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RAIL LINK TO KASHMIR

MINISTRY OF RAILWAYS

PUBLIC ACCOUNTS COMMITTEE 2014-2015

FOURTH REPORT

SIXTEENTH LOK SABHA

LOK SABHA SECRETARIAT
NEW DELHI

FOURTH REPORT

PUBLIC ACCOUNTS COMMITTEE
(2014-15)

(SIXTEENTH LOK SABHA)

RAIL LINK TO KASHMIR

MINISTRY OF RAILWAYS

Presented to Lok Sabha on 25.11.2014
Laid in Rajya Sabha on 25.11.2014

LOK SABHA SECRETARIAT
NEW DELHI
November, 2014/*Agrahayana,* 1936 (*Saka*)

PAC No. 2035

Price: ₹ 55.00

Published under Rule 382 of the Rules of Procedure and Conduct of Business in Lok Sabha (Fifteenth Edition) and printed by the General Manager, Government of India Press, Minto Road, New Delhi - 110 002.

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COMPOSITION OF THE PUBLIC ACCOUNTS COMMITTEE
(2014-15)

Prof. K.V. Thomas — *Chairperson*

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Lok Sabha

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3. Shri Sudip Bandyopadhyay
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†12. Vacant
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$15. Vacant

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1. Shri A.K. Singh — *Joint Secretary*
2. Smt. Anita B. Panda — *Director*
3. Shri A.K. Yadav — *Under Secretary*

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* Vacant *vice* Shri Rajiv Pratap Rudy who has been appointed as Minister w.e.f. 9th November, 2014.

† Vacant *vice* Shri Jayant Sinha who has been appointed as Minister w.e.f. 9th November, 2014.

$ Vacant *vice* Dr. M. Thambidurai who has been chosen as Hon'ble Deputy Speaker, Lok Sabha and has since resigned from the membership of the Committee.

COMPOSITION OF THE PUBLIC ACCOUNTS COMMITTEE
(2013-14)

Dr. Murli Manohar Joshi — *Chairman*

MEMBERS

Lok Sabha

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3. Dr. Baliram
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Rajya Sabha

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17. Shri Prakash Javadekar
†18. Shri Ashwani Kumar
19. Shri Satish Chandra Misra
$20. Dr. V. Maitreyan
21. Shri N.K. Singh
22. Smt. Ambika Soni

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* Elected w.e.f. 14th August, 2013 *vice* Dr. Girija Vyas appointed as Minister of Housing, Urban Development and Poverty Alleviation w.e.f. 17th June, 2013.

† Elected w.e.f. 3rd September, 2013 *vice* Dr. V. Maitreyan ceased to be a Member upon his retirement as a Member of Rajya Sabha w.e.f. 24th July, 2013.

$ Elected w.e.f. 3rd September, 2013 *vice* Dr. E.M. Sudarsana Natchiappan appointed as Minister of State for Commerce and Industry w.e.f. 17th June, 2013.

COMPOSITION OF THE SUB-COMMITTEE-I (RAILWAYS) OF THE PUBLIC ACCOUNTS COMMITTEE
(2013-14)

Shri Prakash Javadekar — *Convenor*

MEMBERS

2. Shri Prasanta Chatterjee
3. Dr. V. Maitreyan
4. Shri Ramen Deka
5. Shri Jayaprakash Hegde

INTRODUCTION

I, the Chairman, Public Accounts Committee, having been authorised by the Committee, do present this Fourth Report (Sixteenth Lok Sabha) on ''Rail Link to Kashmir'' based on C&AG Report No. 19 of 2012-13 Union Government—Railways relating to the Ministry of Railways (Railway Board).

2. The Report of Comptroller and Auditor General of India for the year ended March 2012, was laid on the Table of the House on 20th December, 2012.

3. The Public Accounts Committee (2013-14) took up the subject for detailed examination and report. A Sub-Committee was constituted for the purpose. The Sub-Committee took evidence of the representatives of the Ministry of Railways (Railway Board) on the subject at their sitting held on 11th October, 2013. The Sub-Committee of PAC (2013-14) considered and adopted this Report at their sitting held on 14th March, 2014. As the Report could not be considered by the Committee during the term of the PAC (2013-14), the subject was again selected by PAC (2014-15) which considered and adopted the Report at their sitting held on 8th October, 2014. The Minutes of the Sittings form Appendices to the Report.

4. For facility of reference and convenience, the Observations and Recommendations of the Committee have been printed in thick type and form Part- II of the Report.

5. The Committee thank the Public Accounts Committee (2013-14) and their Sub-Committee for taking oral evidence of the Ministry and obtaining information on the subject.

6. The Committee would also like to express their thanks to the representatives of the Ministry of Railways (Railway Board) for tendering evidence before the Sub- Committee and furnishing the requisite information to the Committee in connection with the examination of the subject.

7. 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;
24 *November,* 2014
03 *Agrahayana,* 1936 (*Saka*)

PROF. K.V. THOMAS,
Chairperson,
Public Accounts Committee.

REPORT

PART- I

I. INTRODUCTORY

The Udhampur-Srinagar-Baramulla-Rail Link (USBRL) project is perhaps the most important and also the most challenging project taken up by the Indian Railways since Independence. The strategic importance of the project to the State of Jammu and Kashmir and to the nation as a whole cannot be over-stated, and the Prime Minister himself has recognized this when he declared this a Project of 'National Importance'.

2. This project is intended and expected to bring about socio-economic development of the State of Jammu and Kashmir through enhanced connectivity within the region and with the rest of the country. The project was envisaged to provide an efficient all weather transportation channel that could function in adverse weather conditions and reduce the travel time to various destinations in and outside the valley considerably.

3. The project is very challenging, considering that the terrain is difficult and hostile, the weather conditions are tough, the security situation in the Valley is sensitive and the logistics support is not really the best. Also, this is the first time that the Indian Railways has taken up the construction of an entirely new line in an area which has not been mapped properly, does not have approach roads and where it would be difficult to transport the required construction material, tracks and other equipment.

4. Considering that the project has been declared to be of National Importance, funds are provided for it from the Consolidated Fund of India rather than the operating surplus of the Indian Railways. The initial cost of the project was estimated at 1500 crore in the year 1994-95 which was revised to ₹3077.23 crore in 1999 and further revised to ₹9341.44 crore in 2010. Now it has touched approx. ₹20,000 crore as of September 2013.

5. The Comptroller and Auditor General of India had decided to carry out a performance audit of the project with a view to assess to the extent to which the objectives of initiating the project had been achieved and whether the project had been/was being executed with the priority accorded to it by the Government of India. The C&AG Report No. 19 of 2012-13 on the subject matter was laid in Parliament on 20th December, 2012.

6. Audit scrutiny revealed that the project with an alignment based on flat gradient of 1:100 connecting Baramulla up to Udhampur *via* Qazigund (292 Kms.) was sanctioned in 1994-95 with a rough estimated cost of ₹1500 crore and was scheduled

for completion by August 2007. However, the project suffered from weak planning resulting in inordinate delays in implementation with time and cost-over-runs. The section from Udhampur to Katra which was scheduled to be completed in March 2003 was completed in July 2014, *i.e.* a time overrun of 135 months. The section from Katra to Banihal was scheduled for completion by August 2007, the progress till July 2012 has ranged from 12 to 14 per cent. The section from Qazigund to Baramulla, scheduled to be completed in March 2003 could be completed and opened for traffic in phases from October 2008 to October 2009 *i.e*. after a time overrun of 67 to 79 months. According to Audit, the principal cause of delay in the execution of the critical Udhampur-Qazigund section was the under-estimation of the challenging geological terrain of the chosen alignment and the failure to carry out complete due diligence process, as laid down in the Engineering Code of Indian Railways, before deciding on the gradient and the alignment.

7. Against the above backdrop, the Public Accounts Committee (2013-14) selected the subject for detailed examination and report. A Sub-Committee under the convenorship of Shri Prakash Javadekar, MP and a Member of the PAC, was constituted to go deep into the matter. In the process of examination of the subject, the Sub-Committee obtained background material and detailed written reply from the Ministry of Railways (Railway Board). They took oral evidence of the representatives of the Ministry and obtained post-evidence replies. They also undertook an on-the-spot Study Visit to Srinagar to have first hand knowledge of the project. The Sub-Committee travelled from Srinagar to Banihal by train and held discussion with the local authorities. Based on the written and oral deposition by the Ministry and the experience gathered during the Study Visit the Sub-Committee examined the subject and discussed some important issues as enumerated in the succeeding paragraphs.

II. PROJECT PLANNING

8. The project is being implemented by three principal agencies, namely, Northern Railway Construction Organisation (NRCO), Konkan Railway Corporation Ltd. (KRCL) and lrcon International Limited (IRCON), each responsible for distinct segments of the USBRL rail link. The NRCO is responsible for coordinating the progress of the work by the other two agencies and reporting to the Railway Board. The Railway Board is responsible for technical guidance on selection of alignment and financial issues, besides co-ordination of overall progress. As the project is being funded by the Government of India on strategic grounds, the Cabinet Committee on Infrastructure is responsible for according administrative approvals of the project estimates. The Ministry of Finance remain responsible for providing finances.

Uadhampur-Qazigund Section

9. The alignment chosen by the Ministry of Railways to connect Baramulla with Jammu *via* Srinagar lies through Udhampur-Katra-Qazigund section (168 Kms.) in the western corridor of the pir Panjal mountain ranges and is located close to the

Line of Control. The major cities/towns located in the Western Corridor of pir Panjal range are Katra, an important pilgrim centre, Reasi a District Headquarters and the Salal Hydel Project, a tourist attraction. The alignment under construction has a ruling gradient of 1:100 requiring a total height of 1100 metres to be gained between Katra and Qazigund.

(i) Selection of Alignment

10. From Udhampur there were two Corridor options for reaching Kashmir *via* Banihal *i.e*. Western and Eastern. There is a pre-history of investigation of Eastern Corridor for National Highway No. 1 passing through the corridor. This Corridor has the benefit of road connectivity provided by the network of NH-1. Further, this region is industrially more developed and inhabited by more people. As such three alignment options were evolved in this corridor by RITES after the Reconnaissance and Engineering cum Traffic survey carried out in 1986-87. The Geological Survey of India (GSI), in 1994-95, also had recommended the rail line through the Eastern Corridor as the same was located along the National Highway whereas the Western Corridor from Jyotipuram (Salal) to Banihal was largely inaccessible.

11. As per the Detailed Project Report (DPR), three alignment options were sent for consideration for approval of the Railway Board and their merits and demerits were analyzed and indicated in the DPR. Two of these options *i.e*. one with gradients of 1:40 (120Kms.) and another with gradient 1:100 (198 Kms.) were evolved in the Reconnaissance and Engineering Cum Traffic survey carried out by RITES in the Eastern corridor in 1986- 1987. However, the third option with ruling gradient of 1: 100 was an option through Western Corridor. However, the recommended option of RITES in the Eastern Corridor after considering cost, speed potential, operation and maintenance factors with gradient of 1: 100 wherever possible and rest with 1: 50/60 with an estimated cost of ₹776.94 Crore entailing a route length of 150.75 Km was not one among these options considered. As such, the Ministry of Railways initially conveyed approval of the alignment passing through the Eastern Corridor with a steep ruling gradient of 1:40 (March 1994) only to reverse the same in the very next year (June 1995) in favour of the alignment through Western Corridor with a ruling gradient of 1:100.

12. In the above context, the Committee desired to know whether the option recommended by RITES in the Eastern Corridor with gradient of 1:100 wherever possible and rest with 1:50/60 with an estimated cost of ₹776.94 crore entailing a route length of 150.75 Km. was considered by the Ministry and if so, the basis on which the recommendation of RITES was overruled. The Ministry in their reply stated that the option recommended by RITES in the Eastern Corridor with gradient of 1:100 wherever possible and rest with 1:50/60 was considered initially along with second proposal along Eastern Corridor. The second alternative with ruling gradient of 1:40 had the advantage of shorter route length and avoidance of engine reversal. So the proposal with ruling gradient of 1:100 wherever possible and rest with 1:50/60 was overruled.

13. When asked to state the reasons that prompted the Ministry of Railways to reverse their own decision within a span of ten months, the Ministry stated as under:—

> "Alignment with gradient of 1 in 40 along the Eastern Corridor was approved by Railway Board in March 1994. Accordingly, the consultant was appointed by Northern Railway for carrying out final location survey. After detailed study, in November, 1994, the consultant opined that the alignment with ruling gradient of 1:40 is unsafe and technically not feasible. The alignment with grade of 1:40 suffered from various drawbacks like it had sharp curves (upto 6^{o}) impacting the speed, requiring construction of catch and slip sidings on viaducts and in tunnels, thereby resulting into considerable slowing down of train beside increase in construction cost. Long and steep gradient pose operational issues such as requirement of locos, coupling forces, recurring cost , failure of breaking system thus requiring very expensive operational method to ensure reasonable safety. This alignment was also got examined by GSI. They also conveyed *vide* their letter No. 2147/EGI/1/23/94 dated 19.10.1994 that this alignment is not feasible due to various geological reasons. In view of all this, the decision was changed by Railway Board."

14. The Ministry further stated that decision was taken by the Railway Board on the basis of recommendation made by Northern Railways in favour of the alignment through Western Corridor ignoring the recommendation of RITES & GSI.

15. As far as the Western Corridor was concerned there was no pre-history of surveys and investigation of the terrain. The geophysical complexities include many active thrusts and faults, inaccessibility (deep valleys, forests, etc.) and absence of road connectivity in significant portion, large uninhabited region, proximity of Line of Control and a fragile law and order due to threats from extremist groups. The Committee desired to know whether the codal provisions that any investment decision should be based on due process of consideration as stipulated in the Engineering and Financial Code of Indian Railways were followed before the project was approved. In reply, the Ministry submitted that in view of difficult geology, inaccessibility of sites, law and order problems and decision of Government to start the work at earliest, codal provisions were followed to the extent it was possible in the given circumstances.

16. The Ministry further submitted that in such a difficult terrain, detailed geological investigations were not possible due to inaccessibility of sites for men and machinery. The details of surface geological features alone were not of much use because the overburden was too much at most of the tunnel locations. As such, detailed Geological and Geo technical investigations in such difficult, rugged and inaccessible terrain was not only time consuming but there was a serious limitation to the extent of Geotechnical investigations which could be carried out in advance. Hence, to carryout detailed Geotechnical investigations it was imperative to freeze the alignment. Alignment through the Western Corridor was selected after considering various alternatives and duly taking into consideration all financial,

technical and operational aspects. The Western Corridor permitted a relatively flatter gradient of 1 in 100 and flatter curve which permitted speed upto 100 Kmph. This Corridor passes through Katra and Salal which are important tourist destinations and location of important Hydel project respectively. This alignment was further studied to optimize the same.

17. Audit pointed out that enormous challenges were involved for an alignment through the Western Corridor *i.e*. most of the area was uninhabited, inaccessible and without approach roads. The Corridor was in close proximity to the LoC and had many law and order problems. Apart from this, the presence of active thrusts and faults, steep hills and valleys of the lesser Himalayas posed significant technical problems. In that context, the Committee desired to know if these issues were factored into the decision making process. In reply, the Ministry stated that issues like uninhabited, inaccessible areas without approach roads, presence of active thrusts and faults, steeper hills and valleys were unavoidable even for the alignment through Eastern Corridor also. Since these factors were not exclusive to any of the alignment options, it did not make any difference in the decision making.

18. When asked to clarify whether the Railway Administration (NR) before submission of the proposal for selecting an alignment for Katra to Udhampur section to the Railway Board, observed due process the Ministry replied as under:—

> "Yes, up to a large extent."

19. When the Committee asked the Ministry to elaborate the issue, a representative of the Railway Board submitted in evidence as under:—

> ''The question is whether we followed the engineering code and the finance code. The engineering code says that before I tender the work, every 30 metres I have to put a peg and every 100 metres I have to take the suction, at every bridge I have to see the waterflow, what is the downstream gradient and what is the upstream gradient. I have to prepare the land acquisition plans; I have to locate the tunnels and bridges. That was not done in this case before tendering. Sir, in these types of terrains, the ground survey is just not practically possible. We have to take certain decisions as we go. We have Rishikesh Karanprayag project sanctioned. We have Sevok Rengpo which will go up to Gangtok. We are not getting a permission to enter the forest area by the human beings.''

20. Asked to specify the agency/person who were not giving permission, the representative of the Ministry stated that permission was being denied 'by environment people'.

21. An alignment through the Western Corridor required construction of 300 Km. of roads. Further, constructability of the Railway line was adversely affected by the presence of active thrusts and faults and inconvenient locations for crossing water bodies like Chenab and Anji Khad. The Committee enquired whether these two

adverse factors were brought to the notice of Railway Board. In reply, the Ministry stated as under:—

> ''Irrespective of the alignment chosen, access roads were required to be constructed as both the alignments were at a considerable distance from the National Highway. The active thrust and faults were also unavoidable in both the alternatives. Since these factors were common to all alternatives, it did not have any major bearing on the decision making. Moreover, details regarding presence of active thrust and fault could be ascertained only after detailed Geotechnical investigations for which, it was imperative to freeze the alignment.''

22. Since an alignment in the Western Corridor involved technical challenges and in-house expertise was grossly inadequate, the Committee enquired whether wider consultations and involvement of experts in the field of rail, tunnel and bridge construction, geologists, etc. were held at any stage. While furnishing the details in this regard, the Ministry stated as under:—

> ''The geological and technical challenges were almost same in both Eastern and Western Corridors and to tackle such challenges in-house expertise was grossly inadequate. This is a fact. After start of the work in 2002, regular discussions are being held with the experts in the field of rail tunnels, bridge construction, Geologist, etc. At present NR has standing MoU with Geological Survey of India to sort out the day to day geological problems. For most of the tunnels detailed design and construction supervision consultant have been appointed. Similarly for the bridge RITES have been appointed for design purpose. Moreover as per directives of CCEA, RITES is the standing consultant for this project.''

23. Audit pointed out that as per the Engineering Code, the gradient should not be the only criterion but other factors such as level of traffic, speeds envisaged including mode of traction, etc. are material considerations influencing unit cost of bringing rail connectivity needs to be considered. Further, technological upgradation in rolling stock, concrete tracks and upgraded braking system, etc. have made adoption of higher gradient no longer a deterrent world over in selecting an alignment. In reply to a query of the Committee regarding overriding insistence of Grade 1:100 in a hilly terrain disregarding all other parameters, the Ministry submitted as under:—

> ''The insistence on grade of 1:100 was based on fact that steeper gradient has many disadvantages. Some of the disadvantages are listed below:—
>
> i. Grade steeper than 1:80 requires construction of catch sidings. Provision and maintenance of catch sidings in this type of terrain, which will mainly be in tunnels and on viaducts, will be difficult. Besides increasing the project cost it would reduce the speed potential of line because as all trains have to stop short of catch sidings.

ii. Steeper gradient will entail construction of very long tunnels. Overall total length of tunnels in the project would also be very high. Thus increasing the project cost and construction time. Seepage and collapse problems are difficult to be tackled in long tunnels.

iii. From safety considerations steep grade alignment is not preferred as probability of train parting will be high.

iv. On steep grade alignment almost all stations will be underground, constructing large cavern to accommodate station requirement will be very difficult.

v. Long and steep rising gradient present operational issues both while going up as well as coming down the slopes—requirement of more locos, coupling forces, recurring costs and failure of breaking system, etc. Any gradient steeper than 1 in 80 requires very expensive operational method to ensure reasonable safety.

vi. Maintenance expenses expected to be higher. Operational expenses would be substantially higher as Steeper gradient requires more traction power for per unit weight of transported goods in comparison to flatter grade."

24. Audit further pointed out that alignment through the Western Corridor involved skirting the mountain slopes and thus required high degree curves. This was an important factor affecting speed and should have been considered. In reply to the query of the Committee in this regard, the Ministry stated that in fact the Eastern Corridor alignment required the curve upto 6° whereas the Western Corridor alignment required the curve upto 2.75° on which train could run at a speed of 100 KMPH. This was also one of the factors besides the flatter grade based on which Western Corridor alignment was chosen.

25. The Committee specifically asked whether the Railways considered any other alignment in the Western Corridor which offered lesser curves and a straighter alignment and whether any alternative alignments giving better options as far as construability, safety and security risks were explored in Western Corridor. The Ministry replied in the negative and stated that with the Grade of 1:100 and curve upto 2.75° no other shorter alignment was possible.

26. According to Audit, the abstract estimates of ₹1500 crore on which administrative sanction had been obtained in 1994-95 and the project estimates for ₹ 3077 crore incorporated in the DPR sanctioned in 1999-2000 as well as the projected date of completion of the work (August 2007) were of doubtful reliability. Moreover, these had completely omitted the material factor of cost of constructing approach roads and also the costs of safeguarding large number of tunnel portals and bridges.

27. In the above context the Committee desired to know whether the abstract estimates were based on any preliminary surveys and after forming a reasonably accurate idea of the probable expenditure. In reply, the Ministry stated that it was

based on thumb rule rather than any survey. However, in a post evidence information, the Ministry submitted that estimate was based on the studies conducted by M/s RITES in 1987.

28. Audit observed that as per Engineering Code, Project Estimate/Detailed estimates should be prepared after a careful examination of the various factors such as details of construction so as to reduce to a minimum, the probability of omission of any item of expense which is capable of being foreseen. The authority according technical sanction should satisfy itself that (i) the details of the scheme as worked out are satisfactory, (ii) the methods proposed for the execution of the work are adequate, and (iii) the cost has been estimated from reliable data and is likely to be reasonably accurate. To ensure the above, a final location survey needs to be conducted to prepare the detailed plan on which technical sanction of the project was given.

29. In the above context, the Committee desired to know whether surveys mandatory and investigations on an unexplored and geologically challenging terrain was conducted. The Ministry in their reply submitted as under:—

> ''The final location survey was not conducted at that stage because the area was inaccessible and militancy was at its peak. There were two options before Railways. The first option was to complete all investigations, but this option had a drawback of being time consuming because of virtual inaccessibility of majority of the stretches and above all there was a serious limitation of the extent of Geotechnical investigations which could be carried out in advance due to topography. But the prevailing political situation coupled with security issues and expectation of the public necessitated early commencement of the work as soon as investigations of a stretch were completed. This option had distinct advantage as the work would be visible on ground to assuage the expectation of public and would facilitate in expediting further investigations.''

30. Asked to state the methodology followed by the sanctioning authority in satisfying himself that the fundamental criteria before sanction of Project Estimates was met, the Ministry replied as under:—

> ''It was ensured that the fundamental criteria was met to the extent possible in the given ground situation and circumstances. Detailed estimate of fully explored territory *i.e*. Udhampur-Katra, Qazigund-Baramulla and Banihal Qazigund have been sanctioned. The detailed estimate of Katra-Banihal is yet to be sanctioned. Abstract estimate of Katra Banihal has been prepared and got approved from CCEA after taking into consideration the rates received by the executing agencies working on the project for the various works.''

31. The Ministry further informed that it was professionally prudent on the part of IR to commence work on both ends of the project. As a result of this decision, Qazigund-Baramulla section has already been commissioned and has become operational, as construction of this section was much easier and simpler as compared to Katra-Qazigund section.

(ii) Construction Strategy

32. Audit scrutiny revealed that when the project was declared as one of national importance to be funded by Government of India, Railways, in December 2002 *i.e.* even before the Final Location Survey—a pre-requisite for commencement of works—had been conducted, entrusted the execution (role of engineer) of this section (barring 5 Km. beyond Katra assigned to NR) to two Public Sector Undertakings under the overall control of NRCO (Northern Railway Construction Organisation). The works were to be commenced along with surveys and investigations to be carried out by the contracted agencies, as this course would yield visible progress on the ground and the option for completion of all investigations would have entailed 2-3 years of delay before commencement. RITES, for the first time carried out geo-technical investigations of the selected alignment on Katra Qazigund stretch-by-stretch that constituted a pre-construction survey. RITES were expected to focus their efforts on preselected parameters and IRCON and KRCL were expected to work in association with RITES who would hand over segments investigated for construction work in piecemeal fashion. RITES were to carry out surveys and investigations in piecemeal wherever feasible and construction agencies to start construction where investigations completed.

33. In reply to the Committee's query for adopting such a high risk strategy without an overall assurance of the technical feasibility of the alignment the Ministry stated that best efforts were made to fix alignment from topo-sheet, satellite / aerial photographs in order to finalise alignment through a terrain which was otherwise not directly accessible. The Ministry further stated that the mandate given to RITES was to refine the already chosen alignment corridor.

34. The Committee desired to know whether the alignment evo@lved on the sole criteria of gradient of 1:100 in Western Corridor was accepted without exploring any other options and risk factors. The Ministry in their written submission stated as under:—

> ''Yes, the gradient and flatter curves were the main criteria in view of the instructions of Indian railways on catch and slip sidings. Any gradient steeper than 1:80 had serious limitation of low speed potential as it is mandatory for train to stop before every catch siding besides other operational issues and safety considerations.''

35. Asked to state categorically whether the gradient could be the sole deciding factor for selecting an alignment especially in a hilly terrain, the Ministry stated as under:—

> ''No, gradient is not the sole deciding factor for selecting the alignment. Besides gradient, other features like curvature, level of traffic, speed envisaged, mode of traction, social benefits of connecting to far flung and remote area, initial cost and ease of construction, unit cost of service, safety considerations and maintenance issues are other factors for deciding the alignment.''

(iii) Alternative Proposed by KRCL and NR

36. Audit pointed out that after a detailed study of the paper alignment provided by Railways and based on its own experience of construction and operation of Konkan Railway Project and opinion of expert agencies like Geological Survey of India and IIT Mumbai, KRCL proposed (September 2003) a re-working of the alignment. They evolved an alternate alignment. KRCL, in its letter to the Chief Administrative Officer (CAO), NRCO in September 2003 suggested setting up a Committee of Senior Experts to examine the alternative proposal and take a view in the matter. But this was rejected and KRCL were instructed to resume works in the existing alignment.

37. When the Committee asked about the reasons for not setting up a Committee of Senior Experts to examine the alternative proposal, the Ministry replied as under:—

> ''KRCL Ltd. had proposed an alternative alignment with a steep gradient of 1 in 50. While originally approving the alignment, Railway Board had looked into the alternative of steeper Grade (1 in 40) but keeping in view the operation and maintenance difficulties, steeper gradient was not adopted. Moreover, this line is being constructed for socio-economic development of remote area of Jammu and Kashmir and to provide connectivity to far-flung areas of Jammu and Kashmir and not just to connect two points *i.e*. Katra and Banihal. This aspect was fully omitted in the proposal of KRCL. Accordingly, it was rejected by Railway Board.''

38. The Ministry further stated that the resistance for a higher gradient was based on the laid down policy/acceptable norms on provision of catch sidings and other operational considerations.

39. Audit further pointed out that in December 2007; NRCO reported to the Railway Board that KRCL and IRCON were facing the following difficulties in execution of the project from Katra to Qazigund:—

- Ruling gradient of 1: 100 had resulted in increase in the route length to 148 Kms. against a straight distance of 75 Kms.
- About 44 per cent of the track was on curves; there were 66 tunnels with a total length of 112.35 Kms., constituting 76 per cent of the total route length; 45 out of the 66 tunnels were on curves; and out of 132 tunnel portals, 77 were on curves or within 200 metres of curves.
- The alignment required 119 bridges, with two very large arch bridges of spans 460 metres (Chenab) and 260 metres (Anji).
- Serious problems in tunneling work had been encountered in KRCL portion from Km. 30 to Km 52 and from Km.131 to 144 in IRCON portion.

40. Audit observed that NRCO also reported to the Railway Board that after examining the section in detail, a gradient of 1: 50 was considered feasible and that double line or twin single lines would be a more feasible option to carry out relief

and rescue operations in case of emergencies in tunnels which were more than 3 Km. in length. Based on this assessment, NRCO further requested the Railway Board to approve fresh alignment survey along with geological feasibility and hold the execution of works under the existing contracts under abeyance, since further execution would lead to infructuous expenditure in case new alignment with a gradient of 1:50 was adopted. Further, experts like E. Sreedharan, the then MD, DMRC, Dr. Golsar, an international expert engaged by Railways, then Member Engineering etc. had advocated for straight alignment, with higher gradient up to 1:40 by pointing out safety and security risks, problems of stability, constructability and maintenance of structures of the existing alignment.

41. Pursuant to extensive deliberations in this regard in February 2008, the Railway Board decided in July, 2008 to suspend the work between Km. 30 to Km. 34 and Km. 52 to Km. 144 until a final decision on alignment was taken. The Board also decided to belatedly engage an internationally accredited agency in October, 2008 for expert advice on the suitability of the alignment from geological considerations. At the same time, considering that the location of Anji and Chenab bridges was problematic, the Railway Board decided to examine the sites of these bridges and hence the work on the entire alignment from km. 30 to km. 144 was suspended. This was followed by constitution of an Expert Committee by the Railway Board in December, 2008 under the Chairmanship of Shri M. Ravindra, ex.CRB to review the alignment.

42. The Committee were informed that an expenditure of about ₹ 1791 crore which also included PSU's profit & D&G charges was incurred when NRCO requested Railway Board to stop execution of further work to approve fresh alignment survey. At that stage, out of 98.50 km. of tunneling, 13.18 (13.4 per cent) had been excavated in Katra-Banihal section. When the Committee specifically asked about the reasons for abandonment of work on tunnels, a representative of the Railway Board during evidence deposed as under:—

> ''Sir, the soil under it got squeezed. It basically took three years after the construction and between abandonment. After the construction, we put the ribs; then after about 1 year or so the ribs that were erected started collapsing; and the entire line of steel became jumbled up. I have seen the photographs myself. Initially, we thought that we will be able to repair it. Finally, the experts recommended not to try it as it was not the entire length. Further, they said that this is a passenger-carrying tunnel and we cannot take risk.''

43. When asked whether the decision was not too late, the Ministry admitted that the proposal to hold execution of work in abeyance might be late in view of the fact that a large amount of money and time had already been spent. The Ministry, however, clarified that sometimes mid-course corrections became inevitable in a project of this size and complexities in order to overcome difficulties encountered which could not be apprehended in advance.

44. The Committee desired to know the compelling reasons for the Railway Board to take one year for setting up a committee even after the demand of stoppage

of work by NRCO. The Ministry in their reply submitted as under:—

> "NRCO sought permission to stop work and carryout investigations for an alternate alignment with grade of 1 in 50 in Dec. 2007. However, the two executing agencies *i.e* KRCL and IRCON made a presentation to the board regarding actual problems being faced in execution and both agencies suggested certain local changes to the alignment to accommodate specific local condition while retaining 1 in 100 grade. Since the decision to setup a Committee to review the alignment had a far reaching implication both financial and political especially when there were contradicting suggestions by NRCO itself (Task Force of NR in March, 2005 had recommended that the work be carried out on the approved alignment having grade of 1 in 100) and by two agencies. It is against this backdrop Railway Board took about a year to arrive at a considered decision of setting up a Committee."

45. The Committee were then informed that a total length of about 1.8 km. of already constructed tunnels that collapsed were abandoned costing about ₹ 75 crore as a result of the review of alignment. The work remained suspended for 14 months. Further the total amount paid towards idling of men and machinery during the pendency period was ₹ 61.39 crore.

46. When the Committee enquired about the action taken by the Railway Board to fix responsibility in this regard, the Ministry stated that no specific individual was responsible for the decision making process of choosing of alignment and as such no action was required.

47. The Committee then desired to know about the measures taken/proposed by the Ministry to prevent recurrence of such instances. The Ministry in their written deposition stated as under:—

> ''Now it has been decided that such type of alignment should be got studied by the renowned consultant having expertise in such field who will advise about the feasibility of the proposed alignment or may suggest changes so that alignment is feasible from constructability, maintainability and safety points of view.''

48. Asked to state categorically whether the Railway Board did not get the alignment studies by any renowned consultant, the Chairman Railway Board, stated in evidence as under:—

> ''Earlier, we did not ..... It was more a specialized kind of activity and not renowned. I could say that we brought in a 'specialised 'consultant.''

49. Another representative of the Railway Board in this context added:—

> ''In Jammu and Kashmir the renowned consultants were brought in only after the problem surfaced in 2003.''

50. Audit pointed out that the international consultant was asked to work around the current alignment or to suggest an alternative alignment subject to certain

mandatory parameters like gradient 1:60 and obligatory points namely Reasi station near Anji Khad bridge, Salal station at Chenab bridge and Sangaldan station to be covered, where works were already underway and planned along the existing alignment. Accordingly, the Consultant submitted options but felt that had he been given a free hand, he could have provided an optimal solution.

51. In the above context, when the Committee sought clarifications, the Ministry stated that the consultant was given free hand. However, as about ₹ 1100 crores had been spent on construction of various assets, so he was advised to respect the partially/fully constructed structures in order to minimize the infructuous expenditure. The expert had never commented upon proposal of KRCL in 2003 as technically unfeasible or financially unviable.

52. Audit observed that the Expert Committee had recommended in June 2009 acceptance of the realignment with a gradient up to 1:60 as suggested by M/s. Amberg as well as adoption of suitable remedial/protective measures in the areas already under construction. The Expert Committee was constrained to observe that no alternative alignment could be considered at that stage in view of the commitments already made on the public exchequer apart from public expectations on the rail connectivity. Despite the Expert Committee's recommendations, the Railway Board ruled in favour of adoption of ruling gradient of 1:80 on the ground that catch sidings were required for steeper gradients. However, these issues had been considered by the Expert Committee who had acknowledged the existence of much steeper gradients on Indian Railways and the use of high powered locos dispensing with requirement of catch sidings. The suspended work was recommended by KRCL, wherever, the realignment was not involved (September 2009). The Audit further revealed that though a decision regarding location of Anji Bridge on Katra-Reasi section was taken in April' 2010, the actual work was not commenced.

53. The Committee desired to know the reasons that forced the Railways to alter the ruling gradient of the alignment from 1:60 to 1:80 contrary to the Expert Committee's recommendation. In reply, the Ministry stated as under:—

> "In fact, the Expert Committee in their report stated that it was possible to construct the rail link along the existing alignment and would be stable and survivable by adopting remedial measures at appropriate stage of construction and by local realignment/abandonment of certain stretches from Geological/ Geotechnical considerations and suggested to adopt steeper gradient of 1 in 60 if necessary. The committee never suggested to change the alignment altogether. The decision to change the ruling gradient from 1:60 to 1:80 was taken by Railway Board based on the need to avoid catch sidings which could have lowered the speed potential and considerably reduced line capacity."

54. On being asked about the policy regarding gradient of a railway line in hilly terrain, the Ministry stated that gradient of railway lines were site specific with reference to operational requirements, connectivity, type of geology, track requirements, etc. As per the policy of Railway Board, provision of catch siding is

essential on grade steeper than 1:80. The Ministry further stated that as per schedule of dimension-2004, slip siding or other arrangement becomes necessary if a passenger line was joined on a steeper gradient than 1 in 260 in yards. Besides this, gradient was also dependent upon curvature of curves which had bearing in the speed potential.

55. The Committee were then informed that most of the surveys and investigations of the Katra-Qazigund section had been completed and alignments frozen. However, geotechnical investigations were stated to be in progress between Km. 61 to 91. The financial progress of Katra-Qazigund section was reported to be 33% (₹ 4925/ ₹ 14841 Crore) and physical progress 20%. The Ministry further apprised that the schedule date of completion of the Katra-Banihal section was Dec., 2017 and Banihal-Qazigund section had already been commissioned in June 2013.

56. On being asked about the scheduled date of completion of Udhampur-Katra section, the Committee were informed that though Udhampur-Katra section was targetted for completion by September 2013; due to recent curfews/bandh and unprecedented rain in the region, the target for completion has been revised to October 2013. Asked to state the expenditure incurred/booked so far, the Committee were apprise that as on 31st July, 2013 the expenditure on Katra-Qazigund section ₹4926.13 crores whereas for Udhampur-Katra section it was ₹1055.79 crores.

57. As regards the latest estimated cost of the work between Katra-Qazigund and Udhampur-Katra section, based on year 2010 rates, the Committee were informed as under:

> "(i) Katra-Qazigund section-₹14841.828 crores
>
> (ii) Udhampur-Katra section-₹ 927.56 crores"

58. In the context of the objectives of the Rail link that it should touch all neighbourhoods or pass through all city/towns, the Committee enquired whether the objectives had been met. In their written submission, the Ministry clarified as under:

> ''One of the main objectives of the construction of this railway line was to bring about socio-economic development of the state of Jammu and Kashmir through enhanced connectivity within the region and with rest of the country. In order to meet this objective, it was desirable that this rail link should touch maximum neighbourhoods and pass through as many cities/towns as possible.''

(iv) Land Acquisition/Forest Clearance

59. Land availability for construction of tunnels, bridges and for construction of approach roads were vital to ensure timely commencement of works and their completion. Audit scrutiny reveled that piecemeal approach adopted for conducting investigations of the alignment and finalizing land requirements was not in

accordance with the prescribed policy governing execution of works. This strategy resulted in indents being placed in part portions and hampered execution of contracts for lack of final determination/non-availability of land. Moreover, the strategy resulted in discard of the land acquired, when the alignment had to be modified.

60. In the above context, the Committee desired to know the quantum of land yet to be procured and the status of the surplus land due to change in alignment. In reply, the Ministry submitted that 328.35 hectare land was yet to be procured and about 966 Kanal Revenue land and 556 Kanal Forest land had become surplus due to change in alignment. The Ministry further stated that the State Government had agreed that Revenue State land and Forest land could be returned to State and Forest Department respectively. For Revenue Private land, the policy was being finalized regarding how this land was to be dealt with in consultation with the State Government. The Ministry further stated that no work contracts were terminated/ delayed due to lack of land or approach road. However, the contract could not be awarded in the stretch from km 61- 91 of Katra-Dharam Section due to non-finalization of alignment.

61. When the Committee asked about the status of the approach roads, the Ministry informed that it had taken about 10 years (approximate) since award of the work in 2002 of contract to construct the approach roads and work on some roads (10 km in between Dharam-Qazigund section) was still in progress. Actual cost of road construction in the section Katra-Qazigund was stated to be as under:

(i) Katra-Dharam Section = ₹ 148 Cr.

(ii) Dharam-Qazigund = ₹ 179,25 Cr.

Total expenditure = ₹ 327.25 Cr.

62. On being asked about the use of these roads in future, the Ministry apprised that all the approach roads were connecting remote places of J&K. These roads had been taking off either from the National Highways/State Highway as such these roads would be required for the connectivity of the local people and for safety and rescue purpose by the Railways. As per the understanding between Indian Railways and the State Government these roads would be handed over to the State Government after completion of the project for maintenance and use.

(v) Designs and Drawings

63. Rules envisage that contracts for works should not be awarded unless all plans, drawings and estimates are approved/sanctioned by the Competent authority. However, Audit pointed out that works were awarded to the sub-contractors for construction of tunnels and bridges and proof consultancy though the GAD (General Arrangement Drawings) of the bridges were not ready for the simple reason that the site was still under exploration.

64. In the above context, the Committee desired to know the reasons for award of works to the sub-contractors without even finalizing the GADs. In reply, the Ministry submitted as under:

> "The project was sanctioned in 2002 with the stipulation to complete the project by 2007. There were two options available before Railway. The first option was that all the investigations should have been completed first as a separate project which would have taken about 3 to 4 years time and the actual execution of work would have been visible on ground after a period of about 4 years. Over and above this, there was a serious limitation to the extent to which geotechnical investigations could be carried out in advance due to the topography. The other option was to award the contract which would have included required investigations before taking up the work. The benefit in second option was that work would be visible at ground as soon as investigations progressed in a particular area. Railway went for the second option in view of prevailing political situation and expectations of public. Geotechnical investigations were carried out in piece-meal basis after taking into confidence of the local populace, paramilitary forces, military (RR), local Administration & J&K Police force and work has been executed. This strategy has worked as it has resulted in completion of Qazigund-Baramulla section and commissioning of passengers services by 2009 followed by completion and commissioning of passenger services in Qazigund-Banihal section in June 2013."

65. Audit further observed that the proof consultancy contracts in respect of Anji and Chenab bridges had to be foreclosed due to non-finalisation of design and fresh contracts at higher cost were awarded. In this context the Committee asked about the extra expenditure incurred due to the foreclosure of proof consultancy contracts and award of fresh contracts on account of non-finalization of designs. In reply, the Ministry stated that the proof consultancy contracts were awarded along with the award of design and built contracts of Chenab and Anji Khad Bridges in August, 2004 at the cost of ₹3.04 crore and ₹ 1.94 crore respectively. The contract works were awarded for a period 30 months and were closed after completion period *w.e.f.* January 2007. The contracts had to be closed with the extent for the work completed for Chenab Bridge for ₹ 1.19 crore and for Anji Khad Bridge for ₹ 0.76 crore. Thereafter new contracts were awarded.

III. PROJECT EXECUTION

66. The USBRL project was to be completed by August 2007. To ensure completion within the targetted date, the project was divided into three legs and execution and the project for each leg was entrusted to a different agency *i.e.* Leg I (Udhampur-Katra) to NRCO, Leg II (Katra to Qazigund) to NRCO/KRCL/IRCON and Leg III

(Qazigund to Baramulla) to IRCON. The status of progress (as of July 2012) relating to each of the legs is given below:

Leg	Section	Executing Agency	Date of award	Scheduled date of completion	Status
Leg I	Udhampur-Katra	0 to 25 km (Katra) NRCO	March 1995	March 2003	Operationalised in July 2014
Leg II	Katra-Qazigund	25 to 30 km (Katra + 5) NRCO	November 2002	August 2007	Incomplete
		30 to 100.868 km Katra to Dharam) KRCL	December 2002		Incomplete
		100.868 to 168 km (Dharam to Qazigund) IRCON	December 2002		Incomplete
Leg III	Qazigund-Baramulla	168 to 292 km IRCON	February 1999	March 2003	Operational - lized in October 2009

(a) Leg I —Udhampur-Katra

67. Audit pointed out that both the surveying and investigating agencies (M/s. NHPC and RITES) in their reports informed the Northern Railway that the strata available on the proposed route of tunnel T-1 was very poor. They anticipated serious difficulties in tunnelling and thus, recommended soft ground tunnelling methodology. But the Northern Railway awarded the work to contractors with the customary tunnelling method and with D shapes design, which they adopted on Jammu-Udhampur Section. The D shaped construction had to be demolished subsequently and tunnel was constructed with "horse shoe shape" design. Northern Railway was cautioned by the investigating agencies about the anticipated difficulties.

68. In the above context, the Committee desired to know the reasons for the inability of the Northern Railways to decide on the suitability of tunnel design/ construction methodology before starting construction. In response the Ministry stated as under:

> "M/s NHPC and RITES were engaged as the consultants for doing survey and geotechnical investigation. M/s NHPC through their interim & final reports in 1997 & 1999 respectively, suggested the tunnelling method with 'D' shape design with different type of support system depending upon rock in five different classes *i.e.*, good rock, fair rock, poor rock, very poor rock and overburden. They also suggested 'D' shape cross section for cut and cover portions. The consultants also submitted detailed bill of quantities as well as drawings for support system to be adopted for various rock classification

using 'D' shape. Accordingly, Railways decided to construct tunnel T-1 with 'D' shape using the tunnel design/construction methodology using steel ribs, RCC laggings, concrete back filling followed by concrete lining, as recommended by the consultants."

69. The Committee then enquired about the rationale for awarding the work on the customary tunnelling method when the surveying and investigating agencies recommended soft ground tunneling methodology. The Ministry in their written deposition submitted as follows:

"Surveying and investigating agencies recommended for soft ground tunneling in only some small patches of tunnel T-1, but no separate methodology was given by them. They only suggested for adopting 'D' shape tunnelling with support system as per the class of Rock. Accordingly, Northern Railway awarded the work with conventional tunnelling method adopting the methodology of construction based on the rock classification as suggested by the consultant."

70. The deformations in tunnel ribs were first noticed in December 2002, when the work was executed to the extent of 40 per cent incurring an expenditure of ₹ 15.38 crore. The Committee desired to know the reasons for late realization of deformation in the tunnel ribs. The Ministry in their reply stated as under:

"Deformation in tunnel ribs were noticed at a later stage due to the geological surprises encountered during tunnelling. The tunnel deformations occurred mainly due to swelling of surrounding strata resulting into squeezing of tunnel section resulting in deformation of tunnel ribs and upheaving of struts. This swelling occurred due to certain minerals present in the tunnelling media which has swelling characteristics when in contact with water. Due to heavy winter rains in the year 2002, the whole strata got fully saturated resulting in swelling and consequent squeezing. Various experts in the field of underground excavation were consulted *i.e.*, Geological Survey of India, Central Mining Research Institute, Roorkee and Central Water Commission. Based on their recommendations, remedial measures were immediately taken to strengthen the support system by providing double rib system."

71. As regards allowing the contractor to excavate further without ensuring the stability of already executed tunnel, the Ministry apprised that apart from geo-technical investigations, CMRI/Roorkee also carried out instrumentation in the tunnel using tape extensometer and load cells. They concluded that large deformations were due to squeezing and swelling ground conditions and recommended that the rib deformations at almost all the locations had stabilized.

72. Audit observed that despite continued deformation of tunnel, the Northern Railway awarded contract for ventilation, illumination and power supply for the tunnel and the contractor supplied material worth ₹ 6.79 crore, which was lying unused and the possibilities of its deterioration could not be ruled out. In that context, the Committee desired to know the reasons for lack of coordination between

the Civil Engineering and Electrical Divisions of NRCO and the action taken by the Railway authorities for this coordination failure. In reply, the Ministry submitted that the contract for the ventilation works was awarded in May, 2006 whereas deformation and collapse of tunnel T-1 took place in June, 2006. It was expected that tunnel No. 1 would be rectified after incorporating and adopting all the suggestions of the experts available in the country, so the contract was operated. This was done to adhere to the overall target of commissioning the section by August, 2007 fixed at that point of time. The Ministry claimed that there was no lack of coordination between civil engineering and electrical divisions of NRCO. All the works were planned to meet with the target to commission the project by August, 2007.

73. Audit further observed that before award of contract for construction of tunnel T-3, the investigating agencies in their reports (NHPC in 1997 and RITES in 2001) pointed out presence of huge quantities of sub-soil water to the level of a standing pool in the tunnel alignment. But the contract of execution of tunnel was awarded without finding a solution for diversion of water. In this context the Committee asked whether further investigations and solution of water diversion were ensured before award of the contract for execution of tunnel. In reply, the Ministry stated as under:—

> "Investigating agencies *i.e.* NHPC in 1997 and RITES in 2001 had pointed out presence of sub-soil water in tunnel alignment, but nowhere in their studies, they suggested any requirement of special measures for diversion of water. Inspite of all investigations carried out, there are inevitable risk of not being able to completely define existing subsurface conditions or to fully predict ground behavior during construction. It is known that even after detailed investigation there are always unknown surprises during tunnelling in underground, which cannot be foreseen inspite of best measures taken for such type of situations encountered in tunnelling. For catering to such hazards, construction methodology is adopted suitable to the risks anticipated. There are no tailor made solutions to deal with such uncertainties & hazards and hit & trial methods are adopted which may not be successful sometimes. Therefore, further investigations and solution to water diversion were not done before award of work. Investigating agencies had only suggested the precautionary measures to be taken in tunnelling in areas where water was expected, such as pre-grouting using cement/chemicals, tunnelling by multiple drift method and umbrella pipe roofing. These techniques were used during construction of tunnel and accordingly e ecution of tunnelling work including lining was completed successfully in March, 2008."

74. Instead of finding a permanent solution to the problem when ingress of heavy water started during construction in 2003 further execution of work was allowed by the Railways by using weep holes. When the Committee sought clarifications on the matter, the Ministry informed as follows:

> "The investigating agencies *i.e.*, NHPC & RITES had suggested presence of subsoil water in a patch of about 560m. They didn't suggest any need for diversion of this subsoil water. Water regimes in such type of strata keep

changing and such unforeseen/unknown hydro-geological situations are generally encountered in tunnelling for which suitable tunnelling methodology needs to be adopted. The consultants had cautioned that tunnelling in this stretch would be very difficult and suggested extremely cautious approach while tunnelling through this reach. The Nilli nalla which was crossing over the tunnel alignment 4 times with very less overburden was crossed successfully by taking all precautions. The problem of ingress of water was tackled at site by using soft ground tunnelling method using cement/chemical grouting, multiple drifting and umbrella forepoling and tunnelling execution was completed successfully including lining by Mar' 2008. Like any earth retaining structure including tunnels, water behind such structures are generally drained through weep holes or channelized so as not to have water head behind the structures which will make the structure uneconomical. The worst enemy of tunnelling work is sub-surface water. In any tunnelling work ingressed water is channelized and diverted away from working face by drilling drainage holes and same methodology was used here. The various experts in the counry in the tunnelling field suggested adoption of same methodology. Efforts were made to control the water by grouting from the top surface as well as from inside, however, it had limited success. Grouting is a costly proposition with no guarantee of its effectiveness. Controlling/channelizing sub-surface water flow is the most unpredictable work as water will find its own path with passage to time. Therefore, to cater for high discharge of water, a special drainage system of weep holes was provided. The provision of these weep holes was very important for the structural safety of the tunnel as otherwise additional pressure on account of water head could have led to detrimental effect on tunnel's stability. It was only with passage of time that problem aggravated as water discharge increased due to change in sub-surface drainage regime in the area."

75. Audit scrutiny further revealed that the flowing water into tunnel through weep holes carried fines and created cavities over the tunnel. To save the tunnel from damages, the NRCO awarded a contract for rectification works. The Committee asked whether the Railway engineers in charge of the project were not aware that the flow of water into tunnel through weep holes would carry fines and create cavities, which were dangerous for the safety of the tunnel. The Ministry in their reply stated that the tunnel was designed as a drainage tunnel and not as a water-tight tunnel. Thus, for the structural safety of the tunnel, weep holes were necessary. Regarding washing of fines thereby creating cavities and endangering the safety of tunnel in future, solutions like providing geo-synthetic membranes and grouting was thought and accordingly, M/s. RITES were engaged to give the detailed scheme. Accordingly, PVC pipes with slotted holes wrapped with permeable geo-synthetic membrane and grouting works were undertaken subsequently.

76. The Audit pointed out that the Railway Administration were aware that the section was not going to be opened due to deformation/demolition of tunnel No. 1. However, the contract for ventilation, illumination and power supply for the tunnel

awarded, thus creating a recurring liability of electricity bill of 100 kVA connection to avoid the damage of electrical equipment of rusting etc. Asked to clarify the matter, the Ministry submitted as under:

> "The contract for the ventilation works was awarded, as it was expected that tunnel No. 1 will be rectified after incorporating and adopting all the suggestions of the experts available in the country. This was done to achieve the overall target of commissioning the section by August, 2007 fixed at that point of time. As for the payment of electricity bill is concerned, 100 kVA electricity connection was taken as against 500 kVA which is necessary for testing/running of installed fans periodically to ensure that equipments remain under working and healthy condition otherwise these would gone rusted and defective and may need replacement at heavy cost."

77. When the Committee enquired about the action taken against the defaulting officials, the Ministry further clarified as under:

> "The primary risks associated with tunnel projects are related to the ground in which the tunnel is being constructed. The geo-technical qualities of the tunneling site are sometimes difficult to fully anticipate. It is common to encounter unanticipated ground conditions at any location along the tunnel path. The interpretation of the ground conditions and its likely future behavior can go wrong in such difficult underground conditions. Best efforts were made by the officials involved in the execution of T-3 based on the advice of various consultants/experts in the field of tunnelling in the country. lnspite of the adverse hydro-geological conditions and associated hazards, this tunnel could be completed in March, 2008 due to the untiring efforts and hardwork of the officials involved. Tunnelling involves venturing into the unknown area where surprises are met every few meters. As such, no officer is blameworthy for the unforeseen problems encountered during tunnelling or during planning."

(b) Leg—II Katra-Qazigund

78. Leg II from Katra to Qazigund is being executed by three agencies *viz.* NRCO, KRCL and IRCON. Audit observed that the work awarded in December 2002 was scheduled to be completed in August 2007. The 90 kms section from Katra to Loale was assigned for execution to KRCL in December, 2002 at cost plus 10 per cent profit basis. In August 2007, the 20 Kms section from Dharam to Loale was withdrawn from KRCL on account of poor performance and was assigned to IRCON. Again, in November 2012, the sections from Kms. 33 to 39 including Anji Bridge and Kms 61 to Kms 90 had been withdrawn on similar grounds and assigned to IRCON.

79. In the above context, the Committee asked about the basis on which, M/s. KRCL and M/s. IRCON were selected for execution of project and the poor

performance of KRCL which led to withdrawal of work from it. In reply, the Ministry clarified as under:

> "The project alignment falls in the areas affected by insurgency. The consequent risk perception, difficult work conditions were a strong disincentive for both Railway staff and officers to come forward to carry out work in the area. The project alignment was largely inaccessible and full of uncertainties. Given the fact that the alignment passes through treacherous hilly area requiring special and sophisticated technique for surveying, geotechnical investigation, design & construction techniques for such an inaccessible terrain with heavy tunnelling & bridging, Railway Ministry who were of the view that it can not be executed expeditiously with conventional working methods. It was, therefore, necessary to entrust the construction to such agency who have adequate resources, experience, technical capability and overall capacity to mobilize their resources in a short time to take up & complete the work and also have a Railway bearing so that all Railway specifications are followed. In order to facilitate early finalization of tenders and contracts, it was considered that solution would be to entrust the implementation of this project to a Public Sector Undertaking which has the necessary capability/expertise and decision taking is faster. Scanning the Indian construction horizon, for agencies which could get such a work executed, M/s. IRCON and M/s. KRCL have experience of such work. M/s. KRCL have the experience of tunneling and bridges on the Konkan Railway. M/s. IRCON, PSU of the Ministry have also the experience of survey, design and other activities as deemed necessary. Both these PSUs are directly under the control of Ministry of Railways and enjoyed full support of the Railways in terms of manpower requirement with railway background. M/s IRCON & M/s. KRCL were the two good construction organizations which fulfilled the requirement of experience of similar work. Accordingly, it was decided to entrust the work to M/s. IRCON and M/s. KRCL. During the course of execution of works by M/s. KRCL, it was observed that the PSU lacked proper initiative and will to solve the various technical issues affecting the progress of works. The performance of M/s. IRCON was better as they were able to commission parts of the project. As such, a prudent decision was taken to offload works in certain stretches from M/s. KRCL and transfer the same to M/s. IRCON so that the laid down target could be achieved."

80. Asked specifically to comment on the slow progress/poor performance by M/s. KRCL and M/s. IRCON the Ministry stated that the progress of the works could not be termed as poor performance by M/s. IRCON and M/s. KRCL, as the target set was far from realistic and not commensurate with ground realities. The Ministry further clarified that the main reasons which affected the progress of work were as under:

(i) Land Acquisition and handing over of land to N. Rly.

(ii) Militancy prone area.

(iii) Inclement weather, due to which practically work is standstill for more than 3 months period in a year.

(iv) Unprecedented snowfall and floods.

(v) Kidnaping and killing of IRCON Engineer, which affected the morale of the Engineers & Staff.

(vi) Frequent disruptions in transportation of construction materials due to blockage of National Highway.

(vii) Non-availability of Local skilled manpower due to which majority of the skilled manpower was from outside the state and the outside manpower was prone to exodus at little instigation and mobilization of fresh manpower required additional efforts and time.

(viii) Loss of time due to various agitations & strike, such as Amarnath Land Row, Agitation of 2010, Elections, etc.

(ix) Disruption of work by locals on minor issues.

(x) It was not possible to reach site until rapport & confidence building/ communication with the local population is build."

81. Audit scrutiny revealed that due to unmanageable difficulties in tunnelling of tunnels T1 & T2 (alignment being in Reasi thrust area) and existence of Big bridge No. 34 (Pie Khad bridge costing ₹ 95 crore approx.), KRCL submitted a proposal for realignment having cost advantage of about ₹ 172 crore. The proposed realignment involved a small bridge (costing approx. ₹ 3 crore) instead of existing bridge costing ₹ 95 crore. The alignment of Tunnel T1 and T2 had to be changed due to existence of thrust areas. Work to the tune of ₹ 50.65 crore had to be abandoned after execution.

82. In the above context, the Committee desired to know the action taken by the Ministry, to fix responsibility for lapses leading to the aforesaid loss. In reply the Ministry stated that alignment had to be changed on account of bad geology. There was a net saving in cost. As such, no officer was blameworthy for the unforeseen problems encountered during tunnelling or during planning.

83. The Ministry further submitted that the location of the bridge was decided as per the alignment finalized for tunnel No. 1 and 2. Location/alignment of T-1 & T-2 was obligatory and accordingly location for bridge was fixed. However, in order to avoid construction of T-2 through Reasi thrust and bad Geology, alignment of T-1(partially) and T-2 was revised. Due to this, shifting of bridge location was inescapable. Regular field visits/supervision were performed by NRCO. Due to their observations and interaction with M/s. KRCL, the proposal for change in alignment was finalized.

84. Audit pointed out that in tunnel T-5, cavities were formed which could be tackled at a cost of ₹14.23 crore. The hazard report submitted by the joint team concluded existence of a shear zone just above the rib line of tunnel. In that context,

the Committee asked the reasons for non-detection of the said aspect by RITES during the geo-technical investigations conducted by them. In reply, the Ministry submitted that due to difficult terrain, inaccessibility of sites, huge over burden, the detailed geotechnical investigations were not carried out. The Ministry also reassured that in underground excavation, even with detailed investigation, unexpected surprises of Geology were inevitable.

85. In the section from km.52 to km.62 (tunnel T6 to T12), the alignment had to be changed twice (1st in 2006 and again in 2009) on account of existence of bridges of unmanageable spans which were not feasible for construction. The Committee desired to know the reasons for not conducting examination/survey for feasibility of construction of bridges in the section before award of contract for construction of tunnels. In response, the Ministry stated as under:—

> "In order to meet with the challenging targets, fixed for the project, the practice followed was to quickly access the BOQ of major construction items from the approved L-section. The detailed bridge works for major bridges were to be tendered later after detail geotechnical investigations and studies. However, in this case the site examination/feasibility of bridge location could not be done in detail due to lack of access roads to reach the alignment in the highly militancy affected areas. Only after the accessibilities was assured, was it possible to examine the risk between construction of long span, curved, tall bridges and the alternative of pushing the alignment further into the mountain for tunneling, thus avoiding such bridges but increasing tunneling."

86. When the Committee asked about the infructuous expenditure incurred on this count, the Ministry clarified that due to change in alignment between km 52-62, there was a net saving in cost due to reduction in number of bridges / height of piers, and also reduction in tunnel length. Change in alignment was required due to site condition. As such, no officer was blameworthy for the unforeseen problems encountered during tunneling or during planning.

87. Audit observed that the alignment at Anji Khad Bridge was suspended in July 2008 due to difficulties pointed out by the sub-contractor M/s. DBM (who conducted GT investigations on behalf of KRCL) and GSI. The Ministry decided to retain the original alignment after suspension of work for over nearly 2 years. Subsequently in November, 2012, the section had been realigned by shifting the location of bridge to a convenient place where a comparative smaller bridge was proposed. This resulted in abandonment of already executed works on Anji Khad Bridge, approach road to T2 P2 and a part of tunnel T3. KRCL had pointed out the difficulty in construction of Mega Bridge at Anji Khad in September 2003.

88. Asked to furnish comments on the Audit findings the Ministry submitted that the matter was examined at that stage also but no techno economic study was conducted which was done later on and on the basis of study, decision was taken to shift the location of bridge.

89. The Committee queried about the new factors that cropped up in November, 2012 which were not known to the Ministry when they made the decision in April, 2010. In response, the Ministry clarified that no new factor cropped up in Nov., 2012, but technoeconomic analysis done in 2012 indicated the bridge at new location would be easy to construct/maintain and cheaper. The Ministry further clarified that the decision however had not led to any infructuous expenditure as no expenditure was incurred after June, 2008.

90. Audit pointed out that the contract for construction of Anji Khad Bridge was foreclosed on account of prolonged suspension period and a sum of ₹16.72 crore was recoverable from the subcontractor, which included a sum of 13.78 crore on account of excess payment.

91. In the above context, the Committee enquired about the causes of excess payment of ₹13.78 crore made to the contractor over and above the amount paid for getting the work executed. In reply, the Ministry submitted as under:—

> "It was a design and built contract for Anji Khad Bridge with lumsum cost of ₹ 207.32 crore. Payments to the contractor were based on milestone and according to the progress of work payments were released to the contractor to maintain the cash flow. Payment of ₹ 10.75 crore for milestone for cable crane on its arrival with third party certification was released to contractor in conformity with above and it was not an excess payment. Due to long pendency, contract had to be-determined in terms of contract conditions. The cable crane as per contract was to be taken back by contractor after completion of work. KRCL, on determination of contract did not agree to take over the consignment of cable crane for which additional payments would have to be paid to the contractor. Rather the amount paid for the cable crane was decided to be recovered from the contractor. The recovery is on account of determination of contract due to long pendency of project. KRCL considered only the cost payable to contractor towards the mobilization/ depreciation/demobilization of the equipment. Like cable crane, for other plant and machinery/structures, on prorata basis recoveries have been effected from the payments of milestone termed as "Mobilization". Hence there is no excess payment made to contractor as per contract."

92. As regards recovery of the amount, the Ministry further clarified that KRCL was retaining the Performance Bank guarantee of the contractor. Arbitration was underway by the panel appointed by the Supreme Court of India. KRCL has also slapped counter claim. On completion of the arbitration proceedings and publication of award, final settlement of accounts shall be done.

93. Audit pointed out that the contract for construction of Chenab Bridge was awarded in August, 2004 with completion target of April, 2007 but till July, 2012, even the design of central Arch had not been finalized. The work was almost at stand still since 2011-12. When asked to furnish the reasons for non-finalisation of

the design of bridge even after expiry of 8 years since the date of award of contract to the subcontractor, the Ministry in their reply submitted as under:—

"The design of bridge consist of four parts:—

(a) Design of substructure and foundation of approach viaduct.

(b) Design of Super structure of viaduct.

(c) Design of cut profiles of slopes on both banks.

(d) Design of arch including its foundation.

Design of substructure and foundation of approach viaduct has already been finalized and work executed. Design of approach superstructure has already been finalized and work is in progress. Design of cut profile of slopes at Bakal end of bridge has already been finalized and work is in progress. The design of cut profile of slope at Kouri end is at advance stage of finalization. The delay in finalization of these cut profiles is because of number of GT investigation were carried out at site. The drifts were constructed to know the rock properties, joint patterns etc. A number of analysis, were carried out to ascertain the stability of cut profiles and global stability of sites with the help of various national/international consultants. The Design of Arch was submitted by the contractor in December, 2005, however, the design need to be changed on account of change in the design parameters of the arch like blast load, span etc. Now, the design of Arch has been started and likely to be completed with in next nine months or so. The delay in design is not due to the location chosen for bridge construction."

94. Audit pointed out that the contractor had already lodged claims amounting to 308 crore for idle manpower / machinery etc. due to non-finalization of design and as a result of non-availability of enough work for execution. When the Committee asked how the Ministry would defend the non-payment of claims especially when they had failed to finalize the design of the bridge, the Ministry stated that this was a design and built contract. The complete responsibility of evolving a design acceptable to proof checker lied with contractor as per the contract conditions. As such, Railway/KRCL would be able to successfully defend their case in future if need arose.

95. The Committee, then asked whether this abnormal delay in finalizing the design would result in cost overrun on account of Price Variation Clause (PVC) payable to the contractor, the Ministry stated that Chenab bridge was a special bridge for which no expertise were available in the country. Even internationally very limited knowledge was found. The design of bridge had evolved after extensive consultation with various experts. Due to initial Government directions to kick start the project, the contract was awarded in 2004 and as usual for long duration contracts PVC has to be paid which is linked to RBI indices. The Ministry further reasoned that being a work of very complex nature and the time taken for evolving the design, the payment of PVC as per contract conditions was inevitable.

(c) Leg—II —Dharam-Qazigund Section-IRCON Portion

96. For execution of the project for Dharam to Qazigund (km.100.868 to 168.00), the route length was divided into seven zones. Contracts for execution were awarded zone-wise. Out of 100 works of IRCON audit selected 21 major works in Zone II to VI for detailed scrutiny. The work for construction of tunnels and bridges in Zone III (Kms 134 to 142) was awarded to M/s. J.P.Associates by M/s. IRCON. As Railway failed to provide land/forest clearance, the contract was foreclosed and Arbitrators awarded a sum of ₹27.82 crore in favour of the contractor on account of idle manpower/machinery.

97. In the above context, the Committee wanted to know the reasons for award of contract without ensuring the preliminaries, which resulted in legal disputes. In reply, the Ministry submitted as under:—

> "The project was sanctioned in 2002 with the stipulation to complete the project by 2007. There were two options available before Railway. The first option was that all the investigations should have been completed first as a separate project which would have taken about 3 to 4 years time and the actual execution of work would have been visible on ground after a period of about 4 years. The other option was to award the contract which would have included required investigations before taking up the work. The benefit in second option was that work would be visible at ground as soon as investigations progressed in a particular area. Railway went for the second option in view of prevailing political situation and expectations of public and this has resulted in completion of Qazigund-Baramulla section and commissioning of passengers services by 2009 followed by completion and commissioning of passenger services in Qazigund Banihal section in June 2013. Otherwise also legal disputes in a contract cannot be avoided altogether as disputes are bound to crop up and dissatisfied agency would take legal recourse."

98. IRCON has approached the High Court against the award given by the Arbitrator appointed by the Railways. The Committee asked the Ministry to explain as to how IRCON was going to defend the case in High Court when the contractor was not provided land for execution of work. In reply, the Ministry stated that IRCON was defending the case in the High Court based on the provision of contract clause No. 24 (a) (iii) of General Conditions of Contract which stated as below:—

> "In the event of any failure or delay by IRCON to hand over possession of the lands to the contractor necessary for the execution of the works or to give the necessary notice to commence the works or to provide the necessary drawings or instructions or any other delay caused by IRCON due to any other cause whatsoever, then such failure or delay shall in no way affect or vitiate the contract or alter the character thereof or entitle the contractor to damages or compensation therefor, but in any such case, IRCON may grant such extension or extensions of the completion date as may be considered reasonable. Accordingly, no compensation is payable to the contractor except extension of Time granted on valid ground."

99. Audit observed that the scope of work awarded for construction of tunnels and bridges in Zone IV (Kms. 142 to 152) which was not affected by the realignment and the work in this portion was not suspended, was reduced from ₹169 crore to ₹ 125 crore by withdrawing a number of works from M/s HCC. These works were subsequently awarded to other agencies at higher cost. As per orders of the Railway Board, the work on alignment from Kms. 30 to Kms. 144 was suspended for review of alignment.

100. Asked to comment on the Audit findings, the Ministry submitted as under:—

> "HCC was awarded the work in September 2003 (Section from Km. 142+000 to Km. 152+000). Due to delay in handing over of the land by State Government, stoppage of work by various departments, such as Revenue, Forest etc. and security reasons at site and due to refinement of alignment from Km. 100 to Banihal, the scope of the work was reduced and hence affected portion of work was withdrawn."

101. Audit further observed that contracts for construction of retaining walls etc. in Zone VI from Kms.164— Kms.168 on account of revision of design of retaining walls, formation etc. had to be foreclosed. The already executed works had to be foreclosed and the work re-awarded at higher cost involving extra expenditure of ₹11.67 crore besides contractor's claims. The design/drawings of retaining wall etc. were prepared by RITES.

102. In the above context, when Committee asked whether the design was finalized without proper field work/surveys, the Ministry submitted as under:—

> "No. Design was finalized after Geotechnical investigation. During the construction activities, it was found that the actual of seepage water is much more than the data calculated during Geotechnical investigation. Due to heavy seepage of water, the basic structure of the soil changed in comparison to the anticipated soil characteristics based on geotechnical investigations. It is observed that water seepage is heavy during snow fall season mainly because of heavy snowfall in the high reaches. As such the slope stability works of this deep cutting area of slope required revision. Accordingly, RITES again prepared revised designs. Therefore this cannot be categorized as defective design by RITES. Himalayan geology is highly unpredictable which throws up many surprises posing enormous challenge during the execution. There is no extra expenditure as this would have otherwise been required, had the proper geotechnical/metrological investigation of site would have been feasible originally."

103. Audit scrutiny revealed that the Member Engineering, Railway Board in the meeting held in February, 2008 with NRCO, KRCL and IRCON decided to engage an internationally accredited agency for review of alignment from Katra to Banihal. IRCON, in July, 2008 awarded the work of realignment of section from Kms.137 to Kms.144 to RITES, which subsequently had to be foreclosed in February, 2009 after a payment of ₹1.20 crore on the plea that the work of review of entire alignment has been awarded to M/s.Amberg.

104. In the above context, the Committee sought clarification. In reply, the Ministry deposed as under:—

> "Railway Board instructions were not ignored by IRCON. The process of awarding Geotechnical Investigation work to RITES was started on 22.01.2008 *i.e.* well before receipt of instructions from Railway Board. The work of refinement between Qazigund-Banihal was in fact awarded to M/s. Amberg (an internationally accredited agency) in October, 2008. M/s. RITES was engaged for refinement of work between Km. 137.00 to Km. 144.00 along with geotechnical investigation. The works executed by the RITES such as Geophysical survey, digitization of top sheets, and fixation of control pillars (21 Nos.) etc. were latter on utilised for fixation of alignment of Tunnel T-74-R and after award of work to Amberg balance work was not got executed through RITES. This has resulted in expeditious finalization of alignment of Tunnel T-74-R. Since the instruction of Railway Board were not ignored as such any action against IRCON was unwarranted."

(d) Leg—III—Qzaiqund-Baramulla

105. Audit scrutiny revealed that Leg III from Qazigund to Baramulla had been opened for traffic in three phases from October, 2008 to October, 2009 as against the targeted date of completion of 31 March, 2003. Against the sanctioned estimate of ₹ 906.33 crore (revised to ₹ 3658.70 crore in January, 2012), an expenditure of ₹ 3071.86 crore had been incurred on executing this Leg as of July, 2012 . This section involved 119 km. track with 63 major bridges and 739 minor bridges. IRCON awarded 1741 work contracts with regard to this section of the project. Audit examined 83 contracts out of which 43 works were completed and 40 contracts were foreclosed as of July, 2012. The delay in completion of works ranged from 3 months to 75 months. The review of contracts selected for audit revealed that in all cases, the scope of work was revised upward by about 100 per cent or even more in some cases, which resulted in foreclosure of contracts and award of balance works at higher rates.

106. In the above context, the Committee desired to be apprised of such huge variations in the scope of work. In reply, the Ministry submitted as under:—

> "Detailed survey could not be conducted before award of the contract, because of the prevailing militancy activities and inaccessibility of the area. Therefore, based on the sample data of geotechnical investigation conducted at few locations the contract were awarded. Due to this reason latter on at the time of actual execution, design and scope of work had changed which has caused variations. Variations also occurred because of demand for large number of minor bridges, access roads, drains, nallahs, irrigation water channels, providing parthways all along the irrigation water channels, revision in formation levels to minimize level crossings by providing RUBs, revision in design drawings due to refinment of alignment on account of technical reasons and social obligations such as to avoid religious places, burrial grounds and

preservation of Chinar Trees (Hertige Trees) to respect the sentiments of the people."

107. When the Committee specifically asked whether the tendered quantities were worked out without detailed survey the Ministry replied as under:—

"Detailed survey could not be conducted before award of the contract, because of the prevailing militancy activities in the area. Therefore, based on the sample data of geotechnical investigation conducted at few locations the contract were awarded. Due to this reason latter on at the time of actual execution, design and scope of work had changed which has caused variations. Variations also occured because of demand for huge number of minor bridges, access roads, drains, nallahs, irrigation water channels, providing pathways all along the irrigationl water channels, due to revision in formation levels to minimize level crossings by providing RUBs, revised design drawings due to refinment of alignment to observe social obligations such as to avoid religious places, burrial grounds and preservation of Chinar Trees (Hertige Trees) to uphold the sentiments of the people."

108. Audit further pointed out that the GAD / Drawings of well caps of bridge No. 5-A (Bridge package 6) had to be revised by IRCON / RITES due to difference in level of bridge. The well caps already constructed had to be dismantled resulting in infructuous expenditure. The design of bridge was prepared by RITES. After discrepancy was pointed out by IRCON, M/s. RITES contended that the design was prepared after proper survey and hence the design was not faulty.

109. In the above context, the Committee asked whether the matter was investigated with a view to ascertain the precise reason of the defect. The Ministry in their reply stated as under:—

"Revision in the spans of Bridge No. 5-A, which was earlier 11 x 30.5m with a well depth of 25m and Pier height of 17m had to be changed to the span arrangement of 12 x 30.5m + 1 x 45.7m + 1 x 18.3m with a well depth of 35m and height of Pier of 22m approximately. It is worthwhile to mention here that an additional span of 1 x 45.7 OWG on this bridge had to be introduced in view of meeting the sentiments of the local people as a social obligation in order to avoid one grave yard falling within the bridge alignment. There was tremendous objection from the local people in following the original approved drawings. In view of this, the well cap drawings for P1, P9 & P10 were revised and the casted well cap had to be adjusted to accommodate the changes. Hence, this does not tantamount to any in-fructuous expenditure."

110. Audit pointed out that the Pier P1 and Abutment Al of Bridge No. 44 (Bridge package 8) had to be abandoned as the pier got tilted during construction. M/s. RITES who prepared the design attributed this to improper supervision by IRCON. In this regard, the Committee desired to know whether the pipes tilted due to defective design by RITES or improper supervision by IRCON so as to fix

responsibility for the infructuous expenditure. The Ministry in their written deposition submitted as under:—

> "Regarding Bridge No. 44, planning was done as per the geological survey of the river bed by conducting standard method of sample bore log tests. However during the execution, an active high pressure aquifer was encountered at a depth of 10-15m below the river bed, with a head of 7-8m. This could not be detected with the conventional investigation method adopted earlier. Hence a special drilling using NX/BX rotary drill was got done, the data of soil strata below the river bed up a depth 50m revealed the existence of aquifer which is very deep and extending beyond 40m. Due to the effect of this aquifer the well of P1 suddenly sunk & tilted, beyond recovery and has to be abandoned. In the same manner the abutment Al which was completed in all respects suddenly started moving towards the river bed. As such this was also required to be abandoned. Hence looking at the criticality of geotechnical strata the foundation type was modified to Pile foundation, with changed span configuration, resulting in additional expenditure and in view of above this expenditure cannot be considered as infructuous expenditure since this resulted in opening of section on due date."

111. In reply to a specific querry of the Committee regarding the system of monitoring adopted by NRCO to supervise the work carried out by RITES/IRCON/ KRCL, the Ministry submitted that NRCO had posted Dy. Chief Engineer/Executive Engineer/Assistant Executive Engineer and supervisors in the field to carry out the check on quality and execution of work as stipulated in contract between NR and PSUs.

112. Audit scrutiny revealed that all the works of construction of Bridges, Office Buildings, Station Buildings, and Residential Buildings etc. suffered on account of not ensuring the preliminaries like availability of clear site, approved design/drawings etc. In this context the Committee enquired about the failure of IRCON to adhere to the codal provisions and ensure the basic preliminary requirements before award of contracts. The Ministry in their written submission stated as under:—

> ''The project was sanctioned in 2002 with the stipulation to complete the project by 2007. There were two options available before Railway. The first option was that all the investigations should have been completed first as a separate project which would have taken about 3 to 4 years time and the actual execution of work would have been visible on ground after a period of about 4 years. The other option was to award the contract which would have included required investigations before taking up the work. The benefit in second option was that work would be visible at ground as soon as investigations progressed in a particular area. Railway went for the second option in view of prevailing political situation and expectations of public. Geotechnical investigations were carried out in piece-meal basis after taking into confidence of the local populace, para-military forces, military (RR), local administration & J&K Police force and work has been executed. This has

resulted in completion of Qazigund-Baramulla section and commissioning of passengers services by 2009 followed by completion and commissioning of passenger services in Qazigund-Banihal section in June 2013."

113. When the Committee asked about the action taken/proposed by NRCO against the defaulting officials which resulted in excess expenditure besides delay in execution of the project, the Ministry submitted that no action was called for and as per MOU, IRCON was fully responsible for award of contracts and execution.

IV. FINANCIAL MANAGEMENT

114. Audit scrutiny revealed that the project was sanctioned in 1994-95 at a cost of ₹1500 crore. This estimate was based on the studies conducted by M/s. RITES in 1987. Cost as per DPR was ₹ 3077 crore in 1999-2000. The cost has gone up to ₹19565 crore as of July, 2010 and approved by CCI which provided for total price escalation (₹ 9346 crore), increase in scope of work (₹ 3427 crore) and items not provided in DPR (₹ 3715 crore) which included element of profit of ₹ 1386 crore payable to KRCL and IRCON. Expenditure incurred till July 2012 was ₹ 8057 crore. As per agreement between NRCO and IRCON/KRCL, 30 per cent advance payment on cost of works in progress was to be made to these PSUs. On the basis of test check, the works costing ₹ 281.42 crore have been abandoned on account of change of alignment rendering the expenditure infructuous. In addition, ₹ 57.24 crore had been paid to contractors for their idle manpower /machinery during the period work was suspended by the Railway Board. Additional financial impact on account of losses and claims arising from general planning failure is given below:—

Sl. No.	Details	Amount in crore (₹)
1.	Loss on account of already executed assets	281.42
2.	Loss on account of idle men power/machinery paid to contractors during suspension period	57.24
3.	Foreclosure of contracts and reward the balance work at higher rates	1122.63
4.	Expenditure on rectification of defective works	194.37
5.	Delayed approval/mid way revision of drawing/design	62.34
6.	Contractor's claims	1514.40
7.	Overpayment-non recovery of Railway dues	26.52
	Total	3258.92

115. As regards the final cost of the project, the Committee were informed that the Ministry were not uncertain about the final cost of the project which was estimated to be ₹ 19565 crore based on the rates of 2010. The Ministry reasoned that in a project of this magnitude in such complex topographical and geological formations, it was not possible to ascertain all the project features as underground construction was always full of uncertainties/surprises.

116. On being asked to provide the basis of working out this percentage of advance payment to contractors *i.e*. KRCL and IRCON, the Ministry stated as under:—

> "First cost plus 10% basis contract was awarded to IRCON for Qazigund-Baramula section. In this contract there was a provision of recoupable advance of 20% of the cost of the work in respect of relevant work/supply contracts finalized by IRCON. The rationale behind 20% advance was to meet the expenses towards 10% mobilization advance and 10 % towards cost of the plant and machinery brought specifically for the project by IRCON or its sub-contractor *i.e*. plant and machinery advance. In the contract for Katra-Qazigund section which was finalized later almost all the provisions are same as they are in Qazigund-Baramula contract but advance limit was enhanced to 30% keeping in view high initial investment due to difficult terrain, technically challenging works involving new techniques, involving costly plants and machinery besides the advance mentioned earlier. Moreover, the advances will be safe in the hands of contractual agencies being PSU under the control of Ministry of Railways. Adequate check and balance was inbuilt in the agreement according to which a separate account for keeping payments received from Railways has to be opened wherein unutilized funds received from Railway will earn interest and all the interest has to be remitted to the Railways by the PSU."

117. Audit pointed out that the Committee constituted for examination of alignment recommended adequate financial/technical powers to the Chief Administrative Officer of Northern Railway, who was responsible for execution of project. The Committee asked the Ministry whether powers delegated to CAO/USBRL were adequate, especially keeping in view the cost of various contracts on the project. The Ministry in their reply stated that as per the decision all major works were being executed by IRCON and KRCL. In case it was decided that some works were to be executed directly by Northern Railway, existing powers delegated to CAO/USBRL would need revision. However, enhancement of power to all CAOs of Indian Railways in general was under consideration.

V. MONITORING

118. Audit opined that a project of this magnitude cannot succeed unless a proper structure for monitoring was in place. The overall incharge of the project is Member (Engineering) in the Railway Board. Chief Administrative Officer, Construction, Northern Railway (CAO/USBRL) is responsible for the day to day construction activities. Audit pointed out that a project of this magnitude would have thus benefitted from an independent project management structure with adequate authority to take appropriate decisions with the Railway Board monitoring the overall progress rather than the conventional hierarchy based process of decision making. Although a separate post of CAO/USBRL was created exclusively to monitor this project, CAO/USBRL had not been entrusted with adequate authority to take decisions relating to the project — either financial or administrative. In fact,

the Expert Committee constituted for reviewing the alignment in 2008 recommended greater financial powers to CAO/USBRL. As a result, quality of monitoring was found to be ineffective.

119. The Audit findings revealed instances where follow up action/decisions were not taken with the required urgency. Some of these instances include deformation in T1 tunnel of Leg-I and subsequent collapse of tunnel, heavy ingress of water in T3 tunnel of Leg-I, decision of suspension of work on Leg-II from Katra to Banihal, delay in approval of revised alignment of Pie Khad submitted by KRCL etc. which resulted in excess/infructuous expenditure. It is indicative of weak monitoring system in the project.

PART II

OBSERVATIONS/RECOMMENDATIONS

The 292 Kms. line Udhampur-Srinagar-Baramula Rail Link (USBRL) project is undoubtedly one of the most important projects taken up by the Indian Railways since Independence. The strategic importance of the project to the State of Jammu & Kashmir and to the nation as a whole cannot be overstated. It is also the most challenging project for the Indian Railways so far, in terms of constructing a new line altogether in a rugged and hostile terrain, tough weather conditions, sensitive security situation and deficient logistics support. The project is intended and expected to bring about socio-economic development of the State through enhanced connectivity within the region and with the rest of the country by providing an all efficient all weather transportation channel that could function in adverse weather conditions and considerably reduce the travel time to various destinations in and outside the valley. Recognizing all these facts, the Government of India declared the project to be of 'National Importance', for which funds are provided for the project from the Consolidated Fund of India rather than from the operating surplus of the Indian Railways. The current outlay expected for this project is ₹20,000 crore (Approx) as against the initial estimate of ₹1500 crore . The project is being implemented by three principal agencies, namely, Northern Railway Construction Organization (NRCO), Konkan Railway Corporation Ltd. (KRCL) and lrcon International Ltd. (IRCON). The 119 Kms. section from Qazigund to Baramula was completed and operationalised in three phases, the last phase being in October 2009. The critical 168 Kms. sections *i.e*. Udhampur-Katra which was scheduled to be completed by 2003 has now been operationalised in July 2014. However, Katra-Qazigund section is yet to be completed. The revised target date for completion of this section is 2017 as against the initial target of 2007. Considering that this is the first time that the Indian Railways has taken up the construction of an entirely new line in an unmapped area devoid of approach roads resulting in immense difficulties in transportation of the required construction material, tracks and other equipment, and appreciating the engineering marvel that the Committee witnessed during their train journey from Srinagar to Banihal, the Committee based on the Audit findings, have analysed the root causes for the time and cost overrun of the projects and given their considered opinion in the succeeding paragraphs.

2. The Committee note that an alignment chosen by the Ministry of Railways to connect Baramula with Jammu *via* Srinagar lies through Udhampur-Katra Quazigund Section (168 kms.) in the Western Corridor of the Pir Panjal mountain ranges and is located close to the Line of Control (LoC). The alignment under construction has a ruling gradient of 1:100 requiring a total height of 1100 metres to be gained between Katra and Quzigund. The Committee also note that

from Udhampur there were two corridor options for reaching Kashmir *via* Banihal *i.e.* Western and Eastern. While the Eastern corridor has a pre-history of investigation passing through NH1 and more developed area and the Geological Survey of India (GSI) in 1994-95 also had recommended the rail line through Eastern Corridor, the Western Corridor from Jyotipuram (Salal) to Banihal was largely inaccessible. As per the Detailed Project Report (DPR) three alignment options were sent for consideration of Railway Board. Two of these options were in the Eastern Corridor — one with gradient of 1:40 (120 kms.) and the other with gradient of ₹ 1:100 (198 kms.) which were evolved in the reconnaissance and engineering cum traffic survey carried out by RITES in 1986-1987. However, the third option with gradient of 1:100 was an option in Western corridor. The Committee find that the Ministry of Railways initially approved alignments passing through Eastern Corridor with steep gradient of 1:40 in March 1994 only to reverse the same in June 1995 in favour of alignment in Western Corridor with a gradient of 1:100 based on the opinion given by the consultant appointed by the Northern Railway who studied the Eastern Corridor alignment and opined that the gradient of 1:40 is unsafe and technically not feasible. The GSI also opined it non-feasible. The Ministry have contended that in view of the difficult geology, inaccessibility of sites, law and order problems and decision of the Government to start the work at the earliest, codal provisions were followed to the extent possible in the given circumstances as detailed geological investigations were not possible due to inaccessibility of sites. Justifying the decision for an alignment through the Western corridor, the Ministry have further contended that factors like uninhibited, inaccessible areas without approach roads, presence of active thrusts and faults, steeper hills and valleys were unavoidable even for the alignment through Eastern Corridor also and hence it did not make any difference in the decision making process. The Committee are not convinced with the contention of the Ministry as details of active thrust and faults could be ascertained only after detailed geotechnical investigations which was not done due to inaccessibility of the sites, as per the Ministry's own admission. The Ministry, have further reasoned that prevailing political situation coupled with security issues and expectation of public necessitated early commencement of work as soon as possible so that work is visible on ground to assuage the expectation of public. Appreciating the Ministry's concern, the Committee are, however, of the considered opinion that requisite field investigations and technical feasibility studies should have been carried out before taking the critical decision on selection of the alignment, more so considering the difficult and unexplored terrain of the region. The Committee desire that the Ministry should draw suitable lessons from the factors that impeded the smoother implementation of the project of 'National Importance' and exercise due diligence in similar projects in future.

3. The Committee note that after the project was declared as one of 'National Importance' to be funded by Government of India (2002), the Railways in December 2002 *i.e.* even before the Final Location Survey which was a pre-requisite for commencement of work, entrusted the execution of Katra-Qazigund section (barring 5 km. beyond Katra assigned to Northern Railway) to two PSUs *i.e.*

IRCON and KRCL under the overall control of NRCO. The Ministry have contended that conducting survey/investigation would have entailed 2-3 years of delay and hence the works were to be commenced along with surveys and investigations by the contracted agencies. RITES was expected to focus on carrying out surveys and investigations in piecemeal and IRCON and KRCL were to start construction where investigations completed. The Committee are concerned to note that the Ministry adopted this high risk strategy without an overall assurance of the technical feasibility of the alignment. The Ministry's claim that best efforts were made from topo-sheet, satellite/aerial photos in order to finalize alignment through a terrain which was otherwise not directly accessible, does not convince the Committee in view of the many problems that cropped up in the implementation of the Project and suggestions of the implementing PSUs for reworking of the alignment. The Ministry owe a cogent explanation in this regard. The Committee further desire that while continuing the present work, fresh and quick evaluation of the new technical studies/consultations be carried out.

4. The Committee note that in December 2007, NRCO reported to the Railway Board that KRCL and IRCON were facing many difficulties in execution of the project form Katra to Qazigund. Such difficulties included an increase in the route length due to the ruling gradient of 1:100; curved tracks and tunnels; large arch bridges over rivers Chenab and Anji etc. NRCO, therefore suggested that a gradient of 1:50 would be more feasible and that a double line or twin single lines would be a more feasible option to carry out relief and rescue operations in case of emergencies in tunnels of more than three Kms. in length. The PSU also requested the Railway Board to approve fresh alignment survey alongwith geological feasibility and hold the execution of work under abeyance since further execution would lead to infructuous expenditure in case new alignment with a gradient of 1:50 was adopted. The Committee find that experts like E. Sreedharan, the then MD, DMRC, Dr. Golsar, an international expert, etc. advocated change in alignment pointing out safety and security risks, problems of stability, constructability and maintenance of structures of the existing alignment. Finally, the Railway Board decided in July, 2008 to suspend the work between Km. 30 to Km. 34 and Km. 52 to Km. 144 until a final decision on alignment was taken. The Committee find that by that time an expenditure of about ₹1791 crore had already been incurred by NRCO and about 13.18 km. of tunneling had been excavated in the Katra-Banihal section. Not only that, a total length of about 1.8 kms. of already constructed tunnels that collapsed was abandoned costing about ₹ 75 crore. Moreover, an amount of ₹61.39 crore was paid towards idling of men and machinery as the work remained suspended for 14 months. All these are pointers towards deficient planning, inadequate surveys and belated decisions. The Committee are not inclined to buy the Ministry's argument that sometimes mid course corrections become inevitable and difficulties encountered cannot be apprehended in advance, in view of their candid confessions that the decision to hold the works in abeyance was late. The Committee are of the firm opinion that the problems could not be foreseen because of lack of initial surveys, studies and planning, despite the Ministry's justifications

to the contrary. The Committee, therefore, exhort the Ministry to exercise due prudence and diligence for smoother implementation of the remaining parts of the project besides plugging the loopholes before undertaking similar challenging but important projects in future. The Committee further desire that alongwith selection of proper gradient, other factors like curvature, level of traffic, speed envisaged, stability, constructability, safety and maintenance of structure be accorded due weightage and consideration.

5. The Ministry have further contended that the progress of the work cannot be termed as poor performance as the target set was far from realistic and not commensurate with ground realities. The Committee do not accept the contention of the Ministry in view of the fact that the responsibility of fixing targets and gauge the ground realities in a difficult and hostile terrain lies with the Ministry themselves. The Ministry's statement that they are now going to engage renowned consultants for the purpose imply that they did not do so earlier. The ingress of water and collapse of tunnels, the changes in the design of bridges, non finalization of drawings, etc. which also delayed the completion of the project depict deficient planning and lack of expert consultations. The Committee are of the firm view that had the project Authorities and implementing agencies resorted to prudent planning including consultations with renowned experts at the very beginning itself, it would have been possible to minimize uncertainty on account of constructability thereby paving the way for smoother implementation of the project. Considering the fact that the project being one of the most challenging projects undertaken by the Railways, the Committee impress upon the Ministry to draw suitable lessons from the shortcomings/impediments/lacunae that surfaced in the course of the execution of the project and take requisite remedial measures to complete the unfinished stretches as per the revised target date besides resorting to adequate precautionary measures to minimize delay in future projects.

6. The Committee note that the USBRL project was to be completed by August 2007 and to ensure timely completion it was divided into three legs. Leg I *i.e.* Udhampur-Katra was awarded to NRCO in March, 1995 and the scheduled date of completion was March, 2003. The Project is completed now and operationalised *w.e.f.* 4th July, 2014. Leg II *i.e.* Katra-Qazigund was awarded to NRCO, KRCL and IRCON in November/December 2002 with the scheduled date of completion in August, 2007 and the project is yet to be completed. Leg III *i.e.* Qazigund-Baramula was awarded to IRCON in February, 1999 with the target date of completion by March, 2003. The project was operationalised in phases by October, 2009. The Ministry have attributed several reasons for the slow progress of different stretches which *inter-alia* include inclement weather; unprecedented rain, snowfall and floods; frequent disruptions in transportation of construction material; non-availability of local skilled manpower; disruption of work by the locals on minor issues; kidnapping and killing of an Engineer affecting the morale of the workers; delay in land acquisition and forest clearance etc. As such, the target date for the completion of the Katra-Qazigund section has been revised to December, 2017. The Committee take note of the tremendous hardships and hostile conditions including natural calamities that the Railways have to face while executing the

project. But the plea of delay in getting land acquisition and forest clearance is not tenable for the projects remains unfinished. The Committee, therefore, impress upon the Ministry to take up the matter with the State Government and also at other appropriate levels to timely obtain the land acquisition and forest clearance so that the progress of the project is not impeded. The Committee also desire that the Railways should resort to a confidence building rapport with the local people so that the construction work is not disrupted on trivial issues.

7. The Committee on their Study Visit to Srinagar were apprised that there is urgent need for more rakes in the present track from Baramulla to Banihal. The Committee desire the Ministry to explore the feasibility of airlifting the requisite rakes to the valley by using Hercules Carrier Aircrafts.

8. The Committee note that the primary objective of the project is to bring about socio-economic development of the State of Jammu & Kashmir through enhanced connectivity within the region and with rest of the Country. But the non-completion of the project pertaining to Katra-Qazigund even after lapse of 12 years has defeated the very objectives. The operationalisation of the Qazigund-Baramulla Leg with a time overrun of more than six years *vis-a-vis* the target date has only constituted a rail link within the Kashmir Valley, and not to Kashmir, as was the primary objective. The Committee, therefore, recommend that the Railway Board (i) make concerted efforts to complete the entire project by the revised target date by monitoring the monthly progress so as to meet the expectations of the nation in terms of providing the citizens within the valley and outside Kashmir a faster, cheaper, reliable and comfortable mode of transportation and (ii) recruit adequate Engineers, impart them periodical training and involve in such important projects so as to prepare them for undertaking challenging projects. In addition to that, every year batches of Railway Engineers be engaged in the USBRL project to gain working experience in extreme conditions.

9. The Committee note that the initial cost of the project was estimated at ₹1500 crore in the year 1994-95 which was revised to ₹3077.23 crore in 1999 and further revised to ₹9341.44 crore in 2010. As of September 2013, the estimate has touched ₹ 20, 000 crore (approx) based on the rates of 2010. What concerns the Committee is that the Ministry are still uncertain about the final cost which is likely to escalate by few more thousand crores of rupees by the time the entire project is completed. The Ministry have reasoned that in a project of this magnitude and in such complex topographical and geological formations, it is not possible to ascertain all the project features as underground construction is always full of uncertainties/surprises. According to the Committee, complex topographical and geological formations are not the only reasons that resulted in the manifold increase in the initial estimates. The fact remains that the project estimates were prepared without firming up selection of alignment on the basis of necessary ground investigations. Moreover, the Detailed Project Report (DPR) had omitted major components such as cost of construction of approach roads, provision of security for guarding tunnel portals, etc. though these factors had huge financial implications. As the inadequacy of the project has heavily contributed to time and

cost over-runs, the Committee exhort the Ministry to guard against complacency and take requisite measures to prepare the estimates in such a way as to provide a reliable basis for cost control and project monitoring so that the final cost of the project is ascertained and not allowed to inflate imprudently. The Committee also desire that effective advance measures be taken in cost estimation of similar challenging projects in future.

10. The Committee are unhappy to note that the general planning failure on the part of Railways has contributed to a loss of ₹3258.92 crore as of 2010 on account of Contractor's claims (₹1514.40 crore); foreclosure of contracts and award of the balance work at higher rates (₹1122.63 crore); loss on account of already executed assets (₹281.42 crore); expenditure on rectification of defective works (₹194.37 crore); delayed approval/midway revision of drawings/design (₹62.34 crore); loss on account of idle manpower/machinery (₹57.24 crore); and overpayment/non recovery of Railway dues (₹26.52 crore). Expressing their serious displeasure over the above factors that resulted in avoidable losses/claims in the course of execution of the project, the Committee impress upon the Ministry to fix responsibility and put in place a robust mechanism for effective planning and project monitoring so as to ensure that such losses/claims do not recur.

11. The Committee note that the Member (Engineering) in Railway Board is the overall incharge of the project. The Chief Administrative Officer, Northern Railway (CAO/USBRL) is responsible for day to day construction activities. The collapse and heavy ingress of water in the tunnels and decision of suspension of work are pointers towards lack of urgent followup action/decision and weak monitoring by the authorities concerned. The Committee find that a committee constituted by the Northern Railway for examination of alignment has recommended adequate financial and technical powers to the CAO for strengthening the monitoring system. The Ministry have informed that enhancement of power to all the CAOs of Indian Railways are under their consideration. In view of the fact that the success of the project of such a magnitude is heavily dependent upon robust monitoring system, the Committee urge the Ministry to empower the CAOs with more technical and financial powers so as to enable them to take quick decisions for timely and seamless execution of the project. The Committee would like to be expeditiously apprised of the measure taken in this regard.

12. To sum up, the Committee acknowledge the commendable efforts made by the Indian Railways in the course of implementation of one of the most challenging projects ever taken up under many adverse conditions. At the same time, the Committee earnestly hope that the Indian Railways, based on the lessons learnt, would take requisite effective measures as discussed in the preceeding paragraphs and also as suggested by Audit so as to not only complete the project as per the revised target date for the benefit of the citizens inside and outside the valley but also to adequately gear up for future assignments.

NEW DELHI;
24 *November,* 2014
03 *Agrahayana,* 1936 (*Saka*)

PROF. K.V. THOMAS,
Chairperson,
Public Accounts Committee.

APPENDIX I

MINUTES OF THE SECOND SITTING OF SUB-COMMITTEE-I (RAILWAYS) OF THE PUBLIC ACCOUNTS COMMITTEE (2013-14) HELD ON 11TH OCTOBER, 2013

Sub-Committee-I (Railways) of the Public Accounts Committee (2013-14) sat on Friday, the 11th October, 2013 from 1100 hrs. to 1300 hrs. in Room No. 'G-074', Parliament Library Building, New Delhi.

PRESENT

Shri Prakash Javadekar — *Convenor*

MEMBERS

Lok Sabha

2. Shri Jayaprakash Hegde

Rajya Sabha

3. Shri Prasanta Chatterjee

SECRETARIAT

1. Shri Devender Singh — *Joint Secretary*
2. Shri D.R. Mohanty — *Deputy Secretary*

Representatives of the office of the Comptroller and Auditor General of India

1. Ms. Divya Malhotra — Director General (Railways)
2. Ms. Ila Singh — Director General (Railway Board)
3. Shri Purushottam Tiwary — Principal Director of Audit (PAC)

Representatives of the Railway Board Ministry of Railways

1. Shri Arunendra Kumar — Chairman, Railway Board
2. Shri Rajendra Kashyap — Financial Commissioner, Railway Board
3. Shri Subodh Jain — Member Engineering, Railway Board
4. Shri D.P. Pande — Member Traffic, Railway Board
5. Shri Kul Bhushan — Member Electrical, Railway Board
6. Shri Sudhir Mital — Addl. Member (Mech. Engg.), Railway Board
7. Tribhuvan Gupta — Adviser (Bridges), Railway Board
8. Smt. Saroj Rajware — Adviser (Finance), Railway Board

2. At the outset, the Convenor, Sub-Committee-I welcomed the representatives of the Office of the C&AG of India and the Ministry of Railways (Railway Board) to

the sitting of the Sub-Committee. Observing that the sitting had been convened for taking oral evidence of the representatives of the Ministry of Railways (Railway Board) on the subjects: (i) 'Civil Engineering Workshops in Indian Railways': (ii) 'Delay in Building the New Rail Bridge Over River Sane'; (iii) 'Signal and Telecommunications'; (iv) 'Rail Link to Kashmir' and (v) 'Environment Management in Indian Railways Stations, Trains and Tracks' based on various Audit Paras/ Reports, the Convenor impressed upon the witnesses not to disclose the deliberations of the Sub-Committee to any outsider, especially the Print and Electronic media. The Convenor then asked the Chairman, Railway Board to give an overview of the subjects under examination, with special reference to the Audit findings and the Ministry's response thereon.

3. The Chairman, Railway Board, accordingly briefed the Sub-Committee on the aforesaid five subjects highlighting the measures taken to upgrade and modernize the Civil Engineering workshops; the status of the Rail Bridge over River Sane; the introduction and expansion of the Anti-Collision Devices; various initiatives undertaken towards Environment Management in Indian Railways and the progress of various stretches in the project Rail Link to Kashmir.

4. The representatives of the Ministry of Railways thereafter responded to various queries raised by the Members. As some queries required detailed and statistical reply, the Convenor asked the Chairman, Railway Board to furnish written reply on the same in due course.

5. The Convenor thanked the representatives of the Ministry for deposing before the Sub-Committee, and furnishing the available information on the subjects. He also thanked the representatives of the Office of the C&AG of India for extending assistance to the Sub- Committee in the examination of the subjects.

The witnesses, then, withdrew.

A copy of the verbatim proceedings of the sitting was kept on record.

The Sub-Committee then, adjourned.

APPENDIX II

MINUTES OF THE THIRD SITTING OF SUB-COMMITTEE - I (RAILWAYS) OF THE PUBLIC ACCOUNTS COMMITTEE (2013-14) HELD ON 14TH MARCH, 2014

The Sub-Committee sat on Friday, the 14th March, 2014 from 1130 hrs. to 1200 hrs. in Room No. 'G-074', Parliament Library Building, New Delhi.

PRESENT

Shri Prakash Javadekar — *Convenor*

MEMBER
Rajya Sabha

2. Dr. V. Maitreyan

SECRETARIAT

1. Shri D.R. Mohanty — *Deputy Secretary*
2. Shri A.K. Yadav — *Under Secretary*

Representatives of the office of the Comptroller and Auditor General of India

1. Ms. Divya Malhotra — Director General (Railway),
2. Shri Purshottam Tiwary — Principal Director (PAC)

2. At the outset, the Convenor, Sub-Committee-I (Railways) of PAC (2013-14) welcomed the Members and the representatives of the office of the C&AG of India to the sitting of the Sub-Committee. The Convenor then apprised that the meeting had been convened to consider and adopt three Draft Reports of Sub-Committee-I (Railways). Thereafter, the Sub-Committee took up the following Draft Reports one by one for consideration:

(i) Draft Report on "Civil Engineering Workshops in Indian Railways", "Delay in Building the New Rail Bridge Over River Sone" and "Signal and Telecommunications" based on Paras 3.2 and 3.4 and Chapter V respectively of the C&AG Report No. 32 of 2011-12;

(ii) Draft Report on "Rail Link to Kashmir" based on the C&AG Report No. 19 of 2012-13; and

(iii) Draft Report on "Environment Management in Indian Railways—Stations, Trains and Tracks" based on the C&AG Report No. 21 of 2012-13.

3. After due deliberations, the Draft Reports were adopted with some modifications/amendments.

4. The Convenor thanked the Member for his participation in the consideration of the Draft Reports and the representatives of the office of C&AG of India for assisting the Sub-Committee in the examination of the subjects.

The Sub-Committee, then, adjourned.

APPENDIX III

MINUTES OF THE SIXTH SITTING OF THE PUBLIC ACCOUNTS COMMITTEE (2014-15) HELD ON 08TH OCTOBER, 2014.

The Committee sat on Wednesday the 08th October, 2014 from 1545 hrs. to 1645 hrs. in Room No. '62', Parliament House, New Delhi.

PRESENT

Prof. K. V. Thomas — *Chairman*

MEMBERS

Lok Sabha

2. Shri Nishikant Dubey
3. Shri Bhartruhari Mahtab
4. Shri Janardan Singh Sigriwal

Rajya Sabha

5. Dr. Satyanarayan Jatiya
6. Shri Shantaram Naik
7. Shri Sukhendu Sekhar Roy

SECRETARIAT

1. Shri A. K. Singh — *Joint Secretary*
2. Shri Jayakumar T. — *Additional Director*

Representatives from the office of the Comptroller and Auditor General of India

1. Shri A.K. Singh — Dy CAG (RC/LB)
2. Shri Balvinder Singh — Dy CAG (CRA)
3. Ms. Subha Kumar — Director General (RC)
4. Shri S. Loomba — DGA
5. Shri T. Theethan — Director General
6. Shri Manish Kumar — Principal Director
7. Shri P. Tiwary — Principal Director

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5. After the witnesses withdrew, the Committee took up following Draft Reports for consideration:

(i) Draft Report on 'Non-compliance by Ministries/Departments in timely submission of Action Taken Notes on the non-selected Audit Paragraphs of C&AG Reports';

*Not related to the Report.

(ii) Draft Report on 'IT Applications in Income Tax Department';

(iii) Draft Report on 'Environment Management in Indian Railways-— Stations, Trains and Tracks'; and

(iv) Draft Report on 'Rail Link to Kashmir'.

6. One of the Members suggested that more stringent words should be incorporated in the recommendation portion of the Draft Report at (i) The suggestion was accepted by the Committee. The Chairperson desired to invite suggestions/ comments in writing, if any, on the four reports from the members of the Committee so that the same can be included in the Reports. The Committee also authorized the Chairperson to finalise the Reports in light of the suggestions, if any, of the Members and the factual verification received from the Audit and present the Reports to the House on a date convenient to him.

7. The Chairperson thanked the Members for their cooperation.

A copy of the verbatim proceedings was kept on record.

The Committee then adjourned.

GMGIPMRND—3274LS—3-1-2015.