



# **GRID REPORT**

## **MAY 2002**

## SYSTEM OPERATION REPORT OF NORTHERN REGION FOR THE MONTH OF MAY, 2002

### SUMMARY REPORT:

- **Important events:**

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

Pragati GT #1 (108 MW) of Pragati Corporation of Delhi synchronised on 25.05.2002 at 14:20 hrs.

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

The average system frequency during the month of May 2002 was 50.13 Hz and frequency remained between 49.0 & 50.5 Hz for 68.56 % 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 and were generally within limits prescribed by IEGC.

**There was no major grid disturbance in the region during May 2002.** The details of minor incidents are given in annexure. However, an unprecedented severe load crash was occurred during the night of 27<sup>th</sup>-28<sup>th</sup> May 2002 due to inclement weather and widespread rain. High frequency and high voltages problem posed danger to the system. The Northern Region system saved from collapse by closing/backing down of generation and by opening of 400 kV & 220 kV transmission lines.

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

NIL

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

(All figs. in MU)

| Sl. No. | State/UT/<br>System | NTPC (Excl. BTPS,<br>Tanda & FGPS)<br>Entitlement | Actual         | NHPC<br>Entitlement | Actual         | NPC ( Excl. RAPS-A)<br>Entitlement | Actual        | BBMB<br>Entitlement | Actual         | TOTALS<br>Entitlement | Actual         |
|---------|---------------------|---------------------------------------------------|----------------|---------------------|----------------|------------------------------------|---------------|---------------------|----------------|-----------------------|----------------|
|         |                     |                                                   |                |                     |                |                                    |               |                     |                |                       |                |
| 1       | Chandigarh          | 45.71                                             | 44.59          | 16.66               | 16.8           | 4.75                               | 5.01          | 45.91               | 45.97          | 113.03                | 112.33         |
| 2       | Delhi               | 842.65                                            | 806.70         | 124.46              | 125.89         | 58.20                              | 9.66          | 0.00                | 0.00           | 1025.32               | 942.26         |
| 3       | Haryana             | 486.84                                            | 483.53         | 158.02              | 157.64         | 35.68                              | 38.12         | 277.49              | 278.19         | 958.02                | 957.47         |
| 4       | H.P.                | 67.49                                             | 70.23          | 73.29               | 73.83          | 7.78                               | 14.39         | 20.72               | 20.76          | 169.27                | 179.21         |
| 5       | J & K               | 175.57                                            | 194.66         | 273.57              | 275.40         | 19.45                              | 28.72         | 0.00                | 0.00           | 468.59                | 498.78         |
| 6       | Punjab              | 417.10                                            | 390.79         | 233.64              | 235.66         | 50.75                              | 11.26         | 400.20              | 401.17         | 1101.69               | 1038.88        |
| 7       | Rajasthan           | 465.15                                            | 487.76         | 110.37              | 111.96         | 115.26                             | 179.49        | 196.57              | 196.89         | 887.35                | 976.09         |
| 8       | U.P.                | 730.05                                            | 781.01         | 170.15              | 171.24         | 80.77                              | 94.32         | 0.00                | 0.00           | 980.97                | 1046.58        |
| 9       | Uttanchal           | 39.30                                             | 32.94          | 35.23               | 27.00          | 8.96                               | 0.64          | 0.00                | 0.00           | 83.49                 | 60.59          |
| 9       | MP / N.F.F.         | 1.87                                              | 10.35          | 0.00                | 0.00           | 0.00                               | 0.00          | 14.88               | 12.79          | 16.75                 | 23.14          |
| 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       | 103.72                                            | 103.71         | 21.95               | 21.95          | 10.80                              | 10.80         | 49.22               | 49.22          | 185.70                | 185.68         |
| 12      | Others              | 59.13                                             | 28.31          | 0.00                | 0.00           | 0.00                               | 0.00          | 0.00                | 0.00           | 59.13                 | 28.31          |
|         | <b>Total</b>        | <b>3434.58</b>                                    | <b>3434.58</b> | <b>1217.34</b>      | <b>1217.34</b> | <b>392.40</b>                      | <b>392.40</b> | <b>1004.99</b>      | <b>1004.99</b> | <b>6049.31</b>        | <b>6049.31</b> |

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

|                                                 | Energy (MU) | Peak MW |
|-------------------------------------------------|-------------|---------|
| a. Import over HVDC Back to Back at Vindhyachal | 1.55        | 250     |
| b. M.P. to Rajasthan(Ujjain - Kota)             | 0.00        | 0       |
| c. Eastern region to Northern region (Import)   | 114.60      | 250     |
| d. Export over HVDC Back to Back at Vindhyachal | 97.33       | 500     |
| e. 220 KV Auraiya -Malanpur                     | 10.59       | 23      |
| f. Northern region to Bihar (Export)            | 0.00        | 0       |
| g. Tanakpur to Mahendranagar(NEPAL) (Export)    | 3.39        | 8       |

#### IV. FREQUENCY PROFILE

a. Maximum frequency            51.56    Hz    at            23:08    hours on    27.05.02  
 Minimum frequency            48.20    Hz    at            01:31    hours on    23.05.02  
 Average frequency            50.13    Hz

b. Frequency distribution in %

| Hz | < 48.5 | <49.0 | 49.0-50.5 | > 50.5 |
|----|--------|-------|-----------|--------|
| %  | 0.14   | 2.35  | 68.56     | 29.09  |

c. Frequency Variation Index

Monthly Average            3.41  
 Maximum            7.64  
 Minimum            1.56

#### V. POWER SUPPLY POSITION IN NORTHERN REGION

a. Average Energy/day (Net)

| State / U.T. | Availability<br>MU/Day | Requirement<br>MU/Day | Shortage<br>MU/Day | Shortage<br>% |
|--------------|------------------------|-----------------------|--------------------|---------------|
| Chandigarh   | 3.62                   | 3.62                  | 0.00               | 0.00          |
| Delhi        | 59.77                  | 61.09                 | 1.32               | 2.16          |
| Haryana      | 49.53                  | 49.53                 | 0.00               | 0.00          |
| H.P.         | 9.13                   | 9.14                  | 0.01               | 0.11          |
| J & K        | 16.74                  | 18.68                 | 1.94               | 10.39         |
| Punjab       | 80.34                  | 82.89                 | 2.55               | 3.08          |
| Rajasthan    | 66.93                  | 68.28                 | 1.35               | 1.98          |
| U.P.         | 97.33                  | 121.32                | 23.99              | 19.77         |
| Uttaranchal  | 9.76                   | 10.09                 | 0.32               | 3.20          |
| N.F.F./Rail  | 1.33                   | 1.33                  | 0.00               | 0.00          |
| <b>Total</b> | <b>394.48</b>          | <b>425.97</b>         | <b>31.48</b>       | <b>7.39</b>   |

## b. Peak MW

| State / U.T.  | MAX.<br>Availability<br>MW | MAX.<br>Requirement<br>MW | Shortage MW       |                     | Shortage %        |                     |
|---------------|----------------------------|---------------------------|-------------------|---------------------|-------------------|---------------------|
|               |                            |                           | ARITH-<br>METICAL | AT MAXM.<br>REQT HR | ARITH-<br>METICAL | AT MAXM.<br>REQT HR |
|               | A                          | B                         | C=B-A             | D                   | (C/B)*100         | (D/B)*100           |
| Chandigarh    | 200                        | 200                       | 0                 | 0                   | 0.00              | 0.00                |
| Delhi         | 3066                       | 3285                      | 219               | 219                 | 6.67              | 6.67                |
| Haryana       | 2793                       | 2793                      | 0                 | 0                   | 0.00              | 0.00                |
| H.P. *        | 565                        | 565                       | 0                 | 0                   | 0.00              | 0.00                |
| J & K *       | 935                        | 1141                      | 206               | 211                 | 18.05             | 18.49               |
| Punjab        | 4533                       | 4533                      | 0                 | 0                   | 0.00              | 0.00                |
| Rajasthan     | 3539                       | 3539                      | 0                 | 0                   | 0.00              | 0.00                |
| U.P.          | 5594                       | 6138                      | 544               | 544                 | 8.86              | 8.86                |
| Uttanchal     | 604                        | 684                       | 80                | 80                  | 11.70             | 11.70               |
| N.F.F./Rail   | 64                         | 64                        | 0                 | 0                   | 0.00              | 0.00                |
| <b>Region</b> | <b>20173</b>               | <b>21758</b>              | <b>1585</b>       | <b>1818</b>         | <b>7.28</b>       | <b>8.36</b>         |

Diversity Factor = 1.09

\* Approximate and Estimated

## B. DETAILED REPORT

## I. 1. INSTALLED / EFFECTIVE CAPACITY AT THE END OF MAY 2002

| # UNUTILIZED / EFFECTIVE CAPACITY AT THE END OF MAY 2022 |                |                            |         |                    |         |
|----------------------------------------------------------|----------------|----------------------------|---------|--------------------|---------|
| -                                                        | STATION        | INSTALLED CAPACITY<br>(MW) |         | EFFECTIVE CAPACITY |         |
| 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 TPS   | 2x210 + 2x210              | 840.00  | 2x210 + 2x210      | 840.00  |
| (f)                                                      | Tanda TPS      | 4x110                      | 440.00  | 4x110              | 440.00  |

|                                               |                       |                        |                 |                        |                 |
|-----------------------------------------------|-----------------------|------------------------|-----------------|------------------------|-----------------|
| (g)                                           | Anta GPS              | 3x88.71+1x153.20       | 419.33          | 3x88.71+1x153.20       | 419.33          |
| (h)                                           | Auraiya GPS           | 4x111.19+2x109.30      | 663.36          | 4x111.19+2x109.30      | 663.36          |
| (i)                                           | Dadri GPS             | 4x130.19+2x154.51      | 829.78          | 4x130.19+2x154.51      | 829.78          |
| (j)                                           | Faridabad GPS         | 2x137.75 +1x156.07     | 431.57          | 2x137.75 +1x156.07     | 431.57          |
|                                               | Sub-Total             |                        | <b>8184.04</b>  |                        | <b>8169.04</b>  |
| <b>B NHPC</b>                                 |                       |                        |                 |                        |                 |
| (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             |                        | <b>2010.00</b>  |                        | <b>1984.20</b>  |
| <b>C. NPC</b>                                 |                       |                        |                 |                        |                 |
| (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             |                        | <b>1350.00</b>  |                        | <b>1180.00</b>  |
| <b>Total Central Sector<br/>( A + B + C )</b> |                       |                        | <b>11544.04</b> |                        | <b>11333.24</b> |
| <b>2 BBMB</b>                                 |                       |                        |                 |                        |                 |
| (a)                                           | <b>Bhakra Complex</b> |                        |                 |                        |                 |
| (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                       | 4x60 + 2x66 | 372.00         | 4x60 + 2x66 | 372.00         |
|                           | <b>Total BBMB</b>          |             | <b>2852.15</b> |             | <b>2852.15</b> |
| <b>3 CHANDIGARH</b>       |                            |             |                |             |                |
| (a)                       | Diesel Gen Sets            |             | 2.00           |             | 1.40           |
| <b>4 DELHI</b>            |                            |             |                |             |                |
|                           | <b>THERMAL</b>             |             |                |             |                |
| (a)                       | Indra Prastha              | 3x62.5+1x60 | 247.50         | 3x62.5+1x60 | 247.50         |
| (b)                       | Rajghat                    | 1x15+2x67.5 | 150.00         | 1x14+2x67.5 | 149.00         |
| (c)                       | Gas Turbines               | 6x30+3x34   | 282.00         | 6x30+3x34   | 282.00         |
| (d)                       | Pragati Gas Turbines       | 1x108       | 108.00         | 1x108       | 108.00         |
|                           | <b>Total DELHI</b>         |             | <b>787.50</b>  |             | <b>786.50</b>  |
| <b>5 HARYANA</b>          |                            |             |                |             |                |
|                           | <b>HYDRO</b>               |             |                |             |                |
| (a)                       | Western Yamuna Canal (WYC) | 6x8         | 48.00          | 6x8         | 48.00          |
|                           | <b>Total Hydro</b>         |             | <b>48.00</b>   |             | <b>48.00</b>   |
|                           | <b>THERMAL</b>             |             |                |             |                |
| (b)                       | Faridabad (New)            | 3x60        | 180.00         | 3x55        | 165.00         |
| (c)                       | Panipat                    | 4x110+2x210 | 860.00         | 4x110+2x210 | 860.00         |
|                           | <b>Total Thermal</b>       |             | <b>1040.00</b> |             | <b>1025.00</b> |
| (d)                       | Magnum Diesel (IPP)        | 4x6.3       | 25.20          | 4x6.3       | 25.20          |
|                           | <b>Total Haryana</b>       |             | <b>1113.20</b> |             | <b>1098.20</b> |
| <b>6 HIMACHAL PRADESH</b> |                            |             |                |             |                |
|                           | <b>HYDRO</b>               |             |                |             |                |

|                           |                           |                    |               |                    |               |
|---------------------------|---------------------------|--------------------|---------------|--------------------|---------------|
| (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 |                    | 9.22          |                    | 8.52          |
| (g)                       | Nogli                     | 2x 0.25+4x0.50     | 2.50          | 2x 0.25+4x0.50     | 2.50          |
| (h)                       | Bhabha (H)                | 3x40.00            | 120.00        | 3x40.00            | 120.00        |
| (i)                       | Baner (H)                 | 3x 4.00            | 12.00         | 3x 4.00            | 12.00         |
| (j)                       | Gaj (H)                   | 3x 3.50            | 10.50         | 3x 3.50            | 10.50         |
| (k)                       | Sal -2                    | 1x 2               | 2.00          | 1x 2               | 2.00          |
| (l)                       | Gumma                     | .                  | 3.00          | 3                  | 3.00          |
| (m)                       | Ghanvi                    | 2x11.25            | 22.50         | 2x11.25            | 22.50         |
| (n)                       | Diesel Gen. Sets          |                    | 0.13          |                    | 0.13          |
| (o)                       | Malana(IPP)               | 2x43               | 86.00         | 2x43               | 86.00         |
|                           | <b>Total HP</b>           |                    | <b>412.80</b> |                    | <b>412.10</b> |
| <b>7 J &amp; K</b>        |                           |                    |               |                    |               |
|                           | <b>HYDRO</b>              |                    |               |                    |               |
| (a)                       | Lower Jhelum              | 3x35.0             | 105.00        | 3x35.0             | 105.00        |
| (b)                       | Upper Sindh               | 2x11.30+1x35.0     | 57.60         | 2x11.30+1x35.0     | 57.60         |
| (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      | 25.30         | 5x4.66 +2X1.0      | 25.30         |
| (f)                       | Stakna                    | 2x2.0 +3x1.25 +2.0 | 9.75          | 2x2.0 +3x1.25 +2.0 | 9.75          |
| (g)                       | Small Hydel               |                    | 3.54          |                    | 3.54          |
|                           | <b>Total Hydro</b>        |                    | <b>225.19</b> |                    | <b>225.19</b> |
| <b>J &amp; K (Contd.)</b> |                           |                    |               |                    |               |
|                           | <b>GAS TURBINES</b>       |                    |               |                    |               |
| (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        |

|                    |                                   |             |                |             |                |
|--------------------|-----------------------------------|-------------|----------------|-------------|----------------|
|                    | <b>Total Gas</b>                  |             | <b>175.00</b>  |             | <b>175.00</b>  |
| (l)                | Diesel Gen. Sets                  |             | 8.94           |             | 7.18           |
|                    | <b>Total J &amp; K</b>            |             | <b>409.13</b>  |             | <b>407.37</b>  |
| <b>8 PUNJAB</b>    |                                   |             |                |             |                |
|                    | <b>HYDRO</b>                      |             |                |             |                |
| (a)                | Jogindernagar/<br>Shanan          | 4x15+1x50   | 110.00         | 4x15+1x50   | 110.00         |
| (b)                | Upper Behari Doab<br>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 HPS                  | 4x150       | 600.00         | 4x150       | 600.00         |
| (f)                | Small Hydel                       |             | 4.10           |             | 4.10           |
|                    | <b>Total Hydro</b>                |             | <b>1145.10</b> |             | <b>1145.10</b> |
|                    | <b>THERMAL</b>                    |             |                |             |                |
| (g)                | Guru Nanak Dev<br>TPS (Bhatinda)  | 4x110       | 440.00         | 4x110       | 440.00         |
| (h)                | Guru Gobind Singh<br>TPS (Ropar)  | 6x210       | 1260.00        | 6x210       | 1260.00        |
| (i)                | Lehra Mohabbat TPS                | 2x210       | 420.00         | 2x210       | 420.00         |
| (j)                | Jhalkeri Rice Straw<br>Fired      | 1x10        | 10.00          | 1x10        | 10.00          |
|                    | <b>Total Thermal</b>              |             | <b>2130.00</b> |             | <b>2130.00</b> |
|                    | <b>Total Punjab</b>               |             | <b>3275.10</b> |             | <b>3275.10</b> |
| <b>9 RAJASTHAN</b> |                                   |             |                |             |                |
|                    | <b>HYDRO</b>                      |             |                |             |                |
| (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            |              | 14.32          |              | 14.32          |
|              | <b>Total Hydro</b>     |              | <b>434.32</b>  |              | <b>434.32</b>  |
|              | <b>THERMAL</b>         |              |                |              |                |
| (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           |
| (i)          | Ramgarh GT EXT.        | 1x35.5       | 35.50          | 1x35.5       | 35.50          |
|              | <b>Total Thermal</b>   |              | <b>1888.50</b> |              | <b>1888.50</b> |
| (J)          | Wind farm              | 2+2          | 4.00           | 2+2          | 4.00           |
|              | <b>Total Rajasthan</b> |              | <b>2326.82</b> |              | <b>2326.82</b> |
| <b>10 UP</b> |                        |              |                |              |                |
|              | <b>HYDRO</b>           |              |                |              |                |
| (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          |
|              | <b>Total Hydro</b>     |              | <b>529.90</b>  |              | <b>529.90</b>  |
|              | <b>THERMAL</b>         |              |                |              |                |
| (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         |
| <b>Total Thermal</b>              |                   |            | <b>4192.00</b>  |            | <b>3909.00</b>  |
| <b>Total UP</b>                   |                   |            | <b>4721.90</b>  |            | <b>4438.90</b>  |
| <b>11 UTTRANCHAL</b>              |                   |            |                 |            |                 |
| <b>HYDRO</b>                      |                   |            |                 |            |                 |
| (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           |
| <b>Total Hydro</b>                |                   |            | <b>980.85</b>   |            | <b>980.85</b>   |
| <b>Total Region<br/>(1 to 11)</b> |                   |            | <b>28425.49</b> |            | <b>27912.63</b> |

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

| Agency / Source   | Hydro          | Thermal         | Gas/Diesel/Wind | Nuclear        | Total           | % of Total     |
|-------------------|----------------|-----------------|-----------------|----------------|-----------------|----------------|
| NTPC              | ---            | 5825.00         | 2344.04         | ---            | 8169.04         | 29.27%         |
| NHPC              | 1984.20        | ---             | ---             | ---            | 1984.20         | 7.11%          |
| NPC               | ---            | ---             | ---             | 1180.00        | 1180.00         | 4.23%          |
| BBMB              | 2852.15        | ---             | ---             | ---            | 2852.15         | 10.22%         |
| CHANDIGARH        | ---            | ---             | 1.40            | ---            | 1.40            | 0.01%          |
| DELHI             | ---            | 396.50          | 390.00          | ---            | 786.50          | 2.82%          |
| HARYANA           | 48.00          | 1025.00         | 25.20           | ---            | 1098.20         | 3.93%          |
| HIMACHAL          | 411.97         | ---             | 0.13            | ---            | 412.10          | 1.48%          |
| J&K               | 225.19         | ---             | 182.18          | ---            | 407.37          | 1.46%          |
| PUNJAB            | 1145.10        | 2130.00         | ---             | ---            | 3275.10         | 11.73%         |
| RAJASTHAN         | 434.32         | 1850.00         | 42.50           | ---            | 2326.82         | 8.34%          |
| UP                | 529.90         | 3909.00         | ---             | ---            | 4438.90         | 15.90%         |
| UTTRANCHAL        | 980.85         | ---             | ---             | ---            | 980.85          | 3.51%          |
| <b>Total</b>      | <b>8611.68</b> | <b>15135.50</b> | <b>2985.45</b>  | <b>1180.00</b> | <b>27912.63</b> | <b>100.00%</b> |
| <b>% of TOTAL</b> | <b>30.85%</b>  | <b>54.22%</b>   | <b>10.70%</b>   | <b>4.23%</b>   | <b>100.00%</b>  |                |

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<br>(MW) |
|----------------------|--------------|----------------------------|
| Gandhi Sagar         | M.P.         | 5 x 23 = 115               |
| Rana Pratap<br>Sagar | Rajasthan    | 4 x 43 = 172               |
| Jawahar Sagar        | Rajasthan    | 3 x 33 = 99                |
|                      | <b>Total</b> | <b>386</b>                 |

Rajasthan has 50 % share in these Chambal projects viz. 193 MW.

#### SATPURA

| PROJECTS    | LOCATED | INSTALLED CAPACITY<br>(MW)        |
|-------------|---------|-----------------------------------|
| Satpura TPS | M.P.    | 5x62.5+200.0+3x210.0 =<br>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 27959.63 MW.

### 3. BREAKUP OF EFFECTIVE HYDRO CAPACITY (MW) IN NORTHERN REGION AS ON 31.05.2002

| Agency / Source | Run-of -the -river | Reservoir | Total   |
|-----------------|--------------------|-----------|---------|
| NHPC            | 1444.20            | 540.00    | 1984.20 |
| BBMB            | 1155.15            | 1697.00   | 2852.15 |
| DELHI           | 0.00               | 0.00      | 0.00    |
| HARYANA         | 48.00              | 0.00      | 48.00   |

|              |                |                |                |
|--------------|----------------|----------------|----------------|
| HP           | 411.97         | 0.00           | 411.97         |
| J&K          | 225.19         | 0.00           | 225.19         |
| PUNJAB       | 545.10         | 600.00         | 1145.10        |
| RAJASTHAN    | 262.32         | 172.00         | 434.32         |
| UP           | 229.90         | 300.00         | 529.90         |
| UTTRANCHAL   | 782.85         | 198.00         | 980.85         |
| <b>Total</b> | <b>5104.68</b> | <b>3507.00</b> | <b>8611.68</b> |

#### 4. Generation Addition/ Deletion During The Month

Pragati Gas Turbine Unit #1 (108 MW) of Pragati Corporation(Delhi) synchronised on 25.05.2002 at 14:20 hrs.

## II. SALIENT FEATURES OF SYSTEM CONDITIONS

### 1. Effective Generation Capacity at the end of month

| Constituent  | Effective Capacity |                 | Increase       |             |
|--------------|--------------------|-----------------|----------------|-------------|
|              | May 2002           | May 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.         | 412.10             | 303.60          | 108.50         | 35.74       |
| J & K        | 407.37             | 407.37          | 0.00           | 0.00        |
| Punjab       | 3275.10            | 2975.10         | 300.00         | 10.08       |
| Rajasthan    | 2326.82            | 1826.82         | 500.00         | 27.37       |
| 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         | 2852.15            | 2821.15         | 31.00          | 1.10        |
| <b>Total</b> | <b>27912.63</b>    | <b>26435.13</b> | <b>1477.50</b> | <b>5.59</b> |

**2. Power Supply Position**

| State/UT          | May 2002       |        |           | May 2001       |        |           | Percentage increase over 2001 |       |
|-------------------|----------------|--------|-----------|----------------|--------|-----------|-------------------------------|-------|
|                   | Energy(MU/day) |        |           | Energy(MU/day) |        |           |                               |       |
|                   | Demand met     | Reqt.  | %Shortage | Demand met     | Reqt.  | %Shortage | Demand met                    | Reqt. |
| Chandigarh        | 3.62           | 3.62   | 0.00      | 3.28           | 3.28   | 0.00      | 10.37                         | 10.37 |
| Delhi             | 59.77          | 61.09  | 2.16      | 54.81          | 56.44  | 2.89      | 9.05                          | 8.24  |
| Haryana           | 49.53          | 49.53  | 0.00      | 42.04          | 42.62  | 1.36      | 17.82                         | 16.21 |
| HP                | 9.13           | 9.14   | 0.11      | 8.54           | 8.54   | 0.00      | 6.91                          | 7.03  |
| J&K               | 16.74          | 18.68  | 10.39     | 13.65          | 16.58  | 17.67     | 22.64                         | 12.67 |
| Punjab            | 80.34          | 82.89  | 3.08      | 74.87          | 77.05  | 2.83      | 7.31                          | 7.58  |
| Rajasthan         | 66.93          | 68.28  | 1.98      | 60.41          | 61.70  | 2.09      | 10.79                         | 10.66 |
| UP                | 97.33          | 121.32 | 19.77     | 113.52         | 124.28 | 8.66      | -14.26                        | -2.38 |
| Uttranchal        | 9.76           | 10.09  | 3.20      | -----          | -----  | -----     | -----                         | ----- |
| NFF/Rail          | 1.33           | 1.33   | 0.00      | 0.90           | 0.90   | 0.00      | 47.78                         | 47.78 |
| REGION            | 394.48         | 425.97 | 7.39      | 372.02         | 391.39 | 4.95      | 6.04                          | 8.83  |
| Frequency Regime  |                |        |           |                |        |           |                               |       |
|                   | May 2002       |        |           | May 2001       |        |           |                               |       |
| Average (Hz)      | 50.13          |        |           | 49.75          |        |           |                               |       |
| Above 50.5 Hz (%) | 29.09          |        |           | 15.17          |        |           |                               |       |
| Above 50.2 Hz (%) | 47.97          |        |           | 28.61          |        |           |                               |       |
| Below 49.5 Hz (%) | 15.01          |        |           | 37.51          |        |           |                               |       |
| Below 49.0 Hz (%) | 2.35           |        |           | 13.68          |        |           |                               |       |
| Below 48.5 Hz (%) | 0.14           |        |           | 2.49           |        |           |                               |       |

**3. Peak Power Supply Position**

| State/UT   | May 2002    |       |           | May 2001    |       |           | Percentage increase<br>over 2001 |       |
|------------|-------------|-------|-----------|-------------|-------|-----------|----------------------------------|-------|
|            | Peak ( MW ) |       |           | Peak ( MW ) |       |           |                                  |       |
|            | Demand met  | Reqt. | %Shortage | Demand met  | Reqt. | %Shortage | Demand met                       | Reqt. |
| Chandigarh | 200         | 200   | 0.00      | 163         | 163   | 0.00      | 22.70                            | 22.70 |
| Delhi      | 3066        | 3285  | 6.67      | 2771        | 2995  | 7.48      | 10.65                            | 9.68  |
| Haryana    | 2793        | 2793  | 0.00      | 2471        | 2522  | 2.02      | 13.03                            | 10.75 |
| HP         | 565         | 565   | 0.00      | 485         | 485   | 0.00      | 16.49                            | 16.49 |
| J&K        | 935         | 1141  | 18.05     | 858         | 1061  | 19.13     | 8.97                             | 7.54  |
| Punjab     | 4533        | 4533  | 0.00      | 4245        | 4245  | 0.00      | 6.78                             | 6.78  |

|           |       |       |       |       |       |       |       |       |
|-----------|-------|-------|-------|-------|-------|-------|-------|-------|
| Rajasthan | 3539  | 3539  | 0.00  | 3286  | 3286  | 0.00  | 7.70  | 7.70  |
| UP        | 5594  | 6138  | 8.86  | 6044  | 6717  | 10.02 | -7.45 | -8.62 |
| Uttanchal | 604   | 684   | 11.70 | ----  | ----  | ----- | ----- | ----- |
| NFF/Rail  | 64    | 64    | 0.00  | 51    | 51    | 0.00  | 25.49 | 25.49 |
| REGION    | 20173 | 21758 | 7.28  | 19436 | 20874 | 6.89  | 3.79  | 4.23  |

### III. FREQUENCY PROFILE DURING MAY 2002

| DATE | Average | MAX.  |       | MIN.  |       | Std dev | Frequency       |
|------|---------|-------|-------|-------|-------|---------|-----------------|
|      | Hz      | Hz    | Time  | Hz    | Time  | Hz      | Var. Index(FVI) |
| 1    | 50.03   | 51.28 | 8.03  | 48.92 | 23.24 | 0.39    | 1.56            |
| 2    | 49.68   | 51.24 | 18.59 | 48.56 | 14.26 | 0.55    | 4.09            |
| 3    | 49.82   | 51.16 | 7.41  | 48.88 | 14.18 | 0.46    | 2.44            |
| 4    | 50.00   | 51.20 | 8.06  | 48.56 | 0.04  | 0.40    | 1.59            |
| 5    | 50.30   | 51.32 | 18.01 | 49.04 | 1.14  | 0.48    | 3.19            |
| 6    | 50.48   | 51.36 | 17.21 | 49.40 | 4.57  | 0.40    | 3.85            |
| 7    | 50.21   | 51.24 | 8.02  | 49.20 | 14.04 | 0.39    | 1.99            |
| 8    | 50.11   | 51.22 | 8.05  | 48.58 | 22.17 | 0.43    | 1.93            |
| 9    | 50.17   | 51.16 | 5.06  | 48.92 | 1.37  | 0.39    | 1.77            |
| 10   | 50.13   | 50.80 | 6.00  | 48.84 | 22.45 | 0.43    | 2.03            |
| 11   | 50.09   | 51.22 | 8.00  | 48.58 | 0.34  | 0.54    | 3.02            |
| 12   | 50.02   | 51.08 | 5.59  | 48.62 | 1.16  | 0.41    | 1.71            |
| 13   | 49.87   | 51.12 | 18.37 | 49.00 | 23.13 | 0.51    | 2.81            |
| 14   | 50.15   | 51.28 | 18.12 | 48.92 | 1.12  | 0.46    | 2.33            |
| 15   | 50.08   | 51.20 | 7.42  | 48.88 | 15.58 | 0.49    | 2.46            |
| 16   | 49.85   | 51.08 | 8.03  | 48.48 | 16.01 | 0.47    | 2.42            |
| 17   | 49.78   | 51.12 | 18.09 | 48.40 | 22.11 | 0.54    | 3.42            |
| 18   | 50.20   | 51.40 | 18.08 | 48.68 | 1.13  | 0.61    | 4.12            |
| 19   | 50.35   | 51.44 | 8.02  | 49.20 | 1.03  | 0.51    | 3.78            |
| 20   | 50.27   | 51.40 | 6.01  | 48.76 | 1.28  | 0.54    | 3.71            |
| 21   | 50.08   | 51.36 | 18.02 | 48.88 | 23.28 | 0.49    | 2.47            |

|         |       |       |       |       |       |      |      |
|---------|-------|-------|-------|-------|-------|------|------|
| 22      | 50.07 | 51.32 | 17.02 | 48.84 | 22.51 | 0.50 | 2.57 |
| 23      | 49.81 | 51.40 | 18.05 | 48.20 | 1.31  | 0.54 | 3.30 |
| 24      | 50.08 | 51.20 | 21.57 | 48.76 | 12.21 | 0.54 | 2.95 |
| 25      | 50.55 | 51.48 | 22.03 | 49.40 | 15.26 | 0.48 | 5.39 |
| 26      | 50.37 | 51.48 | 9.58  | 48.80 | 23.13 | 0.61 | 5.08 |
| 27      | 50.45 | 51.56 | 23.08 | 48.96 | 11.11 | 0.65 | 6.20 |
| 28      | 49.94 | 51.52 | 2.48  | 48.20 | 9.11  | 0.86 | 7.42 |
| 29      | 50.37 | 51.48 | 3.05  | 48.20 | 19.48 | 0.79 | 7.64 |
| 30      | 50.58 | 51.28 | 18.05 | 49.48 | 15.11 | 0.32 | 4.38 |
| 31      | 50.24 | 51.40 | 18.04 | 48.68 | 12.15 | 0.61 | 4.22 |
| Monthly | 50.13 | 51.56 |       | 48.20 |       | 0.59 | 3.41 |

Note : 
$$FVI = \frac{10 \sum (F - 50)^2}{24 \times 60 \times 6}$$
 where F = frequency measured at 10 second interval

#### IV. VOLTAGE PROFILE DURING MAY 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    | 417             | 391 | 412            | 378 | 425             | 392 | 412           | 386 | 213              | 195 |
| 2    | 411             | 391 | 414            | 382 | 425             | 396 | 414           | 392 | 210              | 191 |
| 3    | 413             | 395 | 412            | 378 | 427             | 389 | 412           | 383 | 213              | 194 |
| 4    | 420             | 395 | 406            | 378 | 429             | 387 | 410           | 386 | 214              | 195 |
| 5    | 422             | 393 | 416            | 386 | 433             | 398 | 410           | 390 | 214              | 201 |
| 6    | 422             | 386 | 416            | 384 | 427             | 394 | 411           | 386 | 214              | 192 |
| 7    | 419             | 391 | 416            | 380 | 427             | 389 | 407           | 395 | 213              | 191 |
| 8    | 419             | 391 | 414            | 382 | 427             | 392 | 408           | 391 | 218              | 195 |
| 9    | 420             | 391 | 414            | 382 | 427             | 392 | 410           | 390 | 212              | 193 |
| 10   | 417             | 390 | 412            | 376 | 422             | 392 | 409           | 386 | 209              | 189 |
| 11   | 422             | 380 | 411            | 370 | 425             | 385 | 405           | 382 | 211              | 188 |
| 12   | 417             | 384 | 412            | 380 | 425             | 392 | 410           | 392 | 210              | 193 |
| 13   | 417             | 382 | 414            | 374 | 427             | 385 | 410           | 392 | 210              | 186 |
| 14   | 419             | 382 | 410            | 368 | 425             | 383 | 407           | 388 | 207              | 178 |

|              |            |            |            |            |            |            |            |            |            |            |
|--------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| 15           | 417        | 386        | 414        | 370        | 422        | 378        | 408        | 386        | 208        | 179        |
| 16           | 419        | 384        | 410        | 372        | 420        | 378        | 404        | 389        | 207        | 178        |
| 17           | 422        | 388        | 412        | 378        | 427        | 394        | 408        | 389        | 207        | 185        |
| 18           | 420        | 388        | 414        | 376        | 425        | 392        | 410        | 387        | 209        | 186        |
| 19           | 424        | 389        | 414        | 372        | 424        | 390        | 410        | 385        | 212        | 188        |
| 20           | 415        | 391        | 406        | 378        | 422        | 389        | 408        | 387        | 209        | 185        |
| 21           | 413        | 388        | 412        | 372        | 425        | 389        | 409        | 386        | 206        | 183        |
| 22           | 415        | 395        | 414        | 382        | 420        | 389        | 409        | 386        | 209        | 180        |
| 23           | 422        | 384        | 412        | 370        | 425        | 385        | 406        | 383        | 208        | 170        |
| 24           | 413        | 388        | 406        | 370        | 425        | 389        | 403        | 384        | 208        | 176        |
| 25           | 426        | 399        | 430        | 382        | 433        | 392        | 410        | 389        | 220        | 189        |
| 26           | 422        | 395        | 422        | 380        | 440        | 400        | 411        | 386        | 216        | 188        |
| 27           | 426        | 408        | 432        | 378        | 433        | 392        | 424        | 382        | 220        | 179        |
| 28           | 431        | 397        | 434        | 384        | 427        | 394        | 420        | 384        | 225        | 198        |
| 29           | 419        | 391        | 428        | 378        | 440        | 392        | 421        | 387        | 221        | 190        |
| 30           | 411        | 386        | 414        | 382        | 436        | 392        | 409        | 389        | 215        | 198        |
| 31           | 410        | 384        | 414        | 376        | 433        | 387        | 410        | 388        | 212        | 185        |
| <b>Month</b> | <b>431</b> | <b>380</b> | <b>434</b> | <b>368</b> | <b>440</b> | <b>378</b> | <b>424</b> | <b>382</b> | <b>225</b> | <b>170</b> |

## V. PERFORMANCE OF GENERATING STATIONS DURING MAY 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 |
| <b>1</b> | <b>CENTRAL SECTOR</b> |                       |                  |           |                            |           |
| <b>A</b> | <b>NTPC (Thermal)</b> |                       |                  |           |                            |           |
| (a)      | Badarpur TPS          | 705.00                | 465.05           | 423.76    | 917.49                     | 836.58    |
| (b)      | Singrauli STPS        | 2000.00               | 1084.13          | 996.06    | 2324.21                    | 2153.87   |
| (c)      | Rihand STPS           | 1000.00               | 653.35           | 593.81    | 1303.46                    | 1207.00   |
| (d)      | Dadri NCTPS           | 840.00                | 493.33           | 449.37    | 898.64                     | 821.86    |
| (e)      | Unchahar-I TPS        | 420.00                | 218.44           | 199.22    | 500.92                     | 456.89    |
| (f)      | Unchahar-II TPS       | 420.00                | 271.16           | 246.99    | 471.82                     | 430.39    |
| (g)      | Tanda TPS             | 440.00                | 182.91           | 160.05    | 389.97                     | 341.13    |
| (h)      | Anta GPS              | 419.33                | 208.21           | 202.03    | 374.11                     | 362.72    |
| (i)      | Auraiya GPS           | 663.36                | 331.66           | 324.19    | 567.72                     | 555.27    |

|          |                             |                |                |                |                |                |
|----------|-----------------------------|----------------|----------------|----------------|----------------|----------------|
| (j)      | Dadri GPS                   | 829.78         | 410.75         | 400.70         | 741.17         | 722.01         |
| (k)      | Faridabad GPS               | 431.57         | 212.69         | 206.68         | 371.29         | 360.04         |
|          | <b>Total NTPC</b>           | <b>8169.04</b> | <b>4531.67</b> | <b>4202.84</b> | <b>8860.78</b> | <b>8247.74</b> |
| <b>B</b> | <b>NHPC</b>                 |                |                |                |                |                |
| (a)      | Bairasiul                   | 180.00         | 89.13          | 89.13          | 187.24         | 184.26         |
| (b)      | Salal                       | 690.00         | 408.48         | 407.13         | 678.67         | 676.92         |
| (c)      | Tanakpur HPS                | 94.20          | 43.88          | 43.67          | 70.14          | 69.76          |
| (d)      | Chamera HPS                 | 540.00         | 328.42         | 327.94         | 534.94         | 534.07         |
| (e)      | Uri HPS                     | 480.00         | 355.89         | 352.85         | 702.92         | 696.64         |
|          | <b>Total NHPC</b>           | <b>1984.20</b> | <b>1225.80</b> | <b>1220.72</b> | <b>2173.91</b> | <b>2161.65</b> |
| <b>C</b> | <b>NPC</b>                  |                |                |                |                |                |
| (a)      | RAPS -A                     | 300.00         | 125.04         | 111.23         | 372.46         | 336.31         |
| (b)      | RAPS -B                     | 440.00         | 152.10         | 136.71         | 365.86         | 328.86         |
| (c)      | NAPS                        | 440.00         | 285.47         | 255.68         | 557.26         | 500.02         |
|          | <b>Total NPC</b>            | <b>1180.00</b> | <b>562.62</b>  | <b>503.62</b>  | <b>1295.57</b> | <b>1165.18</b> |
| <b>2</b> | <b>JOINTLY OWNED (BBMB)</b> |                |                |                |                |                |
| (a)      | Bhakra Complex              | 1465.15        | 496.80         | 494.16         | 853.84         | 846.88         |
| (b)      | Dehar                       | 990.00         | 444.31         | 444.31         | 735.12         | 735.12         |
| (c)      | Pong                        | 366.00         | 66.51          | 66.51          | 78.45          | 78.45          |
|          | <b>Total BBMB</b>           | <b>2821.15</b> | <b>1007.62</b> | <b>1004.98</b> | <b>1667.41</b> | <b>1660.45</b> |
| <b>3</b> | <b>DELHI</b>                |                |                |                |                |                |
| (a)      | Indra Prastha               | 247.50         | 60.29          | 53.05          | 121.64         | 107.04         |
| (b)      | Rajghat                     | 149.00         | 81.90          | 72.89          | 158.60         | 141.15         |
| (c)      | Gas Turbines                | 282.00         | 124.39         | 120.66         | 212.88         | 206.49         |
| (d)      | Pragati Gas Turbines        | 108.00         | 2.82           | 2.79           | 2.82           | 2.79           |
|          | <b>Total DELHI</b>          | <b>786.50</b>  | <b>269.40</b>  | <b>249.39</b>  | <b>495.94</b>  | <b>457.48</b>  |
| <b>4</b> | <b>HARYANA</b>              |                |                |                |                |                |
| (a)      | WYC                         | 48.00          | 27.66          | 27.38          | 48.67          | 48.18          |
| (b)      | Faridabad (New)             | 165.00         | 61.26          | 52.99          | 134.16         | 116.05         |

|          |                             |                |               |               |               |               |
|----------|-----------------------------|----------------|---------------|---------------|---------------|---------------|
| (c)      | Panipat                     | 860.00         | 309.20        | 272.09        | 692.35        | 609.27        |
| (d)      | Magnum Diesel(IPP)          | 25.20          | 7.45          | 7.37          | 14.90         | 14.75         |
|          | <b>Total Haryana</b>        | <b>1098.20</b> | <b>405.56</b> | <b>359.83</b> | <b>890.08</b> | <b>788.25</b> |
| <b>5</b> | <b>HP</b>                   |                |               |               |               |               |
| (a)      | Giri                        | 60.00          | 6.79          | 6.74          | 18.69         | 18.57         |
| (b)      | Bassi                       | 60.00          | 39.77         | 39.72         | 73.62         | 73.55         |
| (c)      | Binwa                       | 6.00           | 2.25          | 2.24          | 5.01          | 5.00          |
| (d)      | Rongtong                    | 15.02          | 1.61          | 1.59          | 3.65          | 3.60          |
|          | (+Nogli+Micro+Thirot+Sal-2) |                |               |               |               |               |
| (e)      | Andhra                      | 16.95          | 10.64         | 10.62         | 20.40         | 20.36         |
| (f)      | Bhabha (H)                  | 120.00         | 54.74         | 54.68         | 86.07         | 85.88         |
| (g)      | Baner (H)                   | 12.00          | 3.32          | 3.13          | 6.10          | 5.83          |
| (h)      | Gaj (H)                     | 10.50          | 2.73          | 2.71          | 5.45          | 5.43          |
| (i)      | Gumma                       | 3.00           | 1.76          | 1.75          | 3.53          | 3.51          |
| (j)      | Ghanvi                      | 22.50          | 9.80          | 9.59          | 17.51         | 17.28         |
| (k)      | Malana (IPP)                | 86.00          | 47.25         | 47.25         | 69.23         | 69.23         |
|          | <b>Total HP</b>             | <b>411.97</b>  | <b>180.64</b> | <b>180.01</b> | <b>309.25</b> | <b>308.24</b> |
| <b>6</b> | <b>J &amp; K</b>            |                |               |               |               |               |
| (a)      | Lower Jhelum                | 105.00         | 0.00          | 0.00          | 3.36          | 3.33          |
| (b)      | Upper Sindh                 | 57.60          | 22.69         | 22.46         | 44.04         | 43.60         |
| (c)      | Ganderbal                   | 15.00          | 2.36          | 2.33          | 4.98          | 4.93          |
| (d)      | Mohra                       | 9.00           | 0.00          | 0.00          | 0.00          | 0.00          |
| (e)      | Chenani                     | 25.30          | 9.76          | 9.66          | 17.62         | 17.44         |
| (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         |               |               |               |               |
|          | <b>Total J &amp; K</b>      | <b>400.19</b>  | <b>34.80</b>  | <b>34.45</b>  | <b>70.00</b>  | <b>69.30</b>  |
| <b>7</b> | <b>PUNJAB</b>               |                |               |               |               |               |
| (a)      | Jogindernagar/<br>Shanan    | 110.00         | 67.34         | 67.31         | 125.43        | 125.37        |
| (b)      | UBDC                        | 90.00          | 45.15         | 45.03         | 76.73         | 76.50         |
| (c)      | Mukerian                    | 207.00         | 69.13         | 68.65         | 83.55         | 82.97         |

|          |                              |                |                |                |                |                |
|----------|------------------------------|----------------|----------------|----------------|----------------|----------------|
| (d)      | Anandpur Sahib (APS)         | 134.00         | 89.22          | 89.13          | 121.14         | 121.00         |
| (e)      | Ranjit Sagar HPS             | 600.00         | 155.83         | 155.55         | 255.30         | 254.85         |
| (f)      | Small Hydel                  | 4.10           | 0.83           | 0.82           | 1.47           | 1.45           |
| (g)      | GNDTPS (Bhatinda)            | 440.00         | 202.23         | 183.83         | 432.59         | 392.93         |
| (h)      | GGSTPS (Ropar)               | 1260.00        | 649.32         | 593.50         | 1277.06        | 1167.80        |
| (i)      | Jhalkeri Rice Straw<br>Fired | 10.00          | 0.00           | 0.00           | 0.00           | 0.00           |
| (j)      | Lehra Mohabbat TPS           | 420.00         | 260.04         | 236.72         | 415.09         | 376.89         |
|          | <b>Total Punjab</b>          | <b>3275.10</b> | <b>1539.09</b> | <b>1440.53</b> | <b>2788.36</b> | <b>2599.75</b> |
| <b>8</b> | <b>RAJASTHAN</b>             |                |                |                |                |                |
| (a)      | Mahi Bajaj Sagar             | 140.00         | 0.00           | 0.00           | 1.82           | 1.82           |
| (b)      | Rana Pratap Sagar (RPS)      | 172.00         | 2.39           | 2.34           | 3.38           | 3.33           |
| (c)      | Jawahar Sagar (JS)           | 99.00          | 1.75           | 1.75           | 3.05           | 3.04           |
| (d)      | Anoopgarh                    | 9.00           | 0.93           | 0.93           | 1.04           | 1.04           |
| (e)      | Small Hydro                  | 14.32          | 0.09           | 0.09           | 0.52           | 0.52           |
| (f)      | Kota TPS                     | 850.00         | 601.40         | 541.41         | 1186.47        | 1069.50        |
| (g)      | RAMGARH GT                   | 3.00           |                |                |                |                |
| (h)      | RAMGARH GT EXT               | 35.50          | 11.45          | 11.45          | 11.45          | 11.45          |
| (i)      | Suratgarh TPS                | 750.00         | 471.10         | 426.93         | 941.89         | 854.64         |
| (j)      | Wind Farm                    | 4.00           | 6.23           | 6.23           | 8.34           | 8.34           |
|          | <b>Total Rajasthan</b>       | <b>2076.82</b> | <b>1095.33</b> | <b>991.12</b>  | <b>2157.96</b> | <b>1953.68</b> |
| <b>9</b> | <b>U.P.</b>                  |                |                |                |                |                |
|          | <u>HYDRO</u>                 |                |                |                |                |                |
| (a)      | Rihand                       | 300.00         | 73.96          | 73.22          | 165.13         | 163.48         |
| (b)      | Obra                         | 99.00          | 30.51          | 30.20          | 66.98          | 66.31          |
| (c)      | Matatilla                    | 30.00          | 9.13           | 9.04           | 13.17          | 13.04          |
| (d)      | Khara                        | 72.00          | 49.37          | 48.87          | 88.01          | 87.13          |
|          | <b>Total U.P. (Hydro)</b>    | <b>501.00</b>  | <b>162.96</b>  | <b>161.33</b>  | <b>333.29</b>  | <b>329.96</b>  |
|          | <u>THERMAL</u>               |                |                |                |                |                |
| (e)      | Obra                         | 1442.00        | 611.70         | 535.24         | 1240.45        | 1085.40        |
| (f)      | Panki                        | 242.00         | 52.75          | 46.16          | 94.81          | 82.96          |

|                      |                         |                 |                 |                 |                 |                 |
|----------------------|-------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| (g)                  | Harduaganj              | 375.00          | 66.06           | 57.80           | 150.65          | 131.81          |
| (h)                  | Paricha                 | 220.00          | 82.89           | 72.53           | 172.41          | 150.86          |
| (i)                  | Anpara                  | 1630.00         | 1081.74         | 946.53          | 1961.96         | 1716.71         |
|                      | Total U.P. (Thermal)    | <b>3909.00</b>  | <b>1895.15</b>  | <b>1658.25</b>  | <b>3620.27</b>  | <b>3167.74</b>  |
|                      | <b>Total U.P.</b>       | <b>4410.00</b>  | <b>2058.11</b>  | <b>1819.59</b>  | <b>3953.56</b>  | <b>3497.70</b>  |
| <b>10 UTTRANCHAL</b> |                         |                 |                 |                 |                 |                 |
| (a)                  | Khatima                 | 41.40           | 15.31           | 15.16           | 22.25           | 22.03           |
| (b)                  | Ramganga                | 198.00          | 24.36           | 24.12           | 56.30           | 55.74           |
| (c)                  | Ganga Canal             | 32.70           | 11.52           | 11.40           | 21.79           | 21.57           |
| (d)                  | Yamuna ( I & IV )       | 114.75          | 70.92           | 70.21           | 124.70          | 123.45          |
| (e)                  | Chibro                  | 240.00          | 112.53          | 111.41          | 193.91          | 191.97          |
| (f)                  | Khodri                  | 120.00          | 51.32           | 50.80           | 90.42           | 89.52           |
| (g)                  | Chilla                  | 144.00          | 52.29           | 51.77           | 101.77          | 100.75          |
| (h)                  | Maneri Bhali            | 90.00           | 68.51           | 67.82           | 125.07          | 123.82          |
|                      | <b>Total Uttranchal</b> | <b>980.85</b>   | <b>406.76</b>   | <b>402.69</b>   | <b>736.21</b>   | <b>728.85</b>   |
| <b>Total Region</b>  |                         | <b>27594.02</b> | <b>13317.40</b> | <b>12409.77</b> | <b>25399.04</b> | <b>23638.28</b> |

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 MAY 2002**

(All figs. in MU)

| Sl. No. | State/UT/<br>System | Singrauli STPS |               | Rihand STPS   |               | BTPS          | W. Grid     | VSTPS          |
|---------|---------------------|----------------|---------------|---------------|---------------|---------------|-------------|----------------|
|         |                     | Entitlement    | Actual        | Entitlement   | Actual        | Actual        | Actual      | (WR)<br>Actual |
| 1       | Chandigarh          | 7.84           | 7.86          | 12.01         | 11.72         | 0.00          | 0.02        | 0.00           |
| 2       | Delhi               | 100.91         | 101.13        | 87.90         | 88.73         | 423.76        | 0.33        | 0.00           |
| 3       | Haryana             | 137.27         | 137.47        | 104.94        | 103.70        | 0.00          | 0.30        | 0.00           |
| 4       | H.P.                | 0.00           | 0.08          | 20.15         | 20.46         | 0.00          | 0.12        | 0.00           |
| 5       | J & K               | 3.92           | 4.19          | 46.61         | 47.67         | 0.00          | 0.41        | 0.00           |
| 6       | Punjab              | 108.85         | 109.15        | 84.34         | 83.83         | 0.00          | 0.46        | 0.00           |
| 7       | Rajasthan           | 164.10         | 164.34        | 82.29         | 83.21         | 0.00          | 0.36        | 0.00           |
| 8       | U.P.                | 308.66         | 309.24        | 124.16        | 126.42        | 0.00          | 0.88        | 0.00           |
| 9       | MP                  | 0.00           | 0.00          | 0.00          | 0.00          | 0.00          | 1.87        | 0.00           |
| 10      | Uttanchal           | 29.33          | 27.43         | 6.27          | 2.93          | 0.00          | 0.11        | 0.00           |
| 11      | Bihar               | 0.00           | 0.00          | 0.00          | 0.00          | 0.00          | 0.00        | 0.00           |
| 12      | Trans. Losses       | 37.85          | 37.85         | 25.14         | 25.14         | 0.00          | 0.12        | 0.00           |
|         | <b>TOTAL</b>        | <b>898.73</b>  | <b>898.73</b> | <b>593.81</b> | <b>593.81</b> | <b>423.76</b> | <b>4.97</b> | <b>0.00</b>    |

Note :- Singrauli sentout excludes 97.33 MU supplied to Western Grid

| Sl. No. | State/UT/<br>System | Dadri NCTPS |        | Unchahar-I TPS |        | Unchahar-II TPS |        |
|---------|---------------------|-------------|--------|----------------|--------|-----------------|--------|
|         |                     | Entitlement | Actual | Entitlement    | Actual | Entitlement     | Actual |
| 1       | Chandigarh          | 0.00        | 0.13   | 1.75           | 1.43   | 3.78            | 3.34   |
| 2       | Delhi               | 432.18      | 408.65 | 22.14          | 23.46  | 44.18           | 24.93  |
| 3       | Haryana             | 9.73        | 9.31   | 31.76          | 31.02  | 40.59           | 39.05  |
| 4       | H.P.                | 0.00        | 0.25   | 3.72           | 3.77   | 6.66            | 7.73   |
| 5       | J & K               | 0.00        | 2.24   | 11.87          | 13.00  | 24.50           | 34.40  |
| 6       | Punjab              | 0.00        | 0.00   | 26.34          | 19.43  | 40.08           | 20.62  |
| 7       | Rajasthan           | 0.12        | 2.07   | 18.88          | 20.51  | 38.99           | 51.83  |

| 8            | U.P.                | 7.34          | 21.87         | 74.18         | 77.99         | 37.75         | 54.56         |
|--------------|---------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| 9            | MP                  | 0.00          | 4.62          | 0.00          | 0.00          | 0.00          | 0.00          |
| 10           | Uttanchal           | 0.00          | 0.24          | 0.13          | 0.15          | 0.00          | 0.08          |
| 11           | Bihar               | 0.00          | 0.00          | 0.00          | 0.00          | 0.00          | 0.00          |
| 12           | Trans. Losses       | 0.00          | 0.00          | 8.46          | 8.46          | 10.45         | 10.45         |
| <b>Total</b> |                     | <b>449.37</b> | <b>449.37</b> | <b>199.23</b> | <b>199.23</b> | <b>246.99</b> | <b>246.99</b> |
| Sl. No.      | State/UT/<br>System | Anta GPS      |               | Auraiya GPS   |               | Uri HPS       |               |
|              |                     | Entitlement   | Actual        | Entitlement   | Actual        | Entitlement   | Actual        |
| 1            | Chandigarh          | 4.13          | 4.12          | 5.24          | 4.89          | 2.22          | 2.24          |
| 2            | Delhi               | 29.16         | 29.39         | 45.77         | 45.56         | 38.24         | 38.64         |
| 3            | Haryana             | 29.81         | 29.50         | 53.84         | 52.04         | 19.12         | 19.28         |
| 4            | H.P.                | 7.86          | 7.94          | 10.54         | 10.54         | 9.56          | 9.71          |
| 5            | J & K               | 16.60         | 16.89         | 28.71         | 28.82         | 118.40        | 118.91        |
| 6            | Punjab              | 28.02         | 27.42         | 51.84         | 50.60         | 47.80         | 48.37         |
| 7            | Rajasthan           | 52.43         | 52.68         | 49.23         | 49.07         | 31.62         | 32.07         |
| 8            | U.P.                | 24.12         | 24.73         | 64.40         | 64.67         | 69.86         | 70.95         |
| 9            | MP                  | 0.00          | 0.00          | 0.00          | 3.86          | 0.00          | 0.00          |
| 10           | Uttanchal           | 1.82          | 1.26          | 0.99          | 0.53          | 12.50         | 9.15          |
| 11           | Bihar               | 0.00          | 0.00          | 0.00          | 0.00          | 0.00          | 0.00          |
| 12           | Trans. Losses       | 8.08          | 8.08          | 13.62         | 13.61         | 3.53          | 3.53          |
| <b>TOTAL</b> |                     | <b>202.03</b> | <b>202.03</b> | <b>324.18</b> | <b>324.18</b> | <b>352.85</b> | <b>352.85</b> |
| Sl. No.      | State/UT/<br>System | Dadri GPS     |               | Bairasiul HPS |               | Salal HPS     |               |
|              |                     | Entitlement   | Actual        | Entitlement   | Actual        | Entitlement   | Actual        |
| 1            | Chandigarh          | 3.27          | 3.42          | 0.00          | 0.00          | 1.08          | 1.08          |
| 2            | Delhi               | 54.10         | 58.55         | 9.41          | 9.41          | 46.62         | 46.62         |
| 3            | Haryana             | 53.02         | 55.58         | 26.10         | 26.10         | 60.26         | 60.26         |
| 4            | H.P.                | 10.76         | 11.67         | 10.27         | 10.27         | 3.97          | 3.97          |
| 5            | J & K               | 35.27         | 39.35         | 0.00          | 0.00          | 139.83        | 139.83        |
| 6            | Punjab              | 77.17         | 79.28         | 39.79         | 39.79         | 106.72        | 106.72        |
| 7            | Rajasthan           | 51.07         | 56.01         | 0.00          | 0.00          | 11.84         | 11.84         |

|              |               |               |               |              |              |               |               |
|--------------|---------------|---------------|---------------|--------------|--------------|---------------|---------------|
| 8            | U.P.          | 56.23         | 68.31         | 0.00         | 0.00         | 27.89         | 27.89         |
| 9            | Uttanchal     | 0.67          | 0.21          | 0.00         | 0.00         | 4.85          | 4.85          |
| 10           | Railways      | 59.13         | 28.31         | 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          | 3.57         | 3.57         | 4.07          | 4.07          |
| <b>Total</b> |               | <b>400.69</b> | <b>400.69</b> | <b>89.14</b> | <b>89.14</b> | <b>407.13</b> | <b>407.13</b> |

| Sl. No.      | State/UT/<br>System | Tanakpur<br>HPS |              | Chamera<br>HPS |               | RAPS -A       | RAPS -B       |               | Tanda TPS     |
|--------------|---------------------|-----------------|--------------|----------------|---------------|---------------|---------------|---------------|---------------|
|              |                     | Entitlement     | Actual       | Entitlement    | Actual        | Actual        | Entitlement   | Actual        | Actual        |
| 1            | Chandigarh          | 0.49            | 0.49         | 12.87          | 12.95         | 0.00          | 0.00          | 1.03          | 0.00          |
| 2            | Delhi               | 4.94            | 4.94         | 25.25          | 26.28         | 0.00          | 23.17         | 2.26          | 0.00          |
| 3            | Haryana             | 2.47            | 2.47         | 50.07          | 49.53         | 0.00          | 12.01         | 11.92         | 0.00          |
| 4            | H.P.                | 1.48            | 1.48         | 48.01          | 48.40         | 0.00          | 0.00          | 3.99          | 0.00          |
| 5            | J & K               | 2.96            | 2.96         | 12.38          | 13.69         | 0.00          | 0.00          | 5.50          | 0.00          |
| 6            | Punjab              | 6.92            | 6.92         | 32.41          | 33.87         | 0.00          | 18.88         | 0.72          | 0.00          |
| 7            | Rajasthan           | 4.45            | 4.45         | 62.46          | 63.61         | 111.23        | 82.65         | 104.05        | 0.00          |
| 8            | U.P.                | 8.23            | 8.23         | 64.17          | 64.17         | 0.00          | 0.00          | 7.25          | 160.05        |
| 9            | Uttanchal           | 6.64            | 6.64         | 11.24          | 6.36          | 0.00          | 0.00          | 0.00          | 0.00          |
| 10           | Trans. Losses       | 1.70            | 1.70         | 9.08           | 9.08          | 0.00          | 0.00          | 0.00          | 0.00          |
| 11           | Others              | 0.00            | 0.00         | 0.00           | 0.00          | 0.00          | 0.00          | 0.00          | 0.00          |
| <b>Total</b> |                     | <b>40.28</b>    | <b>40.28</b> | <b>327.94</b>  | <b>327.94</b> | <b>111.23</b> | <b>136.71</b> | <b>136.71</b> | <b>160.05</b> |

Note :- Tanakpur sentout excludes 3.394 MU supplied to Nepal

| Sl. No. | State/UT/<br>System | Narora APS  |        | Bhakra HPS  |        | Dehar HPS | Pong   | F'bad GPS | ER import |
|---------|---------------------|-------------|--------|-------------|--------|-----------|--------|-----------|-----------|
|         |                     | Entitlement | Actual | Entitlement | Actual | Actual    | Actual | Actual    | Actual    |
| 1       | Chandigarh          | 4.75        | 3.98   | 45.91       | 45.97  | 0.00      | 0.00   | 0.00      | 7.67      |
| 2       | Delhi               | 35.03       | 7.40   | 0.00        | 0.00   | 0.00      | 0.00   | 0.00      | 25.99     |
| 3       | Haryana             | 23.67       | 26.19  | 133.26      | 133.96 | 133.76    | 10.47  | 206.68    | 25.58     |
| 4       | H.P.                | 7.78        | 10.40  | 12.16       | 12.20  | 8.56      | 0.00   | 0.00      | 7.67      |
| 5       | J & K               | 19.45       | 23.23  | 0.00        | 0.00   | 0.00      | 0.00   | 0.00      | 7.67      |
| 6       | Punjab              | 31.87       | 10.54  | 183.86      | 184.83 | 200.63    | 15.71  | 0.00      | 0.00      |
| 7       | Rajasthan           | 32.61       | 75.43  | 76.06       | 76.38  | 83.60     | 36.91  | 0.00      | 7.67      |
| 8       | U.P.                | 80.77       | 87.08  | 0.00        | 0.00   | 0.00      | 0.00   | 0.00      | 32.34     |
| 9       | N.F.F.              | 0.00        | 0.00   | 14.88       | 12.79  | 0.00      | 0.00   | 0.00      | 0.00      |

|    |               |               |               |               |               |               |              |               |               |
|----|---------------|---------------|---------------|---------------|---------------|---------------|--------------|---------------|---------------|
| 10 | Uttranchal    | 8.96          | 0.64          | 0.00          | 0.00          | 0.00          | 0.00         | 0.00          | 0.00          |
| 11 | Trans. Losses | 10.80         | 10.80         | 28.04         | 28.04         | 17.77         | 3.41         | 0.00          | 0.00          |
|    | <b>Total</b>  | <b>255.69</b> | <b>255.69</b> | <b>494.17</b> | <b>494.17</b> | <b>444.31</b> | <b>66.51</b> | <b>206.68</b> | <b>114.60</b> |

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

## VII. BILATERAL EXCHANGES IN THE NORTHERN REGION DURING MAY 2002

( All figs in MU'S)

|                   | Chandigarh   | Delhi           | Haryana      | Himachal       | J & K         | Punjab         | Rajasthan    | UP            | Uttranchal     | MP           | Bihar        | Others       |
|-------------------|--------------|-----------------|--------------|----------------|---------------|----------------|--------------|---------------|----------------|--------------|--------------|--------------|
| <b>Chandigarh</b> | 0.00         | 0.00            | 0.00         | 0.00           | 0.00          | 0.00           | 0.00         | 0.00          | 0.00           | 0.00         | 0.00         | 0.00         |
| <b>Delhi</b>      | 0.00         | 0.00            | 0.00         | 110.10         | 0.00          | 0.00           | 0.00         | 0.00          | 106.80         | 0.00         | 0.00         | 0.00         |
| <b>Haryana</b>    | 0.00         | 0.00            | 0.00         | 0.00           | 0.00          | 0.00           | 0.00         | 0.00          | 0.00           | 0.00         | 0.00         | 0.00         |
| <b>Himachal</b>   | 0.00         | -110.10         | 0.00         | 0.00           | 0.00          | -4.96          | 0.00         | 0.00          | 0.00           | 0.00         | 0.00         | 0.00         |
| <b>J &amp; K</b>  | 0.00         | 0.00            | 0.00         | 0.00           | 0.00          | -13.60         | 0.00         | 0.00          | 0.00           | 0.00         | 0.00         | 0.00         |
| <b>Punjab</b>     | 0.00         | 0.00            | 0.00         | 4.96           | 13.60         | 0.00           | 0.00         | 0.00          | 0.00           | 0.00         | 0.00         | 0.00         |
| <b>Rajasthan</b>  | 0.00         | 0.00            | 0.00         | 0.00           | 0.00          | 0.00           | 0.00         | 0.00          | 0.00           | 0.00         | 0.00         | 0.00         |
| <b>UP</b>         | 0.00         | 0.00            | 0.00         | 0.00           | 0.00          | 0.00           | 0.00         | 0.00          | 1.18           | 0.00         | 0.00         | 0.00         |
| <b>Uttranchal</b> | 0.00         | -106.80         | 0.00         | 0.00           | 0.00          | 0.00           | 0.00         | -1.18         | 0.00           | 0.00         | 0.00         | 0.00         |
| <b>MP</b>         | 0.00         | 0.00            | 0.00         | 0.00           | 0.00          | 0.00           | 0.00         | 0.00          | 0.00           | 0.00         | 0.00         | 0.00         |
| <b>Bihar</b>      | 0.00         | 0.00            | 0.00         | 0.00           | 0.00          | 0.00           | 0.00         | 0.00          | 0.00           | 0.00         | 0.00         | 0.00         |
| <b>Others</b>     | 0.00         | 0.00            | 0.00         | 0.00           | 0.00          | 0.00           | 0.00         | 0.00          | 0.00           | 0.00         | 0.00         | 0.00         |
| <b>Total</b>      | <b>0.000</b> | <b>-216.900</b> | <b>0.000</b> | <b>115.060</b> | <b>13.596</b> | <b>-18.556</b> | <b>0.000</b> | <b>-1.180</b> | <b>107.980</b> | <b>0.000</b> | <b>0.000</b> | <b>0.000</b> |

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

|                                                                        |          |
|------------------------------------------------------------------------|----------|
| i) Harayana's share in IP station of Delhi                             | 15.327MU |
| ii) Himachal's share in Shanan & RSD power station of Punjab           | 13.333MU |
| iii) Himachal's share in Yamuna hydro power complex of UP & Uttranchal | 66.550MU |
| iv) Maruti to Harayana                                                 | 0.000MU  |

**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 31.05.2002**  
**(ALL FIGS IN MVAR)**

| CONSTITUENT  | REQUIREMENT AT<br>THE END OF<br>2002-03 | CAPACITORS AS ON<br>31.05.2002 | CAPACITORS ADDITION<br>DURING |                    | ADDITIONAL<br>REQUIRED DURING<br>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                                     | 213                            | 57                            | 8                  | 139                                      |
| J & K        | 872                                     | 147                            | 12                            | 0                  | 725                                      |
| Punjab       | 5067                                    | 4630                           | 199                           | 0                  | 437                                      |
| Rajasthan    | 3021                                    | 2448                           | 59                            | 32                 | 573                                      |
| U.P.         | 5390                                    | 4811                           | 485                           | 120                | 579                                      |
| Uttranchal   |                                         |                                |                               |                    |                                          |
| BBMB         | 366                                     | 381                            | 0                             | 0                  | 0                                        |
| <b>TOTAL</b> | <b>20757</b>                            | <b>17907</b>                   | <b>1632</b>                   | <b>165</b>         | <b>2873</b>                              |

**SOURCE:** Minutes of 329th OCC meeting of NREB held on 07th June, 2002.

**IX. HYDRAULIC DATA FOR RESERVOIRS DURING MAY 2002**

| Item                                                     | Bhakra            | Pong              | Rihand           | R.P.S.            | Gandhi Sagar<br>(M.P.) |
|----------------------------------------------------------|-------------------|-------------------|------------------|-------------------|------------------------|
| Full Reservoir Level (m)<br>(FRL) (ft)                   | 514.50<br>1688.00 | 433.12<br>1421.00 | 268.22<br>880.00 | 352.65<br>1157.00 | 402.64<br>1321.00      |
| Min. Draw Down Level (m)<br>(MDDL) (ft)                  | 445.62<br>1462.00 | 384.05<br>1260.00 | 252.98<br>830.00 | 342.90<br>1125.00 | 381.00<br>1250.00      |
| Level on last day of May 2002 (m)<br>(ft)                | 468.42<br>1536.82 | 394.32<br>1293.71 | 255.64<br>838.70 | 344.68<br>1130.84 | 379.98<br>1246.64      |
| Level on last day of May 2001 (m)<br>(ft)                | 457.40<br>1500.64 | 392.70<br>1288.40 | 258.87<br>849.30 | 344.11<br>1128.96 | 380.02<br>1246.78      |
| Live Capacity as on (mhmt)<br>last day of May 2002(maft) | 0.15<br>1.19      | 0.09<br>0.76      | 0.07<br>0.60     | 0.02<br>0.17      | 0.00<br>0.00           |
| Live Capacity as on (mhmt)<br>last day of May 2001(maft) | 0.07<br>0.57      | 0.08<br>0.66      | 0.18<br>1.43     | 0.01<br>0.12      | 0.00<br>0.00           |
| Energy content as on last<br>day of May 2002 (MU)        | 500.00            | 125.00            | 125.00           | 35.00             | 0.00                   |
| Energy content as on last<br>day of May 2001 (MU)        | 240.00            | 100.00            | 325.00           | 30.00             | 0.00                   |
| Maximum level (m)                                        | 468.42            | 395.64            | 258.90           | 345.12            | 380.16                 |

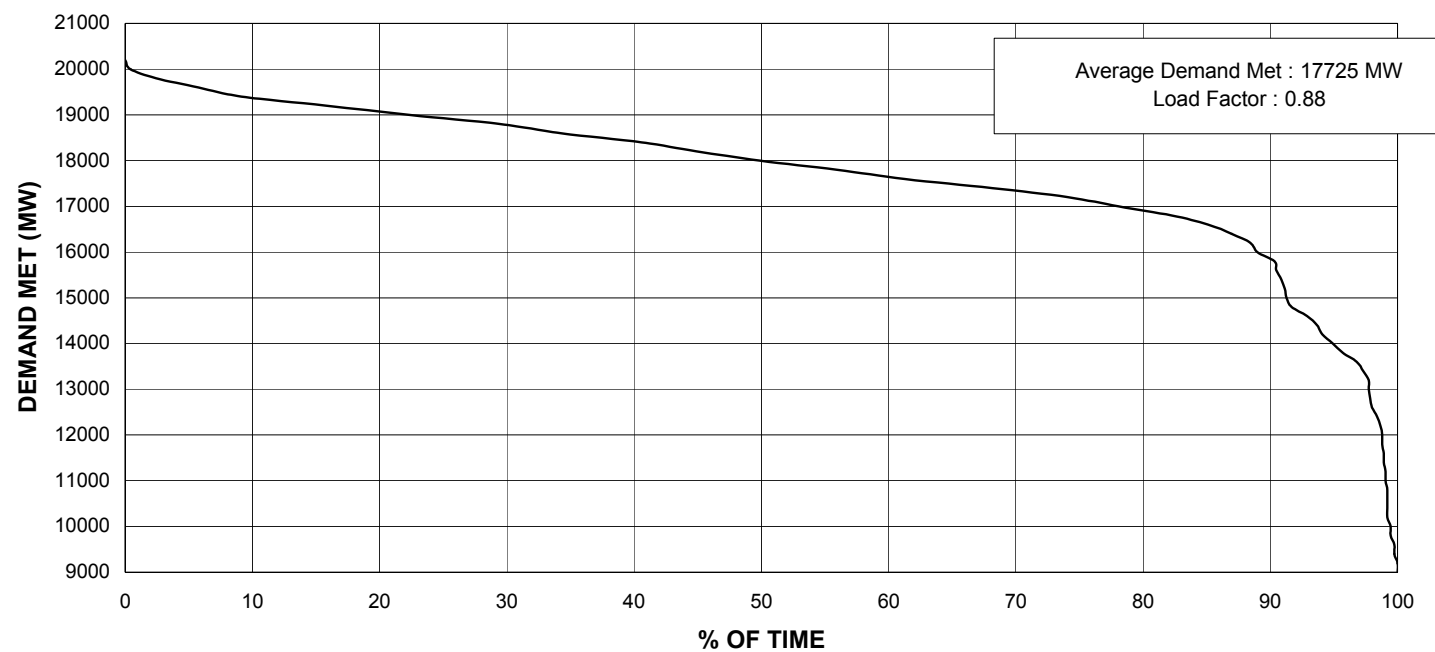
|               |        |            |            |            |            |            |
|---------------|--------|------------|------------|------------|------------|------------|
|               | (ft)   | 1536.82    | 1298.02    | 849.40     | 1132.29    | 1247.24    |
|               | (date) | 31.05.2002 | 20.05.2002 | 01.05.2002 | 01.05.2002 | 01.05.2002 |
| Minimum level | (m)    | 453.74     | 394.32     | 255.64     | 344.68     | 379.98     |
|               | (ft)   | 1488.64    | 1293.71    | 838.70     | 1130.84    | 1246.64    |
|               | (date) | 05.05.2002 | 31.05.2002 | 31.05.2002 | 31.05.2002 | 31.05.2002 |

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

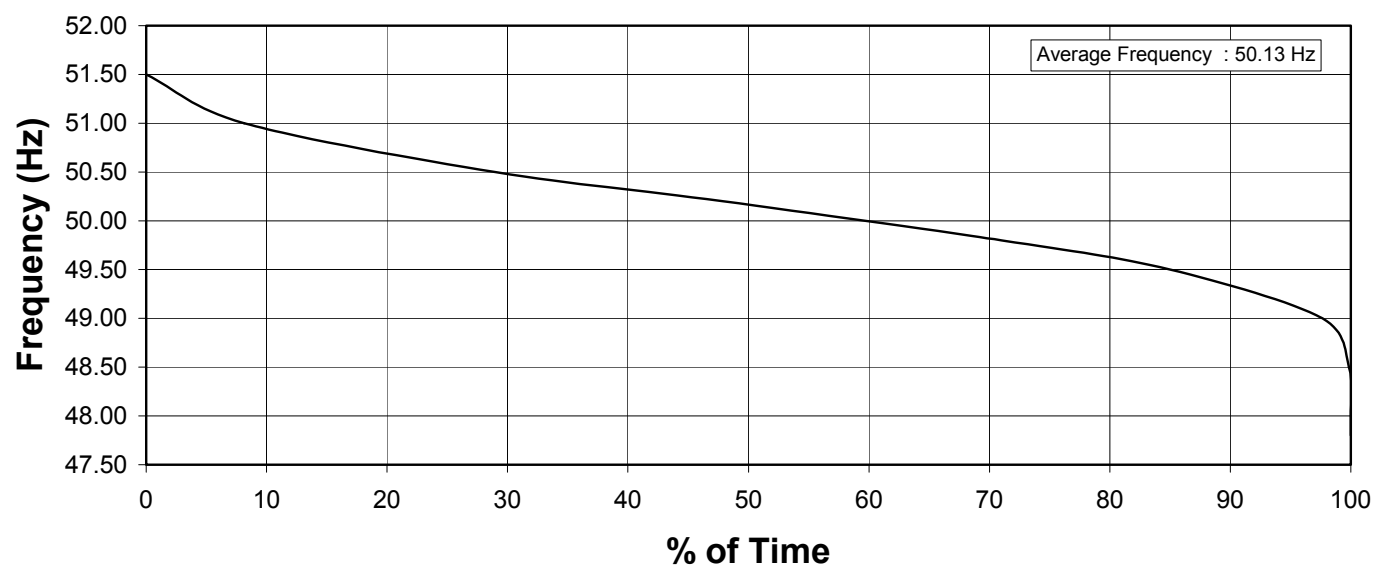
**Energy content of Rihand : Total Energy content at Rihand & Obra power stations**

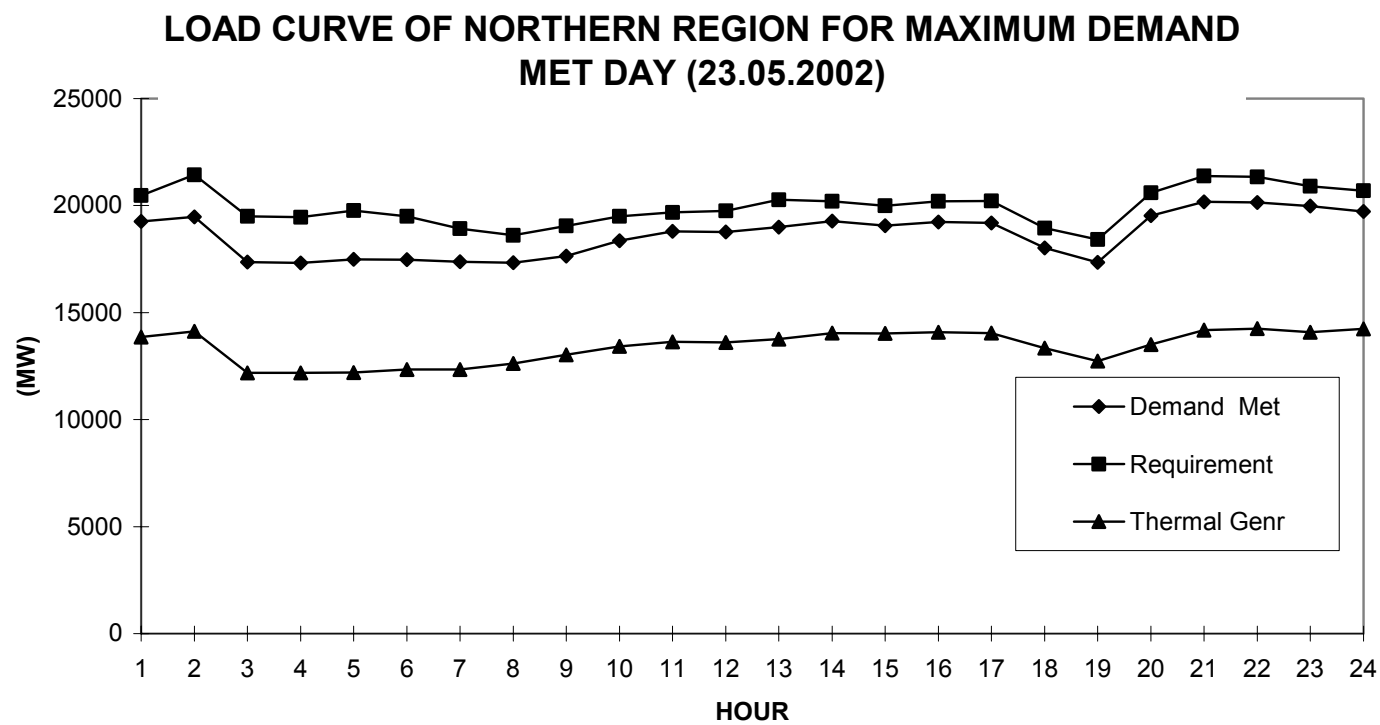
**Energy content of RPS : Total Energy content of Rana Pratap Sagar and Jawahar Sagar Power Stations.**

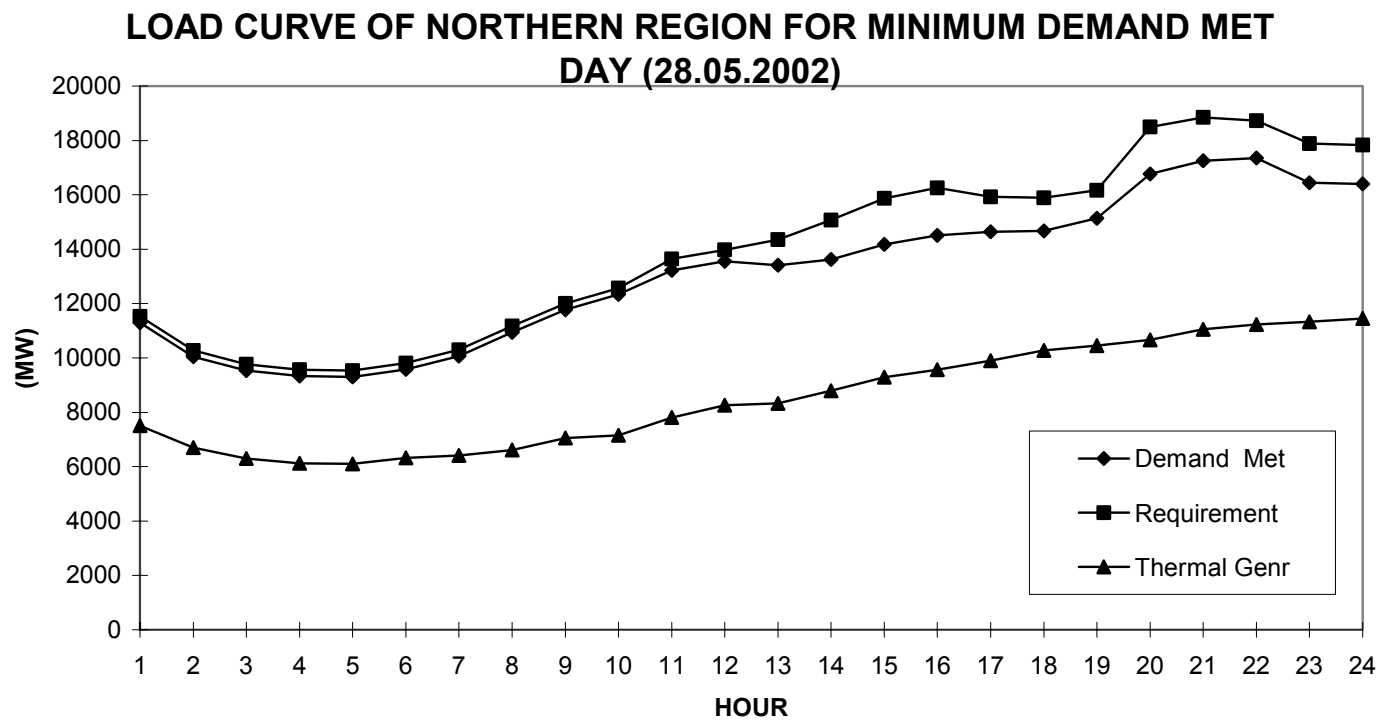
**Energy Content of G. Sagar : Total Energy content at Gandhi Sagar, RP Sagar and Jawahar Sagar Power Stations.**

**LOAD DURATION CURVE OF NORTHERN REGION FOR MAY 2002**

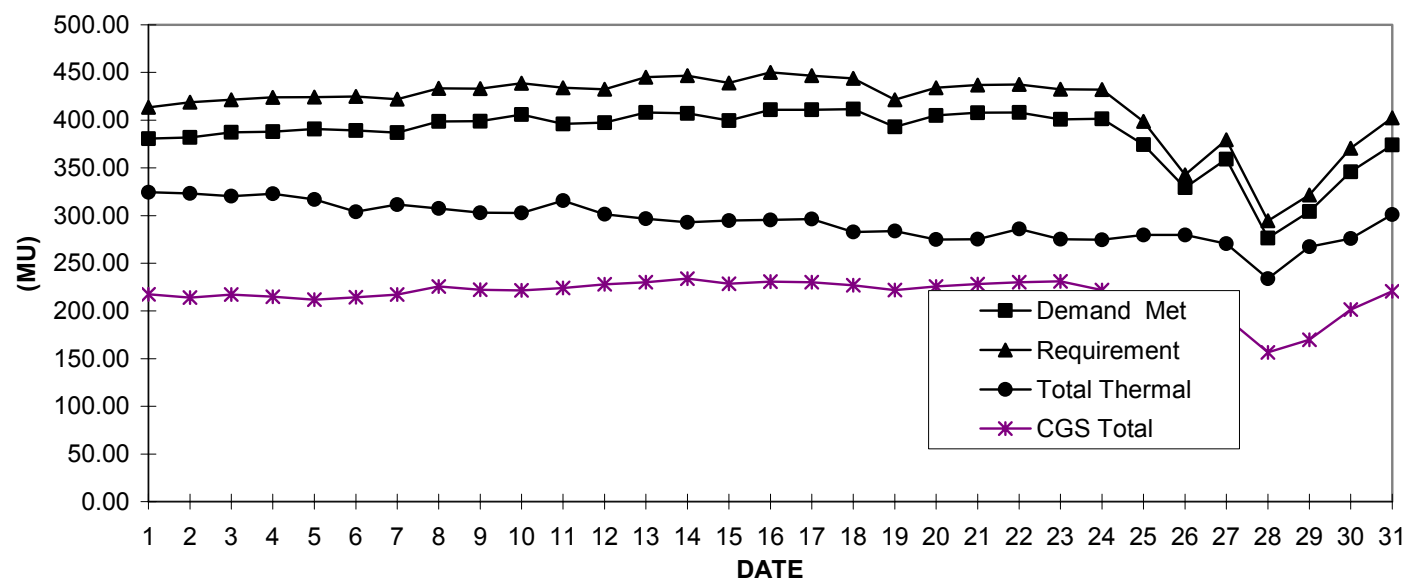
## FREQUENCY DURATION CURVE OF NORTHERN REGION FOR MAY 2002



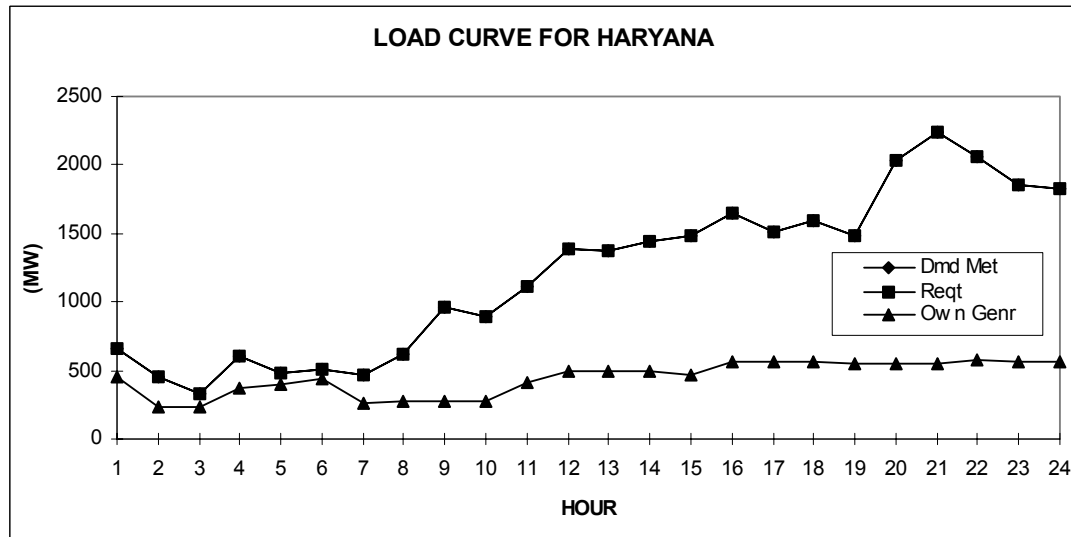
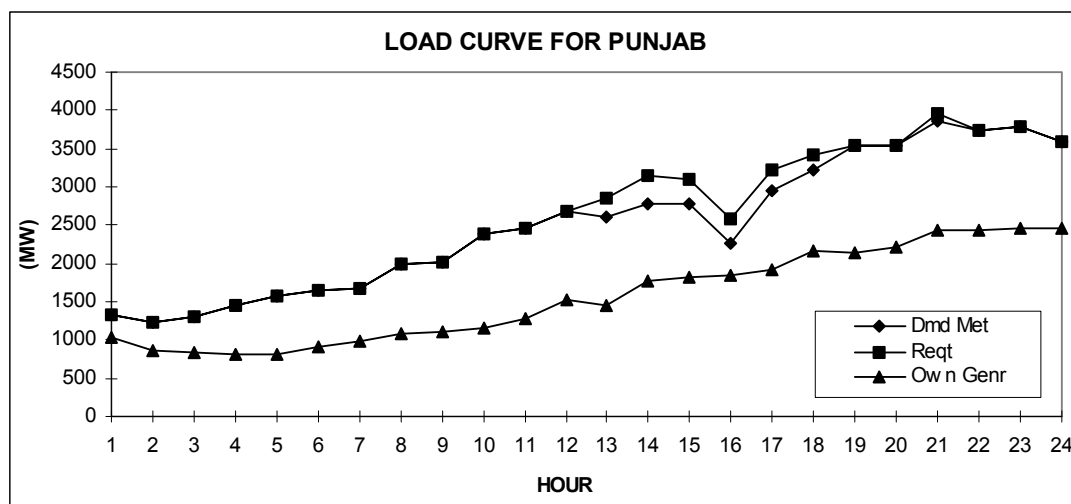


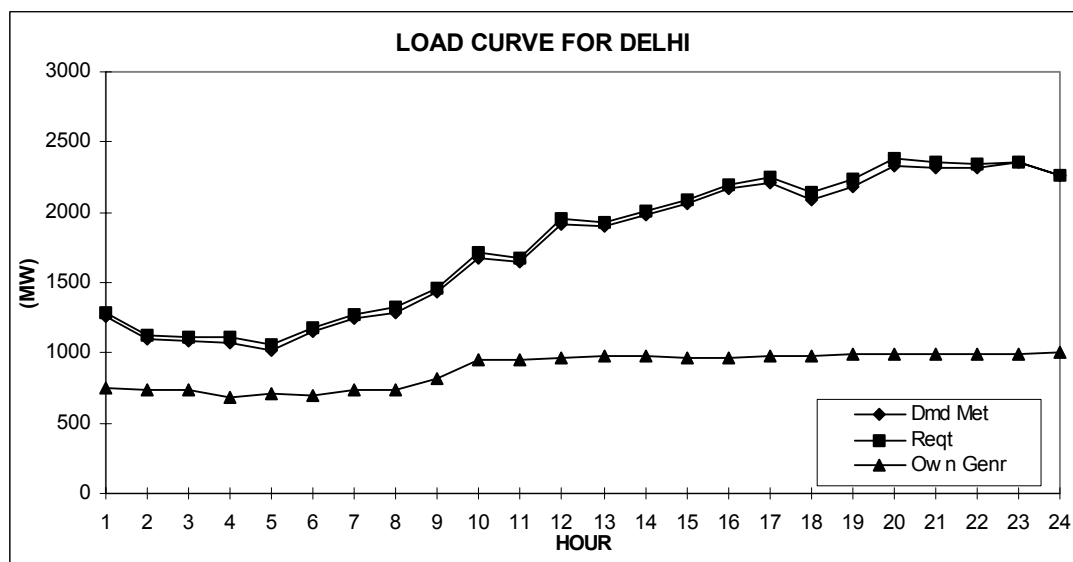
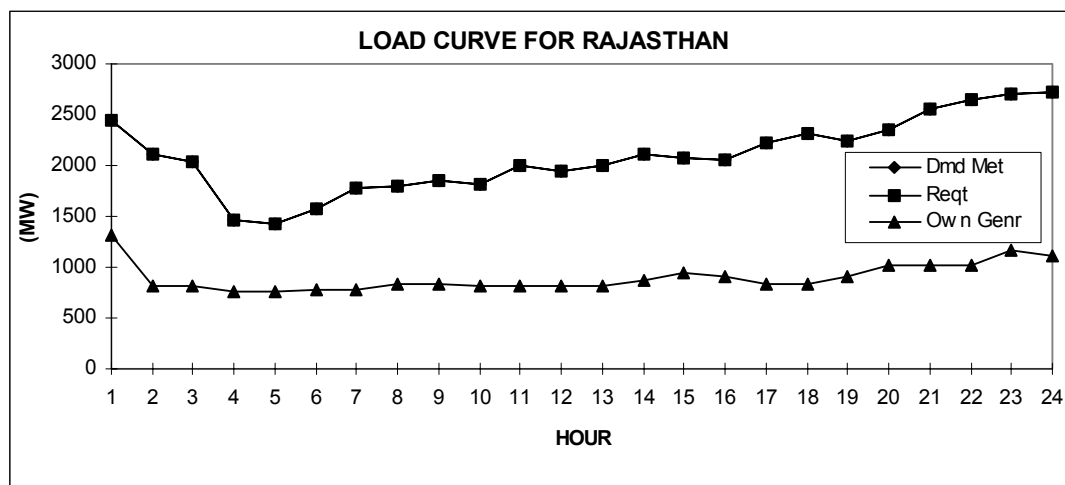


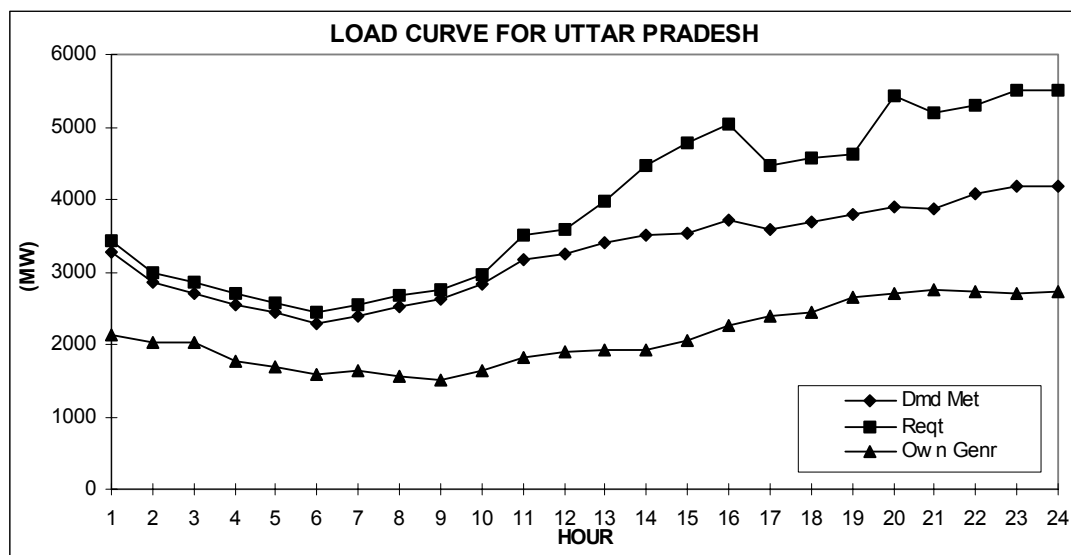
### DAYWISE DEMAND MET AND REQUIREMENT (In MU) OF NORTHERN REGION DURING MAY 2002



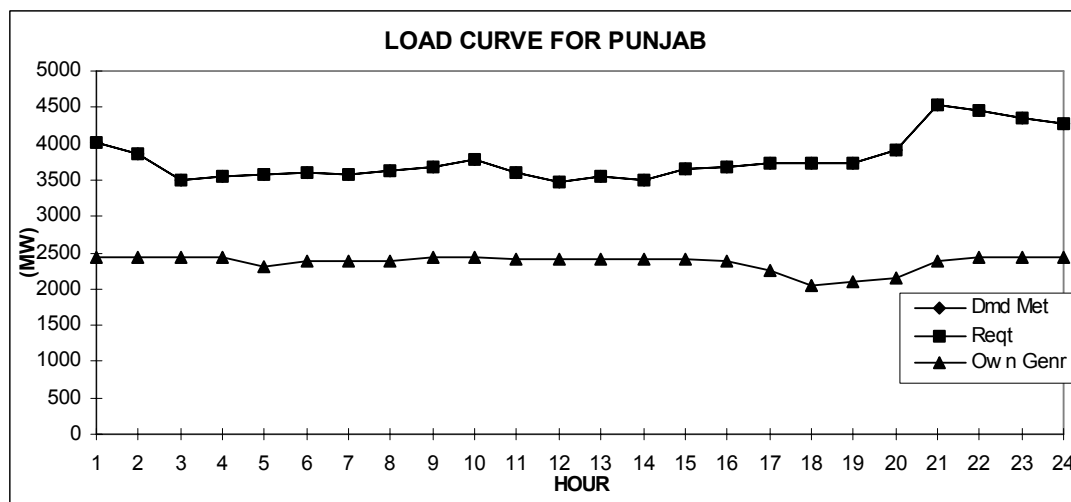
## STATE LOAD CURVES FOR REGIONAL MINIMUM DEMAND MET DAY(28.05.2002)

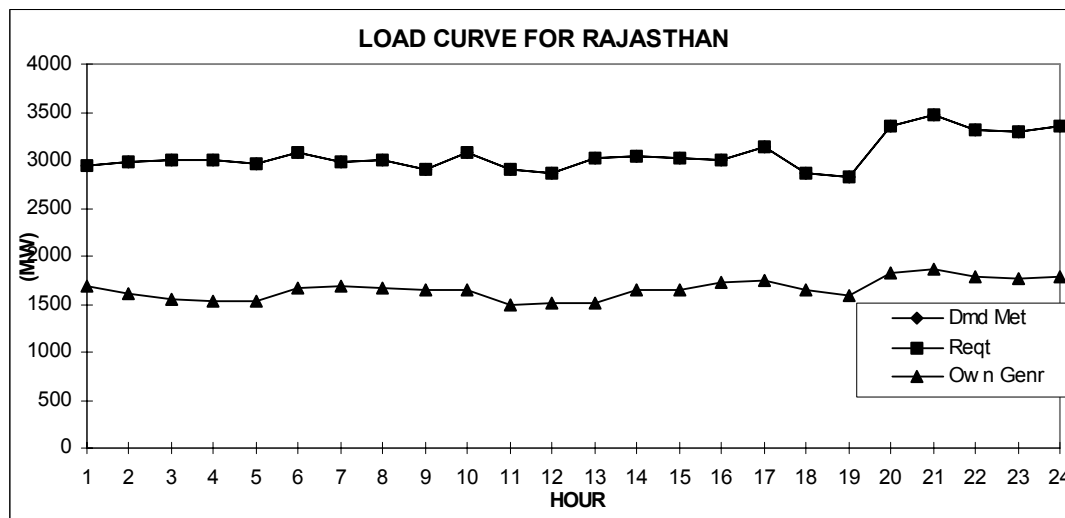
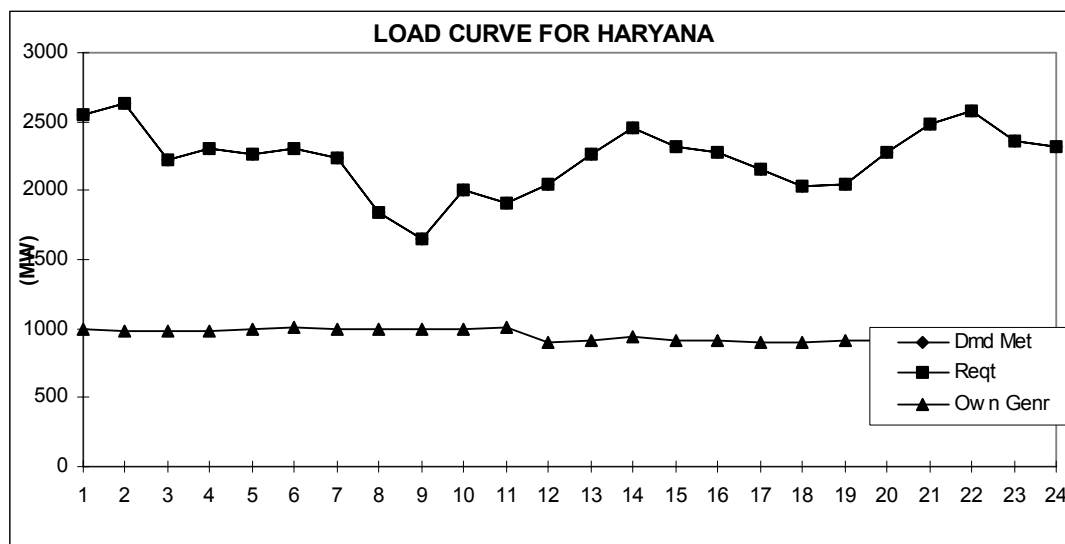


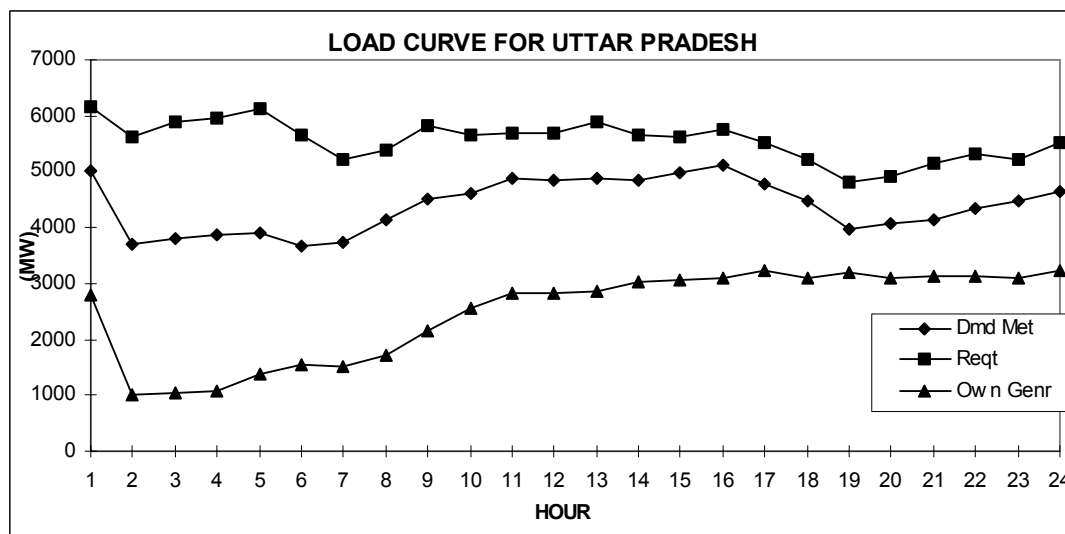
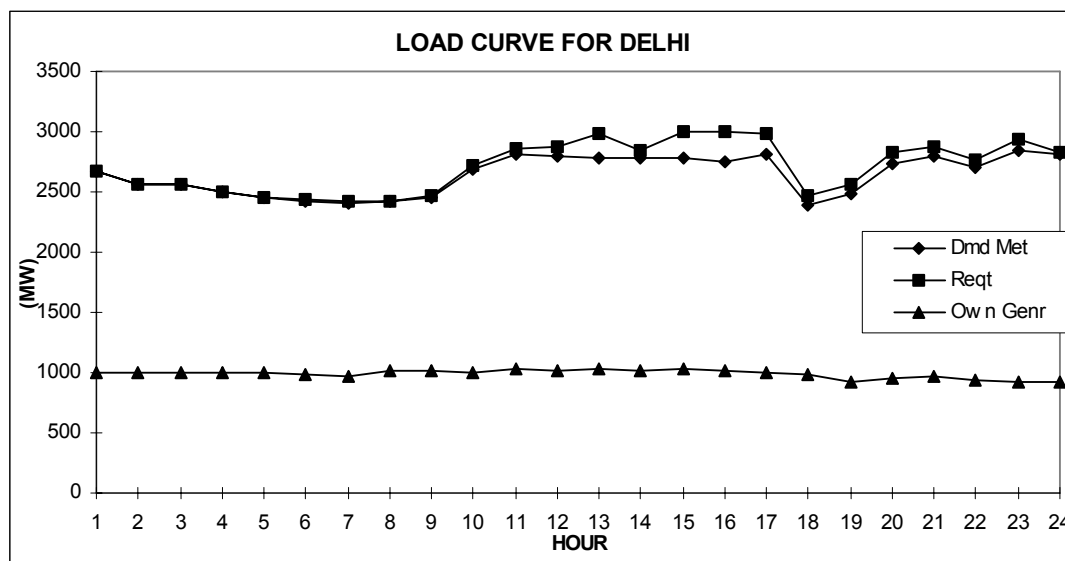




STATE LOAD CURVES FOR REGIONAL MAXIMUM DEMAND MET DAY(23.05.2002)







**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. |