

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**Petition No. 167/SM/2012**

Subject : Grid disturbance on 30.7.2012 and 31.7.2012

Date of Hearing : 23.4.2013

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

Respondents : National Load Despatch Centre, New Delhi  
Power Grid Corporation Indian Limited, Gurgaon and others

Parties present : Shri S.K. Soonee, POSOCO  
Shri V.K Agrawal, POSOCO  
Shri S.R. Narasimhan, POSOCO  
Ms Jyoti Prasad, POSOCO  
Shri Rahul Shukla, POSOCO  
Shri S.S. Barpanda, POSOCO  
Shri V.V Sharma, NRLDC  
Shri Rajiv Porwal, NRLDC  
Shri Vivek Pandey, NRLDC  
Shri Somara Lakra, NRLDC  
Shri Kamaldeep, NRLDC  
Shri P.Pentayya, WRLDC  
Shri Pushpa Seshadri, WRLDC  
Shri G. Chakraborty, ERLDC  
Shri Kmurali Krishna, WRLDC  
Shri Naresh Kumar, NRPC  
Shri D.K. Srivastava, CEA  
Shri M.K. Gupta, SLDC, UP  
Shri Zahir Ahmad, SLDC, UP  
Shri Kamal Sarkar, PGCIL  
Shri A.V.S Ramesh, PGCIL  
Shri Shashi Bhushan, PGCIL  
Shri B.B. Mehta, SLDC, Gujarat  
Shri J. Mazumder, PGCIL  
Shri R.A. Sharma, SLDC, MPPTCL  
Shri M.K. Tomar, RVPNL  
Shri Vikas Sharma, PDD J&K  
Shri Uday Shankar, NTPC  
Shri Shri A. Basu Roy, NTPC  
Shri Rohit Chhabra, NTPC

Shri Ajay Dua, NTPC  
Shri A.K. Bishoi, NTPC  
Ms Shilpa Agrawal, NTPC  
Shri S.K. Sharma, NTPC  
Ms Suchitra Maggu, NTPC  
Shri Darshan Singh, SLDC, Delhi  
Shri S.K. Meena, NHPC  
Shri Hem Joshi, HUPNL

### **Record of Proceedings**

The representative of POSOCO submitted that required information has already been submitted before the Commission. He further submitted that the replies from all the constituents of Northern Region, except J&K, Western Region, NTPC, NHPC and DVC have been received.

2. The representative of WRPC submitted that a team of engineers from WRPC, MSETCL and TPC has done simulation testing of the relay as directed by the Commission and found that the relay had tripped due to load encroachment. In response to Commission's query as to whether the settings adopted on Main-II relay of Bina-Gwalior line by PGCIL was correct, the representative of WRPC submitted as under:

(a) The reactive reach for Zones 1, 2 and 3 adopted in Main-II relay are in line with CBIP Protection Guidelines;

(b) The relay requires a phase to phase resistive reach and phase to earth resistive settings to be set. There are no precise guidelines for resistive reach settings to be adopted;

(c) As per data submitted by PGCIL, the resistive reach adopted for phase to phase fault was equal to that for phase to earth fault during the two incidents. PGCIL has not provided basis of calculation for the same. However, it is clear that phase to phase resistive reach is generally smaller than phase to earth resistive reach. PGCIL have themselves, vide test report dated 10.8.2012, suo motu revised these settings and the same were forwarded by WRPC to the Commission earlier and these revised settings are in order for the resistive reaches;

(d) During testing conducted by the WRPC team, the relay tripped at about 1500 MVA for the first incident and about 1300 MVA for the second incident due to voltage and permitting more loading;

(e) The relay measures and trips as per voltage/current (V/I) ratio and therefore V/I and VA are significant;

(f) Even if the settings are adopted in line with the thermal limits of the line, as per revised transmission planning criteria of CEA, it must be remembered that for the given V/I, the line may trip much earlier than the MVA anticipated from thermal limits, if voltages are poorer. If load encroachment is to be avoided, power transfer shall have to be consistent with the voltage profile prevailing in the grid at that time.

3. The representative of CTU submitted that CTU had made settings considering the limitation of terminal equipment at both Bina and Gwalior 400 kV sub-stations, rated for 2000 A., which corresponds to 1500 MVA (approx). The load considered for relay setting of Bina-Gwalior transmission lines is 1500 MVA even though the transmission lines are of Quad conductor. The transmission line can carry high current but current has to be restricted to remain within the carrying capacity of the station equipment.

4. The representative of POSOCO submitted that if transmission lines are not capable of carrying even the thermal loading for short durations and trip in case of contingencies, the situation does not leave much room for the system operator to take corrective actions. All these terminal equipment constraints at the sub-station level should be known to the system operator in advance as the new transmission planning criteria clearly stipulated loading of lines to thermal limit under N-1 contingency. Relays should not pick up under such loading conditions and standards need to stipulate such a requirement.

5. In response to Commission's query as to whether there was any blackout in the control room of POSOCO due to failure of power-supply or non-availability of telemetry, the representative of POSOCO submitted that no such incident occurred at any point of time as all control rooms have back-up supply arrangements.

6. The CTU was directed to submit the basis of resistive setting as pointed out by WRPC and further required clarification on the different setting adopted post disturbance, the basis of new setting and its implication, on affidavit, by 15.5.2013.

7. The Commission directed the representative of POSOCO to file following information/ clarifications on affidavit, on or before 15.5.2013:

(a) The load flow file corresponding to inter regional scheduling of 2254 MW (excluding Adani- Mundra) between Northern Region and Western Region during

the time block of 0200 hrs to 0230 hrs of 30.7.2012 since only four out of eight inter-regional links between the aforementioned regions were available;

(b) The e-mail from the CTU requesting for shut down for 400 kV Agra-Gwalior-II was received at 10:30 A.M on 26.7.2012. However, POSOCO had revised the TTC at 10:00 A.M. itself. Was there any other communication from CTU on the basis of which TTC of WR-NR was revised by POSOCO; and

(c) Reasons for not applying of congestion charges on Punjab at 0121 hrs on 30.7.2012, when Punjab's drawl was more than its ATC and there was no forced outage in Punjab area.

8. The Commission further directed the WRPC to file its comment as to whether the setting of the relay of 400 kV Agra-Gwalior-I was correct as per approved philosophy, by 15.5.2013.

9. Subject to above, the Commission reserved order in the petition.

By order of the Commission

SD/-  
(T. Rout)  
Joint Chief (Law)