FOURTEENTH REPORT

PUBLIC ACCOUNTS COMMITTEE (1980-81)

(SEVENTH LOK SABHA)

DIESEL HYDRAULIC LOCOMOTIVES

MINISTRY OF RAILWAYS

(RAILWAY BOARD)

[Action taken on 58th Report (Sixth Lok Sabha)]

सत्यमेव जयते

Presented in Lok Sabha on.....
Laid in Rajya Sabha on.....

LOK SABHA SECRETARIAT
NEW DELHI
March, 1981/Phalguna, 1902 (Saka)
Price : Rs. 1.25

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INTRODUCTION

I, the Chairman of the Public Accounts Committee as authorised by the Committee, do present on their behalf this Fourteenth Report on Action taken by the Government on the recommendations of the Public Accounts Committee contained in their 58th Report (Sixth Lok Sabha) on Diesel Hydraulic Locomotives relating to the Ministry of Railways (Railway Board). The 58th Report dealt with a case of procurement of 8 WDM-3 locomotives by the Railways for developing the concept of Suri Transmission. In this Action Taken Report, the Committee have referred to the defects in the locomotives which had largely remained unidentified due to lack of the required R & D follow-up action and have emphasised the necessity of conducting adequate research and development work in such cases.

2. On 20 August, 1980 the following 'Action Taken Sub-Committee' was appointed to scrutinise the replies received from Government in pursuance of the recommendations made by the PAC in their earlier reports:

1. Shri Chandrajit Yadav—*Chairman*
2. Shri K. P. Unnikrishnan
3. Shri K. P. Singh Deo
4. Shri V. N. Gadgil — *Members*
5. Shri Satish Agarwal
6. Shri N. K. P. Salve

3. The Action Taken Sub-Committee of the Public Accounts Committee (1980-81) considered and adopted the Report at their sitting held on 2 March, 1981. The Report was finally adopted by the Public Accounts Committee (1980-81) on 11 March, 1981.

4. For reference facility and convenience, the recommendations and observations 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 the Appendix of the Report.

5. 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;
12 *March*, 1981
21 *Phalguna*, 1902 (*Saka*)

CHANDRAJIT YADAV
Chairman,
Public Accounts Committee.

CHAPTER—I

REPORT

1.1. This Report of the Committee deals with the action taken by Government on the Committee's recommendations and observations contained in their 58th Report (6th Lok Sabha) on Diesel Hydraulic Locomotives.

1.2. The 58th Report was presented to Lok Sabha on 20th April, 1979 and contained in all 20 recommendations or observations. An ad-interim reply, covering all the 20 recommendations or observations has been received from the Government and these have been broadly categorised as follows:

(i) Recommendations or observations that have been accepted by Government.

S.No. 20

(ii) Recommendations or observations which the Committee do not desire to pursue in the light of the replies received from Government.

Nil

(iii) Recommendations or observations replies to which have not been accepted by the Committee and which require reiteration.

Nil

(iv) Recommendations or observations in respect of which Government have furnished interim replies.

S. Nos. 1—19

1.3. The Committee will now deal with the action taken by Government on their above recommendations and observations as under:

Reference of the entire case to an independent High Powered Technical Committee for further investigation

(Sl. No. 20—Para 1.193)

1.4. After examining a case of procurement by Railways of eight WDM-3 locomotives from a West German firm with the objective of developing Suri transmission, the Committee had in para 1.193 of the Report recommended as under:

"The Committee, therefore, desire that an independent high powered Technical Committee be constituted with a view:

(i) to ascertain whether in the circumstances then prevailing, selection of WDM-3 locomotives with Meybach engine was the correct choice;

(ii) whether the assertions made by the West German firms about the performance of their locomotives|diesel engines were subjected to any critical scrutiny either by the Engineer deputed to West Germany for negotiations with the firm or by the Railway Board or any competent technical body;

(iii) whether there was any lapse in obtaining full guarantee terms from German suppliers; and

(iv) whether a fair trial has been given to these locomotives to prove their efficiency."

1.5. In their Action Taken Note dated 16 November, 1979 the Ministry of Railways (Railway Board) stated:

"The observations of the Committee have been noted. The Railway Board have since decided to constitute an independent High Powered Committee. The action taken on the recommendations of this Committee will be intimated to the P.A.C. in due course."

1.6. In a further communication dated 17 November, 1980 the Ministry of Railways (Railway Board) have stated:

"(1) The High Power Committee was constituted on 7.3.80 and its composition is as under:

Chairman

1. Dr. S. R. Valluri, Director, National Aeronautical Ltd., Bangalore.

Member

2. Dr. P. A. Paranjpe. Head of the Propulsion Division of the National Aeronautical Laboratory, Bangalore.

Technical Assessor Member

3. Shri A. Sitanath, Addl. General Manager (Operation), South Eastern Railway, Calcutta.

Convener, Member

4. Shri S. Abuzar, Divisional Railway Manager, Bhusaval, Central Rly.

(2) The High Powered Committee has since submitted its report on 25.9.1980.

(3) The report is being processed at present and after the same has been processed, copies of the report as also action taken thereon will be advised to the Lok Sabha Secretariat."

1.7. The Committee note that as recommended by them the Ministry of Railways (Railway Board) considered it fit to refer the whole question of procurement of 8 WDM-3 locomotives to an independent high powered Committee for further investigation. The high powered Committee which was constituted on 7 March, 1980, submitted its report on 25 September, 1980. The Ministry of Railways (Railway Board) have intimated (December 1980) that they have accepted the findings of the high powered technical committee and initiated necessary action on their recommendations.

1.8. The Committee observe from the report that, according to the high powered technical committee, while concurrent R&D and commercial interests were involved in the purchase programme of the WDM-3 locomotives, the R&D aspects of the project were unwittingly overlooked on commissioning of the locomotives and subordinated to their commercial utilisation. Equally fair trials had not been conducted with regard to R&D aspects. The limited trials conducted were, as an R&D Project, not sufficiently accurate and properly monitored by the research teams. In his evidence before the Committee the inventor of the Suri transmission had also pointed out that these locomotives had been straightaway put in use without making any research, that these had not been given the nursing that such development needed.

1.9. In the light of the above, the Committee cannot help feeling that, for lack of the required R&D follow up action, not only the defects/shortcomings in the locomotives remained largely unidentified, but necessary measures to ensure the performance ex-

pected of them in terms of the manufacturer's guarantees could not be taken. As a result, four of the 8 locomotives purchased are lying out of commission from 1974, while the remaining ones are, as per decision (January 1980) of the Railway Board, to be condemned as and when they become unfit for being continued in service. The investment of Rs. 3.37 crores on these locomotives has consequently remained largely unfructified. The Committee would like the Railway Board to insure in such cases that the necessary R&D drill is prescribed and followed up without fail.

CHAPTER II

RECOMMENDATIONS OR OBSERVATIONS THAT HAVE BEEN ACCEPTED BY GOVERNMENT

Recommendation

1.193. The Committee, therefore, desire that independent high powered Technical Committee be constituted with a view:

(i) to ascertain whether in the circumstances then prevailing selection of WDM-3 locomotives with Meybach engine was the correct choice;

(ii) whether the assertions made by the West German firms about the performance of their locomotives|diesel engines were subjected to any critical scrutiny either by the Engineer deputed to West Germany for negotiations with the firm or by the Railway Board or any competent technical body;

(iii) whether there was any lapse in obtaining full guarantee terms from German suppliers; and

(iv) whether a fair trial has been given to these locomotives to prove their efficiency.

[Sl. No. 20, Para 1.193 of PAC's 58th Report (Sixth Lok Sabha)].

Action taken

The recommendation of the committee has been accepted. The Railway Board have since decided to constitute an independent High Powered Committee.

[Ministry of Railways (Railway Board) O.M. No. 79—BC—PAC/VI/58, dated 23-11-79].

Further Information

(1) The High Powered Committee was constituted on 7-3-80 and its composition is as under:

Chairman

1. Dr. S. R. Valluri
   Director,
   National Aeronautical Ltd.,
   Bangalore.

Member

2. Dr. P. A. Paranjpe,
Head of the Propulsion
Division of the National
Aeronautical Laboratory
Bangalore.

Technical Assessor Member

3. Shri A. Sitanath
Addl. General Manager
(Operation),
South Eastern Railway
Calcutta.

Convener, Member

4. Shri S. Abuzar,
Divisional Railway Manager,
Bhusaval,
Central Railway.

(2) The High Powered Committee has since submitted its report on 25.9.1980.

(3) The report is being processed at present and after the same has been processed, copies of the report as also action taken thereon will be advised to the Lok Sabha Secretariat.

(4) Findings of the Committee on the specific terms of reference have been accepted by the Railway Board. Necessary action is being taken on the recommendations made by the Committee.

[Ministry of Railways (Railway Board) O.M. Nos. 79-BC-PAC VI/58, dated 17-11-80 and 1-12-80].

CHAPTER III

RECOMMENDATIONS OR OBSERVATIONS WHICH THE COMMITTEE DO NOT DESIRE TO PURSUE IN THE LIGHT OF THE REPLIES RECEIVED FROM GOVERNMENT

NIL

CHAPTER IV

RECOMMENDATIONS OR OBSERVATIONS REPLIES TO WHICH HAVE NOT BEEN ACCEPTED BY THE COMMITTEE AND WHICH REQUIRE REITERATION

NIL

CHAPTER V

RECOMMENDATIONS OR OBSERVATIONS IN RESPECT OF WHICH GOVERNMENT HAVE FURNISHED INTERIM REPLIES

Recommendations

Para 1.174. The Committee find that eight WDM-3 locomotives were procured by the Railways from a West German firm with the objective of developing Suri transmission for high speed traction with a view to obtaining operational efficiency and fuel economy. The total expenditure booked upto August 1975 towards the cost of these locomotives was Rs. 3.37 crores. Out of the eight locomotives, six had been equipped with Suri transmission and two with Mekydro transmission. Four out the six WDM-3 locomotives equipped with Suri transmission had to be stabled within a very short time of acquisition. Apart from the four locomotives having to be stabled the Suri transmission had been blanked off by the manufacturers on the ground that the transmission system was responsible for the poor performance of the locomotives. Thus the objectives of purchasing 2500 horse power locos (WDM-3), namely, development of Suri transmission for high speed traction with a view to obtaining operational efficiency and fuel economy have not been realised. The circumstances leading to this purchase of eight WDM-3 locomotives are discussed in the subsequent paragraphs.

Para 1.175. The Committee find that Suri transmission was first used in seven 650 horse power diesel shunting-cum-shuttle service locomotives which were developed and manufactured by M|s. Mak of West Germany. These locomotives placed in service during 1961-62 were not giving good performance. The Committee were informed by the Chairman, Railway Board in August 1976 that trials had been going with 650 horse power locomotives when a decision was taken that "they should go in for a higher horse power engine as Suri transmission was more beneficial at higher speeds." According to the Member Mechanical who deposed (August 1976) before the Committee, the conclusion that 5—9 per cent savings in fuel consumption, if Suri transmission was used in higher horse power locomotives was "just a theoretical conclusion", although in a very general manner he added that "initially with every new unit one does experience trouble, e.g., with all our steam locomotives and the diesel ones, we

always had some trouble or the other". However, in their supplementary memorandum furnished in February 1978 the Railway Board stated that consequent to the "successful trials" with Suri transmission in low horse power locomotives it was proposed to develop this transmission for higher horse power range for main line applications. The Railway Board could not furnish a precise evaluation, as asked for by the Committee, of the benefits derived by installation of Suri transmission in low horse power low speed diesel shunting locomotives to prove that higher efficiency and fuel savings in the use of Suri transmission had been successfully established before it was decided to go in for development of this transmission in higher horse power locomotives. In fact the result of the trials of Suri transmission on low H.P. engines were not available when the decision to go in for higher H.P. engines with Suri transmission was taken.

Para 1.176. Between 1962 and 1964 the Railway Board considered the question of the procurement and development of Suri transmission in 5,000 horse power locomotives or alternatively in 2500 or 2600 horse power locomotives. In September 1964, the Railway Board issued tender enquiries to some West German firms for procuring 5,000 horse power locomotives because efforts were then being made to procure West German credit. The offers of the two West German firms received in response to these tender enquiries were examined by a Technical Committee appointed in June 1965. That Committee on various considerations came to the conclusion that no economic benefits of capital and maintenance costs could be expected of 5,000 horse power locomotives as compared to those of dual coupled 2600 horse power diesel locomotives of ALCO design. In June 1966, the Railway Board decided that taking all factors into consideration, procurement of 5,000 horse power locomotives for developing Suri transmission could not be justified and since the standard B.G. locomotive on Indian Railways was of 2600 horse power, the Board felt that it should be possible to design and fit 2600 horse power Suri transmission in a diesel locomotive of equivalent horse power. It was accordingly decided that it would be more prudent to go in for 2600 horse power locomotives rather than for 5,000 horse power locomotives. The Railway Board then decided to procure six or eight number of 2600 horse power Co. Co type locomotives fitted with medium speed engines and Suri transmission and for this purpose a senior Mechanical Engineer of the Railways was deputed West Germany to have informal talks with the representatives of the firms concerned and the German Credit Loan Authorities for obtaining their reaction to the proposal of procuring 2600 horse power locomotives instead of 5000 horse power locomotives. In the light of the

report of the Mechanical Engineer of Railways deputed to West Germany, the Railway Board decided in August 1966 to procure 2500 horse power 8B 19 tonne axle load mixed service locomotives with high speed Maybach MD 1080 diesel engines and fitted with 2500 horse power Suri/Mekydro transmission.

Para 1.177. In this connection, the Committee, however observe that the report of Railway Engineer deputed to West Germany was nothing but a record of the discussions he had with the representatives of various firms, the German Federal Railways and the German Credit load authorities. Obviously what the Railway Engineer had done was that he had recorded what he had been told by the German firms in regard to the "ease of manufacture and maintenance of 4 axle BB type locomotives, lower cost of BB type of locomotives compared to the Co Co type", unsuitability of a six axle locomotive such as ALCO for the development of Suri transmission, the high expectations about the performance of 20 cylinder MD engine proposed to be used in the locomotives. There is no evidence to show whether the assertions made by the West German firms about the performance of their locomotives/diesel engines were subjected to any critical scrutiny either by the Engineer deputed to West Germany for negotiations with the firm or by the Railway Board or by any competent technical body with a view to arrive at some rational conclusions.

Para 1.178. The Committee find that the Railway Board's main argument in support of their decision to go in for 2500 horse power BB type locomotives for development of Suri transmission had been that as the hydraulic transmission had been developed only in West Germany, the development of Suri transmission could be done by one of the leading hydraulic transmission manufacturers in the West Germany. Further, the only established firm in West Germany who offered to develop this transmission was M/s. Maybach and this firm was agreeable to develop the transmission only if their own Maybach engine was used. The choice of the manufacturer was thus restricted to only one firm and the choice of the diesel engine to be used in conjunction with the Suri transmission also go restricted because the firm made it a precondition that they "would not be interested in developing Suri transmission alone without matching it with their engine as they would not be able to guarantee performance with any other engine in the developmental stages."

Para 1.179. The Committee note from the evidence and subsequent written information submitted in 1976 by the Railway Board as follows:

(i) The Member Mechanical in August 1964 had indicated that 2500 HP high speed Maybach engines which were still under developmental stage would introduce additional element of trial on the same locomotive. However, the Railway Board ruled out the ALCO locomotives, for the time being, for the development of Suri transmission, as M/s. ALCO were unable to develop the transmission themselves and were prepared to undertake this only after the Suri transmission had been fully developed.

(ii) One of the members of Technical Committee constituted by the Railway Board in July 1965 pointed out that building of 2500 HP locomotive with Suri or any other hydraulic transmission should present no problems, as 2600 HP locomotive (ALCO) was already being manufactured in the country. This suggestion had also been accepted by the then Member Mechanical.

(iii) Again in February 1966 the then Member Mechanical opined that the best and the safest course would be to go in for prototype locomotives both with ALCO and Maybach engines for development of Suri transmission which incidentally would provide an adequate means of comparison with 2600 HP ALCO locomotives already in use with the Indian Railways. Thus the Member Mechanical on three different occasions considered trial of Suri transmission with ALCO engine as technically feasible.

(iv) The above proposal (February 1966) of the Member Mechanical was not favoured by the subsequent Member (April 1966) on the ground that this would involve a *de novo* examination of the matter and would thus cause delay in the finalisation of the proposal being negotiated with the German firm. In other words the Member Mechanical on April 1966 ruled out trials of Suri transmission with ALCO engine on consideration other than technical.

(v) The final decision was based on the Railway Engineer's visit to West Germany (July-August 1966) who pointed out that M/s. Maybach was the only firm in West Germany

who offered to develop Suri transmission provided their own Maybach engine was used.

(vi) Another important reason for procurement of diesel locomotives from West German firm is that the procurement was to be financed by West German Credit and that the West German credit load authorities would not approve of procurement of locos from sources other than West Germany. On this point the representatives of the Ministry of Finance had however clarified in evidence that "there would have been no problem from the foreign exchange angle" if the Railways decided to go in for 2600 HP locomotives fitted with ALCO engine.

Para 1.180. In their supplementary memorandum and during fresh evidence (February-March 1978), the representative of the Railway Board stated:

(1) The selection of West German locomotive WDM-3 became inevitable as the ALCO did not give a positive response to the suggestion of undertaking development of the Suri transmission.

(2) The choice of locomotives for development of Suri transmission was restricted to West Germany as there was virtually no other country in the world where diesel hydraulic transmission had been developed.

(3) The ALCO locomotives with 6 axles and heavier 2600 HP ALCO engine were technically unsuitable for the development of Suri transmission. Within the limited permissible axle load, the use of the heavier 2600 HP ALCO engine necessitates use of 6-axles divided into two 3-axle bogies. With hydraulic transmission, the transfer of power to the axles is made through a cardon shaft and gear boxes, and development of an arrangement for distributing power from a single transmission to two 3-axle bogies presented serious technical problems. The Committee, however, must record that the then Member Mechanical on four different occasions (1964, 1965, February 1966 and April 1966) dealt with this matter and did not consider trials of Suri transmission with ALCO engine as technically unsuitable. Again this was not the ground on which the final decision to procure the Maybach engine was taken in August 1966.

(4) The question regarding selection of Maybach engine for use in conjunction with Suri transmission had been examined by the High Power Committee and it was accepted as the most suitable form of engine which could be adopted for development of Suri transmission.

Para 1.181. The Committee find that while keeping in view the West German firm's advice against 6-axle loco with single Suri transmission and insistence of M/s. Maybach for use of their engine as brought out in the Railway Engineer's report, the Railway Board took the decision in regard to use of Maybach MD 1080 diesel engines disregarding the following points:

(a) The Maybach MD 1080 diesel engine had not till then been installed in any locomotive and had undergone bench tests only.

(b) Prototypes of this engine had not undergone trials under Indian conditions nor had this engine been tried in Germany or anywhere else.

(c) The past experience of the Indian Railways in regard to the performance of Maybach engines on WDS-3 and ZDM-2 locomotives was not satisfactory.

(d) The Technical Committee appointed by the Railway Board in 1965 to examine the offers of 5000 HP locomotives and the 20 Cylinder Maybach MD 1080 series engine had given only qualified approval by saying that there would not be "undue risk" in going in for these engines.

(e) In the Railway Engineer's report of 1966 there was no positive statement in regard to the performance of these engines. It had only been mentioned that "M/s. Maybach had stated that their modified 20 cylinder MD engine would be a good trouble-free engine" and that "the German Federal Railways stated that they were quite satisfied with the performance of Maybach engines but they needed greater amount of attention and skill."

Para 1.182. The Committee also find there were some other features in the agreements entered into with the West German firm, which were not completely free from criticism. One such matter related to performance guarantee. It is seen from the Audit paragraph that in 1964 itself the Railway Board had indicated that adequate guarantees on the performance of the Locomotives, engines and

transmission should be forthcoming. In regard to the guarantee actually obtained the Chairman, Railway Board stated in evidence (August 1976) that "Their guarantee, according to the agreement, was worded in such a way as to mean that they were responsible only for metallurgical failures and manufacturing defects of the components, but there was no performance guarantee included in the agreement. Therefore, it has become difficult to pinpoint them for any other deficiancies." However, the Railway Board in their supplementary memorandum of February 1978 have maintained that "Extensive guarantee terms had been included in the contract with the suppliers."

Para 1.183. It is not clear to the Committee as to what extensive guarantees were obtained if these did not cover the performance of the locos, the engine and the transmission system and were confined to material, manufacturing and design defects of components. In regard to Suri transmission (Hydro-mechanical) the guarantee obtained from the manufacturers provided that its performance would not be inferior to the Maybach type K 252 transmission, *i.e.* Mekydro (hydraulic). The manufacturers have not been able to ensure even this part of the guarantee, in that the performance of the locomotives even after Suri transmission was modified to make it comparable to Mekydro transmission (hydraulic) have not shown any improvement. The performance expected for the Maybach engine and Suri transmission in terms of fuel saving and their availability was not incorporated in the agreement. Inspite of the uncertainties and misgivings about the performance of these locomotives, why performance guarantee for the locomotive as a whole including the untried engine and transmission system was not obtained from the manufacturers is a matter which mystifies the Committee.

Para 1.184. It has been argued by the Ministry of Railways that since the locomotives were built as per specifications drawn out by RDSO, after considering the engine characteristics advised by the manufacturers, it was not feasible to have an overall performance guarantee for the entire locomotive from the manufacturers for a trial locomotive being built at our instance and to our specifications. It is to be noted in this connection that what was under trial in these locomotives was the transmission system and not the Maybach diesel engine, whose performance could and should have been covered by adequate guarantees enforceable at the instance of the Railway Board.

Para 1.185. The Committee further find that no penal clause had been included in the agreement with the West German firm under which the Railways could recover the additional expenditure incurred

due to failure of the engine or the transmission system. In the absence of such a penal clause the Railways cannot claim any compensation for the additional expenditure incurred due to inadequate performance of either the engine or the transmission system although so far as manufacturing defects or design defects are considered, M/s. Mak have been removing these defects without charging to the Railways.

Para 1.186. The Committee learn that out of the eight locos 4 have been stabled requiring imported material for commissioning the same. The Ministry of Railways have stated that for improving the position of four locos presently in use initial inputs for the first year to the tune of approximately Rs. 60 lakhs have to be made followed by annual recurring expenditure for maintenance spares of the order of Rs. 16 lakhs and the expenditure for commissioning the four stabled locos was likely to be higher. It is thus to be seen that besides the initial investment of about Rs. 3 crores on the acquisition of these locomotives, the Railway Board will have to incur huge expenditure to bring these locos in proper order and keep them fit for operations. But what distresses the Committee is that Mr. Suri himself pointed out that it is the fault of the Railways in putting these locomotives straightway in use without making any research. Mr. Suri had further observed that "the heavily graded action chosen *viz.*, Guntakal-Madras was incorrect for a light WDM-3 locomotive of 4 axles, expecting to replace the 6 axled ALCO locomotive of greater horse-power and greater weight. On this section the WDM-3 loco was literally thrashed to its limit on upgradients which is not good for any newly developed complex machine. Since WDM-3 were allotted against regular locomotive requirements the Southern Railway desired to get the same haulage as from ALCO locomotives and met with frustration." Explaining the reasons why the WDM-3 locomotives were used on heavily graded sections, the Railway Board have stated that these locomotives had been procured against a specific project and were therefore initially confined to a heavily graded section. For use of these locomotives on passenger trains the permission of the German Credit Bank was required and by the time permission for this change over was obtained, the reliability of the locomotives had already been seriously affected due to non-availability of imported spares.

Para 1.187. In the light of the above the Committee were distressed to learn from the Railway Board in 1976 that in view of their experience of Suri transmission they did not propose any further development of Suri transmission for high horse power locos, as electric transmission has been indigenously developed and giving satisfactory service.

Para 1.188. The Railway Board have stated that the WDH-3 locomotives had been procured under a Research and Development Programme for the exploitation of the concept of Suri transmission and that the infructuous expenditure should be viewed in this background. In this context it is to be noted that the then Chairman, Railway Board, while giving evidence before the Committee in August 1976 made a categorical statement to the effect that there was no R&D programme but the locomotives were procured against the specific programme of traffic movement and the credit was also obtained for that. The only thing was that while getting them opportunity was also taken to get locomotives fitted with Suri transmission. As to whether a research programme could be financed under the terms of the German Credit under which the locomotives were purchased, the representative of the Ministry of Finance deposed before the Committee (1976) that 'the proceeds of the loans were exclusively for the payment of foreign exchange cost of Indian Railways for modernisation and rationalisation.' Inspite of the Railway Board Chairman's categorised statement of 1976 to the effect that there was no R&D programme, the Railway Board, in 1978, attempted to clarify it further by stating that the whole thing was a development project which was used from the commercial angle as the German loan conditions required it and to that extent it was a R&D project with a little commercial bias. The Railway Board have also stated that they would like to develop, these locomotives and there was a proposal to review the commissioning of the 4 stabled locomotives after organising inputs for improving the position of 4 WDM-3 locomotives which are presently in use and watching their performance for some time. The Committee, however, are not able to understand why the proposed review for commissioning of the 4 stabled locomotives was not undertaken earlier as these locomotives had been stabled since 1975-76. The Committee would like that responsibility for this lapse may be fixed.

Para 1.189. From the information made available to the Committee the following significant facts clearly emerge:

(i) In 1964, the procurement of these locomotives was indicated to the Ministry of Finance as part of Railways' development and modernisation programme in the Third Plan.

(ii) These locomotives were intended to cope with the heavy increase in traffic.

(iii) These locomotives were to be deployed for the export of ore of 'some million tons' through ports at Vizag and Madras.

(iv) These locomotives were to be deployed for handling additional traffic particularly coal, ore on high gradients and procurement was justified on economic considerations.

(v) The use of the WDM-3 locos on passenger trains could not be continued because of the specific project under which they had been procured which limited their use for freight traffic. For use on the passenger trains permission of the German Credit Bank was required. There could not be any such limitations on the use of locomotives if they were for R&D project.

The Committee are also unable to reconcile the statement of the Railway Board that the locomotives were for a research and development programme with their inability to deploy them on passenger trains for research and development.

(vi) The procurement of these locomotives was a part of the development programme of the Railways in the fourth and fifth years of the Third Five Year Plan, the finance for which was to be partly met out of German Credit.

(vii) In deciding to procure locomotive of 2500 HP one of the considerations was that the Railway Board would be able to obtain economic bids and locomotives of proven quality.

(viii) The load agreed for the West German credit specifically stated that this was for modernisation and rationalisation of the railways' programme and that *inter-alia* sound financial practices must be observed in the projects financed from the loan.

(ix) This particular project was appraised by the West German Credit authorities and this could be required for only in case of commercial loan investment and not in the case of R&D project.

(x) The expenditure of about Rs. 3 crores on procurement of 8 WDM-3 locomotives has been booked under Depreciation Reserve Fund on replacement Account and not to Revenue to which normally Research and Development expenditure is allocable.

(xi) These locos were not put to rigorous and comprehensive tests which locos developed under an experimental research programme have to go through. In fact there were no research test facilities established by the Railways which were an essential prerequisite to the research development programme.

It appears that none of the above considerations could be relevant in a R&D programme but only for a commercial project. The Committee feel that it was primarily a commercial project for the Indian Railways and a research and development programme for the Germans. In fact, it appears that the German manufacturers in return for a loan to the Indian Railways, in effect were experimenting on a new loco and a new engine and a new transmission system at the expense of the Indian Railways.

Para 1.190. Another exceptionable feature of the arrangement entered into with the West German firm was that the manufacturers imposed a condition that they would be interested in the supply of locomotives fitted with Suri transmission only if a minimum number of locomotives were ordered and in the process they were able to foist 8 locomotives fitted with their own untried engines on the Indian Railways. This was facilitated through the offer of an easy West German credit. The Committee further note that during evidence (1976) the Chairman, Railway Board stated that "Perhaps 4 locomotives would have been the minimum number that was necessary". In their supplementary memorandum of February 1978 the Railway Board stated that the minimum number required was not less than six locomotives with the Suri transmission for the specific service in Madras-Hospet sections. The Committee is unable to understand that if the locos were for a research and development project, then how the number of locomotives required for manning a specific commercial service was relevant. Again the Committee feel that if two locomotives with Mekydro transmission were sufficient as comparators, only an equal number of locos with Suri transmission would have been enough for evaluation of performance.

Para 1.191. The Committee find that an important consideration in the procurement of WDM-3 2500 HP (BB design) locos was that they would more or less perform what the WDM-2 2600 HP (Co Co design) locos, manufactured in this country, were performing and that with Suri transmission would give a higher efficiency and savings in fuel to the extent of 5 to 9 per cent. Actually the performance of the WDM-3 locos had been poor and were consuming

20 per cent more fuel as against the anticipated saving of 5 to 9 per cent. The Railway Board submitted (1978) that the actual performance of the DWM-3 engine under site conditions in relation to test bench results would vary from design to design and RDSO's comments with regard to inferior performance of WDM-3 under site conditions does not reflect the basis on which the choice of the engine was made. The Railway Board also stated that comparing something which was in use for 10 years with one in use for 10 months was not relevant, not desirable and not necessary. The Railway Board further stated that the two locomotives (WDM-3 and WDM-2) were tried in Brindavan Express between Madras and Bangalore, where the speeds attained were higher, and the WDM-3 locos showed 4 per cent lower fuel consumption than the WDM-2 locos. However, the use of WDM-3 locos on passenger trains could not be continued because of the specific project commitment which limited their use for freight traffic between Madras and Hospet. This fits in ill with the claim of the Railway Board in Supplementary evidence that this was a design and development effort. When permission for use on passenger services was obtained from the German Bank authorities, the reliability of the locos had impaired on account of non-availability of spares.

Para 1.192. The Committee are unable to appreciate the reason for not comparing the WDM-2 locos with WDM-3 locos as submitted by the Railway Board in the Supplementary memorandum when the locos had been procured on the understanding received from the manufacturer that the WDM-3 locos' performance would not be inferior to that of WDM-2 locos. The Committee note that the manufacturers have attributed the no-realisation of fuel saving to the configuration of the combustion chamber of the engine which resulted in the consumption of 10 per cent more fuel and that any possible advantage gained in transmission efficiency was likely to be off-set, in fact over shadowed, by the lower engine efficiency. Again, the poor performance of WDM-3 locos had been ascribed to Suri transmission system but it did not show any improvement even after the Suri transmission had been blanked off in these locos. Even the performance of the locos equipped with Mekydro (hydraulic) transmission has been no better than that of the locos equipped with Suri transmission (hydro-mechanical) establishing thereby that the transmission system alone was not responsible for the failure or for the poor performance of the locomotives. In the context of the equally poor performance of the WDM-3 locomotives fitted with Suri transmission and the one fitted with the Mekydro, it is not unreasonable to infer that the main cause of trouble was

the improper functioning of the untried diesel engine. Actually, the former Chairman of Railway Board admitted (1976) that when the Railway went for an altogether untried engine for 16 to 20 cylinders, perhaps some performance tests would have been held so that it did not run into difficulties.

[Serial Nos. 1 to 19, Paras 1.174 to 1.192 of PAC's 58th Report (Sixth Lok Sabha)]

Action Taken

Action taken notes on the observations made in these paras will be furnished to PAC after the findings of the High Powered Committee are available.

[Ministry of Railways (Railway Board) O.M. No. 79—BC—PAC/VI/58, dated 23rd Nov., 1979]

NEW DELHI;
March 11, 1981
Phalguna 20, 1902 (*Saka*)

CHANDRAJIT YADAV,
Chairman,
Public Accounts Committee.

Appendix

Conclusions/Recommendations

S. No.	Para No.	Ministry / Deptt. Concerned	Recommendations
1	2	3	4
1.	1.7	Railways	The Committee note that as recommended by them the Ministry of Railways (Railway Board) considered it fit to refer the whole question of procurement of 8WDM-3 locomotives to an independent high powered Committee for further investigation. The high powered Committee which was constituted on 7 March, 1980, submitted its report on 25 September, 1980. The Ministry of Railways (Railway Board) have intimated (December 1980) that they have accepted the findings of the high powered technical committee and initiated necessary action on their recommendations.
2.	1.8	-do-	The Committee observe from the report that, according to the high powered technical committee, while concurrent R&D and commercial interests were involved in the purchase/programme of the WDM 3 locomotives, the R&D aspects of the project were un-

			wittingly overlooked on commissioning of the locomotives and subordinated to their commercial utilisation. Equally fair trials had not been conducted with regard to R&D aspects. The limited trials conducted were, as an R&D Project, not sufficiently accurate and properly monitored by the research teams. In his evidence before the Committee the inventor of the Suri transmission had also pointed out that these locomotives had been straightaway put in use without making any research; that these had not been given the nursing that such development needed.
3.	1.9	Railways	In the light of the above, the Committee cannot help feeling that. for lack of the required R&D follow up action, not only the defects/ shortcomings in the locomotives remained largely unidentified but necessary measures to ensure the performance expected of them in terms of the manufacturer's guarantees could not be taken. As a result, four of the 8 locomotives purchased are lying out of commission from 1974, while the remaining ones are, as per decision (January 1980) of the Railway Board, to be condemned as and when they become unfit for being continued in service. The investment of Rs. 3.37 crores on these locomotives has consequently remained largely unfructified. The Committee would like the Railway Board to ensure in such cases that the necessary R&D drill is prescribed and followed up without fail.

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PUBLISHED UNDER RULE 382 OF THE RULES OF PROCEDURE AND CONDUCT OF BUSINESS IN LOK SABHA (SIXTH EDITION) AND PRINTED BY THE GENERAL MANAGER, GOVERNMENT OF INDIA PRESS, MINTO ROAD, NEW DELHI.