

CENTRAL ELECTRICITY REGULATORY COMMISSION

Record of Proceedings

Petition No. 2/2010

Sub:_Grid Disturbance in Northern Region on 2.1.2010.

Date of hearing : 25.5.2010

Coram : Dr. Pramod Deo, Chairperson
Shri S.Jayaraman, Member
Shri V.S.Verma, Member
Shri M.Deen Dayalan, Member

Parties present : 1. Shri Rajiv Porwal, NRLDC
2. Shri Alok Kumar, NRLDC
3. Shri V.K. Aggarwal, NRLDC
4. Shri Rajesh Kumar, NRLDC
5. Shri P.S.Mhaske, NRLDC
6. Shri A.K.Agarwal, NRPC

Based on the press report in respect of grid disturbance in the Northern Region on 2.1.2010, CTU and NRLDC were directed to carry out a detailed study of the grid disturbance and submit a report containing the reasons for grid disturbances, preventive steps taken so far and to suggest remedial measures. Accordingly, the petition was listed for hearing.

2. The representative of the NRLDC submitted that there were two incidents of grid disturbance, one at 0301 hrs and the second at 2154 hrs on 2.1.2010. The load loss on the first incident was about 7500 MW and on the second incident, it was about 9000 MW. He mentioned that on 2.1.2010 there was high humidity and low temperature conditions causing outage of several 400 kV and 220 kV lines mainly due to insulator failure. At 03:00 hrs on 2.1.2010, there were 15 number of 400 kV lines and 80 number of 220 kV lines out due to fog related trippings. However, number of 400 kV line trippings was less as compared to incidences of grid disturbances in previous years.

3. According to the submission made by the representative of the NRLDC, the main causes of the disturbance were :

- (a) Depletion of transmission network due to heavy fog/smog conditions;
- (b) Unintended and unexpected operation of protective system/switchgear of some of the critical transmission elements in already depleted network;
- (c) Operator's inability to adequately comprehend the situation in certain cases as a result of which the system conditions were aggravated; and
- (d) Inadequate safety net in the form of automatic load shedding through under frequency relays, df/dt relays and under voltage relays.

4. During the hearing, the representative of the NRLDC highlighted following issues:

- (i) Replacement of Insulators;
- (ii) Protection Coordination;
- (iii) Real Time Data availability;
- (iv) Inadequate relief from Under Frequency Relays (UFRs), Under Voltage Relays (UVRs) and Requirement of System Protection Schemes (SPS);
- (v) Non-availability of Reports / data from different constituents;
- (vi) Reactive Power Management; and
- (vii) Capacity building of operators.

5. While replying to a query by the Commission about status of insulator replacement by the utilities, GM, NRLDC submitted that there was some gap in actual implementation of the schedule for insulator replacement. The Commission directed NRLDC to submit the details of actual vis-a vis schedule replacement of insulator by the utilities.

6. In response to Commission's query about violation of the provisions of the Grid Code by the Utilities, the representative of NRLDC clarified that there might be incidents of inadequate action in accordance with the provisions of Grid Code relating to under-frequency and df/dt relays, protection system and real time data transfer including installations of RTUs by the utilities. He further submitted mentioned that against the planned relief of 1140 MW and 2420 MW

from UFR and df/dt relays, the actual relief was about 128 MW and 297 MW, respectively at 03:01 hours of 2.1.2010. Similarly, the load relief from these schemes was much less than planned in the second incident at 21:54 hrs. He stated that the actions by the system operators in such incidents have to be taken in a very short span of time and emphasized the need of capacity building of the operators. The Commission directed the NRLDC to submit the details of the violation of the provisions of the Grid Code by the utilities, specifying the relevant clause, description of inadequate/lack of action on the utilities, name of responsible utility and the details of non-operation/mal-operation of protection system and non-availability of Remote Terminal Units (RTUs) along with the name of responsible utility.

7. On the query by the Commission about system planning, the representative of NRLDC stated that the system planning was done on the basis of N-1 contingency and there was need to consider the cases of multiple contingency like these incidents while planning the power system.

8. Member-Secretary, NRPC apprised the Commission that a Committee had been constituted by Central Electricity Authority to enquire into the grid disturbances on 2.1.2010. The report of the Committee was under finalization. He also apprised that regular monitoring of the insulators replacement was being done at Regional Power Committee level and there was some gap in actual implementation of programme for replacement of insulators, mainly due to delay in procurement and difficulty in getting shut-down of the transmission lines. He submitted that washing of insulators before onset of winters by using helicopters and hot line washing methods besides the conventional methods. He emphasized that there was a need for special protection schemes, the regular protection audits and construction of new transmission lines to make the system capable of handling such incidents.

9. In response to the query by the Commission about the under frequency relays, Member-Secretary, NRPC submitted that reports about the performance of UFR and df/dt relays were sought from utilities and status was monitored in RPC forum. It was mentioned that according to revised data received from States, the relief from UFR and df/dt relay was about 50 % of the planned relief during these incidents. He further submitted that inspections of these services were done by the joint team of RPC and NRLDC.

10. In reply to a query by the Commission as to whether the NRPC could arrange for the third party protection audits, Member-Secretary, NRPC submitted that funding was an issue as the cost involved is substantial. He however, suggested that subject to approval of the Commission, money available in the UI surplus fund account could be utilized for this purpose as it was in the interest of all the beneficiaries. The Commission directed Member-Secretary, NRPC to submit a concrete proposal in this regard within two weeks.

11. Subject to the above, order in the petition was reserved

Sd/-

(T. Rout)
Joint Chief (Law)