CHAPTER III

3 Reviews relating to Statutory corporation

3A PROCUREMENT, PERFORMANCE, MAINTENANCE AND REPAIR OF TRANSFORMERS IN WEST BENGAL STATE ELECTRICITY BOARD

Highlights

West Bengal State Electricity Board (Board) failed to increase the distribution transformation capacity to keep pace with the increasing load. The distribution transformation capacity should have been 4354 MW i.e. 133 *per cent* of connected load. Against this norm the installed distribution transformation capacity fell short by 1692 MW of the desirable capacity. The installed distribution transformation capacity was also short of the connected load by 612 MW.

(Paragraph 3A.4)

Inadequate distribution capacity and delayed augmentation led to load shedding of 41.023 MU during 2000-2002 with consequential loss of potential revenue of Rs 8.32 crore to the Board and of Rs 40.62 lakh to the public exchequer towards electricity duty.

(Paragraphs 3A.4 & 3A.5)

The Board did not prepare material budget. Procurement of transformers was on emergent basis.

(Paragraph 3A.7.1.2)

The requirement of transformers was not correctly assessed leading to excess procurement of transformers valuing Rs 1.66 crore, while additional expenditure of Rs 0.66 crore was incurred on procurement at higher rates.

(Paragraphs 3A.7.2.1, 3A.7.2.2 & 3A.7.2.4)

History cards were not maintained for distribution transformers. The previous history of power transformers re-installed at various sub-stations was not also known to the Board. The Board had not also evolved any system for inspection of transformers at regular interval.

(Paragraph 3A.8.1& 3A.9.1)

The percentage of failure of distribution transformers at 30 divisions varied from 5 to 75 *per cent*. The high rate of failure was attributable to absence of schedule of preventive maintenance and overloading of distribution transformers. Age-wise analysis of transformers in service and suffering breakdown was also not available.

(Paragraph 3A.8.3)

The Board neither fixed a time frame for repair of transformers in the workshop nor monitored the time taken for repair. Consequently, similar jobs took vastly varying time for completion.

(Paragraph 3A.9.2A)

The Board failed to retrieve transformers sent for repair and ensure repair of defective transformers in time resulting in avoidable procurement of transformers valuing Rs 1.64 crore.

(Paragraphs 3A.9.2B(a)(ii) & 3A.9.2B(b))

Absence of control over retrieval of transformer oil from defective transformers led to shortage of oil valued at Rs 0.94 crore.

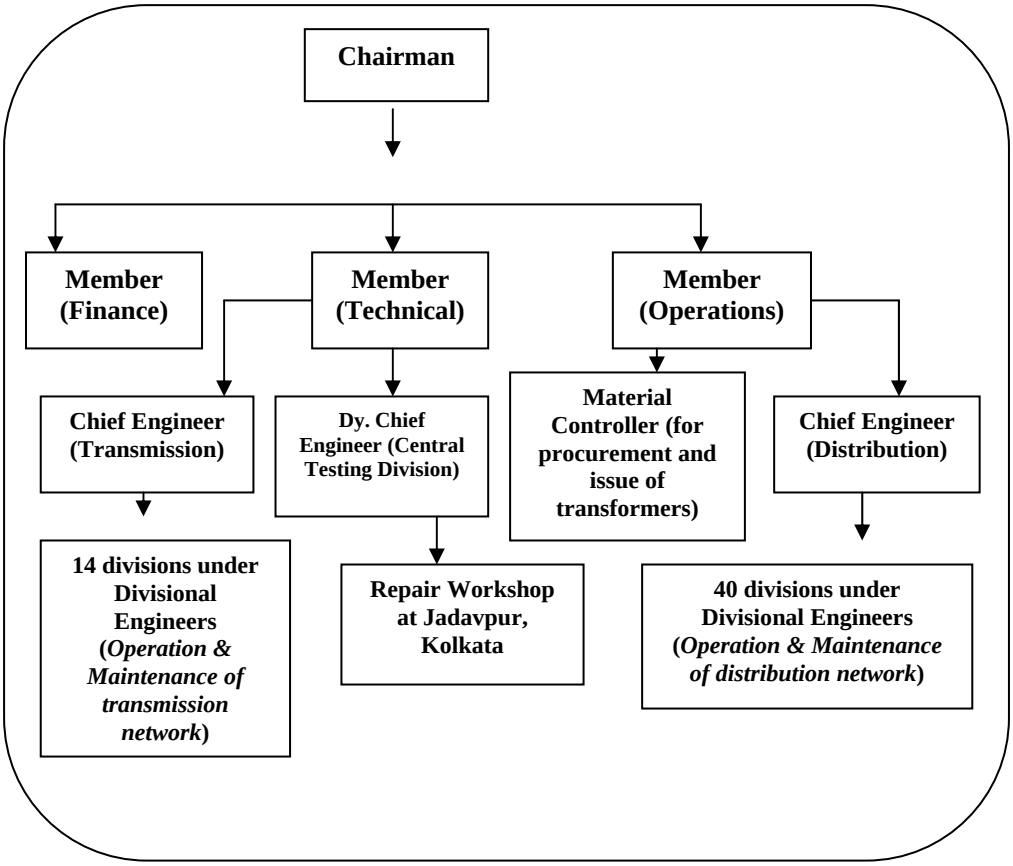
(Paragraph 3A.10.1)

3A.1 Introduction

Transformer is a static equipment for stepping up or stepping down voltages in generation, transmission and distribution of electricity. Power is usually generated at a lower voltage of 11 KV to 15.4 KV and is then stepped up to 132 KV/220KV/400KV through power transformers for transmission to the load centres. At the receiving substation voltage is brought down (220 KV/ 132 KV/ 66 KV/ 33 KV) by using step down transformers and further stepped down (0.4 KV to 11 KV) for supplying to the various consumers. The transformers used at generating stations and in the high voltage substations (known as transmission system) are called power transformers, while transformers used in the distribution system are called distribution transformers. Power is distributed to the consumers and licensees through transmission and distribution lines having voltage ranging from 440 Volts to 132 KV. **The principal benefit of transmitting power at high and extra high voltages is to minimise line losses**.

3A.2 Organisational set up

The organisational chart of West Bengal State Electricity Board (Board) with emphasis on the wings involved in the procurement, performance, maintenance and repair of transformers is given below :



Procurement :

Procurement of transformers is carried out through a Central Purchase Committee consisting of the Chairman of the Board, Member (Operation), Member (Finance & Accounts), Finance Manager (Corporate) and Material Controller.

Maintenance :

Chief Engineer (Transmission) and Chief Engineer (Distribution) are assisted by the Divisional Engineers for maintenance of transmission and distribution net work.

Repair :

The Board undertakes repair of damaged transformers both in-house at the transformer repair workshop and through contractors at site against the rate contract finalised by the Material Controller.

3A.3 Scope of Audit

A review on 'Performance of Transformers' featured in the Report of the Comptroller and Auditor General of India for the year ended 31 March 1991 (Commercial). The review was not discussed by the Committee on Public Undertakings. The present review conducted during December 2001 to February 2002 and July 2002 covers the performance of the Board with regard to procurement, performance, maintenance and repair of transformers. The audit findings for the period from 1997-98 to 2001-2002 arising as a result of test check of records of 28 units[ϕ] out of 64 units are discussed in the succeeding paragraphs.

3A.4 Growth of transformation capacity

The following table indicates the growth of transformation capacity *vis a vis* connected load during the last five years ending 2001-2002 :

Sl. No.	Particulars	1997-98	1998-99	1999-2000	2000-2001	2001-2002 (Provisional)
1	Power transformation capacity					
	MVA	9293	9493	9976	10270	10643
	MW	7434	7594	7981	8216	8514
	Number of transformer	961	996	1030	1075	1101
2	Distribution transformation capacity					
	MVA[∞]	2873	2952	3048	3156	3327
	MW[φ]	2298	2362	2438	2525	2662
	Number of transformer	62037	63415	65133	67259	70725
3	Connected load					
(i)	EHV & HV (MW)[≠]	1402	1385	1392	1430	1362
(ii)	M & LV (MW)[#]	2515	2655	2798	3016	3274
	Total	**3917**	**4040**	**4190**	**4446**	**4636**
4	Gap between connected load and distribution capacity for M & LV consumers (MW) (3(ii) - 2)	217	293	360	491	612
5	Percentage of gap over distribution capacity (4÷2)	9.44	12.40	14.76	19.45	22.99
6	Power transformation capacity per MW of connected load	1.90	1.88	1.90	1.85	1.84
7	Distribution transformation capacity per MW of connected load	0.91	0.89	0.87	0.84	0.81

(Source : Annual Reports of West Bengal State Electricity Board and records maintained by Chief Engineers)

[ϕ] Material Controller's Office, Chief Engineer (Transmission) & Chief Engineer (Distribution) Offices, Central and five Regional Stores, Five transmission and 13 distribution Divisions and Departmental Workshop
[∞] MVA is the rating of the transformer
[φ]MW is the capacity of the machinery
[≠] EHV=Extra high voltage & HV= high voltage
[#] M&LV= Medium & Low voltage

In this connection the following points were noticed in audit :

Distribution transformation capacity fell short of connected load by 612 MW

(a) As of March 2002, the overall power transformation capacity was adequate. The distribution transformation capacity should have been 4354 MW i.e. at 133 *per cent* of connected load. However, against this norm the installed distribution transformation capacity fell short by 1692 MW of the desirable capacity. The installed distribution transformation capacity was also short of the connected load by 612 MW.

Mismatch between distribution transformation capacity and connected load continued to widen

(b) The distribution transformation capacity per MW of connected load had shown a downward trend during 1997-2002. **While the distribution transformation capacity available for catering to medium and low voltage consumers (M & LV) increased by 16 *per cent* during 1997 - 2002, the connected load increased by 30 *per cent* resulting in further widening of mismatch**. This indicated overloading of the system resulting in premature failure/ damage to transformers, supply of power at low voltage as well as load shedding.

Out of 35 test checked divisions, connected load surpassed the distribution transformation capacity in 25 divisions by 4 to 50 *per cent*

(c) Review of connected load *vis-à-vis* distribution transformation capacity in 35 divisions (refer Annexure-26) revealed that -

- In 11 divisions, the connected load exceeded the distribution transformation capacity by 20 to 50 *per cent*. In other words, the average distribution transformation capacity per MW of connected load in these divisions ranged from 0.67 MW to 0.83 MW as against desirable capacity of 1.33 MW.
- In another 14 divisions, the load exceeded distribution transformation capacity by 4 to 17 *per cent*.
- Only in 10 divisions, the distribution transformation capacity did not fall short of connected load.

Load restriction in 12 sub-stations resulted in loss of potential revenue of Rs 2.16 crore

- Inadequate distribution transformation capacity in 12 sub-stations in five[ω] test checked divisions resulted in load restrictions of 10.785 MU[ρ] during 2000-2002 with consequential loss of potential revenue of Rs 2.16 crore to the Board and Rs 10.68 lakh to the public exchequer towards electricity duty.

The Government/ Board stated (September 2002) that in most of the 35 divisions connected load appeared to be marginally in excess of installed capacity. The contention is not acceptable as connected load surpassed the distribution transformation capacity by 20 to 50 *per cent* in 11 divisions which was not marginal.

Addition to transformation capacity fell short of the requirement by 52 *per cent*

(d) A committee constituted (August 1998) by the State Government to assess the power perspective of West Bengal determined (August 1999) the required transformation capacity addition by installing new sub-stations at 1999 MVA (sub-transformation : 1367 MVA, distribution : 632 MVA) during

[ω] Kalyani 0.34 MU, Burdwan 0.56 MU, Habra 0.102 MU, Arambag 9.728 MU and Tamluk 0.055 MU
[ρ] MU – Million units or million kilowatt hours

1997-2002. The Board, however, achieved only 963 MVA (sub-transformation : 427 MVA, distribution : 536 MVA) during 1997-2002 representing only 48 *per cent* of requirement.

The Government/ Board stated (September 2002) that considering the varied load factor and diversity of demand, capacity addition at 33/ 11 KV sub-stations and 11/ 0.4 KV sub-stations were taken care of. However, the fact remains that the capacity addition fell short of the requirement by 52 *per cent* during 1997-2002.

3A.5 Non-identification of augmentation requirements

Requirement of augmentation of transformation capacity not assessed

It was noticed that the Board neither monitored nor ascertained the growth of connected load for distribution transformers. Consequently, the Board was unable to assess and plan for augmentation/ replacement of transformers. At division/ sub-division levels, transformers were normally replaced only after damage.

The Government/ Board stated (September 2002) that action had been taken to arrest unauthorised drawal of load in different districts for identification of transformers/ sub-stations requiring augmentation of distribution transformation capacity more effectively.

Out of 203 transformers at 11 group electric supplies, 55 transformers were overloaded by more than 20 *per cent*

In absence of load records for each distribution transformer, the extent of overloading could not be analysed in audit. However, load measurement of 203 transformers test checked at 11 group electric supplies spread over three[ω] divisions revealed that 88 transformers were overloaded. Of the 88 overloaded transformers, two were overloaded by more than 60 *per cent*, nine by 40 to 60 *per cent*, 44 by 20 to 40 *per cent* and remaining 33 by 1 to 20 *per cent.*

Overloading of transformers resulted in load shedding with consequential loss of potential revenue of Rs 6.16 crore

Further, out of 10 sub-stations test checked, the maximum demand for power at six sub-stations[®] exceeded the capacity resulting in overloading of transformers. This led to load-shedding of 30.238 MU during 2000-2002 in these divisions with consequential loss of potential revenue of Rs 6.16 crore, to the Board and Rs 29.94 lakh to public exchequer towards electricity duty, as discussed in Paragraph 3A.6 *infra*.

3A.6 Delay in augmentation of transformation capacity

The Board delayed the augmentation of capacity/ commissioning of transformers at sub-stations causing persistent capacity – load imbalance leading to loss of potential revenue due to load-shedding.

[ω] Burdwan, Alipurduar and Coochbehar
[®] Alipurduar, Maynaguri, Kolaghat, Goaljan Chandannagar and Nabagram

The Government/ Board stated (September 2002) that the load shedding was attributable not only to delay in augmentation of transformers but also to the limitation of generation, availability of Central sector power, constraint in transmission and distribution network etc. The contention is not acceptable as load shedding discussed in the following cases arose exclusively from overloading of transformers due to delayed/ non augmentation of transformers as mentioned in the log sheets at the respective sub-stations.

Sl. No.	Facts in brief	Impact
(i)	The load of 33/ 11 KV sub-station at Tamluk was fed by the 132/ 33 KV sub-station at Kolaghat (capacity : 100 MVA). The Board proposed (January 2000) to construct a 132/ 33 KV sub-station at Tamluk (capacity :51.5 MVA) at a cost of Rs 12.87 crore to be completed by March 2001. However, the 20 MVA transformer was commissioned by June 2001 while the 31.5 MVA transformer was commissioned only in April 2002 due to defective breaker and non-availability of current transformers (cost : Rs 1.46 lakh). During April 2000 to March 2002, demand at Kolaghat ranged from 101 and 110 *per cent* of capacity indicating overloading of the system.	The Board was compelled to resort to load shedding of 14.338 MU with loss of potential revenue of Rs 2.87 crore to the Board and electricity duty of Rs 14.19 lakh to the exchequer.
(ii)	The Board decided (March 1996/ August 1998) to supply 499 KVA and 400 KVA to the arsenic- free water treatment plants of the Public Health Engineering Department (PHED) at Dariapur and Sultanganj from the Kaliachak 33 KV sub-station and collected (June 1996/ September 1998) service connection charges of Rs 47.37 lakh. Since the existing capacity (12.45 MVA) of the sub-station was inadequate, Malda Division proposed (August 1998) to the Chief Engineer (Distribution) to augment capacity by 6 MVA. The Chief Engineer (Planning) approved capacity augmentation by 3.15 MVA in November 2001, after lapse of more than three years. The work order was issued in May 2002 after delay of six months and work was in progress (September 2002). In March 2002, PHED enhanced demand to 1360 KVA (Dariapur) and 680 KVA (Sultanganj) but had not paid the fresh	Since the Board failed to augment capacity even after four years from the proposal, it failed to supply 7.539 MU between January 2000 and March 2002 to suffer loss of potential revenue of Rs 1.59 crore and electricity duty of Rs 7.29 lakh to the exchequer.

Sl. No.	Facts in brief	Impact
	deposit of Rs 71.53 lakh (September 2002). PHED requested (July 2002) the Board to refund the deposit of Rs 47.37 lakh after deducting cost of work completed.	
(iii)	The Board issued (August 1994/ May 1995) work orders for construction of new sub-station at Goaljan and augmentation of existing sub-station at Nabagram from 3 MVA to 6.15 MVA within March 1997. The Board proposed (February 1995) to acquire 3.73 acres of land for the new sub-station at a cost of Rs 43.92 lakh that was reduced (February 2002) to two acres. Approval of the Government was awaited (September 2002). At Nabagram, the 3 MVA transformer was commissioned only in December 2001 after delay of almost five years. In the interregnum, the capacity had to be further augmented from 6 MVA to 9.3 MVA to meet the rising load for which work order was issued in April 2002. Work was in progress (September 2002). The Government accepted (September 2002) the facts.	The Board's inertia in re-assessing land requirement for Goaljan sub-station and delayed augmentation of capacity at Nabagram led to load shedding of 1.766 MU during the BORO[£] season (March, April and May) of 2000 and 2001 with loss of potential revenue of Rs 35.33 lakh and electricity duty of Rs 1.75 lakh to the exchequer.
(iv)	The 132/ 66 KV Alipurduar sub-station was augmented (June 1999) by substituting an existing 10 MVA transformer with a 20 MVA transformer. The 10 MVA transformer was not transferred to another sub-station and re-installed (cost : Rs 9.54 lakh) only in October 2001 at the same sub-station to cater to the enhanced load arising from shifting of load from Birpara sub-station.	This not only indicated a piece- meal approach to load- planning but also resulted in loss of potential revenue of Rs 0.66 crore and electricity duty of Rs 3.27 lakh during April 2000 to October 2001.
(v)	The Board approved (August 1998) augmentation of transformer capacity at Raghunathgunj sub-station within March 2000 by replacing a 20 MVA transformer with a 31.5 MVA transformer and sent (September 1998) a defective 30 MVA transformer at Dharampur sub-station for repair by a private firm. Despite awareness since October 1999 that the firm was	Inaction of the Board led to delayed augmentation resulting in load-shedding of 2.355 MU with loss of potential revenue of Rs 47.10 lakh and electricity duty of Rs 2.33 lakh during

[£] BORO Season – Crop planting season

Sl. No.	Facts in brief	Impact
	incapable of completing the repair due to financial and labour problems, the Board made no effort to retrieve the transformer. Only in July 2000, the Board identified a 31.5 MVA surplus transformer and placed an order for installation in May 2001. The transformer was ultimately commissioned in August 2001. The Government stated (September 2002) that delay in commissioning of the transformer was not attributable to the Board and would try to recover the transformer after observing all legal formalities. However, the facts stated above failed to uphold the contention of the Government.	March, April and May of 2000 and 2001.
(vi)	At Maynaguri sub-station, Board's proposal (November 1996) to replace one of the two 12.5 MVA transformers with either a 20 MVA or 31.5 MVA transformer was substituted (December 1996) by decision to replace both transformers with 20 MVA transformers. However, only one transformer was installed and commissioned in February 1998, since a second was not available. Nevertheless, the Board persistently diverted the load of Dabgram sub-station on many occasions since August 1999 causing both transformers to trip. The proposal to instal another 20 MVA transformer was revived in October 1998 and installed only in October 2001.	Delayed augmentation led to loss of potential revenue of Rs 22.45 lakh and electricity duty of Rs 1.11 lakh on account of load shedding of 1.122 MU between October 2000 and October 2001.

3A.7 Procurement of transformers

3A.7.1.1 Purchase procedure

The Board procures power and distribution transformers centrally through the Material Controller (MC) based on the indents placed by the Chief Engineers. MC places orders on firms based on open and limited tenders with the approval of the Board. According to the Board's policy, only 20 *per cent* of tendered quantity could be placed in favour of parties from outside the State which were the lowest tenderers and the balance 80 *per cent* was to be allocated among the state-based parties who agreed to supply at the lowest price of the tender. However, with effect from December 2001 this policy had been substituted by a new policy. As per the new policy, the price bid is

prepared after taking into account the price preference (15 *per cent*) as available to the State based units under State Government orders and L_1 unit, determined as above whether State based or outside State party, will be given orders up to their assessed capacity.

3A.7.1.2 Material budget

Absence of material budget

Mention was made vide paragraph 3.4.1 of the Report of the Comptroller and Auditor General of India (Commercial) 2000-2001 that the Board did not introduce material budgeting. In the absence of material budget, funds for procurement of material were allocated on ad-hoc basis in the financial budget.

Non-assessment of requirement of distribution transformers

While the requirement of power transformers is finalised by Central Planning and Engineering Department of the Board based on annual programme of high voltage transmission schemes prepared according to the load pattern, the Board does not assess the annual requirement of distribution transformers. Indents for both power and distribution transformers **are, however, placed by the transmission and distribution wings as per emergent requirements**. The Government/ Board accepted (September 2002) the observation.

3A.7.1.3 Vendor rating

System of vendor rating was not introduced

Vendor rating refers to grading of each manufacturer by in-depth analysis of transformer performance considering the extent of failures attributable to manufacturing defects. The Board did not maintain history cards of distribution transformers and consequently **was unable to rate the vendors on the basis of performance of transformers**. The Government/ Board accepted (September 2002) the observation.

During the period 1997-2002, the Board procured 16549 distribution transformers. Of these, 16 *per cent* were of 'Marsons' make. However, it was noticed in audit that of 2869 defective transformers repaired during 2000-2002, 994 transformers (35 *per cent*) were of 'Marsons' make. This indicated that Board continued to procure transformers without evaluating the performance of vendors.

3A.7.2 Irregularities in procurement of transformers

During the last five years ending March 2002, the Board procured 168 power transformers and 16549 distribution transformers valuing Rs 31.48 crore and Rs 56.15 crore respectively through 82 purchase orders. The major suppliers for power transformers were BHEL, GEC Alsthom, Crompton and Greaves, EMCO etc. and for distribution transformers were Marsons, Mecavo Private Limited, A. P. Electricals, Hertz Electricals Electropair, Andrew Yule and Company Limited.

Mention was made vide Paragraphs 3.4.3(a), 3.4.4.1(a) & 3.4.4.1(b) of the Report of the Comptroller and Auditor General of India (Commercial) 2000-2001 that the Board incurred extra expenditure of Rs 0.77 crore on procurement of transformers due to rejection of the lowest offer and purchase

of transformers in excess of requirement. Further scrutiny of procurement revealed the following.

3A.7.2.1 Additional expenditure due to failure to claim refund

Failure to claim Rs 28.85 lakh towards fall in price from the parties

Against limited tenders received (March 1998) from four[φ] suppliers, the Material Controller (MC) placed (November 1998) three orders on Alstom, BHEL and CGL for supply of three 50 MVA 132/33 KV transformers at a price of Rs 0.98 crore, Rs 0.95 crore and Rs 0.88 crore per transformer respectively. The prices were subject to the provision that in the event of fall in price from the date of the order to the date of supply, the suppliers would refund the price difference to the Board. The transformers were supplied by the parties between March 1999 and February 2000. Meanwhile, against an open tender in September 1999, the Board received (September 1999) seven offers for similar transformers and placed (June 2000) orders on Alstom, BHEL and EMCO at a reduced price of Rs 0.84 crore, Rs 0.81 crore and Rs 0.89 crore per transformer respectively. However, the **MC failed to claim Rs 28.85 lakh from Alstom and BHEL on account of fall in price under the first order**. No responsibility was fixed.

The Government/ Board stated (September 2002) that two separate orders were placed against two separate tenders and action towards payment had been taken accordingly. The contention is not acceptable as the management came to know the fall in price in the second tender during the execution of the first order itself and accordingly the claim should have been lodged.

3A.7.2.2 Additional expenditure on placement of order at higher rate

Wrong classification of a PSU as outside state based party led to additional expenditure of Rs 36.90 lakh on procurement

The Board invited (October 1998) tenders for procurement of 43 power transformers[ϕ] and received 13 offers of which the lowest three offers were rejected as requisite test reports were not submitted. Consequently, the technically acceptable offer of Rs 14.07 lakh per transformer from Andrew Yule and Company Limited (AYL), a state-based public sector undertaking for supply from their Chennai works became the lowest. The Deputy Chief Engineer-II, however, wrongly classified AYL as a non-state based party and placed order for supply of only nine transformers on AYL though AYL quoted for supply of full quantity. Three[δ] other state-based organisations in the private sector refused to match AYL's price but the **Board, placed orders on them for supply of 30 transformers at a higher rate of Rs 1.23 lakh each, resulting in additional expenditure of Rs 36.90 lakh**. The matter needs investigation for fixing responsibility.

The Government/ Board stated (September 2002) that AYL was an outside state based party as their power transformer manufacturing unit was outside West Bengal. The contention is not acceptable as in terms of the Government notification dated 11 September 1990 AYL was a state based party.

[φ] Alstom Limited, Bharat Heavy Electrical Limited (BHEL), Crompton Greaves Limited (CGL) and Hackbridge Hewittick & Casun Limited (HHCL)

[ϕ] 6.3 MVA, 33/11 KV-6.6 KV

[δ] Marson's Limited, R&A (I) Private Limited and RTS Power Corporation Limited

3A.7.2.3 Loss due to non-commissioning of reserve transformer

Unplanned purchase of a reserve transformer resulted in blocking up of fund of Rs 1.12 crore for 63 months

The Board approved (March 1994) installation of a 35 MVA 132/6.6/ 3 KV reserve power transformer at Bandel Thermal Power Station (BTPS). An order was placed (January 1995) by MC on GEC Alsthom India Limited for supply of the transformer. The transformer was received between May and August 1996 and the Board paid Rs 1.12 crore. The transformer was not inspected till October 1998. Meanwhile the guarantee period expired on February 1998.

The transformer was yet to be commissioned (May 2002). General Manager, BTPS attributed (March 2002) the non-commissioning of the transformer to non completion of cable trench excavation and failure of the Central Planning and Engineering Department (CPED) of the Board to prepare the cable schedule indicating lack of planning and monitoring which led to locking up of fund of Rs 1.12 crore in idle inventory for 63 months with consequential loss of interest of Rs 0.71 crore (at the rate of 12 *per cent* per *annum*).

3A.7.2.4 Failure to assess requirement prior to procurement of materials

Transformers procured without assessing requirement led to blocking of fund of Rs 1.66 crore

The Board decided (October 1999) to supply power for new shallow tube well (STWs) and deep tube well (DTW) connections individually through 10 KVA transformers as well as to replace in phases the existing supply to STWs/ DTWs in clusters through 25 KVA/ 63 KVA transformers. The cost of transformers was to be recovered from the potential/ existing consumers. Accordingly, the Board placed (December 1999) orders for procurement of 500 transformers (10 KVA) at a cost of Rs 0.79 crore. Subsequently, the Board anticipated requirement of 4000 transformers and placed (July 2000) further orders for procurement of 3943 transformers (10 KVA) for Rs 5.44 crore without assessing the acceptability of the scheme to potential/ existing consumers. The Board received 1714 transformers (value : Rs 2.40 crore) between February 2000 and March 2002 and issued 777 transformers (excluding opening stock of 90 transformers) to different divisions during the same period. The balance 937 were lying at Central and Regional Stores.

It was noticed in audit that of the 720 transformers issued to 15 divisions[ϖ], only 475 were installed and commissioned and the balance 245 transformers remained unutilised at these divisions till September 2002.

Thus, the Board procured these transformers without assessing their acceptability and based on an unrealistic assessment of requirement resulting in locking up of Rs 1.66 crore in idle inventory of 1182 transformers till March 2002 with consequential loss of interest of Rs 19.89 lakh per *annum* thereon (at the rate of 12 *per cent* per *annum*).

While accepting the fact, the Government/ Board stated (September 2002) that the utilisation of balance transformers would be done progressively.

[ϖ] Srerampur, Habra, Arambag, Katwa, Burdwan 'D', Burdwan Construction Division, Kharagpur, Tamluk, Chandannagar, Asansol, Siliguri, Kalyani, Durgapur, Barasat Construction Division and Berhampur Circle

3A.8 Performance of transformers

The Government of India, Ministry of Power, prescribed (March 1994) the life of both power and distribution transformers as 25 years. However, the Board did not formulate any policy for replacement of transformers that had outlived their useful life.

The Government/ Board accepted (September 2002) the fact.

3A.8.1 Non-maintenance of history cards etc. in respect of distribution transformers

History cards and Asset Registers were not maintained for distribution transformers

The maintenance of history card for each transformer containing full particulars such as the name of the supplier, capacity, voltage ratio, date of issue, date of installation, date of energisation, date of failure, date of expiry of guarantee period, normal life of transformer, date of repair and subsequent re-commissioning etc. was required to monitor performance and ascertain the working life. These cards were to move with the transformer. A review of records revealed the following shortcomings:

i) History cards and Asset Registers were not maintained for distribution transformers. Accordingly, the Board was not aware of the procurement dates as well as the periods for which the transformers were in service. **No age-wise analysis of distribution transformers was also available**.

ii) History sheets maintained for power transformers indicated the period of service in the current sub-station only since re-installation without details of period of earlier service and performance at previous substations.

iii) Registers for transformer-wise load distribution and periodic maintenance were not maintained for distribution transformers.

iv) Transformers failed for a variety of causes *viz.* manufacturing defects, inadequate protection, lack of maintenance and adverse system/ environmental conditions. The Board had, however, not analysed the reasons for failure of distribution transformers.

Resultantly, it could not be ascertained in audit whether the transformers had achieved their normal life of 25 years and the age-wise incidence of failure. It could also not be ascertained whether transformers failed within the guarantee period. In the absence of requisite records, the frequency of damage due to manufacturing defects, poor quality of repair and failure due to other inherent flaws were not susceptible of audit verification.

Test check of records in two[ω] divisions revealed that **six distribution transformers failed (1997-1999) within the guarantee period of 12 months**

[ω] Burdwan & Katwa Distribution

from the date of commissioning, but were yet to be replaced by the suppliers. The reasons for failure were not on record.

While accepting the fact, the Government/ Board stated (September 2002) that the Station-in-charge were being instructed to maintain history cards.

3A.8.2 Premature failure of transformers

Between October 1998 and February 2002, 16 power transformers of capacity 5 to 50 MVA valued at Rs 3.73 crore (approx.) failed prematurely at different sub-stations. Three transformers failed within five years, one after seven years, eight between 10 and 15 years and four between 15 and 20 years.

Premature failure of transformers led to loss of Rs 45.52 lakh

Scrutiny revealed that out of 16 transformers, two 3.15 MVA power transformers at Barasat 'D' Division valued at Rs 18.82 lakh failed (September and October 2001) prematurely due to manufacturing defect and they were declared irreparable by the suppliers. Though one transformer (Marson's make) failed within the guarantee period, the Board did not take any action to get it replaced at the cost of supplier (August 2002).

Similarly, at eight[ʻ] out of 13 test checked divisions, it was noticed from the scrap list that of 102 distribution transformers (25, 63, 100 KVA, 3 MVA, 5 MVA capacity), 14 transformers failed prematurely between 1 and 5 years, 10 between 5 and 10 years, 7 between 10 and 15 years, 38 between 15 and 20 years and the balance 33 between 20 and 25 years.

Thus, due to premature failure of transformers the Board sustained a loss of Rs 45.52 lakh. No investigation was conducted to ascertain reasons for such failure (August 2002).

3A.8.3 Failure of distribution transformers

Average failure of transformers at 17 *per cent* was higher than Assam, Maharastra and Himachal Pradesh

The table below indicates the failure rate of distribution transformers vis-à-vis expenditure incurred on their repair for the last five years ending March 2002.

Particulars	1997-98	1998-99	1999-00	2000-01	2001-2002
1. Transformers in service	62037	63415	65133	67259	70725
2. Damaged during the year	9408	11060	11691	11846	11176
3. Percentage of damage	15.2	17.4	17.9	17.6	15.8
4. Expenditure incurred on repairs (Rupees in crore)	7.63	10.46	9.69	12.68	9.83

In this connection following points were noticed in audit :

- The percentage of breakdown of distribution transformers in the State was higher than that of Assam (7 to 10 *per cent*), Bihar (8 to 9 *per cent*), Himachal Pradesh (5 to 7 *per cent*), Maharastra (10.3 to 15.1 *per cent*) while the same was lower than that of Delhi (21 to 24 *per cent*), Gujarat

[ʻ] Cooch Behar, Burdwan, Baruipur, Siliguri, Malda, Purulia, Chandannagar & Murshidabad

(22 to 25 *per cent)*, Karnataka (19 to 26 *per cent*) and Uttar Pradesh (16 to 22 *per cent*).

- The percentage of failure at **30 divisions varied from 5 to 75 *per cent*** (Annexure-27). However, the Board did not analyse the reasons for the same.

- The Board had not fixed any norm for transformer breakdown.

- There was no schedule for periodic maintenance of transformers.

- It was noticed that during the five years up to 2001-2002, the Board spent Rs 50.29 crore on repair of transformers which was 90 *per cent* of the value of new transformers purchased during the same period.

However, as analysed in audit, **absence of periodical preventive maintenance and overloading of distribution transformers were the main reasons for excessive damage of transformers,** as discussed in Paragraph 3A.4 *supra* and Paragraph 3A.8.4 *infra*.

The Government/ Board stated (September 2002) that the Board had taken action with effect from July 2002 for removal of unauthorised load drawal in different districts to reduce failure of transformers and field engineers were issued circular regarding maintenance of distribution lines and sub-stations. However, the Board had no system of feed back of maintenance carried out by engineers for monitoring.

3A.8.4 Damage to transformers due to lack/ inadequacy of protective devices

Inadequacy/ lack of protective devices led to damage of power transformers, as detailed below-

Loss of potential revenue of Rs 1.41 crore in absence of standby transformer

(a) A new 50 MVA 132/33 KV 'Alsthom' make transformer commissioned in April 1998 at Titagarh sub station failed during October 2001 due to voltage stress during lightning. In absence of standby transformer, the Board resorted (October 2001) to load shedding on the 33 KV feeder. This resulted in loss of potential revenue of Rs.1.41 crore (7.043 MU) to the Board and Rs 6.97 lakh to the public exchequer towards electricity duty. The cost of repair was Rs 25.42 lakh including transport charges of Rs 9 lakh. This indicated that the **lightning arrestor was not effective**.

The Government/ Board stated (September 2002) that the lightning arrester was tested and found serviceable. However, the test report could not be produced to audit.

(b) A 3 MVA 66/11 KV transformer at Shantipur sub station failed (June 2001) due to fall of a bird as the **protective arrangement on low voltage side was inadequate**. The Board replaced the transformer only in September 2001 and sustained loss of potential revenue of Rs 14.55 lakh (0.73 MU) due to load shedding.

The transformer was yet (September 2002) to be sent for repair due to wrong decision of the Board to repair the same at its own workshop which did not have a suitable crane to handle the transformer.

The Government/ Board stated (September 2002) that action was being taken to provide adequate protecting device on low voltage side of the transformer.

3A.9 Maintenance and repair of transformers

3A.9.1 Maintenance

The sub-stations were responsible for maintaining power transformers while the divisions/ sub-divisions maintained the distribution transformers. Maintenance of power transformers was according to manufacturers' recommendations. Test check revealed the following lacunae-

Absence of maintenance schedule, system of feed back of maintenance performed and efficient load management

- The Board had not prescribed a maintenance schedule for distribution transformers.
- Neither the divisions nor the sub-divisions prepared a detailed programme to ensure maintenance of all distribution transformers over a cycle.
- There was no system of feedback of maintenance performed by divisions to the circle/ Head Office for monitoring and control.
- Records relating to maintenance of transformers were not prepared.
- There was lack of efficient load management to avoid overloading of transformers. In order to monitor the growth of load against distribution transformers, load registers showing transformer-wise connected load were not maintained by the divisions/ sub-divisions and replacement occurred only after damage of transformers. Load measurement was done once a year and that too for a limited number of transformers. Test check of records of 11 Group Electric Supplies revealed that **out of 1480 distribution transformers in circuit, 203 were measured during 2001-2002 and in 29 *per cent* of these transformers (58 instances), imbalance in different phases** was noticed.

The Government/ Board stated (September 2002) that local load management was being done by the field engineers as far as practicable.

Schedule for inspection of transformers not laid down

- The Board had not prescribed any schedule for inspection of distribution transformers at the division level to ensure effective and regular maintenance. Test check of records of three divisions[ᵠ] revealed that no record was maintained in regard to the periodicity of inspection and action taken, if any, on the inspection reports.

[ᵠ] Burdwan, Berhampur, Baruipur

- ❖ No overhauling was undertaken during the last five years ending 2001-2002 in any of the 13 test checked divisions except during repair.

- ❖ Checking of voltage, temperature, earth resistance, leakages, internal inspection, oil testing etc. were not performed regularly.

3A.9.2 Repair

The Board undertakes repair of damaged transformers both in-house at the transformer repair workshop and through contractors at site against rate contracts finalised by the Material Controller. During the last five years ending 31 March 2002, 70 contractors were empanelled for repair of distribution transformers.

A Repair through departmental workshop

No target was fixed for repair of transformer at workshop

The Board has a Central workshop at Jadavpur, Kolkata. The main functions of the workshop are repairing of power transformers up to 6.3 MVA at workshop, reconditioning of bushing, current transformers (CT) and potential transformers (PT), minor field repairs to power transformers of all capacities and inspection/ survey of transformers repaired/ to be repaired by external agencies. The activities of the workshop during the past five years ending March 2002 are depicted below:

Sl.No	Particulars	1997-98	1998-99	1999-00	2000-01	2001-02 (P)
1	Transformer repaired at workshop (Nos.)	11	11	9	14	13
2	Time taken (in months)	4 to 14	1 to 17	2 to 15	2 to 16	2 to 13
3	Transformer repaired at site (Nos.)	6	20	7	10	7
4	Survey of defective transformers at external repairers' premises/ site (Nos.)	5	17	7	17	5

Although the workshop was established during 1986, the installed capacity or annual targets for repair by the workshop have not been fixed by the Board to ensure an objective evaluation of its performance.

No time frame was prescribed for repair jobs- repair jobs took varying time

The Board neither fixed a time frame for repair of transformers in the workshop nor monitored the time taken for repair. In the absence of any norm for repair, the performance of the workshop could not be assessed in Audit. During 2000-2002, the workshop took 3 to 13 months for repairing both the H.T. & L.T. coils of ten 5 MVA 33/11 Kv transformers. Similarly, overhauling of similar capacity power transformers (5 MVA) took one month in three instances and three months in one instance. **This indicated inefficient functioning of the workshop.**

The Government/ Board stated (September 2002) that the existing workshop was required to be shifted to a new spacious workshop building with modern facilities for bringing down the time schedule for repair jobs.

B Repair through outside agencies

Transmission (O & M) and Distribution (O & M) wings are responsible for getting the power and distribution transformers repaired. The repair of power transformers is generally carried out by engagement of original manufacturers as well as through outside agencies and at repairing workshop, Jadavpur. The repair of distribution transformers is undertaken through outside agencies only. The major audit findings are discussed in the ensuing paragraphs.

a) Abnormal delay in repair

i) One 'CGL-make' 100 MVA power transformer with replacement cost of Rs 1.50 crore installed at Jeerat sub-station was damaged during May 1996 due to short circuit of LV tertiary 'V' Phase winding and a 100 MVA transformer earmarked for Arambag sub-station was transferred to Jeerat.

One damaged 100 MVA power transformer was repaired after a delay of 32 months

The Superintending Engineer took one year to send the damaged transformer for repair to the manufacturer in May 1997. The joint inspection was also carried out belatedly in December 1997 at the manufacturer's works. After a lapse of another six months, the CE (Transmission) placed the order in July 1998 for repair by November 1998 at a cost of Rs 0.50 crore. Ultimately, the Board installed the repaired transformer in June 1999 at Arambag sub-station. Thus, due to ineffective action on the part of SE & CE, the damaged transformer was repaired after a delay of 32 months.

The Government/ Board stated (September 2002) that the repair of transformer was delayed to match the load growth at Arambag sub-station.

Avoidable purchase of 372 transformers at Rs 0.93 crore due to delay in repair of defective transformers

ii) 372 defective distribution transformers valued at Rs 0.93 crore were awaiting repair at five[ς] divisions, of which 125 were not repaired for a period of two to eight years and 247 were awaiting repair for a period of one to two years. During this period 372 transformers of similar capacity were procured by the Board at a cost of Rs 0.93 crore. The **procurement could have been avoided had repair of these transformers been initiated in time by the Divisional Engineer.**

iii) There were inordinate delays ranging from 0.5 month to 57.5 months in replacement of 201 defective transformers by three[Ω] divisions with **consequential loss of potential revenue of Rs 1.16 crore due to non-supply of power**.

b) Failure to monitor return of transformers

Divisional Engineers were responsible to ensure return of transformers sent for repair to contractors. Scrutiny revealed that six power transformers {Siliguri, Tamluk, Kharagpur and Chief Engineer (Transmission)} and 219 distribution transformers (14 divisions) valued at Rs 1.46 crore were handed over for

[ς] Alipurduar, Cooch Behar, Baruipur, Siliguri & Krishnagar
[Ω] Berhampur, Malda and Kharagpur

Ineffective monitoring of return of transformers from repairers resulted in avoidable purchase of transformers of Rs 0.71 crore

repair to six[Θ] firms between April 1985 and January 2001. However, none of these transformers were returned after repair by the firms so far (August 2002). Bank guarantees received from the firms as security deposit also expired. No legal action was initiated against the firms (August 2002).

It was seen that of 225 transformers, 211 transformers were of 25/63/100 KVA capacity which are regularly procured and used by the Board. Had these 211 transformers been returned in time, the Board could have avoided procurement of 211 similar transformers at a cost of Rs 0.71 crore. **Thus, the lackadaisical attitude of Divisional Engineers to ensure return of repaired transformers saddled the Board with additional financial burden of Rs 0.71 crore besides loss of Rs 1.46 crore due to non return of transformers.** No responsibility was fixed.

3A.10 Scrapping and disposal of transformers

Delay in disposal of damaged transformers led to locking up of fund of Rs 2.77 crore

(a) During 2000 to 2002, the Board identified 5174 unserviceable transformers lying in different divisions of which 782 were sold till February 2002 in mixed lots with other materials leaving the balance of 4392 unsold, due to poor response from bidders.

It was noticed in audit that **fixation of reserve price without taking into consideration the prevailing market rate and the deteriorating condition of the transformers mainly contributed to non-disposal of these unserviceable/ scrapped transformers**. The Board did not review the reserve price to expedite disposal so far (September 2002). The Government/ Board accepted (September 2002) the point.

(b) The Board had also identified (2000) 163 power transformers requiring disposal/ repair valued[ϒ] at Rs 0.83 crore lying in 148 divisions/ sub-stations. No action was taken either to dispose of or repair these transformers. The Government/ Board stated (September 2002) that a Committee had been formed to expedite disposal process.

(c) Audit identified 922 irrepairable transformers of different ratings in eight divisions which were not disposed of for the past 3 to 18 years. No action was taken for their disposal. The Government/ Board stated (September 2002) that on receipt of field survey report action would be taken for disposal.

Thus due to delay in disposal of damaged transformers, the Board's fund of Rs 2.77 crore[©] remained locked up.

[Θ] Hackbridge, Hewittick & Easun Engineering Limited (1), Mirzapur Industries Limited (1), Basant Electro-Industries (P) Limited (6), Transformer & Electrical (P) Limited (1), Barua & Co. (2) & Mechanex Industrial Co-operative Fabrication Society (214)

[ϒ] Considering the cost of one 100 KVA transformer @ Rs 50,850

[©] Considering the latest reserve price fixed by the Board for a 25 KVA transformer i.e. @ Rs 3655 for 5314 distribution transformers plus Rs 0.83 crore being the cost of damaged power transformers

3A.10.1 Short retrieval of transformer oil from defective transformer

Absence of control over retrieval of transformer oil from defective transformers led to shortage of oil valued at Rs 0.94 crore

Defective transformers with no leakage and oil seal intact should contain oil to full capacity. Test check of records of 13[♣] distribution divisions revealed that in 6276 defective transformers, 3.37 lakh litres of transformer oil was recovered as against 6.93 lakh litres recoverable, reflecting a shortage of 3.56 lakh litres (51 *per cent*) valued at Rs 0.94 crore. Of these, no oil was found in 130 transformers, indicating absence of control over retrieval of transformer oil. Therefore, **the possibility of pilferage of oil cannot be ruled out. The Board did not investigate the reasons for substantial shortage of transformer oil**.

3A.11 Seized transformers

During 2001-2002 the Board seized 92 transformers in Burdwan and Murshidabad circles which were being used for unauthorised drawal of energy. This indicated lack of vigilance on the part of the Board.

The Government/ Board stated (September 2002) that the cases were under police investigation.

Conclusion

- **Even as the distribution transformation capacity was inadequate, its growth during 1997-2002 failed to keep pace with the growth of connected load resulting in further overloading of transformers. This led to load shedding, breakdown and loss of potential revenue.**

- **There was no system of identifying need for augmentation of transformation capacity with reference to growth in connected load. Resultantly, there were delays in augmentation of capacity and replacement of transformers resulting in loss of potential revenue due to non-supply of power and load shedding.**

- **In absence of history cards, the Board was unaware of frequency of damage to a specific transformer. The Board did not analyse causes for transformer failure and consequently failed to devise preventive measures.**

- **The Board did not prescribe any schedule for periodical preventive maintenance/ overhauling of transformers. Consequently, the performance of transformers was adversely affected due to inadequate maintenance.**

- **Scrapped, defunct and irreparable transformers were not periodically identified and disposed of at the earliest.**

[♣] Burdwan, Alipurduar, Cooch Behar, Jalpaiguri, Berhampur, Baruipur, Darjeeling, Kharagpur, Bankura, Purulia, Siliguri, Malda & Uttar Dinajpur

Recommendations

- **Effective steps were needed for identification of transformers/ sub-stations requiring augmentation of the distribution transformation capacity so as to effectively cater to the connected load.**

- **The Board should prescribe and enforce a schedule of preventive maintenance for distribution transformers.**

- **History cards of the transformers need to be maintained so as to analyse their performance with a view to identifying causes of premature failure etc. The Board may consider maintaining database of all transformers indicating their location, capacity and condition and monitor them through computers centrally.**

- **Scrapped transformers should be periodically identified and their prompt disposal arranged so as to ensure the best possible price realisation while defective transformers should be replaced and repaired quickly to minimise loss of potential revenue and reduce procurement.**

The Government/ Board accepted (September 2002) the recommendations.

3B Power Sector Reforms - Implementation of the terms of Memorandum of Understanding (MOU)

There had been delays in implementation of power sector reform programme by Government of West Bengal with reference to the commitments made in the MOU. The process of speeding up the power sector reforms could not achieve required momentum.

3B.1 Introduction

The State Level Reorganisation Committee, constituted (October 1997) by the State Government to make a detailed study for revamping the power sector, recommended (July 1998) as under :

- Transferring of all thermal generating stations under State sector[ϕ] to West Bengal Power Development Corporation Limited (WBPDCL).
- Formation of State Rural Energy Development Corporation for execution of rural electrification works and supply of electricity in rural areas.
- Reorganisation of the distribution zones as independent profit centres with separate accounting system.
- Undertaking of energy audit in all segments of transmission and distribution network.
- Formation of an independent Tariff Authority for fixation of tariffs.

In accordance with these recommendations, the State Government set up West Bengal Rural Energy Development Corporation Limited (WBREDC) in August 1998 and West Bengal Electricity Regulatory Commission (WBERC) in January 1999.

WBSEB to achieve break-even by March 2003 on implementation of reform programmes

Subsequently, a consensus was reached in the conference of Chief Ministers/ Power Ministers held in March 2001 on the need to depoliticise power sector reforms and speed up their implementation. With this background, a Memorandum of Understanding (MOU) was signed on 5 May 2001 between the Ministry of Power, Government of India (GOI) and the Department of Power, Government of West Bengal (GOWB), as a joint commitment for implementation of the following reform programmes of the power sector in West Bengal :

- Complete electrification of all villages by March 2006.
- Restructuring of the distribution activity of West Bengal State Electricity Board (WBSEB) into individual profit centres with its own shadow Profit and Loss Account by March 2002.

[ϕ] West Bengal State Electricity Board, The Durgapur Projects Limited

- Undertaking energy audit by WBSEB to reduce transmission and distribution (T&D) loss to 20 *per cent* by 2005.
- 100 *per cent* metering to all consumers by December 2001.
- Transferring of thermal power stations at Bandel (BTPS) and Santaldih (STPS) of WBSEB to West Bengal Power Development Corporation Limited (WBPDCL).
- Securitisation of outstanding dues of Central Public Sector Undertakings (CPSUs) so as to ensure that dues of CPSUs did not exceed two months' billing.
- Timely payment of subsidy by the State Government to the WBSEB.

It was envisaged in the MOU that with the implementation of reform measures, WBSEB would be able to achieve the break-even level by March 2003 and to earn positive return thereafter. The Durgapur Projects Limited, another power generating Government company was, however, kept out of the purview of the MOU.

3B.2 Funding arrangement

As per the MOU, the Ministry of Power, GOI would provide 50 *per cent* of requisite funds under Accelerated Power Development Programme (APDP) for modernisation, renovation of thermal and hydroelectric units as well as for upgradation of transmission, sub-transmission and distribution network. The Ministry would also arrange funds through Rural Electrification Corporation Limited (REC) and other financial institutions for 100 *per cent* electrification of villages and hamlets.

3B.3 Implementation of the programme

The Chairman of WBSEB was responsible to ensure the implementation of reform measures in a time bound manner. For monitoring the implementation, the WBSEB constituted (June 2001) three working groups for (i) 100 *per cent* metering, energy audit, reduction of T&D loss headed by Member (Operations), (ii) restructuring of distribution zones into profit centres headed by Member (Operations), and (iii) securitisation of dues headed by Member (Finance and Accounts).

The status of implementation of reform programmes was reviewed in audit (May and June 2002) and points noticed in audit are discussed in succeeding paragraphs.

3B.4 Formation of West Bengal Rural Energy Development Corporation Limited (WBREDC)

The State Government formed (August 1998) WBREDC, as a wholly owned Government company under the Companies Act 1956 for transferring

transmission, distribution and electrification works in the rural areas from WBSEB and The Durgapur Projects Limited (DPL) to WBREDC. The State Government also decided (February 2000) that till field level infrastructure of the WBREDC was set up, the works would be executed by WBREDC through Zilla Parisads (ZPs) with the assistance from WBSEB. WBREDC started its functioning from March 2000. However, due to failure of the State Government/ WBSEB to transfer employees from WBSEB to WBREDC, 21 consultants were engaged by WBREDC to assist it in the rural electrification works and Rs 41.02 lakh was paid by WBREDC as consultancy fee till May 2002.

Meanwhile, WBREDC submitted (November 1999) an application for obtaining the requisite license from the State Government under Section 3 of Indian Electricity Act, 1910 to act as the licensee. However, no license was issued by the Government so far (September 2002). As a result WBREDC was not eligible to energise the installations erected by it and the WBSEB continued to energise the lines and operate the same.

The Government stated (September 2002) that on receipt of an appropriate proposal from WBREDC, the question of issuing license to WBREDC would be considered. The contention is not acceptable as WBREDC had already submitted the requisite application in November 1999.

Scrutiny of records revealed the following points :

Poor utilisation of fund for rural electrification works

(i) For execution of electrification works, the State Government deposited Rs 306.67 crore (equity : Rs 10.00 crore, grant : Rs 90.67 crore, plan loan : Rs 206.00 crore) in the Deposit Account of WBREDC maintained by Pay and Accounts Officer (PAO), Kolkata during 1999-2002. WBREDC withdrew only Rs 136.00 crore (equity : Rs 10.00 crore, grant Rs 86.00 crore and plan loan Rs 40.00 crore) from the Deposit Account leaving the balance of Rs 170.67 crore (56 *per cent*) in the Deposit Account. Even though the funds were available with State Government to ease its ways and means position, WBREDC had to incur a liability of Rs 18.19 crore as of March 2002 towards interest (at 14.5 *per cent*) on undrawn plan loan of Rs 166.00 crore.

The Government stated (September 2002) that action had been taken by WBREDC to utilise the fund released so far.

Instead of utilising fund for RE works, ZPs deposited Rs 21.66 crore in non-interest bearing local fund accounts

(ii) Out of Rs 136.00 crore drawn, WBREDC released Rs 94.56 crore to 16 Zilla Parishads (Rs 89.43 crore), Darjeeling Gorkha Hill Council (Rs 2.59 crore) and Siliguri Mahakuma Parishad (Rs 2.54 crore) for utilisation in works and the balance fund (Rs 41.44 crore) were utilised for the purpose of procurement of different items *viz.* transformers, capacitors, meters, isolators, cables etc. (Rs 40.60 crore) and meeting establishment expenditure (Rs 0.84 crore). Out of Rs 94.56 crore, ZPs utilised Rs 72.90 crore up to March 2002 and kept the balance fund of Rs 21.66 crore in the non-interest bearing Local Fund Account of the ZPs with the treasuries. WBREDC did not take any action to open bank accounts at the district level so as to deposit fund and to utilise the idle fund, if any, in term deposits.

The Government stated (September 2002) that action was under consideration to open bank account at the district level.

3B.4.1 Electrification of mouzas

Failure to achieve target by 29 to 89 *per cent*

(a) ZPs were to submit the schemes to WBREDC for rural electrification of a particular part of a block after conducting detailed survey of the mouzas[∞] in association with the Superintending Engineer (SE) of WBSEB. On receipt of the scheme, WBREDC was to sanction the schemes and allot the fund to ZPs. Erection orders for installation of lines were issued by WBSEB. Thus, proper coordination among ZP, WBREDC and WBSEB was a pre-requisite for rural electrification in time.

The table below indicates the target and achievement of electrification works as on 31 March 2002.

Name of the work	Target (in number)	Achievement (in number)	Percentage of achievement
Electrification of virgin mouzas	1226	865	71
Intensification of electrified mouzas	4863	1149	24
Revitalisation of mouzas	834	242	29
Energisation of shallow tube wells	2956	313	11

It would be seen from the above table that the targets of rural electrification had remained substantially unachieved due to lack of co-ordination among the WBREDC, WBSEB and ZPs, unpreparedness and lack of interest of the consumers.

While accepting the fact the Government/ Board stated (September 2002) that initial problems of rural electrification had since been resolved through co-ordination.

(b) WBREDC decided (January 2001) that 219 mouzas in Bankura district with a population of less than 100 would be electrified by Solar House Lighting (SHL) system as electrification through grid power would not be economically viable. But the Company took up (February 2001) electrification of 12 such mouzas at an estimated cost of Rs 35.43 lakh. Out of this only one mouza was energised (August 2001) at a cost Rs 1.50 lakh and works in balance 11 mouzas were in progress (August 2002). The Government/ Board accepted (September 2002) the audit observation.

(c) In Burdwan district, five mouzas already electrified under MPLAD® schemes were again included in the sanction order and Rs 22.44 lakh were remitted to Zilla Parishad up to March 2001. The amount was neither refunded nor adjusted by ZP against the cost of subsequent schemes of that district.

[∞] Mouza is the administrative unit in the lowest rung identified by a Jurisdiction Ledger Number maintained by Land Revenue Authorities

® Member of Parliament Local Area Development Fund

The Government/ Board stated (September 2002) that inclusion of the mouzas for both the schemes was inadvertently made and the adjustment of the fund would be made on receipt of the completion report of the sanctioned scheme.

3B.5 Restructuring of distribution activity into profit centres

Shadow profit & loss account was not effective to evaluate the performance of distribution zones

Five existing Distribution Zones[∞] were to be converted into Distribution Profit Centres (DPCs). Shadow profit and loss accounts of the DPCs had been prepared for nine months ending 31 December 2001 which exhibited net loss aggregating Rs 361.67 crore. But the accounts did not disclose the basis of allocation of income and expenditure. In order to depict the actual position of a Zone, the details of distribution network, number of consumers with connected load, manpower available should have been identified zone wise and income and expenditure should have been worked out accordingly. This would have helped WBSEB in identifying the areas of concern for taking remedial measure. In the absence of above information, the shadow profit and loss account hardly served any purpose to evaluate the revenue earning potential of each DPC.

The Government/ Board stated (September 2002) that shadow profit & loss accounts were prepared on some estimated basis as the actual figures were not readily available.

3B.6 Energy audit to reduce T & D losses

As per revised schedule (April 2002), WBSEB was required to complete 100 *per cent* metering up to 11 KV by September 2002 and to operationalise energy audit at 11 KV level by 31 December 2002 as well as to reduce T&D losses to 20 *per cent* by 2005.

Delayed action to effect energy audit

Against this target, WBSEB placed a letter of intent only in March 2002 on Secure Meter Limited (SML), Udaipur for procurement, installation of 4047 energy meters by January 2003 and preparation of energy Audit Report within a period of two years from the date of installation of equipment at a total cost of Rs 49.50 crore. PFC[ℜ] sanctioned (January 2001) Rs 32.60 crore for this purpose, of which only Rs 4.89 crore were drawn by WBSEB till March 2002. As of August 2002, SML completed the supply of 4047 meters, of which only 160 meters were commissioned.

Thus, due to delay in placing the order the operationalisation of energy audit by December 2002 as envisaged in MOU would not be feasible.

[∞] Kolkata, Midnapore, Berhampur, Siliguri and Burdwan
[ℜ] Power Finance Corporation Limited

3B.7 Transfer of thermal units to WBPDCL

The State Government transferred STPS and BTPS to WBPDCL with effect from April 2001 subject to the condition that the transfer of assets and liabilities, manpower etc. would be completed by December 2001.

Revaluation of assets of STPS and BTPS was yet to be completed

It was noticed in audit that WBPDCL entrusted the work of preparation of Balance Sheets and valuation of assets and liabilities of BTPS and STPS to S. R. Batliboi and Company (SRB), Chartered Accountants at a total fee of Rs 22.00 lakh. SRB revalued (December 2001) the fixed assets of these units at Rs 609.46 crore on net replacement cost basis. However, WBSEB did not accept (January 2002) the valuation and claimed Rs 2900.00 crore as replacement cost of these two powers stations, which was again not accepted by WBPDCL. The State Government ultimately constituted (March 2002) a Committee to make a detailed study of the valuation and to submit their report within a month. The report was, however, awaited (September 2002).

As regards employees, no action was taken to assess afresh the requirement of manpower of the transferred units and to absorb the employees of BTPS and STPS in WBPDCL so far (September 2002).

The Government/ Board stated (September 2002) that the matter of valuation of assets and liabilities of BTPS and STPS had been referred to WBERC for advice before taking decision and the process of transfer of employees being time consuming would be completed within a few months.

3B.8 Securitisation of CPSUs dues towards purchase of power

As per the scheme of securitisation, liabilities of the WBSEB of Rs 1757.40 crore comprising principal of Rs 1327.17 crore and 40 *per cent* of late payment surcharge (LPSC) i.e. Rs 430.23 crore to CPSUs as on 30 September 2001 would have to be liquidated by one time dispensation through issue of bonds carrying interest at the rate of 8.5 *per cent* per *annum* and WBSEB would not keep any amount of claim against current bills unpaid.

In order to meet this obligation, WBSEB estimated (July 2001) to increase its revenue generation under the following heads :

(a) Rs 420 crore per *annum* through tariff revision for 2001-2002;

(b) Rs 574.44 crore per annum by enhancing the realisation from consumers and Rs 228 crore by reducing expenditure towards overtime, office expenses etc; and

(c) Rs 140 crore by enhancing the security deposit from low and medium voltage consumers.

Lack of monitoring of the dues recoverable from major consumers

It was noticed in audit that no effective step was taken to increase its revenue except an increase of Rs 200 crore by tariff revision. Moreover, the WBSEB had an overdue amount of Rs 927.89 crore realisable from CESC Limited[ς] (Rs 750.88 crore), other State Electricity Boards and licencees (Rs 119.03 crore) and disconnected consumers (Rs 57.98 crore) as of June 2002. Had WBSEB taken appropriate steps to realise these dues, the amount for issue of bonds would have been reduced substantially. No bond was, however, issued so far (September 2002).

The Government/ Board accepted (September 2002) the fact of irregular payment of dues by CESC Limited. They further added that with the introduction of Indian Electricity (West Bengal Amendment) Act, 2001 from July 2002, the position of revenue realisation would improve.

3B.9 Timely payment of subsidy

On the recommendation (December 2001) of WBERC, the State Government released Rs 150 crore to WBSEB as subsidy for 2000-2001 (Rs 50 crore) and 2001-2002 (Rs 100 crore). However, the State Government was yet to liquidate the outstanding subsidy of Rs 295.64 crore accumulated till March 2000.

3B.10 Metering to all consumers

(a) MOU envisaged 100 *per cent* metering in consumers premises by December 2001 which was revised to December 2002. In order to achieve this target, WBSEB did not assess the total requirement of meters. Instead, WBSEB procured 8.60 lakh meters on ad hoc basis during May 2000 and March 2002. However, there was nothing on the record to indicate the actual number of meters installed in the consumers premises. As a result, the actual achievement could not be ascertained in audit. In reply the Government indicated (September 2002) that during May 2000 to February 2002 the Board installed 9.01 lakh meters (New : 5.88 lakh, Replacement : 3.13 lakh) in consumer premises, while 0.73 lakh consumers were awaiting connection as of February 2002.

(b) WBSEB invited (May 2000) tenders for procurement of 4.70 lakh single phase meters required for clearing all domestic connection pending up to May 2000. Against the estimated cost of Rs 34.77 crore, PFC sanctioned (January 2001) Rs 27.80 crore as loan being 80 *per cent* of the project cost.

Unnecessary borrowing of fund with interest liability of Rs 5.42 crore

Subsequently, at the instance of the WBSEB, the loan was reduced (December 2001) to Rs 22.06 crore on the basis of actual procurement of 3.33 lakh meters while procurement of 0.97 lakh meter was included under APDP Scheme. The amount of loan was drawn in July 2001 (Rs 20.35 crore) and February 2002 (Rs 1.71 crore).

[ς] The matter regarding non payment of dues by CESC Limited has been discussed in paragraph No. 4B.1.1 infra.

It was observed (June 2002) that WBSEB procured 3.33 lakh meters at a cost of Rs 27.60 crore by obtaining Rs 22.06 crore as loan from PFC whereas it realised Rs 33.30 crore from the prospective consumers (at the rate of Rs 1000.00 per consumer) in advance. In addition, WBSEB claimed Rs 7.50 crore from WBREDC in February 2001 towards cost of one lakh meters and received Rs 4.00 crore (December 2001 and April 2002) against supply of 0.72 lakh meters (June 2002).

Had WBSEB planned to procure meters out of fund received from the consumers and WBREDC without resorting to borrowing fund from PFC, it could have avoided payment of quarterly interest of Rs 2.29 crore up to 31 July 2002 alongwith a further liability of Rs 3.13 crore on this account to be paid by July 2006.

In reply the Government/ Board stated (September 2002) that the system of realisation of the cost of meters from the consumers had been withdrawn from early part of the year 2001 and fund was not available. The contention is not acceptable as the system was withdrawn with effect from 15 September 2000 for future new connections only and amount in question (Rs 33.30 crore) received from consumers before September 2000 could have been used by the Board for procurement of meters.

3B.11 Operation of Accelerated Power Development Programme (APDP)

The Accelerated Power Development Programme (APDP) envisaged that 50 per cent of the cost of the approved scheme would be provided from APDP fund (25 per cent as loan and 25 per cent as grant) and the balance 50 *per cent* would be met from internal sources or loans from financial institutions, PFC and REC or suppliers' credit. Such fund would be treated as 'earmarked' and over and above the normal central plan allocation to the State Government who would release such fund to the power utilities within a week of its receipt.

The State Government received (May 2001) Rs 43.50 crore under APDP against eight schemes submitted (January 2001) by WBSEB with an estimated cost of Rs 424.08 crore.

Scrutiny of records revealed the following points :

- Government of India released (May 2001) Rs 24.90 crore as plan loan (Rs 12.45 crore) and plan grant (12.45 crore) to the State Government for renovation, modernisation and uprating (RM&U) of Jaldhaka Hydel Project so as to increase the generation by 57.6 MU per *annum*. The work was to be completed by October 2003. The State Government, however, diverted (February 2002) Rs 10.00 crore as loan to WBPDCL for utilisation in their renovation and modernisation works at Kolaghat Thermal Power Station and released Rs 14.90 crore (loan : Rs 7.45 crore and grant : Rs 7.45 crore) to WBSEB in August 2001.

Renovation work of a hydel project was being delayed resulting in interest burden of Rs 0.78 crore

However, the WBSEB engaged Mecon Limited as a consultant for the project only in February 2002 at a cost of Rs 0.94 crore. Mecon was to submit its report by October 2002. No other work was undertaken so far (September 2002). This reflected WBSEB's inertia to utilise the borrowed fund for the completion of the RM&U work for increasing the generation capacity. As a result, the Board had to bear a liability of interest of Rs 0.78 crore up to March 2002 (12 per cent on Rs 7.45 crore) without any benefit accruing to it. In reply the Government/ Board indicated (September 2002) their expectation to place the order for execution of the RM&U work within December 2002.

- During 2000-2001 the Ministry of Power, Government of India selected Bidhannagar 'D' circle, 24 Parganas (South) 'D' circle and Howrah 'D' circle of WBSEB for developing into ideal circles with APDP fund. Accordingly, Government of India released (May 2001) Rs 18.60 crore towards 50 *per cent* grant (Rs 9.30 crore) and 50 per cent loan (9.30 crore) against two schemes *viz* meters for domestic consumers (Rs 3.60 crore) and meters, capacitors and distribution/ transmission (Rs 15.00 crore). Though the terms and conditions, of APDP envisaged transfer of fund to WBSEB within seven days, the State Government issued the orders on 1st August 2001 for transferring the amounts to WBSEB. The amounts were credited on 8 August 2001 (loan) and 20 August 2001 (grant) in the Reserve Bank of India, Account No. 1 of WBSEB.

WBSEB utilised Rs 3.60 crore towards reimbursement of cost of 0.97 lakh meters procured for these circles till date (August 2002). But utilisation of these meters were not on record. The balance amount of Rs 15.00 crore remained unspent with WBSEB so far (August 2002).

Conclusion

There were delays in implementation of power sector reform programme by Government of West Bengal with reference to the commitments made in the MOU. The process of speeding up the power sector reforms could not achieve required momentum. Government of West Bengal need to take effective steps to speed up the implementation of the reform as per the MOU.