CHAPTER 4

Information Technology Audit of Material Management Information System on Central Railway

4.1 Highlights

- **The Railway made full payment to M/s.CMC though the agency did not supply all the deliverables as per the Agreement.**

  (Paras 4.6.1, 4.6.2, 4.7)

- **Validation procedures were weak or lacking.**

  (Para 4.8)

- **Audit noticed serious defects or deficiencies in the system/ program.**

  (Para 4.9)

- **The System outputs were unreliable.**

  (Para 4.10)

4.2 Introduction

In 1997, Central Railway constituted a Systems Development Team (SDT), as per the Railway Board's instructions, for developing a new RDBMS-based online Material Management Information System (MMIS), integrating all the depots and the purchase office at headquarters (HQ). The Railway Board nominated the Railway as the nodal agency to develop and implement the new MMIS and later to transport the system to other Zonal Railways.

Initially, the Purchase Office and Stores Accounts Office at HQ and five Depots located in Jhansi and Mumbai (Currey Road, Vidyavihar, Matunga and Parel) were selected as pilot sites for development, testing and implementation. M/s.CMC supplied and installed hardware for these six locations at a cost of Rs.1.33 crore. They also developed and implemented software at a cost of Rs.0.34 crore. The Railway switched over the transaction processing completely to the new MMIS with effect from December 2002. As of today 18 out of 19 depots of have been computerised.

The MMIS consists of the following five modules:

- **Purchase Module:** This covers procurement-related activities such as estimation, tendering and issue of Purchase Order (PO) besides assisting management in monitoring POs, availability of funds, vendor performance etc.

- **Depot Module:** This module, which is run in depots attached to workshops and other locations, deals with accountal of

receipt and issue of stores.

- **Uniform Module (at Currey Road depot only):** This covers preparation of indents for uniforms, preparation of work orders for fabrication and supply of uniforms, and accountal of receipts/ issues of uniform.
- **Sales and Auction Module:** This module covers the disposal of scrap accumulated at various depots and scrap collection depots.
- **Finance and Stores Accounts Module:** This module covers pre-checking of POs; monitoring of budget; processing bills; adjustment vouchers, stock adjustment account; and other suspense registers etc.

4.3 Scope of Review

The scope of audit included test-check of the records of the EDP Centre, Mumbai, Controller of Stores Office HQ, and Stores Depots located at Currey Road, Matunga, Parel and Vidyavihar for the period August 2002 to March 2004 and verification of the General and Application controls operating in the IT environment.

4.4 Audit Objectives

The objectives of Audit were to examine whether MMIS meets the requirements of the Railways, complies with the codal provisions and whether the computerized processes are conducted in a suitably controlled environment.

The Railway in their reply to the draft paragraph issued on the subject, appreciated the IT Audit findings as useful for the Management. They, however, stated that the stage at which Audit was done, MMIS was at beta stage of software development and it was premature to expose shortcomings, if any, in the implementation of the software.

The Railways had declared MMIS as fully implemented in the pilot depots with effect from December 2002. Audit was conducted a whole year later from December 2003 to April 2004. Moreover, as MMIS is under implementation/ proposed to be implemented in other Zonal Railways, Audit felt that an IT Audit at this stage was appropriate.

4.5 Audit Methodology

Audit reviewed the outputs of MMIS and feed-backs from the users, besides interviewing the users, to assess the system. Audit selected data pertaining to the period of three months (January - March 2004) for substantial checking of data completeness, regularity and consistency, using an audit software tool called Interactive Data Extraction and Analysis (IDEA).

The Audit findings are discussed in detail below under the heads (i) poor contract management, (ii) weaknesses in general controls, (iii) lack of adequate validation, (iv) incorrect processing of data and (v) incomplete/incorrect outputs.

4.6 Poor Contract Management

4.6.1 Lack of adequate monitoring of expenditure

The Railway did not maintain the works register to record the expenditure on the project vis-à-vis the sanctioned estimate. Sanctioned cost of the system was Rs.1.40 crore. In addition, Rs.0.34 crore was the software development cost. As per contract agreement for software, the Railway was to make the payment to M/s.CMC Ltd on successful completion of 'parallel run' of each module of the MMIS. However, no record of the stage-wise details of payment was available either in EDP centre or in Accounts office and as such Audit could not ascertain the total expenditure on the project. Though Audit called for the information from the Railway Administration in February 2004, the same has not made been available so far.

The Railway Administration stated that payment of Rs.0.34 crore was made in two stages for software development cost which was part of MMIS project. As development and installation of software was to be completed within five months, no works register was maintained.

The Railway had stated, in another context, that the stage at which Audit was done, MMIS was at beta stage of software development. A review of the contract agreement revealed that it did not provide for beta stage of software testing. But the stand of the Railways were to be accepted, it would only accentuate the need for releasing payments after the successful implementation of MMIS by linking the payment to various stages of the MMIS implementation and monitoring payment through a works register.

4.6.2 Non-availability of system documentation

A contract was awarded to M/s.CMC to develop and implement MMIS. As per agreement, M/s.CMC was to supply to the Railways the documentation which included system and functional specifications, design specifications, sub-system and program specifications, layout of all input formats and screens, source code of all programs, user manuals, system manual and operation manual.

M/s.CMC supplied certain system documentation during February and April 2001. However, these were found to be outdated as the system had undergone major changes.

The Railway stated that documents were supplied in 18 volumes in hard and soft copies and that the software in use is fully functional although some of the menu options are yet to be activated or have been

barred for security reasons. It was admitted that due to subsequent upgradation in software there was a need to rewrite this documentation.

The fact remains that M/s.CMC has not supplied a reliable and correct documentation for the MMIS, yet full payment was released.

4.7 Weaknesses in General Controls

General controls apply over the range of applications run in a computer environment while Application controls are specific to a program. General controls were weak in MMIS as detailed below:

- **Inadequate physical access control**: The Railway is not controlling physical access to the system adequately, especially in the case of terminals. There were cases of theft of computer assets highlighting the need for greater physical access control.
- **Inadequate security against virus infection:** Audit observed that a number of PCs installed in individual sections in COS office were down because of virus infection. Most PCs have floppy disk drives giving rise to chances of virus infection through use of infected floppies. Virus infection in one PC can spread to the entire network with disastrous consequences.
- **Inadequate password/ user account management**: Access to the system is through a combination of user-id and password. It is necessary to monitor failed log-in attempts and investigate the same to ensure that there is no malafide intention behind such incidents. The Railway was not monitoring this aspect.
- **Inadequate change management control:** There was no documentation of requests for modifications to the programs and those carried out to the source code by M/s.CMC.

The Railway stated that physical access control of the hardware is an issue that is being addressed holistically, as it is not peculiar to MMIS alone and virus attack issue is being given top priority. It was also stated that all the major changes are well documented and written instructions are issued to M/s.CMC by the Senior EDPM, only thereafter any changes are carried out.

The Railway administration is yet to take appropriate measures to control physical access to the computer assets. Also, concrete steps taken or proposed to be taken as regards prevention of virus attacks have not been spelt out. The changes made to the source code are not available with the Railways.

4.8 Lack of adequate validation

4.8.1 Price List (PL) Master

Stocking same PL item in more than one ward

PL number is a unique number identifying a specific item of store. Stores are stocked in the wards of stores depots. In terms of para 1232 of Indian Railway Code for Stores Department, stores stocked in depots should be distributed among different wards, each ward containing one or more classes of stores. Thus, each item is stocked in only one designated ward. Analysis of MMIS data however, revealed that in 234 cases same PL item appeared in more than one ward of a depot.

Audit compared these 234 PL Nos. with a related MMIS-generated statement ('List of Stock Analysis Items') for the five selected depots. Fifty cases were traced in the statement. Of these, in seven cases, balance quantity and transactions are appearing for both the stocking wards in the statement. Thus, lack of validation check has led to depiction of wrong balances which may result in wrong procurement decision.

The Railway stated that the code provides for stocking of item under six different categories (e.g. New Ordinary, second hand, emergency, surplus, repaired etc). As such, consequences of excess procurement/ overstocking/ delay in work as observed are not acceptable. Efforts are however constantly made to remove/ minimise instances of inherited double stocking from the old system.

The Railway have acknowledged that irregularity exists while stating 'efforts are constantly made to remove/ minimise instances of inherited double stocking from the old system'. MMIS should have validations to prevent stocking of the same item in different wards of the same depot as it is in contravention of codal provisions.

Stocking different items under same PL No.

MMIS generates a statement titled 'Stock, Purchase Orders and Demand Position of Stock items' (also called NN-85 sheet) giving the current information on all of these aspects. This statement forms the basis for all procurement actions. Audit observed from NN85 Sheet generated in January 2004 that two different types of Cylindrical Roller Bearing items (NU-314 and N-314) are stocked under the same PL number (85151002). The Railway placed a PO in March 2003 for supply of 56 Cylindrical Roller Bearing (No.N 314) at a total cost of Rs.1,32,517. Eight were for Matunga depot and the balance to New Katni depot. ACOS/ New Katni depot advised COS that the item required by them was different i.e. Roller Bearing specification No.NU-314 (and not N-314 as per the order placed).

The Railway stated that this was not a case of stocking two items under one PL number, but of amendment in description. Based on the letter of ACOS/ New Katni's letter referred, the description of the PL was changed from N-314 to NU-314 on 15 July 2003.

These remarks are not tenable. It is clear from ACOS/ New Katni's letter that Cylindrical Roller Bearing No.N-314 is different from Cylindrical Roller Bearing No. NU 314 and the two are not interchangeable. Therefore a separate PL number should have been allotted to NU-314.

4.8.2 Vendor Master

The Railway has allotted a vendor code to all registered vendors and vendors who successfully participate in a tender to enable the MMIS system to process the purchase order. Vendor database is an important entity of the MMIS database as the information in this database is used to evaluate the performance of the vendor. It would also prevent a blacklisted, banned or defaulting vendor from getting new contracts as the information would be available to the management. Audit analyzed the data in the vendor master table of the MMIS using the audit software IDEA. The following observations arise:

- **Duplicate entries**

There is no validation to prevent duplicate entries. Also, the management has not checked the database to weed out duplicates and incorrect entries. The database thus lacks integrity. This is clear from the instances listed below:

- In 16 instances a firm had more than one vendor code. The firm's name, address, city name etc shown under different vendor codes were exactly matching indicating that there is no validation to prevent duplicate entries.
- In 530 instances a firm was allotted more than one vendor code. In these cases there were slight differences in address like spaces between words, punctuation marks etc.
- The vendor master table contained 11 duplicate records with the same vendor code.
- There were 286 vendor records where Firm Name and address were not appearing. Instead, a remark 'To be Updated/ Modified/ Deleted' was appearing against these fields.
- In two cases, the Application No./ firm code was appearing as 'XXXXX' and 'da'.
- In five cases the Application No./ firm code was shown as space or less than five characters. Field length for Firm Code/ Application Sl. No. is eight characters in the new MMIS. Acceptance of less than eight characters indicates that there is

no validation check on the data input against this field.

The Railway stated that database integrity has nothing to do with awarding contract to defaulting firm, as there are many checks/ reports/ information available even on MMIS to prevent this. CR also stated that duplication check in information stored in character form (i.e. Vendor name) is practically not possible. It has been prevented only by controlling generation of vendor code through FRPS section only after checking the availability of code in the master. It was further stated that in MMIS, vendor code is identified by an eight digit character field. In Audit's analysis, leading zeroes and spaces have been ignored while matching duplicate records. Errors have occurred during porting of data from Cobol system, and corrective actions are being taken.

Appropriate duplication checks on data must be devised. The Railways could also consider identifying the vendor based on Sales Tax registration number or PAN number to avoid duplicate entries. As per Part XI-C read with Part II Sl. No.21 of the software contract M/s.CMC were required to do data cleaning and conversion from diverse software platforms into the data formats to be used by the application system. Though full payment was made to M/s.CMC, it is clear that the data cleaning/ conversion work was not fully done.

- **Black listed firms**

The MMIS has provision to enter details of firms blacklisted or banned for business dealings etc. The MMIS report showed four firms under the category "Banned from business dealings". MMIS data indicated that business dealing with M/s Whale Stationery Products Ltd. New Delhi (Firm code 01009188) was banned (firm status code 1037). Despite this, the Railway placed a PO on the firm in January 2003. This is an indication that the system is not checking and preventing the issue of POs to blacklisted firms. Incidentally, Audit noticed from the file maintained by COS that there were 25 other banned firms who were not included in the database and PO was issued to one of them (M/s.Shree Steel Wire Rope) in March 2004.

The Railway stated that this observation relates to non-updation of data, not to integrity of database. Concerned section had been instructed to update vendor status on system.

It is noted that one black listed firm was awarded contract even though it was figuring in the database indicating a lack of adequate validation to check issue of PO to banned firms. Further, integrity of database implies that contents of database are correct and current. An outdated database, therefore, lacks integrity and calls for manual monitoring system to exist along with the MMIS to ensure regular updation of database.

4.9 Incorrect processing of data

4.9.1 Class Ledger

In Parel depot, there was a difference of Rs.0.48 crore between the closing balance of the Class Ledger for the month of November 2002 and the opening balance for December 2002. The system carried forward this new figure in the subsequent months. However, the difference was neither explained nor corrective measures taken to set right the difference.

The Railway Administration stated that in the initial stages of implementation of MMIS, a lot of data was imported into the system from the old EDP database. Due to some mismatch between the EDP database/ table/ field structure and the corresponding MMIS structures, many vouchers accepted by the EDP database were rejected in the MMIS processing due to which errors were reported in various statements like Opening and Closing balances in class ledger, SIT/ P, SIT/ DT, Purchase Suspense, Summary of Debit Credits etc. Suitable corrective steps are being taken to identify the source of these discrepancies and prevent such recurrences in the future.

The Railway Administration has accepted the factual position pointed out. The problem still persists in MMIS.

4.9.2 Item description in PO

It is sometimes necessary to change the description of the item under procurement especially where the Railway accepts a counter offer of a similar item by the tenderer. In such cases, there is no provision to record the changed description through the MMIS. Such changes are carried out manually on the PO generated through the system, which carries the original description of the item. The system should have been designed to cater to such requirements.

The Railway stated that system provides for PL description and PO description, as two separate fields. At the time of PO generation, description counter offered by the tenderer or incorporation of model, make, brand etc. in addition to the system description is incorporated in the PO keeping PL description same as original.

A provision may be made in the MMIS to flag cases where counter offered item of different description is accepted so that a trail is kept in the MMIS for future reference by the users.

4.9.3 Generation of CO7

When a bill is passed for payment, it is allotted a continuity number called CO7 number. Audit observed that there were several CO7s generated in respect of which no cheques were issued. This occurred because CO7 numbers were cancelled due to some discrepancies

noticed in the bills being passed. The system needs to be suitably modified to ensure that CO7 number is generated only when competent authority finally authorizes payment and not at any earlier stage.

4.9.4 Letter of Advance Acceptance

In some cases, an 'Advance Acceptance of Tender' advice is sent to the successful tenderer. The date of authorising the Advance Acceptance is only retained by the system and not the date on which the latter is issued. In certain cases, where a multi-consignee PO is being issued, the letter of Advance Acceptance of Tender wrongly shows the value of supply to the first consignee as the value of the PO, though Draft PO/ final PO show the correct value. The program needs to be suitably modified to rectify these errors.

The Railway stated that Advance Acceptance of tender provided in purchase module is a report, based on acceptance of offer, authorised on the system. Since date of authorisation of acceptance is captured on the system, no separate provision for date of generation/ authorisation of report called Advance Acceptance of tender has been provided.

Though the authorisation date is captured on the system, the letter of acceptance is the document, which is actually transmitted to the party and the date of transmission is the legally binding date. MMIS needs to be modified to store this crucial information.

The reply is silent about the error in the Advance Acceptance of the tender in the case of multi-consignments Pos.

4.9.5 Supply of stores against later orders

In some cases, though orders placed earlier on the same firm were outstanding, the Railway accepted supply against later orders and paid for the same. The purchase rate in the later orders was higher than in the orders placed earlier which were outstanding leading to additional payment of Rs.0.02 crore. Since information on pending orders is available in MMIS, suitable procedure should be formulated to ensure that earlier orders are complied with before subsequent ones. The system should be modified to disallow preparation of Receipt Orders (RO) for orders placed subsequently when earlier orders are outstanding on the supplier for supply of the item to the same consignee. This is required to prevent undue benefit to the vendor.

The Railway stated that each PO is a separate contract and receipt, accountal, payment provided in the system is PO wise. Such cases need to be dealt individually as the system cannot restrict acceptance of supplies against later orders.

It is noted that any system or procedure should serve to protect the interests of the organisation. In the instant case, MMIS could be fruitfully used to prevent cases where a firm supplies against contracts

carrying higher rates while failing to supply against contracts with lower rates. Thus not using an available tool to protect railways interest does not make business sense.

4.9.6 Incorrect depiction of taxes in PO

Audit observed that in respect of eight POs issued for procurement of Diesel Oil, the supplier had offered a discount of Rs.600 per kilolitre on the cost before excise and sales tax. However, the system did not take into account the discount offered, while calculating excise duty and sales tax payable. As a result POs issued indicated excess value amounting to Rs.1.66 crore. The software needs to be modified to indicate the correct value taking into consideration discounts offered.

The Railway stated that this was a case of user mistake and not software error. This mistake occurred because of the peculiar nature of the excise duty for which there was no provision in the system. This is not a deficiency of the software.

The Railway has admitted that there was no provision to account for the nature of transaction encountered in this case. The system needs to be modified to provide for this, otherwise such errors would recur.

4.9.7 Vendor selection from special panel

In the case of specialized materials, the vendors, to whom tender enquiry is sent, are selected from a list of vendors included in the GM/ RDSO panel. This defeats the purpose of having special panels. In cases where procurement is to be made from such empanelled vendors, normally all vendors in the panel should be contacted for getting their offers and the option to select or de-select vendors from the panel should be exercisable only by senior officers.

The Railway stated that system provides for addition of Vendors/ change of selection at various authorisation stages, as such there is nothing wrong in allowing selection/ de-selection of vendors from panels at senior levels.

It is in the interest of the Railways to have a wide range of suppliers. Railways would be better served by calling quotes from all parties shortlisted in the RDSO/ GM panel. In case of extreme urgency, parties may be selected from the panel by appropriately high officials for obtaining quotes.

4.9.8 Acceptance of excess supplies

As per existing orders, supply against purchase orders is accepted to the extent of 105 per cent of ordered quantity. Similarly, if 95 per cent of quantity ordered is received, the purchase order is treated as completed and is closed. Audit noticed in one instance in Currey Road Depot that supply against a PO exceeded 105 per cent of the ordered

quantity and yet, the system accepted figure of received quantity and prepared the RO. Though the validation for acceptance of quantity within five per cent over ordered quantity was provided, in the present instance it failed. Failure of validation procedures built into the system raises serious concerns about the reliability of the system.

The Railway stated that as per prevailing system (codal provision), item consigned to a particular depot and received in Depot need to be first taken into Daily Receipt Register, irrespective of quantity, description, conditions and needs to be subsequently dealt at acceptance stage in accordance with the PO.

It is noted that MMIS accepted the quantity over five per cent of ordered quantity and prepared RO in this case. Normally, when figure of received quantity is fed into the system and if it is more than five per cent of the ordered quantity, the system gives an error message 'Maximum Acceptable Qty is : ***' On accepting this figure, the system accepts the permissible quantity and the balance quantity is shown as 'Rejected'. Thus the validation in the MMIS failed in the above case, which needs to be examined.

4.9.9 Errors in Survey Committee Report

An MMIS report titled 'Stores Department Survey Committee Report' listed a total of 12 lots being considered for auction with details such as lot number, PL no., Quantity, Book Rate, Book Value, Scrap Value etc. It was seen that out of the 12 records, 8 records contained mistakes in multiplication of Quantity with Book Rate to arrive at the Book Value.

The Railway stated that in all the eight records, the users have entered the selling unit as 'dozens', because of which the quantity (and consequently the book value) is getting multiplied by a factor of 12.

It is seen that the MMIS output indicates the unit of quantity in all the eight cases as 'Nos.' If the user had wrongly indicated the unit as dozens, the report should also have indicated the Unit as 'Dozen' instead of 'Nos.'

4.9.10 Wrong calculation of sales tax

In August 2003, it was reported by Currey Road Depot that in case of one RO sales tax was incorrectly computed by the system. Similarly, in January 2004 the depot pointed out that rate of cut garments was being incorrectly calculated. Had there been an error in Program logic, the mistakes would have occurred in all the records. However, as this is not the case, it raises concern about stability of MMIS.

The Railway stated that it was not possible to comment on this particular case only on the basis of the letter of the depot and that the RO is showing correct valuation as of now.

The case needs to be investigated to identify the source of this error.

4.9.11 Multiple Terms and conditions in PO

In the 'Tender Schedule' screen of Purchase Module, a list of terms and conditions is available for selecting Terms and Conditions. However, system does not allow the user to select more than one option from the list in cases where more than one condition are applicable. In such cases, the staff type additional conditions manually on the PO.

The Railway stated that provision of list of value for terms and conditions in the tender schedule was incorporated to allow user to select from sets of standard conditions, which is working up to required extent. Terms and conditions is a single data entry field, hence multiple standard conditions cannot be incorporated.

'Terms and conditions' has been created as a single data entry field, which has created a situation where additional terms and conditions are to be typed manually. The limitation has been self-imposed by the design of the software which needs to be modified.

4.9.12 Non-generation of Advance Intimation Sheets

MMIS generates Advance Intimation Sheets (AIS) for various items indicating the quantity to be ordered for the next procurement period on pre determined dates. Test check revealed that in at least 14 cases MMIS did not generate AIS on due dates in respect of stores items in regular use. In the absence of the AIS, the procurement action is not initiated which could lead to the item being rendered out of stock.

The Railway stated that generation of advance estimate sheet in purchase module is based on stocking status (i.e. live) and frequency of AIS generation (i.e. once in a year or once in two years). Most of the cases pointed out pertained to newly opened accounts with 24 month Contract Period. These are the instance of items whose initial status was 'closed' but was later updated to 'live', because of which the AIS could not be generated.

These remarks are not tenable. A further test check of some of the items in stock since 1996 indicated that Transfer Registers were being generated regularly and the PL Nos. were 'Live' all along (e.g. PL No.81.07.1036, PL No.81.05.2522, and PL No.81.05.3010). In these cases also AIS were not generated on due dates.

4.10 Incomplete/ incorrect outputs

4.10.1 Revision of AAC

Often, there is a difference between AAC for the current period and advance procurement period. Audit observed that when COS staff

enters AAC from the Advance Intimation Sheet for the next procurement period the current AAC also gets modified accordingly. This leads to the system indicating overstock with reference to the new AAC. For instance, list of Overstock Items for Parel depot generated on 19 February 2004 contained 625 items whereas manual verification revealed that only 390 items were overstocked and 70 items were scrap items which should not have been included in the statement. Thus, the report on overstock items generated by MMIS was incorrect. The system should, therefore, have provision for two sets of AACs viz. one applicable to current period and another applicable to next procurement period.

The Railway stated that overstock statement like other MIS reports are on-line reports, generated on the basis of data available on system at that instant. Advance intimation sheet provides for suggestion of AAC from depot, vetting of AAC by HQ accounts and AAC approval by competent purchase authority. All analytical reports including overstock status reports are based on current AAC only.

The import of the Audit comment has not been fully appreciated. The overstock statement generated after the updation of AAC for the next procurement period showed a large number of items as overstock whereas there was no overstock in respect of many of the items with reference to AAC worked out for the current period. Wrong listing of an item as overstock could lead to cancellation of procurement action, resulting in the item going out of stock. Also, a number of scrap items figured in the list indicating that the program for generating the statement was defective. This needs to be set right.

4.10.2 Error in AIS

AIS generated by Matunga Depot were not reliable. In case of PL No.1920378, the quantity of 501 Nos. outstanding against Demand No. 0202020161 of 25 February 2003 was included whereas the outstanding quantity against an earlier Demand No.0203020138 of 20 February 2003 did not appear in the AIS generated.

The Railway stated that AISs are generated in HQ and if there is time lag in transfer of data from Depot to HQ, it may not appear in the generated AIS. Such instances are possible in distributed database system with no facility for instant updation of records to and fro from various databases.

Since depot records are updated in the HQ server daily, data pertaining to five days earlier should have figured in the AIS as pointed out in this case. Moreover, since demand pertaining to a later date appeared in AIS, earlier demand should also have appeared in AIS. This, therefore, reflects an error in program, which needs to be examined.

4.10.3 Error in NN85 Sheet

NN85 sheets, which form the basis for procurement actions, were not totally reliable. Audit noticed that the NN85 generated on 24 March 2004 in respect of one stock item (PL No. 38984120) did not reflect the outstanding quantity against a PO which was cancelled due to non-supply of material. As such the NN85 could not be relied upon for indicating the unmet demands for the stock item in question.

The Railway stated that the status of the POs had been updated to '000199', which stands for 'closed (incomplete)', and as such they did not appear either in outstanding POs or completed POs. Under completed category, the software has been programmed to display completed POs as well as POs where quantity received was either greater than or equal to the ordered quantity [status '000025' standing for 'closed/complete' POs].

The reply is factually incorrect. It was seen in audit that the status of PO was actually shown as 000025 i.e. closed/complete in the database and this PO did not appear in the NN85 sheet generated on 12 March 2004 as completed PO. Furthermore, even if the explanation given by the Railway Administration is acceptable, it only indicates programming error as cancelled Pos are unmet demands and need to be reflected in the NN85 sheets so that necessary procurement action can be taken. The programming error, therefore, needs to be attended to.

4.10.4 Error in Transaction Register

Transaction Register for February 2004 for Vidyavihar depot wrongly indicated Opening Balances for a number of stock items as '0.00'. It also included transaction account of one item without indicating the PL number of the item. In Currey Road Depot, the Transaction Register for PL No.56461136 for November 2003 indicated a closing balance of 1477. However, the opening balance of December was incorrectly shown as 1487 nos. and three vouchers already accounted for in November 2003 were reflected again in the December Transaction Register.

The Railway accepted the factual position and stated that this was one of the reasons why a major change in the database structure of the depots was carried out in February/ March 2004.

4.10.5 Error in outstanding work order list

In Matunga Workshop, depot work orders generated for workshop manufactured PL items also show a list of outstanding work orders for the item. Many completed work orders were also shown as outstanding which required manual correction, before issuing the work order.

The Railway accepted that earlier, such a check was not there in the system. Although such a check has now been incorporated all the work orders completed prior to the incorporation of this check are continuing to be displayed in the outstanding list. This has been pointed out to CMC.

There is need for a thorough review of the data in MMIS to set right all the records.

4.10.6 Incorrect depiction of Tender status

A statement 'Tender Register for Non-stock' generated in COS office shows the status of different tenders. Statement generated for the period 1 January 2004 to 6 May 2004 showed a total of ten cases. In seven out of these ten cases the 'Tender Status' was appearing as 'Awaiting Draft PO' though the same statement indicated the details of PO No., Date and Firm against the same tenders. Similarly, the Advance Intimation Sheet in respect of four items stocked in Matunga Depot showed certain demands as Outstanding i.e. awaiting issue of PO. However, the same AIS indicated details of POs placed against these demands as outstanding POs. These instances indicate that the system was not able to co-relate the demand details and the corresponding PO details available in the same database and present a correct picture in its outputs.

The Railway stated that the tender status code gets updated regularly till it reaches 'Awaiting Draft PO' (code '000389'), thereafter it does not get updated due to an error in the script. It is not a case of contradictory status but rather of non-updation of status after a certain level. This has been pointed out to CMC.

Though the factual position has been accepted, the matter has not been set right so far.

4.10.7 Error in Transaction Report

Transaction report (Statement No.23) for the month of July 2003 in respect of Byculla Depot indicated total debit for Mumbai Division as Rs.10,59,747. However, the abstract of Receipts and Issues for the same month wrongly indicated the amount debitable to Mumbai division as Rs.10,08,223 leading to a difference of Rs.51,524. Similarly, the statement 23 for Vidyavihar depot for the month of January 2004 indicated a total debit of Rs.35,35,416 for Mumbai Division while the abstract of Receipts and Issues indicated credit due for an amount of Rs.35,35,416 from a "Div Not Available". Since the statements are generated out of the same database, these discrepancies point to serious flaws in the program/ system.

4.10.8 Error in Purchase Suspense statement

When advance payment is made to supplier against proof of inspection and dispatch, the amount is debited to the accounting head 'Purchase Suspense'. This is cleared when the material is received and accounted for. Audit noticed in Vidyavihar depot that receipt of a quantity of 402 nos. was accounted for against PL NO.31920378 in Transaction Register yet this item was appearing in Purchase Suspense Statement generated subsequently. Audit noticed similar instances in respect of two more PL numbers.

The Railway attributed anomalies pointed out in the two paras above to problems arising during import of data of from cobol-based system.

The Railway has accepted the factual position. It is evident that the matter has not been set right so far though as per Part XI-C read with Part II Sl. No.21 of the software contract, M/s.CMC were required to do data cleaning and conversion from diverse software platforms into data formats to be used by the application system.

4.11 Menu options provided in the system not operational

The designed system provides many options to generate outputs containing appropriate information required. However, Audit observed that some of the facilities provided for were not operational thereby depriving the Railways of full benefit of the system. Most modules have a menu option titled 'Report/ Documents/ Registers'. The output of Reports/ Documents generated through the system can be obtained as a printout (hardcopy). There is also an option available in the above menu system viz. Write to/ Save to file (text, etc. format). This option, which would enable creation of the report in form of a computer file for easy reference/ storage was inoperative in all modules. The Railway did not take up this matter with the software vendor.

The Railway stated that MMIS provides for on-line reports, hence in cases like Tender notifications or Bulletin Schedules, which are only required to be stored and transferred for publication purpose, features of Developer 2000 to generate report in text format has been used. For other reports, provision has not been made for generation of reports 'to file'.

These remarks are not tenable. Generation of report to file has been provided as a menu option but the same is not working. The software, therefore, is not complete.

In Purchase Module, under Reports menu, 'Completed/ Outstanding POs' option does not work. Similarly 'Risk Purchase Register' option also is not operational. Thus, information regarding such PO is unavailable through the system.

The Railway stated that Report options not working have been taken up with M/s.CMC.

In the Purchase Module, in 'Tender Schedule' screen, there is a provision to change the description of an item with option 'Save to Tender'. Sometimes there is a need to give more detailed description of an item in the tender papers than what is available in the master table. To help satisfy this need the option Save to Tender is provided in the system. However, this option is not functioning.

The Railway stated that most of specifications are covered under 1500 characters space, provided for item description, specification and drawing number. Over and above this, tender specification required to be given more than the detailed description of the item available in the master table is normally provided as attachment to the tender document and same need not be stored in the system.

A provision needs to be made in the MMIS to flag cases where description of an item tendered is changed so that a trail is kept in the MMIS for future reference by the users.

4.12 Interruption in service/ system availability

- Audit observed that instances of downtime in MMIS service were frequent, attributable to various reasons such as hardware failure, software problems, virus attacks etc. In some instances certain nodes were affected whereas at other times, the server was also down depriving all users of the service. However, the Railway is not maintaining any record of the downtime etc.

  The Railway accepted the factual position and stated that this will be sorted out as soon as hardware network and software system stabilises.

- The servers in the depots were taken to headquarters for some modification in the program and as a result the MMIS was not available for operation from end of January 2004 to end of February 2004.

  The Railway stated that the depot servers were brought to the HQ not due to any deficiencies in the working of MMIS but to streamline the database structure so as to make the tables in the depots similar in structure to the ones at HQ. This was done with a view to ensure that similar reports could be run at both the depots and HQ.

  The Railway stated that the structure of tables in HQ and at depots was made similar. This should have been thought out at the system design stage itself. This is indicative of poor planning at the design stage.

4.13 Other Issues

4.13.1 Annual Maintenance Contract (AMC)

The warranty on the MMIS developed and installed by M/s.CMC expired in March 2003. However, the Railway has not entered into maintenance contract with the party so far. Failure to enter into maintenance contract (AMC) well in time places the Railway in an indefensible position, should there be a major failure in the system.

The Railway stated that there is a provision of AMC with M/s.CMC after the completion of the original contract. The AMC agreement was not finalised to put pressure on M/s.CMC to rectify the minor bugs and errors in the beta stage software. M/s.CMC has been co-operative fully in rectification and maintenance of the software and not entering into AMC had placed the Railway in a strong position to deal with M/s.CMC.

These remarks are not acceptable. Though M/s.CMC are cooperating with the Railways, they are not under any legal obligation to do so in the absence of an AMC.

4.13.2 Back-up

Back-ups are taken on DAT tapes. M/s.CMC/ EDP staff take complete back-up on weekends and keep the same with EDP centre in a fire proof safe. Data back up is done daily. However, the following shortcoming were noticed in the backup procedure:

- Regular testing of reliability of backed up data to ensure that backed up data can be restored correctly and fully in the event of a disaster is not being done.
- Easy availability of staff trained in disaster recovery procedures in case of emergency has not been ensured.
- No documentation for backup and disaster recovery plan is available.

The Railway stated that testing of backed up data in the HQ has not been carried out. However, the procedure is the same in the depots and successful data recovery from crashed depot servers has been carried out a number of times.

It is necessary to do periodic testing of backup data to ensure that recovery is possible in the event of an emergency.

4.14 Conclusion

MMIS has brought about significant improvements in the inventory management. However, the stability of the system is in doubt. Outputs are erratic and the information derived from MMIS needs

manual checking and corrections before decisions relating to purchase of stores are taken. Further, there have been repeated failures of the system. The system and procedures around it need to be reviewed so that the MMIS can be improved and made into a reliable and more effective managerial tool before it is transported to all the other Zonal Railways for implementation.

4.15 Recommendations

- Since the system outputs are not completely reliable, manual checks on the outputs should be carried out till such a time that the defects/ deficiencies pointed out by Audit and noticed by the Railway Adminstration are attended to.
- A formal fully documented procedure should be established for fault reporting, modification to program, testing, acceptance and implementation of changes in the live environment**.**

(SUDHA RAJAGOPALAN)
New Delhi **Deputy Comptroller and Auditor General**
Dated:

Countersigned

New Delhi **(VIJYAYENDRA N. KAUL)**
Dated **Comptroller and Auditor General of India**