CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 175/MP/2012

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

Date of Hearing: 16.10.2012
Date of order: 28.12.2012

In the matter of

Petition under Regulation 5.2 of the Indian Electricity Grid Code read with Regulation 111 of the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999 in respect of sudden withdrawal of hydro generating units from grid resulting into severe system security problem and measures to be taken for avoiding such contingencies to ensure grid security.

And
In the matter of

Northern Regional Load Despatch Centre, New Delhi **….Petitioner**

Vs

1.Jaiprakash Power Ventures Limited
2.SJVN Limited, Shimla
3.NHPC Limited, Faridabad
4.THDC Limited, Reshikesh
5.ADPHL
6.Everest Power Limited
7.Lanco Budhil HEP **..Respondents**

1.State Load Despatch Centre, Ablowal, Punjab
2.State Load Despatch Centre, Panchkula, Haryana
3.State Load Despatch Centre, Heerapur, Rajasthan
4.State Load Despatch Centre, Delhi
5.State Load Despatch Centre, Lucknow, Uttar Pradesh
6.State Load Despatch Centre, Rishikesh, Uttarakhand
7.State Load Despatch Centre, Shimla, Himachal Pradesh
8.State Load Despatch Centre, Gladini, Jammu and Kashmir
9.Member-Secretary, Northern Regional Power Committee
...**Proforma Respondents**

The following were present:

Shri V.V.Sharma, NLDC.
Shri V.K.Agarwal, NLDC.
Miss Joyti Prasad, NRLDC
Shri V.K.Agarwal, NRLDC
Shri S.S.Barpanda, NLRDC
Shri Rajiv Porwal, NRLDC

ORDER

The petitioner, Northern Regional Load Despatch Centre has filed the present petition seeking following directions to all the respondents for safe operation of the grid:

(a) All the hydro generating stations to prepare and finalize protocols to comply with the Regulation 5.2 (j) of the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 and the same shall be followed to take care of emergencies like occurrence of high silt levels for avoiding sudden reduction in generation at one generating station as well as at other generations stations;

(b) All hydro generating stations to use the State of art inflow forecasting tools as well as silt forecasting, silt monitoring and measurement tools for better management of hydro generating station schedules;

(c) All hydro generating stations to give advance schedule revision request based on expected outage of units due to high silt level;

(d) All generation stations to avoid scheduling in PX during such uncertain period of high silt level conditions;

(e) All the generating stations to keep FGMO/RGMO in operation in all the generating units at all the time;

(f) All drawee entities and state control areas to keep UFR and other defense mechanism in place all the time.

2. The petitioner has submitted that Karcham Wangtoo Hydro Electric Project (KWHEP) (4x250 MW=1000 MW) of Jaiprakash Power Venture Limited is an upstream Hydro Electric Power Plant of SJVN Limited (NJHEP) (6x250 MW=1500 MW) on the river Sutlaj, located in the State of Himachal Pradesh. 412MW Rampur HEP of SJVN Limited is also likely to be commissioned in the month of September, 2013 which would operation in totally tandem with NJHEP. During the high hydro period, KWHEP and NJHEP were generating 1200 MW and 1600 MW with 20% and 10% overload, respectively.

3. The petitioner has submitted that number of hydro generating stations are in Northern Region with run of river scheme or with limited pondage and same are affected with high silt problem during monsoon season. Few hydro generating stations of NHPC are carrying out silt flushing operation at regular interval in a planned fashion also. However, there are instances when high silt conditions have been reported and units are shut down within a very short interval. On 1.8.2012 and 20.8.2012, due to high silt levels all the machines of KWHEP and NJHEP were shut down in quick succession within short span i.e. 9 -11 minutes and 27-28 minutes, respectively. This resulted

in reduction of 2800 MW power in very short span of time on 20.8.2012, the system frequency declined sharply from 49.7. Hz to 48.8 Hz within five minutes and line loading on 400 kV Agra Gwalior line was increased to above 1050 MW due to sudden withdrawal of units in Northern Region. Although, on both occasions, by increasing the generation at Tehri HEP and BBMB and with the help of SLDCs, frequency was brought back to normal range. However, the situation created system security problem and grid was endangered. In this regard, the Regulation 5.2 (j) of the Grid Code provides for sudden reduction in generation.

4. The petitioner has further submitted that other difficulty being faced during the schedule revision is that plant with solely short-term transaction would disturb the power market, because revising/curtailing the Power Exchange transaction is difficult as one to one pairing is unavailable in case of collective transactions. The petitioner has submitted that there is a need for coordination between the tandem hydro generating stations to avoid recurrence of such incidences. All generating stations needs to stagger the shutting down of units by taking advance action before the silt level reaches to threshold value at which all units are to be shut immediately. A similar protocol is required for bringing back the generating units once the silt level reduces. There is also an urgent need:

(i) To improve forecasting of water inflows for better scheduling;

(ii) To improve better forecasting for silt situation for advance scheduling changes;

(iii) To improve observation points for silt monitoring; and

(iv) To improve the silt measurement methods.

5. The petitioner has submitted that the requirement of Free Governor Mode of Operation on all generating units is necessary so that such frequency fluctuation is arrested as well as keeping flat Under Frequency Relays (UFR) and dtf/dt relays in operation is also necessary to save the system under such contingencies.

6. Reply to the petition has been filed by SJVN Limited. SJVN Limited in its reply affidavit dated 27.9.2012 has submitted that generating station was under an emergency condition on 1.8.2012 and 20.8.2012 due to excessive silt and it was closed to avoid damage of the costly equipment with a prior intimation to NRLDC.

7. SJVN Limited has submitted that the silt level increased at Powari (up stream of Nahpa dam) to 13015 ppm and draft tube to 2628 ppm on 20.8.2012, while the safe operating upper limit at Powari is 5000 ppm and at draft tube is 2000 ppm. Therefore, it was bound to stop all the machines under an emergency condition as it was impossible to keep the plant under operation after the shutdown of KWHEP. Although, in terms of Regulation 5.2 (j) of the Grid Code SJVN tried its best by reducing the load gradually within a span of approximately 27 minutes and with prior intimation to NRLDC.

8. SJVN has submitted that silt flushing activities required to be coordinated by NJHPS and KWHEP, since after flushing KWHEP, the silt ppm in NJHPS reservoir can reach from 30,000 to 1,00,000 ppm in a very short duration which may be sucked into the de-silting chamber/HRT, if machines are in running condition. During such high silt condition, plant has no alternative but to shut down immediately in case silt level exceeds permissible limit, before the water finds entry into water conductor system to save the machine from erosion which otherwise will be detrimental for the safe operation of machine and might lead to major castatrophy.

9. We have perused the petition and heard the representatives of the petitioner, SJVNL and learned counsel for the Jaiprakash Power Ventures Limited. It is observed that most of the issues are operational in nature and these issues may be discussed with Regional Power Committee (RPC).

10. Regulation 1. 5 of the Grid Code provides as under:

> "1.5. RLDCs shall report to the Commission instances of serious or repeated violation of any of the provisions of the IEGC and incidences of persistent non-compliance of the directions of the RLDCs issued in order to exercise supervision and control 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.
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> (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. The RPC shall also file monthly reports on status of UI payment and installation of capacitors by states vis-à-vis the requirement/targets, as decided in the RPC.

11. Regulation 5.2 (j) of the Grid Code further provides as under:

> "(j) Except under an emergency, or to prevent an imminent damage to a costly equipment, no User shall suddenly reduce his generating unit output by more than one hundred (100) MW (20 MW in case of NER) without prior intimation to and consent of the RLDC, particularly when frequency is falling or is below 49.5 Hz.. Similarly, no User / SEB shall cause a sudden variation in its load by more than one hundred (100 MW) without prior intimation to and consent of the RLDC."

It is noted that SJVNL has taken action to prevent damage to the machines in accordance with the Grid Code. It is admitted fact that forcasting of water inflows and silt condition is required in advance to prevent such a situation.

12. The petitioner being a statutory body and vested with specific statutory functions is at liberty to approach the Commission by filing the petition for non-compliance with the provisions of the relevant regulations by the utilities.

13. The petitioner in this petition has submitted that the issue was discussed with generators on 21/22.8.2012 with Northern Regional Power Committee in which the representatives of respondents, Central Electricity Authority and Central Water Commission were participated. In these meetings decisions were taken to improve silt forecasting, silt flushing and protocol for coordinated generation reduction. However, NRLDC has filed present petition on 23.8.2012. In the meetings, the protocol for operation of hydro generators in Nathpa Jhakri complex was decided and agreed by

SJVNL, Karcham Wangtoo HEP, NRPC and NRLDC. It was also decided that for better silt forecasting, a group of experts from CEA, CWC, NRPC, NRLDC, NJHPS, NHPC, THDC and KWHPS would be constituted to indentify the state of art technology for discharge, silt sampling, measurement and for joint future sedimentation/silt management. It was further agreed that the new technology shall be put in place at hydro stations of respondents by the end of April, 2013. It is noted that the petitioner had filed petition on 23.8.2012 just one day after the discussions thereby giving no change for implementation of the protocol.

14. As per Regulation 1.5 of the Grid Code, all operational issues are to be continuously monitored and sorted out by the RPC. The Member Secretary of RPC is also responsible to report the matter to the Commission which cannot be sorted out at the RPC forum. As the issues were deliberated and protocol has been finalized in the meeting convened by the NRPC, there is no need to interfere on the matter. In case, the NRLDC/NRPC find that the respondents are not complying with the agreed protocol for coordinated generation and silt flushing at KWHEP and NJHPS as decided in the meetings, they are liberty to approach the Commission as per the provisions of the Grid Code.

15. During the course of hearing, the representative of the petitioner submitted that none of the communication facilities have been provided by the first respondent. In response, the learned counsel for the first respondent

had undertaken that the both fax and fixed telephone facilities would be provided by the respondent immediately.

16. The petitioner and KWHPS and NJHPS have agreed for finalizing the protocol in respect of generation reduction during high silt conditions. We observe that appropriate time should be provided to all utilities involved in the process to implement decision taken by the NRPC in the meeting held on 22.8.2012. The Secretariat of Northern Regional Power Committee is advised to take necessary action for formation of an expert group to monitor the progress of implementation of new technology in silt forecasting so that cases of the nature as involved in the present petition do not recur in future.

17. With regard to the other prayer regarding implementation of FGMO and RGMO, the issue is being dealt separately. Therefore, this prayer does not survive.

18. The petition is disposed of terms of the above.

Sd/-	sd/-	sd/-	sd/-
(M.Deena Dayalan) Member	**(V.S.Verma) Member**	**(S.Jayaraman) Member**	**(Dr. Pramod Deo) Chairperson**