OF THE NORTHERN REGION DURING 2002-03



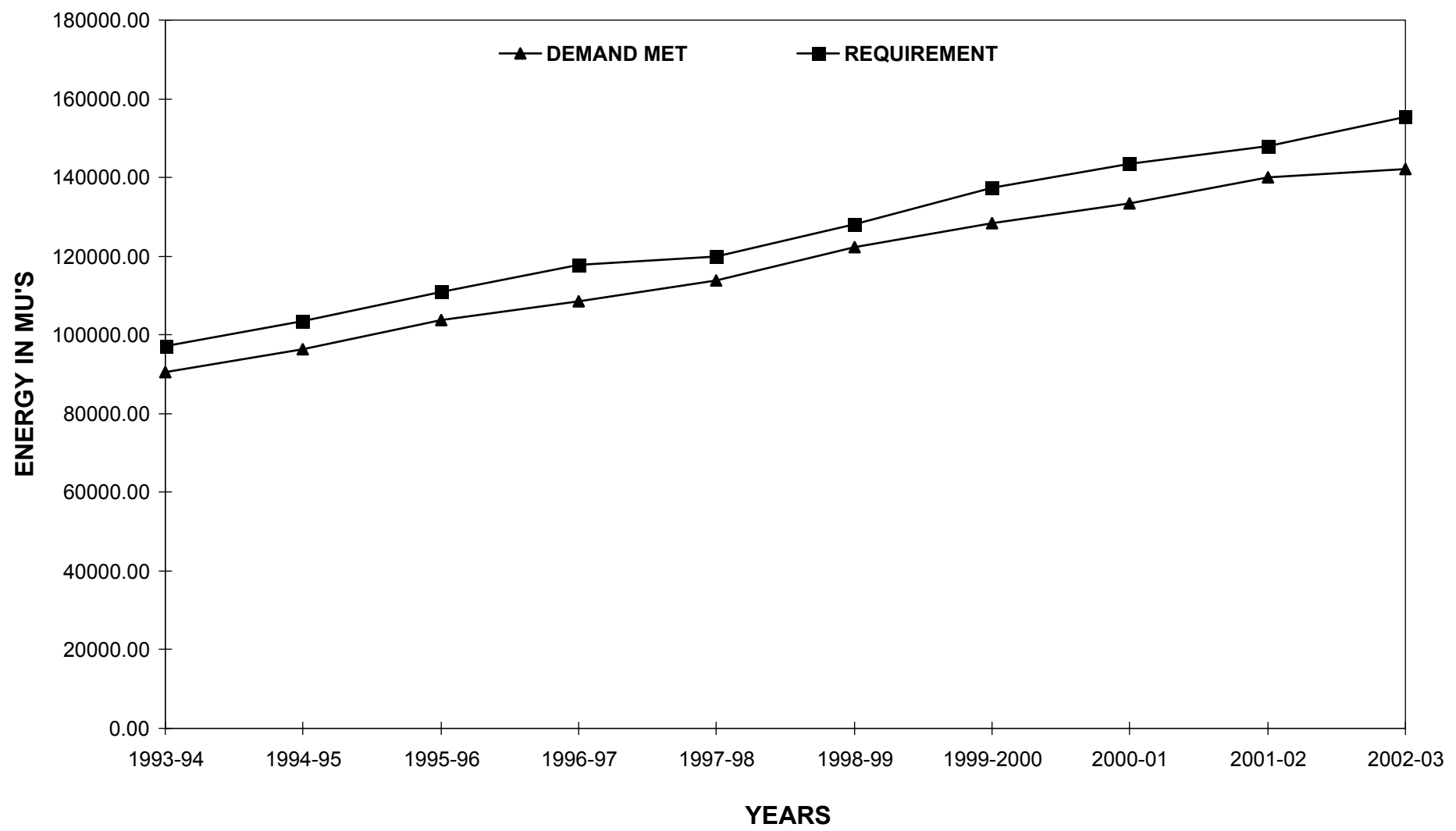
Annual frequency duration curve



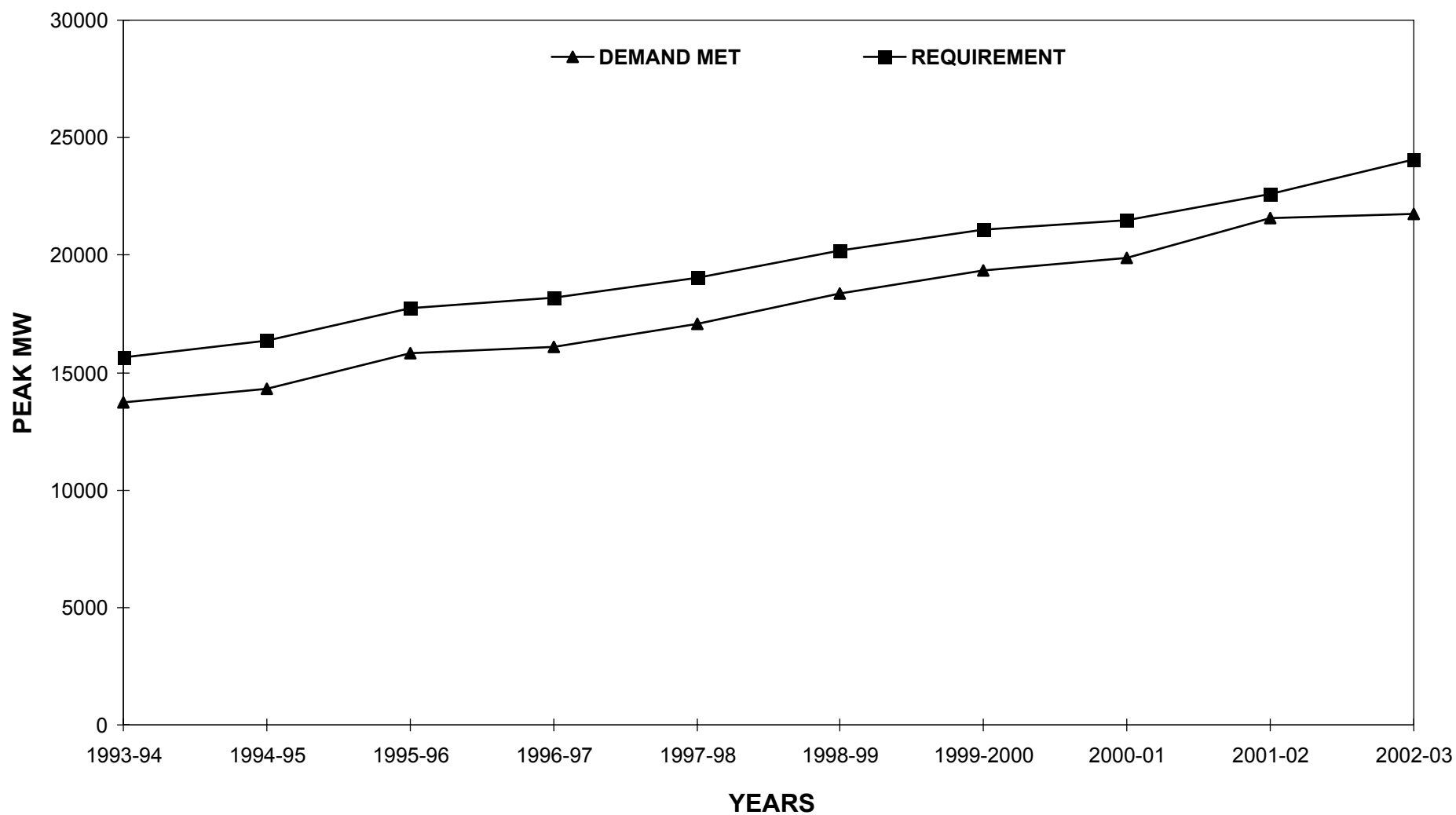
GROWTH OF INSTALLED GENERATING CAPACITY IN NORTHERN REGION



DEMAND MET VS REQUIREMENT IN ENERGY DURING PAST DECADE

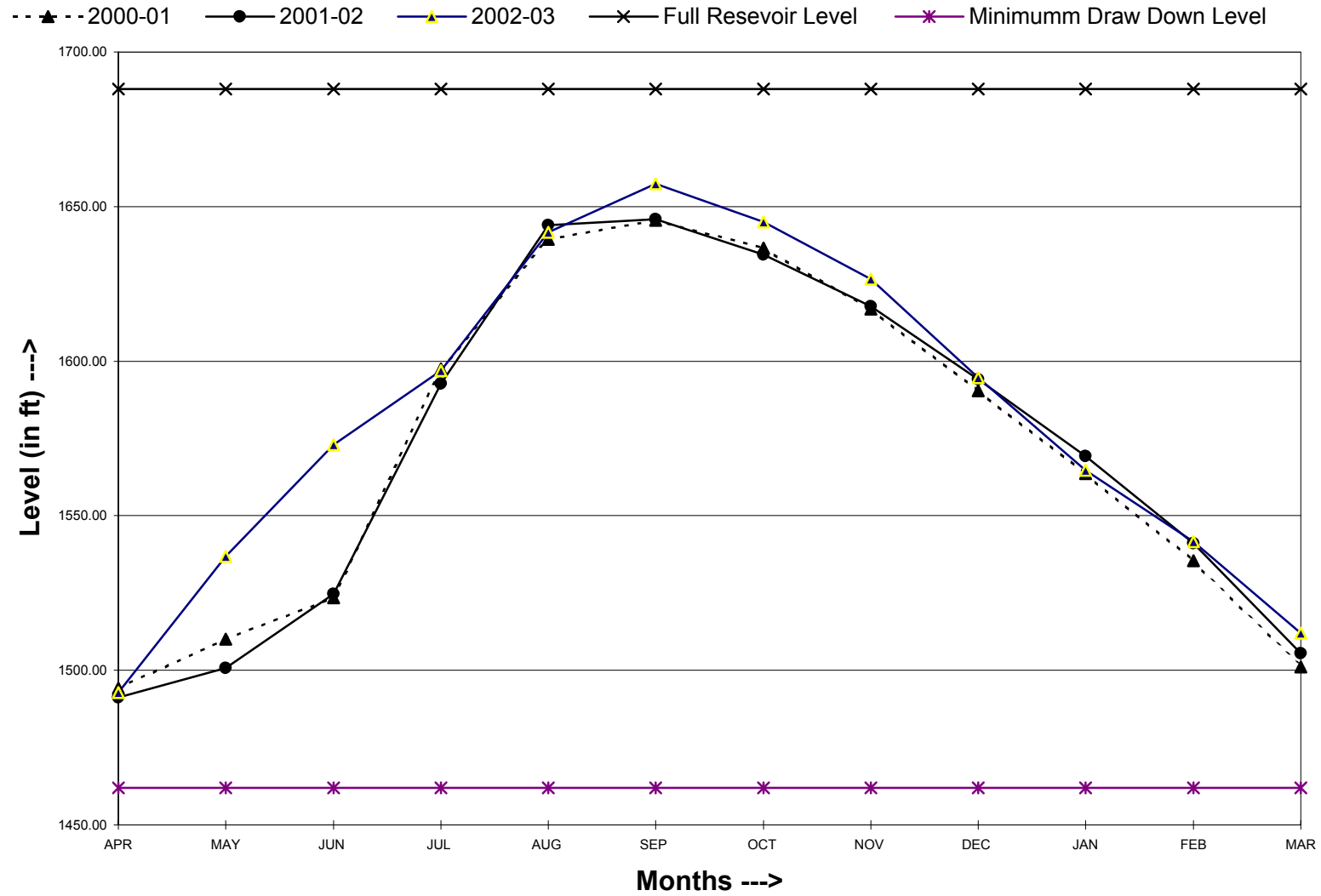


DEMAND MET VS REQUIREMENT IN PEAK MW IN NORTHERN REGION DURING PAST DECADE



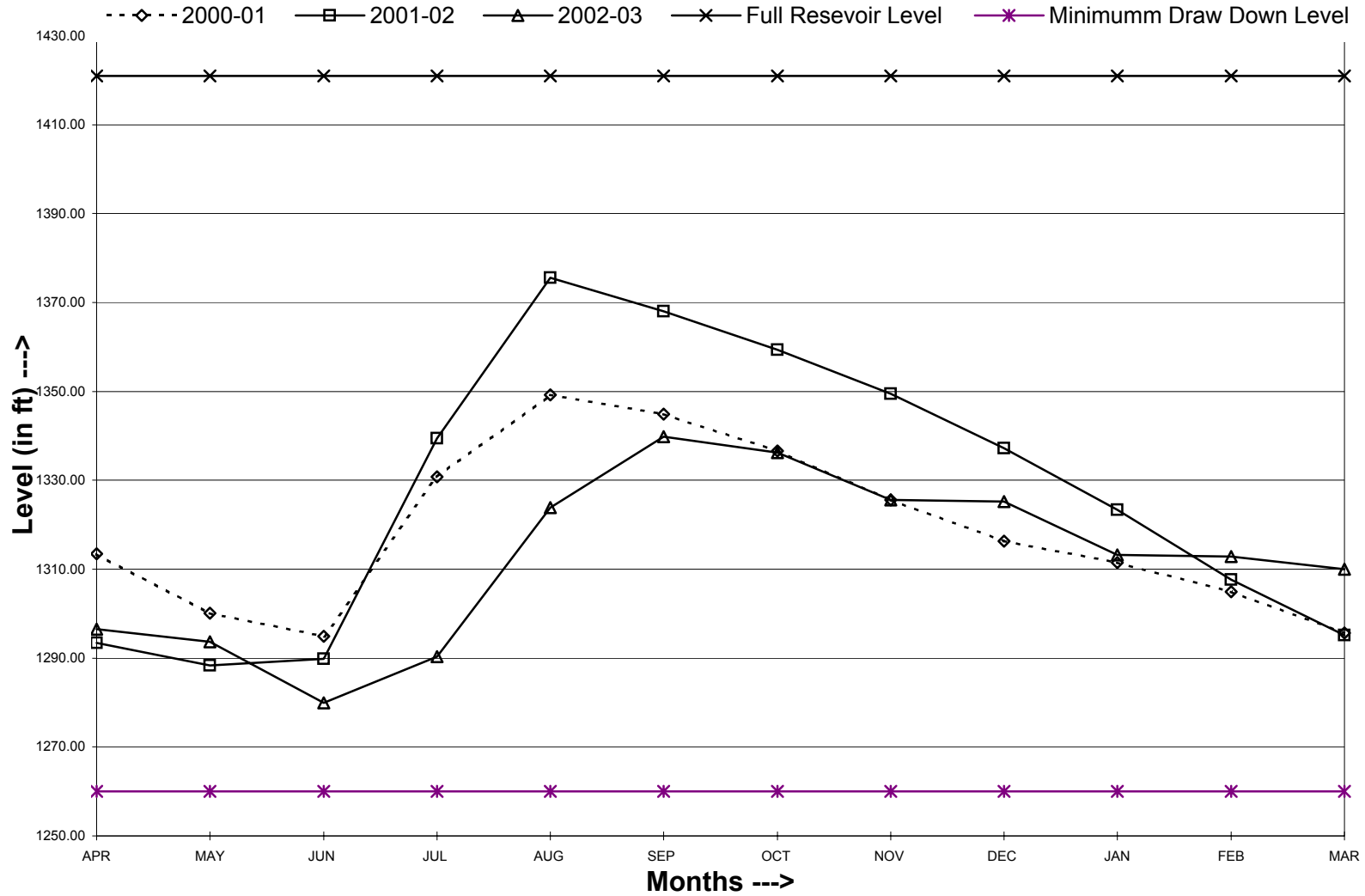
GRAPH-G11

Levels recorded at Bhakra reservoir during 2000-01,2001-02 and 2002-03



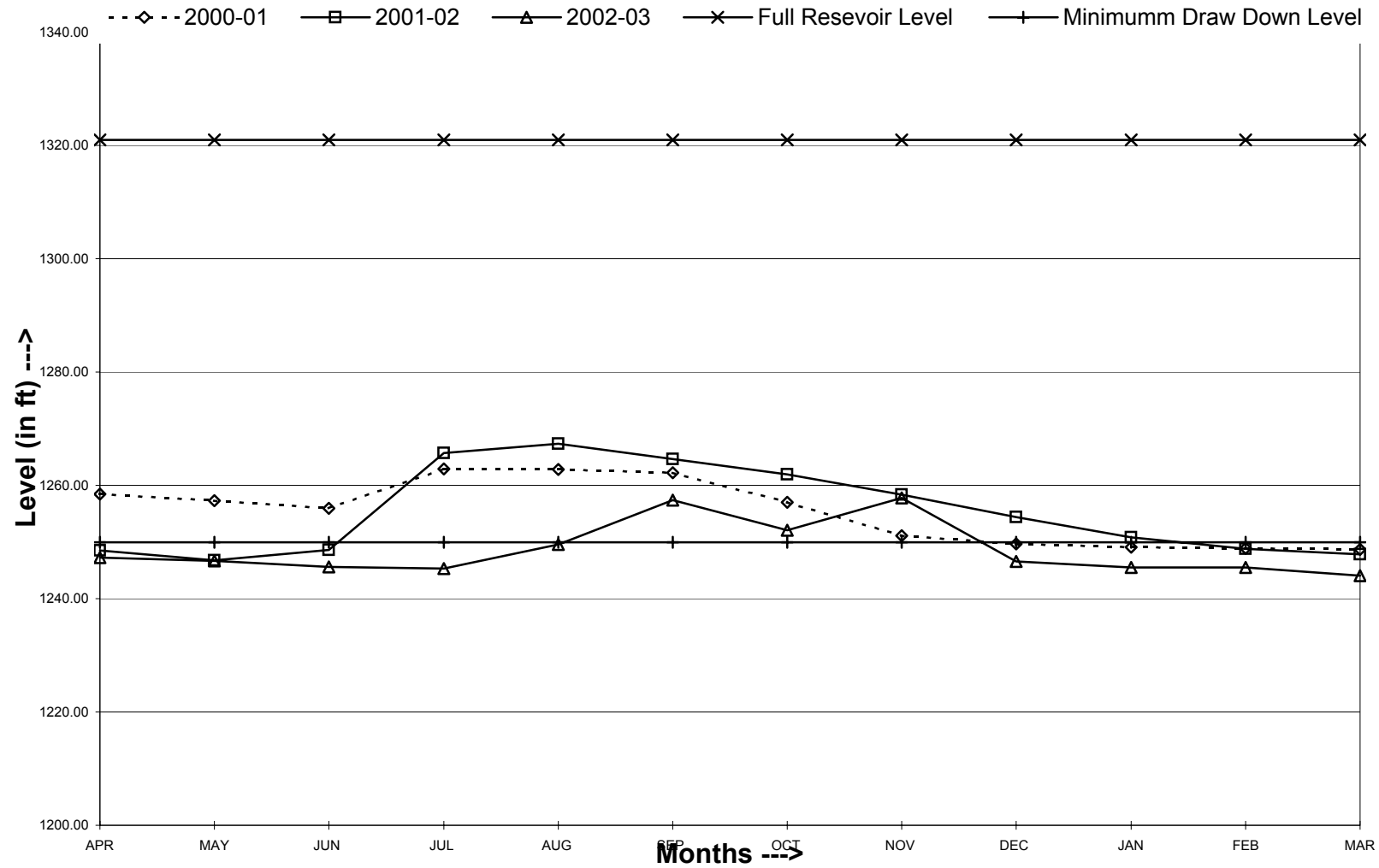
GRAPH-G12

Levels recorded at Pong reservoir during 2000-01,2001-02 and 2002-03

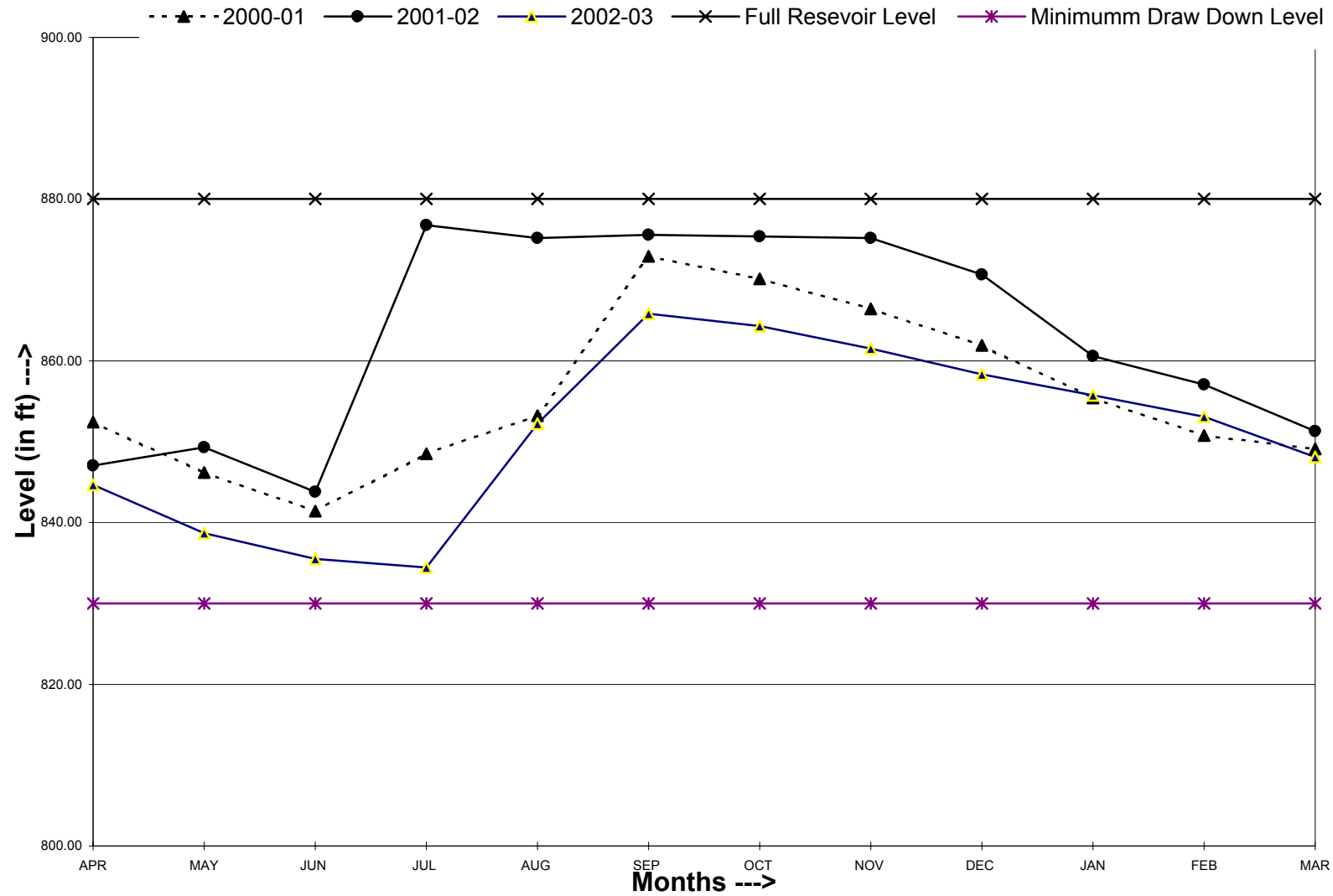


GRAPH-G13

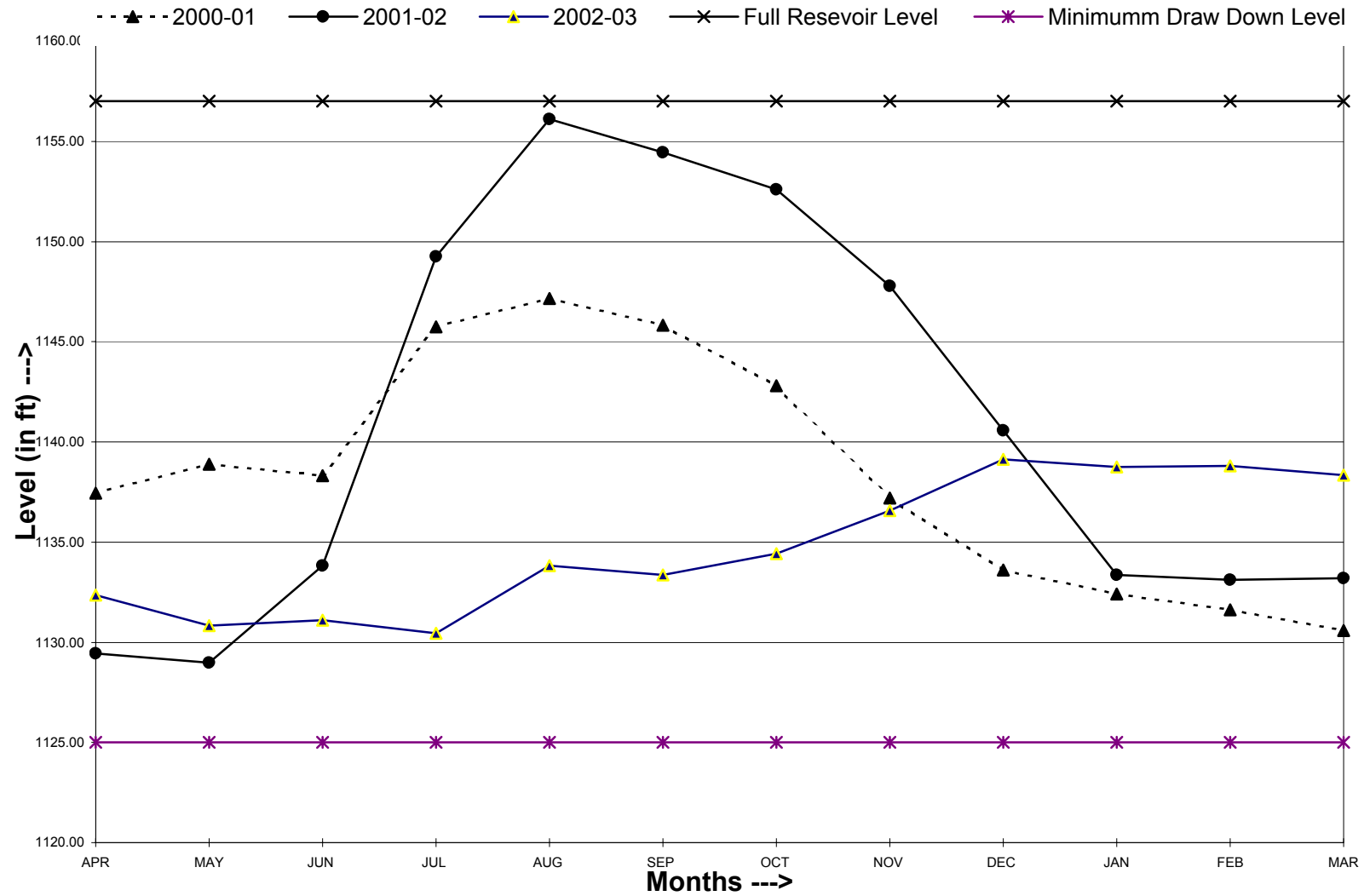
Levels recorded at Gandhi Sagar reservoir during 2000-01,2001-02 and 2002-03



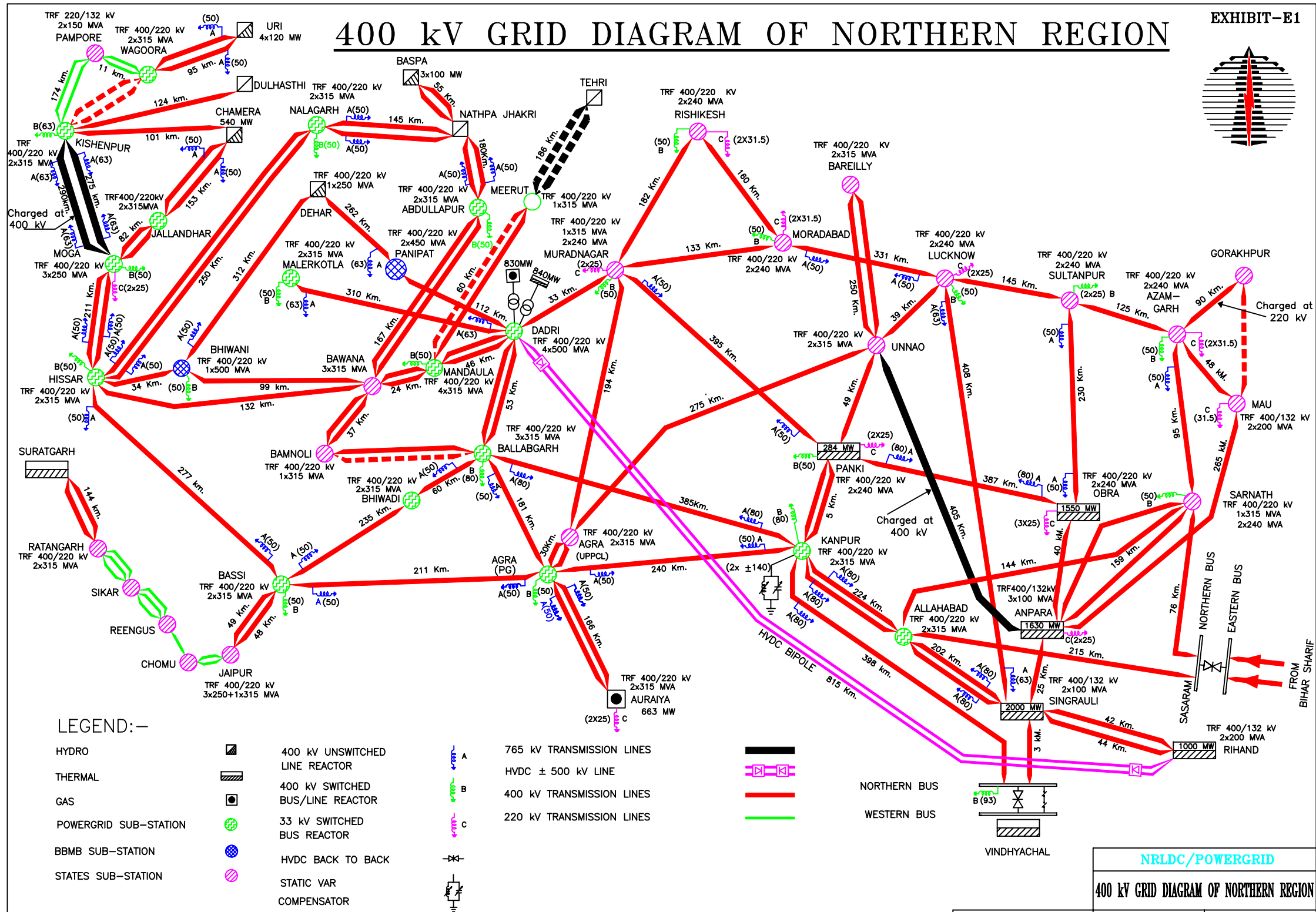
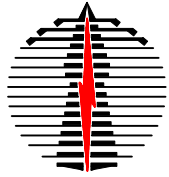
Levels recorded at Rihand reservoir during 2000-01,2001-02 and 2002-03



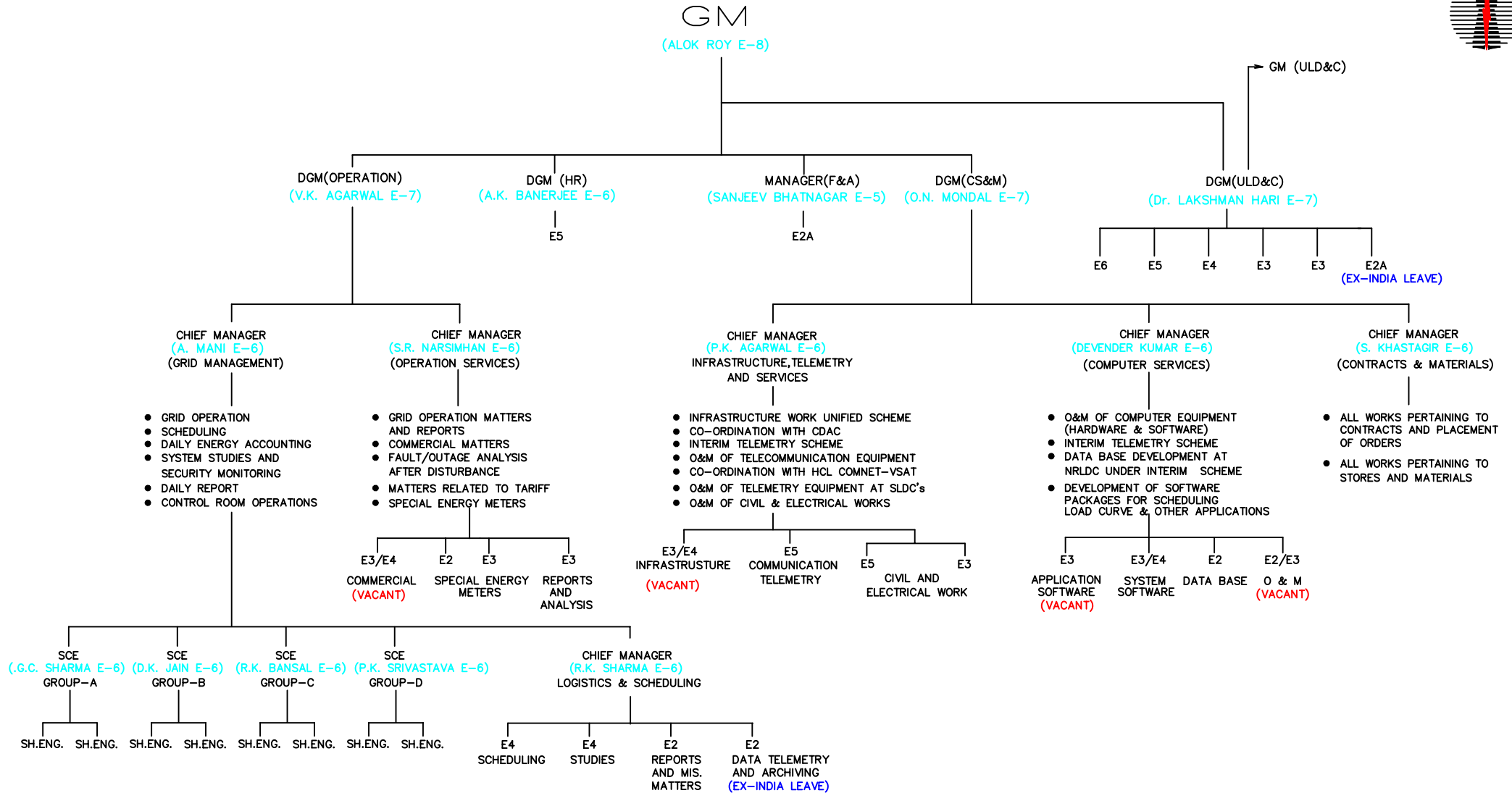
Levels recorded at Rana Pratap Sagar reservoir during 2000-01,2001-02 and 2002-03



400 kV GRID DIAGRAM OF NORTHERN REGION



ORGANISATION CHART OF NRLDC SHOWING FUNCTIONAL BREAK-UP AS ON 31st MARCH, 2003.



MINOR GRID INCIDENTS DURING APRIL 2002

S No.	DATE	TIME	INCIDENT
1	19.04.2002	12:48	An incident occurred in Punjab system, in which all the four running units at Bhatinda TPS and one running unit at Lehra Mohabat TPS tripped due to mal-operation of bus-differential protection at 220 kV Lehra Mohabat Sub-station. The generation loss was of the order of 600 MW. All the tripped units were brought back on bar by 17:30 hrs. of the same day.
2	23.04.2002	10:30	An incident occurred in Delhi system reportedly due to blasting of B-phase CT of 220 kV IP-Rajghat Ckt-II. This resulted in total loss of generation at IP (68 MW) and Rajghat (68 MW) and loss of power supply (400-500 MW) in Central parts of Delhi. The system was normalized by 11:00 hrs. And tripped units were brought back in service by 15:35 hrs.
3	26.04.2002	10:20	An incident occurred in UP system, in which all the running units at Anpara TPS (1300 MW) and three units at Obra TPS (350 MW) tripped. System frequency dropped from initial level of 50.34 Hz to 48.20 Hz. Further fall in system frequency was arrested by partial operation of under frequency relay installed at 48.20 Hz. However, frequency was brought back to normal level by increasing the generation at other thermal stations. Obra units were tripped due to fault in 220 kV bus and Anpara units (#4 & #5) were tripped due to failure of Cooling Water Pumps. The system was normalized by 19:00 hrs.

MINOR GRID INCIDENTS DURING MAY 2002

S No.	DATE	TIME	INCIDENT
1	06.05.2002	17:29	An incident occurred in Delhi system with the tripping of 220 kV Mandola-Patparganj D/C. All the running units at IP (97 MW) and Rajghat (122 MW) tripped because of evacuation problem. Load shedding had to resort mainly in eastern part of Delhi. All the tripped units were brought back in service by 19:40 hrs.
2	14.05.2002	11:15	An incident occurred in Harayana system; in which tripping of 400/220 kV, 500 MVA, ICT-II at Panipat resulted in tripping of ICT-I on overload. Cascade tripping occurred at Panipat 220 kV station and all the running units at Panipat (generation loss of 400 MW) also tripped. Above tripping resulted into total supply failure in Panipat, Dhulkote, Kurukshetra and Jagadhari area of Haryana. The system was normalized by 12:10 hrs.
3	18.05.2002	18:44	An incident occurred in Delhi system with the tripping of 220 kV Mandola-Patparganj D/C and IP-IPext. D/C. All the running units at IP (90 MW) and Rajghat (122 MW) tripped because of evacuation problem. Power supply was affected mainly in central & eastern part of Delhi. The system was normalized by 20:30 hrs.
4	23.05.2002	01:30	An incident occurred in UP system, in which all the running units at Anpara TPS (1600 MW) tripped. System frequency dropped from initial level of 49.80 Hz to 48.16 Hz. Further fall in system frequency was arrested by partial operation of df/dt relay and by under frequency relay installed at 48.20 Hz. However, frequency was brought back to normal level by carrying out load shedding. Anpara units were tripped due to auxiliary supply failure. The system was normalized by 13:00 hrs.

MINOR GRID INCIDENTS DURING JUNE 2002

S No.	DATE	TIME	INCIDENT
1	07.06.2002	17:03	An incident occurred in Delhi/HVPN/BBMB system; which caused load-shedding of around 800 MW in Delhi area .The incident initiated with fault at bus-section 2A of 220 kV Samaypur S/Stn. resulted in tripping of Ballabhgarh I & II, FGPP-II and Dadri ckt. at samaypur end. 220 kV Samaypur-Ballabhgarh ckt.-III tripped on overload. At Badarpur, all the running units and lines tripped reportedly due to heavy voltage jerk. The generation loss occurred at Badarpur (685 MW), IP (84 MW), Rajghat (96 MW) and Faridabad Th. (135 MW). The system was normalized by 1800 hrs. And most of the units were synchronized by 1900 hrs.
2	21.06.2002	10:08	An incident occurred in Delhi system; resulting in complete outage of BTPS (697 MW), IP (37 MW), GT (128 MW), Pragati (104 MW) & Rajghat (97 MW) and disruption in power supply to south and central Delhi area. The Delhi network was restored by 1100 hrs. And power supply normalized progressively with the synchronization of units at BTPS.
3	25.06.2002	21:15	At 400 kV Lucknow S/Stn, bus bar protection operated owing to problem in 'B' phase CT of Singrauli line. This resulted in tripping of all the circuits emanating from Lucknow S/Stn. However grid remained normal and all the tripped circuits were revived subsequently.

MINOR GRID INCIDENTS DURING JULY2002

S No.	DATE	TIME	INCIDENT
1	01.07.2002	11.03	All the running units viz. 1,3,5&6 at Panipat (T) tripped due to tripping of ICT at 400 kV BBMB SEWA PANIPAT S/S. Normalised by 1600 hrs.
2	06.07.2002	16.10	All the running units viz. 3,5&6 at Panipat (T) tripped due to system jerk. Normalised by 21.45 hrs.

MINOR GRID INCIDENTS DURING AUGUST 2002

S No.	DATE	TIME	INCIDENT
1	05.08.2002	23.28	At 23.28 hrs.,due to bus fault at Obra-A, all the running units viz . unit nos 3,4,6,7 & 100 MVA ICT-I&II at Obra-A and unit nos 12,13 & 240 MVA ICT-II at Obra-B tripped.The system was normalized by 00.57 hrs. of 06.08.2002.Most of the units were taken on bar by 04.25 hrs..
2	07.08.2002	16.48	An incident occurred in Delhi system; due to tripping of 220 kV BTPS-I.P.Extn.-II resulted in tripping all the running units at IP, Rajghat, IP GT and Pragati GT. Loss of generation of was around 430 MW. Delhi supply was made normal within 20 minutes and units were brought back on bar by 21.00 hrs.
3	13.08.2002	21:10	An incident occurred at Salal due to operation of LBB of unit-4 which resulted in tripping of Salal-Jammu-II, Salal-Kishanpur-III & IV and running units-IV & V after silt flushing operation at Salal.

MINOR GRID INCIDENTS DURING SEPTEMBER 2002

S No.	DATE	TIME	INCIDENT
1	10.09.2002	10.15 hrs	All the running units at Uri HEP tripped due to tripping of 220 kV Kishanpur-Pampore line-II on E/F.220kV Kishanpur-Pampore line-I was under planned shut down. Due to above tripping Valley got isolated and collapsed. Uri generation and valley power supply was normalized by 13.10 hrs.

MINOR GRID INCIDENTS DURING OCTOBER 2002

S No.	DATE	TIME	INCIDENT
			-----NIL-----

MINOR GRID INCIDENTS DURING NOVEMBER 2002

S No.	DATE	TIME	INCIDENT
1.	08.11.2002	13.01 hrs	220 kV Barnala-Malerkotla ckt tripped due to snapping of conductor .Simultaneously 220 kV Sunam-Mansa D/C tripped and due to the tripping of the above, the 220 kV Bhatinda-MKS-Moga ckt tripped on O/C which resulted in tripping of all the four running units at Bhatinda and two running units at Lehra Mohabat The units at Bhatinda and Lehra Mohabat were synchronized by 15.55 hrs.

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.

I. 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 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 subsystem from the rest of the grid. However part of the BBMB subsystem comprising Ballabgarh/Samaypur remained tied with U.P. subsystem and survived. Rest of the grid experienced high frequency and gas units at Dadri tripped.

- KV 400 kV Ratagarh-Suratgarh TPS ckt-II tripped on O/V protection, resulted in tripping 220 KV Ratangarh-Suratgarh D/C and 220 kV Ratangarh-Suratgarh TPS D/c on power swing. All the running units at Suratgarh tripped.

(iii) At 08.15 hrs.

- 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 synchronized by 12.35 hrs.

MINOR GRID INCIDENTS DURING JANUARY 2003

1. On 02.01.2003 at 03.45 hrs total supply at 400/220 kV failed due to operation of check zone relay. Both the ICTs and lines tripped. This resulted in loss of total generation around 600 MW at panipat (TH). Lines were normalised within one hour and all the generating units at Panipat (TH) were synchronised by 1130 hrs.

2. On 17.01.2003 at 05.29 hrs all the lines and running units at Panipat (TH) tripped due to bus fault on 220kV Panipat S/S. This resulted in loss of total generation around 650 MW at Panipat (TH). All the running units at Panipat (TH) were synchronised by 1200 hrs.

3. On 18.01.2003 at 02.26 hrs bus fault occurred on 220 side of Panipat S/S which resulted in tripping of all the 220 kV lines emanating from Panipat and generating units #1 and #6 at Panipat (TH). System was normalised by 04.30 hrs.

BRIEF DETAILS OF THE LOAD CRASH IN NORTHERN REGION DURING 18TH/19TH FEBRUARY 2003

There was an unprecedentedly high load crash of more than 10,000 MW in the Northern Grid in the night Of 18th/19th February 2003 due to wide spread rains and heavy storm in the region. The demand in the Grid was already running low for the last 1-2 days due to rains in some part of the region notably in Punjab, Haryana & Rajasthan. This resulted in closing down of some of the generating units to the tune of 2290 MW prior to the night of 18 th/19th Feb. 2003. In spite of closing down of the generating units in advance, high frequency and voltage continued through out the night. In order to control the frequency additional generating units to the tune of 5000 MW were closed. Backing down was also carried out on almost all of the generating units to the maximum extent possible level. The system size thus came down to about 7000 MW as contrasted to 17000-18000 MW on fair weather nights .Due to load crash and closing down of units, the loading on HV and EHV transmission circuits also kept on reducing and touching extremely low levels. This resulted in critically high voltages throughout the region and in spite of taking all the possible measures viz. switching-in of reactors and switching out of capacitors, opening of lightly loaded parallel transmission circuits, change in the transformers tap position etc., the voltages at super grid level continued to remain high. Consequently, a large number of 400 kV transmission circuits tripped on over voltage protection, thereby aggravating the system contingency. Due to tripping of large number of transmission lines, redundancy in most of the corridors had been severely reduced or lost and consistent efforts were put in by NRLDC to keep the whole system integrated. In view of the above during the night for a considerable period, the grid continued to remain in a critical stage and narrowly escaped from a major grid disturbance.

MINOR GRID INCIDENTS DURING MARCH 2003

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