|  |  |  |
| --- | --- | --- |
|  | **पंजीकृत कार्यालय :शक्ति सदन, कोटला रोड़, न्यू दिल्ली-110002**  (Regd. Office Shakti Sadan, Kotla Road, New Delhi-110002)  **कार्यालय उपमहाप्रबंधक (एस.ओ.)**  **Office of Dy. General Manager (SO)**  **एस एल डी सी बिल्डिंग, मिंटो रोड़, न्यू दिल्ली-110002**  SLDC Building, Minto Road, New Delhi-110002  Ph: 23221175, 23221099, 23221098 FAX No.23221012 | |
| **No. F./DTL/207/13-14/DGM(SO)/71** | | **Dated : 26.07.2013** | |

**Subject : Minutes of the Meeting held on 05.06.2013 at SLDC to discuss about Transmission & Distribution constraints**

Dear Sir

The Minutes of the Meeting held on 05.06.2013 at SLDC to discuss about Transmission & Distribution constraints and to evolve strategy to overcome these constraints to meet the upcoming summer demand is enclosed for ready reference and further necessary action please.

Thanking you,

भवदीय / Yours faithfully

Encl. as above

**(उपमहाप्रबंधक (एस.ओ.)/**Dy. G. M. (SO)

To

1. Executive Director (Engineering), DERC, Shivalik, New Delhi-110017
2. G. M. (SLDC), SLDC Building, Minto Road, New Delhi-110002
3. General Manager (Planning), DTL, Shakti Deep Bldg. Jhandewallan, New Delhi-55
4. General Manager (O&M)-I, DTL, Parkstreet, 220kV S/Stn.,New Delhi
5. General Manager (O&M)-II, DTL, Jhandewalan, Delhi-110055
6. General Manager (Project)-I, DTL, Jhandewalan, Delhi-110055
7. General Manager (Project)-II, DTL, Jhandewalan, Delhi-110055
8. General Manager (C&RA), DTL, IP Estate, Vikas Marg, New Delhi-110002
9. General Manager, (C&MM),DTL, RPH, New Delhi-110002
10. General Manager (Civil), 220kV S/stn Bldg, Lodhi Road, New Delhi-110003
11. Chief Engineer (Elect.), NDMC, Palika Kendra, New Delhi-110001
12. Sh. Chaman Lal, SE(E-II&IV), 17th Floor, Palika Kendra, New Delhi-110001
13. Chief Engineer (Utilities),CWE,MES, Kotwali Road, Delhi Cantt New Delhi-10
14. Sh. A. K. Sharma, Head (O&M), BYPL, Shakti Kiran Bldg., Karkadooma, Delhi-
15. Sh. Mukesh Dadhich, DGM(SO), BYPL, Balaji Estate, Kalkaji, New Delhi-110019
16. Sh. Chandra Mohan, Sr. Consultant, BRPL, BSES Bhawan, Nehru Place, New Delhi-19
17. Sh. Arvind Gujral, Sr.VP (Head-O&M),BRPL,BSES Bhawan, Nehru Place,New Delhi-19
18. Sh. Ajay Kumar, VP(PMG/Const/Plg),BRPL, BSES Bhawan, Nehru Place, New Delhi-19
19. Sh. S. S. Sondhi, AVP(SO), BRPL, Balaji Estate, Kalkaji, New Delhi-110019
20. Sh. Sanjay Srivastava, AVP (PMG), BRPL, PMG Office, Second Floor, BSES Bhawan, Nehru Place, New Delhi-110019
21. Sh. Sunil Kakkar, Head (PMG), BYPL, Shakti Kiran Building, Karkardooma, Delhi-92
22. Sh. Ashish Kumar Dutta, AGM(PMG), TPDDL, Hudson Lines, Kingsway Camp, Delhi-09
23. Sh. H.C.Sharma, HoD(Engg), TPDDL, 33kV Hudson Lane S/stn Bldg, Kingsway Camp, Delhi-110009
24. Sh. Sanjay Banga, Sr. GM (Operations), TPDDL, 33kV Hudson Lane S/stn Bldg, Kingsway Camp, Delhi-110009
25. Sh. P. Devanand, (HOG-SO), TPDDL, Adjacent to 66/11kV Pitampura-3 Grid Building, Near PP Jewellers, Pitampura, Delhi-34
26. EO to CMD, DTL
27. DGM(SCADA), SLDC Delhi
28. Sh. Darshan Singh, Manager (SO), SLDC Delhi

Copy for favour of kind information to :-

* 1. Secretary, DERC, Viniyamak Bhawan, C-Block, Shivalik, New Delhi-110017
  2. Chairman and Managing Director, DTL
  3. Chairperson, New Delhi Municipal Council, Palika Kendra, Sansad Marg, New Delhi
  4. Member Secretary, NRPC, Katwaria Sarai, New Delhi-110016
  5. General Manager (NRLDC), POSOCO, Katwaria Sarai, New Delhi-110016
  6. Managing Director, Indraprastha Power Generation Company Ltd (IPGCL) / Pragati Power Corporation Ltd (PPCL), Himadri, Rajghat Power House, New Delhi-110002
  7. Director (Operations), DTL
  8. Director (Finance) DTL
  9. Director (HR), DTL
  10. CEO, BSES Rajdhani Power Ltd, BSES Bhawan, Nehru Place, New Delhi-110019
  11. CEO, BSES Yamuna Power Ltd, Shakti Kiran Building, Karkardooma, New Delhi-92
  12. CEO, Power System Operation Corporation (POSOCO), B-9, Qutub Institutional Area, Katwaria Sarai, New Delhi-110016
  13. CEO, Tata Power Delhi Distribution Ltd, 33kV Grid S/Stn, Hudson Lane, Kingsway Camp, Delhi-110009
  14. Chief Engineer(Utilities),CWE, MES, Kotwali Road, Near Gopi Nath Bazar, Delhi Cantt New Delhi-110010
  15. Addl. Secretary (Power), Govt. of NCT of Delhi, Delhi Secretariat, New Delhi

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**DELHI TRANSCO LTD.**

(Regd. Office : Shakti Sadan, Kotla Road, New Delhi 110002)

**[Office of Dy. General Manager (SO)]**

SLDC Building, Minto Road, New Delhi – 110 002

Phone No.23221149, 23221175, Fax 23221012, 59

**Subject : Summary Record of discussions held in the Meeting held on 05.06.2013 at SLDC to discuss about Transmission & Distribution constraints.**

A meeting was convened in SLDC to discuss about Transmission and Distribution constraints likely to exist during summer 2013 and to evolve strategy to overcome the constraints. This meeting was a follow up of the meeting held on 05.02.2013 at SLDC.

The list of participants is enclosed as Annexure-A.

The following is the gist of the discussions and decisions.

1. **The interstate transmission capacity of Delhi for summer 2013 is as under :-**

**Interstate Transmission Capacity**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Sr. No. | Name of the Inter connection point | Transmission Element | Capacity in MVA / MW | Transfer Capacity in MW | Available Transfer Capacity in MW | Remarks |
| 1 | Mandola | 400/220kV 315MVA Tx-I | 315MVA | 280 | 250 |  |
|  | 400/220kV 315MVA Tx-II | 315MVA | 280 | 250 |  |
|  | 400/220kV 315MVA Tx-III | 315MVA | 280 | 250 |  |
|  | 400/220kV 315MVA Tx-IV | 315MVA | 280 | 250 |  |
|  | **Total** | **1260** | **1120** | **1000** |  |
| 2 | Bawana | 400/220kV 315MVA Tx-I | 315MVA | 280 | 250 |  |
|  |  | 400/220kV 315MVA Tx-II | 315MVA | 280 | 250 |  |
|  |  | 400/220kV 315MVA Tx-III | 315MVA | 280 | 250 |  |
|  |  | 400/220kV 315MVA Tx-IV | 315MVA | 280 | 250 |  |
|  |  | 400/220kV 315MVA Tx-V | 315MVA | 280 | 250 |  |
|  |  | 400/220kV 315MVA Tx-VI | 315MVA | 280 | 250 |  |
|  |  | **Total** | **1890MVA** | **1680** | **1500** |  |
| 3 | Bamnauli | 400/220kV 315MVA Tx-I | 315MVA | 280 | 250 |  |
|  |  | 400/220kV 315MVA Tx-II | 315MVA | 280 | 250 |  |
|  |  | 400/220kV 315MVA Tx-III | 315MVA | 280 | 250 |  |
|  |  | 400/220kV 315MVA Tx-IV | 315MVA | 280 | 250 |  |
|  |  | **Total** | **1260** | **1120** | **1000** |  |
| 4 | Maharani Bagh | 400/220kV 315MVA Tx-I | 315MVA | 280 | 140 | The outage of D/C line b/w Maharani Bagh and Trauma Center caused reduction in ATC. |
|  | 400/220kV 315MVA Tx-II | 315MVA | 280 | 140 |
|  | 400/220kV 500MVA Tx-I | 500MVA | 400 | 140 |
|  | 400/220kV 500MVA Tx-II | 500MVA | 400 | 140 |
|  | **Total** | **1630** | **1360** | **560** |
| 5 | Mundka | 400/220kV 315MVA Tx-I | 315MVA | 280 | 100 |  |
|  |  | 400/220kV 315MVA Tx-II | 315MVA | 280 | 100 |  |
|  |  | **Total** | **630MVA** | **560** | **200** |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sr. No.** | **Name of the Inter connection point** | | | **Transmission Element** | | **Capacity in MVA / MW** | **Transfer Capacity in MW** | | **Available Transfer Capacity in MW** | | **Remarks** | |
| 6 | Harsh Vihar | | | 400/220kV 315MVA Tx-I | | 315MVA | 280 | | 0 | | Due to delay in commissioning of 400kV Dadri - Harsh Vihar D/C line by PGCIL | |
|  | 400/220kV 315MVA Tx-II | | 315MVA | 280 | | 0 | |
|  | **Total** | | **630MVA** | **560** | | **0** | |
| 7 | BTPS | | | 220kV Ballabhgarh Ckt-I | | 132MW | 132 | | 100 | |  | |
|  |  | | | 220kV Ballabhgarh Ckt-II | | 132MW | 132 | | 100 | |  | |
|  |  | | | 220kV Alwar Ckt. | | 132MW | -132 | | -100 | |  | |
|  |  | | | 220kV Noida Ckt. (Sec 20) | | 132MW | -132 | | -132 | |  | |
|  |  | | | **Total** | | **528MW** | **0** | | **-32** | |  | |
| 8 | Narela | | | 220kV Panipat Ckt-I | | 100MW | 100 | | 75 | |  | |
|  |  | | | 220kV Panipat Ckt-II | | 100MW | 100 | | 75 | |  | |
|  |  | | | 220kV Panipat Ckt-III | | 100MW | 100 | | 75 | |  | |
|  |  | | | **Total** | | **300MW** | **300** | | **225** | |  | |
| 9 | Rohtak Road  (BBMB) | | | 66kV Gurgaon Ckt-I | | 20MW | -20 | | -10 | |  | |
|  | 66kV Gurgaon Ckt-II | | 20MW | -20 | | -10 | |  | |
|  | 33kV Gurgaon Ckt. | | 20MW | -20 | | -10 | |  | |
|  | 33kV Bahadurgarh Ckt. | | 20MW | -20 | | -10 | |  | |
|  | Total | | 80MW | -80 | | -40 | |  | |
| 10 | Patparganj | | | 220kV Sahibabad ckt. | | 132MW | 132 | | 0 | |  | |
| 11 | Gazipur | | | 220k Noida Sec-62 Ckt. | | 132MW | 132 | | 0 | |  | |
| 220k Noida Sec-20 Ckt. | | 132MW | 132 | | 132 | |  | |
|  |  | | | Total Capacity | |  | **6456** | | **4745** | |  | |
| **Generation** | |  | | |  | | |  | |  | |
| Generation Capacity being injected at 220kV or below level | | | | | | | |  | |  | |
| Station | | | Capacity in MW | |  | | | Capacity in MW | | Ex-bus Capacity | |
| BTPS | | | 705 | |  | | |  | | 600 | |
| RPH | | | 130 | |  | | |  | | 100 | |
| GT | | | 270 | |  | | |  | | 150 | |
| Pragati | | | 330 | |  | | |  | | 300 | |
| Rithala | | | 75 | |  | | |  | | 50 | |
| TOWMCL | | | 16 | |  | | |  | | 12 | |
| Total Capacity | | | 1526 | |  | | |  | | 1212 | |
| Total Demand handling capacity | | | | |  | | | 7668 | | 5997 | |

Note : If any reduction in generation / outage of interstate element, the transmission capacity gets reduced.

It was informed that on 31.05.2013, both the circuits between 400kV Maharani Bagh – 220kV AIIMS which was feeding power upto Naraina via Ridge Valley got damaged in HDD drilling exercise of Delhi Jal Board. This caused reduction of 340MW transmission capacity reduction. This reduction is resulting the over-loading of 400/220kV 315MVA transformers at Bamnauli and 220kV BTPS – Ballabhgarh circuits.

SLDC representative intimated that BRPL, BYPL and TPDDL has been requesting to back down generation strictly on merit order as huge underdrawal is occurring under high frequency conditions due to adequate power arrangements made by the Discoms. It was further argued that the anticipated demand of Summer 2013 has not happened so far. The overall power

supply position anticipated and occurred during April 2013 to June 2013 is as under :

All figures in MW

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **MONTH** | **1st Fortnight** | | | | | **2nd fortnight** | | | | |
| **APRIL 2013** | 00-03 | 03-09 | 09-12 | 12-18 | 18-24 | 00-03 | 03-09 | 09-12 | 12-18 | 18-24 |
| DEMAND ANTICIPATED | 3350 | 3100 | 3900 | 4200 | 3800 | 3200 | 3100 | 4000 | 4400 | 4200 |
| ACTUAL DEMAND MET | **2800** | **2700** | **3500** | **3700** | **3400** | **3400** | **3125** | **3900** | **4200** | **4000** |
| **MAY 2013** |  |  |  |  |  |  |  |  |  |  |
| DEMAND ANTICIPATED | 4200 | 3650 | 4500 | 5000 | 4600 | 4750 | 4450 | 5000 | 5500 | 5200 |
| ACTUAL DEMAND MET | **4200** | **3600** | **3800** | **4429** | **4438** | **4840** | **4450** | **4670** | **5350** | **5050** |
| **JUNE 2013** |  |  |  |  |  |  |  |  |  |  |
| DEMAND ANTICIPATED | 5000 | 4500 | 5000 | 5700 | 5200 | 5200 | 4750 | 5400 | 5900 | 5400 |
| ACTUAL DEMAND MET | **4800** | **4405** | **4801** | **5092** | **5064** | **4822** | **4464** | **4762** | **5375** | **4897** |

The Distribution licensees further were of the view that the power was also not being sold on day ahead basis through Power Exchanges due to lack of demand in NEW grid and transmission corridor problems with NEW grid and Southern Regional Grid. They were of the view that under such conditions the only option appears to close down costly generations such as BTPS Units 1,2 & 3 of 95MW capacity each, GT station of IPGCL, Bawana CCGT, Aravali etc.

SLDC representative elaborated the following problem in closing and backing down load center based generation.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Station name | Installed capacity in MW | Variable Charges in PS/Unit | | | Reason for non backing down |
| 2012-13 (avg) | Apr 13 | May 13 |
| BTPS | 705 | 359 | 361 | 339 | During peak hours irrespective of frequency and underdrawal position of Delhi full generation is required to ensure security of power system of Delhi as in the event of backing down the major link of BTPS with the grid i.e 220kV BTPS-Ballabhgarh Double Circuit lines get over loaded along with over loading of 400/220kV 315MVA ICTs at 400kV S/Stn of PGCIL at Samypur. During off peak hours the backing down is carried out to the extent of technically possible limit. It was also explained that the availability and scheduled power from BTPS during April 2013 to June 2013 establishes the extensive backing down carried out in this station.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Month | Availability in | | Scheduled in | | |  | In MUs | In % of capacity | In MUs | In % of capacity | | April 13 | 430 | 93.5 | 376 | 82 | | May 13 | 463 | 98 | 398 | 84 | | Jun 13 | 456 | 99.35 | 366 | 80 | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Station name** | **Installed capacity in MW** | **Variable Charges in PS/Unit** | | | **Reason for non backing down** |
| **2012-13 (avg)** | **Apr 13** | **May 13** |
| GT | 270 | 366 | 393 | 374 | At least two modules (4 GTs and 2 STGs) are required to be maintained through out the day to contain the loading on 220kV link system mainly, 220kV Wazirabad – Geeta Colony – Patparganj D/C apart from limiting the load on 4 nos. of 400/220kV 315MVA ICTs at Mandola to 1000MW for secure operation of the Grid.  During the off peak hours, sum load relief occurs in the link, but to avoid frequent closing and start up of generation, two modules of GTs amounting the generation of 150MW ex-bus generation is required to be ensured. However, even during peak hours, this quantum of generation is insufficient to contain the loading of mainly 220kV Wazirabad – Geeta Colony – Patparganj D/C apart loading on 400/220kV 315MVA ICTs at Mandola. |
| RPH | 135 | 297 | 305 | 305 | The entire summer season, both units of RPH should be ensured to be available to contain loading of associated transmission system as per the reasons mentioned above. |
| PPCL | 330 | 276 | 247 | 304 | The reasons are same as that mentioned in case of RPH and GT. |
| Bawana CCGT | 685 | 306 | 359 | 283 | To obviate stringent Take and Pay clause of Gas, the generation is being scheduled to extent of technical bare minimum level. |
| Aravali Power | 1500 | 345 | 356 | 358 | At present, Delhi is having 11.71% of the 1500MW, capacity of the Station. Balance power out of 46.2% capacity allocation has been reallocated to needy states upto 30th September 2013 (at present). Delhi SLDC is not scheduling any power from Aravali Jhajjar units. However, NRLDC schedules power occasionally to Delhi to meet the technical minimum requirement to ensure operation of the units. The recent (87th) OCC of NRPC held on 17.05.2013 has also decided following in this regard:-  **11. Technical minimum scheduling to IGSTPP.**  Representative of Aravali Power Company Ltd. stated that their IGSTPP (A 1500 MW Thermal power station) is an ISGS with major beneficiaries being Haryana (46.2%), Delhi (11.79%) and U.P. (13.34%) from NR grid. Other major beneficiaries are Andhra (15.7%) and Kerala (6.0%). He added that on 05.05.2013, IGSTPP Units # 2 & 3 were on bar (2 x 500 MW). The schedule was only approx. 385 MW to 338 MW. He said that schedule was approimately 320 MW short of Technical Minimum schedule for 2 units of 500 MW. Haryana and |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Station name** | **Installed capacity in MW** | **Variable Charges in PS/Unit** | | | **Reason for non backing down** |
| **2012-13 (avg)** | **Apr 13** | **May 13** |
|  |  |  |  |  | Delhi had given ‘nil’ schedule. It was not possible to reduce AG to the level of schedule, keeping in view the stable operation of the units, while the frequency was above 50.0 Hz.  NRLDC could not protect our technical minimum level of generation nor were we allowed to close down one machine, which caused heavy loss to our company. He requested that :-  (1) NRLDC should ensure technical minimum schedule to them on a sustained basis.  (2) In case of very low schedule, it should be ensured that request for reserve shutdown is issued immediately and the period of Reserve shutdown should be for a minimum period of 72 hours, bar to bar. IGSTPP is a base-load station & such frequent starts and stops are detrimental for the plant machinery life.  (3) In case of any revision of schedule the ramp-up and ramp-down rate should be within desired 1% ramp rate (CERC Grid Code clause 5.2 h). The ramp quantity should be 37.5 MW per 500MW unit for the first block and thereafter 75 MW per 500MW unit in subsequent blocks.  (4) It needs to be ensured that Revision of schedule to be exercised from the 6th time block or in case of tripping from the 4th time block as per IEGC.  Representative of NRLDC stated that Haryana has been requisitioning power varying from zero to their full share and has been writing letters intimating that they will not pay for the power booked to them without requisition. Further, in the event of allowing units to go in reserve shut down, Haryana takes the stands that they will not pay charges for DC. He added that under, such situations, it is not possible to give technical minimum schedule to IGSTPP. |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Station name** | **Installed capacity in MW** | **Variable Charges in PS/Unit** | | | **Reason for non backing down** |
| **2012-13 (avg)** | **Apr 13** | **May 13** |
|  |  |  |  |  | Representative of NRLDC desired that OCC should decide as to when a machine be shut down and after how much time the machine can be re-started. Representative of Aravali Power Company Ltd. stated that decision taken to stop a machine should not take too long and reserve shutdown should be for a minimum period of 72 hours, bar to bar.  Representative of HVPNL stated that their requisition was based on the requisition by their distribution companies. SE(O), NRPC suggested that either Haryana may consider surrendering its share or else divert it till such time they don’t need it. Member Secretary, NRPC was of the view that NRLDC was well within its powers to schedule technical minimum. GM, NRLDC stated that they will endeavour to schedule technical minimum by persuading the beneficiaries. However, in the event of technical minimum scheduling to IGSTPP without adequate requisition, power will be booked to all beneficiaries.  Representative of HVPNL stated that technical minimum be maintained at 65%.  **After discussions OCC decided that in respect of Technical minimum scheduling of generating stations, SLDCs will requisition power so that technical minimum gets scheduled. In the event of less requisition, NRLDC will schedule to the technical minimum level and power will be booked to all beneficiaries in proportion to their share.**  Inspite of the decision of OCC of NRPC, the power scheduled to Delhi from Aravali Jhajjar is much less than the stipulated 70% |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Station name** | **Installed capacity in MW** | **Variable Charges in PS/Unit** | | | **Reason for non backing down** |
| **2012-13 (avg)** | **Apr 13** | **May 13** |
|  |  |  |  |  | technical minimum level scheduling which is evident from the following table :-     |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Month | Availability | | | | Scheduling by NRLDC / as per Discom’s requirement | | | In %age | In MUs | for Delhi in MUs | In %age | In MUs | In %age of allocation | | Apr 13 | 104.492 | 792 | 142 | 18.595 | 11.92 | 8.3 | | May 13 | 60.291 | 673 | 79.35 | 11.79 | 12.125 | 15.35 | | Jun 13 | 61.053 | 659 | 77.75 | 11.79 | 9.942 | 12.79 | |

Apart from above, Delhi SLDC schedules power from various sources depending upon system conditions. It was also explained that the technical problems in closing down of units at Load Centers mainly Aravali, Dadri (Thermal)-I & II etc. at the time of high peak demand season. The closing down not only creates the transfer capacity reduction in Inter Regional transfer of power in the Grid but also lowers the voltage at load centers.

It was further explained that in case of closing down of machines at Bawana CCGT, the generator of the Steam Turbine is having some technical problem due to which IR value of the generator goes down. As such, whenever Bawana Station is asked to restart, the machine after a gap of 3-4 days, the generator of Steam Turbine is required to be dried out which normally takes about 12-18 hours during which the Gas Turbine has to operate in Open Cycle mode.

After detailed discussions, it was decided to ensure maximum availability of generation in Delhi which is being injected at 220kV level and below during peak summer season. The backing down should be carried out in these units by SLDC to the extent possible considering the security of the Grid. As far as Bawana CCGT is concerned, the technical minimum level operation of the combined cycle mode generation to be maintained looking into the time being taken by the unit to be back on bars if they are closed down as mentioned above, however, in case of load crash these units should be closed down despite the fact of Take or Pay clause for maximum guaranteed off take by generator for the station.

For other station like Dadri (Thermal) Stage-I & II etc, the scheduling should be done on technical minimum level depending upon real time operation. For Aravali Power, SLDC should requisition power only as per request by Discoms notwithstanding the fact that NRLDC schedules power to beneficiaries to ensure minimum technical limits for operation of the units as per the decision of OCC of NRPC.

**2 Transmission Constraints and suggestions to remove the same**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr. No.** | **Details of transmission constraints** | **Suggestions drawn out as per discussions held on 05.02.13 and 8th GCC meeting held on 08.03.13** | **Target fixed** | **Discussion and decision in the meeting (present status)** |
| **To meet Summer 2013 Demand** | | | | |
| 1 | Outage of 220/66kV 100MVA Tx-II at Okhla since 14.28hrs. on 16.10.2012 due to damage of the Tx. | The Tx should be revived before onset of summer | 30.04.2013 | Tx. Commissioned on 10.05.2013 at 12.32hrs. |
| 2 | Augmentation of 220/33kV 50MVA Tx to 220/33kV 100MVA Tx at Okhla - out since 19.36hrs. on 05.06.2010 | The Tx should be augmented before onset of summer | 31.05.2013 | Representative of Project Department of DTL informed that the civil foundation of transformer needs to be modified. The Tx for which foundation was designed for CGL make Tx has been diverted to RPH to replace the damaged 100MVA Tx. The new Tx received in the month of June 2013 at Okhla. However, design of Tx is different from earlier CGL make Tx. The foundation for the new transformer is required to be modified. |
| 3 | Outage of 220/33kV 100MVA Tx-III at IP 220kV since 06.25hrs on 24.07.12 due to damage of the Tx. | The Tx should be revived before onset of summer | 30.04.2013 | Representative of O&M Department of DTL informed that transformer is expected to be commissioned by 15.07.2013. The reason of delay is attributed due to delay in execution of work by the contractor (UP) |
| 4 | Outage of 220/33kV 100MVA Tx-II at Electric Lane – out since 20.09.2012 | Even though the present load is only 50MW. To have redundancy, the Tx. should be energized during the summer season | 31.07.2013 | The representative of Project Department of DTL informed that the work of revival of transformer is expected to be completed by 15.08.2013. The inspection work of the transformer is under progress. |
| 5 | 220kV Naraina – Ridge Valley Ckt.- out since 15.45hrs. on 17.09.2012 | To be energized before summer | 31.03.2013 | Cable energized on 12.04.2013 at 17.11hrs. |
| 6 | Delay in commissioning of 220kV AIIMs – Ridge Valley D/C line | For ensuring maximum evacuation from Maharani Bagh S/Stn and to give relief to 400/220kV ICTs at Bamnauli, the link should be established to meet the summer load demand. | 31.05.2013 | One of the cables (Ckt-II) energized on 15.04.13 at 18.38hrs. It is informed that the other circuit (ckt-I) has also been rectified but the same has been damaged again in the excavation work by DMRC. Now it has been decided to reroute the cable due to the upcoming station at Bhikaji Cama Place. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr. No.** | **Details of transmission constraints** | **Suggestions drawn out as per discussions held on 05.02.13 and 8th GCC meeting held on 08.03.13** | **Target fixed** | **Discussion and decision in the meeting resent status** |
| 7 | To ensure maximum evacuation from Mundka 400kV S/Stn. | 220kV Najafgarh – Kanjhawala Ckt. to be LILO at Mundka | Tower cast completion by 30.06.2013 and 15 days shut-down for LILO after that | It is explained that 5.5 Kms of the circuit are converted into under ground cable in the Loop in portion and 5.5 Kms for Loop out portion. Towers are required to be erected in 35 locations. The route approval was received from DDA in January 2010. For erection of towers, interruptions are occurred due to agitation by farmers. The foundation casting is done under police protection. Towers are also erected in 19 locations. The clearance for erection for 5 nos. of tower is yet to be obtained from DDA. Court cases are also hampering the work. As per the present conditions, the work might be completed by 31st Dec. 2013. |
| 8 | Stability of supply of West Delhi / North Delhi areas | LILO of 220kV Bawana – Najafgarh Ckt. at Kanjhawala | Route length of the line for Loop In is 3.2Kms for and for Loop Out, length is 3.3Kms. Towers and foundation casting have been erected at 30 locations. Stringing work has been completed for loop out portion. Due to non availability of stringing material, the work is held up and tower foundation at three locations are also held up. The work is expected to be completed by 31.12.2013. | |
| 9 | The transmission constraints in North Delhi areas | Commissioning of 220kV Wazirpur S/Stn. | 31.05.13 | It was explained that due to reasons beyond the control of DTL, the sub-station could not be commissioned before 15.08.2013.  TPDDL representatives vehemently protested the delay as their intra discom constraints in certain pockets only be rectified after the commissioning of sub-station. It was also suggested that in case the sub-station is ready, arrangement should be made to feed the sub-station from 220kV Shalimar Bagh so that 33kV feeders can be fed from the 220kV Wazipur S/Stn.  Project Department expressed their inability to commit anything. It was also suggested that a joint team of DTL and TPDDL may visit site at Wazirpur and Shalimar Bagh to draw out any possible way to feed the sub-station. |
| 10 | The transmission constraints in West and North Delhi areas | Commissioning of 220kV Peera Garhi S/tn. | Though it was expected to be commissioned by 30.06.13, due to delay in getting RBI approval for opening Project Account for Rupees payment to the successful Chinese Bidder, the project is expected to be commissioned only by 31.12.013 | The Project Department informed that the project would now expected to be completed by 31.10.13. |

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| **Sr. No.** | **Details of transmission constraints** | **Suggestions drawn out as per discussions held on 05.02.13 and 8th GCC meeting held on 08.03.13** | **Target fixed** | **Discussion and decision in the meeting resent status** |
| 11 | The over loading of Mandola ICTs and 220kV Wazirabad – Geeta Colony – Patparganj – IP D/C line. | Commissioning of 220kV Maharani Bagh – Gazipur D/C line | UP Irrigation Deptt has not given the clearance sofar to erect five towers on the route in their territory. In the 84th OCC meeting of NRPC held on 19.02.13, UPPCL requested 100MW power from Gazipur during the shut-down period of one of the 315MVA ICTs at Greater Noida S/Stn. DTL agreed to provide the power to Noida after the completion of Gazipur – Maharani Bagh D/C line. The 87th meeting held 17.05.2013, the matter was again raised by DTL’s representatives in the meeting wherein UPPCL authorities assured their help in getting the clearance of erecting towers provided DTL giving 150MW power to UP. | Route length is 9Kms and number of location is 42. Foundation cast for 34 numbers of towers has been done and at 32 locations, towers have also been erected. NOC for 5 numbers of towers has not been given by the UP Irrigation Department. The matter is being pursued at Govt. and DTL level. It is hopeful that the permission would be granted by UP Irrigation Department. The work is expected to be completed by 31.12.2013. |
| 12 | Over loading at Mandola and transmission line between Mandola and IP, the commissioning of the S/Stn to be expedited before summer 2013 | Commissioning of 400kV Harsh Vihar S/Stn. | Due to delay in commissioning of 400kV Dadri – Harsh Vihar D/C line by PGCIL, the target could not be fixed. | It was intimated that as per information available from Powergrid sources, the line would be readied by the end of August 2013. The S/Stn is already ready, BYPL was advised to ensure that the proposed O/G 66kV feeders should be readied by that. BYPL representative agreed to complete the circuits by the stipulated time. |
| 13 | Overloading of 220/66kV 100MVA Txs at Mehrauli during peak hours | 160MVA Tx available at site to be energized before summer 2013. | 31.03.2013. | The Tx has not yet been energized. G.M. Project-I informed that the material like availability of C&R panel LV side CT etc. are being arranged. The only bottleneck is the tree cutting permission from Forest Department for which Civil Department is lisoning. It is expected to commission the transformer by 15.08.2013 |
| 14 | Overloading of 220/66kV 100MVA Txs at Wazirabad | 160MVA Tx available at site to be energized before summer 2013. | 31.05.2013. | In tendering process, the parties quoted abnormally high prices than estimated which is under scrutiny and process. |

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| **Sr. No.** | **Details of transmission constraints** | **Suggestions drawn out as per discussions held on 05.02.13 and 8th GCC meeting held on 08.03.13** | **Target fixed** | **Discussion and decision in the meeting resent status** |
| 15 | Stability of supply at Gazipur | 160MVA Tx available at Gazipur to be energized as quick as possible | 30.06.13 |  |
| 16 | Overloading of 220/66kV 100MVA Txs at Pappankalan-II | 160MVA Tx available at site to be energized before summer 2013. | 31.05.13. | The transformer oil is being arranged as insisted by manufacturer M/s BBL as the same has been used somewhere by DTL and is expected by 20.07.2013. |
| 17 | 220kV Maharani Bagh – Masjid Moth Ckt-I is out since 22.50hrs. on 26.04.13 due to excavation process of Delhi Metro | To meet the ongoing summer peak, the cable must be energized as quick as possible. | -- | Circuit has been energized on 06.06.2013 at 20.25hs. |

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| **18** | **Revival of Long outage capacitors** |

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| **Sl. No.** | **Name of S/stn** | **Capacity down in MVAR** | **Date of outage** | **Reason** | **Target** |
| 1 | 220kV Patparganj | 10 | 09.07.08 | Damage of Reactor and NCT | The orders of the capacitors cell are being made within a week time. The work of revival is expected to be completed by the end of July 2013. |
| 2 | 220kV Gazipur | 5.04 | 20.05.12 | Damage of cells |
| 3 | 220kV Mehrauli | 20 | 10.09.09 | Non availability of bay |
| 4 | 220kV Narela | 20 | 26.05.12 | Damage of cells |
| 5 | 220kV Shalimarbagh | 10 | 05.01.10 | Damage of cells |
| 6 | 220kV Pappankalan-I | 20 | 08.10.10 | Damage of cells |
| 7 | 220kV Naraina | 10 | 29.06.12 | Damage of cells & Reactor |
| 8 | 220kV IP | 20 | 04.03.13 | Due to theft of metal strip |
|  | **Total** | **115.04** |  |  |

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| **Sr. No.** | **Details of transmission constraints** | | **Suggestions drawn out** | **Target fixed** | | **Present status** |
| **Summer 2014 and onwards** | | | | | | |
| 1 | Overloading of 220kV Ckts. from Mandola to BTPS namely 220kV Mandola – Wazirabad (4 Ckts), 220kV Wazirabad – Geeta Colony (Two Ckts), 220kV Geeta Colony – Patparganj (2 Ckts), 220kV Patparganj – IP (2Ckts), 220kV IP – Pragati Ckt (2 Ckts), 220kV Pragati – Sarita Vihar (2 Ckts.) after removal of present LILO, 220kV Sarita Vihar Ckt (2 Ckts) | Capacity enhancement of transmission lines should be carried out in phased manner  **In 1st phase**  220kV Wazirabad – Geeta colony D/C line, 220kV Geeta colony – Patparganj D/C line  220kV Patparganj – IP D/C line,  **Second Phase**  220kV Mandola–Wazira Bad Ckt-I, II, III & IV  220kV Pragati – Sarita Vihar Ckt-I & II  220kV Sarita Vihar – BTPS Ckt-I & II  **Third phase**  Enhancement of the capacity of switchgears at Wazirabad, Geeta Colony, Patparganj, IP and Sarita Vihar S/Stns. | | Planning Deptt to prepare the scheme so that the augmentation can be done before summer 2014  To be augmented by summer 2015  Subsequently | It was informed that since the suppliers of HTLS conductors are limited, the project could be completed before next summer only if the same is awarded to single party as pilot project. Director (Ops) advised if it was the case, the same should be put up with due justification for taking the decision at appropriate level so that the enhanced transmission system capacity is available to meet summer 2014 demand. | |

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| **Sr. No.** | **Details of transmission constraints** | **Suggestions drawn out in the meeting 05.02.2013 and 8th GCC meeting** | **Target fixed** | **Present status** |
| 2 | Overloading of Transformers at Pappankalan-I and 220kV Line between Bamnauli and Pappankalan-I | Two transformers to be augmented to 160MVA Txs along with 66kV bus bars at Pappankalan-I. Lines capacity of 220kV Bamnauli - Pappankalan-I should also be augmented to handle the enhanced transformation capacity. | Planning Department to prepare the scheme so that that the system to be in place before summer 2014 | With regard to implementation of capacity enhancement of transmission line this should also be put in the ambit as a pilot scheme. With regard to enhancement of transformation capability Plg. Deptt. intimated that the scheme would be placed within one month. Planning Department representative informed that as per the Planning Criteria notified by CEA, the maximum capacity fixed for a sub-station is 500MVA. If the two transformers got enhanced to 160MVA capacity, the total capacity of the station would exceed the limit of 500MVA.  There was a general consensus that if there was any technical impediment in clearing the proposal for enhancement of the existing two 220/66kV 100MVA Txs to two 220/66kV 160MVA Txs, it could be thought of to enhance the capacity to 150MVA Txs instead of 160MVA Txs to keep the total capacity of the sub-station at 500MVA.  **Director (Ops) advised to put the scheme of enhancement of transmission line capability also as pilot project along with the case of Wazirabad-Geeta Colony-Patparganj link as these schemes are to be implemented before onset of summer 2014 due to the urgency.** |
| 3 | Over-loading of 400/220kV 315MVA transformers at Mandola. | 31st Standing Committee Meeting of Power System Planning held on 02.01.2013 at CEA, has approved the augmentation of all four 315MVA Txs to 500MVA capacity. | To be implemented by PGCIL. It is understood that two Txs would be augmented before summer 2014 and others before summer 2015. | No change in status |
| 4 | Over-loading of 400/220kV 315MVA ICTs at Ballabhgarh | 31st Standing Committee meeting of Power System Planning held on 02.01.2013 at CEA has approved the augmentation of all three 315MVA Txs to 500MVA | To be implemented by PGCIL. It is understood that all Txs would be augmented before summer 2015. | No change in status |

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| **Sr. No.** | **Details of transmission constraints** | **Suggestions drawn out in the meeting 05.02.2013 and 8th GCC meeting** | **Target fixed** | **Present status** |
| 5 | Alternate source to RPH | The establishment of link between 220kV Kashmiri Gate to RPH to be established so that parallel link between 220kV Harsh Vihar – Wazirabad – Kashmiri Gate – RPH could be established for ensuring reliability of power supply of Central and East Delhi areas. | Planning Department intimated that the scheme for GIS has already been prepared and is under finance scrutiny. | |
| 6 | Reliability of supply of East Delhi areas | DTL should plan and implement the sub-station being established in East Delhi for which land has recently been taken over by DTL as quick as possible and alternate link should be established namely 220kV Harsh Vihar – Wazirabad – Anand Vihar (New S/Stn) - Patparganj | Planning Department representative intimated that the scheme should be realigned with the recommendations of CEA who are about to submit the report of comprehensive transmission planning of Delhi upto 2021-22. | |
| 7 | Overloading of Najafgrh and Pappankalan-I Grids | To ensure maximum evacuation from Mundka and to reduce loading on transformers at 220kV Najafgarh, BRPL be allowed to connect the Paschim Vihar feeder from Nangloi to utilize maximum capacity of Nangloi cables emanating from Mundka. TPDDL is of the view that the T-off portion of Mangolpuri - Nangloi Ckt-I & II is required to be disconnected at Nangloi Grid so that TPDDL could directly feed Mangol Puri Grid from Mundka. The disconnection issue was to be resolved in the Planning Steering Committee meeting to be held on 11.03.2013. | TPDDL & BRPL representative intimated that the mutual agreement has already been entered into the resolve the issue. It was further clarified that the proposal could be implemented once the reliability of supply to Nangloi and Nangloi Water Works from Mundka is achieved. To ensure the reliability of the supply from Mundka to Nangloi, the cross bonding of cables are being planned at joints which is expected to be completed within 4 months. | |

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| **Sr. No.** | **Details of transmission constraints** | **Suggestions drawn out in the meeting 05.02.2013 and 8th GCC meeting** | **Target fixed** | **Present status** |
| 8 | Overloading of 66/11kV at Najafgarh, Pappankalan-I, and Wazirabad and 33/11kV Txs at Shalimar Bagh 220kV Sub-Stations | Due to problem of getting space near 220kV S/Stns. Distribution Licensees requested DTL to enhance the capacities of the 66/11kV and 33/11kV transformers at critically loaded sub-stations namely Najafgarh, Pappankalan-I, Shalimar Bagh and Wazirabad before summer 2014. GCC approved the request and advised Planning Department of DTL to get the DERC approval for enhancement of transformation capacity of 66/11kV and 33/11kV so that the transformers are placed before summer 2014. | Planning Department representative intimated that as per the DTL Board resolution adopted on 01.10.2002 (8th meeting of Board of Directors) DTL is not authorized to invest on assets of 66/11kV, 33/11kV assets. As such the decision of enhancement of capacity at 66/11kV and 33/11kV should be revisited.  The representatives of Discoms univocally emphasized the need of revision of the DTL board’s decision. As with the passage of time from year 2002 by now the power demand of the areas fed from these assets have also increased in the same pace of total demand of Delhi which was to the tune of less than 3000MW during 2002 has been increased to 6000MW at present. As already mentioned in the proceedings of 8th GCC held on 08.03.13 DTL should go ahead with enhancement of the transformation capacity of 66/33/11kV level wherever it is technically feasible. The decision of the 8th GCC meeting is extracted here under :  ***Distribution Licensees were of the view that the existing 66/11kV or 33/11kV 16/20MVA transformers should be augmented to meet the increasing demand of the areas fed from these transformers as there is a legal hurdle to transfer these assets to Distribution Licensees being inherited by DTL at the time of unbundling. Due to severe space constraints for establishment of new substation in nearby areas is also becoming tough to shift the load from 220kV sub-stations since 220kV sub-stations have enough space to accommodate new transformers / enhanced capacity transformer, DTL should moot the proposal to enhance the transformation capacities of 66/11kV and 33/11kV transformers which would be economically viable then establishment of new sub-stations in nearby areas. It was also emphasized that by doing so, reliability of supply would also be enhanced. These enhancements should immediately be carried out at critically loaded substation such as 220kV Najafgarh, 220kV Pappakalan-I, 220kV Shalimar Bagh, 220kV Wazirabad substations. Distribution Licensees requested DTL to carryout these enhancement before summer 2014. Planning Department of DTL intimated that DERC has not agreed to augment the transformation capacities of 66/11kV and 33/11kV at 220kV sub-stations on the plea that DTL can only maintain but not to enhance the transformation capacities as these are distribution assets.*** | |

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| **Sr. No.** | **Details of transmission constraints** | **Suggestions drawn out in the meeting 05.02.2013 and 8th GCC meeting** | **Target fixed** | **Present status** |
|  |  |  | ***After deliberation, GCC advised Planning Department of DTL to moot the proposal again in the light of discussions of this meeting and draw out plans for enhancement of the transformers in the above mentioned critically loaded sub-stations before summer 2014.***  **Director (Ops) advised Plg. Deptt. to go ahead with the decision of 8th GCC meeting and put up the case for revision of Board decision taken in the meeting held on 01.10.02 if that decision is the hindrance for augmentation of transformation capacity at 66//11 & 33/11kV level according to the requisition.** | |
| 9 | In adequate transmission capacity at Masjid Moth | Planning Deptt. to prepare scheme so that additional 220/33kV Tx is in place at Masjid Moth before summer 2014. | The plan has already been prepared and the 3rd transformer would be in place by summer 2014. | |
| 10 | Enhancement of transformation capacity from existing 2X100MVA (220/33kV) Txs. At Lodhi Road | At present both the transformers are running at full capacity and occasional load shedding also taking place due to over loading. | Due to space constraint the 3rd Tx is possible only after the conversion of conventional to GIS which is expected to be in placed by Summer 2014. | |

**3) Frequent outage of 66kV Mundka – Nangloi Ckt. and 66kV Mundka – Nangloi Water Works Ckt. and 66kV Mundka – Mangolpuri Ckt.**

Due to frequent fault of 66kV Mundka – Nangloi Ckt, 66kV Mundka – Nangloi Water works ckt and 66kV Mundka – Mangolpuri cktthe evacuation capacity of 400kV Mundka S/Stn gets reduced. It further aggravates already overloaded 220/66kV 100MVA Txs at Najafgarh. In various meetings, BRPL assured that the cables would be rectified and would continuously be made available. However, there is not improvement of healthiness of the cables. The frequent outage of the cable is causing load shedding in Najafgarh S/Stn due to over-loading of its Txs. The details of outage of the circuit emanating from 400kV Mundka S/Stn were presented as under :-

**66kV Mundka - Nangloi Ckt (Energized on 01.08.2011 at 16:35Hrs.)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Sl. No. | Tripping date | Tripping Time | Restoration date | Restoration time | Relay indication | Remarks | Nos of days outage |
| 1 | 01.08.11 | 16:36 | 11.08.11 | 19:02 | Dist. Prot. B-phase, 51A, 86A&B along with 220/66kV 160MVA Tx. which tripped on 86A&B, supervision faulty, CPR signal, visual audio alarm, signal A&B | Cable faulty | 10 |
| 2 | 29.08.11 | 04:00 | 29.08.11 | 13:59 | 86, 67N | Transient fault | 1 |
| 3 | 27.12.11 | 18:18 | 09.01.12 | 16:06 | General trip, O/C, 86 | Cable faulty | 13 |
| 4 | 13.02.12 | 05:57 | 17.02.12 | 18:17 | 86, Zone-2&3, dist. Prot. 67N, DT, O/C | Cable faulty | 4 |
| 5 | 12.03.12 | 0:33 | 31.03.12 | 13:48 | E/F | Cable faulty | 19 |
| 6 | 10.04.12 | 08:13 | 14.05.12 | 14:58 | Dist. Prot. Zone-2&3, Direct O/C, general trip | Cable faulty | 35 |
| 7 | 26.05.12 | 17.51 | 29.05.12 | 15.17 | General trip 86 Master Relay | Cable faulty | 3 |
| 8 | 10.06.12 | 06.11 | 21.06.12 | 19.05 | General trip 86 Master Relay | Cable faulty | 11 |
| 9 | 04.07.12 | 11.57 | 19.07.12 | 13.39 | General trip 86 Master Relay | Cable faulty | 15 |
| 10 | 27.07.12 | 15.11 | 30.07.12 | 16.07 | General trip 86 Master Relay | Cable faulty | 3 |
| 11 | 06.08.12 | 19.10 | 27.08.12 | 19.28 | General trip 86 Master Relay | Cable faulty | 21 |
| 12 | 29.08.12 | 12.47 | 31.08.12 | 19.52 | General trip 86 Master Relay | Cable faulty | 2 |
| 13 | 31.08.12 | 20.37 | 05.09.12 | 17.04 | General trip 86 Master Relay | Cable faulty | 5 |
| 14 | 12.09.12 | 15.32 | 18.09.12 | 13.08 | General trip 86 Master Relay | Cable faulty | 6 |
| 15 | 04.10.12 | 13.06 | 08.10.12 | 15.33 | General trip 86 Master Relay | Cable faulty | 4 |
| 16 | 18.10.12 | 15.10 | 09.11.12 | 17.14 | General trip 86 Master Relay | Cable faulty | 22 |
| 17 | 09.11.12 | 17.33 | 16.11.12 | 15.12 | Dist. Prot E/F | Cable Faulty | 7 |
| 18 | 31.12.12 | 16.17 | 06.01.13 | 08.17 | O/C, General Trip, Master Relay | Cable faulty | 6 |
| 19 | 09.01.13 | 10.16 | 16.02.13 | 15.12 | General trip 86 Master Relay | Cable faulty | 38 |
| 20 | 19.02.13 | 12.40 | 07.03.13 | 14.15 | General trip 86 Master Relay | Cable faulty | 19 |
| 21 | 15.03.13 | 20.19 | 29.03.13 | 20.08 | General trip 86 Master Relay | Cable faulty | 14 |
| 22 | 05.05.13 | 06.40 | 13.05.13 | 14.40 | Dist Prot Zone-II | Cable faulty | 8 |
| 23 | 13.05.13 | 17.31 | 24.05.13 | 16.08 | General trip 86 Master Relay | Cable faulty | 11 |
| 24 | 04.06.13 | 06.20 | 04.06.13 | 06.51 | Directional O/C | Transient fault | 0 |
| 25 | 05.06.13 | 09.51 | 27.06.13 | 14.46 | Dist Prot Zone-1, RYB | Cable faulty | 22 |
| 26 | 29.06.13 | 12.48 | 02.07.13 | 09.18 | Directional O/C | Cable faulty | 4 |
| 27 | 11.07.13 | 17.13 | 15.07.13 | 17.57 | Dist Prot. Zone-II, RYB, Bus Bar Protection | Cable faulty | **4** |
| 28 | 19.07.13 | 16.54 | 24.07.13 | 14.30 | Dist Prot. Y’ Phase, Zone-I | Cable faulty | **5** |
|  | 24.07.13 | 16.35 | Still out | | Dist Prot `Y’ Phase Zone-I, Directional O/C | Cable faulty |  |
|  |  |  |  |  |  | **Total days** | **303 days out of 697days of service upto 30.06.2013** |

**66kV Mundka - Nangloi W/W Ckt (Energized on 02.08.2011 at 17:40Hrs.)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Sl. No. | Tripping date | Tripping Time | Restoration date | Restoration time | Relay indication | Remarks | Total days of outage |
| 1 | 03.08.11 | 17:56 | 25.08.11 | 16:07 | 220/66kV 160MVA Tx. tripped on visual audio alarm, ERA trip, ERB trip, 86A&B, supervision, 86, 4WS2 link. B-phase of 66kV Nangloi W/W found faulty | Cable faulty | 22 |
| 2 | 03.11.11 | 12:00 | 09.11.11 | 20:13 | Dist. Prot. zone-I, 67NX along with 220/66kV 160MVA Tx. tripped on 86A&B. cable of 66kV feeder found faulty | Cable faulty | 6 |
| 3 | 14.11.11 | 8:17 | 19.11.11 | 15:41 | Tripping of 315MVA ICT and 160MVA Tx | Tx tripping | 5 |
| 4 | 11.12.11 | 21:30 | 20.12.11 | 10:03 | Tripping of 315MVA ICT and 160MVA Tx at 19:47hrs. and normalized at 21:39hrs. PTW issued to BSES at 23:18hrs. on the 66kV W/W feeder | Cable faulty | 9 |
| 5 | 22.12.11 | 01:19 | 26.12.11 | 14:50 | 86, General trip | Cable faulty | 4 |
| 6 | 26.12.11 | 14:51 | 08.01.12 | 18:23 | O/C, general trip, 86 | Cable faulty | 13 |
| 7 | 26.01.12 | 04:15 | 13.02.12 | 18:32 | O/C prot. trip, B-phase faulty | Cable faulty | 18 |
| 8 | 28.03.12 | 03:09 | 15.04.12 | 18:13 | 86, Dist. Prot. Zone-3, O/C, R-phase faulty | Cable faulty | 18 |
| 9 | 24.04.12 | 08:18 | 28.04.12 | 12:53 | O/C, 86 | Cable faulty | 4 |
| 10 | 10.06.12 | 06.09 | 10.06.12 | 08.31 | General Trip 86 Master Relay | Transient fault | 1 |
| 11 | 18.06.12 | 17.03 | 23.06.12 | 19.50 | General Trip 86 Master Relay | Cable faulty | 5 |
| 12 | 02.08.12 | 04.08 | 07.08.12 | 18.25 | General Trip 86 Master Relay | Cable faulty | 5 |
| 13 | 28.08.12 | 09.30 | 31.08.12 | 13.16 | General Trip 86 Master Relay | Cable faulty | 3 |
| 14 | 29.09.12 | 08.08 | 04.10.12 | 17.47 | Dist Prot Zone-I | Cable faulty | 6 |
| 15 | 24.02.13 | 19.22 | 26.02.13 | 15.08 | General Trip 86 Master Relay | Cable faulty | 4 |
| 16 | 06.06.13 | 16.54 | 09.06.13 | 03.23 | Directional O/C | Cable faulty | 3 |
| 17 | 01.07.13 | 15.20 | 03.07.13 | 22.56 | Directional O/C | Cable faulty | 2 |
| 18 | 09.07.13 | 18.31 | 09.07.13 | 20.16 | Directional O/C |  | **-** |
| 19 | 09.07.13 | 22.32 | 13.07.13 | 20.16 | Directional O/C | Cable faulty | **4** |
| 20 | 21.07.13 | 09.48 | Still out |  | Directional O/C | Cable faulty |  |
|  |  |  |  |  |  | **Total** | **126 days out of 698 days of service upto 30.06.13** |

BRPL informed that it has laid two 66 kV circuits from Mundka to Nangloi and Nangloi Water Works for power evacuation from 400/220 kV Mundka.

BRPL further updated that the faults have been analyzed and it was learnt that the circuits are comprising of single core cables of 1000 [sq.mm](http://sq.mm/). cross-section and as such the sheath voltage at the end of cables becomes very high. Earthing of sheath at one end, results a heavy sheath current causing faults in the cables.

It was suggested that the problem of rising sheath voltage can be cured by cross bonding of cable sheaths. The workability of proposal and plan of action was worked out. As the cable are already laid and commissioned and tracing of cables digging on road side cross bonding jointing etc is a difficult task.

However, the forward path has been decided and BRPL has gone ahead with execution of cross-bonding joints in its commissioned 66 kV cable circuits. Work is under award and the work is expected to complete with in next 4 months as far as the circuit in question are concerned.

Further to this, BRPL informed that it has decided to go for all future 66 kV cable circuits (above 1.5 kM route length) with cross bonding joints.

It was also mentioned that the same problem is encountered by TPDDL in 66kV Mangolpuri Ckt emanating from 400kV Mundka. This feeder also goes under frequent break-down as detailed hereunder :

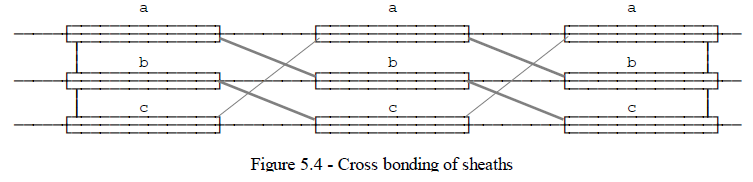
**Details of outage of 66kV Mangolpuri feeder from 400kV Mundka (date of energization 18.02.12 at 13.04Hrs.)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| From Date | Time of outage | To Date | Time of restoration | Relay indication | Remarks | No. of days of outage |
| 25.02.12 | 16.44 | 21.03.12 | 14.57 | R-phase, Zone-I, Dist. Prot. | Cable faulty | 25 |
| 22.03.12 | 9.22 | 24.03.12 | 15.18 | R-phase, Zone-I, Dist. Prot. | Cable faulty | 2 |
| 12.05.12 | 18.02 | 13.05.12 | 14.13 | Over voltage | Over voltage | - |
| 18.05.12 | 23.21 | 29.05.13 | 22.42 | R-phase, Zone-I, Dist. Prot. | Cable faulty | 11 |
| 17.06.12 | 07.08 | 17.06.12 | 15.41 | R-phase, Zone-I, Dist. Prot. |  | - |
| 19.07.12 | 10.39 | 19.07.12 | 14.14 | O/C, Dist. Prot. 3-phase, Z-1 |  | - |
| 13.08.12 | 15.59 | 13.08.12 | 19.48 | O/C, E/F, Bus bar Prot. |  | - |
| 04.09.12 | 14.10 | 12.09.12 | 20.20 | R-phase, Zone-I, Dist. Prot. | Cable faulty | 8 |
| 07.12.12 | 13.17 | 07.12.12 | 22.31 | R-phase, Zone-I, Dist. Prot. |  | - |
| 11.12.12 | 11.39 | 11.12.12 | 13.48 | LBB at Mundka |  | - |
| 13.12.12 | 19.56 | 19.12.12 | 15.56 | R-phase, Zone-I, Dist. Prot. | Cable faulty | 6 |
| 16.01.13 | 22.53 | 22.01.13 | 11.29 | R&Y-phase, Zone-I, Dist. Prot. | Cable faulty | 6 |
| 05.02.13 | 03.10 | 05.02.13 | 04.41 | Over voltage | Over voltage | - |
| 13.03.13 | 06.45 | 13.03.13 | 14.10 | Bus bar Prot at Mundka |  | - |
| 25.03.13 | 12.39 | 30.03.13 | 12.43 | O/C, Y-phase, Zone-I, Dist. Prot. | Cable faulty | 5 |
| 02.06.13 | 6.29 | 02.06.13 | 8.55 | Dist. Prot. B-phase |  | - |
| 06.06.13 | 16.46 | 07.06.13 | 14.49 | O/C, E/F |  | 1 |
| 08.06.13 | 6.32 | Till date |  | Dist. Prot. R-phase, Z-1, E/F | Cable Faulty | 22 |
|  |  |  |  | Total |  | 84 days out 491 day of service upto 30.06.2013 |

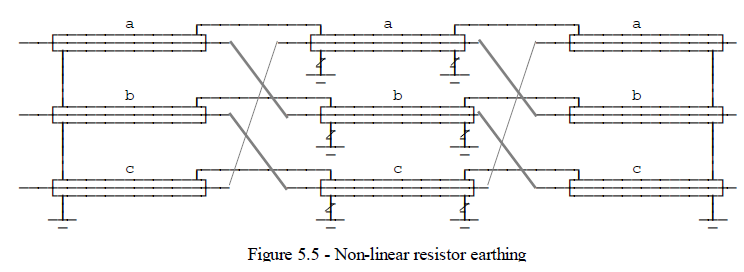
The cross bonding effected is detailed as under :

**Cross-bonding of Cables**

When three single phase cables are used in power transmission, currents are induced in the sheaths and lead to sheath circulating currents and power loss. These may be substantially reduced, and the current rating of the cable increased by cross bonding of the cables (Figure 5.4). Cross bonding of cables are done except for very short lengths of cable.



The continuity of each cable sheath is broken at regular intervals; the cables between two adjacent discontinuities being a minor section. 3 minor sections make up a major section, where the sheaths are solidly bonded together and to earth. A residual sheath voltage exists, and the desired balance, giving negligible sheath voltage between the solid grounded positions is achieved by transposing the cables at each cross bonded section. To prevent excessive voltage build up at the cross bonded points, especially during faults, these points are earthed through non-linear resistors which limit voltage build up. The cable is also transposed.

****

All utilities were requested to ensure permanent remedial measures to ensure working of 66kV cables emanating from 400kV Mundka Sub-Station so that maximum power can be evacuated from Mundka to relieve congested transmission system of 400kV Bamnauli, Mandola and 220kV Najafgarh and Pappankalan-I Sub-stations.

**4) Non utilization of Bays allotted to Distribution Utilities from Newly created Sub Stations of DTL:-**

In the meeting held on 05.02.2013 and 8th GCC meeting held on 08.03.2013, it was decided to review the non utilization of bays allocated to different utilities for more than one year from the date of allocation. It was also decided that in case the allotted bays are not utilized, the same may be allocated to the needy utilities after due consideration by Planning Steering Committee. On review, it is seen that the following

bays are not utilized from different 400kV and 220kV S/Stns:-

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **S N.** | **Name of 400/220kV S.Stns.** | **Details of non utilization of bays** | | | | |
| **Voltage level** | **Name of bay** | **Name of the utility to whom the bay is allocated** | **Original allocation date** | **Present status** |
| 1 | 220kV Trauma Center | 33kV | 1. Sanjay Camp,  2. Kidwai Ngar-II,  3 Jor Bagh  **Total = 3 Bays** | NDMC | 19.11.09 | 1. As per the information provided by NDMC, the nomenclature has been changed to Race Course. Work is held up due to monsoon. However, expected by Dec. 13.  2.Energized on 30.11.12 at 12.47Hrs.  3. ½ cable laid, expected by sept.13. However, Sub-station would be ready by Dec. 2013. Work is held up due to monsoon. |
| 2 | 220kV Electric Lane | 33kV | 1. Vidyut Bhawan  2 Connaught Place  3. Hanuman road  4. Mandi House  5 Janpath Lane  6 Church Road  7 Delhi High Court  **Total = 7 Bays** | NDMC | 19.11.09 | 1.50% cable laid. Work is held up due to permission of digging.  2. Energized on 24.05.13 at 19.30hrs.  3. The work for laying of cable has been awarded. The cable laying activities would be started after monsoon. Expected by December 2013.  4. Energized on 01.10.12 at 17.00Hrs.  5. Land allocation for Janpath Sub-station is still awaited. However, it has been proposed by NDMC to use this Bay for new proposed 33kV Sub-station at Parliament Annexure for which land has been allocated.  6. Bay allocated to DMRC by NDMC for their upcoming project in Phase-3  7. The land allocation fro the S/stn at Delhi High Court premises has not been obtained so far. However, NDMC is planning to terminate the cable at some other S/stn which is under planning statg. |
| 3 | 220kV DSIDC  Bawana | 66kV | 1 Bawana-I  2 Bawana-I  3 Bawana-7  4 Bawana-7  **Total = 4 Bays** | TPDDL | 19.11.09 | For 1&2 the cable work is under progress. Expected by Sept.13  For 3&4 it is a deposit work of DSIIDC. The scheme has been approved by DERC and expected by Feb. 2014. Further, DSIDC has yet to deposit the amount for which demand note has already been raised. GM(PLG), DTL suggested to spare one bay earmarked for DSIIDC for the connection of upcoming MSW plant being established in the area. TPDDL requested DTL to construct additional bay for establishing the connectivity of MSW Plant. Dir. (Ops) was of the opinion that since the load on Bawana-7 is not expected before 2015 the connectivity of MSW plant be done in the existing bay. However DTL should ensure that the bay would be ready when TPDDL’s cable and S/Stn are ready. |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **S N.** | **Name of 400/220kV S.Stns.** | **Details of non utilization of bays** | | | | |
| **Voltage level** | **Name of bay** | **Name of the utility to whom the bay is allocated** | **Original allocation date** | **Present status** |
| 4 | 220kV Rohini-II | 66kV | 1 RG-30-I  2 RG-30-II  3 RG-6-I  4 RG-6-II  **Total = 4 Bays** | TPDDL | 31.05.12 | Scheme has been submitted to DERC for approval. Both the circuits would be energized after the establishment of Rohini-30 Grid S/Stn.  For RG-VI Ckt-I & II, it is explained that there is no link from Rohini-II S/Stn. RG-VI Ckt-I & II is through Rohini-II(20kV) – RG-28 Ckt-I & II which is already under charged position |
| 5 | 400kV Mundka | 66kV | 1. 66kV Mundka ckt-I  2. 66kV Mundka ckt-II  3.66kV Bakarwala ckt-I  4.66kV Bakarwala ckt-II  5. 66kV Pashim Vihar | BRPL | 19.11.09 | 1 &2. Work for construction of 66kV Mundka S/Stn. Has been awarded in June 2013 and S/Stn. Is expected by March 2014. The total length of Cable is 400 mtrs.  3&4. The scheme for the establishment of the Bakkarwala S/Stn. was approved by DERC in 2007. However, the scheme was not implemented due to inadequate load requirement. Now, DERC has again been approched for approval as price has been increased significantly.  5. The cable length is more than 18 Kms. To avoid the sheath voltage inducement problem has been encounter on 66kV Nangloi, Nangloi Water Works and Mangolpuri Feeders, it was decided to take out the Paschim Vihar feeder from the upcoming 220kV Bodella S/Stn. The planning steering Committee for re-allocation of Paschim Vihar Bay allotted to BRPL from Mundka to upcoming Dichau Kalan S/Stn. |
| **TPDDL**  1.66kV Mangol Puri-II  2.66kV Kirari Sultan Puri Ckt.-I  3.66kV Kirari Sultan Puri Ckt.-II | TPDDL | 19.11.09 | 1.For Mangolpuri Ckt-II, though the scheme has been prepared but has not been submitted to DERC due to pending resolution of T-Off to Nangloi on Mangolpuri ckt.  For 2&3 TPDDL explained that the S/stn is envisaged in 2015-16 and by the time the Ckt would be readied.It was further explained that the matter has been taken up with Delhi Govt for allocation of land for establishment of 66kV Grid S/Stn. |

It was explained that due to the non utilization of bays by NDMC at Trauma Center, the existing system are getting oftenly congested resulting into load shedding in other utilities’ areas. The drawal by NDMC from IP Station oftenly causing load shedding in BYPL areas particularly due to the break-down of one 100MVA Tx at IP. The loading position of NDMC from IP Station in one particular day was shown as under :-

|  |  |
| --- | --- |
| **Name of the feeder** | **Load in Amps at 11.30hrs. on 15.05.2013 (33kV side)** |
| 33kV Bay-2 (IP – Nirman Bhawan) | 195 |
| 33kV Bay-4 (IP – Electric Lane) | 115 |
| 33kV Bay-6 (IP – Tilak Marg) | 220 |
| 33kV Bay-10 (IP – Electric Lane) | No Load |
| 33kV Bay-16 (IP – Nirman Bhawan) | 170 |
| 33kV Bay-28 (IP – Connaught Place) | 75 |
| 33kV Bay-38 (IP - Connaught Place) | 180 |
| 33kV Bay-42 (IP - Connaught Place) | 135 |

From the above, it is seen that if NDMC shift the entire load from IP, to the under loaded s/stations, the load shedding at IP can be avoided.

It was further informed that the matter was taken up with NDMC by SLDC. They have intimated that being VVIP load, Bay-2 & 16 (IP – Nirman Bhawan), and 33kV Bay-6 (IP – Tilak Marg) can not be shifted. However, they assured that Bay-4 & 10 (IP- Electric Lane) feeders would be shifted to 220kV HC Mathur Lane. The load of Connaught Place feeder already shifted to newly energized 33kV Connaught Place bay from 220kV HC Mathur Lane (Electric Lane) S/Stn.

**It was proposed by SLDC that all 33kV feeders of NDMC emanating from IP Station would be kept opened at IP till the 3rd Transformer is energized. However, in case of emergency, the feeders would be energized from IP by SLDC. This measure is suggested to tide over the crisis due to the outage of one 100MVA Tx. at IP. NDMC requested not to disconnect the feeders from IP to ensure stability of power supply to NDMC areas. However they assured to shift maximum load from IP. For coordination purposes Chief Engineer (E), NDMC requested SLDC to allow for operating their control room from SLDC. It was indicated by SLDC that it is absolutely impossible after the implementation of ULDC Ph-2 for which equipments have already been started coming in and would have to be established in the existing space of SLDC Control room due to non coming of new SLDC building before the implementation of ULDC Ph-2. The ULDC Scheme-II is scheduled to be implemented by September 2013 by the time, NDMC should shift the control room from SLDC (Minto Road) to their own control room.**

**Director (Ops) advised NDMC representative to urgently take necessary steps to shift their control room by September 2013 to their newly established area control center.**

With regard to non utilization of bays by the utilities, it was observed that many bays are lying unutilized from even years together causing the under utilization of sparingly available assets. BRPL representative suggested that due to the tough stand of NDMC not to allow the allocation of unutilized bays to other needy utilities from AIIMS (220kV) and HC Mathur Lane 220kV S/Stn. The transmission cost of sub-station should be booked on the basis of bays allocated from these station in stead of present way of pooling the transmission charges among the Distribution Licensees. NDMC

was of the view that these sub-stations are especially created to cater the increasing demand of strategic important NDMC areas. General Manager (Commercial), DTL mentioned that the methodology of apportionment of sub-station wise Transmission Charges based on bay allocation would complicate the entire transmission charges sharing methodology and is not time with the present Transmission Tariff Regulation of DERC. It was also pointed out that in number of newly commissioned Grid S/Stns, the bays allocated to other utilities are also lying unutilized. He further opined that instead of floating ideas of sharing of transmission charges of newly commissioned grid sub-stations according to the bay allocation, utilities should try to use the bays allocated optimally for proper utilization of the national assets created for the benefit of people.

**5 Distribution Constraints and remedial measures suggested**

In the meeting held on 05.02.2013, the following constraints / suggestions to remove the constraints have been discussed:-

**BYPL**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No.** | **Over-loading of elements pertains to BYPL (Constraints)** | **Remedial measure under taken** | **Status as on date** |
| 1 | 33/11kV 15MVA Pr.Tr. at Shanker Road | Augmentation of Tx to 25MVA is proposed. Load rationalization has already been carried out to even out the loading on other two Txs. | Work in progress. Likely to be commissioned on 04.07.2013. |
| 2 | 33/11kV 16MVA Pr Txs. At Prashad Nagar | Augmentation of Tx to 25MVA is proposed. | Commissioned on 05.06.13 |
| 3 | 3 nos 33/11kV Txs at Guru Angad Nagar (One 25MVA and Two 20MVA) | No addition is possible at the S/stn. To transfer the load additional 16MVA Tx is being installed at Geeta Colony and Kanti Nagar S/stns before summer 2013. | Additional 16MVa Tx energized on 09.04.13 at 33kV Geeta Cly grid. The work at Kanti Nagar grid is under progress |
| 4 | 2 Nos 66/11kV 25MVA Tx-II at Shastri Park (Central) | Augmentation of 11kV I/C to full capacity is proposed before summer 2013. | Energized on 08.05.13 |
| 5 | One 20MVA Txs and One 25MVA Txs at East of Loni Road | Augmentation planned before summer 2013 | Work under progress and likely to be completed by 15th July 2013 |
| 6 | 33kV Park Street – Motia Khan Ckt-I & II | All the 3 infeeds of Motia khan S/stn is proposed to be reoriented to have independent feeding by putting isolators or loop cables before summer 2013. | Completed on 19.03.2013 |

**BRPL**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No.** | **Over-loading of elements pertains to BRPL (Constraints)** | **Remedial measure under taken** | **Status as on date** |
| 1 | 33kV Malviya Nagar – Andheria Bagh Ckt. | Proposal for two 33kV infeeds from Vasantkunj B Blk S/stn to Andheria bagh has been devised and submitted to DERC for approval. | Scheme is under approval from DERC |
| 2 | Txs at C-Dot | Additional 3rd 25MVA Tx. is under execution and expected by 31.03.13. | Additional 3rd 25MVA Tx. is under execution and expected by 31.07.13. |

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No.** | **Over-loading of elements pertains to BRPL (Constraints)** | **Remedial measure under taken** | **Status as on date** |
| 3 | Txs at G-V Matiala | Additional 4th 25MVA Tx. is under execution and expected by 31.03.13. | Additional 4th 25MVA Tx. is under execution and expected by 30.09.13. |
| 4 | Txs at NDSE | Load swapping of Txs. being prepared as no space for additional Txs. | Load swapping done |
| 5 | 33kV Pankha Road –Mayapuri Ckt. | Scheme for additional 33kV feed from Pankha Rd. was devised and submitted to DERC for approval. | Scheme is under approval from DERC |
| 6 | 66kV Najafgarh – Bodella-II Ckt-I & II | Hasthal S/stn is under commissioning and expected by 31.03.13. Part load of Bodella-II would be shared by Hasthal. Once the 220kV Bodella-2 S/stn is commissioned the problem would be completely eliminated. | Hastsal grid commissioned on 08-06-2013.  Land for 220 kV Bodella -2 has been handed over to DTL on 11-06-2013 |
| 7 | Txs at Vishal | New S/stn at GGSH is expected by the end of March 2013. Part load of Vishal would be shared by the S/stn | GGSH is already commissioned. |
| 8 | 66kV Najafgarh – Matiala Ckt-I & II | Additional Ckt from PPK-II is under execution and expected before 31.03.13 | Additional Ckt from PPK-II is under execution and expected before 30.09.13 |
| 9 | Txs at Kilokari | Load swapping of Txs. being done. | Load swapping done |
| 10 | Txs at Bindapur | Scheme for additional Tx. is under consideration by the Steering Committee. | Scheme for additional Tx. is under consideration by the Steering Committee. |
| 11 | Txs at Hari Nagar | Load swapping of Txs. being done. | Load swapping done |
| 12 | Txs at Nehru Place | Load swapping of Txs. being done. | Load swapping done |
| 13 | 50MVA Txs at Ridge Valley | NDMC has to shift its load from Ridge Valley to newly commissioned S/stn Trauma Center (AIIMS) and Electric Lane. BRPL requested for additional 220/33kV 100MVA Tx. at Ridge Valley | BRPL requested for additional 220/33kV 100MVA Tx. at Ridge Valley |
| 14 | Txs at East of Kailash | Load swapping of Txs. being prepared. | Load swapping done |
| 15 | 33kV Okhla – Tuglakabad Ckt. | At present Tuglakabad is fed from Okhla 220kV and 66kV Malviya Nagar S/stns. On steady state conditions there is no constraints. However, in case of outage of 33kV Okhla-Tuglakabad Ckt the other Ckt from Malviya Nagar get overloaded causing load shedding. The loading of 33kV Malviya Nagar-Tuglakabad is restricted due to being overhead portions of the Ckt is of Wolf. The laying of additional cables from Malviya Nagar is being established. As a temporary measure the possibility of utilizing 33kV Masjid Moth Ckt from 220kV Okhla by laying the cable from the closing of the Ckt at Guru Rabidas Marg to Tuglakabad with approximate length of 2-2.5KM. | As a temporary measure the possibility of utilizing 33kV Masjid Moth Ckt from 220kV Okhla by laying the cable from the closing of the Ckt at Guru Rabidas Marg to Tuglakabad with approximate length of 2-2.5KM. |

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No.** | **Over-loading of elements pertains to BRPL (Constraints)** | **Remedial measure under taken** | **Status as on date** |
| 6 | Txs at Mayapuri | At present there are 3Txs of 20MVA each. Two Txs are loaded to 85% and 3rd one is 65%. Since DERC is not allowing the augmentation of 20MVA Tx to 25MVA Txs. the swapping of load being accomplished for meeting summer 2013 load. Another 33kV A43 S/stn at Mayapuri is under commissioning (expected before summer 2014) which would share the part load of this Txs. | Another 33kV A43 S/stn at Mayapuri is to be taken up (expected before summer 2014) which would share the part load of this Txs. |
| 17 | 20MVA Txs at Bodella-I | Scheme for 4th 25MVA Tx has been taken up for execution. | Scheme for 4th 25MVA Tx has been taken up for execution. |
| 18 | Txs at Jamia | Load swapping of Txs. being done. | Load swapping done |
| 19 | 20MVA Txs at G-2 Pappankalan | Scheme for additional 25MVA Tx has been put up to the Steering Committee. | Scheme for additional 25MVA Tx has been put up to the Steering Committee. |
| 20 | 20MVA Txs at Sagarpur | Load swapping of Txs. being done. | Load swapping done |
| 21 | Txs at Bodella-II | Load shall be shared by the upcoming Hasthal S/stn | Hastsal grid is commissioned on 08-06-2013 |
| 22 | Txs at Masjid Moth | Load swapping of Txs. being done. | Load swapping done |
| 23 | Txs at Sarai Julaina | Augmentation of Txs. with 25MVa Txs (2nos.) has been approved by DERC. | Augmentation of Txs. with 25MVa Txs (2nos.) has been approved by DERC. |
| 24 | Txs at Shivalik | Additional 3rd Tx is expected by 31.03.13 | Additional 3rd Tx is expected by 31.12.13 |
| 25 | 33kV Nangloi – Udyog Nagar Ckt. | After the commissioning of 220kV Peeragarhi S/stn the additional Ckts are envisaged from it namely Udyog Nagar & A4 Paschim Vihar. | After the commissioning of 220kV Peeragarhi S/stn the additional Ckts are envisaged from it namely Udyog Nagar & A4 Paschim Vihar. |
| 26 | Txs at Nangloi | Load swapping of Txs. being done. | Load swapping done |
| 27 | 33kV Nangloi – Paschim Puri Ckt. | After the commissioning of 220kV Peera garhi S/stn the problem will be vanished. | After the commissioning of 220kV Peera garhi S/stn the problem will be vanished. |
| 28 | Txs at R.K. Puram-I | Load swapping of Txs. being done | Load swapping done |
| 29 | Txs at Udyog Nagar | One Tx. has been augmented from 16MVA to 25MVA | One Tx. has been augmented from 16MVA to 25MVA |

**TPDDL**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No.** | **Over-loading of elements pertains to TPDDL (Constraints)** | **Remedial measure under taken** | **Status as on date** |
| 1 | 33kV Jahangirpuri – Azad purckt-I&II | Over-Load on this circuit would be reduced after commissioning of 220kV Wazirpur Grid.One power transformer of Ashok Vihar, Tri nagar and 2 transformers of Azadpur would run on 220kV Wazirpur grid. 1 | 1. 33 KV GIS Grid commissioned. 2. 220 KV DTL Grid is under construction. |
| 2 | 33kV AIR Kham Pur - Jahangirpuri Ckt | RG-5 to Air KhampurCkt –WIP-Line expected by 31.05.13 | The Job is 90% Completed. There is resistance from farmers to provide ROW at other locations. |

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No.** | **Over-loading of elements pertains to TPDDL(Constraints)** | **Remedial measure under taken** | **Status as on date** |
| 3 | 33/11kV Tx. at SGT Nagar | DERC Approval awaited for augmentation to 25 MVA | DERC have not approved the proposal.. |
| 4 | 33kV Naraina – Inder PuriCkts | In normal condition there will be No Over-loading of these Circuits. However another A-21 grid is expected by 30.06.13. Part load of Inderpuri and Panadavnagar would be shifted which would ease the over loading.  In case of outage of any one ckt, one PTR of Inderpuri Grid can be run through PusaCkt in addition to both PTRs of Pusa Grid via Parkstreet-Shastri Park Ckt-1&2. Pandav Nagar Grid can then be run through DMS Circuit. | Expected by 30.06.13. |
| 5 | Txs at Bawana-6 | Bawana-1 Grid- WIP-Expected by 30.06.13 | Expected by 30.09.13. |
| 6 | Txs. at Bawana-7 | 3rd PTR at Bawana-7 – DERC Approval received on 23- Jan-13. Expected by 30.06.13 | Expected by 30.09.13. |
| 7 | 33kV Jahangir Puri- SGT Nagar Ckt | In normal running there will be No Over-loading of this Circuit. During outage of Shalimar Bagh-SGTN Ckt there will be over-loading. DERC Approval received on 01.02.13 foraugmentation of 33kV Jahangirpuri- SGT Nagar Ckt from Wolf (405Amp) to Goat (634Amp) conductor. | The Permission for ROW applied. Ordering in progress. |
| 8 | 33kV SMB Khosla U/G Ckt from 220kV Shalimarbagh | 3 power transformers of WZP-2 and one of WZP-1 will be run on 220kV Wazirpur S/stn once it is commissioned. Till then over loading during summer months can not be ruled out. | Depending on 220 KV wazirpur grid of DTL . |
| 9 | 33kV Rewari Line Ckt from 220kV Naraina | In normal condition there is no over loading. However to reduce over loading DLF Kirti Nagar – Saraswati Garden Twin cable Ckt is expected by end of March 13 which would reduce the loading. | 2 Nos Cable already laid from DLF Kirti Nagar to Saraswati Garden and one cable has been energized. |
| 10 | 33kV Shahzadawalabagh-Rohtak Rd Ckt | SubziMandi to SZ Bagh – conversion to twin cable – WIP-Expected date of completion is 30.06.13 | The Job 95% completed. Only 100 M portion is left due to railway permissions. |
| 11 | 33kV Shah Zadabagh-RampuraCkt | Wazirpur GIS Grid – WIP (This circuit will be delinked and connected to Wazirpur GIS Grid once it is commissioned). | Depending on commissioning of Wazirpur 220 KV grid. |
| 12 | Txs at Ashok Vihar | PTR Augmentation- DERC Approved-Expected by 30.06.13 | Expected to be completed by 30.09.13 due to non availability of shutdown in summer. |
| 13 | 33kV Ashok Vihar-WazirpurCkt-I | The loading would be eased after commissioning of 220kV Wazirpur grid and linking of 33kV Wazirpur-WIP Ckt. 2 power transformers of Ashok Vihar will run on 220kV Wazirpur | Depending on commissioning of wazirpur 220 KV grid. |
| 14 | 33kV Rohtak road – RampuraCkt | Mitigation- 220kV Wazirpur Grid – WIP- once 220kV Wazirpur S/stn is commissioned. One power transformer of Rampura will run on 220kV Wazirpur grid. | Depending on commissioning of wazirpur 220 KV grid. |
| 15 | Tx. at DSIDC Narela-I | Load to be shifted to DSIDC-2 Grid through 11kV feeders- WIP- 5 MVA load to be shifted to DSIDC2 Grid and 3 MVA load to be shifted to A-7 NRL Grid. | The 3 Nos 11 KV Panel has been installed at DSIIDC-II Grid. expected to commissioned by 30.06.13. |

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No.** | **Over-loading of elements pertains to TPDDL(Constraints)** | **Remedial measure under taken** | **Status as on date** |
| 16 | 33kV Rani BaghCkt-I&II from 220kV Shalimarbagh | The commissioning of Rani Bagh CC Grid would ease the loading. DERC Approval received on 16-Jan-13 (Infeed from upcoming 220kV Peeragarhi Grid) | Rani Bagh CC Grid: The Civil work is in progress . |

**6 Capacitor installation programme**

The updated position of capacitor installation is as under :-

**NDMC**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S. No.** | **Name of ESS** | **No. of APFC Bank to be installed** | **Capacity of each Capacitor Bank** | **Present status** | **Status as on date** |
| 1. | B.D. Marg | 1 | 5.04 MVAR | Work awarded. | Work to be completed by December 2013. |
| 2. | Bapu Dham | 1 | 5.04 MVAR |
| 3. | Shahjahan Road | 2 | 5.04 MVAR |
| 4. | Mandi House | 2 | 5.04 MVAR |
| 5. | State Guest House | 1 | 5.04 MVAR |
| 6. | Hanuman Road | 1 | 5.04 MVAR |
| 7. | National Archives | 1 | 5.04 MVAR |
| 8. | Race Course | 1 | 5.04 MVAR |
| 9. | School Lane | 1 | 5.04 MVAR |
| 10. | Scindia House | 1 | 5.04 MVAR |
|  |  | **12 Nos.** | **60.48 MVAR** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S. No.** | **Name of ESS** | **No. of APFC Bank to be installed** | **Capacity of each Capacitor Bank** | **Present status** | **Status as on date** |
| 1 | Keventor dairy | 2 | 5.04 MVAR | -Do- | Energized during May 2013 |
| 2 | Sanjay camp | 2 | 5.04 MVAR | -Do- | -do- |
| 3 | Raisina Road | 2 | 5.04 MVAR | -Do- | -do- |
| 4 | Trauma Centre, AIIMS | 2 | 5.04 MVAR | Capacitor Bank installed. | Tripping circuit to be installed. |
| 5 | Netaji Nagar | 3 | 5.04 MVAR | -Do- |  |
| 6 | Raja Bazar | 2 | 5.04 MVAR | -Do- |  |
| 7 | Ali Ganj Jor Bagh | 2 | 5.04 MVAR | S/S Building yet to be constructed. |  |
|  |  | **15 Nos.** | **75.6 MVAR** |  |  |
|  |  | **Total** | **136.08MVAR** |  |  |

**BYPL**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Additional Capacitor Bank installation programme for 2013-14 in BYPL** | | | | | |
| **Sr. No.** | **Location of Grid Sub-Station** | **MVAR** | **Status** | **DERC Approval Status** | **Status as on date** |
| 1 | 33kV Jama Masjid | 5.4 | Installed | Approved. | Energized on 12.06.12 |
| 2 | 33kV Fountain | 5.4 | Yet to be installed | Approved. |  |
| 3 | 33kV Faiz Road | 5.4 |
| 4 | 33kV G.T. Road Shahdra | 5.4 |
| 5 | 33kV Geeta Colony | 5.4 |
| 6 | 33kV Karawal Nagar-II | 5.4 |
| 7 | 66kV Gonda | 5.4 |
| 8 | 66kV Bhagirathi | 5.4 |
| 9 | 33kV DMS | 5.4 | Under approval |  |
| 10 | 33kV Anand Parvat | 5.4 |
| 11 | 33kV Jama Masjid | 5.4 |
| 12 | 33kV Minto road | 5.4 |
| 13 | 33kV B.G Road | 5.4 |
| 14 | 33kV G.B. Pant | 5.4 |
| 15 | 66kV Shasri Park Central | 5.4 |
| 16 | 33kV Town Hall | 5.4 |
| 17 | 33kV Shankar Road | 5.4 |
| 18 | 33kV Dwarka Puri | 5.4 |
| 19 | 66kV Mayur Vihar phase-II | 5.4 |
| 20 | 33kV Preet Vihar | 5.4 |
| 21 | 66kV Sonia Vihar | 7.5 | Installed |  | 26.03.13 |
|  | Total | 115.5 |  |  |  |

**BRPL**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Capacitors to be commissioned in FY 2012-13** | | | | | |
| **S. N** | **Year** | **Location** | **Capacitor planned in MVAR** | **Status** | **Present status** |
| 1 | 2012-13 | Hastsal | 21.6 | Installed | Hastsal Grid commissioned on 08-06-2013. Energisation of capacitor banks expected by Jul.13. |
| 2 | GGSH | 10.8 | Installed | Commissioned 13.02.2013 |
|  |  | Total | **32.4** |  |  |

**Capacitors planned to be commissioned in FY2013-14**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S. No.** | **Year** | | **Location** | | **Capacitor planned in MVAR** | | | | | **Present status** |
| 1 | 2013-14 | | C-DOT grid substation | | 7.2 | | | | | Commissioning expected in FY 2013-14 |
| 2 | 2013-14 | | G-5 Matiyala | | 7.2 | | | | |
| 3 | 2013-14 | | Shivalik grid substation | | 5.4 | | | | |
| 4 | 2013-14 | | Okhla Phase -1 grid substation | | 7.2 | | | | |
| 5 | 2013-14 | | G-2 PappanKalan grid substation | | 7.2 | | | | |
| 6 | 2013-14 | | G-3 Bindapur grid substation | | 7.2 | | | | |
| 7 | 2013-14 | | Bijwasan grid substation | | 7.2 | | | | |
| 8 | 2013-14 | | Jasola Media Centre grid substation | | 21.6 | | | | |
| 9 | 2013-14 | | DJB Najafgarh grid substation | | 21.6 | | | | |
| 10 | 2013-14 | | G-4 Dwarka grid substation | | 21.6 | | | | |
| 11 | 2013-14 | | Mundka grid substation | | 21.6 | | | | |
|  |  | | **Total in MVAR** | | **135** | | | | |  |
|  |  | |  | |  | |  |
| **Capacitors planned to be commissioned in FY 2013-14 at LT level** | | | | | | | | | | |
| **S. No.** | **Year** | **Location** | | **Capacitor planned in MVAR** | | **Status** | | | **Remarks** | |
| 1 | 2013-14 | 1058 nos. Distribution transformers | | 256.4 | | Planned | | | Commissioning expected in FY 2013-14 | |
|  | **Note - The LT APFC's shall be located with the DT's identified.** | | | | | | | | | |

**Programme for reorientation of capacitors**

|  |  |  |
| --- | --- | --- |
| **Name of the sub-station** | **Capacity in MVAR decommissioned** | **Present Status** |
| Exhibition-I | 10.08 | Neither space nor breaker is available. Planning to shift the capacitor to some other substation. |
| D.C. Saket | 10.08 | Connected and energized on 15.06.2013 |
| Vasant Kunj D block | 20.16 | Dismantled, new bay to be constructed, Scheme under preparation |
| Malviya Nagar | 20.16 | Commissioning expected Jan-2014 |
| Total out | 50.40 |  |

**TPDDL**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr. No.** | **Location of Grid Sub-Station** | **MVAR** | **Status** | **Present status** |
| 1 | RG-28 | 10.8 | Installed but not charged | Work is in progress |
| 2 | Bawana | 4.8 | To be installed in 2013-14 |
| 3 | Rani Bagh CC | 9.6 |
| 4 | RG-23 | 4.8 |
| 5 | SMB FC | 4.8 |
| 6 | A-21 | 4.8 |
| 7 | Bawana-I | 10.8 |
| 8 | Model Town | 10.8 |
| 9 | Bawana Phase-II-I | 10.8 |
|  |  | .00 |  |  |

**Capacitor reorientation programme**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name of the sub-station | Capacity in MVAR | Utility | Remarks | Latest position |
| 66kV Rohini-IV | 20 | TPDDL | Would be installed at 66kV Poothkhurd S/Stn. | Electrical Inspector NOC done., Charging is planned on 21 June 13 |

Summarizing the above, utility-wise program for installation of additional capacitors is as under :

|  |  |  |  |
| --- | --- | --- | --- |
| Utility | Planning for installation of additional capacity in MVAR | Installed so far | Remarks |
| 2013-14 |
| TPDDL | 72.2 | 10.08 | 10.08MVAR installed at RG-28 S/Stn but not yet energized. |
| BRPL | 167.4 | 10.8 | Additional 256.4MVAr capacity is planned to be added at LT level in 2013-14. Further 10.8MVAR added at GGSH S/stn on 13.02.2013 |
| BYPL | 108 | 5.4 | Approval for 32.4MVAr has already been accorded by DERC. 5.4MVAR added at Jama Masjid S/stn on 12.06.12 |
| NDMC | 126 | 30.24 | 5.04MVAr capacitor is also planned for Ali Ganj, Jorbagh for which building is yet to be constructed. Further 30.24MVAR capacity added at Keventry Diary, Sanjay Camp and Raisina Rd S/stn. 10.08MVAR each during May 2013. |
| MES | -- | -- | The installed capacity 21.1MVAr is sufficient to meet the load of MES. However for voltage regulation they have planned additional capacity at LT level for 2013-14. |
| Total | **473.6** | **56.52** |  |

Summarizing the above, capacitor position of Delhi as on date is as under :

|  |  |  |  |
| --- | --- | --- | --- |
| Utility | Installed capacity in MVAR (HT) | Installed in capacity in MVAR (LT) | Total |
| BYPL | 863.8 | 102 | 965.8 |
| TPDDL | 657.4 | 119 | 776.4 |
| NDMC | 209.8 | 24 | 233.8 |
| DTL | 753.5 | 0 | 753.5 |
| BRPL | 1178.78 | 242 | 1420.78 |
| RPH | 20 | 0 | 20 |
| MES | 20.1 | 0 | 20.1 |
| Total | 3703.38 | 487 | 4190.38 |
| Requirement as per NRPC Study | 4594 as on 31.03.2013 |  |  |

General Manager (Planning), DTL informed that the work of reactive power compensation planning has been awarded to CPRI. He requested to provide the information sought by them in connection with the study as early as possible so that the study can be completed as per the stipulated time.

All utilities agreed to provide the same.

It was further decided to review the progress by the end of August 2013.

**Meeting ended with thanks to Chair.**

**Annexure-A**

**List of the participants attended the meeting on 05.06.2013 at SLDC**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
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