

**SIXTY-EIGHTH REPORT  
PUBLIC ACCOUNTS COMMITTEE  
(1981-82)**

**(SEVENTH LOK SABHA)**

**CENTRAL RAILWAY—IDLING OF IMPORTED  
INVERTORS AND DEPOSIT WORKS ON RAILWAYS**

**MINISTRY OF RAILWAYS**



*Presented in Lok Sabha on \_\_\_\_\_  
Laid in Rajya Sabha on \_\_\_\_\_*

**LOK SABHA SECRETARIAT  
NEW DELHI**

*December, 1981 Akrabha (ma, 1903 (Saka)*

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CORRIGENDA

to

68th Report of the Public Accounts Committee (7th Lok Sabha) on Central Railway-Idling of Imported invertors and Deposit works on Railways.

<u>Page</u>	<u>Para</u>	<u>Line</u>	<u>For</u>	<u>Read</u>
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#### PART II\*

Minutes of the Public Accounts Committee (1981-82) held on

4-9-1981 (AN)  
8-9-1981 (AN)  
14-12-1981 (AN)

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\*Not printed. One cyclostyled copy laid on the Table of the House and five copies placed in Parliament Library.

(i)

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(1981-82)**

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2. Shri D. C. Pande—*Chief Financial Committee Officer*
3. Shri K. K. Sharma—*Senior Financial Committee Officer*

## INTRODUCTION

I, the Chairman of the Public Accounts Committee, as authorised by the Committee, do present on their behalf this Sixty-eighth Report of the Public Accounts Committee (Seventh Lok Sabha) on paragraphs 11 and 19 of the Advance Report of the Comptroller & Auditor General of India for the year 1979-80, Union Government (Railways) relating to (i) Central Railway—Idling of imported invertors and (ii) Deposit Works on Railways.

2. The Report of the Comptroller & Auditor General of India for the year 1979-80, Union Government (Railways) was laid on the Table of the House on 12 March, 1981

3. Chapter I of this Report deals with the purchase of seven sets of thyristor equipment (invertors) from a West German firm for installation at the traction sub-stations of the Central Railway for conversion of surplus electrical energy generated when the trains are moving. Chapter II deals with the deposit works on Railways.

4. In Chapter I of this Report Committee have drawn attention to avoidable delays in awarding the contract, approving design details, commissioning of the invertors etc. The performance of five invertors which have been installed is far from satisfactory and the remaining two invertors have not yet been commissioned. There has also been delay in fitting regenerative braking equipment in the goods as well as passenger locomotives. As a result, the value of regenerated energy based on 1979-80 generation costs is only about Rs. 3.5 lakhs per annum as against the value of regenerated energy estimated at Rs. 40 lakhs per annum based on 1968 costs.

5. Audit Paragraph 19 deals with the Deposit Works executed by Railways for other Government Departments, Municipalities and other bodies, private parties and individuals. The Committee have expressed surprise that inspite of the rules providing that no deposit works should be undertaken by Railways without detailed estimates of the work accepted by the party or the estimated amount deposited in advance, an amount of Rs. 336.52 lakhs is outstanding against the parties on whose behalf deposit works were undertaken by the Railways and 37% of this amount is outstanding for more than three years. The Committee have recommended that in all cases of excess expenditure incurred without obtaining the prior concurrence of the party or getting the amount deposited in advance,

individual responsibility for the failure should be fixed and remedial measures taken so that such lapses do not recur.

6. The Committee examined Audit Paragraph Nos. 11 and 19 at their sittings held on 4th and 8th September, 1981. The Committee considered and finalised the Report at their sitting held on 14 December, 1981. Minutes of the sittings of the Committee form Part II\* of the Report.

7. For reference facility and convenience, the observations and recommendations of the Committee have been printed in thick type in the body of the Report, and have also been reproduced in a consolidated form in Appendix to the Report.

8. The Committee would like to express their thanks to the Officers of the Ministry of Railways (Railway Board) for the cooperation extended by them in giving information to the Committee.

9. The Committee place on record their appreciation of the assistance rendered to them in the matter by the Office of the Comptroller and Auditor General of India.

NEW DELHI  
December 16, 1981

*Agrahayana* 25, 1903 (S)

SATISH AGARWAL

Chairman  
Public Accounts Committee

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## REPORT

### CHAPTER I

#### CENTRAL RAILWAY—IDLING OF IMPORTED INVERTORS

##### *Audit Paragraph*

1.1 For the DC (Direct Current) traction system of the Railway 110 KV AC (Alternating Current) electric supply obtained from the main grid is converted into 1500 VDC for feeding into the overhead wires from which the DC locomotive, while running on 'plain' or 'up-gradient', draws energy. On down gradient, the locomotive needs no supply from the overhead wires as it develops energy, which through its regenerative mechanism is converted into DC energy. While bulk of this regenerated energy is absorbed for traction requirements by other trains in the section, if any, the surplus left over has to be either converted into AC energy or dissipated at the sub-station.

1.2 Keeping in view the anticipated increase in traffic and the use of heavier locomotives in future as also the estimated value (Rs. 40 lakhs per annum) of the regenerated energy the Administration in consultation with the Research, Designs and Standards Organisation (RDSO) and the Ministry of Railways (Railway Board) considered (December 1967 and May 1968) it desirable to go in for rectifiers with inversion facilities in replacement of the existing overaged rotary converters at the Kasara Sub-station. Accordingly the Administration invited (July 1968) tenders for such rectifiers and decided (November 1969) to accept the offer of firm 'Y' for supply of silicon rectifiers with thyristor equipment. Order for supply and erection of two sets of silicon rectifiers with thyristor equipment (cost Rs. 45.26 lakhs including foreign exchange of Rs. 20.16 lakhs) was, therefore, placed (November 1969) on firm 'Y', the latter was to obtain these from its West German collaborator—firm 'X'—who (as admitted by it in June 1973), had not supplied such equipments previously.

1.3 In September 1970, the Ministry of Railways (Railway Board) also placed a direct order on firm 'X' for five sets of thyristor equipment (cost Rs. 9.39 lakhs each in foreign exchange) along with various other components and assemblies required for fabrication of rectifiers for traction sub-stations. These equipments were to be supplied to the Administration for erection through firm 'Y' to whom a separate contract for this purpose was awarded in October 1970 by the Ministry of Railways (Railway Board).

1.4 Six, out of the seven invertors (thyristor equipment) received at Bombay in July 1974, were erected and commissioned between March 1977 and June 1978, by which time, however, their warranty period had expired.

1.5 The remaining one could not be erected so far (December 1980) because of its developing extensive damages/corrosion due to seepage of water and long storage on account of which firm 'X' had declined to take any responsibility to replace or repair the equipment.

1.6 The invertors, after commissioning, went out of order frequently due to failure of several components. After more than a year of their remaining out of commission since various dates during June—December 1978, five invertors were recommissioned between December 1979 and February 1980. While the working of the recommissioned units is yet to stabilise (December 1980), one invertor has been lying out of commission continuously since November 1978.

1.7 Inspite of the delay of 3 to 4 years in commissioning the equipments because of various shortcomings/defects in them, neither their warranty period could be got extended nor could they be got/rectified/repaired by the supplier to ensure their reliable and satisfactory working. Inability to work these equipments over the years had resulted in non-materialisation of the contemplated conversion of the surplus regenerated DC energy, if any, into AC for achieving economy in operation. The investment of Rs. 1.04 crores on five invertors had thus remained unfructified for about six years; investment (Rs. 0.41 crore) on the remaining two continues to remain unfructified (December 1980).

1.8 The Administration stated (January 1981) that, though the supplier firm 'X' had not agreed to extend the warranty period, all efforts were being made to persuade it and its Indian licensee (firm 'Y') to take necessary measures to ensure reliable and satisfactory working of the equipment.

[Para 11 of the Advance Report of the Comptroller and Auditor General of India for the year 1979-80, Union Government (Railways)]

#### *Objective behind importing invertors*

1.9 When asked about the objective behind the decision of the Railway Administration to go in for rectifiers with inversion facilities in replacement of the existing rotary converters at the Kasara Sub-station, the representative of the Ministry of Railways (Railway Board) stated :

“The objective is that current at a high voltage when taken from the mains from the power house is stepped down to a low voltage and

converted where necessary from AC to DC. Rotary Convertor was the device which was installed for converting the incoming AC supply to the required DC supply for the traction at that time. It was the device which was also capable of reconverting the surplus energy which could be generated when the trains were moving. This was a measure of economy so that the surplus power could be reutilized. At the time when the decision was taken to replace it, this had become overaged. They had been installed in 1929 and a proposal for their replacement was mooted several times during the period (1963—69). Unfortunately, at that time, this type of equipment was not being manufactured and in fact it had become outdated. It depended upon the system and since a rotary machine was involved efficiency was very poor. So, the Railways thought it desirable to go in for more modern technology for this purpose. There were two alternatives available to the Railways. One was the mercury arc rectifier and the other was silicon diode system. The mercury arc rectifier was one which had presented certain problems. It could function on the principle of two separate chambers being provided in each set. One for converting current incoming into the line from AC to DC and the other chamber for reconverting it back when it was surplus or alternate by a single tank to perform both. It depended upon the vacuum. We found that it was frequently becoming defective because of frequent vacuum leakage taking place. For repair this had to be sent back to the manufacturer. The experience was not satisfactory. In fact, in 1972, the same equipment had failed very miserably and the PAC had commented on it very adversely. Therefore, the Railways had no alternative but to go in for third technology which was silicon diode. This technology comprised of two systems. One was silicon rectifier which was meant for converting the current AC to DC and the other thyristor invertor for inverting DC current into AC. As far as silicon rectifier was concerned, that had been developed indigenously by public sector units. It was only the application of the silicon diode in the invertors, that is for regenerating current that we had to depend on technology abroad. We had a number of our advisers abroad. We had our Deputy Railway Adviser in Paris and one was in London. We wrote to them and they had informed us that the technology about silicon diode had advanced sufficiently in those countries. Since we were to go ahead and instal a number of additional sub-stations, we thought it would be desirable to have the latest equipment technology, the silicon rectifier and thyristor invertor. Therefore, the decision at that time was taken to adopt silicon diode technology in the rectifier and in the invertor modes."

1.10 According to the Ministry of Railways (Railway Board) the expected life of the rotary convertors installed in 1929, was between 25 to 30 years. In reply to a query as to why the Railway Administration did not start any planning with regard to their replacement prior to 1959, the witness stated :

"I have no special knowledge about the position before 1961."

*Placement of orders for invertors*

1.11 Audit para points out that Administration in consultation with the Research, Designs and Standards Organisation (RDSO) and the Ministry of Railways (Railway Board) considered (December 1967 and May 1968) it desirable to go in for such rectifiers. The Committee desired to know the reasons for the delay in taking the final decision from 1961 to 1968. To this the representative of the Ministry of Railways (Railway Board) stated in evidence before the Committee :—

"From 1961 onwards we were contemplating replacement, finding a suitable replacement for the rotary convertor. We started thinking in terms of a new technology. Firstly, we were thinking of mercury arc rectifier for a long period. This new technology came much later.

As I mentioned to you, the technology has been very much advanced and developed in Europe. Only because they do not have DC system for their traction on large scale, they have not developed this. So, they have to develop it especially for us."

1.12 In a note furnished to the Committee, the Ministry of Railways (Railway Board) have explained the position thus :

"The work of replacement of rotary convertors of 2500 KW capacity at Kasara with 3000 KW equipment was proposed by Central Railway in 1961, to be included in 1962-63 Works Programme. The work was, however, approved by Board for inclusion in Pink Book for 1963-64.

Tenders were invited in May, 1964. The offers received included Silicon rectifiers, while equipment for inversion was only of Mercury Arc type. However, after examination of the tenders it was found that none of the offers were conforming to specification. In view of this, it was decided in November, 1965, to invite fresh tenders.

In the meantime Central Railway had two major tenders in hand for 4 sets of equipments for DC Traction Sub-stations, with inversion

facility. These tenders were opened in June/July, 1965. The offers received were only for Mercury Arc type equipment for inversion mode of working. Orders were placed in June, 1967.

Keeping in view the developments then in process of thyristor equipments for inversion, and after consulting RDSO, Central Railway re-invited tenders for equipments for Kasara substation in July, 1968, to be opened on 15-11-68. It was the view to consider offers for thyristor equipment as also Mercury Arc equipments for inversion mode working, on merits."

1.13 In response to tender enquiries made in July 1968 for equipment for Kasara Substation, the following offers were received by the Railway Administration :—

Name of the firm	Type of eqpt.	Remarks
1. M/s. NGEF Ltd.	Silicon (with thyristor inverter of AEG make)	Silicon rectifier with thyristor inverter.
2. M/s. Rajc Industrial Engineering Combine Pvt. Ltd.	Mercury Arc of Secheron make	Mercury arc type equipment (utilising the same tank) for rectification as well as for inversion.
3. M/s. HE(I)	Silicon (with thyristor inverter of AEI make).	Silicon rectifier with thyristor inverter.
4. M/s. BHEL	—	Only 110 KV circuit breakers (Incomplete offer).
5. M/s. Ruttonshah Pvt. Ltd.	Silicon	Only Silicon rectifiers (Incomplete offer).

1.14 According to the minutes of the proceedings of Tender Committee of Central Railway which considered all these tenders the offers of M/s. NGEF Ltd. BB, M/s. Raje Industrial & Engineering Committee Pvt. Ltd. BB and M/s. Heavy Electricals (India ) Ltd., Bhopal were more or less complete.

1.15 The order for supply and erection of two sets of silicon rectifiers with thyristor equipment (cost Rs. 45.26 lakhs) was placed (November 1969) on M/s. NGEF who were to obtain the quipment from M/s. AEG of West Germany. To a query as to why the BHEL's tender was not accepted the witness replied :

"Their rates were higher by about Rs. 8 lakhs for two units, each unit cost about Rs. 20 lakhs."

1.16 Asked whether any negotiations were held with BHEL for reducing the cost they had mentioned in their tender, the representative of Ministry of Railways (Railway Board) stated :

"We did talk to BHEL for few invertors. They said that they were not interested in invertor equipment."

1.17 In a note furnished to the Committee subsequently, the Ministry of Railways (Railway Board) have however, stated :

"The purchase was to be financed under IDA credit, where negotiations are normally not permitted. No negotiation was held with BHEL on prices in their tender for Kasara substation."

1.18 When asked if this particular equipment was supplied by the German firm M/s. AEG to any other country, the representatives of Ministry of Railways (Railway Board) replied :

"Not for any sub-station."

1.19 The Committee desired to know the consideration which weighed with the Railway Board in deciding to obtain invertors from West German firm which had not supplied such equipment previously. In their reply, the Ministry of Railways (Railway Board) have stated inter-alia in a note :—

"The technology of silicon controlled rectifier was not new when Indian Railways were considering the same for invertor equipment. Two such sub-stations with silicon controlled rectifiers (Thyristors) were already working in USSR and France. M/s. AEG were already in the field for Thyristors and they had supplied Thyristor equipment for industrial uses. Being conversant with such technology, the firm was considered competent to supply Thyristor invertors for traction sub-stations of Indian Railways. Here it may be stated that Central Railway had entered earlier into a Contract with M/s. NGEF, a public sector undertaking of the Karnataka Govt., licensee of M/s. AEG, West Germany with whom they had a close collaboration."

1.20 The Committee desired to know whether efforts were made to import this technology on a Government to Government basis from France and USSR where it was actually being used in railway traction. The representative of Ministry of Railways (Railway Board) stated during evidence :

"No. We depended on M/s. NGEF."

He added :

"Our enquiries in France revealed that they were not anxious to transfer the technology to India, due to the distance involved."

1.21 In reply to a query whether the Railway Administration have had any correspondence with any firm in France the witness stated :

"We depended on our Railway Adviser there."

1.22 The witness further stated that in a letter dated 16 November, 1968, the Deputy Railway Adviser in Paris had mentioned :

"No French manufacturer is keen to instal the invertors in India at present. The reason given is that it has not yet established itself fully and that they cannot undertake final adjustments and modifications at such a distance economically."

1.23 The Committee enquired whether there was anything on record to suggest that any firm in France at any point of time refused to transfer this technology to the Indian Railways, the witness stated :

"IDA tender is by law global. The French had every opportunity to quote, but they did not. The tender was advertised according to the IDA rules and World Bank procedures, but the French did not quote. This was the final proof of their lack of interest."

1.24 In a subsequent note furnished to the Committee the Ministry of Railways (Railway Board) have stated :

"While no specific attempt in this direction was made, a reference had earlier been made to the Railway Adviser in London enquiring about experience in Europe of thyristor invertors in traction substations. From the replies received from the Deputy Railway Adviser Paris, and from Deputy Railway Adviser, Berne, it emerged that the following firms who were contacted did not have confidence in being able to supply and commission their equipment economically in India since such commissioning was bound to involve adjustment having to be carried out repeatedly in values of various components, a difficult process for firms based in Europe :

- (i) Jeumont Shneider, France.
- (ii) Alsthom, France.
- (iii) Siemens 'West Germany.
- (iv) Brown Boveri, Switzerland.
- (v) Secheron, Switzerland."

1.25 When asked whether the Soviet manufacturers were contacted for this purpose, the witness stated :

"As the equipment was being bought under IDA loan foreign exchange, the USSR was not qualified to bid for the tender or quote against that tender."

1.26 The Committee wanted to know why no efforts were made to have transfer of this technology from USSR on Government to Government

basis. The representative of the Ministry of Railways (Railway Board) stated during evidence :

"We did not try that because we ourselves were not in a position to develop and manufacture and we had to depend upon private manufacture."

1.27 Following are the extracts from the minutes of the sitting of the Tender Committee of Central Railway which did not recommend (April, 1969) acceptance of offer of M/s. NGEF in collaboration with M/s. AEG for supply, erection, testing and setting to work of 2 units of 3000 KW rectified sets in Traction sub-station at Kasara :

"The Tender Committee noted that references were made to the Rly. Adviser abroad to find out whether silicon rectifiers were being used in Traction sub-station on the Rly's abroad for regeneration purposes, with a view to get correct idea of the use of controlled silicon rectifiers in traction sub-station service. Replies received from Rly. Advisors indicated that for such heavy duties, controlled silicon rectifiers have not been used in the Railway abroad. When M/s. NGEF Ltd., BB were asked to submit the list of places where controlled silicon rectifiers have been used for Traction sub-station service, they have submitted a list of rolling stock and trolley buses only and have not given reference to any use on sub-stations. The tender Committee further noted that the Railway Board vide their D.O. letter No. F (Ex 5 (238)/65 of 27-1-66 advised this Rly., that for the purpose of Kasara sub-station, where regenerative power has to be dealt with, the Rly., should employ only proved apparatus and not take unnecessary hazards. In view of the above, the tender committee do not recommend the acceptance of the offer of M/s. NGEF Ltd., BB whose equipment for regeneration viz. controlled silicon has not proved itself/ Traction sub-station service and it would be risky to go in for the same particularly when appreciable amount of foreign exchange is involved."

1.28 The attention of the representative of the Ministry of Railways (Railway Board), was invited to the minutes of the proceedings of the Tender Committee of Central Railway and they were asked how these were considered as recommendation by the tender Committee to Railway Administration to accept the offer of M/s. NGEF in collaboration with M/s. AEG of West Germany. In reply, the representative of Ministry of Railways (Railway Board) stated before the Committee :

"It is true they have opposed it. They recommended the offer of mercury arc rectifiers. It was in the Board's office that the decision was reversed."

1.29 When asked as to why the Railway Board went against the recommendations of the tender committee and accepted the offer of M/s. NGEF the witness replied :

"If we had accepted the recommendations of the tender committee we would not have had any system working at all. Today's experience is that mercury arc rectifiers are totally unreliable for this purpose."

1.30 In a subsequent note furnished to the Committee, the Ministry of Railways (Railway Board) have given the following reasons for placing an order on M/s. NGEF for silicon rectifier and thyristor equipments even though the tender committee of Central Railway had not recommended the acceptance of offer of this firm :

- "(i) The offer of M/s. NGEF was the lowest of the 3 complete offers.
- (ii) The thyristor equipment with separate rectifier and inverter element had a decided advantage over the mercury arc rectifiers for following reasons :
  - (a) There is no disconnections and reconnection of the substation, which is required if the same mercury arc tank is used for rectifier/inversion operation. Again should the mercury tank fail, the entire equipment will be put out of commission, whereas even if the thyristor equipment fails, the sub-station will satisfactorily function with the rectifier alone working to keep the traffic moving.
  - (b) The circuit in the thyristor equipment is simpler compared to the complicated circuitry and a switching reconnection operation required for the mercury-arc equipment.
  - (c) The maintenance of semi-conductors is easier. In case of failure, components can be identified and replaced easily, whereas in the case of mercury arc equipment, sometimes the whole equipment has to be shipped abroad for repairs. The repair costs alone will be considerable, apart from long delays involved of 9 to 12 months.
  - (d) Mercury arc equipment are subjected to backfires, an inherent feature affecting the life of the equipment.
  - (e) Japan and Europe had largely changed over to semi-conductors. It was also understood that even M/s. Secheron had practically closed down manufacture of mercury arc equipment and were only maintaining workshop facilities for repairs. They were also switching over to thyristors and silicon rectifiers. The problem of maintenance was, thus, bound to assume immense proportions after some time.

- (f) Efficiency and power factor of semi-conductors equipment are higher, resulting in considerable annual savings.
- (g) Thyristors had been applied with success in large number of rolling stock as well as in the rolling mills. Two sub-stations in Railway application were in use with thyristors in Europe.
- (iii) It was observed that HE(I) L (now BHEL) had been lagging behind in the supply of various traction equipments to Railways against orders pending for sometime. Such delays were causing anxiety to Railway Board".

1.31 Asked whether the decision to go against the recommendations of the tender committee was approved by the Railway Board, the witness replied :

"It went through the Finance and it was approved by the Member concerned."

*Delay in supply and commissioning of invertors*

1.32 According to the Audit Para, in September, 1970, the Ministry of Railways (Railway Board) placed a direct order on M/s. AEG, West Germany for five more sets of thyristor equipment (cost Rs. 9.39 lakhs each in foreign exchange) along with various other components and assemblies required for fabrication of rectifiers for traction sub-stations. These equipment were to be supplied to the Railway Administration for erection through M/s. NGEF to whom a separate contract for this purpose was awarded in October, 1970 by the Ministry of Railways (Railway Board).

1.33 The Committee desired to know as to when the invertors were due for delivery and actually supplied by M/s. AEG, West Germany. In reply, the Ministry of Railways (Railway Board) have stated in a note :

"Five Nos. of invertors were to be supplied by M/s. AEG, Germany vide Railway Board's contract No. RB/Elect/1/1970 dated 24-9-1970. The contract specified that all shipments and foreign exchange payments were to be completed by 31-8-71. They were actually shipped in April, 1974. Before taking up the manufacture of invertor equipment, it was necessary to get their designs and drawings approved by RDSO. Preparation, submission, scrutiny and approval of drawings and designs for these sophisticated equipment took more time than anticipated."

Pending finalisation of the detailed drawings and designs of the complete invertor equipment, the Thyristor used in the invertor equipment were type tested in August in 1972 in the presence of

Dy. Rly. Adviser, Berne. Meetings were held by Dy. Rly. Adviser with the firm in September and October, 1972 regarding finalisation of test programme. Invertor power equipment was type tested in the presence of Dy. Rly. Adviser, Berne, in May, 1973. Test procedure for control equipment was finalised by RDSO, NGEF and AEG at Lucknow in June, 1973 and the same were tested in September 1973 in the presence of Dy. Railway Adviser. In March, 1974, clearance was given to the firm to ship all equipment. The equipment was finally shipped in April 1974.

The execution of the contract involved considerable amount of spadework by way of detailed collaboration between Supplier and the Railways in evolving designs, test procedures, etc. compatible to the local system conditions. It needs to be borne in mind that the equipment ordered was not one of mass manufacture but had to be specially custom-built.

Continually, efforts were made to get the drawings, designs and test procedures finalised as expeditiously as possible."

1.34 When asked about the reasons for delay in supply of invertors by M/S. AEG, West Germany, the representative of the Ministry of Railways (Railway Board) stated in evidence before the Committee :

"I admit this period was very long. But we must remember that, at the time we placed the orders, we were expecting the firm to develop the design and get the design approved by us. We were expecting them to develop the method of testing and get it approved by us. The process was considerably long. We had made a wrong estimate about the time frame within which the equipment could be delivered; it was our fault to say that the equipment would come within one years."

1.35 The Committee desired to know about the action taken by Railway Administration to obtain the drawing details expeditiously from the supplier. In reply, the Ministry of Railways (Railway Board) have stated in a note :

"The 7 invertors were ordered as follows :

- (i) order for two rectifiers and two invertors for Kasara dated 27-11-69.
- (ii) order for five invertors dated 24-9-70.

As per the contract for Kasara, the equipment was to be despatched by September 1972 and as per the contract for five invertors the equipment was to be despatched by August 1971.

The firm was continuously reminded to expedite submission of designs and drawings vide RDSO's telegrams dated 29-12-71, 13-1-72 and letter dated 5-2-72, and 8/11-6-73. Deputy Railway Adviser, Berne, followed up and held a meeting with AEG in August/September 1972. The matter was also taken up by Railway Adviser by addressing General Manager of T/s AEG a d.o. letter dated 25-9-72.

First lot of drawings were submitted by the firm in March 1972 and balance progressively by November, 1972. The drawings were revised by them based on comments of Railways/RDSO. Discussions were also held on various technical issues involved in designs, drawings and test schedules. The final drawings were progressively approved between 1973 and 1975."

1.36 To a query as to why it took the railway administration two years for according approval to and finalising the drawing details, the representative of the Ministry of Railways (Railway Board) replied, during evidence :

"May I submit that this type of test procedure are contained in this book running to 500 pages? All the tests have to be carried out."

1.37 The Ministry of Railways (Railway Board) have further stated in a note :

"It was necessary to have thorough scrutiny and get clarifications to various technical details. The firms' Engineers from AEG had to be invited for discussion and supplying necessary clarifications particularly since the Railways had no previous experience with thyristor equipment. A meeting was held in June 1973, with RDSO, after which designs, drawings and testing procedure and programme were finalised and approved.

It is pointed out that the entire equipment was not being imported from Germany. The power and control cubicles and HSCBs etc. were being imported. The other major, equipments such as invertor transformers, the associated rectifier and transformer, CTs, PTs, DCBs etc. were being supplied by M/s NGEF indigenously. While approving the drawings and designs of invertors, the technical parameters of all equipment required to be crosschecked.

In view of these and other comments above, it would be seen that the time taken by the Railways in approving the drawings was unavoidable."

1.38 According to the Audit para six out of the seven invertors (thyristor equipment) received at Bombay in July, 1974 were erected and commissioned between March 1977 and June 1978, by which time, however,

their warranty period had expired, the Committee desired to know the reasons for the delay in erection and commissioning of the equipment. In reply, the Ministry of Railways (Railway Board) have stated in a note :

"It is necessary to recall that the equipment ordered were for wholesale replacement of rotary convertors installed way back in 1929 and additionally for installing entirely new sub-station. The work had to be executed without any interruption to the existing traction power supply for running of trains, in a division where all train services are entirely run on electricity. A number of these sub-stations are located at isolated places some of which are hilly areas away from railway stations and some of them not even approachable by road. This resulted in some delay in construction of sub-station buildings and railway sidings. Further, the replacement of the old rotary convertors could be started only after commissioning and stabilised working of the new sub-stations on either side of the old sub-station so that reliability of traction power supply and normal train services could remain unaffected. Concurrently new and powerful WG/2 locomotives for which these additional sub-stations were being set up, had already arrived and were in use for hauling heavy goods trains on the ghat sections. In the circumstances, expeditious augmentation of the sub-station capacity was the paramount need of the day. Therefore priority had to be given to the commissioning of the rectifier sets and erection of the invertors was taken up in the second phase.

It may also be added that dismantling the old rotary convertors at existing sub-stations and installing the modern rectifiers which had been ordered, was a difficult job which had to be planned and executed carefully. Additionally, while replacing the rotary convertor sets at existing sub-stations each of which had two units in which one unit was a working unit and the other a standby, execution of the work was extremely difficult in view of the fact that while the first rotary convertor was being dismantled to make room for the new rectifier to be installed (involving amongst other things Civil Engg. modifications of foundations, basements, floors etc.) great care had to be exercised to ensure satisfactory working of the other rotary convertor (only one left) so as not to adversely affect the reliability and continuity of power supply.

"At some of the ghat sub-stations like Kasara, the work just could not be taken in hand early due to the fact that one of the adjoining sub-stations like TGR 2 had not stabilised in the working. Karasa sub-stations at the foot of the ghats is a vital kingpin in the NE ghats. No risk could therefore be taken in straightaway taking the work in hand at Kasara until both the adjoining sub-stations had fully stabilised".

1.39 In a subsequent note furnished to the Committee, the Ministry of Railways (Railway Board) have stated as follows :

"As per the inherent design, the invertor equipment can work only in conjunction with a matching rectifier. Accordingly, commissioning of the invertor equipment could be carried out only along with, or after the erection and commissioning of associated rectifier equipment. However, the work in hand on the Central Railway comprising of the Contracts on M/s NGEF and M/s BHEL included erection and commissioning of as many as 34 sets of rectifiers and 7 sets of invertors. The erection and commissioning of 14 rectifier sets in the new sub-stations was naturally given priority over erection of the balance 20 sets of rectifier equipment at the old sub-stations where these were to replace the working rotary convertors. Such a strategy was essentially necessary in the interests of reliable continuity of electric traction. Silicon rectifiers of indigenous make for traction sub-stations were installed and commissioned for the first time, so were the associated 110 KV switchgear. Heavier trains were also run. Accordingly, it was prudent that new sub-stations be brought into commission with Silicon Rectifiers and allowed to stabilise before the rotary convertors in the old sub-stations could be taken up for dismantling, without jeopardising train operation. Erection of invertor at each sub-station was undertaken after the rectifiers had been installed in the sub-station.

Taking these factors into account, out of the 14 rectifiers in new sub-stations, 4 rectifier sets were commissioned in 1973, another 6 in 1974, one in 1975 and 3 in 1976. Of the 20 rectifier sets installed in the old sub-stations which originally had rotary convertors, 4 were commissioned in 1974, 7 in 1975, 6 in 1976, and 3 in 1977. In other words in all, 4 rectifier sets were commissioned in 1973, 10 in 1974, 8 in 1975 and 9 in 1976 and 3 in 1977. This workload was very substantial and the progress by the two contractors is accordingly considered good.

The erection and commissioning of the invertors, which had arrived at site towards end of 1974, was taken up in 1975. One was erected in 1975, 3 in 1976 and 2 in 1977.

While 4 invertors had been erected by 1976, there was some unfortunate delay in their commissioning. AEG Engineers were required to come to India for the commissioning of first two invertors. This was specially in view of the fact that the tests done at the makers works were on laboratory scale with part equipment substituted by models. It was necessary to carry out performance and capacity tests of the

invertors under actual site condition; and presence of AEG Engineers to supervise these works was necessary.

The AEG Engineers arrived in India in February 1977, and commissioning of invertor at Tamabadmal and Oombermali substations was carried out in March and June 1977 respectively. RDSO was associated during this commissioning and all capacity and required type tests were also carried out under site conditions.

Thereafter the balance 4 invertors were commissioned in December 1977, March 1978, May 1978 and June 1978, by NGEF's local Engineers".

1.40 As regards the warranty periods for these invertors, the Ministry of Railways (Railway Board) have stated in a note:

"The warranty for two invertors for Kasara was in the form of security deposit. This was extended by the firm up to 30-9-1980.

For 5 invertors sets ordered on M/s AEG, the performance warranty was in the form of Bank Guarantee for 10% cost of the invertors. The bank guarantee expired on 30-6-77 as per the contract. The same was extended upto 31-3-78. Four invertors had been commissioned by that time at Tambadmal, Oombermali, Lower Bhore Ghat and Than sit substations.

In terms of order on M/s AEG, M/s NGEF (as Agents of M/s AEG) were to take up issues on behalf of Ralway. NGEF were accordingly requested on 7-12-77 to get the Bank guarantee (and waranty period) extended by M/s AEG for the 5 invertors beyond 31-3-78. The Commercial Director of the firm was reminded demi-officially by CE(C) Central Railway on 21-1-1978.

However, M/s NGEF vide their letter of 17-2-78, advised that M/ s AEG were not aggreable to extend the same beyond 31-3-78 with a plea that their guarantee had by then been in force for more than 6 years."

#### *Non-Commissioning of One invertor*

1.41 Audit para points out that one invertor could not be erected so far (December 1980) because of its developing extensive damages/corrosion due to seepage of water and long storage on account of which M/s AEG Tele Funken, West Germany had declined to take any responsibility to replace or repair the equipment. The Committee desired to know whether the 7th invertor had since been erected and commissioned. The Ministry of Railways (Railway Board) have stated in a note :

"The 7th invertor set has not so far been erected and commissioned; claims for damages have been lodged with Insurance Company and the claims are still to be finalised. Pending finalisation of Insurance claims, M/s NGEF are progressing repair of the invertor set at their works at Bangalore".

1.42 The Committee desired to know whether any investigation had been made to find out the reasons for the invertor developing damages/corrosions. In reply, the Ministry of Railways (Railway Board) have stated in a note :—

"After receipt of equipment at site, it was inspected jointly by M/s NGEF and Railway in February 1975 and no damage was noticed.

However, when the equipment was taken for erection in August 1978, it was again inspected jointly by M/s NGEF and Railways. At this time some damage was noticed which appears to be due to seepage of water/moisture. However, the equipment was covered under Insurance by M/s NGEF during the period of storage who had to take up the matter with the firm of insurance with regard to claims. It has not been possible to establish the cause of ingress of water/moisture and therefore, it is not possible to fix responsibility for the same".

1.43 When asked about the reasons for delay in the settlement of the claim for damages lodged with the Insurance Company, the Ministry of Railways (Railway Board) have explained the position thus :—

"It was in August 1978, when the equipment was being taken for erection, that the damages were noticed during joint inspection of the equipment by M/s NGEF and Railways. Since the insurance of the equipments were taken by NGEF it was for them to take up the matter with the Insurance Company. NGEF felt that the damage had occurred due to seepage of sea water during sea transit for which necessary insurance had been taken by Railways. At NGEF's request the Railways lodged claim with the Insurance Company in November 1978, who declined to accept any responsibility as no damage had been found during inspection immediately after arrival at port. At the same time the matter was taken up by M/s NGEF with their Insurance Company and is being followed up by them.

The settlement with the insurance company is to be done by M/s NGEF".

1.44 The Ministry of Railways (Railway Board) have however, stated that "The invertor is expected to be erected and commissioned by June, 1982".

1.45 To a query whether the cost of rectification has been assessed and who will bear the cost of rectification, the Ministry of Railways (Railway Board) have stated:

“Since the equipment during storage was covered by insurance policy taken by M/s NGEF, and the cost of rectification is to be borne by the firm, the same has not be assessed by the Railway”.

1.46 The invertor at Tambadmal was damaged in November, 1978 and the working of this unit is yet to be stabilised. When enquired about the external causes due to which this was damaged the Ministry of Railways (Railway Board) stated that the damage to the invertor was due to insulation of a number of control wires having been eaten away by vermins/rodents.

1.47 The Ministry of Railways have further stated in this connection that necessary components have been ordered by the Central Railway and after receipt of the same, the repair work will be taken in hand. The Committee desired to know why the spare parts procured alongwith the equipment could not be utilised for rectifying the damages instead of going for fresh procurement. In reply, the Ministry of Railways (Railway Board) have stated in a note:—

“The spares procured were such items as may be expected to fail in course of normal service, such as, control cards, and components etc. The special control spares and connections were not procured as initial spares. It, therefore, became necessary to import the required special wires (wrap wires) and the tools for making connections. The extra cost of these components materials for repair is estimated to about Rs. 10,000/- which has to be borne by the Railways, as the damage took place due to external causes after due commissioning of the equipment.

#### *Performance of invertors since Commissioning*

1.48 As regards the performance of commissioned invertors, the representative of the Ministry of Railways (Railway Board) stated during evidence:—

“Before recommissioning the performance was varying between four per cent to twenty per cent and it was varying from sub-station to sub-station also. After recommissioning, the availability improved upto 96% in the case of one and in respect of another the availability was something like 76%.”

1.49 The Committee desired to be furnished with a statement showing the performance of all the 7 inverters right from the date of their commissioning and recommissioning. In reply, the Ministry of Railways (Railway Board) have furnished the following statements :—

Sr. No.	Name of Sub-station	Commissioned on	Recom-missioned on	Number of days worked				Number of days worked			Total (From the date of commissioning till 31-8-81)
				1977	1978	1979	1980	1981- (Up to 31-3-81)	Before Recom-missioning	After Recom-missioning	
1.	Tembaldmal	30-3-77	—	96	3	7	—	—	106	—	106
2.	Combermai	10-6-77	18-2-80	116	—	—	42	100	116	142	258
3.	Lower Bhore Ghat..	27-12-77	25-2-80	—	155	—	293	103	155	396	551
4.	Thansit	10-3-78	29-12-79	—	21	55	274	197	77	471	548
5.	Thakurwadi	19-5-78	22-2-80	—	30	—	287	213	30	500	530
6.	Rasara	17-6-78	13-2-80	—	5	7	69	201	1	270	282
7.	PGR 3	—	—	—	—	—	—	Not commissioned yet.	—	—	—

1.50. Details of the percentage of the days for which the 5 invertors worked after commissioning and recommissioning as seen from the above statement, are as under:—

Name of Sub-Station	Before Recommissioning			After Recommissioning		
	Total No. of days	No. of days worked	Percentage	Total No. of days	No. of days worked	Percentage
Oombermali	982	116	11.8	561	142	25.3
Lower Bhore Ghat	789	155	19.6	554	396	71.5
Thansit	658	77	11.7	611	471	77.2
Thankurwadi	643	30	4.6	557	500	89.8
Kasara	605	12 <sup>+</sup>	2.0	566	270	47.7

1.51. The representative of the Ministry of Railways (Railway Board) further claimed that five of these invertors were functioning "Reasonably satisfactorily" since recommissioning. Initially, there were teething troubles.

1.52. The Committee desired to know as to why the Railway Administration did not go in for trial installation in the first instance because this was a new technology. In reply, the representative of the Ministry of Railways stated:

"There were two circumstances. One was that the requirement for replacement of some rotary convertors was essential and could not be deferred. Secondly, some new sub-stations were to be erected. New sub-stations could not be commissioned without invertors being provided simultaneously. Therefore, this became an essential requirement."

He added:

"You mentioned about the trial. You asked why not have one invertor. If you instal one, it would not function because while the train is running, the current is passing over a number of block, sections or sub-stations. If all are not clubbed, the regeneration would not be effective. Therefore, it was not enough if we could put it at only one sub-station and to put it on trial we had to have it at 7 sub-stations." In this connection, the Chairman, Railway Board stated:

"The original estimates were made by the Central Railway. They came to the figure of 13. Minimum 13 should be there for covering the entire length. It was decided in the Board at that time, that for the purpose of trial, the minimum adequate number will be 7 and not 13.

Therefore, it is almost 50% of the original exercise done by the Rail-way."

1.53. The Committee desired to know why against minimum requirements of 13 invertors as worked out by the Central Railway, an order was placed for 2 invertors initially. The representative of the Ministry of Railways (Railway Board) stated in evidence:

"The procurement of these invertors was phased out, depending upon the availability of funds and essentially of the requirements. First the Kasara sub-station had come up. Therefore, another five new invertors were to come up....We have a large number of items for replacement. But funds availability has always been a constraint to progressing physical replacements."

1.54. It is seen that one invertor was recommissioned in December 1979 and four in February, 1980. The Committee desired to know the cost involved in repair/rectification of the failed components for recommissioning the invertors. In a note furnished to the Committee in this regard, the Ministry of Railways (Railway Board) have stated:

"The defective components were replaced with the modified components by the firm free of cost. Since the entire work of investigation and rectification, including replacement of defective parts was done free of cost by the firm, the cost of parts/repairs/rectification has not been assessed."

1.55. The Ministry of Railways (Railway Board) have further stated in another note furnished to the Committee:

"Even though the warranty could not be got extended, the firm gave full assistance by way of technical investigations, ascertaining reasons for the problems faced, modifications/replacement of components and commissioning the first invertor, observations of the performance of the same and subsequently carrying out similar modifications and commissioning the other invertors free of cost."

1.56. According to the Ministry of Railways (Railway Board) the invertors were tested from August, 1972 to September, 1973 in the firm's works and witnessed by Deputy Railway Adviser, Berne.

1.57. The Committee enquired if the prototype tests had confirmed the design requirements of the invertors and whether the tests were carried out on laboratory scale or under actual conditions. In reply, the Ministry of Railways (Railway Board) have stated in a note furnished to the Committee:

"Schedules for prototype tests on various equipments were finalised for the equipment to conform to design requirements. However,

as regards control equipment, though it was available for testing in Germany, the rectifier cubicles, the rectifier and invertor transformers were manufactured in India and it was not considered feasible to transport them to Germany for carrying out complete prototype tests on the control equipment. The rectifier, rectifier transformer and invertor transformer had therefore to be substituted by suitable models. The tests on the control equipment were thus carried out under laboratory conditions/scale simulating the site conditions and the power equipment on image principle to the extent possible. The tests carried out accordingly on laboratory scale produced satisfactory results/observations and confirmed the design requirements of the invertors."

1.58. As regards the opinion/finding of the Deputy Railway Adviser, Berne, the Ministry of Railways (Railway Board) stated that the Deputy Railways Adviser, Berne, scrutinised the test results/observations and consulted RDSO regarding some of the observations while authorising despatch of the concerned equipment.

1.59. The Committee enquired during evidence whether the equipment received from M/s. AEG conformed to the specifications in terms of the contract. The witness replied in the affirmative. Asked why the equipment did not give satisfactory performance, when it conformed to the specifications, the witness replied:

"It conformed to the specification but it did not give performance."

1.60. When enquired whether adequate inspection and pre-commissioning and post-commissioning tests were carried out, the Ministry of Railway (Railway Board) have stated in a note:

"Adequate inspection and pre and post commissioning tests were carried out by the Engineers of M/s. AEG/Ngef in the presence of Railway Engineers."

1.61. The Committee desired to know as to how the shortcomings/defects in the equipments leading to their delayed commissioning, frequent breakdown, etc. remained undiscovered at the inspection stages. In reply, the Ministry of Railways (Railway Board) have stated in a note:

"The commissioning test reports are available. In the contract it is provided that the existing line voltage was 100 kv which was envisaged to be raised to 110 kv. However, the system voltage on the Tata-koyna-Railway grid continued to be 100 kv. and is yet to be raised to 110 kv due to the general power shortage the system voltage of 100 kv occasionally dipped to 93 kv. This could have contributed to overloading of some of the components such as synchronising transformer and knick amplifier which resulted in failure of some electronic printed cards. After prolonged investigation, the synchronising transformer

and knick amplifier were modified. The cards already damaged had to be replaced. After these modifications, the invertors started stabilising."

1.62. In this connection the representative of the Ministry of Railways (Railway Board) stated during evidence:

"The Tata group advised us that they would step up their voltage from 100 kv but they could not do till the equipment came."

1.63. The Committee enquired whether any contract was signed with the Tatas in this regard. In reply, the witness stated:

"They advised us that they will step up to 110 kv. When they step up to 110 kv, we will be capable of receiving 110 kv. It was to our benefit also, because we will also have generation sources. We have got our own power house. There also we are generating power. We also desired that it should go to 110 kv so that we get our spare parts easily."

1.64. The Committee desired to know about the constraints in gradually developing the system to 110 kv. In reply, the witness replied:

"We were depending upon grid. Maharashtra State Electricity Board, Tatas and others had to make investment. Tatas had not made by then. Now we understand that they are going ahead and 110 kv will be achieved very shortly."

1.65. The Ministry of Railways (Railway Board) have since furnished a note on voltage of Railway-Tatas-MSEB system which is reproduced at Appendix-I.

1.66. The Committee desired to know why the eventuality of delay in raising the line voltage could not be foreseen. In reply, the Ministry of Railways (Railway Board) have stated:

"Possibility of delay in achieving 110 kv as grid system voltage was foreseen at the stage of inviting tenders as can be seen from extract from Tender Specification reproduced below."

"4. Most of the existing substations beyond Kalyan are fed from 95 kv, 3 ph. 50/c/s duplicate feeders. The new substations being constructed will also be fed from the same duplicate set of feeders at the same voltage. The system voltage is also proposed to be raised to a nominal voltage of 110 kv.

However, it was seen that the invertor equipment functioned satisfactorily for a few months initially after first commissioning, but some components failed after having been exposed to low grid voltage condition continuously. It became obvious that the possibility of low grid voltage condition was not adequately provided for in the design of some of components in control equipment. Accordingly, the contractor has taken action to replace these components with those with higher margins."

1.67. As regards the present position in this regard, the Ministry of Railways (Railway Board) have stated:

"The grid voltage standing at 100 kv at present, may be expected to go up progressively to 110 kv in 2 to 3 years time. However, M/s. AEG have modified certain components of the inverters. The equipment is now so designed that it can work on 100 kv as well as 110 kv system voltage, with normal permissible voltage variations."

*Quantum of regenerative energy*

1.68. According to the Audit para, when the Railway Administration considered it desirable to go in for rectifiers with inversion facilities in replacement of the overaged rotary convertors in 1967-68, the value of the regenerated energy was estimated to be Rs. 40 lakhs per annum. The Committee desired to know the approximate value of the regenerated DC energy that could not be converted into AC due to prolonged nonfunctioning of the invertors. In a note furnished to the Committee, the Ministry of Railways (Railway Board) have stated:

"On an average approx. 7 to 8 passenger trains regenerate per day on both the ghat sections. Roughly, the energy regenerated is around 400-450 KWH per passenger train.

This regenerated energy can either get utilised by an ascending train in the vicinity or got inverted in a substations, if no train is nearby. It will be appreciated that the inverted power gets absorbed by ascending trains and only the balance power. will get inverted in a substation.

In the North East and South East ghat sections the rotary convertors were progressively dismantled and invertors initially commissioned. In the North East section the interval between dismantling of the last rotary and initial commissioning of the first invertor was around 3 to 6 months. On the South East Ghat Section, Rotary continued to function till May 1979. The first invertor was initially commissioned in December 1977.

Assuming an average of 7.5 passenger trains regenerate per day and the average energy regenerated being assumed as 425 KWH per train, the energy in a month comes to 19125 KWH. Assuming that the cost of Electrical Energy is 20 P. per KWH, the cost of electrical energy regenerated and inverted per month comes to Rs. 3,800/-.

It is to be noted that a good proportion of the energy thus regenerated is absorbed by trains going up the ghats and only the balance is handled by the inversion equipment at the substations and converted into AC Energy."

1.69. In reply to a question as to why the movement of goods trains has not been included in estimating the quantum of regenerated energy, the Ministry of Railways (Railway Board) have stated:

"With locos of WCM series fitted with regenerative equipment, 7 to 8 passenger trains run daily down the ghats. WCG/2 locos meant for goods service have not been provided with stabilized regenerative equipment. Initially regenerative equipment for 15 locos were supplied by BHEL but they did not work satisfactorily. Recently 5 sets have been modified and fitted on 5 locos which are found to be performing reasonably satisfactorily. Arrangements are being made to procure the balance regenerated equipment so that the entire fleet of 57 WCG/2 locos could be fitted with such equipment. In view of the above, while estimating the current quantum of regenerative energy, goods trains have not been taken into account."

1.70. The Committee were informed during evidence that annual achievement of regenerated energy at present was only of the order of Rs. 3½ lakhs against the initial expectation of Rs. 40 lakhs worth of the regenerated energy.

1.71. When pointed out that the Committee were earlier informed that the energy regeneration is Rs. 3800 per month, the representative of Ministry of Railways (Railway Board) explained the position thus:

"This answer applies to the total value of the current which was fed back into the grid. It does not include the value of the current which was utilised by us in the trains going up."

1.72. To a query if the shortfall every year was to the tune of Rs. 36½ lakhs, the witness replied "In terms of the total regenerated electricity". When asked since when this shortfall had been taking place, the representative of the Ministry of Railways (Railway Board) (replied that this shortfall had been taking place for sometime.) When asked how the actual achievement of Rs. 3½ lakhs of regenerated capacity compared with the estimated value of regenerated energy to the tune of Rs. 40 lakhs the Ministry of Railways (Railway Board) have in a note stated:

"The cost of Rs. 40 lakhs per annum had been arrived by assuming that 14 numbers of goods trains per day each on NE and SE ghats and 299 numbers of passenger trains in NE and 376 passenger trains in SE ghat per month would be running with regeneration. The cost of energy regenerated by these trains was estimated at Rs. 40 lakhs. With 7-8 passenger trains running with regeneration at present, the total cost of regenerated energy based on 1979-80 generation costs comes to Rs. 3.5 lakhs."

1.73. The representative of the Ministry of Railways (Railway Board) stated during evidence:

"We could say that there is no recovery of electricity and the equipment is required for braking. We could have said that. On a down long steep place the only way to control the train is by way of regeneration braking. It is not because we want to recover the electricity alone but the basic objective is to control train and utilise surplus energy that is created. This provides resistance to the locomotive and controls the train."

1.74. The Committee desired to know the number of locomotives which should have been fitted with the regenerative braking equipment for a full capacity utilization of the seven invertors and on the basis of which the earlier assumption of the estimated value of regenerated energy of Rs. 40 lakhs per annum had been calculated. In reply, the representative of the Ministry of Railways (Railway Board) stated during evidence :

"All the 125 locomotives."

1.75. As regards the break up of passenger and goods locomotives the witness stated:

"There are 125 locomotives out of which 49 are passenger and 57 goods locomotives. At the moment, out of 49 passenger locos, 34 are fitted with regenerating facilities and out of 57 goods locos, 3 are fitted with it."

1.76. When asked why only 3 out of 57 goods locomotives have been fitted with the regenerating system the witness explained the position as under:

"These locos were ordered in recent times and we decided to procure the regenerating equipment from BHEL. They were developing it for the first time. We fitted the first seven prototype equipment into the seven locos .

There were some teething problems, which have been overcome now and three locos are now working with modified equipments. We expect BHEL to supply the balance equipment for the other locos shortly."

1.77. When enquired as to why advance orders with BHEL were not placed when this technology was considered developed, the witness stated :

"We ordered for about 57 locomotives later, and they are now working."

1.78. Audit para points out that inability to work these equipments over the years had resulted in non-materialisation of the contemplated conversion of the surplus regenerated DG energy, if any, into AC for achieving economy in operation. The investment of Rs. 1.04 crores on five invertors had thus remained unfructified for about six years and investment (Rs. 0.41 crore) on the remaining two continues to remain unfructified (December 1980). During evidence the Committee enquired if this did not indicate lack of perspective planning. In reply the Chairman, Railway Board, stated:—

“I do feel that it was because of a measure of vision and foresight that the intermediate technology which was available, which is the mercury arc rectifiers, was discarded at that time. Otherwise the position would have been disastrous, and we would have had no manufacturer in the world and they would not have delivered the goods. So, there was a vision.”

1.79. In order to step down the current when taken from the mains from the power house to a low voltage and convert when necessary from AC to DC, Rotary Convertors were being used in the Central Railway. These convertors were installed in 1929 and the expected life of these convertors was 25-30 years. The Railway Administration contemplated in 1961 replacement of these overaged convertors, but it was only in November, 1969 that orders for 2 silicon rectifiers with thyristor equipment were placed with M/s. NGEF, Bangalore who were to obtain these from their collaborators M/s. ABG Telefunken, West Germany. In September 1970, the Ministry of Railways (Railway Board) placed a direct order for the supply of five sets of these rectifiers on the West German firm who had no previous experience of supplying these equipments for railway traction.

1.80. The Committee are surprised to note that although the rotary convertors in the Central Railway were installed in 1929 and the expected life of these convertors expired in 1959, no advance planning was done to obtain replacement for these convertors and it was only in 1961 that the Railway Administration contemplated the replacement of these convertors. It took another eight years for the Railways to actually place an order for the purchase of equipment to replace these convertors. This clearly indicates that there has been an absence of any perspective planning on the part of Railways. Moreover, the fact that Railways took as much as 8 years in placing orders for the equipment clearly indicates that the entire matter was dealt with in a casual manner. The Committee would like to emphasise that the Railways should take action to decide about the replacement of overaged equipment, much in advance of the replacement becoming due and once a decision in this regard is taken, prompt action should be taken to place orders and obtain the equipment so that these may be installed and commissioned in time.

1.81. The Committee note that in response to tender enquiries made in July 1968 for supply of rectifiers with inversion facilities, the Railway Administration received five offers. Out of these, the offers of M/s. NGEF Ltd., and M/s. HE (I) L (now BTEL) for silicon rectifiers with thyristor invertors and M/s. Raje Industrial Engineering Combine Pvt. Ltd for mercury arc rectifiers were more or less complete. The Tender Committee of the Central Railway recommended the offer of M/s. Raje Industrial Engineering Combine Pvt. Ltd. and did not accept the offer of M/s. NGEF Ltd. as the replies from Railway Advisers abroad had indicated that for such heavy duties, controlled silicon rectifiers had not been used in the Railway abroad. Moreover, the Railway Board had also advised that for the purpose of Kasara Substation where regenerative power had to be dealt with, the Railway should employ only proved apparatus and not take unnecessary hazards. The Tender Committee felt that it would be risky to go in for silicon rectifiers particularly when appreciable amount of foreign exchange was involved. The recommendation of the Tender Committee was, however, rejected by the Railway Board and it was decided to accept the offer of M/s. NGEF as it was felt that the thyristor equipment with separate rectifier and invertor element had a decided advantage over the mercury arc rectifiers.

1.82. The Committee are unhappy that the recommendation of the Tender Committee of the Central Railway for use of mercury arc rectifier was rejected by the Railway Board, particularly when the silicon rectifiers were not being used for railway traction even in the country from where these were purchased e.g., West Germany and the Railway Board itself had given advice that the Railways should employ only proved apparatus and not take unnecessary hazards.

1.83. The Committee note that silicon rectifiers with inversion facilities were at that time being used for railway traction in France and USSR only. The Railway Board have stated that no firm in France was anxious to transfer the technology to India due to the distance involved. As regards USSR it has been stated by the Railway Board that as the equipment was being bought under IDA loan, USSR was not qualified to bid for the tender. The Committee appreciate why the Railways did not make any effort to get this technology transferred on Government to Government basis. The Committee would like to caution the Government against going in for untested technology from firms who have no previous experience in the line simply because easy finance is available from some foreign source.

1.84. The Committee note that orders for five invertors to be supplied by the West German firm were placed on 24 September, 1970 and as per contract these were to be supplied by 31 August 1971. However, these were actually shipped in April, 1974. These were erected and commissioned between March, 1977 and June, 1978 by which time the warranty period had expired. The Ministry of Railways have explained that such a long time was taken in shipment, erection

and commissioning because the firm had to develop the design, get it approved by the Railway authorities of India and then tested. The Committee fail to understand that when the Railway Administration was well aware of the different processes that had to be gone through before the supply of these invertors, why the target date for the shipment was fixed for less than a year. The Committee would like to express their unhappiness at the growing tendency on the part of Government Departments to fix unrealistic target dates for commissioning of projects which subsequently not only bring a bad name to the Government but also results in disappointment and frustration amongst the likely beneficiaries.

1.85. In this connection, the Committee find that the Railways took nearly two years in approving the designs and drawings and clearance was given to the firm to ship all equipment in March, 1974 only. The Committee consider that the Railways took unduly long time in giving clearance to the design and drawings submitted by the firm. Such delays the Committee expect, will in future be avoided.

1.86. The Committee have been informed that a number of sub-stations were located in isolated places some of which were hilly areas away from Railway Stations and some of them not approachable by road. This resulted in delay in construction of sub-station buildings and railway sidings thereby causing further delay in erection and commissioning of the invertors. The Committee consider that the job of erection and commissioning of these invertors was not taken up with the seriousness which it deserved. The Committee fail to understand why action was not taken to construct sub-station buildings in time to synchronise with the arrival of invertors at Bombay. Moreover, the shipment of invertors was itself delayed by 2 to 3 years and there is no reason why the building were not ready even within the extended time that became available to the Railways. This is a clear case of faulty planning and lack of anticipation on the part of the Railways.

1.87. The Committee are surprised to note that one out of the 7 invertors has not so far been erected and commissioned because it developed extensive damages/corrosion due to seepage of water and long storage. The equipment when received at site was inspected jointly by M/s. NGEF and Railways in February, 1975 and no damage was noticed. However, when the equipment was taken for erection in August, 1978, it was again inspected jointly by M/s. NGEF and Railways and at that time damage due to seepage of water/moisture was noticed. It is therefore clear that adequate precautions were not taken during the storage of this invertor. The Committee would like the Ministry of Railways to investigate the precise reasons for the damage caused to this invertor and fix responsibility for the same.

1.88 The Committee have been informed that M/s. NGEF have undertaken repair of this invertor at their Works at Bangalore and that it is expected to

be erected and commissioned by June 1982. The Committee would like to be informed of the latest position in this regard.

1.89. The Committee regret to note that the invertor at Tambadmal which was commissioned on 30 March, 1977 went out of order in November, 1978. During this period the invertor worked for 99 out of total number of 581 days. The damage to the invertor is stated to be due to insulation of a number of control wires having been eaten away by vermins/rodents. According to the Ministry of Railways the special control spares and connectors were not procured alongwith the equipment which have been ordered by the Central Railway. The Committee are unhappy at the fact that the invertor remained unutilised for about three years for want of necessary components after it was damaged in November, 1978. They would like that the circumstances in which these control wires were damaged and the reasons for delay in importing components and effecting repairs to the invertor be thoroughly investigated and suitable action in the matter taken.

1.90. The Committee note that although adequate inspection and pre and post-commissioning tests were stated to have been carried out by the engineers of M/s. AEG/Ngef in the presence of Railway engineers, the performance of the remaining five invertors after commissioning has been highly unsatisfactory as is evident from the fact that the invertor at Kasara worked for only 12 out of 60 days after commissioning. The invertor at Thakurwadi worked for 30 days out of 643 days. The remaining three invertors also worked for 77, 116 and 155 days only and none of these invertors worked for more than 20% of days since commissioning. Although the Ministry of Railways (Railway Board) have claimed that the performance of these invertors after re-commissioning has been fairly satisfactory, the same is not borne out by the data supplied by the Ministry of Railways. One of these invertors erected at Oombermali has worked for only 142 days out of 561 days after re-commissioning. The invertor at Kasara worked for only 270 days out of 566 days. The Committee cannot but conclude that the investment made in the purchase of these invertors has remained by and large unfructified and the Railways have not been able to derive the expected benefit out of the investment. The Committee would like to express their unhappiness at this state of affairs.

1.91. The Committee note that the Railways had entered into a contract with M/s. Tatas in 1939 for using their transmission lines etc. for transmitting energy generated by Railways to various traction sub-stations in Bombay area. Consequent upon the expiry of this contract in February 1960, negotiations were carried out by Railways with Tatas in 1964, and a new contract was entered into in January 1964 applicable from February 1960 to March 1967. Para 3(b) of this contract stipulated

that this agreement would continue for further successive period of 5 years, if no notice was given in writing by the Government to the Company. The Tatas proposed in this contract to raise their transmission line voltage to 110 kv for securing higher transmission efficiency. Considering this proposal as an advice from Tatas, in the contract entered into by the Railways with M/s. NGEF/AEG for supply of equipment in 1969 and 1970 it was provided that the existing line voltage was 100 kv and it was envisaged to be raised to 110 kv. However, when the equipment was erected and commissioned, the system voltage on the Tata-Koyna-Railways grid continued to be 100 kv. and is yet to be raised to 110 kv. According to the Ministry of Railways the invertor equipment functioned satisfactorily for a few months initially after the first commissioning but some components failed after having been exposed to low grid voltage condition continuously.

1.92. The Ministry of Railways have further informed the Committee that MSEB (Maharashtra State Electricity Board) system is also connected to the Tatas-Railway system in 100 kv side. MSEB brings power from Nagpur to Kalwa sub-station (in Bombay area) at 220 kv where the voltage steps down from 220 kv to 110 kv. The power transmitted on the 220 kv line is so heavy that the voltage at Kalwa drops down to 180 kv with consequential reduction in voltage on 110 kv side. The voltage of Western grid covering Tatas system is therefore required to be regulated accordingly. In the circumstances the proposal to raise the voltage to 110 kv has not been possible for M/s. Tatas. The Committee are further informed that MSEB have taken up the work of running new transmission lines at 400 kv from Nagpur to Kalwa to improve voltage regulations. The work is likely to be completed by 1982 and after completion of this work the entire system voltage of Tatas-Railways-MSEB will go up to 110 kv. The Committee further note that the equipment is now so designed that it can work on 100 kv as well as 110 kv system with normal permissible voltage variations.

1.93. The Committee fail to understand as to why the Railways did not enter into a formal contract with Tatas in respect of change over of line voltage from 100 kv to 110 kv and on mere advice from them that they would step up the line voltage to 110 kv included a clause in this regard in the contract entered into with the firm M/s. AEG/NGEF. The Committee regret to observe that this failure on the part of Railways to anticipate the possible delay in conversion of line voltage has contributed to the poor performance of the invertors. Moreover, if the Ministry of Railways were not sure about the time by which this voltage conversion would take place, it is not understood why the equipment was not designed in the first instance in such a way that it could work on 100 kv as well as 110 kv system with normal possible voltage variations. The Committee cannot but conclude that the Railways have failed to exercise necessary precautions while placing the orders for the equipment.

1.94. The Committee note that when the Railway Administration decided to go in for silicon rectifiers with inversion facilities in replacement of the existing overaged rotary convertors, the value of the regenerated energy was estimated to be Rs. 40 lakhs per annum. However, according to the Ministry of Railways the total value of regenerated energy per annum based on 1979-80 generation costs comes to Rs. 3.5 lakhs only. This has resulted in avoidable loss of Rs. 36.5 lakhs every year. The loss would be much more if the fact that the current rate per unit is 29 paise, against 11.9 paise which was the rate when the figure of Rs. 40 lakhs was worked out, is taken into account. The Committee find that the shortfall of energy is not only due to the poor performance of the invertor equipment but also due to the delay in providing the requisite regenerating braking facilities to the goods as well as passenger locomotives. The Committee regret to note that against 125 locomotives which were expected to be fitted with the regenerative braking equipment for capacity utilisation of the seven invertors and on the basis of which the earlier assumption of the estimated value of regenerated energy of Rs. 40 lakhs per annum had been calculated, only 37 locomotives i.e. 34 out of 49 passenger locos and 3 out of 57 goods locos have so far been provided with the regenerative braking facilities.

1.95. As regards the delay in the case of goods locomotives the Ministry of Railways have informed the Committee that initially regenerative equipment for 15 locos was supplied by BHEL, who had developed this equipment for the first time, but they did not work satisfactorily. Recently 5 sets have been modified and fitted on 5 locos and their performance has been found to be reasonably satisfactory. Arrangements are being made to procure the balance regenerative equipment so that the entire fleet of 57 WCG/2 locos could be fitted with such equipment. The Committee are unable to appreciate why action to procure this particular equipment for the goods locos was not initiated well in advance particularly when it was known that without equipping the goods locos with it the regeneration of energy will not be possible. Further, since BHEL was developing this equipment for the first time the Railways should have been more cautious to see that the equipment for all locos is received timely and was free from any defect. The Committee recommend that at least now the Railway Administration should take immediate steps to provide regenerative braking facilities in all the locomotives on the basis of a time-bound programme so that the contemplated benefit could be derived from these invertors

1.96. From the foregoing paragraphs it is evident that even though the rotary convertors had become overaged by more than two decades and their replacement could not be deferred and contracts for two rectifiers with inversion facilities for this purpose and five more thyristor equipment (invertors) for new substations were awarded as far back as in 1969 and 1970 respectively the position at present is far from satisfactory. Out of the 7 invertors only five are working and even their capacity utilisation is below the desired level. The

investment of Rs. 1.04 crores on five invertors had remained unfructified for about six years and the investment (Rs. 0.41 crore) on the remaining two continues to remain unfructified. Contrary to the initial estimated value (Rs. 40 lakhs per annum) of regenerated energy, the total value of regenerated energy based on 1979-80 generation costs comes to Rs. 3.5 lakhs only. The Committee at this stage cannot but express their dissatisfaction over the avoidable delays such as in awarding the contract, approving design and drawing details, commissioning of the invertors and lack of proper planning and monitoring at various stages.

1.97. The Committee hope that suitable steps would be taken early to re-commission the remaining two invertors and utilise all the seven invertors to the maximum possible extent and to narrow down the gap of Rs. 36.5 lakhs at 1968 price worth of energy per annum not being recovered by providing all the passenger and goods locos with the regenerating braking equipment.

## CHAPTER II

### DEPOSIT WORKS ON RAILWAYS

#### *Audit Paragraph*

2.1 Works executed by Railways for other Government departments, municipalities and other local bodies, private firms and individuals, at the cost of the latter, are termed 'Deposit Works'.

2.2 According to the rules, no deposit work should be taken up by a Railway till a detailed estimate for the work has been got accepted by the party concerned and sanctioned by the competent Railway authority. In the case of local bodies, private individuals etc., the estimated cost of the work is also required to be deposited in advance with the Railway. Further, no expenditure in excess of either the sanctioned estimate or the deposit made is to be incurred on any work undertaken, unless acceptance of the party to the anticipated excess is obtained or the anticipated excess cost is deposited by the party.

2.3 A review by Audit of the deposit works undertaken by the Railways revealed that, in a number of cases, the rules had not been strictly observed by the respective Administrations, with the result that excess expenditure amounting to Rs. 25.81 lakhs incurred on 11 deposit works by the various Railways had not been recovered from the parties concerned. The details of these cases are mentioned below :

#### *1. Central Railway—construction of a foot overbridge at Nasik Road*

2.4 Construction of the foot overbridge, at an estimated cost of Rs. 1.05 lakhs, was commenced (May 1973) on this amount being deposited (June 1969/July 1971) by the Nasik Municipal Council with the Railway. A further deposit of Rs. 0.41 lakh was made (June 1973) by the Council on the advice of the Administration that the cost of the work was likely to go up due to use of alternative sections of steel owing to non-availability of sections provided in the estimate and increased fabrication costs. While the revised estimate for Rs. 2.35 lakhs was sanctioned by the Railway and communicated to the Council in November 1973, the Administration noticed in June 1974 that the fabricated steel used, as also the fabrication charges, were more than estimated, with the result that the expenditure had exceeded the revised estimated cost/deposited amount. The work having been completed in September 1974, the Council was requested (October 1974) to deposit an

additional amount of Rs. 1 lakh to meet the increased cost. On this, the Council, without depositing the amount, asked (January 1975) the Administration for the completion report for scrutiny. While the bridge had been handed over by the Railway to the Council in December 1974, the Administration later re-assessed the excess over the deposited amount as Rs. 1.32 lakhs and requested (July/August 1975) the Council to deposit Rs. 1.38 lakhs (including interest charges of Rs. 0.06 lakh), which the latter declined (March 1977) to do.

2.5 On a representation by the Council in September 1978 to the Minister of Railways, the Ministry of Railways (Railway Board) advised (February 1979) the Administration (on the basis of what had been stated in the representation) "to recast the estimate taking into account the actual expenditure on the work and without notionally updating the costs to the price level prevailing at the time of completion of the bridge", and also to consider waiver of departmental as well as interest charges under the powers of the General Manager of the Railway. While the Administration contended (October 1979) that, the prices adopted being those prevailing at the time of drawal of materials from the stock, no recasting on this account was necessary, it found, after adjustment of certain credits not accounted for earlier, that the excess over the deposited amount would be Rs. 1.09 lakhs. In March 1980, the Administration stated that the excess was likely to go upto Rs. 1.15 lakhs, and that the question of waiver of departmental and interest charges was yet to be finalised.

2.6 Meanwhile, on payment had been made (October 1980) by the Council towards the excess expenditure, though the work was completed over 6 years ago. The accounts of the work as also the exact amount of excess expenditure to be recovered also yet remain to be finalised by the Administration (October 1980).

**2. Southern Railway—(i) Fabrication of girders and trestles required for construction of road overbridges by Indian Railway Construction Company for Kudremukh Iron Ore Project.**

2.7 As decided at a joint meeting in April 1977 of the representatives of the Ministry of Railways (Railway Board), the Ministry of Steel and Mines and others, the Southern Railway commenced the fabrication work on 6th August 1977 on to priority basis. In January 1978, an estimate for Rs. 11.93 lakhs was sent by the Administration to the Indian Railway Construction Company, with the request to deposit Rs. 10 lakhs initially. While the fabrication work was completed in January 1978, the Company deposited Rs. 6 lakhs on 31st March 1978, accepted the estimate in June 1978 and deposited a further sum of Rs. 1.45 lakhs in October, 1978. While an estimate for Rs. 13.55 lakhs was sent to the Company on 11th September 1980

requesting it to pay the balance amount of Rs. 6.10 lakhs, the accounts of the work are yet (November 1980) to be closed and the completion report drawn up, though the work was completed three years ago.

*(ii) Construction of sub-way for pedestrians on behalf of the Corporation of Madras.*

2.8 The work, estimated to cost Rs. 2.32 lakhs as per sanction (June 1969), was commenced in April 1970. While the cost as per revised estimate (January 1972) was assessed at Rs. 2.86 lakhs and the work was completed in November 1975, the actual expenditure was found at the time of closure of the accounts of the work and preparation of completion report in August 1979 to be Rs. 3.12 lakhs. The amount deposited (June 1967-October 1971) by the Corporation towards the cost of the work being Rs. 2.86 lakhs only, the excess expenditure (Rs. 0.26 lakh) is yet (September 1980) to be recovered, though it is over four years since the work was completed. The completion report is also yet to be certified by the Accounts Office of the Railway (September 1980).

*(iii) Construction of a sub-way between in Wimco Nagar and Ennore station for a firm.*

2.9 The work, estimated (August 1974) to cost Rs. 5.77 lakhs, was commenced in November 1974 and completed in January 1976. Against a deposit of Rs. 5.80 lakhs made (January 1970—March 1974) by the firm, the expenditure incurred, as per the 'Deposits Register', was Rs. 7.10 lakhs (involving an excess of Rs. 1.30 lakhs) and as per the 'Works Register' Rs. 6.34 lakhs (involving an excess of Rs. 0.54 lakh). While reconciliation of the two Registers, prescribed in the rules, has not been done, the excess amount (to be assessed precisely) is yet to be recovered from the firm (September 1980). The completion report showing an expenditure of Rs. 6.34 lakhs prepared in February 1977, is also still (September 1980) under verification in the Accounts Office of the Railway.

*(iv) Construction of a siding for Food Corporation of India.*

2.10 The work, estimated (March 1968) to cost Rs. 4.99 lakhs, was commenced in August 1969 and completed in June 1972. Against the Corporation's deposit of Rs. 4.99 lakhs, the expenditure incurred on the work, as per completion report prepared in October 1976, was Rs. 6.47 lakhs. While reimbursement of the excess expenditure of Rs. 1.48 lakhs was claimed by the Railway in February 1978, it is yet to be received from the Food Corporation of India (September 1980).

**3. South Eastern Railway—(i) Construction of a private siding for Cement Corporation of India.**

2.11 The work was estimated (September 1967) originally to cost Rs. 19.43 lakhs against which the Cement Corporation had deposited Rs. 18.09 lakhs between July 1966 and March 1969. On the party requesting (July 1969-June 1971) certain additions and alterations to the original plan, the work (including these) was completed in 1972 but the cost remained to be finalised. At this stage, in the absence of complete expenditure statement, it was anticipated that the additional expenditure would be met from savings but on finding in August 1978 that the actual expenditure had exceeded the deposit by Rs. 9.03 lakhs, reimbursement thereof was claimed from the party. The latter however refused (December 1978) to accept the additional liability on the ground that it had been assured till June 1971, by which time all the major works had been completed, that the total cost would be within the sanctioned estimate. Payment of the excess is yet to be made by the party (September 1980).

**(ii) Extension of private siding for the Thermal Power station, Korba.**

2.12 The work, which was to be executed by the party under Railway supervision, was commenced in August 1962, the cost as per estimate prepared (by the Railway) in 1963 being Rs. 15.31 lakhs. As only some fittings were to be supplied by the Administration, the party made a deposit of Rs. 2.41 lakhs in May 1963 to cover the cost of the fittings and the supervision charges. While the work was completed in December 1966 and a detailed estimate for Rs. 21.59 lakhs was sanctioned in January 1971, the Administration failed at that stage to assess the expenditure incurred by it in relation to the deposit. At the time of drawing up the completion report in July 1976, the actual expenditure incurred by the Railway was found to be Rs. 4.95 lakhs. It was only in October 1977, that the Administration requested the party to pay the balance of Rs. 2.54 lakhs but no payment has been received so far (September 1980).

**(iii) Construction of assisted cum private sidings in Orissa.**

2.13 Construction of assisted cum private sidings to service the Orissa State Electricity Board and the Orissa Textile Mills at Charbatia was commenced in 1948 and completed in 1951. Certain ancillary works were completed in January 1958. As per agreed terms, the Administration raised debits towards the cost of the work against Government of Orissa from time to time and received payments of Rs. 4.08 lakhs upto October 1962. The completion report was however prepared only in 1970 for Rs. 6.51 lakhs; while debit for the balance of Rs. 2.43 lakhs was raised in April 1972, an amount of Rs. 1.28 lakhs was received in March 1976 and January 1978 leaving Rs. 1.15 lakhs still (September 1980) to be realised.

*(iv) Provision of a reversing loop in the assisted siding for a company*

2.14 At the request of the Company, the work, estimated (August 1 1965) to cost Rs. 1.1 lakhs (Rs. 0.66 lakh to be borne by the Railway, being cost of permanent way materials, and Rs. 0.45 lakh to be borne by the party, this being reduced to Rs. 0.28 lakh if earthwork and ballasting were done by the party) was undertaken by the Railway. In October 1966, it was noticed that a part of the loop would fall on private land requiring acquisition. Taking this into account and some additional works necessary, the plan was revised and the work completed (June 1969) at a cost of Rs. 0.94 lakh but without getting the party's acceptance to the revised estimate or obtaining additional deposit over and above Rs. 0.28 lakh already received. When a revised estimate was sent to the party in August 1969, including provision for further alteration to the siding, it stated (March 1970) that it did not want this alteration and asked for a revised estimate for the loop alone. Over four years later, in June 1974, the Administration furnished just an abstract cost of the loop for the party's acceptance, and in 1976 the party demanded refund of its deposit on the ground that the loop would not be of any use to it. While the deposit made has not been refunded, the expenditure, (Rs. 0.66 lakh) incurred by the Railway is yielding no benefit to the Railway, the loop being not commissioned so far (September 1980).

*(v) Construction of lines for iron ore loading at Kirandul*

2.15 The work was commenced in September 1970 on behalf of the National Mineral Development Corporation Ltd. (NMDC) and completed in March 1976. While NMDC deposited Rs. 1 lakh in September 1970, Rs. 5.37 lakhs in October 1970 and Rs. 0.33 lakh in October 1975 (Rs. 6.60 lakhs in all), it was noticed, when the completion report was drawn up in December 1977, that the actual expenditure incurred, was Rs. 8.08 lakhs but claim for the balance of Rs. 1.38 lakhs was preferred much later in June 1980. Reimbursement of the excess expenditure is yet (September 1980) to be received.

*4. Western Railway—Foot overbridge at Kalol Station*

2.16 On the request (February 1967) of the Kalol Municipality to provide a foot overbridge at Kalol station, and on finalisation (July 1969) of the plans and estimates by the Administration, the Municipality was requested to deposit the estimated cost of Rs. 1.87 lakhs, which it did in September 1970 and May 1971. In December 1971, the Administration advised the Municipality that because of acute steel shortage the plans had to be revised but did not indicate the cost implications of the change. The bridge was completed in September 1974 and in October 1975 the Administration asked, pending finalisation of accounts, for an additional deposit of Rs. 0.90 lakh by the Municipality in view of the increase in cost of the work but it was not received. The

expenditure on the work was assessed in May 1977 at Rs. 2.58 lakhs. When the Administration asked the Municipality to remit the excess of Rs. 0.71 lakh together with interest charges of Rs. 0.05 lakh, the latter disowned (September 1977) responsibility therefor on the grounds that the original estimate had been changed by the Railway without its sanction and further that the increase in cost was solely on account of the delay by the Railway in completing the work. No further payment has also been received from the Municipality so far (November 1980).

2.17 II. In the case of deposit works required to be maintained by the Railway at the cost of the Department local body, private firms or individuals ordering the works, prior acceptance of the party concerned is required to be obtained for the annual recurring expenditure likely to be incurred by the Railway on repairs, maintenance etc., and bills are to be preferred accordingly.

2.18 Non-observance of these rules by the various Administrations resulted in non-recovery of repairs and maintenance charges, as indicated below :

*Central Railway—Construction of foot overbridge at Nasik Road*

2.19 Though the work was completed in September 1974, no bill for recovery of maintenance charges therefor has been preferred on the Municipal Council so far (September, 1980).

*Northeast Frontier Railway—Provision of a level crossing for a firm*

2.20 At the request (December 1971) of the firm, a level crossing for its mechanised brick plant near Agthori Railway Station was provided and opened for traffic in February 1973. However, no bill for recovery of charges on account of its repairs, maintenance, operation etc, was preferred by the Administration against the party. On this omission, being pointed out by Audit in April 1979, the Administration preferred (May 1979) a provisional bill for Rs. 0.87 lakh for the period from February 1973 to March 1979 but the firm has not made any payment so far (September 1980). No agreement has also been executed with the firm for recovery of such charges.

*Western Railway—Foot overbridge at Kalol Station*

2.21 Though the bridge was completed in September 1974, bill for maintenance charges amounting to Rs. 0.29 lakh for the period from October 1974 to March 1979 was preferred only in May 1978. The party has, however, not yet (November 1980) made any payment.

*Summing up :*

2.22 The following are the major lapses/failures on the part of the Administrations in these cases :

- (1) The initial estimates of the works had not been drawn up precisely, taking into account all the relevant factors known at the time.
- (2) The progress of expenditure had not been watched closely with a view to making timely assessment of the additional deposit required before incurring expenditure over and above the initial deposit.
- (3) The accounts of the works, as also their completion reports had not been finalised for years after their completion. This led to the parties not accepting the Railway's belated claims for excess expenditure.
- (4) Bills for maintenance charges etc. had either not been prepared or preferred for several years after the Railways started incurring expenditure on maintenance following completion of the works.

2.23 This para was issued to the Ministry of Railways (Railway Board) on 3rd November 1980; its reply is awaited (January 1981).

[Audit Paragraph 19 of the Advance Report of the Comptroller and Auditor General of India for the year 1979-80, Union Government (Railways)]

2.24 Works executed by Railways for other Government departments, municipalities and other local bodies, private firms and individuals, at the cost of the latter are termed 'Deposit Works'. According to the rules, no deposit work should be taken up by a Railway till a detailed estimate for the work has been got accepted by the party concerned and sanctioned by the competent Railway authority. In the case of local bodies, private individuals etc., the estimated cost of the work is also required to be deposited in advance with the Railway. Further, no expenditure in excess of either the sanctioned estimate or the deposit made is to be incurred on any work undertaken unless acceptance of the party is obtained or the anticipated excess cost is deposited by the party.

2.25 When asked to furnish a statement giving the number of deposit works undertaken every year, the Ministry of Railways (Railway Board) have furnished the following information :

Year	Total number of Deposit Works	Amount (in lakhs of Rs.)
1978-79	483	6,046
1979-80	491	9,955
1980-81	587	10,808
1981-82	414	8,673

2.26 Asked about the details of outstanding against Government departments, public sector undertakings, private parties etc., the Ministry of Railways (Railway Board) have stated in a note :

"The total amount outstanding for deposit works against parties other the Government departments totals to Rs.75.44 lakhs. Amount due from Government departments totals to another Rs.261.08 lakhs bringing the overall total to Rs.336.52 lakhs. The summary of these amounts are enclosed (Appendix I).

It may be seen that the total amount due Rs. 336.52 lakhs forms a small percentage of the value of works handled every year amounting to about Rs. 8,600.00 lakhs (3.9%)."

2.27 The Committee desired to be informed about the amount of outstanding against private firms and individuals, the period since when these amounts have been outstanding and break-up of each individual/party. In reply, the Ministry of Railways (Railway Board) have furnished the following information :

(Amounts in lakhs of Rupees)

	"Less than one year	More than one year but less than 3 years	More than three years	Total amount
Private firms	3.06	2.73	7.40	13.19
&				
Private Individuals		The break-up for each party and individual is indicated in the attached list (Appendix II). Of the Rs. 13.19 lakhs due only Rs. 0.16 lakh is to be realised from individuals and balance from private firms."		

2.28 When asked about the number of requests received by railways for deposit works and the number of cases in which work has not yet been started and the reasons for the same, the Ministry of Railways (Railway Board) in a note have stated as follows :

"The number of requests received is 360. The number of works not started yet is 156 of which 83 are on party's account and 73 on Railways account. The commencement/progress of work is held up on party's account in many cases, the reasons which have mostly featured are :

- Revision of plans and scope of work and estimates at the instance of party.

- (ii) Work required to be executed by the party and only supervision to be done by Rlys but party not having approached the Railway as yet for starting the work.
- (iii) Railway could not start work because party has not started/completed its portion of work.
- (iv) Party wants work to be postponed/slowed down/deleted.
- (v) Land not made available by the party.
- (vi) Materials to be supplied by the party not supplied.
- (vii) Party not giving undertaking to pay variation in costs."

2.29 When asked about the internal checks prescribed if any, to ensure that the relevant rules in regard to deposits works were observed, the Ministry of Railways (Railway Board) have stated in a note :

"Internal checks prescribed for the execution of Deposit Works are contained in paragraphs 932 to 935, 1037-1038, 1777, 2027 to 2037 of the Indian Railway Code for the Engineering Department and paras 3101 to 3104 of the Indian Railway and Works Manual."

2.30 The Committee desired to know the circumstances in which these rules were not observed in the cases mentioned in the Audit Para. In reply, the Ministry of Railways (Railway Board) have stated in a note :

"Briefly, the kind of circumstances in which recoveries could not be effected in time, were as under :

- (a) Execution of work spread over a number of years and increase in prices of material and labour; particularly permanent way materials during the period which could be evaluated and ascertained only on the drawing up of the completion report.
- (b) Change in the agency for the supplying of permanent way material i.e., party agreeing initially to supply the permanent way material and later on in the course of execution of work expressing inability to do so wholly or partially and requesting the Railway to supply the material in order that the work may be completed soon. When such a request is received it becomes difficult to stop the work midstream just for the purpose of revising the estimate/s and realising the additional cost which takes time.
- (c) Parties asking for additional facilities in the course of execution of work or in the final stages of the completion of the work. Usually in such cases, it becomes impractical to stop the work for the purpose of revising the estimate and realising the extra costs which takes time.

- (d) Changes in the design occasioned by non-availability of materials, particularly steel involving additional cost.
- (e) Difficulty in stopping the work in between for lack of depositing of additional funds, in cases of Government department/public sector undertakings or work of National and Public interest.
- (f) The nature of deposit works executed by the Railways for parties is very often such that they cannot be stopped and recommenced as safety gets involved. Works like provision of a sub-way, foot-over bridge, siding which involves connection with Railway lines and alterations to existing yards, level crossing etc. are such that once they are started, they must be finished as otherwise safety is jeopardised.
- (g) Difficulties in acquiring land, for which plans and estimates had to be revised."

2.31 The Committee desired to be apprised of the present position in respect of cases given in the Audit Para. In reply, the Ministry of Railways (Railway Board) have stated as follows:

"The position in respect of cases listed is indicated below :

- 1. Central Railway—Construction of a foot overbridge at Nasik Road. The matter has since been settled by mutual discussion. The Railway have decided to waive departmental and certain other charges amounting to Rs. 71,681 and the balance amount Rs. 45,593 has since been paid by the Municipal Council.
- 2.(i) Southern Railway—Fabrication of girders and trestles required for construction of road overbridges by Indian Railway Construction Company for Kudremukh Iron Ore Project. In a joint meeting convened by the Ministry of Steel & Mines sometime in April 1977 it was resolved that the fabrication of girders and trestles and erection of the steel work for the construction of four bridges should be undertaken departmentally by the Southern Railway. M/s. Indian Railway Const. Co. was not in the picture at that stage. It was only later in Oct. 77 that it was decided that the erection work would be executed by M/s. Indian Railway Construction Co. for M/s. Kudremukh Iron Ore Project. It was at this stage only that the work had to be treated as a deposit work.

The work was estimated to cost Rs. 11.93 lakhs excluding the element of

Karnataka State Sales Tax. An expenditure of Rs. 12.7 lakhs was booked and adding Rs. 0.85 lakh towards Karnataka State Sales Tax etc., the total expenditure came to Rs. 13.55 lakhs. As M/s. Indian Rly. Constrn. Co. have paid Rs. 7.45 lakhs, Rs. 6.10 lakhs is yet to be recovered. This is under correspondence with M/s. Indian Rly. Constrn. Co. Discussions are now in progress to settle the issue. The balance still due from M/s. IRCON has since been revised to Rs. 5.22 lakhs after accounting for credit of Rs. 87,950.

2 (ii) S. Rly.—Construction of a sub-way for pedestrians for the Corporation of Madras. The excess expenditure of Rs. 32,538.93 has since been recovered from the Corporation of Madras and the completion report has been drawn and verified.

2 (iii) S. Rly.—Construction of a sub-way between Wimco Nagar and Ennore station for M/s. Ashok Leyland. The excess expenditure incurred Rs. 65,099.67 has since been recovered from the firm. The completion report has been drawn and verified.

3 (i) S. E. Rly.—Construction of private siding to serve the cement factory at Mandhar for Cement Corporation of India. There is no dispute regarding the quantum of work executed by the Railway for Cement Corporation of India. The dispute concerns only the pricing of permanent way materials used in the works. The execution of work was spread over a long period of 12 years from 1966 to 1978, in the course of which the prices of permanent way material increased considerably. Besides the party themselves has asked for certain works not included in the original plan. The matter has been taken up with the Cement Corporation of India and it has been mutually decided to hold a meeting to sort out this problem regarding pricing of material. The increase in the price of permanent way material could not be foreseen and provided for as the work dragged on for a long time.

3 (ii) Extension of private siding to serve the Thermal Power Station at Korba for M.P. State Electrical Board. The situation has arisen because the party who were required to supply the permanent way material for the work expressed their inability to do so during the progress of the work and requested the Railway to supply the material in

order that the work may be completed. This request was agreed to and the Railway incurred an additional expenditure of Rs. 2.54 lakhs in order that the completion of work may not be delayed.

The matter has been taken up with the M. P. State Electricity Board, who have replied that as this is an old case they would take some time to process payment.

3(iii) Construction of assisted cum-private siding for M/s. Orissa State Electricity Board & Orissa Textile Mills at Charbatia.

The understanding between the Railway and the party was that debits would be raised progressively as the work advances. A debit for Rs. 4.08 lakhs has been accepted upto Oct./62. Against the further debit raised for Rs. 2.43 lakhs, Rs. 1.28 lakhs has been cleared and for the balance amount Rs. 1.15 lakhs meeting has been held and the matter is being pursued.

3(iv) Provision of reversing loop in the assisted siding serving M/s. Indian Aluminium Co., Moor.

As the land required for the provision of reversing loop and that of alterations to the assisted-cum-Private siding could not be acquired, the plans had to be modified and this involved additional length of p. way. The estimate had to be revised but meanwhile the party requested that the proposal for alterations to the sidings may be dropped. Later the party also requested that the work for provision of a reversing loop may be also given up. Meanwhile the Railway had incurred expenditure of Rs. 30,587.28 as against a deposit of Rs. 28,000 received from the party. The party also deposited another Rs. 22,423 in connection with the alterations to the siding. The Rly. is making every effort to settle the matter.

4. W. Rly, Construction of a foot overbridge, at Kalol station for the Municipality.

Due to acute shortage of cement and steel, the design of the bridge had to be revised providing for materials readily available. Meanwhile the prices of steel and cement had increased entailing additional cost. As soon as this position came to light, the estimate was revised. The matter was taken up with the Municipality and they were asked to deposit

the additional cost. Though the Municipality had objected to bearing this additional cost initially, they have since taken a less rigid position after the Divl. Railway Manager met the President of the Municipality and explained to him in detail the reasons for additional costs. The matter has also been taken up with the Govt. of Gujarat, Panchayat and Housing & Urban Development Deptt. and it is hoped that the amount would ultimately be realised.

**CR**—Construction of a foot over-bridge at Nasik Road maintenance charges.

The agreement with the Municipal Council specially provides that actual maintenance charges on repair/painting would be recovered by the Railway. However, it is ascertained from the Railway that no expenditure was actually incurred on the maintenance of the said foot over-bridge and hence no bills were preferred.

**NFR**—Provision of level crossing for Assam Bricks and Ceramics Private Limited.

The bills could not be preferred in time because the standard agreement form has not been executed by the party inspite of several reminders. Level crossing facility has since been terminated w.e.f. 5-6-81. The question of instituting a suit against the firm is being looked into by the Railway.

**W.R.**—Construction of a foot overbridge at Kalol, station—Maintenance charges.

Unless the final cost of the work is available the maintenance charges cannot be worked out exactly. In this case the Railway took sometime in finalising the completion report and obtaining the total cost because fabrication had to be done out of materials released from different works. Pending this, the provisional bills have been preferred as per extant rules (2037 E).

**Southern Railway 2 (iv)**—Construction of a siding for Food Corporation of India.

There arose a difference of Rs. 1.51 lakhs in the expenditure incurred as shown in the Works register and the deposit miscellaneous register. The difference was reconciled and the expenditure on the work was arrived at Rs. 6.5 lakhs reflecting an excess of Rs. 1.51 lakhs over the deposit amount. As soon as this excess came to light, FCI was asked

to deposit this amount. Personal contracts were made and reminders issued. FCI have replied that they are obtaining the sanction of competent authority and the payment will be arranged shortly.'

2.32. When asked about the steps taken or proposed to be taken to ensure that there was no recurrence of such cases, the Ministry of Railways (Railway Board) have stated:

"The importance of complying with the extent instructions and procedures for the execution of deposit works have been reiterated in a circular to the Railways. General Manager of Railways have been addressed in the matter to exert their good offices and take all necessary steps for ensuring recovery of outstanding dues. Further General Managers and Divisional Railway Managers have been asked to discuss these items in their monthly meetings with Headquarters/Divisional Officers. FA & CAO of the Railway and Senior Accounts Officer of the Divisions have been asked to put up statements of the deposits outstanding to the General Managers and the Divisional Railway Managers to enable them to know the monthly position and take timely steps. The Chief Engineers and Divisional Engineers have been asked to pay special attention for the proper maintenance of the records concerning the deposit works i.e. timely submission of the material returns by supervisors, timely posting and evaluation of works registers and the drawing up of completion reports.

2.33. Regarding the precautions taken to ensure that no excess expenditure was incurred on deposit works, the Chairman, Railway Board stated before the Committee :

"There is no question of exceeding the amount. Work will remain incomplete. To that extent, it will be a loss to the party."

2.34. When asked if the procedure was actually being followed the witness stated :

"To the best of my knowledge, there is no case where we have made any extra expenditure, without realising the money. But under several works there may be minor amounts outstanding. A part from that we don't spend from our pockets and complete the work for others."

2.35. Member Engineering, Railway Board added : "We use materials received for other works. We would have originally estimated a certain figure. Where there is a surplus of some materials, they would have

been transferred to some other work. That division will have to apprise it. That is how this delay has happened and some excess is there."

2.36. The Committee desired to know if the likely cost escalation was taken into account while preparing the estimates. In reply, the representative of the Ministry of Railways (Railway Board) stated before the Committee :

"In the estimates when they are framed, cost escalation is not added, because it then becomes revised estimate. No specific provision for cost escalation is made.....upto 20 per cent we can claim on any estimate and ask them for it."

2.37. Elucidating the position further, Chairman, Railway Board stated before the Committee :

"There are safety clauses built in the contract. When the estimates are finalised and we give the final acceptance letter, we do expect that the prices will rise and therefore, we write in that letter that up to 20 per cent, they will have to pay without our giving to them account for expenses so that 20% is covered because of the nature of the economy. Second thing is, if for any reason the costs are likely to go beyond 20 per cent, then we will submit a revised estimate which they will have to accept."

2.38. When asked if Railways enter into any formal contract with the private firms and individuals before undertaking a particular job, Chairman, Railway Board replied :

"Estimates are made. We write a letter to the party mentioning these two conditions I just referred to. Then we do not start the work till they say "this is acceptable to us" and till they deposit the initial amount. This is the contract. I tell him that these are the conditions and he accepts them. He is completely under our mercy. He has deposited the money with us."

2.39. The Committee desired to know why the time limit of six months fixed for finalisation of accounts of these works and completion reports was not observed in the cases pointed out in the audit para. In reply, the Ministry of Railways (Railway Board) have stated in a note :

"Delay in the drawing up of completion report usually arises on account of late submission of material at site returns and their evaluation and posting, late finalisation of contractor's bills, late raising of debits by various Railways and units concerned. However, the importance of drawing up of completion reports particularly for deposit works have been re-emphasised to all the Railways vide Board's circular No. 80/WI/SP/13 dated 28-6-80.

Rules regarding completion estimates, completion reports are contained in paras 1801 to 1818 of the Engineering Code and paras 2716 to 2720 of the Indian Railways and Works Manual." These rules are very comprehensive and a strict observance of these rules should normally be sufficient to keep the records and recoveries up-to-date and so the importance of complying with these rules and regulations has been reiterated to the Railways."

2.40. It was brought to the notice of the Ministry of Railways that in one case relating to the Orissa State Electricity Board while the work was completed in 1951, the completion report was prepared only in 1970 and part amount was yet to be realised. In reply, the representative of the Ministry of Railways stated in evidence:

"In 1960, the report was prepared. It was objected to and again it had to go through the mill. The final report came in 1970. It was a very bad case."

2.41. The Committee were informed by the Ministry of Railways (Railway Board) that an amount of Rs. 71,681 representing departmental and interest charges against Nasik Municipality for construction of a foot overbridge at Nasik Road had been waived. When asked to intimate the amounts of departmental charges written off by Railways during last 3 years in respect of deposit works, the Ministry of Railways have furnished the following information :

"The departmental charges waived by the Railways year-wise are as under :—

Year	Rs. in lakhs (Total amount waived)
1978-79	2.94
1979-80	0.25
1980-81	6.87
1981-82	2.23

"The waiver of departmental charges has been done very sparingly in works done for local bodies, Government Departments and Undertakings, where the organizations have represented for it, and in order to reach amicable settlements. These are mostly for works like canal crossings, foot-over bridges etc. which have importance as public utilities. The amounts waived are an insignificant percentage of the value of work handled, on average less than 0.04%."

2.42. The Committee desired to be apprised of the total number of cases under litigation against private firms or individuals on account of deposit works. In reply, the Ministry of Railways have informed in a note that the number of such cases is 19. It has further been stated that "the majority of the disputes i.e. 11 out of 19 relate to the periodical revision of the rates for maintenance charges for sidings on the updated costs of the assets. Some of these cases are pending before the Railway Rates Tribunal."

2.43. The Committee desired to know if the responsibility for the lapses/ failures in the various cases mentioned in the Audit Para has since been fixed. In reply, the Ministry of Railways (Railway Board) have stated in a note as follows:—

"Railways are executing a large number of deposit works for various Government Departments, Public Sector Undertakings and private bodies and individuals. In the majority of cases, recoveries are made well in time. Quite often the amounts that are due to the Railways are disputed by the parties and these have to be gone into and settled by mutual discussion to the satisfaction of the Railway and the party, which necessarily involves going into the records, correspondence and examination of points and counter points, leading to delays. There is also pressure from the Government Departments, Public Sector Undertakings and other semi-official bodies on the Railways to continue with the work pending deposit of the amounts due and these cannot altogether be ignored, because stopping the work half way is not a practical proposition—firstly as it will lead to infructuous locking of the expenditure incurred, secondly to further delays causing escalation of costs. In many cases the progress of works cannot be switched off and switched on according to the deposits made from time to time because commitments have to be made to the contractors and suppliers of materials on a long term basis. Also once an organisation is set up, it cannot be withdrawn in a hurry and once it is withdrawn, it cannot be re-established without incurring additional expenditure. Many deposit works executed by the Railways for parties are such that once they are started they must be finished, even though the incurring of additional costs may be anticipated, as they cannot be left half way jeopardising safety. Besides, quite a few works have public importance and they cannot be stopped without incurring public criticism and resentment. In such cases, we have to continue with the work and chase the parties concerned for depositing the excess costs.

As already mentioned the circumstances leading to such cases could not lead to fixing of individual responsibility."

### *Maintenance charges on Deposit Works*

2.44 In the case of deposit works required to be maintained by the Railways at the cost of the Departments, local bodies, private firms or individuals ordering the works, prior acceptance of the party is required to be obtained for the annual recurring expenditure likely to be incurred by the Railways on repairs, maintenance etc. and bills are to be preferred accordingly.

2.45 The Audit Para has pointed out three cases where non-observance of these rules by the various Railway Administrations has resulted in non-recovery of repairs and maintenance charges. The Committee desired to know the circumstances in which the bills for maintenance charges etc. were not preferred in time in these cases. The Committee also desired to be apprised of the internal checks existing, if any, to ensure that bills were preferred in time. In reply, the Ministry of Railways (Railway Board) have stated in a note as follows :

"There are three cases cited regarding non-preference of bills for maintenance charges. In the first case namely level crossing for Assam Bricks & Ceramics Private Limited on N.F. Railway, the bills could not be preferred because the party for whom the work was executed failed to sign an agreement despite repeated reminders. In the second case of Foot over bridge at Kalol on Western Railway, bills for maintenance charges could not be preferred earlier as the completion cost of the work was not available. The finalisation of Completion Report and obtaining the total cost took time because the fabrication was done out of materials released from different works for which receipt of debits took time to finalise. In the third case of FOB at Nasik Road on Central Railway no bills were preferred as no maintenance charges were incurred

When an asset belonging to a party is required to be maintained by the Railways, details namely, completion cost, maintenance charges etc. to be levied are furnished to the Accounts Deptt., and an agreement with the party is also executed. The maintenance charges are also reviewed once in five years by updating the costs of assets. Accounts Department ensures that the bills are submitted to the party timely. In case of non-recovery they advise the executive to take action for recovery of the amount or stopping the maintenance".

2.46 When asked why these maintenance charges were not being realised in advance, Chairman, Railway Board stated in evidence before the Committee:

“As far as maintenance is concerned, it normally cannot and should not be allowed to go by default because we can settle it with the person who tries to default by closing the siding, declaring in one minute that this siding is unfit for further traffic and the industry will close. For that reason, the maintenance charges are not realised in advance. Since the railways came into being, maintenance charges are concurrently realised because the Railway has the authority to realise the charges. Therefore, the question of advance does not arise in that.”

2.47 When asked to furnish the amount of outstandings against individuals/private parties on account of maintenance charges, and the period for which these have been outstanding, the Ministry of Railways have stated in a note as follows:

“The amounts outstanding against individuals/private parties on account of maintenance charges of deposit works excluding Assisted sidings, and the periods for which these have been outstanding are indicated below :

	(Amount in lakhs of Rs.)			
	Less than one year	More than one year but less than 3 years	More than 3 years	Total amount due
Private firms and Private individuals	39.21	22.03	15.00	76.24

2.48 Works are executed by the Railways for other Government departments, municipalities and other local bodies, private firms and individuals at the cost of the latter. These works are called “Deposit Works”. The number of such works undertaken by Railways during 1980-81 was 587 and the amount involved was Rs. 108.08 crores. The Rules provide that no deposit work should be taken up by a Railway till a detailed estimate for the work has been got accepted by the party concerned. In the case of local bodies, private individuals etc., the estimated cost of the work is also required to be deposited in advance. This is clearly laid down in Paras 2027 to 2037 of Indian Railway Code for the Engineering Department. Further, no excess expenditure is to

be incurred on any work unless acceptance of the party is obtained or the anticipated excess cost is deposited by the party.

2.49 The Committee are surprised to note that inspite of these rules and the claim of the Railways that sufficient internal checks exist to guard against any violation of the rules, an amount of Rs.336.52 lakhs is outstanding against the parties on whose behalf deposit works were undertaken by the Railways. Out of this amount, Rs. 124.66 lakhs i.e. about 37% has been outstanding for more than three years. Further, out of the total outstanding amount of Rs. 336.52 lakhs, the dues against Government departments totalled Rs. 261.08 lakhs, and against parties other than Government departments Rs. 75.44 lakhs. It is evident therefore that the rules on the subject are not being strictly followed and there has been laxity on the part of Railway authorities in obtaining the concurrence of the party concerned or getting the amount deposited in advance incurring extra expenditure. The Committee would like the Railway authorities to look into the matter in depth and issue fresh instructions to all the Zonal Railways to ensure that the rules on the subject are followed and the internal checks prescribed are implemented in actual practice. The Committee further recommend that in all cases of excess expenditure incurred by the Railways without obtaining the prior concurrence of the party concerned or getting the amount deposited in advance, individual responsibility for the failure should be fixed and necessary remedial action taken so that such lapses do not recur.

2.50 One of the reasons for incurring excess expenditure is stated to be that the necessary registers on the subject are not being kept up-to-date and the completion reports are not prepared in time. Although the rules prescribed that the completion report should be prepared within six months, in a number of cases this is not being done and in one case relating to the Orissa State Electricity Board, while the work was completed in 1951 and certain ancillary works too completed in 1958, the completion report was prepared only in 1970 and the balance amount of Rs. 1.15 lakhs is yet to be realised. This is a glaring example of the indifferent manner in which the preparation of completion reports is being dealt with by the Railway authorities. The delay in preparing completion reports is stated to be due to late submission of material at site returns, their evaluation and posting and late raising of debits by various Railways and Units etc. The Committee feel that all these factors can easily be controlled by better supervision. They should like to emphasise that in order to avoid excess expenditure on deposit works, it is imperative that the progress of expenditure on every individuals work is watched carefully and the completion report prepared within the prescribed period of six months after the completion of the work so that the final accounts may be settled with the

party concerned without loss of time. The Committee need hardly point out that greater the delay in submitting the claim by the Railways, the greater is the likelihood of the claim remaining outstanding.

2.51 An amount of Rs. 13.19 lakhs against as many as 44 private firms and individuals is due on account of the deposit works undertaken by the Railways. The Committee fail to understand why this excess expenditure should have been incurred by the Railways on behalf of these private parties. They would like Railways to exercise greater vigilance and control in the case of private parties and individuals and ensure that no excess expenditure on works undertaken on their behalf is incurred. Immediate and concerted measures should also be taken to recover the dues from these parties.

2.52 The Committee are surprised to note that an amount of Rs. 5.22 lakhs continues to be outstanding for over 3 years against Messrs IRCON, an undertaking under the administrative control of the Ministry of Railways (Railway Board) itself. This would indicate lack of adequate concern for Railway dues.

2.53 At present Railways do not enter into any formal contract with the concerned parties before undertaking work on their behalf. Only the formal acceptance by the parties to the estimates submitted by the Railways is considered adequate. The Committee recommend that Railways should enter into written contracts which should incorporate adequate provision to protect the interests of Railways in the event of increase in the cost of work due to escalation of costs, change in the scope of work, non-supply of materials by the party etc.

2.54 An amount of Rs. 12.29 lakhs on account of departmental charges has been waived by the Railways since 1978-79 in respect of various deposit works. The Committee are not convinced with the argument of the Ministry of Railways that the amount waived forms an insignificant percentage of the value of work handled. They would like to emphasise that utmost care and scrutiny should be exercised by the Railways before waiving a single paisa of what is legitimately due to them particularly when the Railways are undertaking these works on behalf of other departments/private parties. The Committee recommend that Railways should not as a matter of rule agree to requests for waiving of departmental charges. However, if in any case, the circumstances are found exceptionally genuine, such waiving of charges should be decided only at the level of Railway Board.

2.55 The Committee find that in the case of deposit works required to be maintained by the Railways at the cost of the Government departments, local

bodies, private firms etc., prior consent of the party is required to be obtained for the annual recurring expenditure likely to be incurred by the Railways on repairs, maintenance etc. It is, however, seen that Rs. 76.24 lakhs are outstanding against private parties/individuals alone on account of maintenance charges out of which Rs. 15 lakhs are more than 3 years old and Rs. 22.03 lakhs are more than 2 years old. The Committee are surprised that the maintenance charges are not being realised in advance. While the Chairman, Railway Board has claimed that these charges cannot and should not be allowed to go by default because the Railways could settle it with the concerned party by closing the siding etc., the contention cannot be accepted by the Committee because there are cases where these charges have remained outstanding for even more than 3 years and there are as many as 11 cases of litigation in respect of periodical revision of maintenance charges on the updated costs of the assets. The Committee, therefore, suggest that the Railways should examine the desirability of getting the annual maintenance charges deposited by the concerned parties in advance and in case of failure to do so, the Railways should not undertake the maintenance of such works.

NEW DELHI

*December 16, 1981*

*Agrahayana 25, 1903 (S)*

SATISH AGARWAL

*Chairman*  
Public Accounts Committee

## APPENDIX I

(Vide Para 1.65)

### NOTE ON VOLTAGE OF RAILWAY—TATAS—MSEB SYSTEM FOR MEETING CENTRAL RAILWAY'S TRACTION REQUIREMENTS ON THE KALYAN-IGATPURI AND KALYAN-PUNE SECTIONS.

1. Railways entered into contract with M/s. Tatas in 1939, for using their transmission lines, etc. for transmitting energy generated by Railways to various traction-sub-stations in Bombay area. The system voltage at that time was 100 KV. This contract expired in February 1960.

2. Negotiations were carried out with Tatas in 1964, and a new contract entered into in January, 1964, applicable from February 1960 to March 1967. In this contract Tatas proposed to raise their transmission line voltage to 110 KV for securing higher transmission efficiency.

Para 5(c) of the Contract agreement reads as follows :

"(c) At the point of interconnection, that is point 4, the Government shall maintain proper voltage, not exceeding 99.75 KV, as indicated to them by the companies from time to time. In future the companies intend to increase the system voltage level beyond 99.75 KV upto 110 KV for securing higher transmission efficiency. The companies shall give adequate notice to the Government in this respect to enable the Government to take necessary action in the matter".

3. Point 4 is Railways Chola Power House at Thakurli.

4. Para 3(b) stipulates that this Agreement shall continue for further successive period of 5 years, if no notice is given in writing by the Government to the Company.

5. MSEB system is also connected to the Tatas-Railway system on 100 KV side. As there is inadequate generating capacity in Western Region covering Bombay City, MSEB brings power from Nagpur to Kalwa substation (in Bombay area), at 220 KV to make up this deficiency. MSEB's substation at Kalwa steps down this voltage from 220 KV to 110 KV. The

power transmitted on the 220 KV line is so heavy that the voltage at Kalwa drops down to 180 KV with consequential reduction in voltage on 110 KV side. The voltage of western grid covering Tatas system is therefore required to be regulated accordingly, so that there is not flow of power towards Bombay area. In the circumstances the proposal to raise the voltage to 110 KV has not been possible for M/s. Tatas even though arrangements were made by Railways & Tatas.

6. MSEB have taken up the work of running new transmission lines at 400 KV from Nagpur to Kalwa to improve voltage regulation. This voltage would be stepped down to 110 KV providing substation at Kalwa. This work is likely to be completed by 1982 and after completion of this work the entire system voltage of Tatas-Railways-MSEB will go up to 110 KV.

**APPENDIX-II**

(*Vide* Para 2.26 of the Report)

**PROFORMA 'A'**  
Q.S.

**SUMMARY OF OUTSTANDING AMOUNTS DUE AGAINST DEPOSIT WORKS**

Railway	Departments/parties against works outstanding (amount in Rs. lakhs)					
	Total amounts outstanding (Rs. in lakhs)		Govt. Depts., Local Bodies Under-Taking/ Public Sector			
	Total	Less than one year	Between 1 & 3 years	More than three years	Private firms	Private/individuals
Central	85.00	75.85	7.73	1.42	82.39	0.87
Eastern	8.09	—	6.17	1.92	1.25	6.73
Southern	19.39	9.04	3.37	6.98	7.08	4.11
Northern	67.35	58.79	3.03	6.03	59.32	1.65
Western	20.16	5.24	11.04	3.89	3.57	6.68
S. E.	11.83	1.83	1.48	8.52	8.72	1.21
N. E.	33.65	0.32	0.01	83.32	83.34	—
N. F.	2.55	0.58	—	1.97	2.22	0.33
S. C.	38.00	22.90	4.49	10.61	13.19	23.58
<b>TOTAL</b>	<b>336.52</b>	<b>174.55</b>	<b>37.32</b>	<b>124.66</b>	<b>261.08</b>	<b>45.16</b>
% of <b>TOTAL</b>	100%	51.86%	11.09%	37.04%	77.58%	13.42%
					5.08%	5.08%
					3.88%	3.88%
					0.04%	0.04%

**APPENDIX III**  
*(Vide Para 2.27 of the Report)*

**SUMMARY OF OUTSTANDING AMOUNTS DUE AGAINST DEPOSIT WORKS  
 FROM PRIVATE FIRMS AND PRIVATE PARTIES**

(In lakhs of Rupees)

Railway	Private Firms	Private Individuals
Central	0.73	—
Eastern	0.11	..
Southern	0.34	0.02
Northern	4.37	—
Western	4.27	0.07
South Eastern	1.82	0.06
North Eastern	0.31	..
Northeast Frontier	—	—
South Central	1.08	0.01
<b>Total</b>	<b>13.03</b>	<b>0.16</b>
<b>Total for private firms and individuals</b>		= Rs. 13.03 + Rs. 0.16 (lakhs)
		= Rs. 13.19 (Lakhs)

**CENTRAL RAILWAY**

**PROFORMA 'A'**

**OUTSTANDING AMOUNTS DUE AGAINST DEPOSIT WORKS DONE FOR  
 PRIVATE FIRMS/INDIVIDUALS**

Sl. No.	Name of the private party/individual	Amount due	Less than 1 year	Between 1 & 3 years	More than 3 years
1.	M/s. Kosan Metal Products (Pvt.), Ltd.	3262.86	—	3262.86	—
2.	M/s. Shama Forge Co. Ltd.	4000.00	—	—	4000.00
3.	M/s. Urban Development Co. Pvt. Ltd., Connaught place	61031.00	—	—	61031.00
4.	M/s. Property Mahabali Colliery Siding Chanda	4271.17	—	—	4271.17
		<b>72365.03</b>		<b>3262.86</b>	<b>69302.17</b>

**OUTSTANDING AMOUNTS DUE AGAINST WORKS DONE FOR PRIVATE FIRMS/INDIVIDUALS**

Sr. No.	Name of the private party/individual	Amount due	less than 1 year	Between 1 & 3 years	More than 3 years
1.	M/s. Bengal Paper Mills Raniganj	11284.10	—	—	11284.10

## NORTHERN RAILWAY

## PROFORMA 'A'

## OUTSTANDING AMOUNTS DUE AGAINST DEPOSIT WORKS DONE FOR PRIVATE FIRMS/INDIVIDUALS

Sr. No.	Name of the party/ Private individual	Amount	Less than 1 year	Between 1 & 3 years	More than 3 years
1.	M/s. Ayodhya Sugar Mills	303.00	—	303.00	—
2.	„ Ajanta Tube Ltd.	236650.00	236650.00	—	—
3.	„ Sugar Mill, Dhampur	2710.00	2710.00	—	—
4.	„ Roza Sugar Mills, Rampur	9090.00	9090.00	—	—
5.	„ Modi Rubber Ltd.	185249.00	—	—	185249.00
6.	„ J. K. Cotton Spg. & Wvg. Mills Pvt. Ltd., Kanpur	2198.85	2198.85	—	—
7.	„ Elgin Mill No. 2 siding Kanpur	366.19	—	366.19	—
		436567.04	250648.85	669.19	185249.00

## PROFORMA 'A'

## SOUTHERN RAILWAY

## OUTSTANDING AMOUNTS DUE AGAINST WORKS DONE FOR PRIVATE FIRMS/INDIVIDUALS

Sl. No.	Name of the party/ Individual party	Amount due	Less than 1 year	Between 1 & 3 years	More than 3 years
1.	M/s. Imperial Tobacco Co. Pvt. Ltd.	9343.86	—	—	9343.86
2.	M/s. India Cement	142.67	—	—	142.67
3.	M/s. Plyfibres	23420.00	23420.00	—	—
4.	M/s. Fertilisers & Chemicals Travancore	1024.60	—	1024.60	—
5.	M/s. Sarojini Achi & others	1807.36	1807.36	—	—
		35738.49	25227.36	1024.60	9486.53

## PROFORMA 'A'

## WESTERN RAILWAY

## OUTSTANDING AMOUNTS DUE AGAINST DEPOSIT WORKS DONE FOR PRIVATE FIRMS/INDIVIDUALS

Sr. No.	Name of the party/ Private individual	Amount due	Less than 1 year	Between 1 & 3 years	More than 3 years
1.	M/s. Aman Dye (P) Ltd.	17013.00	—	—	17013.00
2.	M/s. Ujjain Hira Mills Siding	61304.53	—	61304.53	—
3.	The Manager, Milk Production Ltd. Ajmer	5917.15	—	5917.15	—
4.	Shri Vithalbhai C. Barot, Bhan- dup	114.30	—	—	114.30
5.	Shri Bhanvshanker	77.00	—	77.00	—
6.	Shri Lahhunal Gandhidham	59.65	—	59.65	—
7.	I.P.C.L. Ramoli	174317.00	—	174317.00	—
8.	The Secretary Railway Institute, Gandhidham	6284.28	—	6284.28	—
9.	M/s. J. K. Cement	170697.90	—	—	170697.00
		435884.81		247959.61	187825.20

## PROFORMA 'A'

## SOUTH CENTRAL RAILWAY

## OUTSTANDING AMOUNTS DUE AGAINST DEPOSIT WORKS DONE FOR PRIVATE FIRMS/INDIVIDUALS

Sl. No.	Name of the party/ Private Individual	Amount due	Less than 1 year	Between 1&3 years	More than 3 years
1.	M/s. Yeshwant Shankar Post Pulusi TR Tasgaon	6776.00	—	—	6776.00
2.	M/s. Sirsilh Ltd. Sirpur Khazna- gar	4570.00	—	—	4570.00
3.	M/s. Sirpur Paper Mills Sirpur Khaznagar	25110.00	—	—	25110.00
4.	M/s. Andhra Sugars Kovvur West Godavari	19800.00	—	—	19800.00
5.	M/s. Links Davangri Cotton Mills	1169.00	—	—	1167.00
6.	M/s. K. S. C. K. Ltd. Shivnagar	525.00	—	—	525.00
7.	M/s. Shahakari Sakhar Karkhana Ltd. Shivnagar	31172.00	—	—	31172.00
8.	M/s. G. Balavenhata Reddy	18977.00	—	18977.00	—
9.	Sh. P. Bhuianga Rayudu	504.00	—	—	504.00
		108603.00	—	18977.00	89626.00

N. F. RAILWAY

NIL

N. E. RAILWAY

1. Shiv Rice Mills

38975.63 29922.63 1053.00 —

PROFORMA 'A'

## SOUTH EASTERN RAILWAY

OUTSTANDING AMOUNTS DUE AGAINST DEPOSIT WORKS : DONE FOR  
PRIVATE FIRMS/INDIVIDUALS

Sl. No.	Name of the party/ individual party	Amount due	Less than 1 year	Between 1 & 3 years	More than 3 years
1.	Sri B. N. Sarda	5967.79	—	—	5967.79
2.	M/s. Killich Industries Ltd. Bombay	14080.12	—	—	14080.12
3.	M/s. Shaw Wallace & Co. Cal- cutta	7648.77	—	—	7648.77
4.	M/s. Killich Industries Ltd. Bombay	17554.85	—	—	17554.85
5.	M/s. Shaw Wallace & Co. Cal- cutta	2140.86	—	—	2140.86
6.	M/s. A. C. Co. Ltd., Jamul	1707.87	—	—	1707.87
7.	M/s. Indian Aluminium Ltd., Muri	43199.00	—	—	43199.00
8.	M/s. Ranipur Saltora Delhi Co- lliery (P) Ltd.	95420.89	—	—	95420.89
			<u>187720.15</u>		<u>187720.15</u>

## APPENDIX IV

### STATEMENT OF CONCLUSIONS AND RECOMMENDATIONS

Sl. No.	Para No.	Ministry/Dept. concerned	Conclusions and recommendation
(1)	(2)	(3)	(4)
1.	1.79	Railways	<p>In order to step down the current when taken from the mains from the power house to a low voltage and convert when necessary from AC to DC, Rotary Convertors were being used in the Central Railway. These convertors were installed in 1929 and the expected life of these convertors was 25-30 years. The Railway Administration contemplated in 1961 replacement of these overaged convertors, but it was only in November, 1969 that orders for 2 silicon rectifiers with thyristor equipment were placed with M/s. NGEF, Bangalore who were to obtain these from their collaborators M/S. AEG Telefunken, West Germany. In September 1970, the Ministry of Railways (Railway Board) placed a direct order for the supply of five sets of these rectifiers on the West German firm who had no previous experience of supplying these equipments for railway traction.</p>
2.	1.80	Railways	<p>The Committee are surprised to note that although the rotary convertors in the Central Railway were installed in 1929 and the expected life of these convertors expired in 1959, no advance planning was done to obtain replacement for these convertors and it was only in 1961 that the Railway Administration contemplated the replacement of these convertors. It took another eight years for the Railways to actually place an order for the</p>

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purchase of equipment to replace these converters. This clearly indicates that there has been an absence of any perspective planning on the part of Railways. Moreover, the fact that Railways took as much as 8 years in placing orders for the equipment clearly indicate that the entire matter was dealt with in a casual manner. The Committee would like to emphasise that the Railways should take action to decide about the replacement of overaged equipment much in advance of the replacement becoming due and once a decision in this regard is taken, prompt action should be taken to place orders and obtain the equipment so that these may be installed and commissioned in time.

3. 1.81      Railways      The Committee note that in response to tender enquiries made in July 1968 for supply of rectifiers with inversion facilities, the Railway Administration received five offers. Out of these, the offers of M/s. NGEF Ltd., and M/s. HE (I) L (now BHEL) for silicon rectifiers with thyristor invertors and M/s. Raje Industrial Engineering Combine Pvt. Ltd. for mercury arc rectifiers were more or less complete. The Tender Committee of the Central Railway recommended the offer of M/s. Raje Industrial Engineering Combine Pvt. Ltd. and did not accept the offer of M/s. NGEF Ltd. as the replies from Railway Advisers abroad had indicated that for such heavy duties, controlled silicon rectifiers had not been used in the Railway, abroad. Moreover, the Railway Board had also advised that for the purpose of Kasara Sub-station, where regenerative power had to be dealt with, the Railways should employ only proved apparatus and not take unnecessary hazards. The Tender Committee felt that it would be risky to go in

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for silicon rectifiers particularly when appreciable amount of foreign exchange was involved. The recommendation of the Tender Committee was however, rejected by the Railway Board and it was decided to accept the offer of M/s. NGEF as it was felt that the thyristor equipment with separate rectifier and invertor element had a decided advantage over the mercury arc rectifiers.

4. 1.82 Railways The Committee are unhappy that the recommendation of the Tender Committee of the Central Railway for use of mercury arc rectifier was rejected by the Railway Board, particularly when the silicon rectifiers were not being used for railway traction even in the country from where these were purchased e.g. West Germany and the Railway Board itself had given advice that the Railways should employ only proved apparatus and not take unnecessary hazards.

5. 1.83 Railways The Committee note that silicon rectifiers with inversion facilities were at that time being used for railway traction in France and USSR only. The Railway Board have stated that no firm in France was anxious to transfer the technology to India due to the distance involved. As regards USSR it has been stated by the Railway Board that as the equipment was being bought under IDA loan, USSR was not qualified to bid for the tender. The Committee fail to appreciate why the Railways did not make any effort to get this technology transferred on Government to Government basis. The Committee would like to caution the Government against going in for untested technology from firms who have no previous experience in the line simply because easy finance is available from some foreign source.

(1)	(2)	(3)	(4)
6.	1.84	Railways	The Committee note that orders for five invertors to be supplied by the West German firm were placed on 24 September, 1970 and as per contract these were to be supplied by 31 August, 1971. However, these were actually shipped in April, 1974. These were erected and commissioned between March, 1977 and June, 1978 by which time their warranty period had expired. The Ministry of Railways have explained that such a long time was taken in shipment, erection and commissioning because the firm had to develop the design, get it approved by the Railway authorities of India and then tested. The Committee fail to understand that when the Railway Administration was well aware of the different processes that had to be gone through before the supply of these invertors, why the target date for the shipment was fixed for less than a year. The Committee would like to express their unhappiness at the growing tendency on the part of Government Departments to fix unrealistic target dates for commissioning of projects which subsequently not only bring a bad name to the Government but also result in disappointment and frustration amongst the likely beneficiaries.
7.	1.85	Railways	In this connection, the Committee find that the Railways took nearly two years in approving the designs and drawings and clearance was given to the firm to ship all equipment in March, 1974 only. The Committee consider that the Railways took unduly long time in giving clearance to the design and drawings submitted by the firm. Such delays, the Committee expect, will in future be avoided.
8.	1.86	Railways	The Committee have been informed that a number of sub--stations were located in isolated places some of which were hilly areas

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away from Railway Stations and some of them not approachable by road. This resulted in delay in Construction of sub-station buildings and railways sidings thereby causing further delay in erection and commissioning of the invertors. The Committee consider that the job of erection and commissioning of these invertors was not taken up with the seriousness which it deserved. The Committee fail to understand why action was not taken to construct sub-station buildings in time to synchronise with the arrival of invertors at Bombay. Moreover, the shipment of invertors was itself delayed by 2 to 3 years and there is no reason why the building were not ready even within the extended time that became available to the Railways. This is a clear cause of faulty planning and lack of anticipation on the part of the Railways.

9. 1.87      Railways

The Committee are surprised to note that one out of the 7 invertors has not so far been erected and commissioned because it developed extensive damages/corrosion due to seepage of water and long storage. The equipment when received at site was inspected jointly by M/s. NGEF and Railways in February, 1975 and no damage was noticed. However, when the equipment was taken for erection in August, 1978, it was again inspected jointly by M/s. NGEF and Railways and at that time damage due to seepage of water/moisture was noticed. It is therefore clear that adequate precautions were not taken during the storage of this invertor. The Committee would like the Ministry of Railways to investigate the precise reasons for the damage caused to this invertor and to fix responsibility for the same.

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10. 1.88 Railways The Committee have been informed that M/s. NGEF have undertaken repair of this inverter at their Works at Bangalore and that it is expected to be erected and commissioned by June, 1982. The Committee would like to be informed of the latest position in this regard.

11. 1.89 Railways The Committee regret to note that the inverter at Tambadmal which was commissioned on 30 March, 1977 went out of order in November, 1978. During this period the inverter worked for 99 out of total number of 581 days. The damage to the inverter is stated to be due to insulation of a number of control wires having been eaten away by vermins/rodents. According to the Ministry of Railways the special control spares and connectors were not procured alongwith the equipment which have now been ordered by the Central Railway. The Committee are unhappy at the fact that the inverter remained unutilised for about three years for want of necessary components after it was damaged in November, 1978. They would like that the circumstances in which these control wires were damaged and the reasons for delay in importing the components and effecting repairs to the inverter be thoroughly investigated and suitable action in the matter taken.

12. 1.90 Railways The Committee note that although adequate inspection and pre and post commissioning tests were stated to have been carried out by the engineers of M/s. AEG/NGEF in the presence of Railway engineers, the performance of the remaining five invertors after commissioning has been highly unsatisfactory, as is evident from the fact that the inverter at Kasara worked for only 12 out of 60 days after commissioning. The inverter at Thakurwadi worked for 30 days out of

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643 days. The remaining three invertors also worked for 77,116 and 155 days only and one of these invertors worked for more than 20% of days since commissioning. Although the Ministry of Railways (Railway Board) have claimed that the performance of these invertors after re-commissioning has been fairly satisfactory, the same is not borne out by the data supplied by the Ministry of Railways. One of these invertors erected at Oombermali has worked for only 142 days out of 561 days after recommissioning. The invertor at Kasara worked for only 270 days out of 566 days. The Committee cannot but conclude that the investment made in the purchase of these invertors has remained by and large unfructified and the Railways have not been able to derive the expected benefit out of the investment. The Committee would like to express their unhappiness at this state of affairs.

### 13. 1.91 Railways

The Committee note that the Railways had entered into a contract with M/s. Tatas in 1939 for using their transmission lines etc. for transmitting energy generated by Railways to various traction sub-stations in Bombay area. Consequent upon the expiry of this contract in February 1960, negotiations were carried out by Railways with Tatas in 1964 and a new contract was entered into in January 1964 applicable from February 1960 to March 1967. Para 3(b) of this contract stipulated that this agreement would continue for further successive period of 5 years, if no notice was given in writing by the Government to the Company. The Tatas proposed in this contract to raise their transmission line voltage to 110 kv for securing higher transmission efficiency. Considering this proposal as an advice from Tatas, in the contract entered into by the Railways with M/s. NGEF/AEG for supply

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of equipment in 1969 and 1970 it was provided that the existing line voltage was 100 kv and it was envisaged to be raised to 110 kv. However, when the equipment was erected and commissioned, the system voltage on the Tata-Koyna-Railway grid continued to be 100 kv. and is yet to be raised to 110 kv. According to the Ministry of Railways the inverter equipment functioned satisfactorily for a few months initially after the first commissioning but some components failed after having been exposed to low grid voltage condition continuously.

#### 14. 1.92 Railways

The Ministry of Railways have further informed the Committee that MSEB (Maharashtra State Electricity Board) system is also connected to the Tatas-Railway system in 100 kv side. MSEB brings power from Nagpur to Kalwa sub-station (in Bombay area) at 220 kv where the voltage steps down from 220 kv to 110 kv. The power transmitted on the 220 kv line is so heavy that the voltage at Kalwa drops down to 180 kv with consequential reduction in voltage on 110 kv side. The voltage of Western grid covering Tatas system is therefore required to be regulated accordingly. In the circumstances the proposal to raise the voltage to 110 kv has not been possible for M/s. Tatas. The Committee are further informed that MSEB have taken up the work of running new transmission lines at 400 kv from Nagpur to Kalwa to improve voltage regulations. The work is likely to be completed by 1982 and after completion of this work the entire system voltage of Tatas-Railways-MSEB will go up to 110 kv. The Committee further note that the equipment is now so designed that it can work on 100 kv as well as 110 kv system with normal permissible voltage variations

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15. 1.93	Railways	The Committee fail to understand as to why, the Railways did not enter into a formal contract with Tatas in respect of change over of line voltage from 100 kv to 110 kv and on mere advice from them that they would step up the line voltage to 110 kv included a clause in this regard in the contract entered into with the firm M/s. AEG/NEGF. The Committee regret to observe that this failure on the part of Railways to anticipate the possible delay in conversion of line voltage has contributed to the poor performance of the invertors. Moreover, if the Ministry of Railways were not sure about the time by which this voltage conversion would take place, it is not understood why the equipment was not designed in the first instance in such a way that it would work on 100 kv as well as 110 kv system with normal possible voltage variations. The Committee cannot but conclude that the Railways have failed to exercise necessary precaution while placing the orders for the equipment.	
16. 1.94	Railways	The Committee note that when the Railway Administration decided to go in for silicon rectifiers with inversion facilities in replacement of the existing overaged rotary convertors, the value of the regenerated energy was estimated to be Rs. 40 lakhs per annum. However, according to the Ministry of Railways the total value of regenerated energy per annum based on 1979-80 generation costs comes to Rs. 3.5 lakhs only. This has resulted in avoidable loss of Rs. 36.5 lakhs every year. The loss would be much more if the fact that the current state per unit is 29 paise against 11.9 paise which was the rate when the figure of Rs. 40 lakhs was worked out, is taken into account. The Committee find that the shortfall of energy is not only due to the	

(1)	(2)	(3)	(4)
			poor performance of the invertor equipment but also due to the delay in providing the requisite regenerating braking facilities to the goods as well as passenger locomotives. The Committee regret to note that against 125 locomotives which were expected to be fitted with the regenerative braking equipment for capacity utilisation of the seven invertors and on the basis of which the earlier assumption of the estimated value of regenerated energy of Rs. 40 lakhs per annum had been calculated, only 37 locomotives i.e. 34 out of 49 passenger locos and 3 out of 57 goods locos have so far been provided with the regenerative braking facilities.
17. 1.95	Railway		As regards the delay in the case of goods locomotives the Ministry of Railways have informed the Committee that initially regenerative equipment for 15 locos was supplied by BHEL, who had developed this equipment for the first time, but they did not work satisfactorily. Recently 5 sets have been modified and fitted on 5 locos and their performance has been found to be reasonably satisfactory. Arrangements are being made to procure the balance regenerative equipment so that the entire fleet of 57 WCG/2 locos could be fitted with such equipment. The Committees are unable to appreciate why action to procure this particular equipment for the goods locos was not initiated well in advance particularly when it was known that without equipping the goods locos with it the regeneration of energy will not be possible. Further, since BHEL was developing this equipment for the first time the Railways should have been more cautious to see that the equipment for all locos is received timely and was free from any defect. The Committee recommend that at least now the Railway

(1)	(2)	(3)	(4)
			Administration should take immediate steps to provide regenerative braking facilities in all the locomotives on the basis of a time-bound programme so that the contemplated benefit could be derived from these invertors.
18.	1.96	Railway	From the foregoing paragraphs it is evident that even though the rotary convertors had become overaged by more than two decades and their replacement could not be deferred and contracts for two rectifiers with inversion facilities for this purpose and five more thyristor equipment (invertors) for new substations were awarded as far back as in 1969 and 1970 respectively the position at present is far from satisfactory. Out of the 7 invertors only five are working and even their capacity utilisation is below the desired level. The investment of Rs. 1.04 crores on five invertors had remained unfructified for about six years and the investment (Rs. 0.41 crore) on the remaining two continues to remain unfructified. Contrary to the initial estimated value (Rs. 40 lakhs per annum) of regenerated energy, the total value of regenerated energy based on 1979-80 generation costs comes to Rs. 3.5 lakhs only. The Committee at this stage cannot but express their dissatisfaction over the avoidable delays such as in awarding the contract, approving design and drawing details, commissioning of the invertors and lack of proper planning and monitoring at various stages.
19.	1.97	Railway	The Committee hope that suitable steps would be taken early to recommission the remaining two invertors and utilise all the seven invertors to the maximum possible extent and to narrow down the gap of Rs. 36.5 lakhs (at 1968 prices) worth of energy per annum not being recovered by providing all the passenger and goods

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			locos with the regenerating braking equipment.
20. 2.48	Railways		Works are executed by the Railways for other Government departments, municipalities and other local bodies, private firms and individuals, at the cost of the latter. These works are called "Deposit works". The number of such works undertaken by Railways during 1980-81 was 587 and the amount involved was Rs. 108.08 crores. The Rules provide that no deposit work should be taken up by a Railway till a detailed estimate for the work has been got accepted by the party concerned. In the case of local bodies, private individuals etc., the estimated cost of the work is also required to be deposited in advance. This is clearly laid down in Paras 2027 to 2037 of Indian Railway Code for the Engineering Department. Further, no excess expenditure is to be incurred on any work unless acceptance of the party is obtained or the anticipated excess cost is deposited by the party.
21. 2.49	Railways		The Committee are surprised to note that in spite of these rules and the claim of the Railways that sufficient internal checks exist to guard against any violation of the rules, an amount of Rs. 336.52 lakhs is outstanding against the parties on whose behalf deposit works were undertaken by the Railways. Out of this amount, Rs. 124.66 lakhs i.e. about 37% has been outstanding for more than three years. Further, out of the total outstanding amount of Rs. 336.52 lakhs, the dues against Government departments totalled Rs. 261.08 lakhs, and against parties other than Government departments Rs. 75.44 lakhs. It is evident therefore that the rules on the subject are not being strictly followed and there has

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been laxity on the part of Railway authorities in obtaining the concurrence of the party concerned or getting the amount deposited in advance before incurring extra expenditure. The Committee would like the Railway authorities to look into the matter in depth and issue fresh instructions to all the Zonal Railways to ensure that the rules on the subject are followed and the internal checks prescribed are implemented in actual practice. The Committee further recommend that in all cases of excess expenditure incurred by the Railways without obtaining the prior concurrence of the party concerned or getting the amount deposited in advance, individual responsibility for the failure should be fixed and necessary remedial action taken so that such lapses do not recur.

22. 2.50 Railways

One of the reasons for incurring excess expenditure is stated to be that the necessary registers on the subject are not being kept up-to-date and the completion reports are not prepared in time. Although the rules prescribed that the completion report should be prepared within six months, in a number of cases this is not being done and in one case relating to the Orissa State Electricity Board, while the work was completed in 151 and certain ancillary works too completed in 158, the completion report was prepared only in 1970 and the balance amount of Rs. 1.15 lakhs is yet to be realised. This is a glaring example of the indifferent manner in which the preparation of completion reports is being dealt with by the Railway authorities. The delay in preparing completion reports is stated to be due to late submission of material at site returns, their evaluation and posting and late raising of debits by various Railways and Units etc. The Committee feel that all these

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factors can easily be controlled by better supervision. They would like to emphasise that in order to avoid excess expenditure on deposit works, it is imperative that the progress of expenditure on every individual work is watched carefully and the completion report prepared within the prescribed period of six months after the completion of the work so that the final accounts may be settled with the party concerned without loss of time. The Committee need hardly point out that greater the delay in submitting the claim by the Railways, the greater is the likelihood of the claim remaining outstanding.

23. 2.51      Railways      An amount of Rs. 13.19 lakhs against as many as 44 private firms and individuals is due on account of the deposit works undertaken by the Railways. The Committee fail to understand why this excess expenditure should have been incurred by the Railways on behalf of these private parties. They would like Railways to exercise greater vigilance and control in the case of private parties and individuals and ensure that no excess expenditure on works undertaken on their behalf is incurred. Immediate and concerted measures should also be taken to recover the dues from these parties.

24. 2.52      Railways      The Committee are surprised to note that an amount of Rs. 5.22 lakhs continues to be outstanding for over 3 years against Messrs. IRCON, an undertaking under the administrative control of the Ministry of Railways (Railway Board) itself. This would indicate lack of adequate concern for Railway dues.

25. 2.53      Railways      At present Railways do not enter into any formal contract with the concerned parties before undertaking work on their behalf. Only the formal acceptance by the parties to the

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<p>estimates submitted by the Railways is considered adequate. The Committee recommend that Railways should enter into written contracts which should incorporate adequate provision to protect the interests of Railways in the event of increase in the cost of work due to escalation of costs, change in the scope of work, non-supply of material by the party etc.</p>			
26. 2.54	Railways		An amount of Rs. 12.29 lakhs on account of departmental charges has been waived by the Railways since 1978-79 in respect of various deposit works. The Committee are not convinced with the argument of the Ministry of Railways that the amount waived forms an insignificant percentage of the value of work handled. They would like to emphasise that utmost care and scrutiny should be exercised by the Railways before waiving a single paisa of what is legitimately due to them particularly when the Railways are undertaking these works on behalf of other departments/ private parties. The Committee recommend that Railways should not as a matter of rule agree to requests for waiving of departmental charges. However, if in any case, the circumstances are found exceptionally genuine, such waiving of charges should be decided only at the level of Railway Board.
27. 2.55	Railways		The Committee find that in the case of deposit works required to be maintained by the Railways at the cost of the Government departments, local bodies, private firms etc., prior consent of the party is required to be obtained for the annual recurring expenditure likely to be incurred by the Railways on repairs, maintenance etc. It is, however, seen that Rs. 76.24 lakhs are outstanding against private

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<p>parties/individuals alone on account of maintenance charges out of which Rs. 15 lakhs are more than 3 years old and Rs. 22.03 lakhs are more than 2 years old. The Committee are surprised that the maintenance charges are not being realised in advance. While the Chairman, Railway Board has claimed that these charges cannot and should not be allowed to go by default because the Railways could settle it with the concerned party by closing the siding etc., the contention cannot be accepted by the Committee because there are cases where these charges have remained outstanding for even more than 3 years and there are as many as 11 cases of litigation in respect of periodical revision of maintenance charges on the updated costs of the assets. The Committee, therefore, suggest that the Railways should examine the desirability of getting the annual maintenance charges deposited by the concerned parties in advance and in case of failure to do so, the Railways should not undertake the maintenance of such works.</p>			

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