सभा पटल पर रखे जाने के लिये
To be laid on the Table of Lok/Rajya Sabha
अधिप्रमाणित AUTHENTICATED

नई दिल्ली संतोष मोहन देव
New Delhi SANTOSH MOHAN DEV
मंत्री, भारी उद्योग एवं लो० उद्यम मंत्रालय

Minister of Heavy Ind. & Public Enterprises

दिनांक/Date.....

PAPERS LAID ON THE TABLE
OF THE RAJYA SABHA
ON 15 MAY 2007

Report of the Comptroller and Auditor General of India

for the year ended March 2006

Union Government (Commercial)

Information Technology Applications in
Public Sector Undertakings

No. 10 of 2007

(Regularity Audit)

CONTENTS

PREFACE

A reference is invited to the prefatory remarks in the Report of the Comptroller and Auditor General of India– Union Government (Commercial) No. 9 of 2007 where a mention was made that Report No. 10 of Information Technology Applications in Central Public Sector Undertakings (PSUs) gives an overall assessment of the use of Information Technology in selected areas of operations of PSUs.

This Report contains Information Technology Applications reviews on the following activities of selected PSUs:

Name of the Ministry/Department	Title of the Reviews
Department of Coal	Integrated Business Solution – Northern Coalfields Limited
Ministry of Communication	Information Technology Audit of Material Management and Inventory Accounting, Integrated Material Management System and Baan System-ITI Limited
Ministry of Finance (Insurance Division)	IT controls in Genisys – National Insurance Company Limited, New India Assurance Company Limited and United India Insurance Company Limited
Department of Heavy Industries	Enterprise Resource Planning – Braithwaite & Company Limited
Ministry of Petroleum and Natural Gas	a) Inventory Management System in ERP environment- Hindustan Petroleum Corporation Limited b) IT Audit of Material Management- Oil & Natural Gas Commission

Overview

This volume of Audit Report represents IT Audit of software modules in use in different areas of activities in eight Public Sector Undertakings under five Ministries.

MINISTRY OF COAL

Northern Coalfields Limited (NCL)

❖ **Integrated Business Solution (IBS)**

- Northern Coalfields Limited, a subsidiary of Coal India Limited, is engaged in extraction and sale of coal. It operates nine open cast/mining Projects with deployment of high value Heavy Earth Moving Machinery (HEMM), one Central Workshop (CWS) and one Central Store. Integrated Business Solution (IBS), an ERP package containing five Modules, was implemented by CMC on 31 March 2005. The system lacked integration among different Modules and validation and application controls were inadequate, incorrect mapping of business rules led to items not being identified as non moving stores. Lack of coordination between various units resulted in unnecessary purchases in spite of holding stock of same items in other units.

MINISTRY OF COMMUNICATION

ITI Limited

❖ **Material management and inventory accounting (MMIA), Integrated material management System (IMMS) and Baan System**

- There was absence of an IT policy and strategy which led to overlapping in development of software and in areas of operations as well as underutilisation of IT resources.
- The Company continued its dependence on MMIA which had various deficiencies. Major activities of the Company were not carried out through IMMS and Baan software making the investment of Rs.82.98 lakh on development of Baan and IMMS software unfruitful.

MINISTRY OF FINANCE

National Insurance Company Limited, New India Assurance Company Limited and United India Insurance Company Limited

❖ **IT Control in GENISYS**

National Insurance Company Limited (NIC), New India Assurance Company Limited (NIAC) and United India Insurance Company Limited (UIIC) implemented GENISYS, an application software developed by CMC limited, in their operating offices throughout the country for processing business of underwriting of policies, claim settlement, preparation of financial statements and generation of reports. The Genisys software was reviewed in the operating offices of these companies in Southern Region with reference to general IT controls and application controls. The major findings were as below:

- Weak logical access controls posed a security threat and a risk of misuse of facilities. Lack of proper input controls and inadequate process controls resulted in violation of regulations and instructions of statutory authorities.
- Absence of change management controls resulted in under recovery of the statutory levies from the policyholders. Belated updation of the software led to excess recovery due to lack of knowledge of the notification date of revision of the rate of service tax.
- The departments in these companies that handled third party claims used a programme in Microsoft Access and the required data was later entered manually in Genisys. Non-integration of database with other service departments and manual intervention resulted in inaccurate basic estimates of provisions to be made in MACT cases due to non-provision of incidental expenditure.

DEPARTMENT OF HEAVY INDUSTRIES

Braithwaite and Company Limited

Investment of Rs.1.51 crore was made by the Company for procurement and installation of an ERP system with the objective of increasing efficiency in various financial matters and marketing a tailor-made package in the wagon industry. The process of computerisation could not be implemented and the investments did not yield any benefit.

MINISTRY OF PETROLEUM AND NATURAL GAS

Hindustan Petroleum Corporation Limited

❖ Inventory Management System in Enterprise Resource Planning Environment

- Hindustan Petroleum Corporation Limited procured JD Edwards One World Xe (JD Edwards) software with licenses for all modules viz. sales and distribution, manufacturing, procurement and project, finance and human resources in April 2000 for Enterprise Resource Planning (ERP) with the objectives, *inter alia*, of adopting industry best practices; providing on-line, timely and accurate information for improved decision making; improving integration across functions and processes with reduced data cycles and improving external reconciliation; and working capital management - inventory, credit control and cash flows. The system started generating data from April 2003.

- Study and analysis of the Inventory Management module of the system in audit revealed that there was delay in formulating business continuity plan, setting up of disaster recovery site and deployment of the equipment purchased for the purpose which could cause serious disruption to the business. The system had design deficiencies such as lack of referential integrity, customization, input controls and validation checks leading to presentation of inaccurate status of the transactions. Over-riding input controls resulted in supplies to the customers beyond the credit limit. Internal control mechanism was also not effective enough to ensure the completeness of data leading to generation of unreliable information. The Company was not utilizing the features available in the system for valuation of stock and generation of MIS reports leading to under-utilisation of the system.

Oil and Natural Gas Commission

❖ IT Audit of Material Management

- In October 2003, Oil and Natural Gas Corporation Limited implemented a generic Enterprise Resource Planning (ERP) package, the SAP - mySAP Financials and Logistics under project Information Consolidation for Efficiency (ICE). All ten modules of ICE were utilized along with mySAP Oil & Gas Upstream Solutions consisting of joint venture accounting, production sharing agreement and offshore logistic management. The existing data in the Integrated Materials Management System was migrated into the ERP System. ICE went live across the company in phases from October 2003 to January 2005.

Performance of material management module in the ERP System was reviewed in audit. It was observed that inadequacy of input controls resulted in wrong valuation of material and consequently in wrong material accounting, lack of data integrity and incorrect MIS. Stock receipts and issues were not being captured accurately and timely due to deficient internal control mechanism resulting in wrong material accounting. Inherent design defects resulted in generation of incorrect reports. Legacy data was loaded into the ERP System without

adequate data cleaning resulting in incomplete and incorrect data. Even after implementation of the ERP, checks for material requirement planning were being carried out manually.

DEPARTMENT OF COAL

CHAPTER: I

Northern Coalfields Limited

Integrated Business Solution

Highlights

Integrated Business Solution (IBS) was not utilised optimally leading to unnecessary purchases of Rs. two crore though the same material was available in other projects.

(Para 1.6.8.1)

Materials worth Rs.13.69 crore were not consumed since their procurement.

(Para 1.6.8.3)

IBS had various deficiencies in input control leading to unreliability of database.

(Para 1.6.9)

Purchases made during 2005-06 were identified as non-moving due to incorrect mapping of business rule. This led to over provision of Rs.24.93 lakh during 2005-06.

(Para 1.6.11.1(i))

The absence of uniform logic in programming in Material Module and MIS Module resulted in difference of Rs.1.32 crore in identification of non-moving stores in respect of Bina Project.

(Para 1.6.11.1(ii))

1.1 Introduction

Northern Coalfields Limited (NCL), a subsidiary of Coal India Limited (CIL), is engaged in extraction and sale of coal. It operates nine open cast-mining projects (OCPs) which deploy Heavy Earth Moving Machinery (HEMM), one Central Workshop (CWS) and one Central Store. The Board of Directors (BOD) of NCL approved (September 2000) implementation of the 'Integrated Business Solution' (IBS) in NCL Headquarters and all its units. An agreement was signed (March 2001) with CMC Limited at a total cost of Rs.11.03 crore for supply and installation of hardware and system software, installation/upgradation of Local Area Network (LAN) etc. The other items of work included preparation of Business Mapping Report, customisation of Ramco e-application, codification of stores items, development of production and sales software and their integration with Ramco e-application, integration of payroll package etc. The project was to be implemented in two phases, the pilot phase in Headquarters and in two units at Bina and Kakri and the roll over phase in other units. The pilot phase was scheduled to be completed by November 2001 and the roll over phase by November 2002. However, the pilot project was completed in September 2002 and the system comprising Phase I and Phase II was accepted in totality in March 2005. An amount of Rs.23.89 lakh was deducted from the bills of CMC on account of

liquidated damages for delay in service and supplies, ranging from three to twenty two weeks.

1.2 Scope of Audit

The Integrated Business Solution (IBS) contains six modules viz. Finance, Material, Maintenance, Production, Sales, and Management Information System (MIS). The scope of audit included examination of all the modules and the extent of integration of the total system.

1.3 Audit Objectives

It included examination of the following aspects:

(i) Status of implementation of different modules;

(ii) Mapping of the business rules;

(iii) Completeness and correctness of the data output; and

(iv) Achievement of the overall objectives of the organisation.

1.4 Audit Methodology and Acknowledgement

Audit was conducted through study and scrutiny of records/ documents, discussion and interaction with the Company officials and data analysis through IDEA on inventory database followed by verification, wherever necessary. Audit of IBS was conducted in March and July 2006.

Audit takes this opportunity to thank the Management and staff of the NCL for their cooperation and assistance in the conduct of this performance audit.

1.5 Audit Criteria

(i) Objectives set by the Company at the time of introduction of IBS.

(ii) Accounting policy adopted by the Company.

(iii) Business Rules and procedures followed by the Company.

1.6 Audit Findings

1.6.1 Utilisation of IBS

IBS is an ERP solution and encompasses all the activities of the organisation. During the course of Audit, it was observed that though the system was accepted and implemented in all projects by March 2005, only Material module was being used in all the projects.

1.6.2 Finance module

The annual financial accounts of the Company could not be drawn up for the year ended 31 March 2006 through the system in projects like Bina and Kakri also, where IBS was implemented in September 2002 as a pilot project. Non-integration of the Inventory module with Finance module led to dependence on manual financial control on purchases. Mode of allocation of cost between coal and over burden (OB) was not defined in the system. As

such, due to lack of allocation of costs among the sub projects, the financial and physical efficiency of sub projects could not be determined.

The Management accepted (May 2006) that allocation of actual cost between coal and OB had not yet been implemented and stated (December 2006) that purchase order generation from projects together with budget certification through the system would be considered for implementation and efforts would be made for better utilisation of the Finance module at Kakri and Bina along with other projects.

1.6.3 Production module

This module consisted of basic data, machine wise and unit wise, relating to production of coal and OB for utilisation in various MIS.

Out of nine OCPs, this Module was being used in four OCPs only viz. Jhingurdah, Dudhichua, Amlohri and Khadia. Production related data was not being fed into the system in the remaining five OCPs. Therefore, electronic flow of data from the projects to Head quarters could not be consolidated for various managerial decisions and consolidated production reports for the Company as a whole could not be generated through the system.

The Management accepted (December 2006) that the desired level of usage had not been achieved.

1.6.4 Maintenance module

This module including equipment task, Plant & Machinery parts forecast, automatic work order generation, material planning, monitoring equipment parameters, generation of reports etc. was not utilised due to partial data entry.

The Management accepted (December 2006) that the desired level of usage had not been achieved.

1.6.5 Sales module

This module including facilities for sales order management, sales billing, sales realisation, sales ledger etc. could not be utilised for reconciliation of billed and realised amount as payments were made in lump without any reference to any bill or any project and there was no provision to cross-check the same.

The Management stated (December 2006) that wherever complete bill wise payment details were not available, adjustments were made on FIFO basis and further adjustments would be done during reconciliation. However, the Management could insist on a reference to the relevant bill numbers when payments were received, for ease of reconciliation.

1.6.6. Material module

The material module comprising Purchase planning, Purchase order processing, Inventory management, Inventory planning etc. was being utilized fully in all the OCPs. Audit observations on the data base of this module regarding error of logic in programming, data validation etc. have been discussed in the subsequent paragraphs.

1.6.7 Management Information System (MIS) module

This module was designed to depict summarised information on the entire business package with the facility for customisation to meet the requirement of various Projects as well as of various levels of management. However, the Management incorporated only inventory related data in the MIS module. The relevant data was extracted from the Material module of IBS. However, in respect of Gorbi and Central Stores it was extracted from the Plant care package, which was an old package. The extracted data was fed into the MIS module of IBS in Headquarters to generate different kind of standard reports. During audit data analysis was conducted on the inventory database of the module. Results of such analysis have been given in subsequent paragraphs.

This module was not integrated with the other modules of IBS.

The Management stated (December 2006) that due to poor connectivity and the old Plant care system being used in Central Stores and Gorbi project, MIS module could not be integrated with other modules of IBS. However, it assured that the MIS module would be integrated with other modules and old system kept as back up.

1.6.8 Non-utilisation of IBS in ensuring inventory control management

On introduction of the integrated on line ERP Package, it was expected that inventory would be managed on the basis of centralised store concept though stores might be located at different places. It was however, noticed that Minimum, Maximum, Re-order and safety levels were not fixed in the system to reduce the inventory holding costs.

The Management stated (December 2006) that the procurement and indenting of high value items of spares and consumables was centralised. It also stated that due to the special nature of the industry it was difficult to predict the breakdown of various HEMM. However, for timely supply of stores and spares they adopted various strategies like Depot agreement and rate contract with various suppliers. The Management reply was not tenable as fixation of Minimum, Maximum, Re-order and safety level at least for critical items was necessary for better inventory management.

1.6.8.1 It was observed that in 286 cases valued at Rs. two crore, purchases were made during 2005-06 though similar materials were lying unmoved for a considerable period in other OCPs. Since IBS was implemented in all OCPs by March 2005, stock in other OCPs should have been taken into consideration before deciding on fresh purchases.

The Management stated (December 2006) that it had instructed the projects to ensure gainful utilisation of these materials on priority basis before initiating any fresh purchase.

1.6.8.2 In respect of 2028 items valued at Rs.4.05 crore, there was no consumption since the date of last purchase. Of these 1417 items valued at Rs.2.08 crore remained unutilised for over three years.

1.6.8.3 There were 6738 items valued at Rs. 13.69 crore where no date of issue was available in the data base implying that these items were never utilised since their procurement.

The Management stated (December 2006) that the useable items would be identified and action for their use in other projects would be taken.

1.6.9 Input control and validation checks

To ensure correctness and reliability of the data it is necessary to ensure appropriate input control and data validation. The following lacunae were noticed in Audit regarding input control and data validation.

1.6.9.1 The system accepted dates after 31 March 2006 for incorporation in the database of 2005-06. In Kakri Project, 12 different items issued for consumption in April 2006 (financial year 2006-07) were shown as issued in 2005-06.

After this being pointed out in Audit, the Management stated (December 2006) that the necessary validation check in this regard had been put in the system.

1.6.9.2 In some cases the last issue dates and last receipt dates of materials were before the date of incorporation of the Company.

The Management accepted (December 2006) that there were some invalid dates of issue and these would be examined for further improvement of the system.

1.6.9.3 In respect of 1146 items pertaining to Gorbi and Central Stores, description of material was not mentioned. In respect of 2070 items the description was shown as "00" or "000000".

The Management stated (December 2006) that Gorbi store was closed and items relating to Central Stores would be deleted on implementation of IBS at Central Stores.

1.6.9.4 In respect of 17253 items of Gorbi and Central Stores, the unit of measurement (UOM) was not mentioned. In respect of 20063 items UOM were shown as 30, 45, 71, 81 etc. instead of number, Set, MT etc. In respect of 216 items of same material, the description was different.

The Management stated (December 2006) that corrective action had been taken in respect of blank UOM. In respect of other points, they stated that the problems would be solved with the implementation of IBS at Central Stores.

1.6.9.5 NCL adopted an 11 digit code for stores and spares. It was noticed that in respect of 113 items, material code was less than 11 digits, making it incorrect.

The Management stated (December 2006) that these items were not in use and there was no financial implication. The Management reply did not justify the existence of less than 11 digit material code. Proper validation controls were needed to be incorporated and the irrelevant items that were no longer required should be removed from the data-base.

1.6.10 Inadequate and incorrect mapping of business rules

NCL prepared Business Mapping Report (BMR) detailing the business process for designing the system. It was observed in Audit that mapping of business process was inadequate in some cases and incorrect in some other cases as detailed below.

1.6.10.1 Inadequate mapping of business rules

Advance payments made to the contractors and suppliers were not automatically linked at the time of passing the final bill in respect of work order or purchase order executed by them.

Separate Adjustment Vouchers were prepared for the purpose. Thus, it was possible for the user to bypass preparation of Adjustment Voucher and pass the final bill without adjustment of advance amount.

The Management stated (December 2006) that it would take up the matter with CMC for implementation in the next phase.

In case a vendor is black listed, his name and code can be deleted from the vendor master. However, names of black-listed suppliers should be maintained in a separate module so that the system could validate names of the suppliers before allowing any transaction with a supplier.

The Management stated (December 2006) that it had decided to flag such vendor codes instead of deleting them.

For repairing any equipment in the Central Workshop, one work order is generated in the system to book the material and labour utilised for the purpose. After completion of the repair job, the total cost is debited to the OCPs to which the equipment belonged.

It was however observed in Audit that Central Workshop has its own equipment, which are used for repairing of equipments of different OCPs. Before introduction of IBS, work orders were generated to draw material from stores for repairing own equipment also. Since there was no scope to debit any project for cost of such repair work, these work orders still remained open, though equipment had been repaired and put to use long back. No facility had been provided in IBS to take care of the booking of material consumed for own equipment. Therefore, after introduction of IBS, no work order was generated in such cases and the material was drawn from stores against requisitions. The earlier difficulty regarding booking material cost thus persisted even in IBS.

The Management assured (December 2006) that such work orders would be closed and charged to own expenses.

1.6.11 Incorrect mapping of business rules

1.6.11.1 Error in logic of programming

(i) As per the adopted accounting policy of NCL, 50 *per cent* provision is made in annual accounts against the stores and spares that have not moved for five years or more after purchase. Non-moving stores are identified at Headquarters. Data is, however, taken from the Material Module at OCPs in text form and fed into the MIS Module of IBS at Head quarters. Material in hand as on 31 March 2006 was treated as non-moving for more than five years, if the last issue date was prior to 1 April 2001. If the last issue date was not indicated, then the item was treated as non-moving if the last purchase date was prior to 1 April 2001. Analysis of inventory data relating to non-moving items showed that 218 store items valued at Rs.49.86 lakh, purchased during the year 2005-06, were identified as non-moving as on 31 March 2006 since last issue date in respect of these items was prior to 1 April 2001. This was incorrect because non-moving stores were to be identified with reference to the date of purchase of stores/spares, which remained unmoved for more than five years.

Thus, due to a logical error in programming, there was an over provision of Rs.24.93 lakh (i.e.50 *per cent* of Rs.49.86 lakh) during 2005-06.

The Management accepted (December 2006) that some changes in the programming logic were required and these were in the process of implementation.

(ii) The logic applied in programming for identification of non-moving stores through the Material module was different in several ways from the MIS module. In MIS module, issue date as well as purchase date (where issue date was not available) was being considered whereas in Material module only the issue date was being considered for determining non-moving store. It was observed in Audit that the value of non-moving stores, as on 31 March 2006, generated through Material module in Bina Project was Rs.2.46 crore whereas the same generated through MIS module was Rs.3.78 crore.

The Management (December 2006) assured that they would adopt uniform logic in both the modules.

(iii) In Material module, if issue date was not available in the data base, the corresponding closing stock lying for more than five years was not shown under non-moving stores.

The Management accepted (December 2006) that the prevailing logic for identification of non-moving items needed more refinement and assured adoption of new logic.

1.6.11.2 Transfer date considered as issue/receipt date

Materials are regularly transferred among different OCPs. In the database, the field 'issue date' denotes material issued for consumption in the project itself while the field 'transfer date' indicates the date of transfer to other projects.

While extracting inventory data through an interface programme from the Material module for feeding the MIS module at Headquarters, the later of 'issue date' or 'transfer date' was considered the last issue date. Similarly, the later of 'purchase date' or 'transfer date' from other OCPs was considered as the last purchase date. As a result, last issue date and last purchase date included transfer date to/from other OCPs also though there may not have been any actual consumption or actual purchase. Data analysis in Audit revealed that, in respect of 668 items, date of transfer to other OCPs was considered as last issue date during 2005-06. Similarly, in 3495 items, transfer date from other OCPs was considered as purchase date. Thus, non-moving stores were being determined on the basis of wrong data in respect of last issue date and last purchase date.

The value of non-moving stores and spares for a period of more than five years as on 31 March 2006, as determined by the Management, was Rs.41.86 crore. As per accounting policy of NCL, 50 *per cent* provision of the above amount i.e. Rs.20.93 crore had been made in the accounts. Because of reasons brought out above, the quantum of provision made in the accounts was incorrect.

The Management stated (December 2006) that it had corrected the data transfer programme.

1.6.12 Non classification of consumables

Consumables consisting of mainly POL and small items of stores like elbow, flange, sockets, unions, valves and nipples etc. were not analysed for ascertaining the value of non-moving stores and spares under these categories. Consumables were of the nature of regular consumption and were not expected to lie unconsumed for long time. On analysis of closing inventories as on 31 March 2006, consumables valued at Rs.1.56 crore were found to be lying for a period of more than five years. No action was taken by NCL to ascertain unusable items of consumable stock and make necessary provision in the accounts.

The Management stated (December 2006) that it would include consumables for analysis of non-moving inventory.

1.6.13 Non inclusion of World Bank spares in IBS

World Bank spares were kept outside the scope of IBS though it was technically possible to incorporate the same. Thus, weighted average rate for the purpose of issue of similar spares and the closing stock valuation were vitiated. Thus, the Priced Stores Ledger (PSL) generated by the system did not include the value of World Bank spares.

The Management assured (December 2006) examination of the issue of merging data base of World Bank spares.

1.6.14 Business continuity and disaster recovery

IBS is an ERP solution and encompasses the total activities of the organisation. In spite of its critical importance for the overall functioning of the Company, it had not drawn any Business Continuity and Disaster Recovery Policy (November 2006).

The Management stated (December 2006) that the policy in respect of business continuity and disaster recovery was being taken up by Coal India Limited.

1.7 Conclusion

Implementation of IBS in NCL was delayed by more than 28 months. The absence of total integration among different modules was noticed besides under utilisation of the modules with the exception of the Material module. Besides, lack of input validation control in MIS module and errors in mapping of business rules were evident. Thus, the basic objectives of introducing an ERP package could not be achieved so far.

1.8 Recommendations

- Suitable modification may be carried out by CMC to provide automatic adjustment of advance amount at the time of payment of final bill.
- Minimum and maximum limits should be fixed for critical items in each OCP. The system should be capable of capturing excess, if any, of the stock held at various locations before initiating any purchase.
- In the Central Workshop, old work orders pertaining to own job should be closed.

- Important points regarding errors of logic and formulation of business continuity and disaster recovery plan brought out in Audit should be addressed by the Management urgently in a time-bound manner.

The matter was reported to the Ministry in December 2006; reply was awaited (December 2006).

MINISTRY OF COMMUNICATION AND INFORMATION

CHAPTER: II

ITI LIMITED

Information Technology Audit of Material Management and Inventory Accounting, Integrated Material Management System and Baan System.

Highlights

Absence of an IT policy and strategy led to overlapping in development of software and areas of operations and underutilisation of IT resources.

(Para 2. 7)

The Company continued its dependence on MMIA which had various deficiencies. Major activities of the Company were not carried out through IMMS and Baan software making the investment of Rs.82.98 lakh on development of Baan and IMMS software unfruitful.

(Para 2.10 and 2.11)

2.1 Introduction

The Company was incorporated (January 1950) as a multi-unit organization for the manufacture of telecommunication equipment and their installation, commissioning and maintenance. The Bangalore Complex of the Company had a turnover of about Rs.500 crore as of 31 March 2006.

2.2 Organisational set up of IT Department

The IT Department functions under the Additional General Manager who in turn reports to General Manager (Bangalore Plant) and is supported by Chief Managers and Managers/Deputy Managers.

2.3 Scope of Audit

In the Bangalore Complex there were many IT systems out of which Audit selected the Material Management and Inventory Accounting (MMIA), Integrated Material Management System (IMMS), and Baan Finance package modules for review.

MMIA was implemented in January 2000 covering material management functions like accounting of receipts, issues, physical verification, identification of slow/non-moving inventory, control checks and data integrity. In MMIA, data were fed and processed in batch mode.

The Company introduced (June 2004) IMMS in Bangalore Complex with the object to have a fully integrated online material management system across all the stores. IMMS also had a provision for stores accounting function.

The Company introduced (December 2001) the finance package of Baan, an enterprise resource planning system with the objective to synchronise finance data by processing the data on the same platform.

The scope of audit included an assessment of the effective utilisation of MMIA, IMMS and Baan systems in computerization of various activities. The audit was carried out through test checks of records and analysis of data besides review of general and application control checks and data integrity.

2.4 Audit Objectives

The broad objectives of audit were:

(i) To review the implementation of MMIA, IMMS and Baan systems and to assess the extent to which information needs of the Company in relation to its business objectives were being met by these systems.

(ii) To check the effectiveness of control in the system.

2.5 Audit Criteria

The main criteria used for audit were:

(i) Compliance with General Controls based on the observations made in the earlier IT Audit conducted in 2002;

(ii) Application Controls for MMIA/IMMS/Baan finance package module;

(iii) Control and Security parameters keeping in view best practices*;

(iv) Corporate rules and Government guidelines.

2.6 Audit Methodology

During the IT Audit of the systems, the following were utilised:

(i) Study and analysis of the records concerned;

(ii) Discussion and interaction with the officers;

(iii) Collection of data and information through issue of questionnaire, audit requisitions, enquiries and replies thereon;

(iv) Data pertaining to MMIA was collected from Management and thereafter imported into IDEA/Dbase for further analysis;

(v) Verification of relevant records.

2.7 Audit Findings

In an earlier IT Audit report (August 2002), the absence of IT policy, Documentation policy, Computer Security Policy, Change Management Control, Storage of back up data, Recruitment/Personnel Policy and non-involvement of Internal Audit had been pointed out. The Management in its reply (November 2002) had assured remedial action but the

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* ***Audit utilised COBIT audit guidelines for international best practices.***

deficiencies still persisted. Internal Audit Manual envisaged EDP Audit by the Internal Audit Department but such audit had not been carried out. In the absence of a clear cut IT policy and strategy, MMIA, the original software continued to be in use with all its deficiencies and the software IMMS and Baan introduced later could neither be integrated with MMIA nor put to use independently.

MMIA

The MMIA system comprises Stores Module and Cost Module. The Stores Module was being used by the Company for the accounting of opening stock, receipt of materials, issue of materials, closing stock, consumption, etc. The Cost Module was being used by the Company to ascertain the costs and to exercise cost control over the items manufactured. A review of these modules as on 31 March 2006 revealed the following:

2.7.1 Stores Module

2.7.1.1 Lack of input controls

Input controls ensure accuracy, completeness and timeliness of data input. It was observed in audit that there were no input controls and this coupled with absence of data validation procedures made the data unreliable. The following points were noticed during Audit:

(i) It was observed that though there was no consumption in respect of 1790 items valuing Rs.2.49 crore for the past three years, these items were neither marked as Quantity Record (QR)[♣] items nor marked as slow moving /dormant inventory as required by the existing guidelines. The Company was carrying these items as useful inventories though there was no consumption.

(ii) The date of last transaction in respect of 77 items valuing Rs.8.81 lakh was captured as a date prior to the date of incorporation of the Company and in respect of two items valuing Rs.14211 the date of last transaction was captured as September 9919 indicating absence of validation controls in entering/capturing data. The Management stated (July 2006) that the data might have been malformed during updation and efforts would be made to correct the same.

(iii) Though there was no consumption or receipt of material in respect of 385 items valuing Rs.18.05 lakh in 2004-05 and 610 items valuing Rs.19.36 lakh in 2005-06, the 'date of transaction' field indicated that they were transacted during 2004-05 and 2005-06 respectively. On further verification with 32 records it was found that dates of transaction in the data base did not match the last transaction date as in bin cards. Thus the correctness of data base of inventory could not be verified.

(iv) There was negative stock for 312 items valuing Rs.61.07 lakh in the Stores module which required reconciliation by the Company. In addition, there was negative consumption of 293 items (value Rs.43.44 lakh) during 2003-04, 229 items (value Rs.1.23 crore) during 2004-05 and 363 items (value Rs.54.89 lakh) during 2005-06. The existence of negative consumption figures during the above years and their non

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♣ ***QR= Quantity record i.e. items which were written off from the accounts and retained in the stores accounts in terms of quantity only without value***

reconciliation indicated lack of adequate controls. Consequently, the opening balances of the subsequent years were also not correct. As a result consumption for those years and cost of production were incorrectly computed to that extent.

2.7.1.2 Incorrect mapping of business rules

Inventory held in stock was classified as A, B or C with reference to the pattern of consumption during the previous year. 'A' class items constituted 70 *per cent* of value of consumption of previous year, 'B' class items constituted 20 *per cent* of value of consumption of previous year and the remaining 10 *per cent* represented 'C' class items. It was however observed that 17 items were classified as 'A' class items and 97 items were classified as 'B' class items though there were no consumption of these items after 1 April 2004. In the absence of any consumption during the last two years classification of these items as A and B was not correct.

The Company's manual for Inventory Management laid down that each item has to be classified with reference to consumption in each production division separately. The Company was actually following this procedure as exemplified by the fact that item DC4C1104090A1A1 was classified as 'A' in two production division stores but was classified as 'C' in six others. However, in respect of 17 items mentioned in the preceding para, the Management stated (July 2006) that the classification of any item irrespective of the consumption in a division, was updated with the determined class with reference to consumption in another division. The reply was clearly contrary to the procedure that was actually being followed by the Management in accordance with the Company's manual.

2.7.1.3 Process control

The stock in respect of 1067 items at the end of the year (March 2006) did not agree with the closing stock for the year as worked out with the help of formula (Closing stock = Opening stock + Receipts - Issues).

2.7.2 Cost module

To ensure that correct and relevant data were entered into the system and to generate reliable output, a proper control over the input of data supported by proper validation checks in the system was essential. A review of the cost module revealed that it was based on an incomplete data base due to the absence of input validation controls and incorrect mapping of the business process.

(i) 324 shop orders were opened without indicating the items to be manufactured.

(ii) The scheduled date of closing of shop order had not been captured in respect of 4056 shop orders and for 56 shop orders it was prior to the date of incorporation of the Company.

(iii) There was excess drawal of quantities over and above the authorised quantities in respect of 3686 shop orders relating to 7554 items valuing Rs.18.71 crore. Most of the shop orders were old and not regularised by way of increasing the authorised quantity.

(iv) Incomplete data entry relating to cost, quantity drawn and delivery value made the data base unreliable.

(v) In respect of 35 shop orders both cost and delivery values had not been captured.

(vi) In respect of 107 shop orders having a delivery value of Rs.20.50 crore, cost had not been indicated.

(vii) In respect of 264 shop orders, the details of delivery rate and delivery value had not been captured though 58498 items were shown in the cost module as manufactured and delivered at a cost of Rs.6.68 crore.

(viii) In respect of 2459 shop orders, the details of quantity delivered, delivery rate and delivery value had not been captured though Rs.104.53 crore was booked as cost.

(ix) In respect of 49 shop orders having a delivery value of Rs.47 lakh, the quantity delivered was not captured.

(x) In respect of 419 shop orders the quantity delivered (276029) was found to be more than the ordered quantity (203737). Though the cost had been indicated as Rs.5.36 crore, the delivery value was indicated as Rs.20.90 crore. A detailed review revealed that in respect of 21 shop orders, the ordered quantity and cost were indicated as Nil, though 39101 units had been manufactured and delivered with delivery value of Rs.18.06 crore, as seen in the Cost module.

(xi) Out of 3392 running shop orders, cost was not indicated against 1010 shop orders having a delivery value of Rs.20.36 crore indicating incompleteness of the data base.

In view of above, the data available in the cost module was not dependable and did not serve its purpose of ascertainment of costs and cost control.

2.8 Non integration of costing module with finance accounts

At the end of the year, from the total costs booked in cost module against each shop order the delivery value would be deducted and the balance would be carried as closing work in progress. The data for finalisation of accounts were captured manually and due to non-utilisation of Baan finance module, there was no integration of accounts with cost module. As a result the closing work in progress as on 31 March 2006 was valued at Rs.39.98 crore in the accounts, whereas as per the cost module the value of closing work in progress was Rs.80.03 crore, leaving an amount of Rs.40.05 crore unreconciled.

Other Points of Interest

2.9 Lack of internal controls in purchases resulted in unwanted purchase and blocking of funds of Rs.1.27 crore

A test check in audit revealed that 1190 items (bought out items-706 and manufactured-484) valued at Rs.1.27 crore were lying in stock without any consumption. Even though stocks were available in respect of 33 items as on 1 April 2004, the Company made further purchases for Rs.10.87 lakh during 2004-05 and all these items had not been consumed during 2004-05 and 2005-06. The MIS Reports on stock availability generated by the system

were not used while making purchase decisions. Purchase/manufacture of materials could have been made more judiciously in order to avoid locking up of funds in idle inventory.

2.10 Wasteful expenditure in investment made in IMMS and Baan

The investment of Rs.82.98 lakh in IMMS and Baan systems was not fruitful as the Company could not achieve the intended objectives. IMMS after implementation across the divisions was to take over the stores accounting function from MMIA. IMMS was developed at a cost of Rs.33.50 lakh. However, it was used partially in one division for production planning only and the company continued to use MMIA for stores accounting functions.

The Company selected the finance package of Baan system for implementation in six units at a cost of Rs.49.48 lakh for the Bangalore Complex. The data migration work was completed by December 2001. Baan Finance package was however not put into use as a fully operational system. Though it was originally intended to finalise the accounts using the software, the Company had not used this software to finalise the accounts so far (2005-06). Only one of the ten modules, viz. cash management was being used in a limited way, while other finance functions were maintained in other software on Excel, Dbase, etc.

2.11 Conclusion

The Company continued to carry out most of the functions manually even where computerisation had been done. Major activities of the Company were not carried out through IMMS and Baan software resulting in non-achievement of their objectives. Even MMIA, where data were being captured and used for finalisation of accounts, contained incomplete data base, lacked integration with accounts and lacked input controls. Thus the Company had made computerisation efforts in patches leading to non-achievement of the objective of total integration of the computerised functions.

2.12 Recommendations

- The Company should formulate a clear and comprehensive IT Policy.
- The Company should address the control deficiencies to make the system effective.
- Various modules developed during computerisation should be properly and effectively integrated.

The matter was reported to the Ministry in December 2006; reply was awaited (December 2006).

MINISTRY OF FINANCE

CHAPTER: III

National Insurance Company Limited, New India Assurance Company Limited and United India Insurance Company Limited- Southern Region

IT controls in Genisys

Highlights

Weak logical access controls resulted in multiple user IDs, existence of IDs for resigned and transferred employees and too many system administrators.

(Para 3. 5.1.1 & 3.5.1.2)

There was inadequate daily and weekly backup of data.

(Para 3.5.1.3)

Lack of proper input controls resulted in accepting business from agents who did not hold valid licence.

(Paras 3 5.2.2)

Inadequate process control led to irregular grant of 'No Claim Bonus'.

(Para 3.5.3.1)

Absence of proper change management controls resulted in short collection of Service Tax of Rs.91.72 lakh in UIIC.

(Para 3.5.3.3)

As Genisys did not have the provision to capture the details of deposits relating to Motor Accident (MACT) there was poor control over deposits in court of appeal in MACT cases.

(Para 3.5.4.1)

Lack of proper input controls in the operating offices led to inaccurate provision for third party claims.

(Para 3.5.4.3)

3.1 Introduction

3.1.1 National Insurance Company Limited (NIC), New India Assurance Company Limited (NIA) and United India Insurance Company Limited (UIIC) are engaged in non-life insurance business (Fire, Marine and Miscellaneous Insurance). Assessment, collection of premium, issue of policies and settlement of claims are critical to their business. The Companies implemented Genisys, a software developed by CMC Limited, in their operating offices across the country. Genisys facilitates the operating offices in carrying out their business of processing of underwriting, claims settlement and preparation of trial balance etc. within the framework of laid down policies of the Companies as well as generation of reports for various statutory authorities.

3.1.2 Genisys runs on client server architecture in Local Area Network (LAN) for which all the operating offices are provided with

(i) Pentium based computer system with Windows 2000 operating system in UIIC and NIC and UNIX operating system in NIA for server and clients as hardware platform; and

(ii) Oracle database at back end and Developer 2000 at front end as Relational Database Management System (RDBMS).

3.2 Scope of Audit

3.2.1 The scope of audit included examination of the contract with CMC for the use and implementation of Genisys. The audit involved:

(i) Review of general IT controls with special reference to physical and logical access controls, business continuity and data integrity; and

(ii) Review of application controls with special reference to underwriting, claims, accounting and reporting

in the three Companies.

3.3 Audit Objectives

(i) Review of general controls to check the existence and the efficacy of the implementation of

- Procedures, instructions and guidelines to provide and secure effective and efficient operation of computer facilities; and
- Plans to resume processing in the event of failure of computer operations;

(ii) Review of Application controls to check whether :

- Guidelines issued by Insurance Regulatory and Development Authority (IRDA)/Tariff Advisory Committee (TAC) and Management were properly built into the system and correctly adhered to.

3.4 Audit Methodology

3.4.1 In 85 Operating offices (28 out of 447 offices from UIIC, 26 out of 129 offices from NIC and 31 out of 297 offices from NIA) selected from five Regions (Chennai, Coimbatore, Hyderabad, Bangalore and Kochi), data was extracted and analysed using SQL[♣] Queries. The data was analysed with reference to tariff and guidelines/directions issued by IRDA, TAC and the Management. The exception reports generated were discussed with the Management. The problems reported by the operating offices through PROMPT (a software for registering the complaints on Genisys to be taken up with software provider through Management Services Department) and action taken thereon were also reviewed for ascertaining the effectiveness of Genisys.

[♣] ***Structured Query Language***

3.5 Review of IT controls

3.5.1 General controls

3.5.1.1 Access control

A review of access controls in the operating offices of all the three Companies revealed that:

(i) Users were given multiple user ID to access Genisys;

(ii) User IDs assigned to staff who had resigned/transferred were not disabled;

(iii) There was no control over the length of the user ID and password;

(iv) The password validity period did not have any significance since the user could extend the period on its expiry without changing the password; and

(v) The system allowed cancellation of the policy issued on the same day by any user without proper authorisation.

NIA stated (December 2006) that the number of IDs for users was restricted to one. The control on the length of user ID and the validity of password were restricted in the Version 6.3, which was under implementation in the operating offices. The deficiency would continue till Version 6.3 was loaded in all the operating offices and stabilised.

3.5.1.2 System Administrator

In the Genisys environment, the System Administrator (SA) was authorised to access the System Administration module and perform its functions. SA enjoyed the highest privilege in the system. Ideally only one user should be given the privileges associated with SA. Audit, however, observed that in Genisys, there was no control on the maximum number of users to be given these rights.

The number of users with SA power ranged from 2 to 26 in UIIC, 4 to 31 in NIC and 2 to 44 in NIA at different periods. This resulted in complete dilution of the privileges, as too many users were given these privileges and had access to key menus of the System Administration module. The key menus included important functions like creation of users, grant and/or withdraw user permission, enable and/or disable users and master data maintenance. It was noticed that any user with SA power could change the password of others even without knowing their old password. Thus, the system was vulnerable to manipulations.

NIA accepted the observations and stated (December 2006) that the number of users with SA privileges had now been restricted to three.

3.5.1.3 Business continuity

There was no documented and tested business continuity plan detailing the back up and recovery procedures in any of the Companies. Responsibility was not assigned to any one for taking backup of data. There was no offsite storage of backups. Retrieval of data from backup had not been tested in any of the operating offices.

The backup log file for the period November 2003 to January 2006 was not available in any of the 31 operating offices of NIA selected for review and hence the same could not be

analysed. This indicated that the log files relating to this period were either deleted or were not archived.

The daily backup log downloaded from the system revealed that backup was taken for less than 100 days in seven operating offices of UIIC (2004-05) and 15 operating offices of NIC (2005-06). The weekly log file indicated that backup was taken for less than 30 weeks in five operating offices in UIIC and 15 operating offices in NIC for the same period. IT security policy adopted by the NIC Board (October 2005) was not specific about back up procedures.

UIIC admitted that this was an area of concern. Even though proper instructions were given regularly regarding taking backup of data by UIIC and NIC, it was noticed that no mechanism was in place at regional offices to monitor the backup activities.

NIA stated (December 2006) that standing instructions to take daily backup and to keep the backups at a secure offsite location were given to all operating offices. The reply was not tenable as despite the standing instructions the log files were not available.

3.5.2 Application controls

3.5.2.1 Input control

Input controls ensure that the data received for processing are genuine, complete, accurate and properly authorized and data are entered accurately, in time and without duplication. Controls over input are vital to the integrity of the system. The deficiencies observed were as below:

3.5.2.2 Lapsed licences of agents

According to Regulation 8 (ii) (a) of IRDA (Licensing of Insurance Agents) Regulations, 2000, no insurance agent shall solicit or procure insurance business without holding a valid licence. It was noticed that in Genisys only a warning message was being displayed on the input screens, while booking of business against an agent whose licence had lapsed and the system allowed the booking of business against such agents.

Data analysis revealed that 18592 policies in 12 operating offices of UIIC, 1780 policies in two operating offices of NIC and 16150 policies in 29 operating offices of NIA were booked through agents whose licences had expired.

It was informed (NIA and NIC) that the agency commission in respect of the agents whose licences had lapsed, was not released till the licences were renewed. This was not correct as the acceptance of business against lapsed licence of an agent itself was a violation of the Regulations.

3.5.2.3 Survey by surveyors whose licence had expired

Genisys allowed appointment of surveyors holding a licence under the Surveyors and Loss Assessors Regulations-2000. It was found that surveyors could be appointed even if they did not hold a valid licence. The system provided just a warning message in such cases but the same could be ignored and over ridden. In 11 operating offices of UIIC, 389 survey works were given to surveyors whose licenses had expired. UIIC stated that the operating offices were being advised to do the needful immediately.

3.5.3 Process control

Process controls should ensure that all the valid data has been properly processed without repetition. The deficiencies observed were as below:

3.5.3.1 Absence of control on no claim bonus on motor policies

General Regulation 27 of Indian Motor Tariff, applicable from 1 July 2002, specified that No Claim Bonus (NCB) could be earned only in the Own Damage Section of policies. The insured becomes entitled to NCB only at the renewal of a policy after the expiry of the full duration of 12 months without any claim.

A review of data from Genisys indicated that in the case of claims arising during the policy period but registered subsequent to the renewal of the policy, the NCB allowed was not recovered or adjusted while settling the claim. This resulted in loss of revenue amounting to Rs.4.51 lakh in 15 operating offices of NIC and Rs.5.20 lakh in 26 operating offices of NIA between July 2002 till Audit was conducted in 2006. Considering that there are a few thousands operating offices of the three Companies using Genisys, this lapse of non-recovery of NCB would count as a major source of leakage of revenue.

NIA stated (December 2006) that such cases were accounted manually and adjusted at the time of claim payment. Such manual interventions in adjusting the NCB paid in excess, could be avoided by providing built in controls in the software.

3.5.3.2 Change management controls

Change Management Control ensures that standardised methods and procedures are used for efficient and prompt handling of all changes to minimise the impact of change-related incidents upon service quality, and consequently improves the day-to-day operations of the organisation. The following deficiencies were, however, observed during the review.

3.5.3.3 Short collection of service tax

Service tax revision from five to eight *per cent* and then to 10.2 *per cent* was implemented with effect from 14 May 2003 and 10 September 2004 respectively. There was, however, delay in loading the Genisys patches in all the operating offices.

The consequent short collection of service tax to the extent of Rs.91.72 lakh for all operating offices for 2003-04 and 2004-05 had to be borne by UIIC. The short collection in respect of NIA worked out to Rs.4.92 lakh and 1.18 lakh respectively for 2003-04 and 2004-05 in 28 operating offices. NIA stated (December 2006) that they would explore the possibility of making necessary provisions in the software for a service tax rate master to resolve the above problem.

3.5.4 Design deficiencies

3.5.4.1 Appeal court deposits

According to Section 173 of the Motor Vehicles Act, 1988 (MV Act) an appeal against any award of a Claims Tribunal would be entertained provided Rs.25000 or 50 *per cent* of the amount so awarded which ever is less, is deposited in the manner directed by the High Court.

Genisys did not have the provision to capture separately the details of deposits relating to Motor Accident Claims Tribunal (MACT) appeal cases made by the Company, which would facilitate better monitoring of the cases.

UIIC stated that the matter had already been taken up with CMC to make suitable modifications to the system. NIC replied (August 2006) that if the appeal court deposits were properly entered as 'interim payments' into Genisys, proper control could be exercised. NIA stated (December 2006) that provision was available in the software for making such payments and adjusting the same as "on account payment" against a particular claim while making payment. However, no such provision was observed in Audit. In practice, while settling the claim after final award by the Court, the deposits were picked up manually from the individual (manual) files and adjusted in the final payment of claims. Thus, the settlement of claims was being done manually and the system could not be utilised to monitor the appeal court deposits.

3.5.4.2 Underwriting module

(i) Cheque realisation date

According to Section 64 VB of the Insurance Act, premium for any insurance cover should have been received on or before the actual date of commencement of risk. When premium is paid by cheques, Genisys did not have the provision to capture their date of realisation and the same was monitored manually. A test check in one office of UIIC revealed that 23 out of 41 cheques were realised belatedly (by two months to seven months) and 18 cheques (deposited between 10 May 2005 and 17 October 2005) were yet to be realised (June 2006). UIIC replied that as the present architecture of Genisys did not have the provision to electronically update the details, it was coordinating with the banks to get the details at regular intervals.

(ii) Motor third party loading

While underwriting motor policies, Genisys calculated third party loading premium taking into account factors such as nature of goods carried, permit, types of road, driver's age, experience and educational qualification, total number of previous claims, etc.

Check of data entry screens in UIIC revealed that the software allowed change in the system-calculated amount. UIIC replied that flexibility was provided to take a commercial decision with regard to loading for special clients. The reply was not acceptable as motor insurance cannot be transacted outside the purview of the Indian Motor Tariff (IMT) and commercial deviations in this regard were in violation of IMT.

3.5.4.3 Accounts module

Provision for outstanding MACT claims

Motor Third Party Claims Office (MTPCO) in insurance companies handled the third party claims. These offices were not using Genisys. Instead they had developed a programme in Microsoft Access and later the required data was fed in Genisys manually. At UIIC, Chennai, the MTPCO handling the cases of third party claims in and around Chennai, communicated the provisions on outstanding claims as on 31 March every year to the

operating offices for incorporation in their accounts. The interest in respect of outstanding claims was calculated through interest module in various operating offices, after manually entering data relating to outstanding claims in Genisys. Lack of proper input controls in the operating offices resulted in inaccurate provisions in basic estimate due to typographical errors or omission, non-provision of interest thereon and non-provision of incidental expenditure like legal fee, surveyor/investigator fee etc. vitiating the profitability of the operating offices. A check of data downloaded from MTPCO and provisions made in various operating offices indicated the following:

(i) Non-provision of incidental expenditure of Rs.2.85 crore in one Regional Office[♣] (2003) and interest of Rs.95.81 lakh in three operating offices[♠] (2004).

(ii) Short provision of Rs.27.67 lakh towards outstanding claims and Rs.8.23 lakh (in 38 cases) towards interest

(iii) Excess provision of Rs.36.71 lakh towards outstanding claims and Rs.10.68 lakh (in 40 cases) towards interest

UIIC replied that the matter had already been taken up with CMC to provide necessary data import facility from Third Party Cell. However, no such facility had been provided so far (July 2006).

The same risk also existed in NIC and NIA, since the procedure followed was the same.

3.5.4.4 Other design deficiencies

(i) The system did not have provision to capture the details/certification of installation of Fire Extinguishing Appliances (FEA), which was vital for deciding the FEA discount resulting in deficient audit trail.

(ii) As against the IRDA's instruction of varying percentages (zero to seventeen and a half) of agency commission, the system allowed only the maximum percentage denying exercise of delegated powers to the heads of operating offices of allowing lower agency commission to effect economy.

(iii) The system did not have provision to capture the details of subrogation rights resulting in deficient audit trail

(iv) There was no provision in the system to merge the database of the offices which were merged as an economy measure. As such integrity of data could not be assured in such cases.

(v) The system did not have provision to capture and ensure the approval by Regional Office or Head Office in respect of provisional policies.

NIA stated (December 2006) that the need for capturing the above information would be examined.

[♣] ***Regional Office, Chennai.***

[♠] ***Warangal-BO, Tirupati-Nagari and Renigunta BOs.***

3.6 Conclusion

United India Insurance Company Limited (UIIC), National Insurance Company Limited (NIC) and New India Assurance Company Limited (NIA) are engaged in non-life insurance business (Fire, Marine and Miscellaneous Insurance). Assessment, collection of premium, issue of policies and settlement of claims were critical to their business. These operations were being conducted through Genisys. Deficiencies in access control, input control and business continuity planning made the system vulnerable to manipulations, errors and nonconforming to the relevant provisions of rules and regulations. The design deficiencies led to incorrect provisioning of claims and interest apart from contributing to non-integration of the data among all operating offices leading to manual interventions in data entry. Genisys was being used by the three insurance companies but continued with the deficiencies brought out above.

3.7 Recommendations

- In the areas of access control and business continuity plan, the Companies should evolve suitable security policies with clearly defined procedures and responsibilities. Its implementation by the operating offices should be closely monitored by Head Office.
- Directions, instruction and guidelines issued by IRDA, TAC and the Head Offices of the Companies should be incorporated into the system.
- Necessary modifications to the software may be made in respect of the deficiencies relating to input controls, application controls and process controls pointed out in Audit.

The matter was reported to the Ministry in December 2006; reply was awaited (December 2006).

DEPARTMENT OF HEAVY INDUSTRIES

CHAPTER: IV

Braithwaite and Company Limited

Highlights

The Company invested Rs 1.51 crore for procurement and installation of an Enterprise Resource Planning system with the objective of increasing efficiency in various financial and operational matters and marketing a tailor-made package in the wagon industry. Because of deficiency in monitoring of the process of computerisation, absence of proper documentation and departure of trained employees, the process could not be implemented and the investment did not yield any benefits.

4.1 Injudicious expenditure on procurement and installation of Enterprise Resource Planning package

Braithwaite and Company Limited (Company), a subsidiary of Bharat Bhari Udyog Nigam Limited (BBUNL) is mainly engaged in manufacture of wagons and cranes of various types and their repair and maintenance at its Clive, Angus and Victoria units. The Company was referred to the Bureau of Industrial and Financial Reconstruction (BIFR) in 1992. After financial restructuring, the Company came out of BIFR's purview with effect from June 2006.

The Company initiated (December 1998) a proposal for total computerisation of its activities to effectively address its business requirements. The Company, therefore, proposed to integrate the Payroll system and the Commercial and Purchase, Stores and Inventory, Accounting and Finance and Management Information System at a cost of Rs.76.85 lakh which was approved by the Board on condition that the Company would have to generate its own funds for implementation of the project. The project was scheduled to be completed by September 1999.

In the meantime, BBUNL entered into a MoU in August 1999 with CMC Limited (CMC), the vendor of Baan ERP♣, to prepare a 'Proof of Concept'♥ of Baan software for implementing in the Company. It was stipulated in the MoU that CMC and BBUNL would develop and refine a business model for the wagon and passenger coaches industry. The business model when completed would be the joint property of CMC and BBUNL and the same would be jointly marketed in India and abroad and revenue from any such sale would be distributed between CMC and BBUNL. It was envisaged that the business model would increase the efficiency of the Company in terms of different operational and financial parameters *viz.*, increase in productivity, reduction in inventory holdings, powerful decision

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♣ ***Baan is a popular enterprise resource planning (ERP) software created by Baan Corporation, Netherlands now owned by Infor Global Solutions which integrates various activities of an entity for better resource utilisation.***

♥ ***Proof of Concept is an initial study to prove that the core ideas of the project or proposal are workable and feasible, before going further***

support mechanism *etc.* The package would also be implemented in other group Companies. As against the sanctioned cost of Rs.3.69 crore, the Company incurred (August 2006) an expenditure of Rs.1.51 crore for implementation of Baan ERP in the Company.

Audit scrutiny revealed the following:

(i) Although the project was in the nature of a joint venture between CMC and BBUNL for development of a customised Baan ERP for the wagon industry involving sharing of revenue, there was no sharing of cost for the development of the package. The Company paid Rs.39 lakh towards consultancy charges to CMC although the domain knowledge and business process were provided by them.

The Management stated (November 2006) that the payment of consultancy charges could not be linked to revenue earning which was contingent upon certain things happening. The Management's reply was not tenable because development of the customised Baan ERP was the basic requirement for future generation of revenue. The consultancy charges being a part of the cost of development of prototype should also have been shared.

(ii) The implementation of the ERP system in the Company was to be completed within July 2000 *i.e.*, 11 months from the date of signing of the MOU with CMC. But the proposal for sanctioning of the fund was sent to the Ministry of Heavy Industry only in April 2001 and implementation of the same throughout the Company could not be completed till September 2006. In the mean time, CMC backed out from the venture on completion of four years when the validity of the MOU expired. This left the development and implementation of the package incomplete.

The Management accepted that support as per the MOU had not been provided by the CMC and there were no penalty provisions in the MOU to pursue the matter further, once CMC backed out of the venture.

(iii) During the course of implementation of this project, due to fund crunch, an amount of Rs.75.50 lakh was diverted from other approved Schemes (Rs.71.66 lakh from Dished End Project and Rs.3.84 lakh from Tank Wagon Project) which were part of the BIFR package to revive the Company. This led to delay in completion of those projects and one of the projects, Dished End, was yet to be completed.

The Management accepted the delay.

(iv) There was no IT steering committee and monitoring was not done by the Company to adhere to the various milestones of project implementation. The Company spent Rs.7.50 lakh for imparting training to its personnel in the ERP package. Almost all such trained officials left the Company subsequently causing serious hindrance even in managing the package. Finally the Company had to incur an additional expenditure of Rs.6.25 lakh towards generation of final accounts for the financial year 2002-03 and Rs.2.50 lakh towards training for the new users in January 2005.

Thus, because of delay in monitoring of the computerisation efforts of the Company due to absence of a steering committee, absence of documentation and departure of employees who

were trained in computerisation, the Company could not achieve the benefits envisaged from computerisation in the key functional areas. The benefit of a powerful decision making mechanism was also not realised as the overall integration of the functions of different units had not yet been completed. Non implementation of the computerisation that was intended to increase efficiency in financial matters meant that the benefits of the expenditure of Rs.1.51 crore were not obtained.

The Management stated that they planned to complete implementation of ERP in all its units in 2007-08.

The matter was reported to the Ministry in November 2006; reply was awaited (December 2006).

MINISTRY OF PETROLEUM AND NATURAL GAS

CHAPTER: V

Hindustan Petroleum Corporation Limited

Inventory Management System in Enterprise Resource Planning Environment

Highlights

There was a delay in formulating business continuity plan, setting up of disaster recovery site and deployment of the equipment purchased for the purpose. This could cause serious disruption to the business.

(Para 5. 7.1)

The system had design deficiencies such as lack of referential integrity, customisation, input controls and validation checks leading to presentation of inaccurate status of transactions. Over-riding of input controls resulted in supplies worth Rs.60.10 crore to the customers beyond the credit limit.

(Para 5.7.2, 5.7.3 and 5.7.4)

Valuation of stock was being done in excel sheet and MIS reports were being generated in an external utility package, though the ERP system had features for these functions. This led to underutilisation and undermining the effectiveness of the system.

(Para 5.7.6)

5.1 Introduction

Hindustan Petroleum Corporation Limited (Company), with its operational infrastructure comprising of two refineries with 13 MMTPA[♣] capacity, 80 Regional Offices, 20 Terminals, 35 LPG[♥] Plants, 120 Depots and 8900 Retail Outlets, has a long history of computerisation starting from the early sixties. In 1997, the Company with the help of M/s. Andersen Consulting conducted a Business Process Re-engineering (BPR) study to prepare the organisation for the changes in the environment subsequent to the deregulation of the oil sector, dismantling of the Administered Pricing Mechanism (APM) regime, entry of private players in the oil sector, enhanced competition, evolution of the Information Technology (IT) architecture etc. M/s. Andersen Consulting also recommended and assisted in selecting JD Edwards One World Xe software (JD Edwards) for Enterprise Resource Planning (ERP) with the aim to provide:

(i) Flexibility to adapt to changing needs;
(ii) Adoption of industry best practices;

♣ ***Million Metric Tonnes per Annum***
♥ ***Liquified Petroleum Gas***

(iii) Availability of on-line, timely and accurate information for improved decision making;
(iv) Improved integration across functions and processes with reduced data cycles, reduced internal reconciliation, improved external reconciliation;
(v) Improved working capital management - inventory, credit control, cash flows; and
(vi) Increased profitability.

5.2 Implementation

JD Edwards software with licences for all the modules[♣] was procured in April 2000. The implementation was initiated under the Project "Parivartan" with a multifunctional team of 25 officers drawn from various functional departments of the Company. The job of conceptualisation and detailed designing, configuration, customisation, localisation, development and testing of Conference Room Prototype (CRP) for the complete business of the Company and rolling out the model across selected pilot locations in India was awarded to M/s. Cap Gemini Consulting India Private Limited, the consulting partner of JD Edwards. Thereafter, the Company was to implement the roll out to the rest of the organisation. JD Edward system was implemented in 14 Pilot locations from March to July 2003. M/s. Accel ICIM was engaged to provide consultancy in addition to the internal resources for the roll out in the rest of the locations of the Company. The roll out of this package was done first in locations one after another since August 2003 and later on in regional offices, marketing headquarters and the corporate headquarters. This went on for about three years and was completed in April 2006.

5.3 Audit Objective

Study of the ERP system in the area of Inventory Management in the Company with a view to assessing whether the targeted objectives envisaged at the proposal and implementation stage of ERP system were actually realised.

5.4 Scope of Audit

The audit was limited to the Inventory Module implemented in the JD Edwards package of the Company. The data generated in the JD Edwards system since implementation i.e. from the year 2003 along with the migrated data from the legacy system constituted the data for audit analysis. For the purpose of comprehending the business process at the locations, audit examined and reviewed the system functionality at three pilot locations of the Company viz. Vashi, Wadala and Mazagaon.

5.5 Audit Methodology

The study of the Inventory Management System in the ERP environment in the Company was conducted by adopting the following methods:

- Issue of questionnaire and eliciting the Management's response and clarifications;
- Discussion with the higher Management, field level officers, technical officers, and users of the ERP system at the grass-root level;

[♣] ***Sales and Distribution, Manufacturing, Procurement and Project, Finance and Human Resources***

- Study of the available features in the various sub-modules of the Inventory module;
- Analysis of data extracted with the help of Audit tools like IDEA[♣] and MS Excel from the limited access provided to audit; and
- Issue of preliminary audit observations to the Management for response with a view to firming up the audit conclusions.

5.6 Limitations

Audit extracted and analysed the data from the JD Edwards system relating to Inventory module limited to the query screens in the application. The Management did not provide access to the following:

- Complete Data dump
- Testing with dummy data on the online production environment to test the input and process validation controls.

5.7 Audit Findings

5.7.1 Business continuity planning

As all sales are done online, the JD Edwards system became a mission critical application whose failure could cause serious disruption to the business of the organisation. Audit observed that the Company did not have a disaster recovery and business continuity plan till June 2005.

The Committee of Functional Directors had in principle approved Business Continuity Plan only in July 2005. However, neither the disaster recovery site was operational nor were the equipment purchased for improving the connectivity deployed (October 2006).

5.7.2 Design deficiencies

5.7.2.1 Lack of referential integrity

In a relational database system[♥], data integrity is ensured with the help of referential integrity such that any changes in the data element have cascading effect on all the related tables in the entity. These controls form part of the system design and any weakness in these controls results in lack of data integrity. Audit analysis revealed cases of lack of referential integrity as below:

i. In 5009 items of purchase orders placed from Wadala location, 2170 from Mahul and 778 from Vashi, delivery of the items in the purchase orders was completed and updated in the General Ledger. However, these purchase orders were shown as open purchase orders implying that delivery against them was not complete. This indicated lack of referential integrity in the system.

[♣] ***Interactive Data Extraction & Analysis (IDEA) is a software tool that aids in data extraction and analysis for audit purposes.***

[♥] ***A relational database is a set of relations that help to organise and structure the data, in addition to forcing the database to conform to a set of requirements as per business rules encoded in the system.***

ii. Scrutiny of the in-transit inventory in the JD Edwards system (valuing Rs.30.26 lakh) for the Mazagaon Lube location revealed that transactions pertaining to the period from March 2003 to December 2004 were shown as inventory in-transit. Further scrutiny at the locations revealed that these items had already been received in the receiving locations and were actually not in-transit indicating lack of referential integrity.

5.7.2.2 It was observed during audit at Sewri, Wadala, Vashi and Mazagaon locations and the Corporate Office that while querying, extracting and downloading the data the JD Edwards package provided poor navigation facilities resulting in heavy loss of time. The querying gave output of only a few records at a time on the screen and the user had to key in repeatedly for the next set of records. Audit observed this as an inherent design defect in the JD Edwards package inhibiting the system efficiency.

5.7.3 Deficiencies in customisation[♣] of the ERP system

All excise forms were to be prepared through the ERP system. However, as the ERP system was not yet fully customised to the requirement of the Company, two forms were still being prepared manually and this data fed into the system subsequently. There were nine employees engaged in this job. The Management stated that the India localisation impact was an add-on to the standard ERP package. The Management's reply confirmed that even after three years of the project being implemented, the customisation of the package to cater to all types of excise forms was wanting.

5.7.4 Input controls and validation checks

Input controls ensure that the data received for processing are genuine, complete, accurate, properly authorised, entered promptly and without duplication. Validation checks ensure that the data conforms to the business rules. The input controls and validation checks, thus, ensure the correctness and completeness of the data.

5.7.4.1 Scrutiny of Item ledger report revealed that transactions which should have been recorded at current date, had future dates for years 2007, 2009, 2013, 2019.

The Management stated that the dates in transactions normally default as the current date. When transactions are entered in future date system provides warning to the user and these errors are due to the wrong entry and overriding of the warning by the users. These aspects of transactions accuracy were being stressed in all the training programs. The reply of the Management indicated that provision for overriding of the validation checks along with weak input controls did lead to feeding of erroneous data into the system.

5.7.4.2 The ERP system has built in controls to check credit sales and enforce relevant business policies to monitor the application of payment terms agreed with each of the Company's customers. Analysis of sample records of sales transactions with customers revealed that sales transactions had taken place in contravention of the business rules maintained in the system as explained below:

[♣] ***Customisation involves reconfiguring and mapping the software package to the organisational needs.***

Sales Area	Payment Terms	Actual sales transaction
West Zone Retail Unit at 'Bandra' sales area	(i) Advance payment (ii) Credit period allowed in the range of three to 45 days	Supplies were made bypassing the "Advance payment" term in the system to the extent of Rs.20.92 crore as on 23/12/2005. Similarly, credit periods ranging from 60 days to 900 days were allowed.
Headquarters' Office customers under 'direct sales'	Advance payment	Sale on credit amounting to Rs.2.55 crore as on 13/01/06.
Headquarters' Office customers under 'direct sales'	Payment to be made monthly in advance	Sale on credit amounting to Rs.31.95 crore as on 13/01/06.
LPG bulk customers in the western region	Credit limits fixed	Supplies beyond the credit limit to the tune of Rs.1.69 crore (as per the accounts balance in 2005-06, taking into consideration both the ERP and the legacy balance against the particular party).
Vashi Sales Area	Credit limits fixed	Supplies beyond the credit limit to the tune of Rs.2.99 crore.

The above indicated that the validation checks built into the system that translated the business policies of the Company were allowed to be bypassed by local Management decisions. Though approvals were obtained manually, any reference to the authority for exceeding these credit limits was not available in the system. This indicated that the system was vulnerable to overriding of control on the credit limit.

The Management replied that in many cases the credit balances of customers were lying in legacy accounts since the collections had been made in the legacy system before the collecting location going live on ERP. In some of the other cases, the customers' accounts in JD Edwards system were under reconciliation. In some cases customers had more than one address number; one of the accounts had credit balance, which needed to be migrated to the other account.

The reply of the Management indicated lack of input controls while porting of data from the legacy systems rendering the data available in the system unreliable. Further, the rising figures of Sundry Debtors from 2003 to 2006 and supplies made beyond the credit limit to

the tune of Rs.60.10 crore as pointed out in the table above indicated that the Management's objective of improved working capital management through the ERP implementation was not achieved.

5.7.5 Internal controls

Internal controls within an organisation are designed to provide reasonable assurance regarding the achievement of reliability and integrity of information. Internal controls, thus, ensure completeness, timely updation, accuracy and validity of transactions leading to economic and efficient use of resources.

5.7.5.1 Scrutiny of the 'availability' of the items revealed that tank number TK5002 in location number 11213 was available for storage of inventory although the tank had been dismantled and decommissioned in April 2005. The database was not updated.

5.7.5.2 It was observed that no bank guarantee details were available in the system.

Thus, non updation of data in the system led to unreliable information being available and also indicated that the internal control mechanism was not effective in ensuring the completeness of data.

5.7.6 Underutilisation of inventory module of ERP

5.7.6.1 At the time of initial 'Go-live' at various locations, the available cost of inventory items was incorporated as standard cost[♣] into the system. The Management maintained the same data over a period of three years and had not configured the system to update the costs and compute the value of stock. As per the current practice, various parameters required for computing the stock value were derived from the ERP system and were tabulated in an excel sheet and valuation was done on weighted average cost basis in the case of raw materials, lubes and crude oil, and at cost (FIFO[♥] basis) or net realisable value, whichever is lower, for finished products. Although the ERP system had the capability to capture all the data relating to the stock valuation, the Management did not utilise the features by not designing the system to provide the value of the stock, thus undermining the effectiveness of the ERP system.

5.7.6.2 JD Edwards system had provisions for generating ready made reports viz. analytical and integrity reports[♠]. However, these reports had not been configured in the Inventory module of ERP to generate the required MIS reports. This resulted in not-utilising this feature available in the system, dependence on external utility packages and dedicating manpower resources for this purpose which could have been used elsewhere.

5.8 Conclusion

The Company made an investment of Rs.109.85 crore in the ERP system with certain objectives to face the imminent changes in the competitive scenario. However, lack of

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♣ ***Fixed cost not revised periodically***

♥ ***First in First Out (FIFO), method used in recording the cost of inventory for stock valuation and inventory movements.***

♠ ***Analytical reports like ABC Analysis report, Cost Analysis report, Margin Analysis report, Valuation Analysis report, Inventory Turnover report, Supply and Demand report etc. and Integrity reports like Item Balance/Ledger Integrity report, Ledger/Account Integrity report etc.***

complete customisation, lack of input controls and validation checks, deficiencies in the design and non utilisation of various features were noticed during audit. These led to incorrect data being fed into the system and underutilisation of the Inventory module in achieving the objectives of availability of on-line, timely and accurate information for improved decision making, improved working capital management and improved profitability and optimal deployment of human resources.

5.9 Recommendations

In order to exploit the full potential of the Inventory module of ERP, the Company should:

- Ensure that input controls and validation checks are built in and are applied to all data entered into the system. Even in case of porting of data from legacy systems, the data should conform to these controls;
- Ensure completion of customization of the Inventory module so that recourse to manual intervention is avoided;
- Ensure timely updation of various information into the system through prompt internal control mechanism;
- Address the design deficiencies; and
- Ensure that all the relevant features of the software are utilised.

The matter was reported to the Ministry in December 2006; reply was awaited (December 2006).

Chapter: VI

Oil and Natural Gas Corporation Limited

IT Audit of Material Management

Highlights

Inadequacy of input controls resulted in wrong valuation of material and consequently wrong material accounting, lack of data integrity and incorrect MIS.

(Paras 6.7.1.1 to 6.7.1.4 and 6.7.1.7)

Because of a deficient internal control mechanism, stock receipts and issues were not being captured accurately and in a timely manner resulting in wrong material accounting

(Para 6.7.1.5 and 6. 7.1.6)

Material Requirement Planning (MRP) checks were being carried out manually even after implementation of ERP.

(Para 6 7.2.1)

Several reports being generated were incorrect due to inherent design defects.

(Para 6.7.2.2 and 6.7.3)

Legacy data was loaded into the ERP system without adequate data cleaning resulting in incomplete and incorrect data.

(Para 6.7.4)

There were deficiencies in physical count of inventory items; there was delay in settlement of discrepancies revealed in physical count.

(Para 6.7.5)

6.1 Introduction

In 1980s, the Material Accounting System developed in COBOL was adopted by Oil and Natural Gas Corporation Limited (Company). This was modified to 'Integrated Materials Management System' (IMMS) in 1990s based on ORACLE 7.3 Client Server architecture. In October 2003, the Company implemented a generic Enterprise Resource Planning (ERP) package, the SAP - mySAP Financials and Logistics under project Information Consolidation for Efficiency (ICE). All ten modules[♣] of ICE were utilised along with mySAP Oil & Gas Upstream Solutions consisting of joint venture accounting, production sharing agreement and offshore logistic management. The existing data in the IMMS was migrated into the ERP system. ICE went live across the Company in phases- (Western offshore in October 2003, Western Onshore in April 2004, Southern Onshore in July 2004, Eastern and Central Region in October 2004 and Northern Region, in January 2005).

SAP R/3 release version 4.6C was installed on HP Unix 11.11 operating system and platforms. Oracle database management system was used to store data in SAP. LAN/WAN was used as means to connect to R/3 environment.

6.2 Objectives of Audit

The audit objective was to review performance of Material Management (MM) module in the ERP System and seek assurance that input, processing and output controls were in place ensuring reliability and integrity of data.

6.3 Scope of Audit

Audit covered stores, spares including capital stores handled and managed through the MM module under the ERP system, migrated data in the new system as well as transactions generated from the ERP system till March 2006. MM processes in the sequence from issuance of the indents to final consumption were examined in audit. Data analysis was carried out based on sample data mainly from Mumbai, Western onshore, Central Region, Eastern region, Delhi and Dehradun.

6.4 Audit Criteria

The following constituted the audit criteria:

(i) Best practices in Information Technology (IT) system designing and development;
(ii) Input and internal controls for data entry in purchase and material documents and monitoring thereof;
(iii) Business rules, manuals and procedures.

♣ ***Financial (FI), Controlling (CO), Material Management (MM), Plant Maintenance (PM), Project Systems (PS), Investment Management (IM), Asset Management (AM), Treasury (FM), Sales & Distribution (SD), Business Information Warehouse (BW)***

6.5 Audit Methodology

IT review of MM in ERP environment in the Company was conducted by adopting the following method:

(i) Discussion, correspondence and questionnaire issued to the Management and its feedback.

(ii) Data extraction using the standard in-house reports and analysis thereof using IDEA, EXCEL and ACCESS softwares.

6.6 Limitations

(i) Audit Information System (AIS), a single location data mining tool provided by the SAP developer for real-time auditing in SAP system, was not implemented by the Company.

(ii) Access to a limited transaction codes was available to Audit and access to SAP Query and Data Browser was not available, due to which the issues relating to source data tables, in-house developed transactions and programs, release strategies, authorisations and user administration could not be examined.

6.7 Audit Findings

The main processes in the MM module were material planning and indenting, procurement, inventory management and warehouse management for incoming material.

The MM module was reviewed in audit in the sequence of the process flow and the following points were observed:

6.7.1 Input Controls

Input controls ensured that the data received for processing were genuine, complete, accurate, properly authorised and entered in time and without duplication. Validation checks ensured that the data conforms to the business rules. The input controls and validation checks together ensured the correctness and completeness of data.

The following cases showed weakness in the input controls and validation checks:

6.7.1.1 Purchase orders for stores and spares items with wrong valuation types

Split Valuation Procedure (SVP) was configured in the ERP system for stores and spares items where separate weighted average cost was maintained for each 'material type'[♣] based on corresponding 'valuation types' configured in the system. Any wrong entry of 'valuation type' of material in a purchase order impacted recording of cost of material at the time of their receipt and issue and consequently led to incorrect accounting of material consumption and incorrect Management Information System (MIS).

Analysis of purchase orders against foreign vendors, however, revealed that the 'valuation type' of material entered in the purchase requisition by and large continued to be followed in purchase orders, without being corrected to indicate whether the order was placed on indigenous vendor or foreign vendor, leading to creation of purchase orders with incorrect 'valuation type' assigned to a material. Consequently, cost of the items received against such

[♣] ***Different material types were configured depending upon source of supply, nature of use and whether new or used etc.***

purchase orders were also recorded incorrectly at the time of their issue. It was observed that 327 purchase orders were placed with wrong material 'valuation types' during the period April 2004 to March 2006. During the same period, 478 goods receipt documents for receipt against foreign vendors (for 2647 items) were posted with similar wrong material 'valuation types'. The financial impact of the wrong valuation of material was, however, not ascertainable.

The Management attributed this to user ignorance and stated that this problem would be reduced with increased user awareness. The reply was not tenable as the system had neither been configured with necessary data input controls nor were effective compensating controls put in place by having a mechanism to review such errors by the ICE core teams.

6.7.1.2 Purchase orders for capital items with wrong valuation type

Capital goods received from vendors and their subsequent issue were handled by the system based on a unique batch number assigned to the material in the purchase order. Analysis of purchase orders for capital items, however, revealed cases where 'valuation types' applicable to stores and spares items were entered as 'batch number'. Consequently at the time of issue, cost of these capital items was incorrectly generated at moving average cost♣ instead of the cost of the item relevant to the specific purchase order as shown in a few illustrative cases:

Plant	Material (Material Code)	Goods Received Document No.	Qty. (Nos.)	Unit Rate (Rs.)	Unit Issue Rate (Rs.)
10T3	UPS System (0C3696000)	9000016225	30	2819	
			4	24012	8631
			1	121500	
70R1	Computer/Laptop (0C3800000)	900016673	1	120890	123365
		900016674	1	125840	
10T3	Over head projector (0C9567000)	900022171	1	185000	216712
		900018936	4	224640	
23R1	Bed (0C9820000)	900042540	12	9968	10721
		900042540	2	15239	

♣ ***Stores and spares items were valued at moving average cost.***

The Management stated that validation checks had subsequently been put in place to check such errors.

It was, however, observed in audit that the validation checks were not correctly configured and similar errors occurred in case of capital items procured against purchase orders No. 4010010560 placed on 15 December 2004 and No. 4010019744 placed on 5 December 2005.

6.7.1.3 Delivery date in purchase orders

No input controls were in place for entering the delivery date* of material in the purchase orders created in the ERP system. It was observed in audit that in a large number of cases, the delivery date of material entered in the purchase requisition and defaulted in the purchase orders continued to be followed without being corrected to the purchase order conditions. In 14 cases, the delivery date in the purchase order was even prior to the date of the purchase order (based on sample data for January to March 2006). It was further observed that the date of actual delivery of the supplies was not captured in the system.

Due to capturing of incorrect purchase order delivery date and non capturing of actual delivery date, MIS data on procurement of material and execution of purchase order with respect to the delivery date could not be correctly generated and also liquidated damages due to delay in delivery of material had to be worked out manually outside the system.

The Management stated that there was no provision in SAP for capturing the actual delivery date and there was also no functionality in SAP for calculation of liquidated damages. The Management further stated that they were in the process of exploring the possibility of capturing the date of actual delivery after which necessary MIS data would be generated.

6.7.1.4 Creation of fresh purchase requisitions with earlier requisitions remaining pending

Analysis of purchase requisitions in Mumbai revealed that 107 requisitions involving 876 items created between April 2004 and December 2004 were lying pending in the System without any procurement action being taken. At the same time, fresh purchase requisitions for some of these items were also created and procurement action taken thereon.

The Management accepted the fact and stated that possibility of automatic deletion of all purchase requisitions not requiring any subsequent action at the end of a financial year was being explored.

6.7.1.5 Non clearance of stock in transfers

Stock Transport Orders (STO) were created for internal transfer of material from one location to another. To complete the documentation of internal stock transfers, goods issue document posted by the issuing store was complemented by a goods receipt document by the receiving store. Till the goods receipt document was not posted, the material transfers remained as 'stock in transfer' under inventories.

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* ***Delivery dates are the dates on which the goods are to be delivered by the vendors***

Analysis of balances in 'stock in transfer' revealed instances of delayed posting and non-posting of goods receipt documents in respect of internal transfer of goods resulting in accumulation of large balances in 'Stock in transfer'. In a test check in July 2006, stock transfers worth Rs.53.58 crore lying uncleared for over three months were noticed out of which stock transfers worth Rs.9.60 crore had not been cleared for more than a year.

The above indicated lack of internal controls in ensuring that all stocks received were captured by the system accurately and in time in the correct period. This adversely impacted the reliability and correctness of inventory balances as physical existence of items under 'Stock in transfer' remained unverified and unconfirmed as such items were not covered in the physical count process. In a test check in audit, 349 cases of stock transfers were found where the items were included as 'Stock in transfer' in the system even though materials amounting to Rs.11.94 lakh, were already posted as material consumed in financial records. Further, the objective of accounting of inventories and its consumption on actual and online basis was also not achieved and correctness of accounting of the consumption of inventories, therefore, could not be ensured.

The Management accepted the fact and stated that materials remaining in transit for long periods had been put up in the intranet of the Company.

6.7.1.6 Delay in recording of material consumption

Analysis of goods issue documents for material issued for consumption revealed deficiency in internal controls to ensure that all stock issues were captured by the system accurately and in a timely manner in the correct period. Delays upto 202 days in posting 77 goods issue documents for consumption of casing pipes in 21 wells involving material value of Rs.16.32 crore were observed in drilling of wells in Assam and Agartala during 2005-06. Out of these, 43 documents were posted after delay of 30 days or more involving material value of Rs. nine crore. Similar delays upto 156 days were found in posting of 273 goods issue documents in respect of consumption of material valuing Rs.8.20 crore in 19 wells, out of which 92 documents were posted after delay of 30 days or more involving material value of Rs.1.84 crore. Due to the delay in posting of the material documents referred to above, material consumption amounting to Rs.2.24 crore prior to 31 March 2006 was actually accounted for in the following financial year resulting in accounting of material consumption in the wrong period. This showed that the objective of online and real-time accounting of material consumption had also not been achieved with the ERP implementation.

6.7.1.7 Insurance spares

Capital spares/insurance spares i.e. the machinery spares specific to a particular item of fixed asset the use of which was expected to be irregular, were to be capitalised at the time of their purchase whether procured along with the fixed asset concerned or subsequently.

It was observed that as of March 2006, 811 insurance spares of value Rs.12.29 crore were included as part of inventories instead of being capitalised, consumption of which was accounted as and when issued. It was further observed that out of these 811 items, details of the related capital equipment in the Material Master were available for only 411 items costing Rs.9.40 crore.

The Management stated that the data migration was done as per data available from the legacy system and in most of the spares, details of the capital item to which it belonged were not available. It further stated that efforts were still on to locate all the details.

6.7.2 Mapping of business rule

6.7.2.1 Material procurement planning

Analysis of inventory holding of material vis-à-vis consumption to find out the extent to which the stock holding was in consonance with the actual requirement or consumption revealed that there existed 6512 items (material codes) each of average stock value exceeding Rs.one lakh, consumption of which during 2005-06 was nil. Based on the value of the average stock holding during 2005-06, funds invested on these inventory items amounted to Rs.523.09 crore. Included in these items were 47 stores items costing Rs.177.38 crore and six spares items costing Rs.11.52 crore of average stock value over Rs.one crore. Further month-wise stock analysis, since implementation of the ERP system, of items with average stock value over Rs.50 lakh revealed 62 items with nil consumption during the entire period. The average stock value of these items amounted to Rs 139.66 crore in March 2006.

In case of capital items also, which were required to be issued to the users immediately on their receipt, items valuing Rs.19.15 crore were lying unused in stores for more than one year. These included even general purpose items valuing Rs.1.13 crore.

The Management stated that it was the responsibility of MRP[♣] controller to release the purchase requisition taking into account the stock position, current consumption and quantity on order. Once the MRP controller was of the view that material was to be purchased, it was the decision of the business units and that a report on age analysis of CIOS[♠] was being generated by the system.

The reply was not tenable as even after implementing the ERP system the checks were carried out by MRP controller manually as was being done in the legacy system and these remained subjective in the absence of any laid down minimum, maximum and reorder levels of inventory holding.

6.7.2.2 Purchase requisition release dates

It was observed that the release[♥] date field in the purchase requisitions in the system automatically captured the date as one day prior to the date of delivery of material indicated in the purchase requisition instead of actual date of release. Capturing of wrong date of release, which was a vital key indicator resulted in vitiating any analysis or MIS generation involving date of release of the PR due to wrong capture of data in the SAP reports.

The Management stated that since purchase order processing time, goods receipt processing time and delivery period were not maintained in the system, by default the system took one day prior to delivery date as the release date. It also stated that actual date of release could be

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♣ *Material Requirement Planning.*

♠ *Capital item on Stock*

♥ *Date when purchase requisition is approved by the relevant authority*

viewed from the change history. The reply of the Management was not tenable as the change history did not form part of any SAP/MIS reports.

6.7.2.3 Open purchase orders with small residual quantity

In case where the finally delivered quantity of material against a purchase order was marginally less than the ordered quantity and the remaining ordered quantity was not expected to be delivered, the purchase order was to be closed as completed so that funds attached therewith were freed for other use. The ERP system had neither been configured to close or trigger the closing of such purchase orders nor did the MM function generate periodical reports from the system to close such open purchase orders. Due to non closing of such type of open purchase orders, the material and funds attached to such quantities remained blocked during the year.

Analysis of open purchase orders for the period October 2003 to March 2005 with delivery date before 30 September 2005 and residual quantity of less than 10 *per cent* of the ordered quantity as in July 2006 revealed that 240 purchase orders of this nature involving funds of Rs.3.39 crore were yet to be closed.

ICE group accepted that closing of such purchase orders was a manual activity and the system had not been configured to close or trigger closing of such purchase orders and no data validation controls had been put in place. This showed management reporting control failure as it was not ensured that the relevant data was being collected for the creation of management information reports and exception reports on open purchase orders.

6.7.3 Discrepancies in in-house developed report

For generating MIS data on the status of in-transit inventory and monitoring the clearance of in-transit items, an in-house 'MIT[♣] Report' had been developed in the system. Test check of MIT Reports in audit revealed the following inconsistencies and incorrect reporting of information:

6.7.3.1 The MIT report calculated wrong values of in-transit inventory where stock keeping unit[♦] of measurement was not used in the Stock transport orders (STO) for internal transfer of material. In a test check it was observed that the MIT Report for Mumbai plants on 25 July 2006 reported stock value of in-transit High Speed Diesel as Rs.9297.37 against actual value of Rs 9297374. Similarly, the MIT report for onland plants on 31 July 2006 reported stock value of in-transit inventory of High Speed Diesel as Rs.4936 against actual value of Rs.4936080.

The Management accepted the facts and stated that action will be taken to rectify the errors.

6.7.3.2 The MIT report for Mehsana Asset on 31 July 2006 erroneously reported 180 litre of Formaldehyde solution as in-transit item though the goods receipt document for the full quantity was already posted on 19 May 2005. Moreover, the report captured the goods receipt document in the column for goods issue document. In another instance, the MIT report for Drilling Services Kolkata on 29 May 2006 did not capture the in-transit value of

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♣ ***Material in transit***

♦ ***The unit for recording stock balance and maintaining price in material Master***

chain for chain tong issued on 13 April 2006, which however was captured in the MIT report on 2 June 2006.

6.7.4 Data migration

Analysis of data revealed gaps in the data migration processes run by the organisation during implementation of the ERP system as indicated below:

Material master data ♦

6.7.4.1 It was observed that 16780 master records were migrated into the ERP system without complete codification details out of which 3880 records were not associated with any material in the master table. As the primary details of the material were missing in these records, transactions concerning these materials could not be made. The inventory lying against these material codes since October 2004 amounted to Rs.3.52 crore. It was also observed that subsequent to the data migration, ICE MM core teams, responsible for creation and maintenance of the Material Master data further blocked♥ 4043 discrepant master records to prevent the users from making any procurement against these material codes.

The Management accepted the fact of uploading of master records without complete codification details and stated that these materials could be issued from stores if identified by the users. It further stated that cleaning▲ of Material Master was an on-going job and the codification cell had been interacting with the users for getting information on these blocked material codes.

The reply was not acceptable as data cleaning process should have preceded implementation of a new system to ensure that the current system maintained and processed correct and reliable data. Further, the System did not provide any information on these materials to enable users to identify and issue the same.

6.7.4.2 There were 801 records of spares items in the master table without details of part numbers. So, these records provided insufficient details to the users for placing indent on inventory management and for MIS generation. Similarly, 56741 records with missing manufacturer name were also found among the spares items.

The Management accepted the fact and attributed the same to non-availability of data during the Material Master clean up exercise prior to going live at various locations.

6.7.4.3 Stores and spares balances

In order to check the correctness of data during the data migration from the legacy system into the new system, Audit analysed sample data that was uploaded into the MM module. Comparative study of the migrated unit price vis-à-vis the current moving average prices

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♦ ***Material master file is the central repository of information used to store details of materials that are purchased by an organization. Information like accounting data, purchasing data, production data, classification details, storage information, etc. are maintained in the material master file.***

♥ ***1555 material codes were blocked with status as 'duplicate record'. 2488 codes were blocked with status as 'temporary codes'.***

▲ ***Cleaning of data involves removing mismatch of description/material codes, verification of balances, completing details on missing data, identifying/resolving errors found during conversion***

revealed that the former was abnormally higher than the latter. This indicated that the data migrated from legacy system was unreliable.

6.7.5 Physical count process

Physical count of inventory items is an important control procedure for periodical updating of the book balances to ensure conformity with actual physical balances. Test check of data for 2005-06 in audit revealed the following deficiencies:

6.7.5.1 Physical count was not being conducted regularly and completely. In five[♣] units no physical count of category A and B capital assets was carried out in the first quarter of 2005-06 and bulk of the verification took place in the third and fourth quarters of the year. In respect of other inventory items it was observed that no verification of capital items was conducted in five locations[♦] and incompletely conducted in seven of the 14 locations[♥] since implementation of the Warehouse Management Module. Similarly, in respect of Category 'A' stores and spares items which were to be verified every year, no verification was done in four locations[♠] and it was incompletely done in the remaining locations. No verification of category B and C items was conducted at all in three[•] units.

6.7.5.2 The System did not provide any report or facility for age analysis of discrepancies in stock verification. Also, despite the improved availability of information after ERP implementation, large number of discrepancies in stock verification was outstanding for want of final settlement. As on 31 March 2006, shortages in stock verification amounting to Rs.7.60 crore and excess of stock verification amounting to Rs.2.48 crore were outstanding.

6.8 Conclusions

From the audit conducted it could be concluded that adequate data input controls and internal control procedures had not been put in place to ensure accurate and timely capture of data. The deficiencies observed in the master data indicated weaknesses in data conversion plan, methods of collecting and verifying the data to be converted and identifying and resolving any errors found during conversion. The maintenance of incomplete data in the master tables undermined the effectiveness and efficiency of the system and created scope for errors at the user level. There was a risk of defective decision making based on the incomplete data presented by the MIS reports. Due to absence of any prescribed minimum, maximum and reorder levels of stock and carrying out of MRP controlling activity manually, the organisation was yet to achieve the benefits provided by the ERP system for material planning and inventory control.

♣ ***Mumbai, Dehradun, Baroda, Assam Asset and RO, Agartala***

♦ ***Baroda, Central Workshop Baroda, Dehradun, Dhansiri Valley Project and Uran***

♥ ***The Warehouse Management Module was implemented across the Company except in five units during 2005-06, hence data on verification of stores and spares items after implementation of WM module was analysed***

♠ ***Baroda, Dhansiri Valley Project, CBM project, and Uran***

• ***Baroda, Dhansiri Valley Project and Uran***

6.9 *Recommendations*

The Management needed to take measures in the following areas to optimize the use of and benefits from the investment made in the ERP system:

- Strengthening input controls, validation controls and internal control procedures to ensure accurate and timely capture of data;
- Strengthening the role of the MRP controller through the system and optimising system use by fixing minimum, maximum and reorder levels in respect of spares;
- Cleaning of migrated master data to rectify the errors that have crept into the ERP system and establishing comprehensive procedures for periodical review of master data;
- Organising regular training programmes to raise the level of user awareness and minimise errors of data input and making available updated operational documentation to the end users.

The matter was reported to the Ministry in December 2006; reply was awaited (December 2006).

C.V. Avadhani

(C. V. AVADHANI)
Deputy Comptroller and Auditor General
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New Delhi
Dated: 4 APR 2007

Countersigned

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