

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Adjudication Case No. 6/2010

Coram:

Shri M. Deena Dayalan, Member and Adjudicating Officer

DATE OF HEARING: 28.11.2011

DATE OF ORDER: 8.12.2011

In the matter of

Maintaining grid security of the entire North East West (NEW) grid by curbing overdrawal and effecting proper load management Punjab State Electricity Board.

And

In the matter of

Northern Regional Load Despatch Centre

.. Petitioner

Vs

Punjab State Electricity Board, Patiala

.. Respondent

Member-Secretary, Northern Regional Power Committee, New Delhi

Performa Respondents

The following were present:

1. Shri M.K.Singh, PSTCL
2. Shri Rajiv Porwal, NRLDC
3. Mis Joyti Prasad, NRLDC
4. Shri Somara Lakra, NRLDC
5. Shri V.Suresh, NRLDC

ORDER

Petition No. 129/2010 was filed by Northern Regional Load Despatch Centre (NRLDC) seeking the following reliefs:

- (a) Direct the Northern Regional SLDCs and State Control Areas in the Northern Region to honour paras 5.4.2, 6.4.7 and 6.4.8 of the

Indian Electricity Grid Code (hereinafter referred to as "IEGC") and curb their overdrawals when the frequency is below 49.20 Hz. so that the NEW grid is secure;

(b) Direct SLDCs and State Control Areas in the Northern Region to honour the directions of RLDC under section 29 (1) of the Electricity Act, 2003 (hereinafter referred to as "the Act"); and

(c) Direct SLDCs and State Control Areas in the Northern Region to take necessary steps for proper load management so as to avoid overdrawal in the ensuing months.

2. According to the petitioner, the frequency profile of the NEW grid had undergone sharp deterioration since the start of the month of April 2010 and the percentage of time during which frequency remained below 49.2 Hz reached up to 80 % on 9.4.2010. The petitioner submitted that the primary reason for the sustained low frequency was overdrawals by the State Control Areas/Regional Entities in Northern Region. As per the details submitted by the petitioner, during 1st to 9th April 2010 all the State Control Areas with the exception of Delhi, were heavily overdrawing from the grid. Based on SCADA data, it was urged that the maximum overdrawal by Punjab State control area during 1st to 9th April 2010 was up to 1190 MW when frequency was below 49.2 Hz. (during the subject time period the stipulated frequency range as per IEGC was 49.2-50.3 Hz.) and average overdrawal was 12.6 MU per day.

3. The petitioner submitted that in line with the provisions of IEGC, it issued different types of messages to the defaulting State Control Areas/Regional Entities in real-time with regard to overdrawal from the grid during low frequency period. Briefly, the scheme for issue of different types of message is as given below:

Message-Type	Subject Description
Caution message in line with para 6.4.7 of IEGC (Message type A)	Intimation of Low frequency operation and request to restrict the drawal within schedule
Violation of IEGC paras 5.4.2 (a) and 6.4.7 (Message type B)	Intimation regarding violation of paras 5.4.2 (a) and 6.4.7 of the IEGC and directions under paras 5.4.2 (b) of IEGC and sub-section (1) of Section 29 of the Electricity Act, 2003 for immediate action for restriction of overdrawal in order to avert threat to system security
Violation of IEGC para 5.4.2 (b) and sub-sections (2) and (3) of Section 29 of the Electricity Act, 2003 (Message type C)	Intimation of violation of para 5.4.2 (b) of IEGC and sub-sections (2) and (3) of Section 29 of the Electricity Act, 2003 and request for immediate action for curtailing the overdrawal, in the interest of grid safety and security

4. As regards the respondent in the present Adjudication proceedings, it was submitted that during 1st to 9th April, 2010 at least 40 numbers of "Caution messages" (Message type A) and 31 numbers of "Violation messages" (19 numbers type "B" Message and 12 numbers type "C" Messages) were issued to the Punjab State Electricity Board.

5. According to the petitioner some State Control Areas were exporting power in Short-Term Open Access (STOA) and overdrawing from the grid. There was no denial of Open Access for import of power into the Northern Region on account of transmission constraints. The State control area of Punjab was selling power through bilateral arrangements during the period in question and was also overdrawing from the grid. As per data submitted by NRLDC, during 1.4.2010 to 9.4.2010, respondent was selling power to the tune of about 7 MU per day under short term open access.

6. The Commission in its order dated 4.11.2010 in Petition No. 129/2010 noted that there was indiscriminate overdrawal from the Grid and non-compliance of directions issued by NRLDC under sub-sections (2) and (3) of the Act by many utilities in the Northern Region including the respondent herein viz. Punjab State Electricity Board (PSEB). The Commission accordingly, appointed the undersigned as the Adjudicating Officer for conducting the enquiry into the non-compliance with the directions of NRLDC by the respondent under Section 143 of the Act.

7. The undersigned had issued notice under Section 143 of the Act directing the respondent to show cause as to why enquiry for the reported overdrawal should not be held against it for non-compliance of the directions of the NRLDC. Thereafter, the undersigned issued notice on 11.2.011 to the respondent for holding an enquiry for non-

compliance with the directions of NRLDC. On the date of hearing, none appeared on behalf of the respondent. However, subsequently, a letter was received from the respondent requesting for opportunity for hearing. Accordingly, the respondent was directed to file its reply.

8. The respondent viz. Punjab State Electricity Board in its reply dated 9.11.2011 has made following submissions:-

(i) The reasons for overdrawl during the period in question were forced outage of various units of the State generating stations, outages of Central Sector Generating Stations, extreme temperature, low availability from BBMB Hydro stations, obligation for supply of minimum quantum to other utilities as per banking arrangements and requirement of uninterrupted supply during the World Cup Kabaddi hosted by the State of Punjab;

(ii) For the month of April, 2010, banking arrangements were made in advance and as per the obligations of agreements, some minimum quantum had to be supplied to the other Utilities. Punjab had surrendered 228 LUs of power till 13.4.2010 against the tied up banking export of 1196 LUs, considering the high demand and poor availability;

(iii) PSPCL was well aware of the prevailing grid condition and endeavour fully in not overdrawing from the grid by way of surrendering the banking export commitments; and

(iv) The Automatic Demand Disconnection Scheme has not so far been implemented in the State.

9. During the course of hearing on 28.11.2011, the representative of the respondent submitted that Automatic Demand Management Scheme has since not been implemented. However, Under Frequency Relays (UFR) have already been installed in the State and are functional. The representative of the NRLDC clarified that UFR has different purpose and it cannot serve the purpose of Automatic Demand Management Scheme as mandated in Regulation 5.4.2 (d) of the Grid Code. The representative of the NRLDC further clarified that in compliance with Regulation 5.4.2 (e) of the Grid Code, the respondent had to arrange the interruptible loads in four groups in order to facilitate the load shedding in different cases of the grid conditions. The representative of the NRLDC submitted that the respondent in its reply itself admitted that atleast in nine messages, directions of NRLDC were not complied with.

10. Having heard the representatives of the parties and examined the material on record, I proceed to dispose of the matter hereunder.

Analysis of the actions taken by the respondent on 'B' and 'C' Messages

11. Section 29 of the Act are provides as under:

"29. Compliance of directions- (1) The Regional Despatch Centre may give such directions and exercise such supervision and control as may be required for ensuring stability of grid operations and 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, substation and any other person connected with the operation of the power system shall comply with the direction issued by the Regional Load Despatch Centres under sub-section (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. "

12. Clause 5.4.2 of the Grid Code (in vogue during the subject period)

provides as under:

"5.4.2 Manual Demand Disconnection

(a) As mentioned elsewhere, the constituents shall endeavour to restrict their net drawal from the grid to within their respective drawal schedules whenever the system frequency is below 49.5 Hz. When the frequency falls below 49.2 Hz, requisite load shedding (manual) shall be carried out in the concerned State to curtail the over-drawal.

(b) Further, in case of certain contingencies and/or threat to system security, the RLDC may direct an SLDC to decrease its drawal by a certain quantum. Such directions shall immediately be acted upon.

(c) Each Regional constituent shall make arrangements that will enable manual demand disconnection to take place, as instructed by the RLDC/SLDC, under normal and/or contingent conditions.

(d) The measures taken to reduce the constituents' drawal from the grid shall not be withdrawn as long as the frequency/voltage remains at a low level, unless specifically permitted by the RLDC."

13. Clause 6.4.7 of the Grid Code further provides as under:

"7. Provided that the States, through their SLDCs, shall always endeavour to restrict their net drawal from the grid to within their respective drawal schedules, whenever the system frequency is below 49.5 Hz. When the frequency falls below 49.2 Hz, requisite load shedding shall be carried out in the concerned State(s) to curtail the over-drawal."

14. It is clear from the above provisions of the Act and Grid Code that all directions issued by the RLDC shall be strictly complied with. Further, the Grid Code provides for the measures that a constituent is expected to take to curtail overdrawal.

15. From the records of the case, it emerges that out of 30 messages, in case of 9 "B" messages and 2 "C" messages, the direction of NRLDC was not complied with by the respondent as the overdrawal continued even after 15 minutes of the message and frequency was below 49.2 Hz. In case of other messages, either the overdrawal was reduced or the frequency improved and went above 49.2 Hz. Regarding the frequency improvement, it is observed that it was not necessarily due to action of the respondent, but it could have been due to action by some other utility i.e. reduction of overdrawal or increase of underdrawal or increase in generation.

16. The Non-compliance of instances of 9 "B" messages and 2 "C" messages which were not responded to by the respondent, are discussed below in detail :

(i) **Message "B" at 2313 hours on 5.4.2010:**

Before issuing of "B" message on 5.4.2010, the grid frequency was below 49.5 Hz. since 2234 hours when the respondent was overdrawing about 536 MW from the grid. Gradually frequency went below 49.2 Hz. also and the overdrawal by the respondent was increased instead of decreasing, in violation of clause 5.4.2 (b) of Grid Code. Frequency went below 49.2 Hz. and overdrawal was about 703 MW at 2301 hours. After this instant, frequency remained below 49.2 Hz. and overdrawal was continued though with reduced quantum. "B" message was issued at 2313 hours when frequency was 48.93 Hz. and overdrawal by the respondent was about 454 MW. The frequency continued to be below 49.2 Hz. till 2341 hours and during this period the overdrawal was increased up to 677 MW and then reduced up to 433 MW by the respondent. Subsequently, though frequency improved slightly ,it remained below 49.5 Hz. till 2355 hours and the overdrawal of about 450 MW was continued by the respondent. In the "B" message issued by NRLDC to SLDC, Punjab , it was clearly directed to restrict drawl within its schedule. The relevant portion of the "B" message issued by NRLDC are as under:

" Further, it is a matter of serious concern that despite the low frequency conditions in the grid, the overdrawal by Punjab State Control Area is continuing. You would agree that operation of grid at present level of frequency is a threat to system security and in order to ensure stability of the Grid, NRLDC is issuing directions under Clause 5.4.2 (b) of IEGC and Section 29(1) of Indian Electricity Act 2003, to increase the generation and / or carry out manual load shedding in Punjab State Control Area in order to restrict its drawl within schedule and also inform the details of the action taken. Please note that the non-compliance of these directions would be construed as violation of IEGC and IE Act 2003 and would be brought to the notice of the Hon'ble Central Electricity Regulatory Commission (CERC)."

From above, it is observed that after " B" message, the overdrawal was increased instead of curtailment. Subsequently, it was reduced but the overdrawal of about 450 MW (the quantum of overdrawal at the time of "B" message) continued for a substantial period of time i.e. about for 30 minutes when frequency was below 49.2 Hz. and for about 40 minutes when frequency was below 49.5 Hz., even after direction by NRLDC to strict drawl within its schedule. Thus, there was clear non-compliance of direction of NRLDC in form of message "B" issued at 2313 hours on 5.4.2010.

(ii) Message "B" at 2305 hours and message "C" at 2316 hours on 6.4.2010: Before issuance of "B" message, on 6.4.2010, the grid frequency was below 49.5 Hz. since 2206 hours. The respondent was overdrawing about 500-600 MW from the grid during this sustained low frequency condition. This amounts to non-compliance of clause 5.4.2 (b) of the Grid Code. The frequency dipped below 49.2 Hz., at 2300 hours, even then overdrawal up to 500 MW was

continued. "B" message was issued at 2305 hours when frequency was 48.91 Hz. and overdrawal by the respondent was about 513 MW. After "B" message, the overdrawal was reduced to some extent, but it was continued even though frequency remained below 49.2 Hz. Consequently, message "C" was issued at 2355 hours. After this instant, the frequency was continued to be below 49.2 Hz. till 2338 hours and the overdrawal was continued by more than 300 MW by the respondent. Though, subsequently, frequency improved slightly, it remained below 49.5 Hz. till 2300 hours. During this period, the overdrawal was again increased up to about 500 MW. As in case of earlier "B" message, in this message also, State Load Despatch Centre, Punjab was clearly directed to restrict drawl within schedule. But overdrawal was continued for a substantial period of time i.e. for about 30 minutes when frequency was below 49.2 Hz. and for about 50 minutes when frequency was below 49.5 Hz. even after direction by NRLDC to strict drawl within its schedule. The overdrawal was continued for about 40 minutes, frequency remaining below 49.5 Hz., even after "C" message. Therefore, there was clear non-compliance of direction of NRLDC, in form of "B" message and "C" message issued at 2305 hours and 2316 hours, respectively, on 6.4.2010.

(iii) Message "B" at 1530 hours on 7.4.2010: Before issuance of this "B" message, grid frequency was below 49.5 Hz. since 1405

hours on 7.4.2010. During this period, the frequency remained below 49.2 Hz. most of the time. The respondent was overdrawing about 550-850 MW from the grid. Overdrawal was increased from 550 MW at 1405 hours to 783 MW at 1431 hours even with falling of frequency from 49.48 Hz to 49.04 Hz. Overdrawal was slightly reduced and again increased up to 863 MW, frequency remaining below 49.5 Hz. This was against the stipulation in para 5.4.2 (b) and (d) of IEGC. Message "B" was issued at 1530 hours when frequency was 48.90 Hz. and overdrawal by the respondent was about 770 MW. Frequency remained below 49.2 Hz. till 1557 hours and overdrawal continued by 700-800 MW. In the message "B", SLDC, Punjab was clearly directed to restrict drawl within its schedule, but it continued overdrawal for a substantial period of time i.e. about for 30 minutes when frequency was below 49.2 Hz. even after direction by NRLDC to strict drawl within its schedule. In response, the respondent had not filed any reply. Therefore, there was clear non-compliance of direction of NRLDC, in form of message "B" issued at 1530 hours on 7.4.2010.

(iv) "B" Messages at 1413 hours and 1419 hours on 8.4.2010: The grid frequency remained below 49.5 Hz. since 1305 on 8.4.2010 hours before issuance of first "B" message. The respondent was overdrawing about 100-300 MW from the grid. This was against the

stipulation in clause 5.4.2 (b) of Grid Code. Message "B" was issued at 1413 hours when frequency was 48.91 Hz. and overdrawal by the respondent was about 320 MW. After this "B" message, frequency further deteriorated and overdrawal was continued, resulting in next "B" message at 1419 hours. Even after second "B" message, the overdrawal was continued with increased quantum. The frequency improved slightly at 1428 hours, for few minutes (but remained below 49.5 Hz.) and again went below 49.2 Hz. touching 48.82 Hz. and respondent increased overdrawal from about 300 MW at the time of "B" messages to 500 MW before reducing it to about 380 MW and continued this for a substantial period of time under low frequency conditions. In both the "B" messages, the respondent was clearly directed to restrict drawl within schedule. But overdrawal was continued for a substantial period of time i.e. for about 1 hour and 30 minutes when frequency was below 49.5 Hz. (most of the time hovering around or remaining below 49.2 Hz.) even after direction by NRLDC to strict drawl within its schedule. Therefore, there was clear non-compliance of direction of NRLDC, in form of "B" messages issued at 1413 and 1419 hours on 8.4.2010.

(v) Message "B" at 1711 hours and Message "C" at 1736 hours on 8.4.2010 : Before issuance of "B" message, at 1711 hours on 8.4.2010, the grid frequency was below 49.5 Hz. (remaining below 49.2 Hz. for substantial period of time) since 1605 hours and

respondent was overdrawing from grid about 600-1000 MW. This was against the stipulation in clause 5.4.2 (b) of Grid Code. "B" message was issued at 1711 hours when frequency was 49.04 Hz. and overdrawal by the respondent was about 950 MW. Frequency remained below 49.2 Hz. till 1752 hours and overdrawal of about 900 MW was continued. In the "B" message, State Load Despatch Centre, Punjab was clearly directed to restrict drawl within schedule but it was continued for a substantial period of time i.e. for about 25 minutes when frequency was below 49.2 Hz. even after direction by NRLDC to strict drawl within its schedule. Consequently, at 1736 hrs "C" message was issued when frequency was 49.03 and overdrawal was about 970 MW. Even after "C" message overdrawal of about 900 MW continued till 1752 hrs and frequency remained below 49.2 Hz. After this instant, frequency improved for few minutes and overdrawal was increased up to about 1030 MW. Frequency deteriorated again and the overdrawal was started to be reduced since around 1810 hours, but continued till 1831 hours. This implies that there was no action from the respondent on "B" and "C" messages for substantial period of time i.e. for about 1 hour after "B" message and about 30 minutes after "C" message. The respondent in its reply has accepted non-compliance of message at 1736 hours. It was indicated in the data that the reduction in overdrawal after 15 minutes of the message was only 25 MW against the overdrawal of around 950 MW. This indicates non-compliance of

directions of NRLDC, in form of "B" message issue at 1711 hours and message "C" issued at 1736 hours on 9.4.2010.

(vi) "B" messages at 2122 hours and 2217 hours on 8.4.2010: The grid frequency remained below 49.5 Hz before issuance of "B" message at 2122 hours on 8.4.2010 since 1957 hours (most of the time remaining below 49.2 Hz.) except improvement for few minutes. The respondent was overdrawing about 100-350 MW from the grid. This was against the stipulation in clause 5.4.2 (b) of Grid Code. The first "B" message was issued at 2122 hours when frequency was 48.84 Hz. and overdrawal by the respondent was about 180 MW. After this B message, frequency remained below 49.2 Hz. except slight improvements (but remained below 49.5 Hz.) for few minutes and overdrawal was increased then reduced and again increased and continued till 2204 hours. After this instant, overdrawal was negligible for few minutes but it was again increased since 2208 hours, frequency remaining below 49.2 Hz. Consequently, next "B" message was issued at 2217 hours. Even after second "B" message the overdrawal continued with increased quantum. The overdrawal at the time of second "B" message i.e. at 2217 hrs was about 180 MW and it was increased up to about 530 MW at 2240 hrs and frequency remained below 49.2 Hz. Frequency improved gradually touching 49.5 Hz. at 2252 hours but overdrawal of about 400 MW was continued. Subsequently, frequency deteriorated and dipped below

49.2 Hz. and respondent continued overdrawal by more than 100 MW till 2326 hours. In both the "B" messages, the respondent was clearly directed to restrict drawl within schedule. In response to first "B" message, it appears that there was some action of reduction in overdrawal but it was not adequate, since overdrawal was not stopped but reduced and then increased. In case of second "B" message, the overdrawal was increased instead of curtailing. Even after direction by NRLDC to strict drawl within schedule, the overdrawal was continued for a substantial period of time i.e. for about 40 minutes after the first "B" message and for more than 1 hour when frequency was below 49.5 Hz. (most of the time hovering around or remaining below 49.2 Hz.). In response, the respondent had not submitted any information regarding action on these messages. Therefore, there was clear non-compliance of direction of NRLDC, in form of "B" messages issued at 2122 hour and 2217 hour on 8.4.2010.

(vii) "B" message at 0249 hours on 9.4.2010: Before issuance of this "B" message, the grid frequency was below 49.2 Hz. since 0207 hours on 9.4.2010. The respondent was overdrawing about 100-200 MW from the grid. This was against the stipulation in clause 5.4.2 (b) of Grid Code. "B" message was issued at 0249 hours when frequency was 48.87 Hz. and overdrawal by the respondent was about 220 MW. Frequency remained below 49.2 Hz. till 0353 hours and overdrawal continued by 100-200 MW. After this instant, frequency improved

slightly but remained below 49.5 Hz. and overdrawal was increased and continued for more than 30 minutes. In the "B" message, State Load Despatch Centre, Punjab was clearly directed to restrict drawl within its schedule, but it continued overdrawal for a substantial period of time i.e. for more than 1 hour when frequency was below 49.2 Hz. even after direction by NRLDC to strict drawl within schedule. The respondent had not submitted any information with regard to action on these messages. Therefore, there was clear non-compliance of direction of NRLDC, in form of "B" message issued at 0249 hours on 9.4.2010.

17. It is observed that on above mentioned instances of "B" and "C" messages, the overdrawal by the respodent continued for a substantial period of time. Though in some case it is noted that the overdrawal was reduced (not reduced to zero as directed in "B" messages) to some extent but again, after few minutes, it was increased, even when frequency remained low i.e below 49.5 Hz. or 49.2 Hz. This was also non-compliance of clause 5.4.2 (d) of Grid Code, which provides that measures taken to reduce constituents' drawal from grid shall not be withdrawn as long as the frequency remains low. Increasing of overdrawal instead of decreasing it, indicates clear violation of NRLDC messages. The respondent in its reply admitted that the directions of NRLDC was not complied.

18. Lack of accurate demand estimation and for planning to meet the load accordingly seems to be one of the main reasons for the overdrawal. The first respondent must use of state of the art technologies for short-term as well as long-term demand situation and for planning the load generation balance.

19. Based on the above discussion and analysis, it is established that the respondent did not comply with the directions of NRLDC under sub-sections (2) and (3) of Section 29 of the Act, given through above mentioned 9 number of "B" messages and 2 number of "C" messages . Therefore, under the provisions of sub-section (6) of Sections 29 and sub-section (2) of Section 143 of the Act, I impose penalty of ₹ one lakh on the respondent for each of the aforestated eleven instances of non-compliance with the directions of NRLDC. The respondent is directed to deposit the penalty within one month from the date of issue of this order.

Sd/-
(M. Deena Dalayan)
Member and Adjudicating Officer
