

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 193/MP/2016

Subject : Petition under Regulation 6.5(17) of the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 (Grid Code) read with Regulation 111 of the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999 seeking a direction to the respondents to act pursuant to the Grid Code and carry out consequential steps post declaration of Grid Disturbance.

Date of hearing : 25.4.2017

Coram : Shri Gireesh B. Pradhan, Chairperson
Shri A.K. Singhal, Member
Shri A.S. Bakshi, Member
Dr. M.K. Iyer, Member

Petitioner : Thermal Powertech Corporation India Limited (TPCIL)

Respondents : Southern Regional Load Despatch Centre (SRLDC) and Others

Parties present : Shri Sitiesh Mukherjee, Advocate, TPCIL
Shri Gautam Chawla, Advocate, TPCIL
Ms. Akansha Tyagi, Advocate, TPCIL
Shri K. Mahesh Kumar, TPCIL
Shri V. Suresh, SRLDC
Shri Ashok Rajan, POSOCO

Record of Proceedings

Learned counsel for the petitioner submitted that the present petition has been filed seeking direction to the respondents to act in accordance with Regulation 6.5 (17) of the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010, (Grid Code) and revise the petitioner's accounts for the grid disturbance occurred on 30.12.2015. Learned counsel for the petitioner further submitted as under:

a) Regulation 6.5.16 of the Grid Code is applicable in case of bottleneck in the transmission system whereas Regulation 6.5.17 of the Grid Code is applicable in case of any grid disturbance irrespective of category/severity. The objective behind Regulation 6.5.16 and 6.5.17 of the Grid Code is that no generator is liable to pay deviation charges in case there is limitation in ISTS due to constraint or grid disturbance, as in the present case the petitioner has already suffered monetarily owing to the grid disturbance and is only seeking restoration of the monetary loss caused. A penalty such as DSM charges cannot in law be imposed without any fault of the petitioner.

b). In the case of unit tripping, SRLDC insists for only one time revision in case of short term open access scheduling. Therefore, the generator has to properly assess the reasons for the unit tripping and to inform the respective RLDC. In the present case, the petitioner after receiving firm confirmation of timelines for revival from SRLDC, it requested for revision in schedules as a prudent operator. However, under Regulation 6.5.17 of the Grid Code, SRLDC is required to revise the schedule on its own instead of waiting for the petitioner's request.

c). SRLDC failed to understand that due to sudden and unexpected tripping/breakdown of the transmission lines, the entire apparatus for the generation and supply of electricity gets adversely impacted. In the present case, due to the grid disturbance there was a complete blackout at the generating station, interruption of power supply and tripping of all the auxiliary systems. The blackout of the generating station due to grid failure is a serious concern as it may result in emergencies such as leakage of hydrogen, abrupt stoppage of turbine, stoppage of air pre-heater, etc. The time taken in the instant case is definitely more than regular start-up time. Further, a power line can be restored immediately after checking/ensuring line's safety whereas a restoration of the unit will definitely take more time.

e). As per the Central Electricity Authority (Grid Standards) Regulations, 2010, SRLDC is required to conduct preliminary assessment post grid disturbance and prepare the report on the same. However, in the instant case, the report was prepared by the petitioner instead of SRLDC.

f). SRLDC is a statutory body and has statutory function under Section 28 of the Act of carrying out real time operations for grid control and dispatch of electricity within the region through secure and economic operation of the regional grid in accordance with the Grid Standards and the Grid Code. SRLDC is duty bound to ensure that generators such as petitioner are not penalized on account of grid disturbance but it has failed to take note of the commercial implications that flow from deviation settlement charges paid by the petitioner without any fault on its part.

g). The tripping of transmission lines for the reasons beyond the control of the generator cannot be considered as business risk as the purpose of the Central Electricity Regulatory Commission (Deviation Settlement Mechanism and Related Matters) Regulations, 2014 (DSM Regulations) will get defeated. The primary objective of DSM Regulations is to reduce the instances of unscheduled interchange in the grid, thereby leading to a healthy and stable system. Further, the DSM amount in the present matter is more than Rupees Four crore.

h). SRLDC has itself acknowledged that more than 200 GD-I incidents have occurred in the past one year across the country. Thus, there is a pressing need for the Commission to issue suitable directions to insulate the generators such as the petitioner from the consequences of such disturbances. Therefore, there is no reason to treat GD-I and GD-V incidents on a different footing.

i). Learned counsel for the petitioner referred to SRLDC's submission vide affidavit dated 21.02.2017 that the above situations make the system operator sitting in a volcano with many possibilities of disturbances of GD-I nature and more, despite all advance actions in real time and scheduling.

j) In the 115th OCC meeting, with respect to the incident on 30.12.2015, CTU informed that the corrective action had been initiated including the rectification of time setting for Zone-2 protection and assured that it would take care to ensure that such incidents do not happen in future.

2. In its rebuttal, the representative of SRLDC submitted as under:

a). On 30.12.2015, at 6:02 hrs both 400 kV Nellore Ps-TPCIL line, 400 kV NPS-NCC and NCC-TPCIL lines tripped on protection resulting in to loss of power supply of 400 kV switchyard at TPCIL and thereby the instant falls under the category of GD-I grid disturbance. The instant falls lead to loss of evacuation situation to the petitioner's power plant and leading to tripping of both on bar units.

b). Actual generation of TPCIL power plant prior to tripping was 1060 MW. Subsequent to tripping of both the units, based on the telephonic request of TPCIL, SRLDC revised the MTOA and STOA injection schedule of TPCIL with effect from 08:00 hrs though the written communication received from TPCIL through e-mail at about 08:21 hrs indicating revision request effective from 09:00 hrs.

c). The NPS-NCC 400kV line was charged and synchronized at 7:02 hrs of 30.12.2015 and the NCC-TPCIL 400 kV line was synchronized at 7:17 hours of 30.12.2015. Thus, the 400 kV switchyard of TPCIL was energized at 7:17 hrs. This restoration of 400 kV switchyard along with one evacuation path to TPCIL facilitated the restoration of tripped units from boiler hot condition. Another direct line of NPS-TPCIL was restored at 12:34 hrs.

d). TPCIL's generating station was in blackout condition from 06:02 hrs to 07:17 hrs (1 hour 15 minutes) of 30.12.2015. From 7:17 hrs of 30.12.2015, there were no limitations from the system/network point of view that prevents TPCIL in bringing up the units within 2 to 3 hours. However, Unit 1 was synchronized at 14:02 hours and Unit 2 was synchronized at 17:00 hrs, probably due to plant level issues. Subsequent to that, TPCIL's units' injection schedule revision by SRLDC was effected as requested by TPCIL based on its declaration of generation schedule. SRLDC ensured all the possible co-operation /co-ordination with the petitioner in normalizing the tripped elements and restoration of schedule.

e). Regulation 11(2) of CEA Grid Standard Regulations defines "Grid Disturbance Category GD-I" as an event of tripping of one or more power system elements of the grid resulting in total failure of supply at a sub-station or loss of integrity of the grid, at the level of transmission system at 220 kV and above resulting loss of less than 10% of the antecedent generation or load in a regional grid. The severity of GD-I grid disturbances varies with the loss of antecedent generation/load from 0% to 10% that may occur at intra-State or inter-State connection level of 220kV and above.

f) The clause intended to insulate both the ISGS and beneficiaries during major grid disturbances. The number of instances of grid disturbances category GD-I occurred during 2014-15, 2015-16 and 2016-17 is 24,41 and 54 respectively. On analysis of GD-I instances, it is observed that one of the primary reasons in certain grid disturbances is either failure to operate/mal-operation of protection system. The utilities are operating at 220 kV level, most of the buses are operating at single bus/split bus. Any small failure may

lead to GD-I, twice or thrice to revise the schedule for such GD-I disturbances which will destabilize and disturb all the members in the system .

g). During such less severe instances in case of tripping of any generating units, the existing provisions of the Grid Code enables the generators to revise the schedule with effect from 4th time block for all type of bilateral transactions thereby mitigating the commercial implications. In any case, SRLDC has no means of knowing in real time whether the unit has tripped due to the fault at generator's end or that of remote end or any other player. The system operator has revised the schedule as per IEGC.

h). In a complex power system, the treatment of scheduling and accounting methodology is based on the nature/severe of instant/ tripping but not on the source of fault/ownership of fault location. In case of any negligence or violation of grid discipline of any Regional Entities has been observed as the root cause of such grid disturbance instances, on deliberation in PCC / TCC forum suitable action from respective Regional Entities are ensured and in case of any sluggishness in this regard, the Commission has been reported by the respective RPC/RLDC for suitable direction.

i). The intent of Regulation 6.5.17 of the Grid Code is to insulate the major commercial implications to all the generators as well as to the beneficiaries during major grid disturbances like cascade trippings/natural calamity, etc. with high severity that may take longer duration for normalization. Accordingly, the schedules of all the generators and buyers/beneficiaries in the region is also required to be revised for insulating commercial implications on them.

j) Regulation 6.5.17 of the Grid Code is applicable for the all the ISGS generating stations. As per "Definitions" given in the Grid Code (1) (PP), ISGS means "a Central generating station or other generating station, in which two or more States have shares". Further as per "Definitions" given in the Grid Code (1) (qqq), Share means "percentage share of beneficiary in an ISGS either notified by Government of India or agreed through contracts and implemented through long term access". In the present case, as per definitions in the Grid Code, TPCIL does not qualify as ISGS and thereby Regulation 6.5.17 may not be applicable to TPCIL.

k). During such instances, co-operation of all the constituents may be required in real time to flex generation/drawal level to facilitate loadings in the transmission elements within the safe level and thereby a situation of forcible violation of DSM limits. This has been achieved with suspension of DSM at least at the Regional level during such major grid disturbances.

l) With due analysis of all the aspects and impact of grid disturbances in the Regional / Level (The severity categorization is based on loss of % of load or generation in the region just prior to the event), the taskforce constituted at NPC level recommend for DSM suspension only for the major grid disturbances of category GD-5 where the impact is more than 40% of regional load / generation and action required by multiple generators / utilities.

m) Most of the GD-I instances were attributed either to failure to operate / mal-operation of protection. However, in the subject case, the protection at NPS end rightly operated as per the setting done at site. It is neither due to mal-operation nor/ protection failure. It can be observed from the recorded minutes of PCC meeting of SRPC, the need was only for revising the setting. Therefore, to avert such instances in future, for every new

element prior to giving permission for synchronizing, clearance / confirmation from RPC on correct protection setting implementation is very much essential. This aspect of correct protection setting may be reviewed for other elements also as the system configuration changed drastically.

n) Short transmission lines are prone to the failure / mal-operation of distance protection. Therefore, short lines of length less than say 35 km are to be provided with differential protection. As the subject case, TPCIL's generating stations are connected to NPS through short dedicated transmission lines, it was already advised in the PCC forum to implement differential protection for these lines. Therefore, the Commission may issue necessary directions for implementing differential protection scheme in all the short lines in the country.

3. After hearing the learned counsel for the petitioner and representative of SRLDC, the Commission reserved the order in the petition.

By order of the Commission
Sd/-
(T. Rout)
Chief (Legal)