GRID REPORT

July 2002

SYSTEM OPERATION REPORT OF NORTHERN REGION FOR THE MONTH OF JULY, 2002

SUMMARY REPORT:

Important events:

(a) Commissioning of new units /lines/transformers during the month.

Nil

(b) Major problems / constraints affecting grid operation including major grid disturbances.

The average system frequency during the month of July 2002 was 49.40 Hz and f frequency remained between 49.0 & 50.5 Hz for 70.42 % of the time. Although there was appreciable increase in the period when frequency remained in this normal band as prescribed by IEGC (Indian Electricity Grid Code), the large number of fluctuations from low to high & vice versa were a cause of concern. The implementation of free governor operation on all generating units in the region assumes importance.

Overall voltage profile in the grid during the month has been satisfactory on most of the 400 kV Buses. However on few occasions 400 kV bus voltage Dadri and adjoining sub-stations went below 360 kV due to excessive MVAR drawal by the constituents.

There was no major grid disturbance in the region during July 2002. The details of minor incidents are given in annexure.

(c) Important decisions taken during the month in various meeting / other forums.

NIL

II. CENTRAL GENERATING STATIONS SHARE vs DRAWAL OF ALL CONSTITUENTS DURING JULY 2002

(All figs. in MU)

Sl. No.	State/UT/ System	NTPC (Excl. BTPS, Tanda & FGPS) Entitlement	Actual	NHPC Entitlement	Actual	NPC (Excl. RAPS-A) Entitlement	Actual	BBMB Entitlement	Actual	TOTALS Entitlement	Actual
1	Chandigarh	45.92	41.51	12.70	12.7	2.94	1.17	55.38	55.49	116.94	110.86
2	Delhi	1018.96	1026.97	109.73	109.74	76.40	17.97	0.00	0.00	1205.09	1154.67
3	Haryana	459.22	478.76	140.31	140.31	40.99	121.22	392.57	393.76	1033.09	1134.05
4	H.P.	77.28	76.94	55.04	55.04	4.79	6.11	27.49	27.55	164.59	165.64
5	J & K	169.69	192.30	254.86	254.86	11.97	51.89	0.00	0.00	436.52	499.05
6	Punjab	533.35	537.68	213.59	213.58	46.42	16.91	559.97	561.62	1353.33	1329.79
7	Rajasthan	530.80	554.47	85.94	85.94	207.62	199.66	254.77	255.32	1079.13	1095.40
8	U.P.	1185.73	1128.90	134.48	134.49	47.29	22.22	0.00	0.00	1367.51	1285.61
9	Uttranchal	153.51	151.18	28.76	28.76	5.58	6.85	0.00	0.00	187.85	186.80
9	MP / N.F.F.	9.66	14.03	0.00	0.00	0.00	0.00	14.88	11.32	24.54	25.34
10	Bihar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	Trans. Losses	133.70	133.67	17.27	17.26	6.51	6.51	72.43	72.43	229.92	229.87
12	Others	54.54	35.96	0.00	0.00	0.00	0.00	0.00	0.00	54.54	35.96
	Total	**4372.38**	**4372.38**	**1052.68**	**1052.68**	**450.51**	**450.51**	**1377.49**	**1377.49**	**7253.05**	**7253.05**

III. INTER REGIONAL EXCHANGES IN *MU* AND PEAK *MW*

		Energy (MU)	Peak MW
a.	Import over HVDC Back to Back at Vindhyachal	1.55	200
b.	M.P. to Rajasthan(Ujjain - Kota)	0.00	0
c.	Eastern region to Northern region (Import)	101.01	270
d.	Export over HVDC Back to Back at Vindhyachal	18.23	500
e.	220 KV Auraiya -Malanpur	10.59	45
f.	Northern region to Bihar (Export)	0.00	0
g.	Tanakpur to Mahendranagar(NEPAL) (Export)	7.73	12

IV. FREQUENCY PROFILE

a. Maximum frequency	51.44	Hz	at	19.02	hours on	20.07.2002
Minimum frequency	48.2	Hz	at	12.17	hours on	08.07.2002
Average frequency	49.4	Hz				

b. Frequency distribution in %

Hz	< 48.5	<49.0	49.0-50.5	> 50.5
% of time	3.23	25.33	70.42	4.25

c. Frequency Variation Index

Monthly Average	6.72
Maximum	13.55
Minimum	2.06

V. POWER SUPPLY POSITION IN NORTHERN REGION

a. Average Energy/day (Net)

State / U.T.	Availability MU/Day	Requirement MU/Day	Shortage MU/Day	Shortage %
Chandigarh	3.72	3.72	0.00	0.00
Delhi	63.56	65.68	2.12	3.23
Haryana	62.31	65.36	3.05	4.67
H.P.	9.22	9.23	0.01	0.11
J & K	15.29	18.39	3.10	16.86
Punjab	104.42	113.70	9.28	8.16
Rajasthan	69.39	70.91	1.52	2.14
U.P.	103.95	131.75	27.80	21.10
Uttranchal	9.79	10.15	0.36	3.54
N.F.F./Rail	1.53	1.53	0.00	0.00
Total	**443.18**	**490.42**	**47.24**	**9.63**

b. Peak MW

State / U.T.	MAX. Availability MW	MAX. Requirement MW	Shortage MW		Shortage %	
			ARITH-METICAL	AT MAXM. REQT HR	ARITH-METICAL	AT MAXM. REQT HR
	A	B	C=B-A	D	(C/B)*100	(D/B)*100
Chandigarh	206	206	0	0	0.00	0.00
Delhi	3101	3347	246	254	7.35	7.59
Haryana	3325	3411	86	300	2.52	8.80
H.P. *	505	505	0	0	0.00	0.00
J & K *	938	1160	222	305	19.14	26.29
Punjab	5281	5691	410	410	7.20	7.20
Rajasthan	3610	3610	0	0	0.00	0.00
U.P.	5626	6685	1059	1224	15.84	18.31
Uttranchal	681	771	90	90	11.67	11.67
N.F.F./Rail	75	75	0	0	0.00	0.00
Region	**21767**	**24092**	**2325**	**2325**	**9.65**	**9.65**

Diversity Factor = **1.07**

* Approximate and Estimated

DETAILED REPORT

1. INSTALLED / EFFECTIVE CAPACITY AT THE END OF JULY 2002

STATION	INSTALLED CAPACITY (MW)		EFFECTIVE CAPACITY	
CENTRAL SECTOR				
NTPC				
Badarpur TPS	3x100+2x210	720.00	3x95+2x210	705.00
Singrauli STPS	5x200+2x500	2000.00	5x200+2x500	2000.00
Rihand STPS	2x500	1000.00	2x500	1000.00
Dadri NCTPS	4x210	840.00	4x210	840.00
Unchahar TPS	2x210 + 2x210	840.00	2x210 + 2x210	840.00
Tanda TPS	4x110	440.00	4x110	440.00

Anta GPS	3x88.71+1x153.20	419.33	3x88.71+1x153.20	419.33
Auraiya GPS	4x111.19+2x109.30	663.36	4x111.19+2x109.30	663.36
Dadri GPS	4x130.19+2x154.51	829.78	4x130.19+2x154.51	829.78
Faridabad GPS	2x137.75 +1x156.07	431.57	2x137.75 +1x156.07	431.57
Sub-Total		**8184.04**		**8169.04**
NHPC				
Bairasiul	3x60	180.00	3X60	180.00
Salal Stage - I	3x115	345.00	3x115	345.00
Salal Stage - II	3x115	345.00	3x115	345.00
Tanakpur HPS	3x40	120.00	3x31.4	94.20
Chamera HPS	3x180	540.00	3x180	540.00
URI	4x120	480.00	4x120	480.00
Sub-Total		**2010.00**		**1984.20**
NPC				
RAPS -A	2x220	440.00	1x100+1x200	300.00
RAPS -B	2x220	440.00	2x220	440.00
NAPS	2x235	470.00	2x220	440.00
Sub-Total		**1350.00**		**1180.00**
Total Central Sector (A + B + C)		**11544.04**		**11333.24**
BBMB				
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**
Dehar	6x165	990.00	6x165	990.00
Pong	2x60 + 4x66	384.00	2x60 + 4x66	384.00
Total BBMB		**2864.15**		**2864.15**
CHANDIGARH				
Diesel Gen Sets		**2.00**		**1.40**
DELHI				
THERMAL				
Indra Prastha	3x62.5+1x60	247.50	3x62.5+1x60	247.50
Rajghat	1x15+2x67.5	150.00	1x14+2x67.5	149.00
Gas Turbines	6x30+3x34	282.00	6x30+3x34	282.00
Pragati Gas Turbines	1x108	108.00	1x108	108.00
Total DELHI		**787.50**		**786.50**
HARYANA				
HYDRO				
Western Yamuna Canal (WYC)	6x8	48.00	6x8	48.00
Total Hydro		**48.00**		**48.00**
THERMAL				
Faridabad (New)	3x60	180.00	3x55	165.00
Panipat	4x110+2x210	860.00	4x110+2x210	860.00
Total Thermal		**1040.00**		**1025.00**
Magnum Diesel (IPP)	4x6.3	25.20	4x6.3	25.20
Total Haryana		**1113.20**		**1098.20**
HIMACHAL PRADESH				
HYDRO				

Giri	2x30.00	60.00	2x30.00	60.00
Bassi	4x15.00	60.00	4x15.00	60.00
Binwa	2x 3.00	6.00	2x 3.00	6.00
Rongtong	4x 0.50	2.00	4x 0.50	2.00
Andhra	3x 5.65	16.95	3x 5.65	16.95
Micro Hydel+Killar+Thirot		8.75		8.75
Nogli	2x 0.25+4x0.50	2.50	2x 0.25+4x0.50	2.50
Bhabha (H)	3x40.00	120.00	3x40.00	120.00
Baner (H)	3x 4.00	12.00	3x 4.00	12.00
Gaj (H)	3x 3.50	10.50	3x 3.50	10.50
Sal -2	1x 2	2.00	1x 2	2.00
Gumma	.	3.00	3	3.00
Ghanvi	2x11.25	22.50	2x11.25	22.50
Diesel Gen. Sets		0.00		0.00
Malana(IPP)	2x43	86.00	2x43	86.00
Total HP		**412.20**		**412.20**
J & K				
HYDRO				
Lower Jhelum	3x35.0	105.00	3x35.0	105.00
Upper Sindh	2x11.30+3x35.0	127.60	2x11.30+3x35.0	127.60
Ganderbal	2x3+2x4.5	15.00	2x3+2x4.5	15.00
Mohra	2x4.5	9.00	2x4.5	9.00
Chenani	5x4.66 +2X1.0 +3x2.5	32.80	5x4.66 +2X1.0+3x2.5	32.80
Stakna	2x2.0 +3x1.25 +2.0	9.75	2x2.0 +3x1.25 +2.0	9.75
Small Hydel		3.54		3.54
Sewa	3x3.0	9.00	3x3.0	9.00
Total Hydro		**311.69**		**311.69**
J & K (Contd.)				
GAS TURBINES				
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		**175.00**		**175.00**
Diesel Gen. Sets		8.94		7.18
Total J & K		**495.63**		**493.87**
PUNJAB				
HYDRO				
Jogindernagar/ Shanan	4x15+1x50	110.00	4x15+1x50	110.00
Upper Behari Doab Canal (UBDC)	3x15+3x15	90.00	3x15+3x15	90.00
Mukerian	6x15+6x19.5	207.00	6x15+6x19.5	207.00
Anandpur Sahib (APS)	4x33.5	134.00	4x33.5	134.00
Ranjit Sagar HPS	4x150	600.00	4x150	600.00
Small Hydel		4.10		4.10
Total Hydro		**1145.10**		**1145.10**
THERMAL				
Guru Nanak Dev TPS (Bhatinda)	4x110	440.00	4x110	440.00
Guru Gobind Singh TPS (Ropar)	6x210	1260.00	6x210	1260.00
Lehra Mohabbat TPS	2x210	420.00	2x210	420.00
Jhalkeri Rice Straw Fired	1x10	10.00	1x10	10.00
Total Thermal		**2130.00**		**2130.00**
Total Punjab		**3275.10**		**3275.10**
RAJASTHAN				
HYDRO				
Mahi Bajaj Sagar	2x25+2x45	140.00	2x25+2x45	140.00
Rana Pratap Sagar (RPS)	4x43	172.00	4x43	172.00
Jawahar Sagar (JS)	3x33	99.00	3x33	99.00

Anoopgarh	6x1.5	9.00	6x1.5	9.00
Small Hydro		14.85		14.85
Total Hydro		**434.85**		**434.85**
THERMAL				
Kota TPS	2x110+3x210	850.00	2x110+3x210	850.00
Suratgarh TPS	4x250	1000.00	4x250	1000.00
Ramgarh GT	1x3	3.00	1x3	3.00
Ramgarh GT EXT.	1x35.5	35.50	1x35.5	35.50
Total Thermal		**1888.50**		**1888.50**
Wind farm		14.01		14.01
Total Rajasthan		**2337.36**		**2337.36**
UP				
HYDRO				
Rihand	6x50.0	300.00	6x50.0	300.00
Obra	3x33.0	99.00	3x33.0	99.00
Matatilla	3x10.0	30.00	3x10.0	30.00
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
Khara	3x24.0	72.00	3x24.0	72.00
Sobla & small hydro	6 +12.2	18.20	6 +12.2	18.20
Total Hydro		**529.90**		**529.90**
THERMAL				
Obra	5x50	250.00	4x40	160.00
Obra Extn. - I	3x100	300.00	3x94	282.00
Obra Extn. - II	5x200	1000.00	5x200	1000.00

Panki	1x32	32.00	1x32	32.00
Panki Extn.	2x110	220.00	2x105	210.00
Harduaganj - A	3x30	90.00	0	0.00
Harduaganj - B	2x50+2x60	220.00	1x40+2x55	150.00
Harduaganj - C	2x60+1x110	230.00	2x60+1x105	225.00
Paricha	2x110	220.00	2x110	220.00
Anpara - A	3x210	630.00	3x210	630.00
Anpara - B	2x500	1000.00	2x500	1000.00
Total Thermal		**4192.00**		**3909.00**
Total UP		**4721.90**		**4438.90**
UTTRANCHAL				
HYDRO				
Khatima	3x13.8	41.40	3x13.8	41.40
Ramganga	3x66.0	198.00	3x66.0	198.00
Ganga Canal				
Chitwa	2x1.5+		2x1.5+	
Mohamedpur	3x3.1+		3x3.1+	
Pathri	3x6.8	32.70	3x6.8	32.70
Yamuna (I & IV)				
- Dhalipur	3x17.00+		3x17.00+	
- Dhakrani	3x11.25+		3x11.25+	
- Kulhal	3x10.00	114.75	3x10.00	114.75
Chibro	4x60.0	240.00	4x60.0	240.00
Khodri	4x30.0	120.00	4x30.0	120.00
Chilla	4x36.0	144.00	4x36.0	144.00
Maneri Bhali	3x30.0	90.00	3x30.0	90.00
Total Hydro		**980.85**		**980.85**
Total Region (1 to 11)		**28533.93**		**28021.77**

2. SUMMARY OF THE EFFECTIVE GENERATING CAPACITY(MW) IN THE NORTHERN REGION AT THE END OF JULY 2002

Agency / Source	Hydro	Thermal	Gas/Diesel/Wind	Nuclear	Total	% of Total
NTPC	---	5825.00	2344.04	---	8169.04	29.15%
NHPC	1984.20	---	---	---	1984.20	7.08%
NPC	---	---	---	1180.00	1180.00	4.21%
BBMB	2864.15	---	---	---	2864.15	10.22%
CHANDIGARH	---	---	1.40	---	1.40	0.00%
DELHI	---	396.50	390.00	---	786.50	2.81%
HARYANA	48.00	1025.00	25.20	---	1098.20	3.92%
HIMACHAL	412.20	---	0.00	---	412.20	1.47%
J&K	311.69	---	182.18	---	493.87	1.76%
PUNJAB	1145.10	2130.00	---	---	3275.10	11.69%
RAJASTHAN	434.85	1850.00	52.51	---	2337.36	8.34%
UP	529.90	3909.00	---	---	4438.90	15.84%
UTTRANCHAL	980.85	---	---	---	980.85	3.50%
Total	8710.94	15135.50	2995.33	1180.00	28021.77	100.00%
% of TOTAL	31.09%	54.01%	10.69%	4.21%	100.00%	

Notes The above table doesn't take into account the shares of a state in power stations located in the neighbouring state. Details of this is as under :

(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 UPSEB viz. 111.20 MW. It also has a 20 % share in the Kulhal and Khara 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.

(iv) HP has 4.6 % share in Ranjit Sagar Dam project of PSEB viz.27.60 MW.

(iv) The shares of Rajasthan in Chambal and Satpura projects are as under :

CHAMBAL

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 viz. 125 MW in the first five units of Satpura TPS.

If the above shares of Rajasthan are included, the regional effective generating capacity would be 28068.77 MW.

3. BREAKUP OF EFFECTIVE HYDRO CAPACITY (MW) IN NORTHERN REGION AS ON 31.07.2002

Agency / Source	Run-of -the -river	Reservoir	Total
NHPC	1444.20	540.00	1984.20
BBMB	1155.15	1709.00	2864.15
DELHI	0.00	0.00	0.00
HARYANA	48.00	0.00	48.00

HP	412.20	0.00	412.20
J&K	311.69	0.00	311.69
PUNJAB	545.10	600.00	1145.10
RAJASTHAN	262.85	172.00	434.85
UP	229.90	300.00	529.90
UTTRANCHAL	782.85	198.00	980.85
Total	5191.94	3519.00	8710.94

4. Generation Addition/ Deletion During The Month

NIL

II. SALIENT FEATURES OF SYSTEM CONDITIONS

1. Effective Generation Capacity at the end of month

Constituent	Effective Capacity		Increase	
	July 2002	**July 2001**	MW	%
Chandigarh	1.40	1.40	0.00	0.00
Delhi	786.50	678.50	108.00	15.92
Haryana	1098.20	888.20	210.00	23.64
H.P.	412.20	303.60	108.60	35.77
J & K	493.87	407.37	86.50	21.23
Punjab	3275.10	2975.10	300.00	10.08
Rajasthan	2337.36	1826.82	510.54	27.95
U.P.	4438.90	5419.75	-980.85	-18.10
Uttranchal	980.85	0.00	980.85	----
NTPC	8169.04	8169.04	0.00	0.00
NHPC	1984.20	1984.20	0.00	0.00
NPC	1180.00	960.00	220.00	22.92
BBMB	2864.15	2821.15	43.00	1.52
Total	28021.77	26435.13	1586.64	6.00

2. Power Supply Position

State/UT	July 2002			July 2001			Percentage increase over 2001	
	Energy(MU/day)			Energy(MU/day)				
	Demand met	Reqt.	%Shortage	Demand met	Reqt.	%Shortage	Demand met	Reqt.
Chandigarh	3.72	3.72	0.00	3.48	3.48	0.00	6.90	6.90
Delhi	63.56	65.68	3.23	58.53	60.07	2.56	8.59	9.34
Haryana	62.31	65.36	4.67	53.43	54.26	1.53	16.62	20.46
HP	9.22	9.23	0.11	8.76	8.77	0.11	5.25	5.25
J&K	15.29	18.39	16.86	13.94	15.28	8.77	9.68	20.35
Punjab	104.42	113.70	8.16	93.29	98.89	5.66	11.93	14.98
Rajasthan	69.39	70.91	2.14	53.68	53.73	0.09	29.27	31.97
UP	103.95	131.75	21.10	115.33	131.87	12.54	-9.87	-0.09
Uttranchal	9.79	10.15	3.54	-----	-----	-----	-----	-----
NFF/Rail	1.53	1.53	0.00	1.02	1.02	0.00	50.00	50.00
REGION	443.18	490.42	9.63	401.46	427.37	6.06	10.39	14.75

Frequency Regime	July 2002	July 2001
Average (Hz)	49.40	49.77
Above 50.5 Hz (%)	4.25	9.25
Above 50.2 Hz (%)	9.77	22.84
Below 49.5 Hz (%)	64.15	32.67
Below 49.0 Hz (%)	25.33	7.65
Below 48.5 Hz (%)	3.23	0.48

3. Peak Power Supply Position

State/UT	July 2002			July 2001			Percentage increase over 2001	
	Peak (MW)			Peak (MW)				
	Demand met	Reqt.	%Shortage	Demand met	Reqt.	%Shortage	Demand met	Reqt.
Chandigarh	206	206	0.00	176	176	0.00	17.05	17.05
Delhi	3101	3347	7.35	2829	3011	6.04	9.61	11.16
Haryana	3325	3411	2.52	2773	2798	0.89	19.91	21.91
HP	505	505	0.00	500	500	0.00	1.00	1.00
J&K	938	1160	19.14	991	1071	7.47	-5.35	8.31
Punjab	5281	5691	7.20	4665	5167	9.72	13.20	10.14

Rajasthan	3610	3610	0.00	2959	2959	0.00	22.00	22.00
UP	5626	6685	15.84	6046	6983	13.42	-6.95	-4.27
Uttranchal	681	771	11.67	-----	-----	------	------	------
NFF/Rail	75	75	0.00	54	54	0.00	38.89	38.89
REGION	21767	24092	9.65	20216	21559	6.23	7.67	11.75

III. FREQUENCY PROFILE DURING JULY 2002

DATE	Average	MAX.		MIN.		Std dev	Frequency
	Hz	Hz	Time	Hz	Time	Hz	Var. Index(FVI)
1	49.85	51.24	18.25	48.40	2.09	0.69	4.94
2	49.62	51.04	7.05	48.32	14.06	0.55	4.52
3	49.92	51.08	18.06	48.68	20.48	0.46	2.18
4	49.64	51.00	18.07	48.32	12.43	0.53	4.14
5	50.01	51.04	4.15	48.72	12.38	0.58	3.42
6	49.47	50.64	18.33	48.60	21.21	0.49	5.20
7	49.35	51.20	18.03	48.24	0.28	0.58	7.56
8	49.58	50.96	18.04	48.20	12.17	0.46	3.89
9	49.44	51.08	19.06	48.20	12.15	0.51	5.68
10	49.49	51.16	19.12	48.24	21.06	0.44	4.60
11	49.32	50.76	6.13	48.24	23.08	0.43	6.54
12	49.43	51.00	20.02	48.20	23.04	0.52	6.00
13	49.23	51.12	20.02	48.24	11.02	0.43	7.74
14	49.48	51.16	19.58	48.20	0.04	0.52	5.39
15	49.14	50.84	8.07	48.20	23.27	0.45	9.43
16	49.01	50.36	16.08	48.20	0.06	0.41	11.43
17	49.07	50.80	18.03	48.20	0.11	0.45	10.59
18	49.20	50.44	20.02	48.32	0.12	0.42	8.24
19	49.24	50.76	18.03	48.20	0.55	0.55	8.74

20	49.60	51.44	19.02	48.20	0.22	0.65	5.81
21	49.66	50.36	3.10	49.16	0.40	0.30	2.06
22	49.59	51.04	12.07	48.52	17.36	0.53	4.42
23	49.55	51.20	0.18	48.20	13.51	0.68	6.61
24	48.90	50.48	20.05	48.20	4.16	0.39	13.55
25	49.19	50.88	16.09	48.20	0.01	0.45	8.58
26	49.11	50.24	16.09	48.36	15.54	0.31	8.86
27	49.19	50.68	18.10	48.28	14.32	0.44	8.57
28	49.35	51.08	19.01	48.24	0.07	0.54	7.17
29	49.17	50.44	6.03	48.20	16.27	0.45	8.92
30	49.28	50.76	6.04	48.24	15.34	0.50	7.76
31	49.36	50.96	8.06	48.28	4.41	0.40	5.68
Monthly	**49.40**	**51.44**		**48.20**		**0.50**	**6.72**

Note : $$\mathrm{FVI} = \frac{10\sum (F-50)^2}{24 \times 60 \times 6}$$

where F = frequency measured at 10 second interval

IV. VOLTAGE PROFILE DURING JULY 2002

Date	Kanpur (400 KV)		Dadri (400 KV)		Jaipur (400 KV)		Moga (400 KV)		B.T.P.S.(220 KV)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	411	380	412	344	414	374	396	369	203	174
2	411	393	396	354	416	378	398	364	202	174
3	411	386	394	342	414	365	394	358	203	177
4	408	386	388	350	409	370	394	362	197	174
5	417	395	404	364	407	387	404	371	202	177
6	413	382	394	362	416	385	404	381	204	180
7	410	384	402	366	420	383	407	382	206	186
8	406	375	396	348	411	370	399	370	200	173
9	402	369	386	340	409	365	401	368	195	170
10	404	375	394	350	414	374	410	377	197	176
11	402	377	388	352	405	374	395	379	196	174
12	399	371	386	344	400	370	400	375	197	174
13	402	384	388	362	403	381	405	380	198	183
14	406	386	396	362	414	383	412	375	204	186
15	406	373	392	348	407	374	406	382	204	178
16	399	380	380	356	403	381	403	377	196	180
17	402	382	386	352	409	374	403	381	200	177
18	400	384	388	358	407	381	401	380	201	184
19	400	375	388	352	407	374	403	381	200	182
20	408	379	404	360	420	378	411	382	208	184
21	402	393	390	370	411	387	397	385	202	192
22	404	382	394	366	407	385	407	386	207	186
23	408	395	402	366	414	383	406	387	207	182
24	404	391	396	368	411	383	411	383	203	185
25	404	386	400	364	411	381	407	384	207	184
26	402	391	392	370	409	385	402	386	203	188
27	402	382	396	362	411	383	408	379	204	188
28	404	384	398	366	411	383	407	382	206	192
29	400	386	394	364	409	376	402	380	204	184
30	402	380	396	360	411	374	408	382	204	184
31	404	391	400	370	414	387	409	385	204	189
Month	**417**	**369**	**412**	**340**	**420**	**365**	**412**	**358**	**208**	**170**

V. PERFORMANCE OF GENERATING STATIONS DURING JULY 2002

S.No.	Power Station	Effective Capacity MW	Energy Generated		Cumulative from 01.04.2002	
			Gross MU	Ex Bus MU	Gross MU	Ex-bus MU
1	**CENTRAL SECTOR**					
A	**NTPC (Thermal)**					
(a)	Badarpur TPS	705.00	488.41	455.14	1830.31	1677.13
(b)	Singrauli STPS	2000.00	1442.43	1341.79	5074.56	4708.86
(c)	Rihand STPS	1000.00	746.73	688.05	2695.61	2483.75
(d)	Dadri NCTPS	840.00	620.11	572.52	2042.02	1876.54
(e)	Unchahar-I TPS	420.00	294.70	270.09	1044.12	954.11
(f)	Unchahar-II TPS	420.00	304.64	273.34	1026.05	931.76
(g)	Tanda TPS	440.00	197.31	172.65	757.39	662.64
(h)	Anta GPS	419.33	262.77	256.94	853.37	829.95
(i)	Auraiya GPS	663.36	432.32	425.60	1358.91	1333.51
(j)	Dadri GPS	829.78	460.13	448.11	1543.76	1497.97
(k)	Faridabad GPS	431.57	266.43	260.78	874.21	850.80
	Total NTPC	**8169.04**	**5515.97**	**5165.01**	**19100.31**	**17807.02**
B	**NHPC**					
(a)	Bairasiul	180.00	53.89	53.89	300.63	297.64
(b)	Salal	690.00	487.09	486.79	1616.20	1612.88
(c)	Tanakpur HPS	94.20	46.83	46.55	162.07	161.12
(d)	Chamera HPS	540.00	248.46	248.06	1083.47	1083.50
(e)	Uri HPS	480.00	227.22	225.08	1271.68	1260.38
	Total NHPC	**1984.20**	**1063.49**	**1060.37**	**4434.04**	**4415.52**
C	**NPC**					
(a)	RAPS -A	300.00	142.07	119.29	612.70	544.74
(b)	RAPS -B	440.00	324.55	292.76	977.02	878.39
(c)	NAPS	440.00	178.55	157.73	1030.12	922.65
	Total NPC	**1180.00**	**645.17**	**569.78**	**2619.85**	**2345.78**

2	**JOINTLY OWNED (BBMB)**					
(a)	Bhakra Complex	1465.15	838.18	835.35	2391.97	2379.80
(b)	Dehar	990.00	465.83	465.83	1647.36	1647.36
(c)	Pong	366.00	76.31	76.31	253.15	253.15
	Total BBMB	**2821.15**	**1380.32**	**1377.49**	**4292.48**	**4280.31**
3	**DELHI**					
(a)	Indra Prastha	247.50	43.01	37.85	205.19	180.57
(b)	Rajghat	149.00	72.51	64.53	294.86	262.43
(c)	Gas Turbines	282.00	106.59	103.39	407.61	395.38
(d)	Pragati Gas Turbines	108.00	62.76	62.13	107.84	106.76
	Total DELHI	**786.50**	**284.87**	**267.90**	**1015.50**	**945.13**
4	**HARYANA**					
(a)	WYC	48.00	26.19	25.93	99.15	98.16
(b)	Faridabad (New)	165.00	84.36	72.97	302.00	261.23
(c)	Panipat	860.00	427.04	375.80	1497.11	1317.45
(d)	Magnum Diesel(IPP)	25.20	7.45	7.37	29.80	29.50
	Total Haryana	**1098.20**	**545.04**	**482.07**	**1928.05**	**1706.33**
5	**HP**					
(a)	Giri	60.00	8.39	7.76	35.70	34.87
(b)	Bassi	60.00	29.06	29.02	140.84	140.69
(c)	Binwa	6.00	1.81	1.80	8.83	8.80
(d)	Rongtong	15.02	1.87	1.85	7.05	6.96
	(+Nogli+Micro+Thirot+Sal-2)		0.00	0.00		
(e)	Andhra	16.95	5.30	5.29	34.02	33.95
(f)	Bhabha (H)	120.00	83.29	82.95	242.49	241.88
(g)	Baner (H)	12.00	2.85	2.85	11.56	11.14
(h)	Gaj (H)	10.50	4.38	4.36	12.89	12.84
(i)	Gumma	3.00	0.38	0.37	5.69	5.65
(j)	Ghanvi	22.50	11.11	11.09	37.15	36.72
(k)	Malana (IPP)	86.00	64.11	64.11	183.39	183.39
	Total HP	**411.97**	**212.55**	**211.45**	**719.60**	**716.89**
6	**J & K**					

(a)	Lower Jhelum	105.00	0.00	0.00	3.36	3.33
(b)	Upper Sindh	127.60	45.53	45.08	126.91	125.64
(c)	Ganderbal	15.00	2.36	2.34	9.24	9.15
(d)	Mohra	9.00	0.00	0.00	0.00	0.00
(e)	Chenani	25.30	5.39	5.34	30.82	30.51
(f)	Stakna	9.75	0.00	0.00	0.00	0.00
(g)	Small Hydel	3.54	0.00	0.00	0.00	0.00
(h)	Pampore GT St - I	75.00	0.00	0.00	0.00	0.00
	Pampore GT St - II	100.00				
	Total J & K	**470.19**	**53.28**	**52.75**	**170.33**	**168.63**
7	**PUNJAB**					
(a)	Jogindernagar/ Shanan	110.00	50.62	50.60	238.30	241.19
(b)	UBDC	90.00	45.24	45.11	177.85	177.36
(c)	Mukerian	207.00	94.50	93.89	294.62	292.83
(d)	Anandpur Sahib (APS)	134.00	94.61	94.51	307.00	306.65
(e)	Ranjit Sagar HPS	600.00	124.26	123.98	542.05	540.96
(f)	Small Hydel	4.10	0.93	0.92	3.25	3.21
(g)	GNDTPS (Bhatinda)	440.00	257.17	234.21	897.51	815.93
(h)	GGSTPS (Ropar)	1260.00	879.35	809.55	2912.01	2670.42
(i)	Jhalkeri Rice Straw Fired	10.00	0.00	0.00	0.00	0.00
(j)	Lehra Mohabbat TPS	420.00	310.16	283.46	985.84	897.67
	Total Punjab	**3275.10**	**1856.83**	**1736.21**	**6358.41**	**5946.22**
8	**RAJASTHAN**					
(a)	Mahi Bajaj Sagar	140.00	0.02	0.02	1.84	1.84
(b)	Rana Pratap Sagar (RPS)	172.00	0.79	0.74	4.57	4.41
(c)	Jawahar Sagar (JS)	99.00	0.83	0.83	5.53	5.52
(d)	Anoopgarh	9.00	0.39	0.38	2.00	1.99
(e)	Small Hydro	14.32	0.35	0.34	1.10	1.10
(f)	Kota TPS	850.00	482.37	434.54	2127.22	1914.75
(g)	RAMGARH GT	3.00	0.00	0.00		
(h)	RAMGARH GT EXT	35.50	21.32	21.32	47.62	47.62

(l)	Suratgarh TPS	750.00	523.08	472.57	1943.05	1758.71
(j)	Wind Farm	4.00	8.19	8.19	22.44	22.44
	Total Rajasthan	**2076.82**	**1037.32**	**938.93**	**4155.37**	**3758.39**
9	**U.P.**					
	HYDRO					
(a)	Rihand	300.00	39.98	39.58	269.07	266.37
(b)	Obra	99.00	17.73	17.55	112.42	111.30
(c)	Matatilla	30.00	1.54	1.53	20.75	20.54
(d)	Khara	72.00	44.80	44.35	172.83	171.10
	Total U.P. (Hydro)	**501.00**	**104.05**	**103.01**	**575.07**	**569.32**
	THERMAL					
(e)	Obra	1442.00	602.63	527.30	2406.68	2105.84
(f)	Panki	242.00	56.42	49.37	192.19	168.16
(g)	Harduaganj	375.00	69.83	61.10	273.25	239.09
(h)	Paricha	220.00	90.72	79.38	303.80	265.82
(i)	Anpara	1630.00	1081.42	946.25	3915.58	3426.13
	Total U.P. (Thermal)	**3909.00**	**1901.02**	**1663.40**	**7091.49**	**6205.06**
	Total U.P.	**4410.00**	**2005.08**	**1766.41**	**7666.56**	**6774.37**
10	**UTTRANCHAL**					
(a)	Khatima	41.40	14.57	14.43	53.04	52.51
(b)	Ramganga	198.00	0.00	0.00	81.41	80.60
(c)	Ganga Canal	32.70	13.13	12.99	46.66	46.19
(d)	Yamuna (I & IV)	114.75	68.54	67.85	252.53	250.00
(e)	Chibro	240.00	95.63	94.67	382.10	378.28
(f)	Khodri	120.00	45.82	45.36	179.82	178.02
(g)	Chilla	144.00	77.88	77.10	235.55	233.19
(h)	Maneri Bhali	90.00	6.08	6.02	192.61	190.69
	Total Uttranchal	**980.85**	**321.64**	**318.42**	**1423.72**	**1409.48**

Total Region	**27664.02**	**14921.55**	**13946.79**	**53884.21**	**50274.09**

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

-----Hydro and diesel/gas power stations in open cycle------1.0% 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% Tanda----12.5%

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

2. The generation on small hydro& Sobla in U.P. and on small diesel gen. Sets in UT Chandigarh, H.P.and J&K has been neglected.

VI. CENTRAL GENERATING STATIONS SHARE vs DRAWAL OF ALL CONSTITUENTS DURING JULY 2002

(All figs. in MU

Sl. No.	State/UT/ System	Singrauli STPS		Rihand STPS		BTPS	W. Grid	VSTPS (WR)
		Entitlement	Actual	Entitlement	Actual	Actual	Actual	Actual
1	Chandigarh	10.29	10.29	11.28	10.55	0.00	0.04	0.00
2	Delhi	155.43	155.43	97.45	97.53	455.14	0.55	0.00
3	Haryana	173.80	173.80	68.00	68.08	0.00	0.50	0.00
4	H.P.	0.00	0.00	23.23	23.26	0.00	0.21	0.00
5	J & K	5.62	5.62	49.35	49.45	0.00	0.70	0.00
6	Punjab	148.07	148.07	87.08	87.19	0.00	0.77	0.00
7	Rajasthan	235.95	235.95	86.66	86.75	0.00	0.61	0.00
8	U.P.	477.23	477.23	210.50	210.72	0.00	1.49	0.00
9	MP	0.00	0.00	0.00	0.00	0.00	9.66	0.00
10	Uttranchal	60.88	60.88	26.13	26.15	0.00	0.18	0.00
11	Bihar	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Trans. Losses	54.56	54.56	28.37	28.37	0.00	0.21	0.00

	TOTAL	**1321.83**	**1321.83**	**688.05**	**688.05**	**455.14**	**14.92**	**0.00**

Note :- Singrauli sentout excludes 19.966 MU supplied to Western Grid

Sl. No.	**State/UT/ System**	**Dadri NCTPS**		**Unchahar-I TPS**		**Unchahar-II TPS**	
		Entitlement	**Actual**	**Entitlement**	**Actual**	**Entitlement**	**Actual**
1	Chandigarh	0.00	0.01	1.97	1.63	3.49	1.87
2	Delhi	521.15	528.48	18.35	22.45	43.11	36.70
3	Haryana	11.42	11.65	27.72	31.50	48.35	61.12
4	H.P.	0.00	0.12	3.92	4.20	7.86	7.66
5	J & K	0.00	0.41	9.11	13.89	20.83	34.64
6	Punjab	3.53	3.96	40.18	42.46	47.37	47.22
7	Rajasthan	0.00	0.36	14.29	18.84	33.22	48.65
8	U.P.	36.42	19.88	124.90	107.68	50.64	19.35
9	MP	0.00	3.67	0.00	0.00	0.00	0.00
10	Uttranchal	0.00	3.97	18.50	16.27	7.20	4.86
11	Bihar	0.00	0.00	0.00	0.00	0.00	0.00
12	Trans. Losses	0.00	0.00	11.16	11.16	11.27	11.27
	Total	**572.52**	**572.52**	**270.10**	**270.10**	**273.34**	**273.34**

Sl. No.	**State/UT/ System**	**Anta GPS**		**Auraiya GPS**		**Uri HPS**	
		Entitlement	**Actual**	**Entitlement**	**Actual**	**Entitlement**	**Actual**
1	Chandigarh	4.62	4.62	5.34	4.29	1.33	1.33
2	Delhi	37.63	37.62	62.44	62.50	24.53	24.53
3	Haryana	24.60	24.60	44.33	44.40	12.12	12.12
4	H.P.	9.06	9.06	13.63	13.47	6.07	6.07
5	J & K	18.33	18.33	29.10	29.26	75.67	75.67
6	Punjab	34.10	34.10	76.88	76.97	30.61	30.61
7	Rajasthan	57.42	57.42	51.65	51.75	20.02	20.02
8	U.P.	51.51	51.51	108.61	108.89	44.60	44.60
9	MP	0.00	0.00	0.00	0.70	0.00	0.00
10	Uttranchal	9.38	9.38	15.73	15.51	7.88	7.88

11	Bihar	0.00	0.00	0.00	0.00	0.00	0.00
12	Trans. Losses	10.28	10.28	17.85	17.83	2.25	2.25
	TOTAL	**256.93**	**256.93**	**425.56**	**425.56**	**225.08**	**225.08**
Sl. No.	**State/UT/**	**Dadri GPS**		**Bairasiul HPS**		**Salal HPS**	
	System	**Entitlement**	**Actual**	**Entitlement**	**Actual**	**Entitlement**	**Actual**
1	Chandigarh	3.20	2.52	0.00	0.00	1.30	1.30
2	Delhi	53.57	56.41	5.69	5.69	55.79	55.79
3	Haryana	35.54	38.15	15.78	15.78	72.11	72.11
4	H.P.	13.68	13.28	6.21	6.21	4.75	4.75
5	J & K	30.96	34.30	0.00	0.00	166.96	166.96
6	Punjab	95.37	96.92	24.06	24.06	127.70	127.70
7	Rajasthan	45.30	48.45	0.00	0.00	14.16	14.16
8	U.P.	100.44	108.16	0.00	0.00	33.36	33.36
9	Uttranchal	15.51	13.96	0.00	0.00	5.81	5.81
10	Railways	54.54	35.96	0.00	0.00	0.00	0.00
11	Bihar	0.00	0.00	0.00	0.00	0.00	0.00
12	Trans. Losses	0.00	0.00	2.16	2.16	4.87	4.87
	Total	**448.11**	**448.11**	**53.90**	**53.90**	**486.81**	**486.81**

Sl. No.	**State/UT/ System**	**Tanakpur HPS**		**Chamera HPS**		**RAPS -A**	**RAPS -B**		**Tanda TPS**
		Entitlement	**Actual**	**Entitlement**	**Actual**	**Actual**	**Entitlement**	**Actual**	**Actual**
1	Chandigarh	0.48	0.48	9.59	9.59	0.00	0.00	0.19	0.00
2	Delhi	4.77	4.77	18.95	18.95	0.00	53.20	3.55	0.00
3	Haryana	2.38	2.38	37.92	37.92	0.00	25.90	89.39	0.00
4	H.P.	1.43	1.43	36.58	36.58	0.00	0.00	3.14	0.00
5	J & K	2.86	2.86	9.37	9.37	0.00	0.00	21.56	0.00
6	Punjab	6.67	6.67	24.55	24.55	0.00	26.39	3.90	0.00
7	Rajasthan	4.29	4.29	47.47	47.47	119.29	187.27	158.43	0.00
8	U.P.	7.94	7.94	48.58	48.58	0.00	0.00	9.92	172.65
9	Uttranchal	6.40	6.40	8.67	8.67	0.00	0.00	0.00	0.00
10	Trans. Losses	1.60	1.60	6.39	6.39	0.00	0.00	2.66	0.00
11	0thers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	**38.82**	**38.82**	**248.07**	**248.07**	**119.29**	**292.76**	**292.76**	**172.65**

Note :- Tanakpur sentout excludes 7.728 MU supplied to Nepal

Sl. No.	State/UT/	Narora APS		Bhakra HPS		Dehar HPS	Pong	F'bad GPS	ER import
	System	Entitlement	Actual	Entitlement	Actual	Actual	Actual	Actual	Actual
1	Chandigarh	2.94	0.97	55.38	55.49	0.00	0.00	0.00	5.69
2	Delhi	23.20	14.42	0.00	0.00	0.00	0.00	0.00	29.29
3	Haryana	15.09	31.83	240.16	241.36	140.37	12.04	260.78	24.96
4	H.P.	4.79	2.96	18.93	18.99	8.56	0.00	0.00	5.69
5	J & K	11.97	30.33	0.00	0.00	0.00	0.00	0.00	5.69
6	Punjab	20.03	13.02	331.37	333.02	210.55	18.05	0.00	0.00
7	Rajasthan	20.35	41.23	124.65	125.20	87.73	42.40	0.00	5.69
8	U.P.	47.29	12.29	0.00	0.00	0.00	0.00	0.00	24.00
9	N.F.F.	0.00	0.00	14.88	11.32	0.00	0.00	0.00	0.00
10	Uttranchal	5.58	4.20	0.00	0.00	0.00	0.00	0.00	0.00
11	Trans. Losses	6.51	6.51	49.97	49.97	18.63	3.83	0.00	0.00
	Total	**157.75**	**157.75**	**835.34**	**835.34**	**465.83**	**76.31**	**260.78**	**101.01**

Note : - The above figures are based on the daily energy accounts prepared by NRLDC.

VII. BILATERAL EXCHANGES IN THE NORTHERN REGION DURING JULY 2002

(All figs in MU'S)

	Chandigarh	Delhi	Haryana	Himachal	J & K	Punjab	Rajasthan	UP	Uttranchal	MP	Bihar	Others
Chandigarh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.71
Delhi	0.00	0.00	0.00	47.40	0.00	0.00	0.00	0.00	111.60	0.00	0.00	0.00
Haryana	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Himachal	0.00	-47.40	0.00	0.00	0.00	-62.00	0.00	0.00	0.00	0.00	0.00	0.00
J & K	0.00	0.00	0.00	0.00	0.00	-77.50	0.00	0.00	0.00	0.00	0.00	0.00
Punjab	0.00	0.00	0.00	62.00	77.50	0.00	0.00	0.00	41.94	4.71	0.00	6.13
Rajasthan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uttranchal	0.00	-111.60	0.00	0.00	0.00	-41.94	0.00	0.00	0.00	0.00	0.00	0.00
MP	0.00	0.00	0.00	0.00	0.00	-4.71	0.00	0.00	0.00	0.00	0.00	0.00
Bihar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Others	-4.71	0.00	0.00	0.00	0.00	-6.13	0.00	0.00	0.00	0.00	0.00	0.00
Total	**-4.71**	**-159.00**	**0.00**	**109.40**	**77.50**	**-192.28**	**0.00**	**0.00**	**153.54**	**4.71**	**0.00**	**10.84**

The above figures do not indicate the following shares in common projects/ bilateral agreements:

i) Harayana's share in IP station of Delhi **11.390** MU
ii) Himachal's share in Shanan & RSD power station of Punjab **11.393** MU
iii) Himachal's share in Yamuna hydro power complex of UP & Uttranchal **60.370** MU
iv) Maruti to Harayana **0.000** MU

Note: The above figures are based on the daily energy accounts prepared by NRLDC.

VIII. PROGRESS OF INSTALLATION OF SHUNT CAPACITORS IN NORTHERN REGION AS ON 31.07.2002

(ALL FIGS IN MVAR)

CONSTITUENT	REQUIREMENT AT THE END OF 2002-03	CAPACITORS AS ON 31.07.2002	CAPACITORS ADDITION DURING		ADDITIONAL REQUIRED DURING 2002-03
		INSTALLED	2001-02	April 02 -March 03	
Chandigarh	108	92	7	0	16
Delhi	3042	2638	397	5	404
Haryana	2539	2547	416	0	0
H.P.	352	236	57	31	116
J & K	872	147	12	0	725
Punjab	5067	4668	199	38	399
Rajasthan	3021	2529	59	113	492
U.P.	5390	4811	485	120	579
Uttranchal					
BBMB	366	381	0	0	0
TOTAL	20757	18049	1632	307	2731

SOURCE: Minutes of 331st OCC meeting of NREB held on 16th August, 2002.

IX. HYDRAULIC DATA FOR RESERVOIRS DURING JULY 2002

Item	Bhakra	Pong	Rihand	R.P.S.	Gandhi Sagar (M.P.)
Full Reservoir Level (m) (FRL) (ft)	514.50 1688.00	433.12 1421.00	268.22 880.00	352.65 1157.00	402.64 1321.00
Min. Draw Down Level (m) (MDDL) (ft)	445.62 1462.00	384.05 1260.00	252.98 830.00	342.90 1125.00	381.00 1250.00
Level on last day of (m) July 2002 (ft)	486.75 1596.95	393.28 1290.28	254.33 834.42	344.56 1130.45	379.57 1245.32
Level on last day of (m) July 2001 (ft)	485.46 1592.71	408.27 1339.46	267.25 876.80	350.29 1149.23	385.80 1265.74
Live Capacity as on (mhmt) last day of July 2002(maft)	0.33 2.69	0.09 0.74	0.04 0.30	0.02 0.17	0.00 0.00
Live Capacity as on (mhmt) last day of July 2001(maft)	0.32 2.57	0.34 2.74	0.50 4.05	0.11 0.87	0.08 0.63
Energy content as on last day of July 2002 (MU)	1240.00	110.00	50.00	40.00	0.00
Energy content as on last day of July 2001 (MU)	1150.00	440.00	1450.00	205.00	250.00
Maximum level (m)	486.75	393.28	254.57	344.78	379.66

	(ft)	1596.95	1290.30	835.20	1131.17	1245.60
	(date)	31.07.2002	30.07.2002	01.07.2002	01.07.2002	01.07.2002
Minimum level	(m)	480.18	390.31	253.87	344.54	379.57
	(ft)	1575.41	1280.53	832.91	1130.39	1245.32
	(date)	01.07.2002	01.07.2002	15.07.2002	17.07.2002	31.07.2002

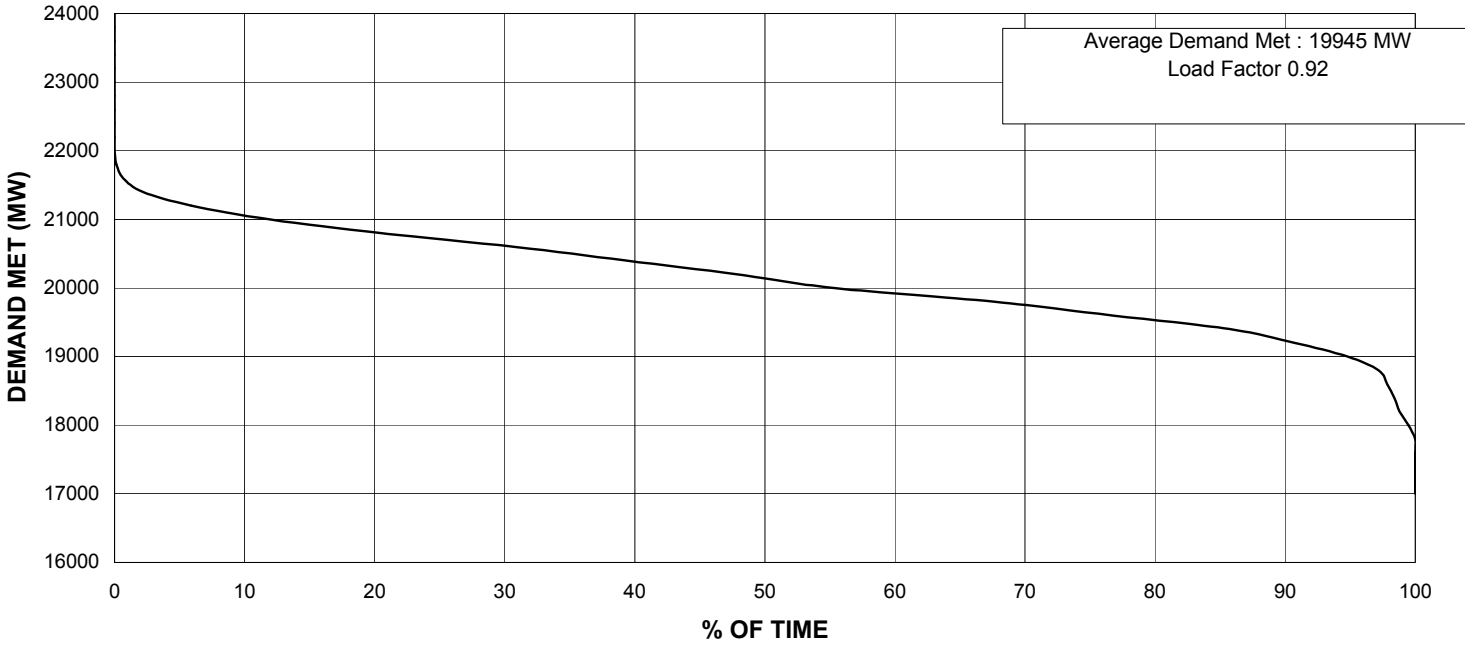
Energy content of Bhakra : Total Energy content at Bhakra, Ganguwal and Kotla power stations

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

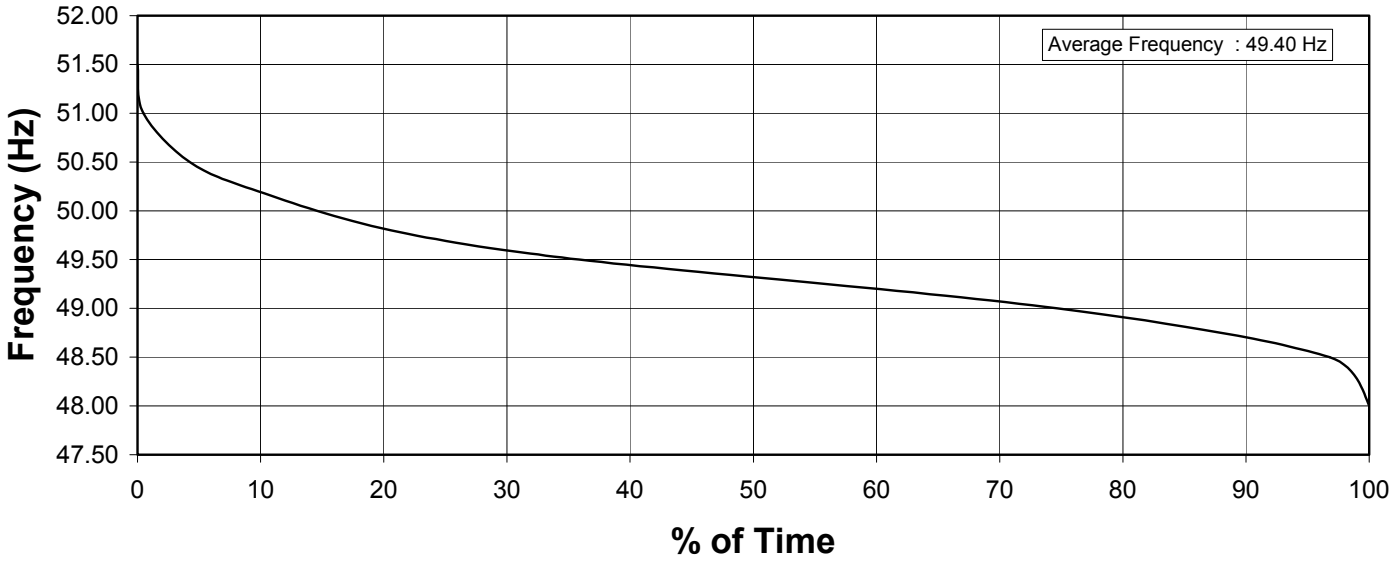
Energy content of RPS : Total Energy content of Rana Pratap Sagar and Jawahar Sagar Power Stations.

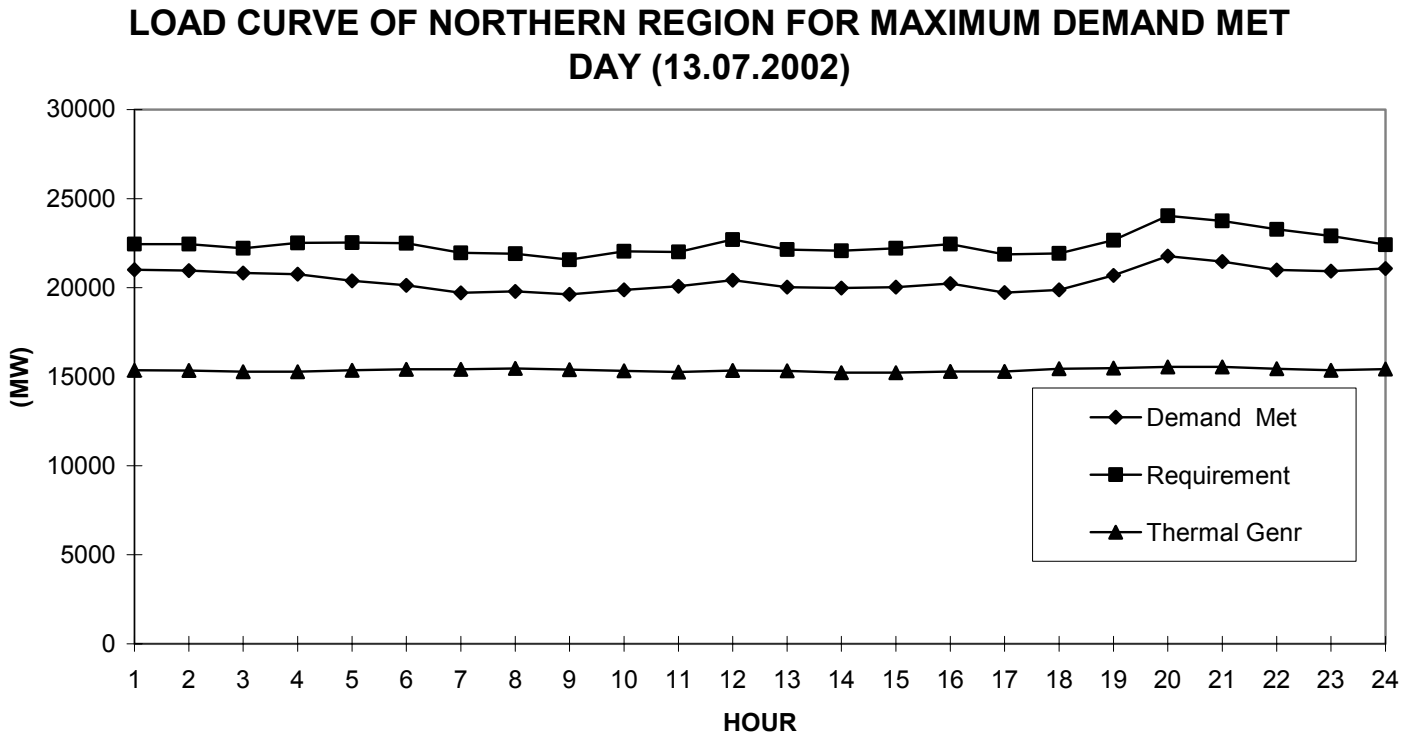
Energy Content of G. Sagar : Total Energy content at Gandhi Sagar, RP Sagar and Jawahar Sagar Power Stations.

LOAD DURATION CURVE OF NORTHERN REGION FOR JULY 2002



FREQUENCY DURATION CURVE OF NORTHERN REGION FOR JULY 2002

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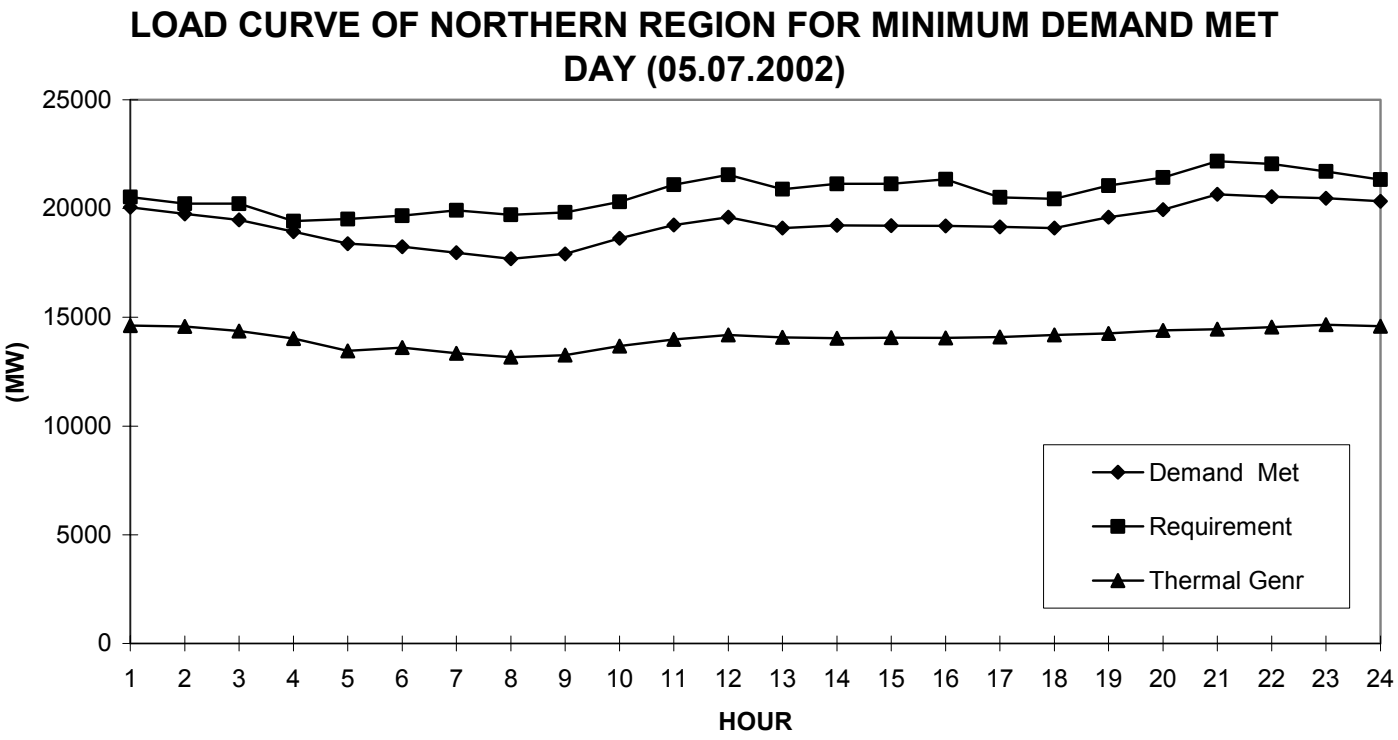
HOUR
Demand Met
Requirement
Thermal Genr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(MW)
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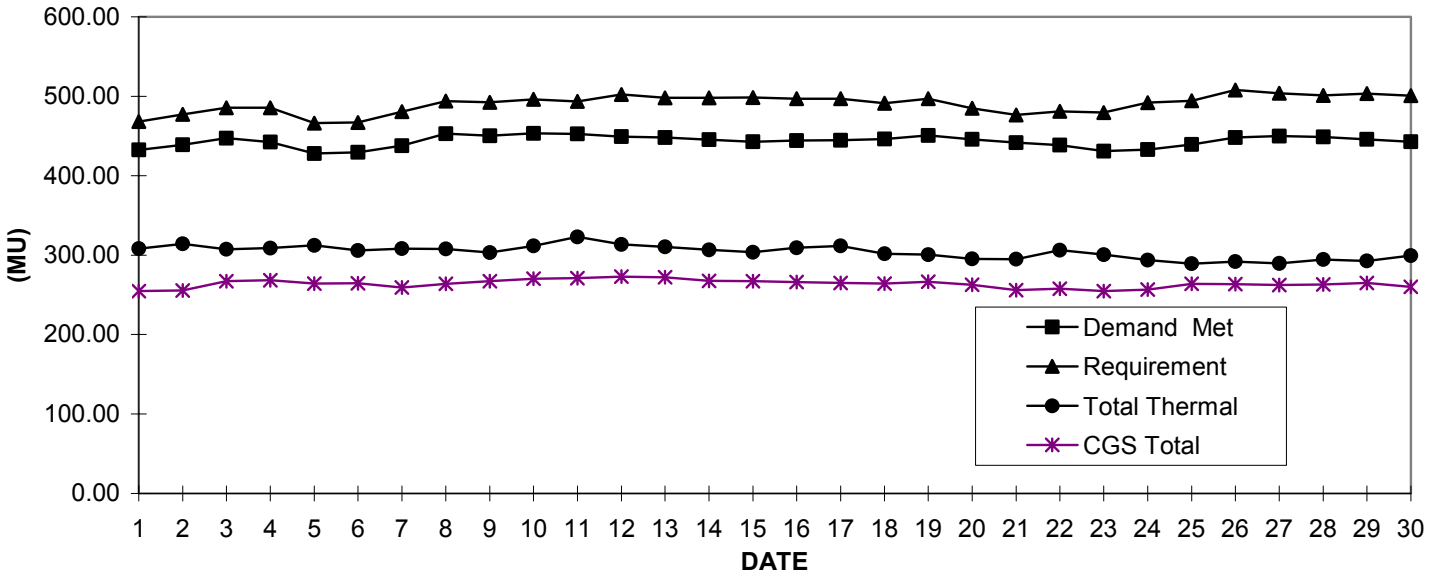
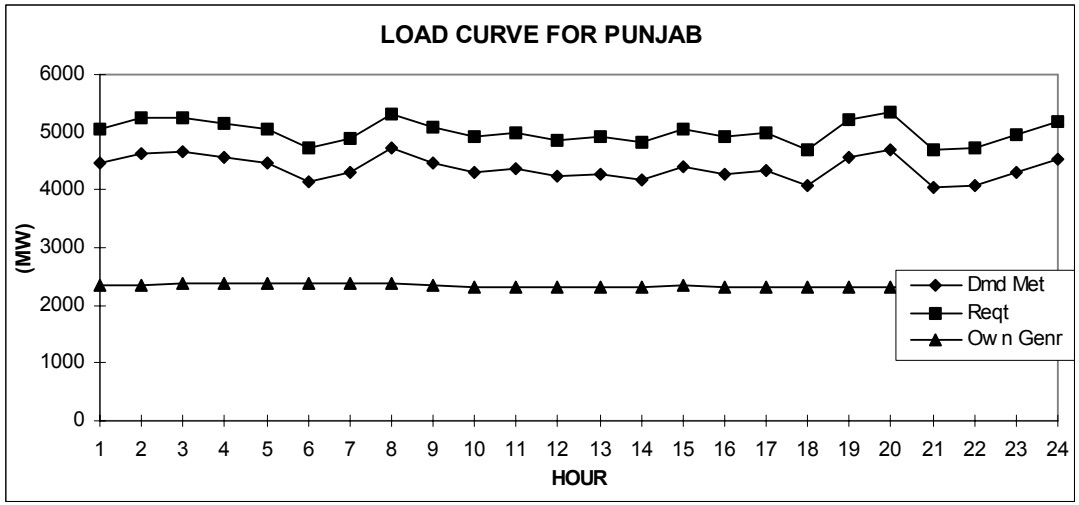
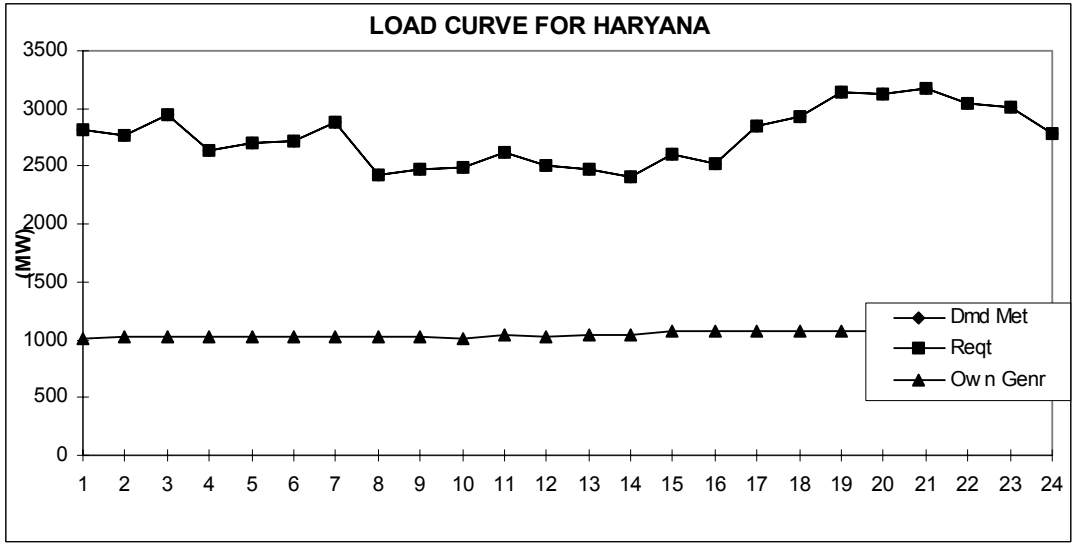
HOUR
Demand Met
Requirement
Thermal Genr

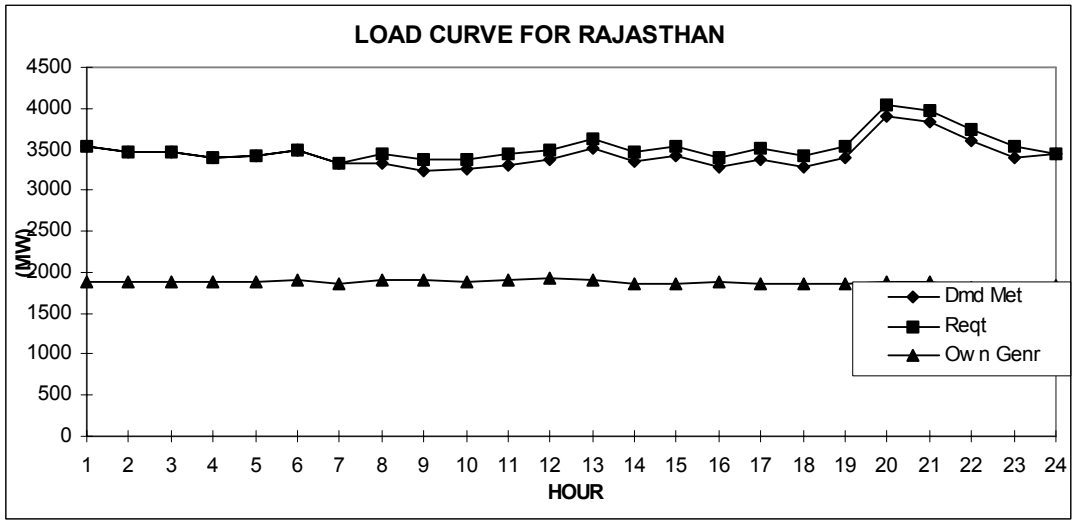
DAYWISE DEMAND MET AND REQUIREMENT (In MU) OF NORTHERN REGION DURING JULY 2002



STATE LOAD CURVES FOR REGIONAL MAXIMUM DEMAND MET DAY(13.07.2002)



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3000
2500
2000
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1000
500
0
(MW)
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HOUR
Dmd Met
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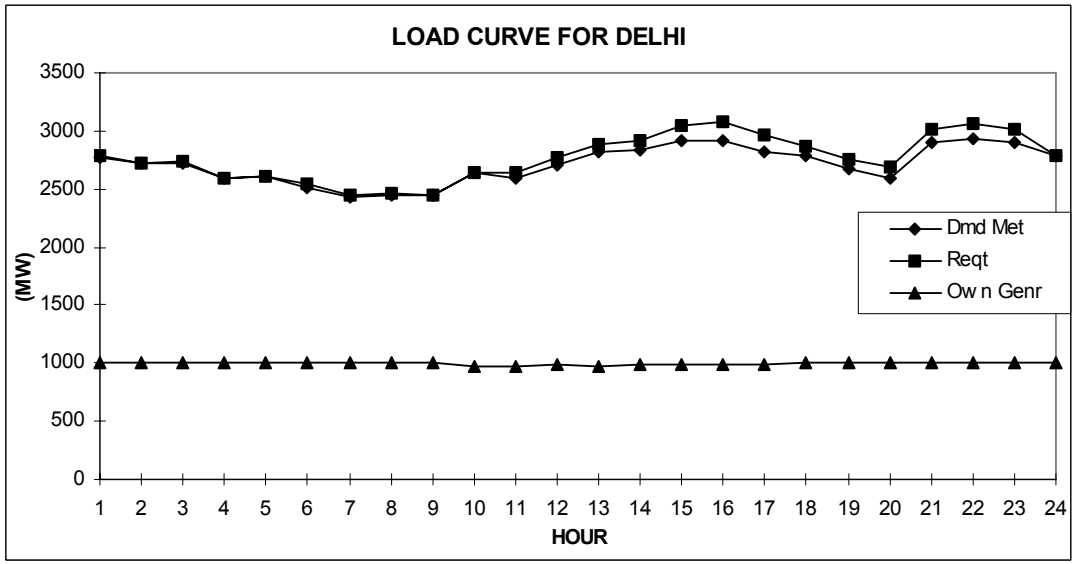
Ow n Genr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500
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(MW)
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HOUR
Dmd Met
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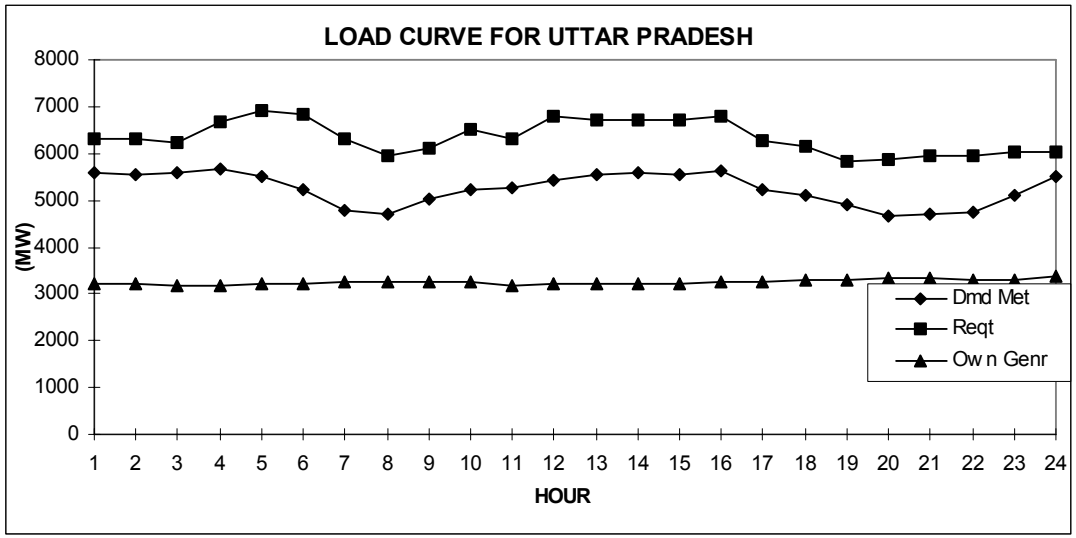

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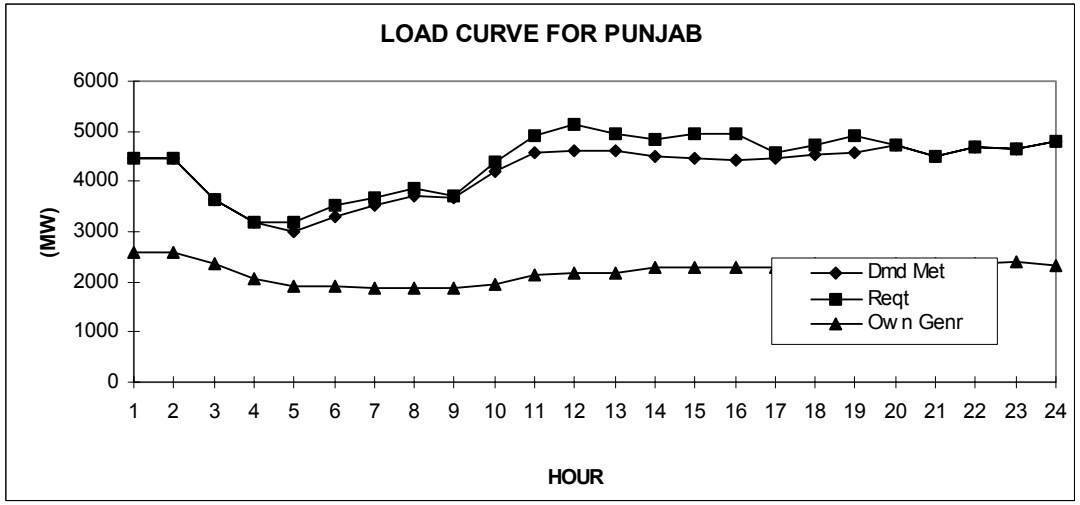

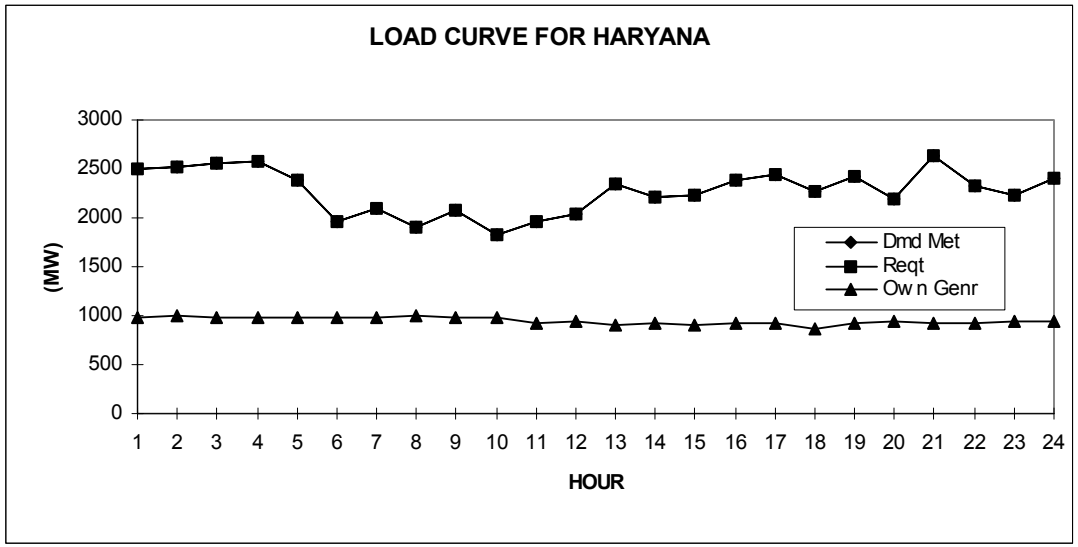
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Dmd Met
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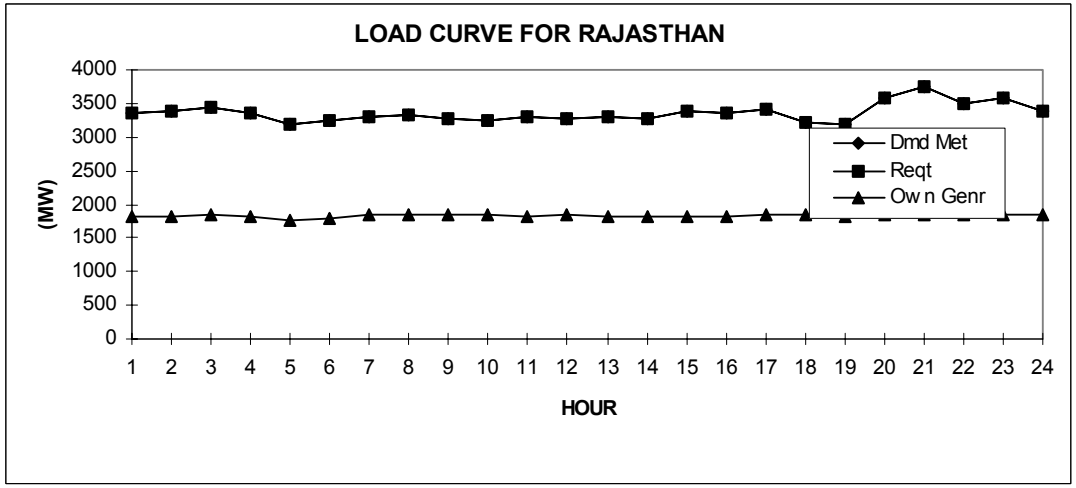
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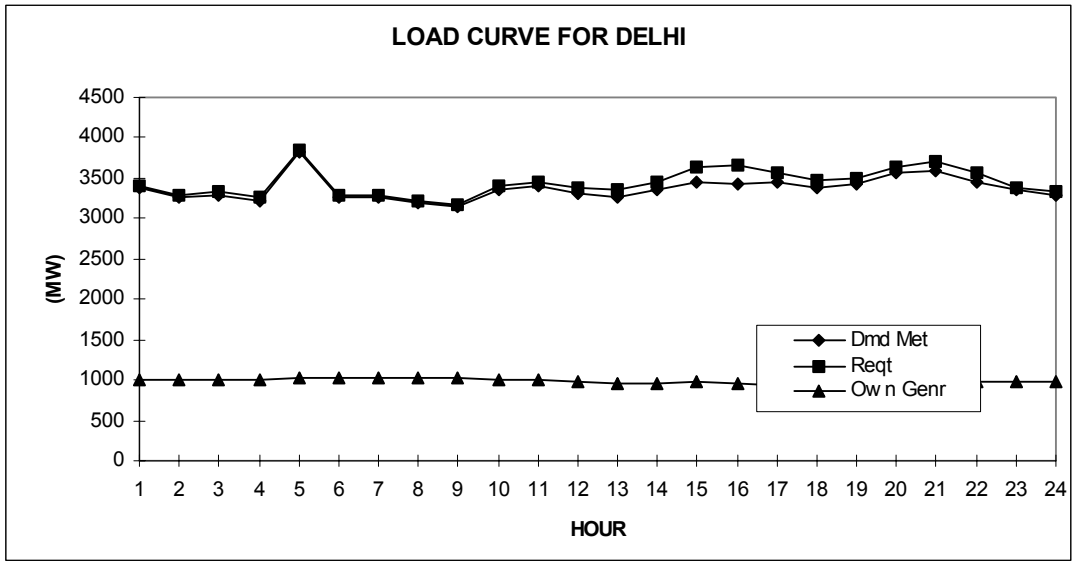
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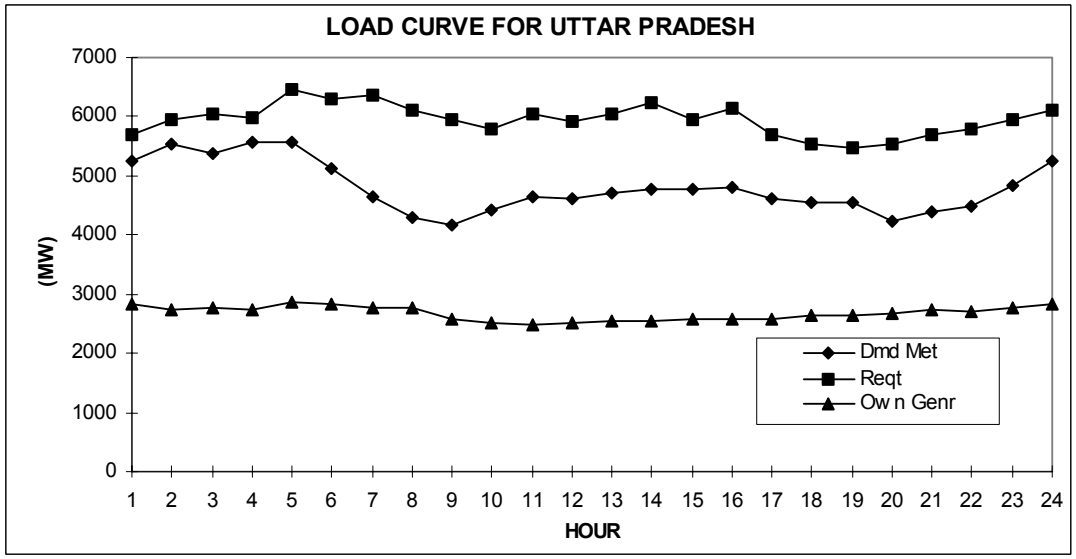
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2000
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0
(MW)
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HOUR
Dmd Met
Reqt
Ow n Genr

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.