

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**Petition No. 193/MP/2016**

**Coram:**

**Shri Gireesh B. Pradhan, Chairperson**

**Shri A. K. Singhal, Member**

**Shri A. S. Bakshi, Member**

**Dr. M. K. Iyer, Member**

**Date of order: 19.12.2017**

**Date of Hearing: 25.4.2017**

**In the matter of**

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 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.

**And in the matter of**

Thermal Powertech Corporation India Limited  
6-3-1090, Block A, Level 5, TSR Towers  
Rajbhavan Road, Somajiguda  
Hyderabad - 500082

...Petitioner

Vs

1. Southern Regional Load Despatch Centre  
29, Race Course Cross Road  
Bangalore-5 60009
2. Southern Regional Power Committee  
Central Electricity Authority  
No. 29 Race Course Cross Road  
Bangalore-560 009
3. Power Grid Corporation of India Limited  
B-9, Qutub Institutional Area  
KatwariaSarai, New Delhi – 110016

...Respondents



**Parties Present:**

- 1) Shri Sitesh Mukherjee, Advocate, TPCIL
- 2) Shri Gautam Chawla, Advocate, TPCIL
- 3) Ms. Akansha Tyagi, Advocate, TPCIL
- 4) Shri K. Mahesh Kumar, TPCIL
- 5) Shri V. Suresh, SRLDC
- 6) Shri Ashok Rajan, POSOCO

**ORDER**

The Petitioner, Thermal Powertech Corporation India Limited (TPCIL), has filed the instant petition seeking direction to Respondent No. 1 and 2 namely, Southern Region Load Dispatch Centre (SRLDC) and Southern Region Power Committee (SRPC) respectively, to act on its admission of "grid disturbance" which occurred on 30.12.2015, and consequently in terms of the regulations revise its accounts and refund the deviation charges paid by the Petitioner.

2. Gist of the submissions of the petitioner is as under:

- (i) The Petitioner has developed a 1320 MW (2 X 660 MW) supercritical coal-fired plant in Krishnapatnam, SPSR Nellore District (Power Plant), which is connected to Southern Grid at Busbar via CTU network. On 24.12.2010, the Petitioner entered into a Bulk Power Transmission Agreement (BPTA) with the Respondent No. 3 for long term access facilitating inter-State transmission of electricity from the power plant.
- (ii) In the month of December 2015, the Petitioner had the following Power Purchase Agreements (PPAs):
  - (i) Long term PPA with Central Power Distribution Company of Andhra Pradesh Limited, Eastern Power Distribution Company of Andhra Pradesh,



Southern Power Distribution Company of Andhra Pradesh and Northern Power Distribution Company of Andhra Pradesh for the supply of 500 (net) MW of power.

- (ii) Long term PPA with Southern Power Distribution Company of Telangana Limited, and Northern Power Distribution Company of Telangana Limited for the supply of 570 MW (net) of power.
- (iii) Short term PPA with Southern Power Distribution Company of Telangana Limited for the supply of 155 MW of power.
- (iv) PPA for supply of power on day ahead basis with Andhra Pradesh Power Co-ordination Committee for a quantity of 300 MW of power; and
- (v) Short term purchase order for supply of power on day ahead basis with Telangana State Power Co-ordination Committee for a quantum of 570 MW

**(iii)** Unit-I and Unit-II of the power plant were commissioned on 02.03.2015 and 15.09.2015 respectively. The Petitioner has been following all the prudent industry practices in its operation and the relevant regulations for the scheduling of power.

**(iv)** On 30.12.2015, the running units of the power plant tripped resulting in station blackout. After preliminary investigation it was confirmed that the reason of trip was beyond the battery limits of power plant. Thereafter, the officials of the Petitioner immediately contacted the control room of Respondent No. 1 to enquire about the incident and the said Respondent informed the Petitioner that



units of the Petitioner's power plant tripped due to tripping of 400 kV Nellore PS-TPCIL line and 400 kV NPS-NCC line.

- (v) The Petitioner, vide letter dated 1.1.2016, informed the Respondent No. 1 that due to the said tripping of both the evacuation lines of CTU systems between TPCIL-NPS 400 kV D/c line, the power plant was isolated from the grid. The Petitioner further informed that before the aforesaid outage, Unit 1 and Unit 2 of the power plant were loaded up to 625 MW and 510 MW respectively. Since the tripping of the evacuation lines maintained by the CTU could not be attributed to the Petitioner, it requested the Respondent No. 1 to look into the matter as unwarranted tripping stresses the machine and has commercial consequences as well. The relevant extracts of the letter dated 1.1.2016 are as follows:

*"...On 30<sup>th</sup> December 2015 at 06:02:40 hrs both the 400 kV lines of TPCIL to NPS got tripped and caused to trip both 660MW units of TPCIL and resulted in station black out at TPCIL & NCC complex.*

*On further investigation it was found that the line #1 trip was because of the improper time delay setting in Zone#2 protection at NPS end. As you are kindly aware that both units could have survived on single line if the protection time delay set at envisaged values....*

*It is pertinent to mention here that any unwarranted tripping not only gives a huge commercial impact on our company but also stresses the machine because of load through-off.*

*Hence we request your good office to look in to the matter and instruct concern accordingly.*

- (vi) Subsequently on 2.1.2016, the Petitioner informed the Respondent No. 2 that since the blackout resulting in deviation of schedule was due to CTU's line tripping, the implementation of the declared schedule be reviewed at the earliest so as to limit the levy of deviation charges under the Central Electricity



Regulatory Commission (Deviation Settlement Mechanism and related matters) Regulations, 2014 (hereinafter referred to as the DSM Regulations). The relevant extracts of the email dated 2.1.2016 are as follows:

*"Since the blackout resulting in deviation of schedule was due to PGCIL 's line tripping, we request you to kindly consider the issue and review implementation of the schedule at the earliest so as to limit the levy of UI charges as per relevant regulations."*

- (vii)** On 7.1.2016, the Petitioner, once again, informed the Respondent No. 1 and 2 that due to the occurrence of the aforementioned outage and tripping, and the time required in restoration of units, it was forced to deviate from its schedule and hence it could not generate the power as per the declared schedule between the time of the incident until the restoration of units of the power plant. Further, the Petitioner requested the Respondent No. 2 that since the deviation from the schedule was on account of grid disturbance, the Petitioner should be exempted from any deviation charges / penalty under the DSM Regulations.

The relevant extracts of the letter dated 7.1.2016 are as follows:

*"...TPCIL was forced to deviate from its schedule / unable to generate the power for supplying required schedule in the interim period (Tripping to Revision of Schedule, IEX Quantum) on account of Force Majeure conditions (outage of Evacuation Lines (Gird Outage) and time required of restoration of Units) which resulted in our exposure to penalties under UI. Accordingly, in line with regulations on Grid incidence for force majeure conditions, we request Honorable RPC to exempt TPCIL from any UI charges / penalty under the DSM mechanism.*

- (viii)** Subsequently, the Respondent No. 2 uploaded the agenda for the 115<sup>th</sup> OCC Meeting to be held on 08.01.2016 on its webpage. In the said agenda, one of the issues for deliberation was the deliberation of the incident dated 30.12.2015.



In the 115<sup>th</sup> OCC Meeting, with respect to the said incident on 30.12.2015, the 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. However, since the current outage was a protection issue, it was flagged for the next Protection Coordination Sub-Committee meeting (PCSC) to be held on 27.1.2016.

- (ix)** Further, Respondent No. 2 requested Respondent No. 1 to (i) revert on the commercial issues since both the lines had tripped, and (ii) clarify whether this outage period can be treated as evacuation constraint/ grid disturbance and whether the deviation account could be prepared as per Grid Regulations. Pursuant to this, the AGM of the Respondent No. 1 agreed that they would discuss these issues with their commercial wing and revert.
- (x)** In the 50<sup>th</sup> PCSC meeting held on 27.1.2016, it was clarified that the grid disturbance involving the Petitioner's power plant had primarily occurred because of mal-operation of the relays at NPS end, and the said tripping event is a "Grid Disturbance" as per Regulation 6.5.17 of the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 (hereinafter referred to as "the Grid Code").
- (xi)** On 10.2.2016, the 116<sup>th</sup> OCC Meeting of SRPC was held wherein it was noted that in the 4<sup>th</sup> National Power Committee (NPC) meeting held on 10.12.2015, a Working Group was constituted to examine and discuss possible options for



treatment of bilateral short term and collective transactions in case of grid disturbances. It was further noted that the said Working Group will have a meeting on 16.2.2016, during which the issue akin to the Petitioner's would also be discussed.

- (xii)** In the 5<sup>th</sup> NPC meeting, held on 8.4.2016, it was decided that the Working Group would meet again to arrive at consensus on the methodology and thereafter, the finalized methodology would be put up to NPC in the next meeting for approval.
- (xiii)** The Petitioner, once again, vide letter dated 6.5.2016, informed Respondent No. 2 that due to the grid disturbance and time required for restoration of units following the said grid disturbance, the Petitioner could not generate the power from the power plant for supplying as per the schedule from the date of grid disturbance till the restoration of units of the power plant, which exposed the Petitioner to heavy deviation charges and loss of revenue. In view of the foregoing, the Petitioner requested the Respondents to revise its accounts and refund the deviation charges paid by the Petitioner.
- (xiv)** The Petitioner has not received any response from Respondent No. 2 to its letter dated 6.5.2016 to date. Further, Respondent No. 1 and 2 have not taken any action on the Petitioner's request to revise the accounts.



- (xv)** The RLDCs are statutory bodies created / notified under the terms of the Act. In terms of section 28, the Respondent No. 1 has the statutory function of carrying out real time operations for grid control and despatch of electricity within the region through secure and economic operation of the regional grid in accordance with the Grid Standards and the Grid Code.
- (xvi)** Ever since the date of the occurrence of grid disturbance, the Petitioner has made several attempts to apprise the Respondents of the predicament in which it finds itself because of the grid disturbance. However, the Respondents have not acted as per the provisions of the Grid Code despite the repeated requests of the Petitioner.
- (xvii)** Due to sudden and unexpected tripping / breakdown of the transmission lines, the entire apparatus for the generation and supply of electricity gets adversely impacted. The Grid Code stipulates that in the event of forced outage of a unit, the revised schedule will come into effect after 4 time blocks; i.e. there will be deviation from the schedule for 4 time blocks to the extent of unit ex-bus capacity.
- (xviii)** In the Statement of Reasons for 3rd Amendment to Deviation Settlement Regulations, one of the generators apprised this Commission that the generators with Unit sizes of 330 MW, 660 MW and above, due to forced outage of a unit, lead to deviation of more than the regulated limits causing huge commercial implications in the form of additional deviation charges.



Similarly, in the present matter, the Petitioner having unit sizes of 660 MW deviated (unintentionally) from the schedule post grid disturbance. Therefore, the grid disturbance has not only brought the supply of electricity from the power plant to a halt, but also exposed the Petitioner to penalty in the form of deviation charges.

**(xix)** Such outages / grid disturbances are not intentional and are beyond the control of the generators including the Petitioner. Therefore, the Respondents should refund the deviation charges paid by the Petitioner. It is submitted that the Petitioner has paid deviation charges amounting to Rs. 2,36,97,001/- and has suffered loss of revenue amounting to Rs. 3,53,64,831/- due to the event.

**(xx)** The factual matrix unequivocally reveals that the deviation in the schedule was not intentional and beyond the control of the Petitioner, and has been acknowledged as "Grid Disturbance" as per Regulation 6.5.17 of the Grid Code in the 50th PCSC meeting. This being the case, it is respectfully submitted that the Petitioner cannot be made to repeatedly follow-up with the Respondents to act as per Grid Code and refund the deviation charges paid by the Petitioner. It is reiterated that such outages not only resulted in the Petitioner's generation station being isolated from the grid, but also culminated in the complete loss of the existing power being generated.

**(xxi)** The Respondents have failed to comply with the provisions of the Grid Code and the Act, despite the Petitioner's repeated requests for revision of accounts



pursuant to the acknowledgment of grid disturbance. The imposition of deviation charges and loss of revenue by the Petitioner, for no fault on its part, has not only made a severe dent on the financial health of the Petitioner but has also put into jeopardy the well-being of beneficiaries in the states of Andhra Pradesh and Telangana who rely on the Petitioner's generating station for continuous and uninterrupted supply of power.

**(xxii)** Since the Respondents have failed to revise the accounts despite acknowledging the grid incident dated 30.12.2015 as Grid Disturbance under the Grid Code, and ignored repetitive requests from the Petitioner, the Petitioner is constrained to approach this Commission with following prayers:

*“(a) Allow the present petition and direct the Respondents to act in accordance with Regulation 6.5 (17) of Grid Code, and revise the Petitioner's accounts for the grid disturbance which occurred on 30.12.2015;*

*(b) Direct refund of the amount already paid by the Petitioner towards DSM charges and allow additional amount suffered on account of the said grid disturbance on 30.12.2015.*

*(c) Pass such other and further order(s) and/or directions as this Hon'ble Commission may deem just, fit and proper in the facts and circumstances of the case and in the interest of justice.”*

3. The matter was heard on 19.1.2017. After hearing the arguments of the learned counsel for the petitioner, the Commission admitted the petition and directed to issue notices to the respondents.

4. SRPC (Respondent No. 2) has, vide letter dated 17.2.2017, submitted its reply as under:



- (a) TPCIL 1320 MW (2X660 MW) is connected only to Nellore Pooling station (ISTS) through TPCIL-Nellore Pooling station 400 kV D/C lines.
- (b) Both evacuation lines from TPCIL had tripped due to mal-operation of relays at Nellore Pooling Station at 06:02 hr on 30.12.2015.
- (c) Generation loss was around 1270 MW on account of loss of all evacuation lines from TPCIL due to relay mal-operation. Accordingly, as per Grid Standard (CEA), it was categorized under GD-I.
- (d) MTOA quantum of 269.45 MW and STOA was revised by SRLDC to zero from 8th time block (08:00 hr) on 30.12.2015, instead of revising effectively from 4th time block. Whereas power scheduled under Power Exchange platform were not revised.
- (e) As per Regulation 6.5.16 of Grid Code, for first three time blocks, schedule generation of ISGS, after Grid Disturbance, shall be deemed to be revised to actual, but
  - (i) Since revision was carried out only in 8th time block, there is no provision to revise schedule as per actual from 4th to 7th time block.
  - (ii) There is no methodology in vogue for revising schedule of an ISGS which has transaction under power exchange platform. In the event of schedule revision of ISGS schedule, revision of buyers also needs to be done.
- (f) As per Regulation 6.5.17 of in the event of Grid Disturbance ISGS schedule is deemed to be revised to actual. In such case, if ISGS has bilateral transactions/ Collective transaction then revision of their schedule would be based on the methodology formulated by NPC and approved by the Commission.



- (g) This incident was treated under Regulation 6.5.16 since the incident was not declared by SRLDC as “grid disturbance” which is a pre-condition for applying Regulation 6.5.17 of Grid Code, though the incident was declared GD-I as per Grid Standards (CEA).
- (h) Deviation Settlement Account and Regional Energy Account were not revised mainly due to two reasons:
  - (i) A methodology is required for revision of schedule for Power Exchange Transaction and
  - (ii) Request by the petitioner for revision up to 8th time block against stipulated 4th time block as per 6.5.16 of Grid Code.
- (i) It is seen from the Minutes of the NPC Meeting held on 19.12.2016 that NPC has formulated a methodology and would submit the same to CERC. However, it is noted that the scope of methodology proposed by NPC is limited to GD-5 of Grid Standards (CEA).

5. SRLDC (Respondent No. 1) has vide affidavit dated 21.2.2017 submitted its reply as under:

- (a) On 31.12.2015, at 06:02 hrs both 400 kV Nellore Pooling Station (NPS)-TPCIL line, 400 kV NPS-NCC and NCC-TPCIL lines tripped on protection resulting into loss of power supply of 400 kV switch yard at TPCIL & thereby loss of evacuation situation to the petitioner’s power plant and leading to tripping of both on bar units.
- (b) Just prior to tripping of units, the injection schedule of TPCIL was 1037 MW as shown below:



SI. No	Type	Quantum in MW (Ex-bus)
1	MTOA	269.45
2	STOA	229.76
3	STOA	78.44
4	STOA	50.61
5	PX	409.31
Total Injection Schedule		1037.57

- (c) 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 & STOA injection schedule of TPCIL with effect from 08:00hrs though the written communication received from TPCIL through e-mail at about 08:21hrs indicating revision request effective from 09:00hrs.
- (d) The NPS-NCC 400 kV line was charged & synchronized at 07:02 hrs and the NCC - TPCIL 400 kV line was synchronized at 07:17 hrs of 30.12.2015 respectively. Thus the 400 kV switchyard of TPCIL was energized at 07:17 hrs. This restoration of 400 kV switchyard along with one evacuation path to TPCIL facilitated the restoration of tripped units from boiler hot condition. The direct line from TPCIL to NPS i.e. NPS-TPCIL line was restored at 12:34 hrs.
- (e) TPCIL generating station was in blackout condition from 06:02 hrs to 07:17 hrs (for 01 hr 15 minutes) of 30.12.2015. From 07:17 hrs of 30.12.2015 there was no limitation from system/network point of view that prevents TPCIL in bringing up the units within 2 to 3 hours. However, the Unit # 1 was synchronized at 14:02 hrs and Unit # 2 was synchronized at 17:00 hrs, probably due to plant level issues. Subsequent to synchronization of line, the TPCIL units' injection



schedule revision by SRLDC was effected as requested by TPCIL based on their declaration of generation schedule.

- (f) From the preliminary assessment report received from TPCIL it is learnt that the TPCIL - NCC - NPS line tripped from TPCIL end on Zone - 1 protection with fault distance of 4.1 km from TPCIL and it sent the carrier signal to NPS end for remote tripping. However, before clearing the faulty line, other line tripped on Zone - 2 protection mal operation leading to outage of both lines from NPS connecting TPCIL.
- (g) The Petitioner vide its letter dated 2.1.2016 & 7.1.2016 requested SRLDC and SRPC for exemption of deviation charges / penalty from the time of tripping of units till the restoration of both the units under the DSM Regulations mentioning the reason as Grid Disturbance due to mal operational protection at remote end.
- (h) The tripping instance was deliberated in the 115<sup>th</sup> Operation co-ordination Committee Meeting (OCCM) of SRPC on 8.1.2016 wherein POWERGRID 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. However, the instant was flagged for detailed discussion with due analysis in the forthcoming PCSC scheduled on 27.1.2016.
- (i) During the deliberation in PCSC, the forum observed that any unwarranted tripping of short transmission lines such as that occurred in the instant case will have huge impact on the ATC and attendant commercial transactions. Thus, considering the criticality of Nellore PS, it is necessary to ensure that protection



systems in place do not mal-operate. Since all these lines (except Gooty feeder) are of length less than 35 km and optical fibre has already been laid between these stations, it is a fit case for replacing the conventional distance protection by the more accurate line differential protection on all the 400 kV lines (of length less than 35 km) emanating from Nellore PS. After ascertaining the views of PGCIL and the generators, PCSC forum agreed in-principle for providing line-differential protection on all 400 kV lines (of length less than 35 km) emanating from Nellore PS and provided an implementation action plan in this regard. In this meeting, it was also clarified to treat this as GD-I event for scheduling and accounting in line with the provision of Regulation 6.5.17 of the Grid Code.

- (j) Further, the issue of finalizing scheduling and accounting methodology for the subject instant was deliberated on 4.2.2016 in the 30<sup>th</sup> Commercial sub-Committee meeting (CCM) of SRPC wherein it was noted that at present there was no methodology/regulation to suspend UI accounts and revision of REA. CCM opined that as the issue evolving methodology for *force majeure* condition for generators selling under short term bilateral and collective transaction is under the discussion of NPC it would be prudent to wait for NPC methodology to be finalized.
- (k) During the 5<sup>th</sup> NPC meeting held on 8.4.2016, the Working Group constituted to examine and discuss possible options for treatment of bilateral short term and collective transactions in case of grid disturbance planned for one more meeting to finalize the said aspect. In view of the same, the TPCIL representative was invited as a special invitee for the 31<sup>st</sup> CCM of SRPC held



on 2.6.2016 and clarified that for CGS/ISGS, CERC had directed that schedules to be replaced with actual for the period affected by the Grid Disturbances. In case of bilateral transactions, there is no methodology for treating the transaction taken place during the Grid Disturbance and a Sub Group formed by NPC is working on it. Since the case is analyzed by a Sub Committee formed by NPC, the issue of revision of DSM may await the decision of the Sub Group (of NPC) on this issue.

- (l) Clause 11(2) of CEA Grid Standard Regulations, 2010 defines “Grid Disturbance category GD-I” as an event of power tripping of one or more power system elements of the grid resulting in total failure of supply at sub-station or loss of integrity of the grid, at the level of transmission system at 220 kV and above resulting in loss of less than 10% of the antecedent generation or load in a regional grid.
- (m) The severity of GD - 1 category Grid Disturbances varies with the loss of antecedent generation / load from 0% up to 10% that may occur at intra-state or inter-state connection level of 220kV and above. During such less severe instances in case of tripping of any generating units, the existing provisions of Grid Code enables the generators to revise the schedule with effect from 4<sup>th</sup> time block for all type of bilateral transactions thereby mitigating the commercial implications. Only for the first three time blocks, there are commercial implications on the generators and that business risk is applicable even in the case of forced outage of unit. The risk on commercial implication on PX transaction for the rest of the day from the time of tripping of units is known to the seller as the transactions are surplus of surplus margin utilization in the



Transmission Network and the transactions are anonymous to the seller / buyer.

- (n) Only the PX schedule was not revised. The petitioner had received payments for the power scheduled through PX. In view of the rare instance of tripping of the evacuation system, the petitioner's units had tripped due to which the scheduled power could not be generated. DSM is there to take care of the settlement system. Depending on the system frequency, the DSM rates vary and the petitioner could either have a small net outgo or net receipt as the PX clearing price also varies.
- (o) In a complex power system, the treatment of scheduling and accounting methodology is based on the nature of tripping but not on the source of fault / ownership of fault location. In case any negligence or violation by any Regional Entities is observed as the root cause of such Grid Disturbance, the Commission is reported by the respective RPC / RLDC for suitable direction.
- (p) The intent of clause 6.5.17 of the Grid Code is to insulate the major commercial implications to the generators as well as to the beneficiaries during major grid disturbances like cascade tripping / natural calamity / etc., with high severity that may take longer duration for normalization. Accordingly, the schedules of the Generators & buyers are also required to be revised for insulating commercial implications on them. 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. Otherwise, for every element tripping where the loss of generation / demand unserved is meager with short restoration period, as per the condition prevails at the instance of incident, Grid Code provision for revising the schedule with effect from 4<sup>th</sup> time block is supposed to be applicable.

- (q) The working committee constituted by NPC for formulating procedure of treatment of STOA & collective transactions in scheduling & accounting during Grid Disturbances has submitted the procedure for approval of the Commission with applicability for Grid Disturbance Category GD - 5 only.

6. SRPC (Respondent No. 2) has vide letter dated 7.3.2017 submitted following additional information in light of submission made by SRLDC:

- (a) Number of cited GD-1 incidents in SR is beyond the control of the Petitioner, since none of the transmission system falls under the control of the Petitioner. All tripping involving 400 kV & above transmission lines, ISGS plants, and critical 230/ 220 kV network elements are religiously being monitored by SRPC/ SRLDC in the monthly Meetings of Protection Sub Committee with specific focus on cases where protection systems in place do not seem to have operated as intended. In these Meetings, protection systems put in place by the Constituents are also subject to critical scrutiny for correctness of operation, and appropriate remedial measures are suggested/ recommended for system improvement.
- (b) Out of the total 51 grid disturbances mentioned in the SRLDC's submission, only seven (7) GDs involve ISGS stations. Most of these (51) grid disturbances were



- on account of mal-operation of protection systems, and had been dealt with appropriately in Meetings of Protection Sub Committee.
- (c) SRLDC appears to have compared this incident with forced outage of ISGS units. In this incident, limitation in ISTS for evacuation of ISGS power had led to tripping of ISGS units. The Commission has clearly spelt out procedure (Regulation 6.5.16 of Grid Code) to be adopted in case of limitation in ISTS for evacuation of ISGS power. As per this provision, an ISGS needs to be insulated from commercial implication/ risk to the extent of deviation payment, in case the limitation is in the ISTS.
- (d) SRLDC has stated that they had no means of knowing in real time whether the unit had tripped due to the generator's fault or that of any other player. SRLDC control room through SCADA would have observed that all evacuation lines from TPCIL had tripped prior to unit tripping. DSM is not only a settlement system but also a penalty mechanism (additional DSM charges) for non-ability of an entity to generate scheduled power beyond specified limits. SRLDC has stated that the commercial impact may have a small net outgo or net receipt. The DSM amount is more than Rs. 4 Crore as reported by TPCIL. One of the reasons is also due to delay in revision of schedule by Respondent No 1 as per Regulation 6.5.16 of the Grid Code.
- (e) As per regulations 6.5.16 and 6.5.17 of Grid Code, the treatment of scheduling and accounting methodology is such that no generator is liable to pay deviation charges in case there is limitation in ISTS due to constraint or Grid Disturbance.
- (f) Intent of regulations 6.5.16 and 6.5.17 of Grid Code is to insulate generators and not beneficiaries from payment of DSM charges. As per regulations 6.5.16 and



6.5.17 of Grid Code for any constraint in ISTS which has led an ISGS to deviate from schedule, then for such instances ISGS must be insulated from payment of DSM charges. There is no DSM suspension in a region, only the liability of paying the DSM charges changes from generator to its beneficiary/buyer in case the DSM liability has arisen on account of constraint/limitation in ISTS.

- (g) As stated by SRLDC that for every element tripping resulting in loss of generation, Grid Code provision for revising the schedule with effect from 4<sup>th</sup> time block is applicable. Similarly Grid Code provision in Regulation 6.5.16 is applicable for first three time block where scheduled generation of the ISGS shall be deemed to have been revised to be equal to actual generation, and the scheduled draws of the beneficiaries shall be deemed to have been revised accordingly. Further the schedule of the petitioner was not revised in the 4<sup>th</sup> time block as per Grid Code, but from 8<sup>th</sup> time block only. The petitioner had to bear additional DSM penalty due to delay in revision of the schedule beyond 4<sup>th</sup> time block.
- (h) Status of implementation of Protection Audit Recommendations (PAR) by SR Constituents is being regularly monitored by SRPC/ SRLDC, and concerned reports on the same are being furnished to the Commission periodically. The PAR status w.r.t. revised time-lines given by the Commission vide their Order dated 15.12.2016 [in respect of Petition No 88/MP/2016 and Petition No. 135/MP/2016] is being monitored regularly in PCSC meetings. Latest report in this regard was furnished to the Commission vide SRPC letter dated 14.2.2017. It can be seen from the furnished status report that SR-Constituents are on the



job of implementing their respective PAR within the stipulated timelines given to them.

- (i) 220 kV sub-stations are operated in split bus mode only to enhance the import capability and without affecting the reliability of the grid. The instruction to operate the 220 kV S/s in split bus mode is given by appropriate Govt. as per Section 37 of Electricity Act.
- (j) Regarding SPS, all SPS have been implemented on the request of POSOCO. No SPS is planned to increase the TTC where N-I violation is observed. All scheduling is carried out within ATC limits. SPS are in place to give additional comfort to POSOCO in real time operation.
- (k) Necessary amendment to the CEA (Technical Standards for Grid Connectivity) Regulations is under the purview of CEA. The subject petition is pertaining to scheduling and accounting methodology and references to LVRT, protection mal-operation etc. in this petition may not be relevant. LVRT pertains to a system where the WTG shall remain in grid where primary protection is clearing the fault within stipulated period. The location of TPCIL is near Nellore where only 2 MW of Wind turbines are reportedly in position.
- (l) All tripping involving 400 kV & above voltage level transmission lines, ISGS plants, and critical 230/ 220 kV network elements are religiously being monitored by SRPC/ SRLDC in monthly PCSC meetings with specific focus on the cases where the protection systems in place do not seem to have operated as intended. In these meetings, protection systems put in place by the concerned Constituents are subject to critical scrutiny for correctness of operation, and



appropriate remedial measures are suggested/ recommended for system improvement.

- (m) The report of NPC is yet to be approved by the Commission. NPC had been asked to submit its report in case of Grid Disturbance as per Regulation 6.5.17 whereas this incident is related to limitation in ISTS as per Regulations 6.5.16.

7. The petitioner has, vide affidavit dated 1.3.2017, submitted rejoinder to reply filed by SRLDC (Respondent No. 1) and the same is as follows:

- (a) SRLDC has argued the petition may be dismissed due to non-severity of the grid disturbance. SRLDC has also argued that existing provisions of the Grid Code enables the Petitioner to revise the schedule with effect from 4<sup>th</sup> time block. The contention in the reply that the Petitioner is not entitled to any relief under Grid Code because the grid disturbance was not severe, is erroneous and misconceived. Grid Code expressly recognizes the potential adverse effect of grid disturbance on the generator and provides for revision of supply power schedule to actual schedule. Therefore, Grid Code is designed in a manner to shield generators from uncontrollable grid disturbances such as in the present case.
- (b) The contention of SRLDC that since the tripping of line in the present case is GD-I, which is less severe in nature, and therefore the existing provisions of Grid Code enabling the generators to revise the schedule effect from 4<sup>th</sup> time block for all type of bi-lateral transactions i.e. Regulation 6.5.16 would be applicable, is misplaced and based on erroneous understanding of law. Regulation 6.5.16 of Grid Code is applicable in case of bottleneck in the transmission system whereas



Regulation 6.5.17 of Grid Code is applicable in case of any grid disturbance irrespective of category / severity.

- (c) The Explanatory Memorandum to Draft Central Electricity Regulatory Commission (Indian Electricity Grid Code) (Second Amendment) Regulations, 2013 provides that the rationale behind Regulation 6.5.17 is to ensure that no entity suffers any financial implication due to Grid Disturbance. Therefore, the contention of SRLDC that Regulation 6.5.17 of the Grid Code is to insulate the major commercial implications to the generator during major grid disturbances is wrong and contrary to the rationale behind Regulation 6.5.17 of the Grid Code.
- (d) The contention related to the actual generation of the Petitioner's generating station and the Petitioner's request for revision of the schedule, are not denied. However, it is pertinent to mention that in the case of unit tripping, SRLDC insists for only one time revision in case of STOA scheduling. Therefore, the generator has to properly assess the reasons for the unit tripping and to inform the respective RLDC. In the present matter, 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, it is SRLDC's statutory duty to revise the schedule on its own instead of waiting for the Petitioner's request.
- (e) The contentions related to restoration of units of the generating station are not denied. However, the contention of SRLDC that the units were synchronized at 14:02 hrs and 17:00 hrs due to plant level issues, are denied as wrong. 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 the all the auxiliary systems. Whereas in other cases of tripping/outage, only a system or sub-system gets tripped which results in de-synchronization of a generator from the grid. Therefore, the time taken in the restoration of the units in the present case will be different from the other incidents of tripping. The details of the activities undertaken by the Petitioner for restoration of the units back are as follows:

- (i) Charging of lines after getting confirmation from Grid and ensuring safety of the system;
- (ii) Restoring of electrical systems at different voltage levels, including charging of transformers and switchgears, etc.;
- (iii) Changing over-supply (for critical drives) from emergency source (diesel generator) to regular source (grid);
- (iv) Starting of auxiliary systems/supporting systems one-by-one after thorough inspection as the system tripped abruptly due to grid failure;
- (v) Making all the systems ready for start-up, including draining the steam lines, etc.;
- (vi) Starting of unit's auxiliaries one-by-one; and
- (vii) Unit start-up was conducted one-by-one in view of resources and safety precaution requirements

In view of the above, the time taken in restoration of the units 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.

- (f) As per the Central Electricity Authority (Grid Standards) Regulations, 2010, it is the statutory duty of SRLDC to conduct preliminary assessment post grid disturbance and prepare the report on the same. However, in the present matter, the assessment report was prepared by the petitioner instead of SRLDC.
- (g) The contentions regarding the categorization of grid disturbance in the present case as GD-I are not denied. However, the said categorization is no reason for such disturbance to be treated on a different footing from a grid disturbance which comes within the ambit of other categories. Further, SRLDC has itself recognized the proposition that more than 50 incidences of grid disturbance under category GD-I have occurred in SR alone in the calendar year 2016. In light of the fact that grid disturbances under GD-I have become a regular phenomenon, it is imperative that this Commission issue directions that would ensure that generators are able to successfully tide over the difficulties flowing from such grid disturbances, as the same is critical for the continuous and uninterrupted generation of power.
- (h) The contention regarding the assertion made by SRLDC that the grid disturbance in the present case does not give rise to any serious commercial ramifications for the Petitioner is wrong and denied. SRLDC failed to take note of the commercial implications that flow from deviation settlement charges paid by the Petitioner without any fault on its part. Further, while Respondent No. 1 may not have any method to identify the cause of any deviation on a real-time basis, it is submitted that as rightly pointed out by the Respondent No. 2, vide additional inputs filed by it, the Respondent No. 1 through SCADA would have observed that in the



present matter the evacuation lines tripped prior to unit tripping.

- (i) It is duty of SRLDC to ensure that generators such as the Petitioner are not penalized on account of grid disturbance beyond its control. The objective of Regulation 6.5.16 and Regulation 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. Further, nobody should gain upon occurrence of grid disturbance, and in the present case the Petitioner has already suffered monetarily owing to 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.
- (j) With respect to SRLDC's contention that business risk is there throughout the year either due to possibility of unit tripping or the transmission system, it is submitted that for the tripping of unit due to technical reasons from the generator's side, the generator is completely responsible and liable to pay deviation settlement charges. However, 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 CERC (Deviation Settlement Mechanism and Related Matters) Regulations, 2014 (DSM Regulations, 2014) will get defeated. It is to be noted that the primary objective of the DSM Regulations is to reduce the instances of unscheduled interchange in the grid, thereby leading to a healthy and stable system. Hence, the tripping of lines / transmission system cannot be considered as business risk. Further, the DSM amount in the present matter is more than Rs. four (4) crores.



8. The matter was again heard on 25.4.2017. During the hearing the petitioner and the Respondent No. 1 reiterated their submissions made vide affidavits dated 1.3.2017 and 21.2.2017 respectively.

**Analysis and decision:**

9. We have considered the submission of the petitioner and respondents. The following issues arise for our consideration:

- (i) Whether the incidence of tripping of petitioner's plant due to tripping of 400 kV Nellore Pooling Station-TPCIL line and 400kV Nellore Pooling Station-NCC line falls under the category of grid disturbance under the CEA (Grid Standards) Regulations, 2010? And under which Regulation of the Grid Code i.e. 6.5.16 (transmission bottleneck) or 6.5.17 (Grid disturbance) does the incident fall?**
- (ii) Whether SRLDC has acted as per the Regulations and EA 2003?**
- (iii) (a) Whether the DSM accounts of the petitioner be revised pursuant to the occurrence of incident on 30.12.2015; and**  
**(b) What should be the methodology to be adopted for settlement of accounts?**

These issues have been analyzed and discussed in the succeeding paragraphs.

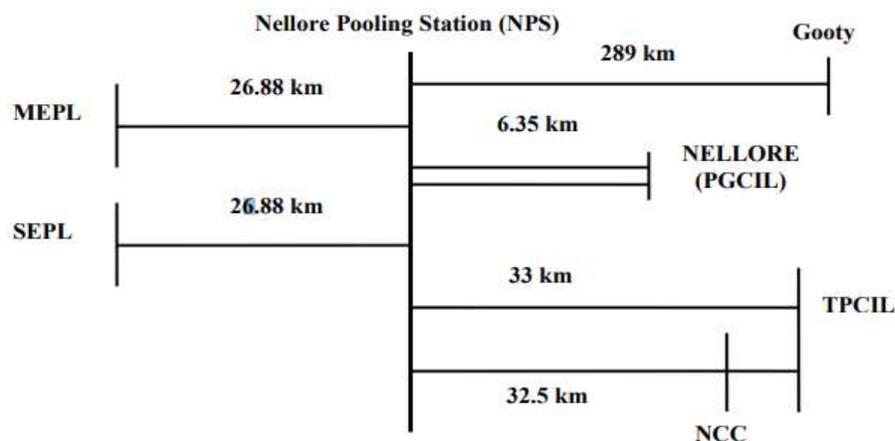
**Issue No. (i): Whether the incidence of tripping of petitioner's plant due to tripping of 400 kV Nellore Pooling Station-TPCIL line and 400kV Nellore Pooling Station-NCC line falls under the category of grid disturbance under the CEA (Grid Standards)**



**Regulations, 2010? And under which Regulation of the Grid Code i.e. 6.5.16 (transmission bottleneck) or 6.5.17 (Grid disturbance) does the incident fall?**

10. The Petitioner has submitted as follows:

(i) It has developed a 1320 MW (2x660MW) supercritical coal-fired plant in Krishnapatnam, SPSR Nellore District, which is connected to Southern Grid via 400 kV Nellore Pooling Station (NPS)-TPCIL line and 400 kV NPS-NCC line. It has been stated that at 06:02 hrs on 30.12.2015, both the running units of the power plant tripped due to tripping of 400 kV Nellore PS-TPCIL line and 400 kV NPS-NCC line due to mal-operation of relays at Nellore pooling station point. The Petitioner has further submitted that the said incident was reported to the Respondent No. 1 immediately after the incident, vide letter dated 1.1.2016 & 7.1.2016 and vide email dated 2.1.2016. Due to this grid incident, the Petitioner had to pay an amount of Rs. 2,36,97,001 towards deviation charges and has suffered loss of revenue amounting to Rs. 3,53,64,831. Single line diagram showing the connection arrangement of TPCIL generating station is shown below:



(ii) The issue of tripping of petitioner's plant was discussed during 115<sup>th</sup> OCC meeting held on 8.1.2016 wherein SRPC requested SRLDC to clarify whether the outage can be treated as evacuation constraint or grid disturbance as per the Grid Code. The chronological order for the occurrence of events on that day is;

S. No.	Duration of 30.12.2015	Event	Remark
1.	06:02 hrs	400 kV NPS-TPCIL line, 400 kV NPS-NCC and NCC-TPCIL lines tripped due to mal operation of relays	This event resulted into loss of power supply of 400 kV switchyard at TPCIL & thereby resulting in tripping of both units of the petitioner's plant.
2.	07:02 hrs	400 kV NPS-NCC line was charged & synchronised.	
3.	07:17 hrs	400 kV NCC-TPCIL lines was charged & synchronised and thus 400 kV switchyard of TPCIL was energised.	One Evacuation line from the Petitioner's plant got charged. Total Blackout condition for plant was 1 hr 15 min. (from 6:02 hrs to 7:17 hrs)
4.	08:00 hrs	SRLDC revised the MTOA & STOA schedule to 0 MW till 16:00 hrs & 19:30 hrs. respectively.	As per telephonic information of TPCIL to SRLDC.
4.	12:34 hrs	Another direct line of NPS-TPCIL was restored	Both the evacuation lines from the plant got charged.
5.	14:02 hrs	Unit-1 got synchronized	
6.	17:00 hrs	Unit-2 got synchronized	

(iii) The issue was again discussed in the 50<sup>th</sup> meeting of Protection Coordination Subcommittee (PCSC) held on 27.1.2016 which was attended by the representatives of the petitioner and the respondents wherein it was clarified that tripping of both the units of the petitioner's plant had occurred due to mal-operation of the relays at Nellore Pooling Station (NPS) end which is a grid disturbance as per Regulation 6.5.17 of the Grid Code. The relevant paragraph related to statement of SRLDC during the PCSC meeting is extracted below;

**"SRLDC**



- *To ensure healthiness of carrier communication, PLCC end-to-end testing may be carried out by NPS in coordination with TPCIL.*
- *Further, taking note of the fact that this grid disturbance involving TPCIL Units had primarily occurred because of mal-operation of the relays at NPS end, it is clarified that this tripping event is a Grid Disturbance as per IEGC Regulation 6.5.17.*

(iv) Based on the above, the Petitioner vide its letter dated 06.05.2016 requested both the Respondents to revise its account and refund the deviation charges paid. However, no action was taken by the Respondents.

11. The Respondent No. 1 (SRLDC) vide affidavit dated 21.02.2017 has submitted that the issue of finalizing scheduling and accounting methodology for the subject instant was deliberated on 04.02.2016 in the 30<sup>th</sup> Commercial sub-Committee Meeting (CCM) of SRPC wherein it was noted that at present there was no methodology/ regulation to suspend UI accounts and revision of REA. CCM opined that as the issue evolving methodology for force majeure condition for generators selling under short term bilateral and collective transaction is under the discussion of NPC, it would be prudent to wait for such methodology to be finalized.

12. Further, SRLDC has submitted that since the tripping of line in the present case is GD-I, which is less severe in nature, the existing provisions of the Grid Code enabling the generators to revise the schedule effect from 4<sup>th</sup> time block for all type of bi-lateral transactions i.e. Regulation 6.5.16 would be applicable.

13. SRPC vide its affidavit dated 17.02.2017 has submitted that this incident was treated under Regulation 6.5.16 since the incident was not declared by SRLDC as “grid



disturbance” which is a pre-condition for applying Regulation 6.5.17 of the Grid Code. However, the incident was declared GD-I as per Grid Standards (CEA) in PCSC meeting by SRLDC.

14. We have considered the submissions of the petitioner and the respondents. It is observed that the Grid Code does not provide for definition of grid disturbance. The Clause 43.5 of Statement of Objects and Reasons dated 18.6.2010 to the Grid Code states as under;

*“43.5 On draft Regulation 6.5.17, NTPC has proposed that NLDC/ RLDC may prepare a procedure for determining and declaring grid disturbance. The procedure when approved by the Commission shall become a part of the IEGC. It is clarified that the classification of the grid disturbances shall be as per CEA (Grid Standards) Regulations.”*

15. The CEA (Grid Standards) Regulations, 2010 defines “grid disturbance” as under;

*“2. Definitions:-*

*...*

*(i) “**grid disturbance**” means tripping of one or more power system elements of the grid like a generator, transmission line, transformer, shunt reactor, series capacitor and Static VAR Compensator, 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 (132 kV and above in the case of North-Eastern Region);”*

16. Further Regulation 15(6) of the CEA (Grid Standards) Regulations, 2010 provides as under:

*“(6) Regional Load Dispatch Centre shall classify the grid incidents and grid disturbances according to regulation 11, analyse them and furnish periodic reports of grid incidents and grid disturbances to the Regional Power Committee which shall recommend remedial measures to be taken on the Report of Regional Load Dispatch Centre to prevent recurrences of such grid incidents and grid disturbances.”*



Thus as per these Regulations, the RLDC is entrusted with the responsibility to categorize the event under specified category of grid incidents and grid disturbances.

17. We have also perused the minutes of 50<sup>th</sup> PCSC meeting wherein SRLDC had stated as follows:

**"SRLDC**

....

*Further, taking note of the fact that this grid disturbance involving TPCIL Units had primarily occurred because of mal-operation of the relays at NPS end, it is clarified that this tripping event is a Grid Disturbance as per IEGC Regulation 6.5.17."*

18. The above minutes were ratified in 51<sup>st</sup> PCSC meeting held on 25.02.2016 which has been obtained from website of SRPC. The relevant extracts of 51<sup>st</sup> PCSC meeting held on 25.02.2016 is extracted below;

**"22. Confirmation of the Minutes of the 50th PCSC meeting held on 27.01.2016**

*SE (Protection), SRPC stated that the Minutes of the 50th meeting of the PCSC had been circulated vide SRPC letter No. SRPC/SE-III/ PCSC-49/ 2015/ 1016-48 dated 11.02.2016. As no observations had been received from any of the Constituents, the Minutes of the 50th meeting of PCSC were confirmed."*

19. We gather from the minutes of the 50<sup>th</sup> meeting of PCSC that the representative of SRLDC had stated that the event of tripping of the units of the petitioner was covered under Regulation 6.5.17 of the Grid Code and the same was confirmed in the 51<sup>st</sup> meeting.

20. As per The CEA (Grid Standards) Regulations, 2010, grid disturbance is categorised as under:

GD 1: When loss of antecedent generation / load is less than 10% in a regional Grid.

GD 2: When loss of antecedent generation / load is between 10% to less than 20% in a regional Grid.



GD 3: When loss of antecedent generation / load is between 20% to less than 30% in a regional Grid.

GD 4: When loss of antecedent generation / load is between 30% to less than 40% in a regional Grid

GD 5: When loss of antecedent generation / load is 40% or more

From its submissions in the instant petition, the SRLDC has categorised the tripping of line of the petitioner as GD-I.

21. There being no rival contentions on the issue, we conclude that the event was grid disturbance in terms of provisions of the Grid Code and the CEA (Grid Standards) Regulation, 2010.

22. In the 50<sup>th</sup> PCSC meeting, the SRLDC had stated that the event was grid disturbance under Regulation 6.5.17 of the Grid Code. However, SRLDC vide its affidavit dated 21.02.2017 has submitted that although the event was GD-1 but since it was less severe in nature, the Regulation 6.5.16 of the Grid Code will be applicable.

23. Regulation 6.5.16 and Regulation 6.5.17 of the Grid Code is extracted as under:

*“16. In the event of bottleneck in evacuation of power due to any constraint, outage, failure or limitation in the transmission system, associated switchyard and substations owned by the Central Transmission Utility or any other transmission licensee involved in inter-state transmission (as certified by the RLDC) necessitating reduction in generation, the RLDC shall revise the schedules which shall become effective from the 4th time block, counting the time block in which the bottleneck in evacuation of power has taken place to be the first one. Also, during the first, second and third time blocks of such an event, the scheduled generation of the ISGS shall be deemed to have been revised to be equal to actual generation, and the scheduled drawals of the beneficiaries shall be deemed to have been revised accordingly.*”



17. In case of any grid disturbance, scheduled generation of all the ISGSs supplying power under long term / medium term/ shall be deemed to have been revised to be equal to their actual generation and the scheduled drawals of the beneficiaries/buyers shall be deemed to have been revised accordingly for all the time blocks affected by the grid disturbance. Certification of grid disturbance and its duration shall be done by the RLDC.

The declaration of disturbance shall be done by the concerned RLDC at the earliest. A notice to this effect shall be posted at its website by the RLDC of the region in which the disturbance occurred. Issue of the notice at RLDC web site shall be considered as declaration of the disturbance by RLDC. All regional entities shall take note of the disturbance and take appropriate action at their end.

For Bilateral short term and collective transactions, the methodology of settlement of accounts for the period of Grid Disturbance shall be formulated by National Power Committee(NPC) and same shall be put up to the Commission for approval. The methodology shall cover all possible scenarios with illustrative examples to covers the instances where the Grid disturbance is either partial or it effects only one region"

24. The relevant extract from the Explanatory Memorandum to the Draft Second Amendment (2013) to the Grid Code states as under:

"29. Amendment in Regulation 6.5.17 of Grid Code:

**(a) Existing Provision:**

.....  
**(b) Proposed Amendment:**

.....  
**(c) Rationale:** This clause has been there in the IEGC since the year 2000 when major regions were not interconnected and various market products like long term, medium term, short term bilateral, short term collective were not there. With gradual interconnection of the regional grids as well as introduction of various market products, the above clause is difficult to implement. For example, on the days of recent grid disturbance, power to affected regions was extended by neighboring regions. If schedule of all utilities is made equal to actual, then there would be no UI in the affected region and power supplied by neighboring regions cannot be accounted for. While POSOCO suggested this for Long Term and Medium term transactions only, the Commission is of the view that there should not be any financial implication on any entity due to Grid Disturbance. Hence it is proposed that Regulation 6.5.17 may be modified in line with Regulation 6.5.16 (transmission bottleneck) wherein schedule of ISGS is made equal to actual and schedule of beneficiaries is revised accordingly (based on entitlement).



25. SRPC vide affidavit dated 17.2.2017 in the instant petition has submitted that this incident was treated under Regulation 6.5.16 of the Grid Code since the incident was not declared by the SRLDC as “grid disturbance” which is a pre-condition for applying Regulation 6.5.17 of the Grid Code, even though the incident was declared a GD-I event

26. In the present case, both the units of the generating station of the petitioner tripped due to tripping of 400 kV NPS-TPCIL line, 400 kV NPS-NCC and NCC-TPCIL lines due to mal-operation of relays. Thus the generating units tripped due to faults with ISTS and not due to any reason attributable to the petitioner. The SRLDC has categorized the incident as GD-1 as per The CEA (Grid Standards) Regulations, 2010. But RLDC has, vide its affidavit dated 21.02.2017, not categorised the event under Regulation 6.5.17 of the Grid Code. Rather the SRLDC is of the view that the event is to be treated under Regulation 6.5.16 of the Grid Code.

27. However, the SRLDC does not dispute the fact that the units of the generating station of the petitioner tripped due to tripping of 400 kV NPS-TPCIL line, 400 kV NPS-NCC and NCC-TPCIL lines of the CTU and consequently, it has also categorised the incident as grid disturbance with severity as GD-1. Nonetheless, the SRLDC had agreed in the 50<sup>th</sup> PCSC meeting that the incident was covered under Regulation 6.5.17 of the Grid Code and did not raise any objections while the minutes were confirmed during 51<sup>st</sup> PCSC meeting. But the SRLDC has not certified the incident under Regulation 6.5.17 and maintained the same view in the affidavit dated 21.02.2017 filed in the present petition.



28. We are of the view that there is clear distinction between provisions of Regulation 6.5.16 and Regulation 6.5.17 of the Grid Code. Regulation 6.5.16 finds application in case of limitation in ISTS or grid constraint for evacuation of ISGS power while Regulation 6.5.17 is applicable when there is grid disturbance. In the present case, SRLDC has clearly identified the event as grid disturbance and, therefore, any application of Regulation 6.5.16 is incorrect.

29. The units of generating station of the petitioner tripped due to tripping of the 400 kV NPS-TPCIL line, 400 kV NPS-NCC and NCC-TPCIL lines of the CTU. The incident occurred at 0602 hrs on 30.12.2015. The total blackout condition lasted for 1hr 15 minutes when at 0717 hrs, the CTU lines were charged and synchronized and thus the 400 kV switchyard of the petitioner was energised. However, the unit-1 and unit-2 of the generating station of the petitioner were synchronised at 1402 hrs and 1700 hrs respectively. The petitioner has contended that the SRLDC did not revise the schedule of the generating station of the petitioner as per provisions of the Grid Code and consequently, the petitioner had to pay huge amount towards DSM charges.

30. We hold that the provisions of Regulation 6.5.17 are attracted in present case since the event is a grid disturbance and SRLDC has categorized the event under grid disturbance GD-1. The same was stated by SRLDC in 50<sup>th</sup> meeting of PCSC that the event should be covered under Regulation 6.5.17 of the Grid Code. As already stated, we do not agree that the present incident should be dealt with under provisions of Regulation 6.5.16.



31. However, we observe that Regulation 6.5.17 of the Grid Code requires certification of grid disturbance and its duration to be done by the concerned RLDC. Accordingly, we direct SRLDC to certify the event under instant Petition.

32. We observe that Regulation 6.5.17 also provides that scheduled generation of 'all the ISGS' present in region has to be revised to their actual generation. We note that there may be events which does not affect all ISGS. The words 'all the ISGS' should be read as all the affected ISGS, since revision of schedule should not be carried out for the ISGS which are not affected by particular grid disturbance. In the instant case, affected ISGS was only petitioner's plant.

**Issue No. (ii): Whether SRLDC has acted as per the Regulations and EA 2003?**

33. As per the Electricity Act 2003, SRLDC is a statutory body and functions of RLDC are specified under section 28 of the Act which is reproduced below:

***"28. Functions of Regional Load Despatch Centre***

*(1) ...*

*(2)*

*(3) The Regional Load Despatch Centre shall:*

*(a) be responsible for optimum scheduling and despatch of electricity within the region, in accordance with the contracts entered into with the licensees or the generating companies operating in the region;*

*(b) monitor grid operations;*

*(c) keep accounts of quantity of electricity transmitted through the regional grid;*

*(d) exercise supervision and control over the inter-State transmission system; and*

*(e) be responsible for carrying out real time operations for grid control and despatch of electricity within the region through secure and economic operation of the regional grid in accordance with the Grid Standards and the Grid Code."*



34. Thus, SRLDC is entrusted with the statutory function of carrying out real time operations for grid control and despatch of electricity within the region through secure and economic operation of the regional grid in accordance with the Grid Standards and the Grid Code and to exercise supervision and control over the inter-State transmission system.

35. SRLDC vide its affidavit dated 21.02.2017 has submitted certain as under:

- (a) SRLDC has no means of knowing in real time whether the unit has tripped due to the generator's fault or that of any other player.
- (b) Even PCSC forum has declared this event a Grid Disturbance under 6.5.17, SRLDC has relied on that the event is of less severe in nature therefore Regulation 6.5.16 of the Grid Code will be applicable.
- (c) DSM is there to take care of the settlement system as in this case only PX schedule was not revised and depending on the system frequency, the DSM rates vary and the petitioner could either have a small net outgo or net receipt as the PX clearing price also varies. This is a business risk of which the generators are fully aware of.
- (d) During the year 2016, there has been more than 50 incidents of grid disturbance (category GD-1) mainly due to failure to operate/ mal-operation of protection.
- (e) Intent of Regulation 6.5.17 of the Grid Code is to insulate the major commercial implications to the generators as well as to the beneficiaries during major grid disturbances like cascade tripping/ natural calamity etc., with high severity that may take longer duration for normalization.



- (f) Amendment in CEA (Technical Standards for Grid Connectivity) Regulations is awaited even after a year of the Commission order dated 05.01.2016 in petition no. 420/MP/2014. In the absence of clarity/ amendment, even today the WTG manufacturers pressurize MNRE/ NIWE etc. for permitting new models approval without complying with LVRT provisions.
- (g) To avert grid disturbance issues, it is necessary for committed and timely implementation of protection audit recommendations, recommendation of PCSC and grid security aspects as well as commissioning of major grid elements and strengthening of intra-state network.

36. Replying on the same, SRPC vide its affidavit dated 07.03.2017 has countered the arguments of SRLDC as under;

- (a) In real time, SRLDC control room through SCADA would have observed that all evacuation lines from TPCIL had tripped prior to unit tripping.
- (b) As per Regulation 6.5.16/ 6.5.17 of the Grid Code, the treatment of scheduling and accounting methodology is such that no generator is liable to pay deviation charges in case there is limitation in ISTS due to constraint or Grid Disturbance.
- (c) DSM is not only a settlement system but also a penalty mechanism (Additional DSM Charges) for non-ability of an entity to generate scheduled power beyond specified limits. The DSM amount is more than Rs. 4 crores as reported by the petitioner. One of the reasons of high DSM charges is delay in revision of schedule by Respondent No. 1 as per Regulation 6.5.16 of the Grid Code.
- (d) Number of cited GD-1 incidents in SR were beyond the control of the Petitioner, since none of the transmission system falls under the control of the Petitioner.



Most of these (51) grid disturbances were on account of mal-operation of protection systems, and had been dealt with appropriately in meetings of Protection Sub Committee.

- (e) The intent of Regulation 6.5.16/ 6.5.17 of the Grid Code is to insulate generators and not beneficiaries from payment of DSM charges. As per Regulation 6.5.16/ 6.5.17 of the Grid Code, if for any constraint in ISTS which has led an ISGS to deviate from schedule, then for such instances ISGS must be insulated from payment of DSM charges. There is no DSM suspension in a region, only the liability of paying the DSM charges changes from generator to its beneficiary/ buyer in case the DSM liability has arisen on account of constraint/ limitation in ISTS.
- (f) The matter is under the purview of CEA. The subject petition is pertaining to scheduling and accounting methodology. References to LVRT and protection mal-operation etc. in this petition may not be relevant. LVRT pertains to a system where the WTG shall remain in grid where primary protection is clearing the fault within stipulated period. The location of TPCIL is near Nellore where only 2 MW of Wind turbines are reportedly in position.
- (g) Status of implementation of Protection Audit Recommendations (PAR) by SR Constituents is being regularly monitored by SRPC/ SRLDC, and concerned reports on the same are being furnished to CERC periodically.

37. The Commission has gone through the submissions made by the parties and observes following on account of SRLDC:



(a) SRLDC control rooms are equipped with SCADA system for real time monitoring and supervision on the equipment installed for evacuation of the power. Hence, we do not accept the contention of SRLDC that it has no means of knowing in real time the exact reason for unit tripping.

(b) Even if we consider that SRLDC has accounted for this event under Regulation 6.5.16 of the Grid Code, the SRLDC did not carry out the following actions:

(i) SRLDC did not revise the schedule for the initial 3 time blocks (6:00 – 6:45 hrs) to actual.

(ii) It is also observed that Regulation 6.5.16 of the Grid Code provides,

*“.....RLDCs shall revise the schedules which shall become effective from the 4<sup>th</sup> time block, counting the time block in which bottleneck in evacuation of power has taken place to be the first one.....”*

In the instant case;

- SRLDC has stated that ‘Subsequent to tripping of both the units, based on the telephonic request of TPCIL, SRLDC revised the MTOA & STOA injection schedule of TPCIL w.e.f. 8:00 hrs though the written communication received from TPCIL through e-mail at about 8:21 hrs indicating revision request effective from 09:00 hrs.’

(iii) We observe that as per Regulation 6.5.16 of the Grid Code, in case of bottleneck in evacuation of power, RLDCs should revise the schedule from the 4<sup>th</sup> time block, counting the time block in which the bottleneck in evacuation of power has taken place to be the first one and give effect to curtailment as per applicable Regulations. There is no requirement for RLDCs to wait for the intimation/ request for revision from the generating station/



beneficiaries to bring into effect the desired revision from the 4<sup>th</sup> time block in the instant Regulation. SRLDC should have revised the schedule for petitioner, accordingly from the 4<sup>th</sup> time block if they have considered the event under Regulation 6.5.16 of the Grid Code. Petitioner has brought to our attention that assessment report post grid disturbance as per The CEA (Grid Standards) Regulations, 2010 has not been prepared by SRLDC. SRLDC has not refuted this claim.

- (c) SRLDC has commented that DSM may lead to “small net outgo”. It is immaterial whether the outgo from DSM is small or big. If a generator is affected either by Regulation 6.5.16 or Regulation 6.5.17, the consequence as per the regulation will follow.
- (d) SRLDC and SRPC need to work together on recommendations of PCSC forum and thereby reduce the number of grid disturbances due to mal-operation of protection systems.
- (e) SRLDC has stated that Regulation 6.5.17 of the Grid Code is applicable for “major” disturbance. But a plain reading of the Regulation 6.5.17 states that this provision is applicable in case of “any grid disturbance”. Once an incident is categorised as “grid disturbance” as per The CEA (Grid Standards) Regulations, 2010, the provisions of Regulation 6.5.17 of the Grid Code is applicable. RLDCs and RPCs are directed to provide historical data where each regulation (6.5.16 or 6.5.17) was applied within three months of issue of this order. On receipt of this data from RLDCs and RPCs, we also direct the staff of the Commission to analyse the applicability of Regulation 6.5.16 and Regulation 6.5.17 under different circumstances and propose draft amendment to the Grid Code, if required.



38. In view of the foregoing, we are of the view that SRLDC should have been more prudent and prompt in handling the situation and revising the schedules. As regards its submission that the incident is to be categorised under Regulation 6.5.16 and not Regulation 6.5.17, we are of the view that it is a matter of interpretation by SRLDC. The Regional Load Dispatch Centres are statutory apex bodies to ensure integrated operation of the power system of their respective region and entrusted with high degree of responsibility that can be achieved only with high standards of performance. SRLDC is, therefore, advised in all our earnestness to ensure absolute compliance with provisions of the Act, Regulations and the Grid Code in future.

39. We observe on perusing the minutes of 50<sup>th</sup> PCSC meeting that the reason for tripping of line has been noted as “the zone-2 timing was wrongly kept as zero sec, due to which the line tripped at NPS end instantaneously”. We are pained at the conduct of PGCIL with regards to laxity being shown towards protection setting of its relays. PGCIL should ensure that its relays have proper protection settings so that such tripping incidents are avoided in future. RPCs should carry out periodic audit to ensure the healthiness of protection relays and its settings.

**Issue No. (iii):**

**(a) Whether the DSM accounts of the petitioner be revised pursuant to the occurrence of incident on 30.12.2015; and**

**(b) What should be the methodology to be adopted for settlement of accounts?**



40. The Petitioner has submitted that the Petitioner has paid deviation charges amounting to Rs. 2,36,97,001 and has suffered loss of revenue amounting to Rs. 3,53,64,831 due to grid incident. Before the tripping incident occurred, the injection schedule of TPCIL was 1037 MW as shown below:

Sl.No	Type	Quantum in MW(Ex-bus)
1	MTOA	269.45
2	STOA	229.76
3	STOA	78.44
4	STOA	50.61
5	PX	409.31
<b>Total Injection Schedule</b>		<b>1037.57</b>

41. The Schedule on 30.12.2015 (day of event) for the period during which the Petitioner has suffered heavy deviation charges due to the event are as under;

(All units in MW)

Time Block	Block No.	MTOA	STOA	IEX	Total Schedule
06:00-06:15	25	269.45	358.81	409.31	1037.57
06:15-06:30	26	269.45	358.81	409.31	1037.57
06:30-06:45	27	269.45	358.81	409.31	1037.57
06:45-07:00	28	269.45	409.41	409.31	1088.17
07:00-07:15	29	269.45	561.24	409.31	1240
07:15-07:30	30	269.45	717.11	253.44	1240
07:30-07:45	31	269.45	717.11	253.44	1240
07:45-08:00	32	269.45	717.11	253.44	1240
08:00-08:15	33	0	0	253.44	253.44
08:15-08:30	34	0	0	253.44	253.44
08:30-08:45	35	0	0	253.44	253.44
08:45-09:00	36	0	0	253.44	253.44
09:00-09:15	37	0	0	253.44	253.44
09:15-09:30	38	0	0	253.44	253.44
09:30-09:45	39	0	0	253.44	253.44
09:45-10:00	40	0	0	253.44	253.44
10:00-10:15	41	0	0	308.1	308.1
10:15-10:30	42	0	0	308.1	308.1
10:30-10:45	43	0	0	308.1	308.1



<b>Time Block</b>	<b>Block No.</b>	<b>MTOA</b>	<b>STOA</b>	<b>IEX</b>	<b>Total Schedule</b>
10:45-11:00	44	0	0	308.1	308.1
11:00-11:15	45	0	0	409.31	409.31
11:15-11:30	46	0	0	409.31	409.31
11:30-11:45	47	0	0	409.31	409.31
11:45-12:00	48	0	0	409.31	409.31
12:00-12:15	49	0	0	409.31	409.31
12:15-12:30	50	0	0	409.31	409.31
12:30-12:45	51	0	0	409.31	409.31
12:45-13:00	52	0	0	409.31	409.31
13:00-13:15	53	0	0	409.31	409.31
13:15-13:30	54	0	0	409.31	409.31
13:30-13:45	55	0	0	409.31	409.31
13:45-14:00	56	0	0	409.31	409.31
14:00-14:15	57	0	0	409.31	409.31
14:15-14:30	58	0	0	409.31	409.31
14:30-14:45	59	0	0	409.31	409.31
14:45-15:00	60	0	0	409.31	409.31
15:00-15:15	61	0	0	409.31	409.31
15:15-15:30	62	0	0	409.31	409.31
15:30-15:45	63	0	0	409.31	409.31
15:45-16:00	64	0	0	409.31	409.31

42. SRLDC, vide affidavit dated 21.02.2017, has submitted that as per Regulation 6.5.17 of the Grid Code, the schedules of the generators and buyers are also required to be revised for insulating commercial implications on them.

43. In reply, SRPC, vide affidavit dated 07.03.2017, has submitted as follows:

- (i) Regulation 6.5.17 of the Grid Code is provided to insulate generators and not beneficiaries from payment of DSM charges.
- (ii) As per Regulation 6.5.17 of the Grid Code, for any constraint in ISTS which has led an ISGS to deviate from schedule, then for such instances ISGS must be insulated from payment of DSM charges.



(iii) There is no DSM suspension in a region, only the liability of paying the DSM charges changes from generator to its beneficiary/ buyer in case the DSM liability has arisen on account of constraint/ limitation in ISTS.

44. As has already been concluded while dealing with the Issue No. (i), the event is grid disturbance and has to be dealt with under Regulation 6.5.17 of the Grid Code. Therefore, the methodology for settlement of account shall be adopted as specified in that Regulation.

45. Hence, the schedule should be revised to actual for power supplied under Long term/ medium term for the period affected by grid disturbance. After certifying the “period affected by grid disturbance” as already directed, the DSM charges be revised accordingly for MTOA.

46. The petitioner has contended that since its units tripped due to tripping of CTU lines, the restoration of units took longer than usual due to factors like confirmation of charging of lines and ensuring safety of the system; restoration of electrical systems at different voltage levels; changing over-supply from emergency source (diesel generator) to the grid; starting of auxiliary systems one-by-one; making systems ready for start-up; starting of unit’s auxiliary’s one-by-one and so on. The whole process took more time than regular start-up time.

47. The Petitioner has submitted that Unit-I was synchronized at 14:02 hrs and Unit-II was synchronized at 17:00 hrs and on the day of incident, the Petitioner’s plant was supplying power under MTOA, STOA and Power Exchange. Further, the Petitioner has



stated that it has suffered heavy DSM penalty on the PX transaction till 16:00 hrs. The petitioner has prayed relief from payment of DSM charges. We observe that DSM liability shall accrue on the basis of revised schedules keeping in view the “period affected by grid disturbance” to be certified by SRLDC. Once the grid disturbance is over, generator should be given a reasonable time period of 4 timeblocks to revise its schedule, i.e if grid disturbance is restored in first time block, generator should intimate the revised schedule in this first block which shall be effective from 4<sup>th</sup> time block. However in the instant case, RLDC did not certify the period of grid disturbance. It is also observed that RLDC revised the schedule from 8.00 AM on telephonic communication of generator. The 400 kV NCC-TPCIL lines was charged & synchronised and thus 400 kV switchyard of TPCIL was energised at 7.17 hrs. RLDC has revised the schedule from 8.00 hrs which is the 4<sup>th</sup> time block from the time when switchyard was synchronised, therefore, there shall be no DSM on generator for MTOA transactions till 8.00 hrs and its schedule shall be revised to actual. The corresponding schedule of beneficiaries shall also be revised as per Regulations.

48. We have already dealt with the settlement of MTOA transaction. As envisaged in the Regulation 6.5.17 of the Grid Code, NPC was directed by the Commission to formulate the methodology of settlement of accounts for the period of grid disturbance in case of transactions related to bilateral short term and Power Exchange and the same was to be put up to the Commission for approval. NPC, vide its letter dated 27.01.2017, has submitted the methodology to Commission for approval. The Commission is in the process of finalizing the draft procedure submitted by NPC. Once the draft procedure as submitted by NPC is approved by the Commission, the accounts related to bilateral short term



transactions and power exchange transactions of the present case shall also be settled as per that procedure.

49. Petition No. 193/MP/2016 is disposed of in terms of the above.

Sd/-	Sd/-	Sd/-	Sd/-
<b>(Dr. M. K. Iyer)</b>	<b>(A.S.Bakshi)</b>	<b>(A.K.Singhal)</b>	<b>(GireeshB.Pradhan)</b>
<b>Member</b>	<b>Member</b>	<b>Member</b>	<b>Chairperson</b>

