

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 008/SM/2014

Coram:

Shri Gireesh B. Pradhan, Chairperson

Shri A.K. Singhal, Member

Shri A.S. Bakshi, Member

Date of Hearing: 12.02.2015

Date of Order : 14.12.2015

In the matter of

Non-compliance of Section 29 of the Electricity Act, 2003 and Regulations 5.2 (r), 5.4.2 (a) (g) (h) and (i), 6.4.12, 6.5.20, 6.5.27, 5.7.4 (c) (g) (iv) and 4.6.3 of the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 and Regulation 6 (4) (a) of the Central Electricity Regulatory Commission (Technical Standards for connectivity to the grid) Regulations, 2007 and Regulation 3 (e) of the Central Electricity Authority (Grid Standards) Regulations, 2010.

And

In the matter of

1. The CE (S/O Commercial)
State Load Despatch Centre,
Haryana Vidyut Prasaran Nigam Limited,
Shakti Bhawan, Sector-6, Dist- Ambala,
Panchkula, Haryana- 134109.
2. The CMD,
Punjab State Transmission Corporation Limited,
PSEB Head office,
The Mall, Patiala, Punjab - 147001.
3. The CE (PS), SLDC,
Energy Systems,
5 th Floor, Shakti Bhawan, Ashok Marg,
Lucknow, Uttar Pradesh- 226007.
4. The CE (LD),
State Load Despatch Centre,
Vidyut Bhawan, Janpath,
Jaipur, Rajasthan- 302005.
5. The Chief Engineer,
Maharashtra State Load Despatch Centre,

Thane- Belapur Road, P.O. Airoli, Navi Mumbai - 400708.

6. The Superintending Engineer (Operation)
SLDC, Gujarat Energy Transmission Corporation Limited,
132 kV Gotri Sub Station compound,
Near T.B. Hospital, Gotri road, Vadodara, Gujarat

7. The Chief Engineer (LD),
State Load Despatch Centre,
MP Power Transmission Corporation Limited,
Nayagaon, Rampur, Jabalpur - 482008.

8. The Chief Engineer,
State Load Despatch Centre,
CS Power Transmission Corporation Limited,
Khedamara, Jamul, Bhilai, Chhattisgarh- 490024

9. The General Manager,
Western Regional Load Despatch Centre,
F-3, M.I.D.C. Area, Marol, Andheri (East),
Mumbai- 400093.

10. The General Manager,
Northern Regional Load Despatch Centre,
18-A, Shaheed Jeet Singh Sansawal Marg,
Katwaria Sarai, New Delhi-110016.

11. The CMD,
Power Grid Corporation of India Limited,
Saudamini, Plot No. 2, Sector-29,
Near IFFCO Chowk, Gurgaon (Haryana)- 122001

12. The CMD,
NTPC Ltd.,
NTPC Bhawan, SCOPE Complex, Institutional Area,
Lodhi Road, New Delhi – 110003

....Respondents

Following were present:

Shri P.P. Francis, NTPC
Shri K.P. Satapathy, NTPC
Shri Shubha Arya, NTPC
Shri V.K. Jain, NTPC
Shri P.P. Francis, NTPC
Shri Uday Shankar, NTPC
Shri Pradeep Mishra, Advocate, SLDC Rajasthan
Shri A.K. Arya, RVPNL
Shri P.R. Toshniwac, RVPNL
Shri B.B. Mehta, SLDC Gujarat
Shri AP Shah, SLDC Gujarat
Shri Rahul Srivastava, Advocate, UPSLDC

Shri Pankaj Kela, Advocate, UPSLDC
Shri D.K. Rokade, SLDC, Maharashtra
Shri R.A. Sharma, MPPTCL
Shri Aashish Bernard, Advocate, SLDC, MP
Shri Hem Joshi, HVPNL
Shri Ravi Sher Singh, HVPNL
Shri J. Mazumder, PGCIL
Shri Shashi Bhushan, PGCIL
Shri A. Sensarma, PGCIL
Shri P. Mukhopadhyay, WRLDC
Shri K. Muralikrishna, WRLDC
Shri Pragya Singh, WRLDC
Shri KVS Baba, POSOCO
Shri S.R. Narasimhan, NLDC, POSOCO
Shri V.K. Agrawal, NLDC
Shri N. Nallarasan, NLDC
Ms. Supriya Singh, Advocate, NRLDC
Shri Rajiv Porwal, NRLDC
Shri D.K. Jain, NRLDC

ORDER

Northern Regional Grid failed on 30.7.2012 at about 2:30 hours and the Northern, Eastern and Northern-Eastern grids failed at about 13:00 hours on 31.7.2012. The grid failures plunged several States into darkness and left the people to fend without electricity for hours together and affected the communication, essential services, industry, economy and the life of the people in a large way. In view of the magnitude and severity of the grid disturbance, the Commission directed the Power System Operation Corporation Limited (POSOCO) and Central Transmission Utility (CTU) to investigate into grid failures and submit a report to the Commission. After carrying out a joint detailed investigation by POSOCO and CTU, POSOCO submitted a report on 9.8.2012 in this regard. Based on the findings of report and after hearing the concerned parties, the Commission vide order dated 22.2.2014 in Petition No. 167/SM/2012 came to the conclusion that the following constituents have violated the various provisions of the Electricity Act, 2003, Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 (Grid Code), Central Electricity Authority (Technical Standards for Connectivity to the

Grid) Regulations, (CEA Technical Standards) and Central Electricity Authority (Grid Standard) Regulations, 2010 (CEA Grid Standards) as mentioned against each:

S. No.	Name of constituent /Organisation	Violations
1	Haryana, Punjab and UP (30.7.2012)	Section 29 of Electricity Act, 2003 and Regulations 5.4.2 (a), (g), (h) and (i) of Grid Code
2	Haryana, Punjab and Rajasthan (31.7.2012)	
3	Maharashtra, Gujarat, MP and Chhattisgarh (30.7.2012)	Section 29 of Electricity Act, 2003 and Regulations 6.4.12 of Grid Code
4	Maharashtra, Gujarat, Chhattisgarh (31.7.2012)	
5	WRLDC	Regulations 5.7.4 (g) (iv), 6.5.20 and 6.5.27 of Grid Code
6	NRLDC	Regulations 5.7.4 (g) (iv) of Grid Code
7	POWERGRID	Regulations 6 (4) (a) of CEA Technical Standards, Regulation 3 (e) of CEA Grid Standards and Regulations 5.7.4 (c) of Grid Code
8	NTPC (Sipat)	Section 29 of Electricity Act, 2003

2. The Commission vide order dated 22.2.2014 directed for initiation of action under Section 142 of the Electricity Act, 2003 against the constituents guilty of non-compliance of the provisions of the Act and Regulations. The relevant extract of the order dated 22.2.2014 is as under:

"77. In the light of the foregoing discussion, we have come to the conclusion that there are some violations which are specific to this grid disturbance which need to be addressed here; other violations relating to UFRs, Telemetry, RGMO and non-submission of data are being addressed separately. Accordingly, we find that the SLDC of Haryana, Uttar Pradesh, Punjab, Rajasthan, Maharashtra, Gujarat, Madhya Pradesh, Chhattisgarh as well as Powergrid, WRLDC, NRLDC and NTPC have failed to comply with the provisions of the Electricity Act, 2003 and various Regulations of the Commission and CEA as mentioned in the preceding paragraphs. Accordingly, we direct staff of the Commission to process the case for issue of notice in accordance with provisions of Electricity Act, 2003".

3. In view of the above, the Commission, vide order dated 20.6.2014, directed the respondents to show cause as to why action under Section 142 of the Act

should not be initiated against them for non-compliance with the provisions of the Act, Grid Code, CEA Technical Standards and CEA Grid Standards.

4. The matter was heard on 21.8.2014. During the hearing, the representative of the respondents requested the Commission to upload the CEA report on the website to enable them to file their replies. The Commission directed National Power Committee to submit report of task force and upload the same on its website.

5. During the next hearings on 30.9.2014 and 12.2.2015, the representatives of the respondents reiterated their submissions as made in the Petition No. 167/SM/2012. The representatives of the respondents submitted that they have endeavored their best to perform their statutory duties under the Act, Grid Code, CEA (Technical Standards for Connectivity to the Grid) Regulations, 2007 and CEA (Grid Standards) Regulations, 2010 and there was no wilful disobedience of any directions issued to them.

6. The respondents have filed their replies which have been discussed and analysed as under:

Reply of the constituents of Northern Region:

7. The responses of the State Load Despatch Centre, Uttar Pradesh, State Load Despatch Centre, Haryana, State Load Despatch Centre, Rajasthan and State Load Despatch Centre, Punjab have been discussed briefly as under:

(a) State Load Despatch Centre, Uttar Pradesh (SLDC, UP) vide its affidavit dated 7.7.2014, has submitted that in the order dated 20.6.2014, it has been alleged that SLDC, UP had violated the provisions of Section 29 of the Act, Regulation 5.4.2 (a), (g), (h) and (i) of the Grid Code, and has not complied with the instructions of RLDC. SLDC, UP has further submitted that

prior to the grid disturbance, on 30.7.2012 at 02:30 hrs, RLDC did not issue any message to SLDC, UP which is clear from the perusal of the details of the messages issued by RLDC. Therefore, in order dated 22.2.2014 in Petition No. 167/SM/2012, it has wrongly recorded that a hand written message was issued by NRLDC on 30.7.2012 at 02:32 hrs to SLDC, UP. The above message was actually issued on 31.7.2012 at 02:32 hrs. SLDC, UP has further submitted that at present, the grid discipline is being maintained and there is hardly any overdrawl on behalf of State of UP, after the grid disturbance on 30.7.2012 and 31.7.2012.

(b) State Load Despatch Centre, Haryana (SLDC, Haryana) vide its affidavit dated 15.7.2014 has submitted that as per the submission of NRLDC, immediately before the grid collapse on 30.7.2012 at 02:33 a.m. and on 31.7.2012 at 13:00 a.m., the frequency profile of the grid was above 49.7 hz. Therefore, the question of non-compliance of the provisions of Regulation 5.4.2(a) and (i) of the Grid Code, does not arise. SLDC, Haryana remained in constant touch with NRLDC and gave feedbacks about the compliance of instructions issued by them. SLDC, Haryana has diligently implemented the Commission's directions and has not committed any violations of the provisions of Section 29 of the Act, Grid Code and directions of NRLDC.

(c) State Load Despatch Centre, Rajasthan (SLDC, Rajasthan) vide its affidavit dated 14.7.2014 has submitted that SLDC, Rajasthan issued the messages to the distribution companies of Rajasthan including the messages received from NRLDC for advising to reduce drawal, in case of overdrawl/ contingency/ threat to the system security. SLDC, Rajasthan has submitted that it had always taken immediate action in compliance with the directions of

NRLDC. SLDC, Rajasthan has further submitted that to ensure safety and reliability of the system, it had carried out requisite load shedding or backing down of generation to relieve congestion in real time and the same was continued unless specifically not permitted by NRLDC. Rajasthan, SLDC did not receive any notice or bill w.e.f. 31.7.2012 to 31.3.2014 regarding congestion imposed on the State. Rajasthan, SLDC has further submitted that UFRs, Revised UFRs based automatic load shedding scheme have been fully implemented and is functional in Rajasthan Control area. With regard to "Telemetry", SLDC, Rajasthan has not allowed any new element to be connected with the grid without telemetry, unless undertaking for providing telemetry and data communication is given by the STU/users. SLDC has further submitted that units are operating under RGMO mode and the status is being submitted regularly in OCC meetings. Therefore, Rajasthan, SLDC had always provided desired information to NRLDC/NRPC Secretariat and it will continue to do so.

(d) State Load Despatch Centre, Punjab (SLDC, Punjab) vide its affidavit dated 19.8.2014 has submitted that as per Section 29 of the Act, it had complied with all directions of NRLDC. As a result of timely action, it reduced overdrawl to 104 MW before the grid disturbances on 30.7.2012. Similarly, on 31.7.2012, Punjab was under drawing to the tune of 79 MW just prior to grid disturbances. Therefore, despite similar schedule SLDC, Punjab has complied with the directions of NRLDC and has reduced the drawl either on its own or on receipt of messages from NRLDC. SLDC, Punjab has further submitted that in order to curtail overdrawl, it has resorted to manual disconnection of 66 kV feeders. SLDC, Punjab has also made additional submissions as under:

(i) PSPCL controls the transmission and distribution system of 66 kV and below. However, PSTCL has been vested with power to control 220 kV and 132 kV sub-stations/transmission lines. There is no scheduling and dispatch of generating station of PSPCL, as the entire electricity generated within the State is used by PSPCL for retail supply of electricity. PSPCL directly coordinate scheduling and dispatch, UI, POC charges towards usage of inter-State line with NRLDC/NRPC without the involvement of SLDC for the electricity procured by the distribution licensees.

(ii) SLDC, Punjab has no role in scheduling and despatch or in the demand estimation. The overdrawal from the grid by the distribution licensee is relating to demand and load management and it is not within the purview of SLDC. All activities of scheduling, despatch and demand estimation, etc., are being done by PSPCL. The messages were received from the automated software of NRLDC. However, the remedial measures are being taken by SLDC, Punjab manually. The measures are implemented by giving directions to distribution licensee to curtail overdrawal and in rare cases by performing manual disconnection of 66 kV feeders from PSPCL. SLDC, Punjab is now more vigilant towards the shortcomings after the grid disturbances in July, 2012. SLDC, Punjab has also filed petition before PSERC to restrain such violations.

Analysis:

8. We have considered the submissions of SLDCs of Uttar Pradesh, Punjab, Haryana and Rajasthan. The respondents have made similar submissions in the

present petition as made by them in Petition No. 167/SM/2012. Therefore, there is no need to repeat the same in the instant petition. We are of the view that the control areas of Haryana, Punjab and Uttar Pradesh have failed to comply with Section 29 of the Act and Regulations 5.4.2 (a), (g), (h) and (i) of the Grid Code on 30.7.2012 and 31.7.2012.

Reply of the constituents of Western Region:

9. State Load Despatch Centre, Madhya Pradesh, State Load Despatch Centre, Gujarat and State Load Despatch Centre, Maharashtra, State Load Despatch Centre, Chhattisgarh have filed their replies. State Load Despatch Centre, Chhattisgarh has not filed its reply. Submissions made by the respondents are summarised as under:

(a) State Load Despatch Centre, Madhya Pradesh (SLDC, Madhya Pradesh) vide its affidavit dated 25.7.2014 has submitted that it has complied with the provisions of Section 29 (1) and (2) of the Act, by reducing under-drawl of the State in accordance with the notices issued by WRLDC. SLDC Madhya Pradesh has further submitted that it has already submitted its detailed comments in Petition No. 167/MP/2012 and has reiterated that there was no specific instruction from WRLDC to hand trip any running thermal unit in State of MP. However, in order to reduce the under drawl of MP, almost all the thermal units were running at their technical minimum limits and the actions of SLDC, MP has been vetted by WRLDC and POSOCO which demonstrate that SLDC, MP complied with the directions of WRLDC or provisions of Central Electricity Regulatory Commission (Measures to Relieve Congestion in Real Time) Regulation, 2010, Section 29 of the Act and Regulation 6.4.12 of the Grid Code.

(b) State Load Despatch Centre, Gujarat (SLDC, Gujarat) vide its affidavit dated 14.7.2014 has submitted that according to the notices served under Section 29(1) of the Act, it has exercised its powers conferred under Section 29(2) of the Act and Part-2 (2.7) of the Grid Code to reduce underdrawl. SLDC, Gujarat has further submitted that it has taken actions to reduce under drawal as per the provisions of Regulations 4.10 and 5.15 of the Grid Code and directions given by GERC in order dated 1.4.2010 in Petition No. 3/2010. SLDC, Gujarat, has further submitted as under:

- (i) The State level Operation Coordination Committee meetings are held at regular intervals to discuss all issues relating to grid operation.
- (ii) SLDC has done considerable work for data visualization, maintaining of RTU availability and communication link with control centre.
- (iii) In order to ensure secure and reliable grid operation all the time, special protection schemes have been placed in service in form of predefined automated action either for reducing generation or curtailment of load to meet various contingencies.
- (iv) After grid disturbances, number of proactive steps have been taken by SLDC Gujarat for safe, secure and reliable operation of the grid such as strengthening defense mechanism like introduction of Automatic Demand Management Scheme, SPS, islanding schemes and black start mock drill, initiation of RE desk, real time information of RE generation data, weather forecasting and load forecasting, development of WAMS from PMU data in Gujarat, SCADA up-

gradation with back-up SLDC, RE generation curtailment in case of exigency, changes in network topology, co-ordination with all stakeholders and capacity building, etc.

(c) State Load Despatch Centre, Maharashtra (SLDC, Maharashtra) vide its affidavit dated 15.7.2014 has submitted that during the grid disturbance, the WR grid was not affected. In the message of WRLDC dated 29.7.2012 at 22:27 hrs, there was no mention of any congestion on any of the network element. SLDC, Maharashtra has further submitted that it was not aware of any outage on transmission lines on WR-NR corridor. The congestion of WR-NR corridor was informed on 29.7.2012 at 22:50 hrs and SLDC has acted upon such communication and has taken action to reduce underdrawl by withdrawal of load shedding. Since SLDC, Maharashtra has always acted upon the directions of WRLDC in true spirit of grid operation, there is no default on part of Maharashtra. SLDC, Maharashtra has submitted that underdrawl by Maharashtra was inadvertent and unintentional, after taking all possible measures to curb the underdrawl.

Analysis:

10. We have considered the submissions of SLDCs of Gujarat, Maharashtra and Madhya Pradesh. The submissions of SLDC, Gujarat regarding under drawal is similar as made in the Petition No. No.167/SM/2012. The Commission in order dated 20.6.2014 had dealt with the reply of SLDC, Gujarat as under:

“It seems that SLDC, Gujarat did not learn lesson from the last night's disturbance. It also shows that system operators were not aware about the aggravated situation. SLDC failed in controlling under drawl in its control area hence failed to comply with RLDC's directions.”

11. During the hearing on 12.2.2015, the representative of SLDC, Gujarat submitted that SLDC, Gujarat is conducting regular State level OCC meeting to discuss all grid operation related matters, work for data visualization, maintaining RTU availability and communication link with control centre, strengthening defense mechanism like introduction of Automatic Demand Management Scheme, SPS, islanding schemes and black start mock drill, initiation of RE desk, real time information of RE generation data, weather forecasting and load forecasting, development of WAMS from PMU data in Gujarat, SCADA up-gradation with back-up SLDC, RE generation curtailment in case of exigency, changes in network topology, co-ordination with all stakeholders and capacity building. We are of the view that these measures taken by SLDC, Gujarat are post grid disturbance measures which are not relevant in the present petition. In our view SLDC, Gujarat has failed to control under drawl in its control area and to comply with the directions of RLDCs issued on 30/31.7.2012.

12. It is noticed that there was continuous under drawal by the control area of Maharashtra during the night of 29/30.7.2012. According to SLDC, Maharashtra, since there was no real time visibility of wind injection, the efforts of system operator to reduce State generation were partly eaten away by wind injection. SLDC, Maharashtra has contended that all the thermal generating units were running at the technical minimum level and the practice of withdrawal of thermal unit is generally not adopted. Therefore, they take more time to synchronize. It appears that SLDC was more worried about catering to demand for the next day instead of prevailing over loading of flow gates and violation of TTC reported in the messages. During the real time operation, RLDC and SLDCs should have considered grid security as top priority. However, SLDC, Maharashtra has failed to give requisite priority to grid

security and to comply with the directions of RLDC issued under Section 29 of the Act and Regulation 6.4.12 of the Grid Code.

13. It is noticed that SLDC, Madhya Pradesh violated the notices issued by WRLDC to MPSEB indicating TTC of WR-NR and WR-ER. On 29.7.2012, the under drawl of control area of MP kept increasing from 190 MW at 21:47 hours to 392 MW at 23:43 hours and further to 614 MW at 00:58 hrs. On 30.7.2012 at 01:25 hours, the under drawal was 449 MW. Therefore, the control area of MP was consistently under drawing and UI receivable was in the range of ₹ 8 to ₹ 19 crore per week for the month of July, 2012. Despite direction of WRLDC to control under drawal, SLDC, Madhya Pradesh intentionally was under drawing the power to earn the money through UI and jeopardized grid security. SLDC, Madhya Pradesh did not comply with the directions of RLDC issued under Section 29 of the Act and Regulation 6.4.12 of the Grid Code on 30.7.2012.

14. It is noticed that during the month of July, 2012 (2.7.2012 to 29.7.2012), the constituents of Western Region had made huge under drawal and same cannot be said to be unintentional and the deviation in wind energy was not the only reason attributable to such under drawal. The constituents of WR consistently ignored the directions issued by WRLDC which amounts to non-compliance of directions of RLDC and provisions of Regulation 5.4.2(h) of the Grid Code. WRLDC is responsible to point out specifically the severity of under drawal and to refrain the utilities from under drawing. As per the records available, WRLDC has not discharged its responsibility considering the severity of prevailing system condition. The under-drawals by the constituents of WR were utilized by the constituents of NR to over-draw from the grid as frequency was not abnormally low and UI rate was also low. As per Regulation 6.4.25 of the Grid Code, WRLDC is required to take action on

collusion of the constituents of WR and report the matter to WRPC for investigation/action.

15. We agree with the contention of SLDC, Gujarat that WRLDC should have revised the schedule suo-motu in the interest of better system operation as provided in the Regulations 6.4.12 and 6.5.20 of the Grid Code. However, SLDC, as apex body in the State, is equally responsible to ensure secure and reliable operation and it should have revised the schedules of its constituents in accordance with the provisions of the State Grid Code and it cannot pass its responsibility on RLDC. In our view, SLDCs of Gujarat, Maharashtra, Madhya Pradesh and Chhattisgarh have failed to discharge their responsibilities by not acting on their own to revise schedule of their constituents and generating stations as per the provisions of State Grid Code as well as under Section 29 of the Act.

16. SLDC, Chhattisgarh neither filed its reply to the show cause notice nor appear before the Commission during the hearing. Perusal of the information submitted by WRLDC reveals that Chhattisgarh was under drawing from the grid, before disturbance on 30/31.7.2012. Considering the system security, WRLDC requested SLDC, Chhattisgarh to take out load shedding/regulate excess generation. However, SLDC, Chhattisgarh did not comply with the direction of WRLDC. We are of view that SLDC, Chhattisgarh has failed to comply with the directions of WRLDC issued under Regulation 6.4.12 of the Grid Code and Section 29 of the Act.

17. It is noticed that system operators at the State as well regional level have failed to visualize the impact of under drawal and overdrawal by the constituents of WR and NR respectively, contributing to skewed flow of power from WR to ER and WR to NR which contributed to factors which ultimately led to the disturbance. As per

Regulation 6.5.20 of the Grid Code, RLDC is required to revise schedule in the interest of better system operation. However, despite consistent under draw by the constituents of WR, WRLDC has failed to revise schedule in terms of Regulation 6.5.20 of the Grid Code. Therefore, it emerges that on 30.7.2012, control areas of Maharashtra, Gujarat and Madhya Pradesh had failed to comply with the provisions of Regulation 6.4.12 of Grid Code and Section 29 of the Act. Similarly on 31.7.2012, the control areas of Gujarat and Maharashtra had failed to comply with the provisions of Regulation 6.4.12 of Grid Code and Section 29 of the Act prior to grid disturbances.

Reply of Power Grid Corporation of India Limited:

18. Power Grid Corporation of India Limited (PGCIL), vide its affidavit dated 14.7.2014, has submitted as under:

(a) The relay settings are in line with CBIP Protection Guidelines and there are no precise guidelines for resistive reach settings to be adopted. The adopted setting of resistive reach is as per the expertise available with relay manufacturer in absence of any recommendation either from RPC or from CBIP.

(b) The prime function of the protection system is to protect components from faults. The adopted setting is based on the continuous current rating of the terminal equipment (2000A) which was also verified by WRPC during testing at Bina and the element operated beyond full load rating of 2000A for 50 minutes. Prohibiting tripping while operating beyond the rated capacity of the terminal equipment, could lead to failure of the equipment, leading to long outage of the transmission element. Therefore, protection system has acted

with reliability during an abnormal operating condition to save the terminal equipments. RPC has not specified any method for protection of terminal equipment.

(c) Selection of network location for Power Swing Blocking function without step feature can best be obtained through transient stability studies covering many possible operating conditions. Since, no such study was undertaken by RPCs, PGCIL was apprehensive to adopt the recommendations of RPC considering safe operation of the machines connected to the Grid. RPCs should be directed to undertake required studies in a definite time frame to implement the option suggested by RPC in real time operation. The task force on Power System Analysis has also expressed its views in the report.

(d) Outage planning by PGCIL of transmission elements is done on annual basis for maintenance of transmission lines based on Annual Maintenance Plan (AMP) of each element which is planned well in advance for round the year implementation. However, it is reiterated that the outage planning in respect of 400 kV Agra-Gwalior-Bina-II transmission line for the period 27.7.2012 to 29.7.2012 was for undertaking construction related activity which is very difficult to plan in advance due to inherent uncertainties associated with such construction activities. Mostly, outages are planned and discussed in RPC forum and does not materialize due to non-availability of tool to study the contingency arising out of the outage of the element under consideration. RLDC undertake studies on real time basis and permit outages and the process of approval of RPC is being followed meticulously.

Analysis:

19. Perusal of the submissions of PGCIL reveals that the outage plan of transmission system was discussed in the OCC meetings regularly and approval is being granted for planned shutdown. PGCIL availed shutdown of two important inter-regional links, namely, 400 kV Bina-Gwalior-II and Gwalior-Agra-II during the period of peak demand (July–August) in the Northern Region without due deliberation with the constituents in the OCC forum. The shutdown of an important inter-regional link for up-gradation of these lines from 400 kV to 765 kV was permitted by NRLDC and WRLDC only on the basis of an e-mail from PGCIL, an activity which is not emergent; but is a planned activity. In the OCC meeting, NRPC had authorized NRLDC to approve need based shut down. According to WRLDC, such practice can be allowed only in cases of emergency or unforeseen shutdown indicating the nature of emergency. Therefore, RLDC permitted PGCIL to avail shutdown in the peak season without proper consultation or discussion in the OCC forum of NRPC and WRPC. RLDC has over-stretched the authorization given by RPC for allowing need based shutdown.

20. According to PGCIL, the construction related shutdown cannot be planned. It is noticed that the manpower requirement and material needed to be deployed for construction activity is well known in advance. Therefore, it cannot be accepted that this type of shutdown cannot be planned in advance and shutdown could not have been approved by RPC/OCC in accordance with provisions of the Grid Code. In our view, it is unconvincing considering the prudent practice of Project Management.

21. The Commission while dealing with the submission of PGCIL in Petition No. 167/SM/2012 vide order dated 22.2.2014 had observed as under:

“51. We find that the protection settings adopted by POWERGRID were not in line with the protection philosophy approved by RPCs. Accordingly, we conclude that POWERGRID failed to comply with Regulation 3(e) of the CEA Grid Standards and Regulation 5.2 (l) of the Grid Code. RPCs shall ensure that the approved philosophy is adopted by all users. Any non-compliance shall be reported to the Commission under Regulation 1.5 (ii) of the Grid Code which reads as under:

1.5 Compliance Oversight

(ii) The Regional Power Committee (RPC) in the region shall also continuously monitor the instances of non-compliance of the provisions of IEGC and try to sort out all operational issues and deliberate on the ways in which such cases of non-compliance are prevented in future by building consensus. The Member Secretary RPC may also report any issue that cannot be sorted out at the RPC forum to the Commission.”

22. In our view, the protection philosophies approved at RPC level are on the basis of discussions by different stakeholders and PGCIL is an important stakeholder due to the fact that it owns, operates and maintains majority part of ISTS. The apprehension shown by PGCIL in adopting the recommendations of RPC where PGCIL is itself part of decision making is highly regretful. Accordingly, we are of the view that PGCIL has failed to comply with the provisions of Regulation 3(e) of the Central Electricity Authority (Grid Standard) Regulations, 2010 and Regulation 5.2(l) of Grid Code.

23. As per Regulation 5.7.4(c) of the Grid Code, it is necessary to prepare outage planning at RPC level to ensure the utilization of available resources in an optimal manner and to maintain security standards. Outage of such an important link during the peak demand at Northern Region without discussions in RPC is imprudence. Therefore, WRLDC and NRLDC by allowing the need based shutdown have overstepped the authorization given by RPC. We are of the view that PGCIL has failed to comply with the provisions of Regulation 5.7.4(c) and (g) (iv) of the Grid Code.

Reply of Western Regional Road Despatch Centre and Northern Regional Load Despatch Centre:

24. Western Regional Road Despatch Centre (WRLDC), vide its affidavit dated 9.7.2014, has submitted that the planned outage of 400 kV Gwalior-Agra ckt-1 was permitted on 26.7.2012 at 0825 hrs. WRLDC has further submitted that at the time of approving the outage, all other inter-regional links between WR-NR i.e. 400 kV Gwalior-Agra ckt-2, 400 kV Kankroli-Zerda, 400 kV Bhinmal-Zerda, 220 kV Modak-Badod, HVDC Vindhyachal back-to-back were available. As per the studies undertaken by it, the system was secure under N-1 contingency even after allowing the above outage and implementing the suggested TTC revision/contingency measure. Therefore, there was no reason to defer the requested outage. According to WRLDC, as per Regulation 6.5.20 of the Grid Code, RLDC is required to revised schedules if there is need for revisions of schedules in the interest of better system operation. On 29.7.2012, 30.7.2012 and 31.7.2012, there were huge under drawl by the beneficiaries of WR and ample options were available to reduce their own generations. WRLDC has contended that revising the schedules suo-motu by it in terms of the provisions of Regulation 6.5.20 could not prevent the beneficiaries changing their reference point as per the prevailing regulations. However, even on certain occasions, beneficiary, namely SLDC, Chhattisgarh had objected to such suo-motu revision of schedule. It is noticed that such suo-motu revisions by WRLDC in a decentralized scenario have the potential for disputes by utilities and the generating stations.

25. Northern Regional Load Despatch Centre (NRLDC), vide its affidavit dated 14.7.2014, has submitted that it has complied with the provisions of Regulation 5.7.4(g)(iv) and Regulation 5.2(c) of the Grid Code even while facilitating network

augmentation activities (in case of Gwalior-Agra) for avoiding imminent damage to plant/equipment (in case of Kankroli-Zerda). NRLDC has further submitted that the procedure for permitting the outage has been reviewed by NLDC. As per the procedure laid down by NLDC, the planned outages on inter-regional corridors are to be discussed in OCC meetings of the concerned regions. According to NRLDC, the outages on all the elements associated with 765 kV network and transmission elements having impact on inter regional systems have to be permitted by NLDC.

Analysis:

26. Perusal of the submissions of WRLDC and NRLDC reveals that RLDCs have claimed that shutdowns were done as per the provisions of the Regulations. However, it is not clear as to under which 'Regulations', RLDCs are authorised to shut down for planned construction related purpose. Only in case of emergency, RLDC can shutdown without consulting the stakeholders. During the peak demand season in Northern Region, RLDC cannot keep Regional Stakeholders in dark while allowing shutdown of such an important link as 'planned shutdown'. As per Regulation 5.7.4(g) of the Grid Code, NLDC/RLDCs are authorised to defer the planned outage in case of grid disturbances, system isolation, partial black out in a State and any event in the system may have an adverse impact on the system security by the proposed outage. We find that RLDCs have over-stretched the authorization given by RPC to allow need based shutdown. We are of the view that WRLDC and NRLDC have failed to comply with provisions of the Regulation 5.7.4(g) (iv) of Grid Code.

Reply of NTPC Ltd.

27. NTPC Ltd. (NTPC), vide its affidavit dated 14.7.2014, has submitted as under:

(a) The allegations made against NTPC are restricted to the unit-3 of Sipat generating station. The said unit was under testing and commissioning prior to the commercial operation at the time when the directions were issued. NTPC had expressed difficulty to restrict the injection of power from Sipat Unit-3, which was under testing and commissioning. Therefore, NTPC had offered to reduce generation from other generating stations which were under commercial operation. The same ought to have been considered by RLDC.

(b) The sequence of events of 30.7.2012 and 31.7.2012 are to be considered in the light of the following:

(i) Inadequate comprehension of the emergency situation on the part of NLDC, WRLDC and NRLDC.

(ii) Lack of prompt action by drawing constituents of Northern Region.

(iii) Inadequate/low priority response from injecting entities in WR on 30.7.2012, probably not being aware of the gravity of the situation. However, on 31.7.2012, they were not informed of any such requirement.

(c) As recorded by the Commission, NTPC had pro-actively attempted to suggest just and proper solution which would have enabled NTPC to continue testing and commissioning of unit-3 of Sipat generating station and at the same time to enable reduction in the generation at other generating stations. WLRDC for its own reasons did not proceed to accept the said solution.

Analysis:

28. NTPC has submitted that at the time of issue of direction by WRLDC, unit-3 of Sipat generating station was under testing and commissioning. NTPC had projected its difficulty to restrict the injection of power from unit-3 of Sipat generating station. However, NTPC had offered to reduce generation from other generating stations which were under commercial operation.

29. It is noted that NTPC was performing testing and commissioning prior to commercial operation with permission of system operator. NTPC should have complied with direction of system operator rather than suggesting alternate solution to mitigate the situation. It is further noted that communication between NTPC and WRLDC was focusing on commercial issue instead of security aspect. Each entity is obligated to comply with instructions of RLDC in real-time immediately even if it results in possible commercial loss. The entity aggrieved by the direction of RLDCs may approach the Commission for resolution of disputes in accordance with law. In our view, protracted discussion during real-time operation is dangerous for security of the grid and should be avoided. We warned NTPC to comply with the directions of RLDC in such situation impacting grid security and not give undue importance to other aspects.

30. The Commission vide order dated 22.2.2014 in Petition No. 167/SM/2012 had directed National Power Committee (NPC) to constitute a Task Force consisting of representatives of CEA, and staff of the Commission and others to conduct technical study in regard to Grid Stability covering pre-disturbance scenario, considering each contingency from 23.7.2012 to 31.7.2012, and impact of TTC violation on ER-WR and WR-NR corridors as well as simulation of cascade tripping after tripping of 400 Bina-Gwalior line. As per the Commission`s direction, the Task Force conducted

detailed power system studies including load flow simulation, ATC/TTC violations, contingency analysis and system dynamics by stability studies for the various grid conditions during the period from 23.7.2012 to 31.7.2012. The Task Force in its report mainly has observed as under:

(a) The system was stable from 23.7.2012 to 26.7.2012. However, there were significant deviations of the actual inter-regional power transfer on the WR-NR and WR-ER corridor from the declared TTC/ATC values.

(b) The situation was critical during the planned shutdown period of 400 kV Gwalior-Agra ckt-I and 400 kV Bina-Gwalior ckt-2 (400 kV Bina-Gwalior-Agra one circuit is in service on 27.7.2012 [1330 hours]). Under these two planned outage conditions, underlying 220 kV network becomes critically loaded in case of tripping of 400 kV Bina-Gwalior ckt-II or 400 kV Agra-Gwalior ckt-I. There were TTC violations of the order of 400 MW each on WR-NR and WR-ER corridors from the declared TTC/ATC values. However, the results of the dynamic studies show that system remains stable in case of tripping of 400 kV Bina-Gwalior ckt-II or 400 kV Agra-Gwalior ckt-I.

(c) On 29.7.2012 at 1500 hrs, there was a violation close to 100 MW with respect to declared TTC on WR-NR and 500 MW on WR-ER corridor. The WR-NR declared TTC of 2600 MW and considered only planned outage of one circuit of the 400 kV Bina-Gwalior-Agra section while in actual operation there was heavy depletion on this corridor making the system insecure. The results of the dynamics study for these depleted conditions also indicate that the system was stable even for these depleted conditions as the oscillations damp out within 12-15 seconds. The angular difference between Jabalpur

(WR) and Kanpur (NR) increases from 45 degrees to 93 degrees indicating the stress on the system. This was a narrow escape from cascade tripping. The 220 kV Badod-Morak and 220 kV Gwalior (MP)-Gwalior (PG)-2 lines were restored subsequently.

(d) On 30.7.2012 at 02:30 hrs, since there was additional flow on WR-NR corridor of the order of 1100 MW and with tripping of Bina-Gwalior line-I, the system became unstable. However, had there been a reduction of 1000 MW in NR and 1000 MW generation in WR, system could have remained stable. This establishes the need for appropriate system protection schemes (SPS) on critical corridors.

(e) The situation of 31.7.2012 was similar to that of 30.7.2012 in terms of network depletion on the WR-NR corridor.

Analysis and Decisions:

31. We have considered the submissions of Haryana, UP, Rajasthan, Gujarat, Maharashtra, Punjab, Madhya Pradesh, NTPC, WRLDC, NRLDC and PGCIL.

Section 29 of the Act provides as under:

“Section 29. Compliance of directions: --- (1) The Regional Load Despatch Centre may give such directions and exercise such supervision and control as may be required for ensuring stability of grid operations and for achieving the maximum economy and efficiency in the operation of the power system in the region under its control.

(2) Every licensee, generating company, generating station, sub-station and any other person connected with the operation of the power system shall comply with the directions issued by the Regional Load Despatch Centres under subsection (1).

(3) All directions issued by the Regional Load Despatch Centres to any transmission licensee of State transmission lines or any other licensee of the State or generating company (other than those connected to inter State transmission system) or sub-station in the State shall be issued through the State Load Despatch Centre and the State Load Despatch Centres shall ensure that such directions are duly complied with the licensee or generating company or sub-station.

(4) The Regional Power Committee in the region may, from time to time, agree on matters concerning the stability and smooth operation of the integrated grid and economy and efficiency in the operation of the power system in that region.

(5) If any dispute arises with reference to the quality of electricity or safe, secure and integrated operation of the regional grid or in relation to any direction given under sub-section (1), it shall be referred to the Central Commission for decision :

Provided that pending the decision of the Central Commission, the directions of the Regional Load Despatch Centre shall be complied with by the State Load Despatch Centre or the licensee or the generating company, as the case may be.

(6) If any licensee, generating company or any other person fails to comply with the directions issued under sub-section (2) or sub-section (3), he shall be liable to a penalty not exceeding rupees fifteen lacs.”

Regulations 5.2(l), 5.4.2(a), (g), (h), (i), 6.4.12, 6.5.20, 6.5.27, 5.7.4(c), 5.7.4(g)(iv) and 4.6.3 of Grid Code provides as under:

“5.2(l) Provision of protection and relay settings shall be coordinated periodically throughout the Regional grid, as per a plan to be separately finalized by the protection sub-Committee of the RPC.

5.4.2(a) SLDC/ SEB/distribution licensee and bulk consumer shall initiate action to restrict the drawal of its control area, from the grid, within the net drawal schedule whenever the system frequency falls to 49.7 Hz.

5.4.2(g) RLDCs shall devise standard, instantaneous, message formats in order to give directions in case of contingencies and /or threat to the system security to reduce over drawl by the bulk consumer , SLDC/ State at different overdrawal conditions depending upon the severity of the overdrawal. The concerned SLDC shall ensure immediate compliance with these directions of RLDC and send a compliance report to the concerned RLDC.

5.4.2(h) All Users, SLDC/ SEB/distribution licensee or bulk consumer shall comply with direction of RLDC/SLDC and carry out requisite load shedding or backing down of generation in case of congestion in transmission system to ensure safety and reliability of the system. The procedure for application of measures to relieve congestion in real time as well as provisions of withdrawal of congestion shall be in accordance with Central Electricity Regulatory Commission (Measures to relieve congestion in real time operation) Regulations, 2009.

5.4.2(i) The measures taken by the User’s, SLDC SEB/distribution licensee or bulk consumer shall not be withdrawn as long as the frequency remains at a level lower than the limits specified in para 5.2 or congestion continues, unless specifically permitted by the RLDC/SLDC

6.4.12 However, notwithstanding the above, the RLDC may direct the SLDCs/ISGS/other regional entities to increase/decrease their drawal /generation in case of contingencies e.g. overloading of lines/transformers, abnormal voltages, threat to system security. Such directions shall immediately be acted upon. In case the situation does not call for very urgent action, and RLDC has some time for analysis, it shall be checked whether the situation has arisen due to deviations from schedules,

pursuant to short-term open access. These shall be got terminated first, before an action, which would affect the scheduled supplies to the long term and medium term customers is initiated in accordance with Central Electricity Regulatory Commission (Grant of Connectivity, Long-term Access and Medium-term Open Access in inter-state Transmission and related matters) Regulations, 2009.

6.5.20 If, at any point of time, the RLDC observes that there is need for revision of the schedules in the interest of better system operation, it may do so on its own, and in such cases, the revised schedules shall become effective from the 4th time block, counting the time block in which the revised schedule is issued by the RLDC to be the first one.

6.5.27 When for the reason of transmission constraints e.g. congestion or in the interest of grid security, it becomes necessary to curtail power flow on a transmission corridor, the transactions already scheduled may be curtailed by the Regional Load Despatch Centre.

5.7.4(c) RPC Secretariat shall compile LGBR for peak as well as off peak scenario and also prepare annual outage plan in the respective region. RPC Secretariat shall then come out with the draft LGBR and draft outage plan for the next financial year by 30th November of each year for the regional grid taking into account the utilization of available resources in an optimal manner and to maintain security standards. This will be done after carrying out necessary system studies and, if necessary, the outage plan shall be rescheduled and LGBR shall be modified, accordingly. Adequate balance between generation and load requirement shall be ensured while finalizing outage plan. The draft LGBR and draft outage plan shall be uploaded by the RPCs on their websites.

5.7.4(g) NLDC/RLDC are authorized to defer the planned outage in case of any of the following, taking into account the statutory requirements:

- (i) Grid disturbances
- (ii) System isolation
- (iii) Partial Black out in a state
- (iv) Any other event in the system that may have an adverse impact on the system security by the proposed outage."

Regulation 3 (e) of the CEA (Grid standards) Regulations, 2010 reads as under:

"3. Standards for Operation and Maintenance of Transmission Lines- (1) All Entities, Appropriate Load DespatchCentres and Regional Power Committees, for the purpose of maintaining the Grid Standards for operation and maintenance of transmission lines, shall,-

(e) Provide standard protection systems having the reliability, selectivity, speed and sensitivity to isolate the faulty equipment and protect all components from any type of faults, within the specified fault clearance time and shall provide protection coordination as specified by the Regional Power Committee."

Regulation 6(4) (a) of the Central Electricity Authority (Technical standards for Connectivity to Grid) Regulations, 2007 provides as under:

"6(4)(a)"The Requester and user shall cooperate with the Regional Power Committee and Appropriate Load Despatch Centers in respect of the matter listed below, but not limited to -

a) Protection coordination and setting of its protective relays accordingly”

32. The respondents have submitted that they have performed their duties as per the provisions of the Act and Grid Code for safe and secure functioning of the grid and they are not responsible for the grid disturbances occurred on 30.7.2012 at 02:30 hrs and 31.7.2012 at 13:00 hrs. However, the respondents have failed to prove that they had complied with the directions of the system operators prior to grid disturbances on 30.7.2012 and 31.7.2012. As per analysis in preceding paras and report of task force, the combined inaction/ non-serious approach created a situation which caused grid disturbance. We express our displeasure at the conduct of the respondents to ignore the directions of RLDCs and non-compliance of the provisions of the Grid Code, especially in such a matter where grid security is involved. In our view, there are no mitigating factors which exonerate the respondents from the charges initiated under Section 142 of the Act. In our view, the charges against the respondents are proved and accordingly, we impose the following penalty on the respondents under Section 142 of the Act for non-compliance of the provisions of the Act and regulations which shall be deposited within one month from the issue of the order:

(a) PGCIL has not complied with Regulations 6(4)(a) of the Central Electricity Authority (Technical Standards for Connectivity to Grid) Regulations, 2007, Regulation 3(e) of CEA (Grid Standards) Regulations, 2010 and Regulations 5.2(l) and 5.7.4 (c) of the Grid Code and indecorous and casual approach of PGCIL has caused these disturbances. Accordingly, we imposed a penalty of ₹ one lakh on PGCIL.

(b) WRLDC and NRLDC have allowed shutdown of 400 kV Bina-Gwalior-Agra link during the peak load condition of NR without due diligence and consultation with the stakeholders. They should have deferred such request by PGCIL. In our view, WRLDC and NRLDC have failed to comply with the provisions of Regulation 5.7.4(g)(iv) of the Grid Code. Further, WRLDC has also strictly failed to comply with the provisions of Regulations 6.5.20 and 6.5.27 of the Grid Code. Accordingly, we impose a penalty of ₹ Fifty Thousand on each RLDC.

(c) SLDCs of Haryana, UP and Punjab have failed to comply with Section 29 of Act and Regulations 5.4.2 (a), (g), (h) and (i) of Grid Code on 30.7.2012 and SLDCs of Haryana, Punjab and Rajasthan on 31.7.2012 respectively. We impose a penalty of ₹ one lakh on each SLDC.

(d) SLDCs of Western Region constituents, namely Gujarat, Maharashtra, and Madhya Pradesh have failed to comply with Section 29 of the Act and Regulations 6.4.12 of Grid Code. We impose a penalty of ₹ one lakh on each SLDC.

(e) SLDC, Chhattisgarh neither filed its reply nor appeared before the Commission. We express our displeasure at the conduct of the SLDC, Chhattisgarh to ignore the direction of the Commission and RLDC. We impose a penalty of ₹one lakh on SLDC, Chhattisgarh for non-compliance of the provisions of the Act, Grid Code and direction of the Commission.

(f) NTPC, Sipat is reprimanded for protracted discussion during real- time operation. We warn NTPC not to repeat such mistake in future and to always comply with the directions of RLDC.

33. Petition No. 8/SM/2014 is disposed of in terms of the above.

Sd/-

(A.S. Bakshi)
Member

sd/-

(A. K. Singhal)
Member

sd/-

(Gireesh B. Pradhan)
Chairperson