Chapter 4

Traction

Member Traction at Railway Board is overall in charge of the Electrical department of Indian Railway. He is also responsible for Railway Electrification Workshops (exclusively for locomotives) and Energy/Fuel Management.

At Zonal level, Chief Electrical Engineer (CEE) is responsible for operation and maintenance of Electric Locos, Electric Multiple Unit train (EMU), Mainline Electric Multiple Unit train (MEMU), maintenance and operation of Overhead Electrical Equipment (OHE), electrical coaching stock etc. Maintenance of Diesel locomotives is supervised by Chief Motive Power (Diesel). Production Units Chittaranjan Locomotive Works (CLW) and Diesel Locomotive Works (DLW) are managed independently by General Managers reporting to Member Traction at Railway Board.

The total expenditure of Indian Railways on repair and maintenance of Motive Power (including plant and equipment) and expenditure on fuel (diesel and electricity) during the year 2016-17 was ₹ 8338.88 crore[143] and ₹ 26427.26 crore[144] respectively. An expenditure of ₹ 263.79 crore[145] was incurred in production units of locomotives during the year 2016-17. During the year, apart from regular audit of vouchers and tenders, 407 offices of Electrical department including CLW and DLW were inspected by Audit.

This chapter includes one long paragraph on 'setting up of diesel locomotive manufacturing unit at Marhowra, Bihar'. In addition, this chapter also includes two individual paragraphs highlighting issues of utilization of diesel locos in completely electrified routes and incorrect fixation of contract demand.

[143] Grant no.05 – Repair and maintenance of Motive Power for 2016-17 and Minor Head 400 of Grant no.07 – repair and maintenance of plant and equipment
[144] Grant no.10 – Operating Expenses – Fuel for 2016-17
[145] DLW, Varanasi, DMW, Patiala and CLW, Chittaranjan

4.1 Railway Board: Setting up of diesel locomotive manufacturing unit at Marhowra, Bihar

Ministry of Railways proposed setting up of diesel locomotive manufacturing unit at Marhowra, Bihar in September 2006. The contract was awarded to M/s GE Global Sourcing India Pvt. Ltd in November 2015 for setting up of diesel locomotive manufacturing unit along with maintenance depot at Roza and Gandhidham. As a long time has elapsed, there was a need to reassess the necessity of setting up of new diesel locomotive manufacturing unit, before awarding the contract. Audit analysis showed that the diesel locomotives available with the Railways are sufficient in numbers to take care of the present needs. Indian Railways is planning to shift to complete electrification of its BG routes by 2021 and would also run the freight trains in dedicated freight corridors (DFCs) on electrified routes. Even if, Railways do not go for 100 per cent electrification, it is expected that most of the high traffic routes would definitely be electrified and the need for diesel traction would remain only for low traffic routes, for which high horse power diesel locos are not likely to be used optimally. Consequently, need for high power diesel traction in Indian Railways is going to diminish in the years to come. Indian Railways has realised this eventuality and decided to significantly reduce the production of diesel locomotives at Diesel Locomotive Works (DLW), Varanasi from 2018-19 onwards. Also, the production plan of Diesel Loco Modernisation Works (DMW), Patiala, does not include any plan for production of diesel locomotive in 2018-19. As such, the diesel locomotives procured under this agreement would have no scope for productive utilisation in the Indian Railway network in future. Railways themselves have decided to significantly reduce in-house production of diesel locomotives at DLW, Varanasi from 2019-20 onwards. Thus, setting up of a new infrastructure for production of diesel locomotives and incurring a huge liability of ₹ 17126.08 crore is not in sync with the overall strategic vision of Railways. Railways need to revisit the decision of setting up of the new factory for production of diesel locomotives and examine whether it will be prudent to create assets and infrastructure for which Railways has no useful requirement in future, when they have planned for large scale electrification and have also reduced considerably their own in-house production of diesel locomotives.

Minister of Railway in his Budget Speech for 2006-07[146], announced setting up of a new Diesel Locomotives Factory at Marhowra, Bihar, for meeting the requirements of Indian Railways including the requirement of locomotives for Dedicated Freight Corridor. Railways proposed (September 2006) setting up of this unit in order to meet the additional requirement of locomotives in view of various line capacity works being undertaken including the Dedicated Freight Corridor. At that time, Diesel Locomotive Works (DLW), Varanasi was the sole diesel locomotive building plant in the country with a capacity to build 150

[146] during monsoon session

diesel locomotives per year with an expandable capacity of 200 locomotives per year. A requirement of 350 diesel locomotives per year was assessed by Indian Railways till the end of 2017. Keeping in view the assessed capacity of 200 locomotives at DLW, Varanasi, a new diesel locomotive manufacturing facility with a capacity of 150 HHP locomotives per year was proposed (September 2006) at Marhowra, Bihar. The capital cost of the project was ₹ 2106.66 crore. The project was notified as Special Railway Project on 19 February 2008.The project was targeted for completion by 2011-12.

The main objectives for setting up of this unit were as follows:

- To bridge the demand supply gap and to create facilities for manufacture of 150 diesel locomotives per year,
- Creation of facilities for manufacture of state of the art high horsepower diesel locomotives to meeting traffic requirements, and
- To derive benefits of the latest technological developments to reduce unit cost with better fuel efficiency, maintainability and higher reliability.

Indian Railways finalised a joint venture partnership project through international competitive bidding for manufacture and supply of modern diesel electric locomotives of 4500 HP and 6000 HP. The Request for Proposal (RFP) was issued to two short listed bidders at Request for Qualification (RFQ) stage on 11 March 2015. The bid was opened on 1 September 2015 and the project was awarded to M/s GE Global Sourcing India Pvt. Ltd (hereinafter referred to as the *Company*) for setting up of Diesel Locomotive Factory (DLF) at Marhowra, Saran District, Bihar and production and maintenance of mainline diesel electric locomotives on 6 November 2015. The project involved setting up of a diesel locomotive factory at Marhowra and maintenance depot at Roza and Gandhidham. The company was to work on an assured off-take model of 100 locomotives per annum for 10 years, starting from third year from appointing date (November 2015)[147] i.e. from November 2018. The basic cost of these 1000 freight locos would be around ₹ 14,656 crore. The company would also maintain a few of these locomotives up to 13th year. Thereafter, Indian Railways would take over maintenance of these locomotives. As on 31 March 2017, the physical progress of 30 *per cent* and financial progress of five and a half *per cent* was achieved.

Requirement of diesel locomotives in current scenario

The proposal for setting up of the Diesel Locomotive Factory was mooted in September 2006 and initially the expected date of completion of the project was 2011-12. The agreement for setting up of Diesel Locomotive factory, Marhowra, Bihar was finalized in November 2015 i.e. after more than eight years. During 2007-08 to 2015-16, 2117 new diesel locomotives were added to the fleet of Indian Railways (1325 of these were 4000 HHP to 5000 HHP), which were not

[147]Para 14.5.1 of the Agreement

taken into consideration while awarding the contract to the Company in November 2015. Meanwhile, during the past few years, important policy decisions have been taken by the Ministry of Railways, regarding the pace of electrification in the railways, which have a significant impact on the requirement of diesel locomotives in Indian Railways in the coming future and number of diesel locomotives required would come down drastically.

Audit observed that the assessment of requirement of diesel locomotives projected in the Budget speech of 2006-07 was not reviewed at the time of finalization of agreement in November 2015. Detailed audit observations are discussed below:

a. Electrified Dedicated Freight Corridors

The projected requirement of locomotives in the estimate of setting up of new Diesel locomotive factory, Marhowra, Bihar included projected utilization of diesel locomotive on the Dedicated Freight Corridor (DFC) routes. Under the Eleventh Five Year plan of India (2007-12), Ministry of Railway started constructing a new Dedicated Freight Corridor in two routes viz., the Eastern and Western Freight Corridors. The two routes covered a total length of 3360 kms, with the Eastern Dedicated Freight Corridor stretching from Ludhiana in Punjab to Dankuni in West Bengal and the Western Dedicated Freight Corridor from Jawaharlal Nehru Port in Mumbai (Maharashtra) to Dadri in Uttar Pradesh. Upgradation of transportation technology, increase in productivity and reduction in unit transportation cost are the focus areas for the project. The mandate of the company implementing this project, Dedicated Freight Corridor Corporation of India Ltd. (DFCCIL), is heavy haul train operation with electric traction with 13 minute head way;4500/6500 tonne and 9000/13000 tonne trains in the ratio of 2:1, Speed of 100 kmph, deployment of high horse power locomotive (9000/12000 HP). Both the corridors, Western Corridor[148] of 1504 kms and Eastern Corridor[149] of 1856 kms are being set up for operation on electrified routes.

In view of completely electrified DFCs, the projected assessment of requirement of diesel locomotives should have been done afresh, as there is no requirement of the diesel locomotive on completely electrified DFC routes.

b. Electrification of existing and new broad gauge routes

A blue print for Railway electrification in the Vision 2020 Document was issued by Ministry of Railway in December 2009, wherein it was stated that 33000 kms of railway routes would be electrified by March 2020. The blue print contained the list of routes that were to be taken up for electrification in future. By 31 March 2016, 27,999 RKMs out of 58,825 RKMs had been electrified, 12,710

[148]Rewari-Vadodara (963 kms), Vadodara-JNPT (430 kms), Rewari-Dadri (127 kms) – Fully electrified double line section
[149]Khurja-Bhaupur(343 kms), Bhaupur-Mughalsarai (402 km), Khurja-Ludhiana (401 kms), Khurja-Dadri (46 kms), Mughalsarai-Sonnagar (126 kms) and Sonnagar-Dankuni (538 kms) - 447 kms of Ludhiana- Dhari - Khurja section with single electrified track and remaining line will be double track electrified up to Dankuni in West Bengal

RKMs had been included in the Works Programme and the remaining 18,116 RKMs were yet to be sanctioned. In August 2016 (nine months after signing of the agreement for assured off take of the 1000 diesel locomotives and setting up of the Diesel Locomotive Factory at Marhowra) the target of electrification was revised by Railway Board to cover 24,427 RKMs under electrified route by 31 March 2021. This included 12,710 RKMs in progress and 11717 RKMs (out of 18116 RKMs) of missing links between already electrified sections. Ministry of Railway decided to engage public sector undertakings viz., Indian Railway Construction Organisation Co. (IRCON), Rail India Technical and Economic Services Limited (RITES)(Railway's PSUs)and Power Grid Corporation of India Limited (PGCIL)(PSU under the Ministry of Power)having expertise in laying the transmission lines in India and abroad.The status of electrification of BG routes and availability of diesel and electric locomotives in Indian Railways during the past ten years was as follows:

Table 4.1 – Year-wise total route kilometers and electrified route kilometers in Indian Railways

Year	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Electrified (RKM)	18145	18942	20059	21034	22224	23541	24891	26266	27999	30012
Total (RKM)	63273	64015	63974	64460	64600	65436	65808	66030	66687	67368

The pace of electrification in Indian Railways has increased and as on 31 March 2017, 45 *per cent* of BG routes have been electrified in Indian Railways. Subsequently, in September 2017, Ministry of Railways have decided to have 100 *per cent* electrified routes over Indian Railways. The action plan for Railway electrification against this target of 100 *per cent* electrification includes preparation of detailed project reports by October 2017, preparation of designs and drawings by the Zonal Railways by Dec 2018, finalisation of bid document by May 2018 and award of contract by June 2018. Capacity assessment should be done by RDSO and CORE and the vendor base should be expended so that 33000 RKMs electrification can be achieved in next three years. Public Sector Undertaking have been advised to ramp up their progress of Railway Electrification works for achieving the objectives of mission 100 *per cent* Railway electrification of Indian Railway network within next three years. General Managers of various Zonal Railways have sent 107 proposal for 100 *per cent* electrification of all BG routes of Indian Railway to Railway Board for approval. In order to expedite the electrification work, Railway Board has issued directions for keeping ready, all the prerequisites like detailed survey, drawing/plans and other related documentation pertaining to these routes, for making a part of tender document, so as to immediately take up the work.

In addition Railway Board has also decided (July 2017) that all New lines, Doubling and Gauge Conversion projects should be inclusive of electrification.

Audit observed that at the time of finalization of agreement for this project (November 2015), the issues mentioned in Blue print 2009 and future planning

of consideration for electrification of Railway routes, were not taken into consideration for assessment of requirement of diesel locomotives required in Indian Railways. The decision of the Ministry of Railways to go for 100 *per cent* electrification of all BG routes and directions issued to all stakeholders to putting concerted efforts to achieve the same, indicate that Indian Railways plans to run its passenger and goods trains only on electrified routes after 2021. Even if, Railways do not go for 100 *per cent* electrification, it is expected that most of the high traffic routes would definitely be electrified and the need for diesel traction would remain only for low traffic routes, for which high horse power diesel locos are not likely to be used optimally.

The requirement of high horse power diesel locomotives in such a scenario thus, would not be there and the decision of setting up of the new factory for production of diesel locomotives needs to be reconsidered.

c. Present availability and utilisation of diesel locomotives in Indian Railways

The numbers of diesel and electric locomotives in Indian Railways for the past ten years are as follows:

Table 4.2 - Numbers of diesel and electric locomotives in Indian Railway

Year/ Locomotives	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Diesel	4843	4963	5022	5137	5197	5345	5633	5714	5869	6023
Electric	3443	3586	3825	4033	4309	4568	4823	5016	5214	5399

As on 31 March 2017, there are 6023 diesel locomotives in Indian Railways, of which 2101 are high horse power. Review of Annual Statistical Statement no.22 regarding availability and utilization of diesel locomotives over Indian Railway, revealed that the percentage of unutilized diesel locomotive in 2015-16 was 26.63 *per cent* of available 5869 locomotives.

Table 4.3 – Share of unutilized diesel locomotives in Indian Railway

Year	Total number of diesel locomotives	Diesel Locomotives used in different type of services in Indian Railway	Unutilized Diesel locomotives available in Indian Railway	Percentage of unutilized locomotives
2007-08	4843	3587	1256	25.93
2008-09	4963	3682	1281	25.81
2009-10	5022	3789	1233	24.55
2010-11	5137	3872	1265	24.63
2011-12	5197	3899	1298	24.98
2012-13	5345	3964	1381	25.84
2013-14	5633	4106	1527	27.11
2014-15	5714	4244	1470	25.73
2015-16	5869	4306	1563	26.63
Average Diesel locomotives unutilized = 1364				
Percentage of unutilized locomotive = 25.69				
Unutilized locomotives lying spare range between 1233 and 1563				

Though 1026 new diesel locomotives have been added during the last nine years, almost 26 *per cent* have remained unutilised.

Statistics of Engine Kilometre per day in use and on line are as under:

Table 4.4 - Engine kilometre per day (Diesel locomotive)

Year	Per passenger engine in use	Per mixed engine in use	Per goods engine in use	Per engine in use	Per engine on line
2007-08	587	793	403	436	350
2008-09	584	791	398	433	342
2009-10	586	802	382	435	355
2010-11	594	794	384	439	357
2011-12	612	0	407	460	369
2012-13	641	0	423	465	370
2013-14	615	0	429	461	359
2014-15	614	0	383	418	349
2015-16	607	0	367	442	352

The above data shows that Indian Railways is not able to use the existing diesel engines on line to its optimal capacity. The use of diesel engine in terms of engine kilometre per day per engine on line is 352, which means that these diesel engines are being run at speed of 14.67 km/hour (on 24 hour utilisation basis) and 18.53 km/hour (on 19 hour utilisation basis at 80 percent utilisation of engine on line) only. This reflects that the existing locomotives are underutilized and the requirement of additional locomotives, if any, can be made good by better utilisation of the existing fleet. The diesel engines were being run for 350 kms per day per engine in 2007-08, which is almost the same as 352 kms per day per engine in 2015-16. As such, despite adding more than 1000 diesel engines since 2007-08, their utilisation has shown no improvement. Hence, projected requirement for additional diesel locomotives on grounds of infrastructure optimization is not justifiable.

d. In-house production of diesel locomotives by Indian Railways

Indian Railways has realised this eventuality and decided (October 2017) to significantly reduce the production of diesel locomotives at Diesel Locomotive Works (DLW), Varanasi from 2018-19 onwards. Initially, the production plan for locomotives at DLW, Varanasi comprised of 254 diesel and 25 electric locomotives in 2017-18 and 200 diesel and 75 electric locomotives for 2018-19. For 2018-19, this has been revised to 107 diesel locomotives and 173 electric locomotives in September 2017 by the Railway Board. The reason for retaining the production target of 107 diesel locomotives for 2018-19 was attributed to the likely availability of buffer of material equivalent to 107 locomotives in April 2018 and to ensure utilisation of the existing infrastructure at the DLW. However, rebuilding[150] of diesel locomotives is to be completely stopped from 2019-20.

[150] Locomotive Rebuilding includes dismantling, repairs and reassembly of the complete Locomotive including under frame. During rebuilding, locomotive sub-assemblies are brought to as good as new condition.

Further, in Diesel Loco Modernisation Works (DMW), Patiala, which also undertakes rebuilding of diesel locomotives and started production of diesel locomotives from 2010-11 onwards, there has been a significant change in the production plan. While in 2014-15, 2015-16 and 2016-17, 89, 11 and 43 diesel locomotives were manufactured, the number came down to just nine diesel locomotives in 2017-18 (up to January 2018) and in 2018-19, there is no plan for production of diesel locomotives.

Thus, there is hardly any real requirement of additional 1000 diesel locomotives which are to be manufactured at Diesel Locomotives Factory, Marhowra. Whatever little requirement for diesel locomotives remains, can be comfortably met with in-house production at DLW, Varanasi.

e. Present status of implementation of the project

The scope of the project included setting up of a diesel locomotive factory at Marhowra and maintenance depot at Roza and Gandhidham. The work of setting up of the factory is planned for completion by November 2018[151]. As of September 2017, land acquisition has been done and the works of power, rail and road connectivity are in progress. The work of Government maintenance depot at Gandhidham remains to be initiated**.** The earmarked site is yet to be handed over to the Company as of November 2017**.** As regards Company maintenance depot at Roza, Railways have handed over the land to the company on 9 November 2016 and executed a land lease agreement at a token license fee of Rupee one annually. As on 31 March 2017, the physical progress of 30 *per cent* and financial progress of five and a half *per cent* was achieved.

By going ahead with the setting up of this factory, Railways would be inducting another 1000 diesel locomotives in its fleet, which it does not require, and there by commit to a liability of ₹17126.08 crore on account of manufacture and maintenance of locomotives, land cost of factory and depots, equity share, power, rail and road connectivity and investment made in Joint Venture with M/s GE Global Sourcing India Pvt. Ltd. The details of the liabilities are as under:

Table 4.5 – Liability of Indian Railways

Particulars of liability	Amount of Liability (₹ in crore)
Cost of locos to be supplied by company[152]	14,656
Maintenance cost to be paid by Railway	2228 **(Annexure 4.1)**
Expenditure as on September 2017 at Marhowra (Land acquisition cost, Equity share[153]*, Power connectivity, Rail connectivity, Road connectivity and Miscellaneous such as establishment, vehicle, imprest etc.)*	242.08
Total liability	**17126.08**

[151]Para 12.4.1 of the Agreement stipulates the scheduled date of completion as 1095 days from the date of appointment of the company (6 November 2015).
[152]The effective weighted average cost of 1000 locomotives (700 4500 HHP and 300 6000 HHP)
[153]As per the Para 1.1.8 of the Agreement, Government shall have the right to subscribe to equity share capital of the Company up to maximum of 26 *per cent* of its issued and paid up share capital, but subject to maximum ₹ 100 crore.

The above indicates that diesel locomotives available with the Railways are sufficient in numbers to take care of the present needs. In the changed scenario, wherein Indian Railways is planning to shift to complete electrification of its BG routes and also to run the freight trains in Dedicated Freight Corridors on electrified routes, the diesel locomotives procured under this agreement have hardly any scope for gainful utilisation on the Indian Railway network. Railways themselves have decided to significantly reduce in-house production of diesel locomotives at DLW, Varanasi from 2019-20 onwards and have not planned production of any diesel locomotive in DMW, Patiala in 2018-19. Thus, setting up of a new infrastructure for production of diesel locomotives and incurring a huge liability of ₹ 17126.08 crore is not in sync with the overall strategic vision of Railways. Better utilisation of the current fleet of diesel locomotives can help address the requirement of Indian Railways, if any.

It is recommended that Railways may revisit the issue and examine whether it will be prudent to create assets and infrastructure for which Railways may have no useful requirement in future, as they have planned for large scale electrification and dedicated freight corridor is also going to be completely electrified; Railways have already considerably scaled down their own in-house production programme of diesel locomotives.

The matter was brought to the notice of Railway Board on 18 January 2018; their reply is yet to be received (28 February 2018).

4.2 North Central Railway (NCR): Utilisation of Diesel Locomotive in completely electrified section

NCR administration allowed utilization of diesel locomotives in completely electrified electric sections of Allahabad-Ghaziabad (606.88 kms) and Palwal-Bina (505.31 kms). This led to extra operational cost of ₹ 5.74 crore besides negative impact on environment and increase the dependency on petroleum based energy.

Electric traction is a more environment friendly option to haul trains in Indian Railway (IR). By using electric traction, which is also a cheaper source of energy, import and use of fossil fuel is reduced resulting in reduction of carbon footprints of IR. The electric rolling stock also has the capacity to regenerate electricity. Thus, overall electric traction is as economically viable option for the railways for haulage of trains.

Audit reviewed the movement of trains in two sections of NCR viz., Mughalsarai-Ghaziabad and Palwal-Bina, which are fully electrified. Audit noticed that diesel locomotives are still running under these sections.

Audit analysed the data of Freight Operation Information System (FOIS) pertaining to freight movement in the above two sections for the year 2013-14 to 2016-17 and noticed that on the long running length viz. Allahabad-Ghaziabad section (606.88 RKM) and Palwal-Bina section (505.31 RKM), which are fully

electrified sections, a number of freight trains were running with diesel locomotives.

Audit noticed that on these two electrified sections, during the period of 2013-14 to 2016-17, a total 350 freight trains were run using diesel locomotives under electric wire. This resulted in extra operational cost of ₹5.74 crore[154] on account of freight movement using diesel locomotives as detailed below:

Table 4.6 – Extra operation cost due to running of diesel locomotives in electrified sections

Year	Section	No. of freight trains	Extra operation cost due to running diesel locomotives (in ₹)
2013-14	Allahabad-Ghaziabad	35	5227637.61
	Palwal-Bina	33	4207719.40
2014-15	Allahabad-Ghaziabad	52	10511436.22
	Palwal-Bina	43	7245805.35
2015-16	Allahabad-Ghaziabad	36	4719803.16
	Palwal-Bina	39	5550318.06
2016-17	Allahabad-Ghaziabad	38	7035622.60
	Palwal-Bina	74	12980769.77
	Total	**350**	**57479112.17**

Utilisation of diesel locomotives in electric traction not only causes extra operation cost, but also defeats the purpose of electrification.

When the matter was taken up with the NCR Administration in May 2017, they stated (July 2017) that though Allahabad-Ghaziabad section is completely electrified, all adjoining territories are yet to be electrified. Allahabad division receives trains with diesel traction and changes traction in its own system. They further stated that trains on diesel traction on electrified route are operated due to operational constraints like absence of matching of diesel and electric traction at interchange point, crew availability, training of crew, non-acceptance by other division etc.

The reply may be viewed in light of the fact that even if the goods train enters NCR jurisdiction from a section which is not electrified, NCR administration could change traction under their jurisdiction, so that electric locomotives can haul the trains in electrified section under NCR, especially when the length of electrified section is as long as 500 to 600 kms. For optimal utilisation of long electrified stretches, Railways need to identify constraints and address them to enable effective use of railway electrifications assets created, save resources in terms of expenditure on energy costs and reduce need for diesel tractions in Indian Railways.

Thus, use of diesel locomotives in completely electrified Allahabad-Ghaziabad and Palwal-Bina sections thus, resulted in extra operational cost of ₹ 5.74 crore. Besides, it also has a negative impact on environment and increases carbon foot print of the railways.

[154]Calculation of extra operation cost is based on the line haul cost per thousand GTKMs for freight (BG) issued by Railway Board

The matter was brought to the notice of Railway Board on 6 October 2017; their reply is yet to be received (28 February 2018).

4.3 South Eastern Railway (SER): Avoidable expenditure of ₹4.35 crore due to incorrect fixation of Contract Demand and erroneous payment of electricity duty at DMU Factory, Haldia

SER Administration did not realistically assess the energy requirements of the DMU factory at Haldia, keeping in view the pace and scope of its activities and continued to incur expenditure on Contract Demand charges and load factor surcharge for increasing contract demand from 1500 KVA to 5500 KVA. This led to avoidable expenditure of ₹3.22 crore in addition to the load factor surcharge of ₹0.52 crore. The scope of higher consumption is remote in near future as Phase I of the factory has been set up with very limited activity and there is no proposal to set up Phase II in near future. Till the time the activities of the factory are geared up, SER Administration would continue to pay for 1500 KVA supply, though actual consumption is below 100 KVA (7 per cent of contract demand approximately).

Ministry of Railways (Railway Board) vide their circulars of February 2000 and January 2011 directed all Zonal Railways to monitor the maximum demand at each supply point on regular basis and revise the same to the desired level based upon the agreements and tariffs of Electric Supply Authorities in force once in two years or earlier to avoid payment of penalty on account of contract demand.

South Eastern Railway (SER) decided (2011) to set up a Diesel Multiple Unit (DMU) Factory at Haldia[155] in two phases to manufacture 400 coaches of DMU and 30 coaches of Self Propelled Accident Relief Train (SPART) per annum. Phase I of the project was planned as Departmental unit for manufacture of 8 to 12 coaches per month. The Phase I unit, constructed by Rail Vikas Nigam Limited (RVNL), was taken over by the Railway Administration in April 2013. However, very limited activity of assembly, painting, furnishing of the fabricated shell received from Integral coach Factory (ICF) was started. In Phase II, full scale production of DMUs and SPARTs through Joint Venture (JV)/ Public Private Partnership (PPP) mode was planned, which could not materialize till March 2017.

Audit observed that SER Administration had applied (May 2011) for 33 KV bulk power supply at Haldia factory premises from the West Bengal State Electricity Distribution Company Limited (WBSEDCL). Electrical Department[156] of SER executed agreement with WBSEDCL in April 2012. On the basis of projected progressive requirement of 1500/2000/2500/5500/7000 KVA for the first five years of operation, the Contract Demand (CD) was fixed as per the forecast for the first five years and the sub-station was energized on 15 March 2013. SER

[155] Previously the factory was planned at Sankrail but in February 2011 it was relocated to Haldia
[156] Senior Divisional Electrical Engineer, General, Kharagpur

Administration incurred an expenditure of ₹ 3.07 crore for new connection, security deposit and shifting of the existing 11 KV to 33 KV line.

Audit noticed that because of very low level of workshop activities, actual consumption of electricity was very low in comparison to CD (below 100 KVA during the period April 2013 to March 2017). Meanwhile, the Contract Demand continued to increase as per the progressive projected requirement of 1500/2000/2500/5500/7000 KVA for the first five years of operation. As per agreement, railway had to pay for Maximum Demand (MD) at 85 *per cent* of the CD, irrespective of the actual usage[157]. This resulted in an avoidable expenditure of ₹ 3.22 crore[158] towards demand charges[159]. Besides, due to extremely low load factor, railways also paid load factor surcharge of ₹ 0.52 crore for the period from April 2013 to March 2017.

In February 2012, Senior Divisional Engineer, Kharagpur assessed the load demand[160] of 1500 KVA as sufficient for the DMU, Factory, Haldia. Audit raised the issue in February 2014 and observed that construction of Phase II of the factory has not yet planned and all infrastructure of Phase I has not yet ready for full production, estimation of contract demand progressively 1500/ 2000/ 2500/ 5500/ 7000 KVA for the first five years was injudicious. However, SER Administration approached WBSEDCL for downward revision of CD to 500 KVA only in August 2016. In response, WBSEDCL intimated (August 2016) that CD for 33 KV system of supply should not be below 1500 KVA and revised (October 2016) the CD to 1500 KVA from the consumption month of November 2016. Thus, though the CD increased from 1500 KVA to 5500 KVA during 2013 to 2017, the option for downward revision of CD was availed by railways only in November 2016, though it was available to them in April 2014 itself.

Audit further observed that SER Administration erroneously paid an amount of ₹ 0.61 crore pertaining to the period from October 2013 to March 2017 to WBSEDCL towards Electricity Duty (ED). This was in violation of Constitutional provisions of Article 287 which stipulates that 'no law of a State shall impose, or authorize the imposition of a tax on the consumption or sale of electricity (whether produced by a Government or other persons) which is consumed in the construction, maintenance or operation of any railway by the Government of India etc.' In this connection, it is pertinent to mention that railway is not paying ED to the electricity authority for purchase of electricity at other locations (Haldia Railway Station and Kharagpur).

The matter was brought to the notice of Railway Board on 9 October 2017. Ministry of Railways in their reply (February 2018) stated that as soon as the actual load was found to be less than the initial projected demand, the user

[157] As per Clause 22 and 23 of the Agreement dated 13.04.2012
[158] Considering 100 KVA as maximum demand as during the entire period from April 2013 to March 2017, MD was below 100 KVA
[159] Demand Charge is the element of electricity charge computed on the maximum contract demand per KVA/ month.
[160] Load demand is the maximum requirement of electricity for which agreement is entered into with the West Bengal State Electricity Distribution Company Limited

department was consulted and matter taken up with WBSEDCL for revision of contract demand. They further stated that the assessment of power requirement was done as per factory utilisation envisaged and they have further sent a reference to CMD, WBSEDCL for examining the possibility of further reduction of demand.

Regarding payment of electricity duty, the Ministry stated that they had taken up the matter with WBSEDCL in February 2017, who stated that the exemption could be considered provided the Director of Electricity Duty, Government of West Bengal agrees to it. They stated that they have taken up the matter with the State Government and their reply was awaited.

Thus, SER Administration did not realistically assess the energy requirements of the DMU factory keeping in view the pace and scope of its activities and continued to incur expenditure on Contract Demand charges and load factor surcharge for increasing contract demand from 1500 KVA to 5500 KVA. This led to avoidable expenditure of ₹ 3.74 crore. The scope of higher consumption is remote in near future as Phase I of the factory has been set up with very limited activity and there is no proposal to set up Phase II in near future. Till the time the activities of the factory are geared up, SER Administration would continue to pay for 1500 KVA supply, though actual consumption is below 100 KVA (7 *per cent* of contract demand approximately).