

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**Coram  
Shri Bhanu Bhushan, Member**

**Petition No. 10/2003**

**In the matter of**

Payment of outstanding dues by APTRANSCO to GRIDCO for the period from December 1994 to September 1996.

**And in the matter of**

Grid Corporation of Orissa Limited, Bhubaneswar ..... **Petitioner**

**Vs**

1. Transmission Corporation of Andhra Pradesh Ltd., Hyderabad
2. Power Grid Corporation of India Ltd, Gurgaon
3. West Bengal State Electricity Board, Kolkata
4. Eastern Regional Electricity Board, Kolkata ..... **Respondents**

**The following were present:**

1. Shri R.K. Mehta, Advocate, GRIDCO
2. Shri Manas Kumar Das, GRIDCO
3. Shri Joydeb Bandhopadhyay, EREB
4. Shri Mohan Jha, EREB
5. Shri P. Srirama Rao, CE/GO, APTRANSCO,
6. Shri K. Umamaheshwar Rao, SE (Comml.), APTRANSCO
7. Shri V.A. Kishore, IAO, APTRANSCO
8. Shri G.V. Narayana Rao, APTRANSCO
9. Shri U.K. Tyagi, PGCIL

**Order  
(Date of hearing: 17.02.2006)**

This petition has been filed by Grid Corporation of Orissa Limited (GRIDCO), for directions to Transmission Corporation of Andhra Pradesh Ltd (APTRANSCO), for recovery of outstanding dues for the power supplied to the latter from Eastern Region. The dispute relates to an inter-State transaction

between the period December 1994 and September 1996. It is, therefore, necessary to recapitulate the relevant facts chronologically.

2. A meeting was held at Bhubaneswar on 3.12.1994, with Member (G&O), CEA in chair. The meeting was attended by Chairman, Andhra Pradesh State Electricity Board (APSEB), the predecessor of APTRANSCO, among others. After the meeting the “summary record of conclusions”, a copy of which has been placed on record by the petitioner, was duly signed by all concerned, including Chairman, APSEB. The summary record of conclusions is the basis of the petitioner’s claim in the present petition, since it can be said to be of the nature of a contractual agreement. It is reproduced below.

“SUMMARY RECORD OF CONCLUSIONS ARRIVED ON 3.12.1994 AT BHUBANESWAR ON EXPORT OF POWER FROM EASTERN REGION TO ANDHRA PRADESH STATE ELECTRICITY BOARD

List of Participants is annexed.

Shri B.Sen Gupta, Member (G&O), CEA, was in chair

After detailed discussions, following were concluded:

(1) Operational and Technical feasibility of export of Eastern Regional non-peak thermal power up to 100 MW (excluding 17-22 hours peak) i.e. approximately 50 MU per month has since been established subject to availability from central sector thermal stations in Eastern Region (ER) and transmission constraints in OSEB system which are in the process of getting resolved. In case if more power is available same would also be passed.

(2) Considering various factors a consensus decision was taken and rate of Rs.1.54 per unit was agreed upon for export of power from ER to APSEB via OSEB including service charge of 1.50 paise per unit by Power Grid towards handling the transaction on behalf of Eastern Regional constituents as their agent.

This rate would remain valid up to 31.12.1996

(3) Irrevocable L.C. would be opened by APSEB in favour of Power Grid based on an estimate of 30 MU per month to start with and would be enhanced based on actuals by the end of the month.

This transaction would be totally independent and will have no bearing whatsoever on other transactions of Power Grid and NTPC in both the regions.

(4) This transaction is between ER and APSEB and does not involve other constituents of Southern Region (SR).

(5) Meter Reading will be jointly taken by OSEB and APSEB at Balimela and Upper Sileru and mean taken for the purpose of global accounting of EREB.

(6) Detail accounting procedure of EREB would be adopted and communicated to all concerned including Power Grid on the basis of which Power Grid would raise the bill on APSEB on behalf of EREB constituents.

On receipt of amount from L.C. Power Grid would retain service charges of 1.50 paise per unit and pass on remaining to contributing constituents as per global accounting of EREB.

(7) Regular operation is proposed to commence on 6<sup>th</sup> Dec'94 at 10.00 AM.

(8) Detailed minutes would be issued by CEA.

Chairman, OSEB, Chairman, APSEB, Director (P), Power Grid, ED, NTPC expressed their happiness over arriving at the above conclusion in a very cordial way under the guidance of CEA, EREB and SREB.

Meeting ended with a vote of thanks to chair.

Sd/- (M.Y. Rao) Chairman OSEB	Sd/- (K.B. Reddi) Chairman APSEB	Sd/- (K. Saran) ED(Comm.) NTPC	Sd/- (S.C. Parakh) (Dir(Proj)) POWERGRID	Sd/- (S.V. Narayanan) M.S, SREB	Sd/- (S. Mukhopadhyay) M.S. , EREB
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Sd/-  
B. Sengupta  
Member (G&O), CEA

3. In a further meeting held on 8.12.1994 at EREB Secretariat, the sharing pattern for Rs.1.54/Unit, charged from APSEB, between the constituents of Eastern Region was agreed to. It was subsequently revised marginally in the

EREB meeting held on 23.12.1994. This is not an issue in the present petition and has been mentioned here only for completeness of record.

4. While power flow from Eastern Region to APSEB under the above agreement started on 6.12.1994, LC was not opened by APSEB till April 1995, though it was one of the requirements under the agreement arrived at on 3.12.1994. Also, while releasing payments for energy received, APSEB started deducting unilaterally 2% to 3% of the billed amount from the bills raised by PGCIL, based on global energy accounting of EREB. In due course of time, APSEB also resorted to delaying release of payment. As per letter dated 28.11.1995 from PGCIL, available on record, bills for export of power to APSEB from Eastern Region since May 1995 amounting to Rs.44.83 crore remained unpaid. It is thus clear that APSEB was continuously defaulting in meeting its obligations under the agreement arrived at on 3.12.1994. GRIDCO happened to be the party affected the most since in addition to the charges for its contribution in export of power, it was being deprived of the involvement charge agreed to in EREB.

5. Although parties concerned had been pursuing with APSEB for releasing the payments overdue, the outstanding amount continued to mount. Ultimately, getting no positive response from APSEB, the inter-State transmission line (220 kV S/C Balimela-Upper Sileru transmission line) through which Eastern Region power was being supplied to APSEB was opened by GRIDCO on 25.5.1996. It

is evident from copies of communications filed by GRIDCO that OSEB then came under pressure (for which there was no justification) from various quarters for restoring the power supply to APSEB, and it did restore the supply in July 1996, on the assurance of release of payments by APSEB. The latter, however, continued to fail in meeting even the fresh commitment made, and the power supply under the arrangement was finally terminated by GRIDCO in September 1996, though the rate of Rs. 1.54 per unit was valid upto 31.12.1996 as per agreement arrived at on 3.12.1994.

6. As per a statement furnished by PGCIL, which is jointly signed by the officials of APSEB on 24.3.1998, the total net energy supplied by Eastern Region to APSEB from December 1994 to September 1996 was 889,963,714 units as per EREB and 868,097,544 units as per APSEB. At Rs.1.54 per unit, the total amount payable by APSEB was Rs.1370,502,540 as per EREB and Rs.1336,870,217 as per APSEB. The amount actually paid by APSEB upto that date was Rs.1050,276,645. The outstanding amount as per EREB was thus Rs.320,225,895, out of which Rs.33,632,323 was being contested by APSEB by raising the metering dispute. No payment had been made by APSEB after a payment of Rs.1.6 crore in October 1996 through LC. It is not clear why APSEB made no effort after October 1996 to liquidate even the admitted liability of Rs.28.66 crore.

7. GRIDCO then wrote to APSEB on 20.4.1998 that delayed payment surcharge (DPS) would be levied @ 2% per month w.e.f. 1.11.1996 on the outstanding amount of Rs. 15.447 crore due to be received by GRIDCO. This was refuted by APTRANSCO (the successor of APSEB) on 9.2.2000, on the ground that DPS was not provided for in any bilateral agreement or in the summary record of conclusions of the meeting held on 3.12.1994. APTRANSCO, however, accepted a liability of Rs.28.66 crore, and advised that Vidyut Bonds of Rs.14.66 crore had already been issued in favour of PGCIL on 28.9.1999, to liquidate a part of its liability. According to the affidavit dated 6.12.2004 filed by PGCIL, the entire amount of Rs.14.66 crore was paid to WBSEB based on an advice from APTRANSCO to that effect. Thereafter, a payment of Rs.14.18 crore was made by APTRANSCO in September 2003 (subsequent to filing of the present petition) through Bonds out of which PGCIL has paid Rs. 13.09 crore to GRIDCO in January 2004 as per decision in EREB meetings on 18-19 September 2003.

8. From the foregoing, it is clear that APSEB/APTRANSCO had an outstanding liability to Eastern Region constituents, as on 1.11.1996, of Rs.28.66 crore by its own admission and of Rs.32.02 crore as per EREB global energy account. Out of this, Rs. 14.66 crore was paid in September 1999 and Rs.14.18 crore in September 2003. GRIDCO has worked out its own receivables on the above account as Rs.15.44 crore as on 1.11.1996, which, as per the averment, remained unpaid till filing of the present petition dated

4.3.2003. GRIDCO has also claimed DPS @2% per month, aggregating to Rs.23.17 crore upto 31.1.2003, and has prayed for directing APTRANSCO/PGCIL to pay the total amount of Rs.38.61 crore to GRIDCO, along with interest @ 24% per annum on the said amount from 1.2.2003 till the date of payment.

9. The petition was filed before the Commission on 5.3.2003, and first came up for hearing on 3.6.2003. In its order dated 5.6.2003 made after hearing on 3.6.2003, the Commission had observed that “the question of settlement of dues should preferably be sorted out mutually between the parties”. Thereafter, hearing of the case was being adjourned from time to time on the request of GRIDCO or APTRANSCO as the Commission had been looking forward to an amicable settlement of the matter between the parties, both of whom are responsible State Government-owned utilities. Thus, the petition was kept pending as the Commission was being informed that the efforts were still afoot to settle the dispute through mutual discussions between the parties.

10. It was at the hearing on 22.11.2005 that the Commission was informed that the parties had been unable to resolve the dispute mutually, and the Commission was requested to take up the matter for hearing and adjudication. Through its order dated 25.11.2005, the Commission then referred the matter to me, as a one-Member Bench for a detailed examination since it involved detailed

deliberation on technical aspects, particularly, in regard to the dispute regarding energy supplied. Therefore, I have proceeded to examine the issues.

11. In its affidavit dated 21.11.2005, APPCC/APTRANSCO has contested the claim of GRIDCO on various grounds. One contentious issue is whether the energy accounting should be as per Trivector meters or as per TOD meters. The other major issue is whether DPS is leviable. These are being dealt with by me one by one.

12. In the first hearing before the Bench on 12.1.2006, the parties were directed to meet and reconcile the meter readings. The relevant reconciled readings/figures furnished by Member-Secretary, ERPC are tabulated below.

BALIMELA (Orissa) end

Date	Tri-vector meters		TOD meters	
	Import	Export	Import	Export
1.12.94	974.572	610.049	-	-
1.1.95	974.643	633.277	-	-
Advance	0.071	23.228	-	-
M.F.	1200,000	1200,000	-	-
Units x 1000	85.2	27,873.6	-	-
Net Export MWh (Dec 1994)	-	27,788.4	-	(27,788.4)
1.1.95	974.643	633.277	2092.7	2999.3
1.10.96	975.986	1349.917	2253.9	76069.1
Advance	1.343	716.640	161.2	73069.8
Testing	(-)0.065	(-)0.077	-	-
Net advance	1.278	716.563	161.2	73069.8
MF	1200,000	1200,000	12000	12000
Units x 1000	1533.6	859,875.6	1934.4	876837.6
Net Export MWh (Jan 1995 – Sept 1996)	-	858,342	-	874,903.2
<b>Total Export MWh (Dec.1994 – Sept. 1996)</b>	-	<b>886130.4</b>	-	<b>902691.6</b>



UPPER SILERU (A.P.) end

Date	Tri-vector meters		TOD meters	
	Import	Export	Import	Export
1.12.94	4300	1127	-	-
1.1.95	17657	1185	-	-
Advance	13357	58	-	-
M.F.	2000	2000	-	-
Units x 1000	26714	116	-	-
Net Import MWh (Dec.1994)	26598	-	(26598)	-
1.1.95	17657	1185	4851.3	-
1.10.96	430,925	2146	57197.9	-
Advance	413,268	961	52346.6	-
Testing	(-)41	(-)47.2	-	-
Net Advance	413,227	913.8	52346.6	-
MF	2000	2000	16000	-
Units x 1000	826,454	1827.6	837545.6	(1827.6)
Net Import (Jan 1995 – Sept 1996)	824626.4	-	835718	-
<b>Total Import MWh (Dec 1994 – Sept 1996)</b>	<b>851224.4</b>	-	<b>862316</b>	-

13. TOD meters were installed by OSEB at Balimela and Upper Sileru ends only in December 1994. As such, billing for the month of December 1994 was based on the readings of Trivector meters already in place on 6.12.1994 (when this transaction started). Net energy export from Balimela for the month of December 1994, as recorded by Trivector meters, is 27788.4 MWh. Net energy import at Upper Sileru recorded by similar Trivector meters is 26598 MWh (95.7% of net export recorded at Balimela).

14. For the period from January 1995 to September 1996, the net energy export from Balimela as recorded by Trivector meters is 858342 MWh. The net energy import at Upper Sileru end for the same period, as recorded by similar meters, is 824626.4 MWh (96.1% of net export recorded at Balimela). As for the

TOD meters, the 'export' meter at Balimela end has recorded 876837.6 MWh for January 1995 – September 1996 period, while 'import' meter at Upper Sileru end has recorded 837545.6 MWh for the same period (95.5% of the export recorded at Balimela end).

15. A comparison of the readings of TOD and Trivector meters at Balimela shows that the former were about 1.97% faster than the latter. A similar comparison of readings at Upper Sileru produces a figure of 1.34%. It is generally perceived that TOD meters are more accurate. However, in the present case, after passage of so many years it is not possible to say with certainty that TOD meter readings were closer to the actual energy flow, and to accept EREB/ERPC's contention that Trivector meter readings should be discarded and only TOD meter readings should be taken. It also transpires that Trivector meters were tested (in September 1996), whereas there is no record of testing of TOD meters. Besides, TOD meters were installed after the transaction had started, and one meter (for export from Upper Sileru end) was never installed.

16. Considering all these factors, I am inclined to accept APTRANSCO's argument on this particular aspect, and propose that the readings of Trivector meters installed at Balimela end be taken as the base. However, a difference of about 4% between the readings of Balimela end meters and Upper Sileru end meters is not palatable, since the transmission losses in this comparatively short

line would normally be much lower. It is also noted that Superintending Engineer (Commercial-I), OSEB had written a letter to Member-Secretary, EREB on 30.3.1996 inviting attention to report of Executive Engineer (E&MR Division), Rayagada, OSEB that P.T. lead wires at Upper Sileru were very long causing voltage drop of about 2 to 2.5 Volts, leading to recording of lower readings at Upper Sileru. (This was a serious matter, with large financial implications. It is not clear why the concerned utilities did not pursue it, and did not take immediate corrective measures, if called for). If this was really the case, it would mean that taking the “mean” of Balimela and Upper Sileru meter readings (as stipulated in the agreement arrived at on 3.12.1994) would be erroneous. The factual position could be verified through a comparison of metered transmission losses with the losses theoretically calculated from line parameters. In order to estimate losses on technical basis, I had, vide my order dated 17.02.2006, directed GIRDCO and APTRANSCO, to file the following information:

- (a) Length (in ckt-kms) of 220 kV Upper Sileru-Balimela transmission line;
- (b) Conductor size of the transmission line; and
- (c) Detailed calculations on percentage transmission losses along with basis for such information.

17. In response to above, GRIDCO has informed that the length of 220 kV Upper Sileru-Balimela transmission line is 24 kms and conductor used in ACSR Zebra. GRIDCO has submitted following calculations of transmission losses

using  $I^2R$  method, based on data for the month in which maximum energy was exported i.e. January 1996:

- Energy Exported = 69948000 kWh
- Average MW export =  $69948000 / (24 \times 31 \times 1000) = 94.02$  MW
- Maximum Demand recorded = 168 MVA
- Power factor recorded = 0.943
- Maximum Demand =  $168 \times 0.943 = 158.4$  MW
- Maximum current =  $168000 \div (1.732 \times 220) = 441$  A
- Resistance/km of ACSR Zebra conductor = 0.08699 ohm/km at  $75^\circ$  C
- Losses at peak load =  $3 \times (441)^2 \times 0.08699 \times 24 / 10^6 = 1.22$  MW
- % Losses =  $1.22 / 158.4 = 0.77\%$
- Load Factor (LF) = Average Load/Peak Load =  $94.02 / 158.4 = 0.5936$
- Loss Load Factor (LLF) =  $0.3 \text{ LF} + 0.8 \text{ LF}^2 = 0.45992$
- Average Loss = LLF x Loss at peak load =  $0.45992 \times 1.22 = 0.5611$  MW
- Average % Loss =  $0.5611 \times 100 / 94.02 = 0.597\%$

18. GRIDCO has also made calculations using MiPower software and has informed that loss at maximum load come out to be 1.047 MW (0.66%) and using Loss Load Factor method, average losses work out to 0.51%.

19. APTRANSCO has calculated losses based on difference in meter readings of Trivector meters at Balimela end and Upper Sileru end, which varies in the range of 2.98% to 4.72%. This submission is of little value. The transmission losses in a transmission line vary widely with power flow, voltage, reactive power, etc. and, therefore, the loss-calculation furnished by GRIDCO can only be taken as an approximation. Also, APTRANSCO has advised the line length as 25 km, and a different conductor size. For these reasons, I propose making an allowance in favour of APTRANSCO, and consider the transmission losses as 1.0% (a round figure) instead of 0.5% – 0.6% as per GRIDCO's estimate.

20. My conclusion from the foregoing is that the meters at Upper Sileru end were definitely under-registering energy by around 3%, on account of out-of-proportion voltage drop in P.T. leads (mentioned in para 16), and their readings should be ignored.

21. Now I come to final calculation of quantum of energy exported from Eastern Region to APSEB during December, 1994 – September 1996 period. As per TOD meter readings tabulated in para 13, the “mean” of net energy recorded at Balimela and Upper Sileru is :  $(902691.6 + 862316) \div 2 = 882503.8$  MWh. This is the final figure of EREB, in amendment of the figure of 891084.2 MWh calculated by EREB earlier. As per Trivector meter readings tabulated in para 12, the “mean” of net energy recorded at the two ends is :  $(886130.4 +$

$851224.4) \div 2 = 868677.4$  MWh, which is very close to the figure of 868097.5 MWh admitted by APTRANSCO.

22. As mentioned in para 16, I propose to take the readings of Trivector meters installed at Balimela as the base. These readings are  $(27873.6 + 859,875.6) = 887,749.2$  MWh (export) and  $(85.2 + 1533.6) = 1618.8$  MWh (import). With transmission losses assumed at 1.0%, the deemed readings at Upper Sileru end would be 878871.7 MWh (import) and 1635.2 MWh (export). The "mean" of net energy would be  $(887749.2 - 1618.8 + 878871.7 - 1635.2) \div 2 = 881683.4$  MWh. This figure is proposed to be taken to determine the total amount payable by APSEB/APTRANSCO, applying the agreed rate of Rs.1.54 per unit. I consider it as a reasonable way of settling this long-pending issue.

23. Based on the above, in my opinion, the total amount payable by APSEB/APTRANSCO for the energy received under the agreement arrived at the meeting held on 3.12.1994 is Rs. 1357,792,400. Out of this, Rs. 1050,276,645 were paid by October 1996. I have, therefore, determined the outstanding liability as on 1.11.1996 as Rs. 307,515,755, which may be rounded off to Rs. 3075 lakh. After payment of Rs. 1466 lakh in September 1999, the outstanding amount has come down to Rs. 1609 lakh. After a further payment of Rs. 1418 lakh in September, 2003, the outstanding amount, still to be paid, is Rs. 191 lakh.

24. Now I consider GRIDCO's claim for delayed payment surcharge (DPS). It is agreed that there was no provision for DPS in the agreement arrived at the meeting held on 3.12.1994. However, such a provision was not necessary since agreement provided for opening of L.C. by APSEB in favour of PGCIL. Had an L.C. been opened and maintained by APSEB, as was expected and contractually required, the present situation would not have arisen. Therefore, I am not able to accept APTRANSCO's argument that it has no liability to any compensation for delayed payment simply because it was not provided for in the agreement dated 3.12.1994 or any other bilateral agreement. When GRIDCO has been deprived of its right to use money in business, necessarily the loss is to be compensated by payment of DPS or in any other suitable manner to compensate. APSEB/APTRANSCO has derived, without any doubt, a substantial financial benefit in the process of delaying release of payments. I, therefore, hold that APTRANSCO is liable to pay compensation for the loss suffered by the parties on account of APSEB's default, otherwise it would amount to unjust enrichment of APTRANSCO at the cost of others.

25. On the other side, I am also not able to fully accept GRIDCO's claim for DPS @ 2% per month, for the reason that GRIDCO too was a party to inaction. In the first instance, opening of L.C. was not insisted upon, though it was so agreed at the meeting held on 3.12.1994. Further, once APSEB's tendency of default had become clear, in early 1995 itself, the power supply from Eastern Region could be stopped by opening the 220 kV Balimela-Upper Sileru

transmission line controlled by OSEB. GRIDCO should, therefore, be reconciled to getting only a reasonable compensation.

26. Considering all the above aspects, I consider it fair to stipulate that APSEB/APTRANSCO shall pay interest at a moderate rate of 6% (six percent) per annum, without compounding, on the outstanding amounts as follows:

- i) On Rs.3075 lakh, from 1.11.1996 to 30.9.1999, i.e.  $3075 \times 0.06 \times \frac{35}{12} = \text{Rs.}538.12$  lakh.
- ii) On Rs.1609 lakh, from 1.10.1999 to 30.9.2003, i.e.  $1609 \times 0.06 \times \frac{48}{12} = \text{Rs.} 386.16$  lakh.
- iii) On Rs.191 lakh, from 1.10.2003 to 30.9.2006, i.e.  $191 \times 0.06 \times \frac{36}{12} = \text{Rs.} 34.38$  lakh.

27. I recommend that the above compensation amount, adding to Rs. 958.66 lakh shall be paid by APTRANSCO to GRIDCO in three equal instalments, by 31<sup>st</sup> October, 30<sup>th</sup> November and 29<sup>th</sup> December, 2006. The payment for energy exported still outstanding, that is, Rs.191 lakh as per para 23 above, shall be paid by APTRANSCO to GRIDCO latest by 30.9.2006. If any of the above payments are delayed beyond the dates stipulated, APTRANSCO shall be liable to pay further interest @ 1.25% per month of delay on the outstanding amount.

28. Since only GRIDCO has come to the Commission for redressal of its grievance, and it is the party which has suffered the most, I have proposed above



that all payments are to be made by APTRANSCO directly to GRIDCO. As per EREB's affidavit dated 29.9.2003, GRIDCO, WBSEB, DVC, BSEB, Sikkim and PGCIL were to receive Rs.1583.5 lakh, Rs.32.9 lakh, Rs.23.4 lakh, Rs.82.2 lakh, Rs.0.7 lakh and Rs.31.3 lakh respectively out of a total outstanding amount of Rs. 1754 lakh, as in August 2003, as per EREB account. This was before the receipt of Rs.1418 lakh from APTRANSCO in September 2003, and its distribution. Member-Secretary, ERPC may, therefore, ascertain if any part of the amount now payable by APTRANSCO should be passed on by GRIDCO to any other constituent and have it ratified by ERPC. GRIDCO should honour the decision of ERPC in this regard.

Sd/-  
**(BHANU BHUSHAN)**  
**MEMBER**

New Delhi dated the 27<sup>th</sup> July 2006