

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Coram

1. **Shri D.P. Sinha, Member**
2. **Shri G.S. Rajamani, Member**
3. **Shri K.N.Sinha, Member**

Petitions No. 93/2000, 94/2000,
98/2000,103/2000,106/2000
IAs No. 15/2001,16/2001,18/2001
35/2001 and 39/2001 in
Petition No. 93/2000

In the matter of

Maintenance of grid frequency at 48.6Hz and above in Southern region

And in the matter of

Southern Regional Load Despatch Centre

Petitioner

VS

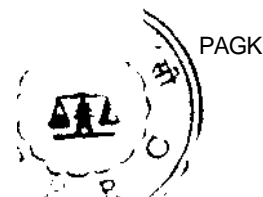
1. Andhra Pradesh Transmission Corporation Ltd.
2. Karnataka Power Transmission Company Ltd.
3. Kerala State Electricity Board
4. Tamil Nadu Electricity Board
5. Electricity Department, Govt, of Pondicherry
6. National Thermal Power Corporation
7. Nuclear Power Corporation Ltd
8. Neyveli Lignite Corporation Ltd.
9. Southern Regional Electricity Board

Respondents

The following were present:

1. Shri R.D. Prabhakar, GM, SRLDC
2. Shri L.K. Kanungo, DGM, SLRDC
3. Shri. Sowmyanarayanan, Consultant, TNEB
4. Shri A. Muthunayanan, SE, Elec. Dept., Pondicherry
5. Shri K.K. Das, GM, PGCIL

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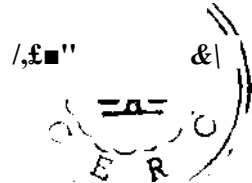
6. Shr | T.M. Poulouse, KSEB
7. Shr | K.K. Garg, GM(C), NTPC
8. Shr | V.K. Padha, DGM(Comml.), NTPC
9. Shr | B.S. Sheshadri, CE/DC, KPTCL
10. Shr | K. Krishnamurthy Naik, CEE(RA), KPTCL
11. Shr' | S. Sivan, MS, SREB
12. Shri | R. Suresh, CE(Comml), NLC
13. Shri | K.M. Suresh, CE(Elec), NLC

**ORDER (DATE OF HEARING
27.7.2001 AT BANGALORE)**

These petitions and Interlocutory applications, have been filed by the petitioner, Southern Regional Load Despatch Centre, seeking the following directions to the respondents:

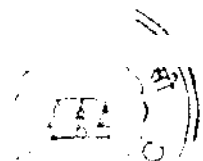
- (a) to faithfully adhere to the SRE Board decision dated 11.3.2000 to maintain the grid parameters.
- (b) to restrict their drawal from the grid within their respective drawal schedule to maintain the grid frequency at 48.6 Hz and above at all times.
- (c) to faithfully follow the instructions of the petitioner and adhere to the provisions of IEGC(Dec. 1999)
- (d) to expedite the introduction of Availability Tariff for ISGS in Southern Region

2. The Petition No. 93/2000 refers to the violations of the grid parameters by the constituents during the months of July and August 2000; Petitions No 94/2000 and 98/2000 during the month of September 2000; Petitions No. 103/2000 and 106/2000 during the month of October 2000. The interlocutory applications filed by the petitioner in Petition No. 93/2000 again point to the violations of grid parameters during the subsequent periods. Since the issues involved in these petitions and interlocutory applications are same, these were heard together and are being disposed off through a common order.



3. It has been stated by the petitioner, that Southern Regional Grid has been experiencing low frequency conditions for a number of years with frequency hovering around 48.0 Hz or below most of the time and at times it has dipped as low as 47.8 Hz. The petitioner has placed on record the frequency profile of the region for the years 1995-96 to 1999-2000. According to the petitioner, the load growth in the region has been in the range of 8-10% per annum whereas the capacity addition has been in the range of 2-5% per annum, which has resulted in conditions of deficiency in the region and the state of low frequency. It has been stated that in view of the situation prevalent in the Southern Region, a meeting of the constituents of the Region was held during November 1999 to discuss the measures to improve the frequency profile. In the said meeting, the following decisions were taken:

- (a) The beneficiaries shall adhere to grid discipline and maintain frequency at not less than 48.4 Hz. In case of over-drawal at 48.4 Hz or below, the petitioner shall advise the State Load Despatch Centres to take action either to shed load or to increase their own generation in order to bring down their drawals within the schedule.
- (b) In case drawals of the beneficiaries at frequency of 48.4 Hz correspond to their schedule, the petitioner shall apply frequency correction and then work out the deemed drawal and advise the over-drawing states to take necessary corrective measures.
- (c) In case the frequency goes below 48.2 Hz, the petitioner after giving reasonable notice to the beneficiary states, shall



resort to opening of identified ICTs/inter-connecting feeders from PGCIL sub-stations to the over-drawing states. (d) Immediate action shall be taken by the states to restore under frequency relays and also to ensure requisite quantum of load shedding under Stage I (48.2 Hz instantaneous - 950 MW) and Stage II (47.8 Hz instantaneous - 950 MW).

4. According to the petitioner, the regulatory measures adopted in the light of above noted decisions have not yielded the desired results and the beneficiary states continued to over-draw at low frequency as a result of which the grid frequency dropped to or around 48.0 Hz. The position was reviewed at SREB Board meeting held on 11.3.2000 whereat the constituents of the region are stated to have agreed to maintain grid frequency at not less than 48.6 Hz till June 2000 and 49.00 Hz and above thereafter. It has been stated that despite the decisions at SREB forum, all the beneficiary states continued to over-draw at one point of time or the other at low frequency and consequently the frequency could not be maintained at 48.6 Hz, as agreed to in SRE Board meeting. A number of meetings are reported to have been held in the Ministry of Power, CEA & Power Grid during April-May 2000 when it was emphasized that the grid frequency should be maintained at least at the level of 48.6 Hz by resorting to load shedding by the constituent states as per advice of the petitioner. It is stated that the Union Minister of Power held a meeting with Power Ministers of Southern Regional States and the Board members of SREB on 10.7.2000 to review the operation of Southern Regional Grid. In the said meeting, the Minister of Power emphasized on maintenance of grid frequency in accordance with the statutory



provisions and the Indian Electricity Grid Code (IEGC) in force since 1 February 2000. The petitioner has also placed on record a copy of D.O. No. 3/3/2001- OM dated 6.1.2001 written by Union Minister of Power wherein he emphasized to enforce grid discipline and operation of grid according to grid code.

5. According to the petitioner, despite all possible efforts, the constituent states have continued to over-draw at low frequency notwithstanding the instructions from the petitioner to these states. The petitioner has furnished the details of the instances when it issued instructions to the states. The petitioner has prayed for the reliefs as noted above, against the above background.

6. The replies have been filed on behalf of some of the respondents. The beneficiary states have admitted that the region is facing deficit conditions as a result of which the grid frequency is below the permissible limits. The fact of over-drawal by the beneficiary states at low frequency is not denied. They have attempted to justify the over-drawals that in view of the deficit conditions over-drawals are unavoidable. Member Secretary, Southern Regional Electricity Board (Respondent No. 9) in the reply has stated the question of non-compliance of IEGC was taken up with the constituents as per para 1.5 of IEGC, but there has been no improvement in the grid parameters.

7. National Thermal Power Corporation (NTPC) in its reply has stated that Southern Regional Grid has been experiencing low frequency conditions, which

is largely due to unwillingness on the part of beneficiary states to limit their drawals from the grid. According to NTPC, the consistent low frequency in the Southern Region has been causing serious latent damages to its machines at the generating stations, (although other respondents, namely SEBs, etc. have not brought out any such damage to their machines as pointed out by NTPC which are operating under the same conditions) NTPC has catalogued a number of instances of damages to its generating station at Ramagundam, which according to this respondent, are attributable to low frequency in the region. Accordingly, this respondent also seeks directions to the beneficiary states and other agencies involved, to take steps to ensure operation of the Southern Regional Grid within the safe operating range of frequency as provided in the Indian Electricity Grid Code. Similar submission was also made by Neyveli Lignite Corporation (NLC) in general terms. However, both NTPC and NLC stated that the cost of damage to their generating equipments had not been assessed in financial terms.

8. At this stage, the Commission would like to record that Andhra Pradesh Transmission Corporation Limited (APTRANSCO) (Respondent No.1) has abstained from the proceedings. It is seen that the APTRANSCO has also failed to comply with the provisions of the IEGC and has been responsible for the low frequency grid conditions. In the absence of its representative at the hearing, we are unable to find out the reasons for continuous violation of the provisions of the Grid Code. We record our displeasure on the absence of the APTRANSCO from

the proceedings relating to maintenance of Grid frequency in the Southern Region and decide to proceed in its absence, as we are not left with any other alternative.

9. We heard the representatives of the parties present at the hearing and have carefully gone through the records. In accordance with Rule 55 of the Indian Electricity Rules, 1956, except with the written consent of the consumer or the previous sanction of the State Government, a supplier shall not permit the frequency of an alternating current supply to vary from the declared frequency (which is 50.0 Hz) by more than 3%. Thus, the provisions of the Indian Electricity Rules prohibit respondents 1 to 5 to supply electricity at a frequency below 48.5 Hz. The Indian Electricity Grid Code which is in force with effect from 1st February 2000 in Chapter 6 (Operating Code for Regional Grids) in paragraphs 6.2(1) and 6.2(m) provides as under:

"(l) All Regional constituents shall make all possible efforts to ensure that the grid frequency always remains within the 49.0 - 50.5 Hz band, the frequency range within which steam turbines conforming to the IEC specifications can safely operate.

(m) All Regional constituents shall provide automatic under frequency load shedding in their respective systems, to arrest frequency decline that could result in a collapse/disintegration of the grid, as per the plan separately finalised by the concerned REB forum, and shall ensure its effective application to prevent cascade tripping of generating units in case of any contingency. All Regional constituents shall ensure that the under frequency load shedding/islanding schemes are functional and no under frequency relay is by-passed or removed without prior consent of RLDC which shall independently check and keep a record of its findings."

10. The facts narrated above evidently point towards non-compliance of the provisions of Indian Electricity Rules as also the Indian Electricity Grid Code on the subject of the maintenance of grid frequency. At the hearing before us, it was strenuously urged on behalf of the petitioner as also the Member Secretary, Southern Regional Electricity Board (Respondent No.9) that the frequency of the Regional Grid cannot improve without proper load management/load shedding and addition of generation/import of power. The meetings at the highest levels have not proved fruitful in restoration of the grid discipline. This is a highly alarming state and is deplorable. The situation needs to be handled with firmness.

11. Initially, upon hearing the parties, we directed the petitioner/beneficiary states orally to file affidavits before the Commission latest by 31st July 2001 assuring of prudent practice in future and outlining the steps which they proposed to take to deal, with the situation. The affidavit filed on behalf of TNEB (Respondent No.4) has been received. In the affidavit it has been affirmed that it is not technically feasible to limit the energy drawal exactly to schedule at the end of each day and, therefore, cumulative over-drawal during a month will not exceed 5 Million Units. It is further affirmed that TNEB cannot alone maintain a frequency of 49 Hz and above, which depends on the operating frequency maintained by the other constituents of the region, without affecting the scheduled drawal from the Central Generating stations. No affidavits have been filed on behalf of the other constituent states of the region and we are separately

contemplating appropriate action against them. We express our unhappiness

over the affidavit filed on behalf of TNEB (Respondent No.4). Therefore,

on

deeper consideration- of the matter, we feel that at this stage itself certain firm directions need to be given to the parties in the interest of safety and security of the regional grid and the maintenance of the grid discipline. Accordingly, we direct that the beneficiary states shall schedule their drawals from the Regional Grid in such a manner that during the first three months i.e. from 1st August 2001 to 31st October 2001 the frequency of the Regional Grid shall not be allowed to fall below 48.5 Hz. Thereafter, during the next three months, that is up to 31st January, 2002, the frequency shall be maintained above the level of 49.0 Hz by taking suitable measures to comply with the provisions of IEGC. The measures adopted may be to increase the generation within the region or import of power from neighbouring regions or through proper load management and load shedding. We want to make it clear that these directions shall not be construed to absolve the respondents of their liability to pay Unscheduled Inter-change charges under the ABT regime. We also point out that non-compliance of these directions shall invite penal action under Sections 44 and 45 read with Section 47 of the Electricity Regulatory Commissions Act, 1998 and the Chief Executives of the utilities and/or concerned divisions of the same, shall be made personally liable. A copy of this order be sent to each of the Chief Executives, etc. by name for his personal information and appropriate action, in addition to the copy to be sent in the normal course.



12. We direct the petitioner to file affidavits by 15th November 2001 and 15th February 2002 placing on record the frequency profile of the regional grid and state of drawal by the constituent states in the Southern Regional Grid for the period ending 31.10.2001 and 31.01.2002 to enable the Commission to take an appropriate view on compliance of its directions contained in this order.

13. As regards the prayer for compliance of directions of the petitioner, law is clear on this issue. Section 55 of Electricity (Supply) Act, 1948, mandates compliance with the directions of the petitioner, the Southern Regional Load Despatch Centre. Further, as per the Commission's order of 15.12.2000 in Review Petition No. 13/2000, ABT was to be introduced in the Southern Region w.e.f. 1.4.2001. Therefore, no further directions are required on these two issues raised in the petition. As directed by the Commission in its order dated 4.6.2001 in petition no. 28/2001, the Regional Energy account shall be prepared by the REBs based on drawals as well as capacity allocations along with the UI accounts, so that implementation of ABT can become effective on disposal of the appeals lying in various High Courts.

14. With the above directions, all the petitions and interlocutory applications noted above stand disposed off.

Sd/-
(K.N. Sinha)
Member

Sd/-
(G.S. Rajamani) -^
Member' ""

Sd/-
(D.P. Sinha)
Member

New Delhi dated the 3rd August 2001