Chapter: V

Chennai Petroleum Corporation Limited

RAMCO e Applications System

Highlights

Non integration of the RAMCO e Applications system among various units resulted in manual intervention and led to risk of data entry errors.

(Para 5.4.1)

Deficient user training and insufficient monitoring led to improper closing of the system and non utilisation of swipe cards to gain entry and exit out of the system.

(Para 5.4.2)

Procurement processes were not linked and led to absence of audit trail in the system.

(Para 5.4.3.2)

Lack of input controls and validation checks made data incorrect, incomplete and unreliable.

(Para 5.4.4)

The system was not utilised effectively for inventory management.

(Para 5.4.5)

5.1 Introduction

Chennai Petroleum Corporation Limited (Company) was established in the year 1965. The Company has two refineries one at Manali with a refining capacity of 9.5 Million Metric Tonnes Per Annum (MMTPA) and another in Cauvery Basin at Nagapattinam with a capacity of one MMTPA. The main products of the Company are Liquefied Petroleum Gas, Motor Sprit, Superior Kerosene, Aviation Turbine Fuel, High Speed Diesel, Naphtha, Bitumen, Lube Base Stocks, Paraffin Wax, Fuel Oil, Hexane and Petrochemical feed stocks.

The Company introduced VAX (Virtual Address Extension) system in the early 1990s using programmes developed in house which were independent and not integrated. Hence the Company proposed to integrate these systems using Enterprise Resource Planning (ERP). The RAMCO e Applications system was selected on the advice of CMC Limited and implemented during June 2002 at a total cost of Rs.3.77 crore. RAMCO e Applications system uses client server architecture with MS-SQL 2000 as database and Windows 2000 as Operating System.

5.2 Audit objectives

The main audit objective was to find out whether the implemented ERP system had achieved the main objectives of the Company viz. generation of single point online Management Information System (MIS), integration of the various business processes *etc.*, and to check the accuracy, completeness, integrity, confidentiality and reliability of data in the inventory module of the system.

5.3 Audit methodology

The backup of data (up to December 2007) provided by the Company was used to study the data structure relating to inventory modules and the data was analysed using SQL and MS Access. Audit enquiries were further issued and replies obtained to confirm the results of the analysis. Discussions were also held with users from concerned departments.

5.4 Audit findings

5.4.1 Implementation of ERP system

The Company is using RAMCO e Applications system at both the refineries. However, these two units were not integrated online. The General Ledger Balances and Trial Balance generated at Nagapattinam Refinery were being forwarded to the Company for preparation of Financial Statements using MS EXCEL.

Further, the Company has ten leased locations to store their products and monitor their sales. These locations were not having RAMCO e Applications system. The fortnightly sales data received from such locations were being manually fed into the system.

Non-integration of systems at refineries and non availability of RAMCO e Applications system at store and sale locations thus had resulted in non availability of information on "real time" basis. It also had manual interventions which ran the risk of data entry errors which could affect the integrity of the data.

The Management stated (July 2008) that an Oracle based system was provided to the leased locations and data downloaded from these locations were uploaded into RAMCO e Applications system at regular intervals as the system requirements for various sales locations were varied and customisation of RAMCO e Applications system to the specific requirement required many changes. However, non customisation of RAMCO e Applications system at the leased locations and non linking of the systems at two refineries necessitated manual interventions leading to risks of data entry errors.

The Ministry assured (February 2009) that the three leased locations and CBR would be fully integrated in 2009-10 when the Company moves over to SAP.

5.4.2 Physical and logical access control

The Company formulated an IT security policy document in February 2009, after being pointed out in Audit (July 2008). However, the following control weaknesses were observed in the practice adopted by the Company.

5.4.2.1 User identities (IDs) were not linked with Employee ID resulting in absence of any control ensuring accountability. The Ministry stated (February 2009) that the user IDs were currently assigned and linked with employee IDs. However, as of March 2009, the linking of user IDs with employee IDs was in progress.

5.4.2.2 The system captured NULL value whenever there was abrupt shutdown either due to power failure or due to improper shutdown by the users. Scrutiny of database revealed that in respect of 208 users, such improper shutdown was done more than 100 times. This indicated deficiencies in user training and subsequent monitoring of user's operating performance. The Ministry accepted (February 2009) the deficiencies and stated that users have been imparted necessary training and strictly advised to follow logout procedures.

5.4.2.3 The entry into and exit out of the premises were controlled through a smart card enabled access control system. On review of the data base, it was observed that the employee wise entry details (IN♣ entries) did not match with the corresponding exit details (OUT♦ entries) defeating the primary objective of access control. The OUT entries exceeded the IN entries in respect of 827 employees and IN entries exceeded the OUT entries in respect of 820 employees, the excess in both cases ranged from two to ten *per* day. Further analysis of data revealed multiple swiping of the smart cards at the time of entry as well as exit, non use of swipe cards to secure entry or exit each time indicating inadequate training or failure of the system.

The Management stated (July 2008) that in respect of employees who were in night shift, the number of IN entries would not match with the number of OUT entries as the employee out time was recorded in the next day only. The reply is not acceptable because the difference between IN and OUT entries in respect of all the above cases was more than one per day and open IN or OUT entries indicated the risk of unauthorised entries as well. The Ministry accepted February 2009) the audit observation and stated that possibility of entry or exit of more than one person through the doors existed where turnstile gates were not provided. It further added that employees have been suitably advised to ensure swiping at the time of every entry and every exit.

5.4.3 Design deficiency

5.4.3.1 Cancellation of indents after receipt of material

Purchase Orders (POs) were manually linked to the respective Indents. When the POs were short closed due to some reasons, it was required to short close the indents also as otherwise these indents would be shown as pending in the system. However, it was observed that no such provision was inbuilt in the system. Hence, the corresponding indents against short closed POs were manually cancelled in the system. This resulted in lack of audit trail. An analysis of database revealed 1960 such indents were cancelled against which procurement to the extent of Rs.30.37 crore has since been made. Thus, non existence of provision to short close the indents could result in misleading MIS reports. The Ministry stated (February 2009) that introducing the option of "short closing indents' would be explored during the up gradation of the current ERP system to My SAP system.

5.4.3.2 Referential integrity

While preparing PO, the user has to manually link the Purchase Request (PR). It was observed that in many cases such link was not created resulting in absence of audit trail as discussed below:

In respect of 5128 duly authorised indents, the PO details could not be generated and audit trail could not be established. In respect of 2760 POs, indents were not linked to the POs. Hence it could not be ensured that all the PRs were processed, POs were issued and all POs issued were based on valid indents. The Ministry stated (February 2009) that "PO-PR Coverage" option was introduced at a later stage and hence earlier cases were not linked. It further added that a mandatory logical check was introduced during

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♣ ***While entering into the premises employee has to swipe the smart card and system will record one IN entry against the employee number***

♦ ***While making an exit, the smart card is swiped again and the system will record one OUT entry***

November 2008 to ensure PO-PR coverage. It was, however, observed that even PO's issued during January/February 2009 were not linked with indents.

5.4.4 Input controls and validation checks

Input controls and validation checks ensure completeness, correctness, accuracy and integrity of the data. Data analysis revealed the following deficiencies in the controls**.**

5.4.4.1 On review of database, it was observed that the dates indicating chronological events were not entered in many cases or were filled up with unrealistic dates as detailed below:

(i) Date of authorisation was not captured in 25 PO's (246 stock items) issued between 21 January 2002 to 20 August 2007;

(ii) Date of creation of stock code was not captured for 65 stock items;

(iii) Date on which the status of material was classified as "On Demand", "Stock", "Obsolete" *etc.*, was not captured in respect of 49553 items and in respect of 33882 items the system default date 1 January 1900 was captured; and

(iv) Date of inspection of goods received was not captured in 9474 records.

Thus, lack of input controls made the data incomplete.

The Ministry stated (February 2009) that necessary controls would be inbuilt with the help of RAMCO e-Applications system and during upgradation of the system to My SAP.

5.4.4.2 As per the Company's policy, as and when it was decided to replace equipment or upgrade a material in the plant, the spares of the equipment and the stock of such materials in stores were classified as "No-Further Order (NFO)" to prevent initiation of automatic procurement action. Whenever, the equipment was removed from service or the material was upgraded, the related spares/materials in stock were identified as "Obsolete". However, it was seen that, when such materials were required by user departments again, these items were reclassified as stock items or on demand items enabling placing of Indents and POs against them.

Analysis of data base revealed that due to non updating of material status date, 968 items already identified as NFO and for 104 items already identified as obsolete were procured after such identification. The Ministry stated (February 2009) that the status of material was dynamic and continuously changing as and when modification took place. It was, however, observed that there was no provision in the system to maintain a history of such changes to identify the status of a stock with reference to a particular period which also resulted in lack of audit trails.

5.4.5 Inventory control

5.4.5.1 Re-Order, Re-Order Quantity (ROQ), Maximum, Minimum and Safety levels in respect of stock items were fixed as per the Material Management Manual of the Company. The manual prescribed one year's consumption as ROQ and six months consumption as Re-Order Level (ROL). The Company has fixed ROQ for 17085 out of 168745 stock items. It was observed that no controls were available in the system to validate the PO quantity either with respect to the ROQ captured or with the actual consumption of previous 12 month while generating PO through the system.

Data analysis revealed that in respect of 730 stock items procured between 27 February 2002 and 12 December 2007, procurement in excess of ROQ worked out to Rs.7.18 crore. In respect of materials for which ROQ was not fixed in the system, the excess procurement over and above respective previous year's consumption was Rs.2.84 crore (227 stock items), Rs.1.58 crore (192 stock items) and Rs.2.23 crore (242 stock items) for the years 2005-06, 2006-07 and 2007-08 respectively.

The Management stated (July 2008) that due to frequent episodes of unit shut downs, periodic turn around and Refinery wide total production management activities, user departments indent, maintenance repairs & operation and consumable material in large quantities were procured which may defy the consumption logic and beyond the stock levels. It was further stated that because of the erratic consumption caused by such indenting and receipt of material, it was not advisable to revise the stock levels, which could lead to accumulation of non moving inventory.

Further, the Ministry stated (February 2009) that the consumption pattern during previous years were studied to minimise the inventory level.

As the periodic turnaround and TPM activities were preplanned activities, the Company could have fixed Re-Order Quantity for better inventory management.

5.4.5.2 Inventory holding in excess of maximum level

The Company's policy did not allow the maximum inventory holding more than the sum of ROL and ROQ (six months consumption + one years' consumption) fixed in the system. However, a review of stock balances of the years 2005-06, 2006-07 and 2007-08 revealed that, the stock holding was in excess of the maximum level resulting in blocking up of working capital to the extent of Rs.7.80 crore (2546 stock items), Rs.14.73 crore (2425 stock items) and Rs.13.08 crore (3096 stock items) respectively.

The Ministry stated (February 2009) that the consumption of project and Refinery spares was not regular and fixing norms was therefore practically not possible. Due to frequent occurrence of unit shut downs, periodic turn around and Refinery wide TPM activities, user departments indent MRO and consumable material in large quantities which would defy the consumption pattern. The reply was not convincing since materials like consumables and MRO items, utilisation of which could be planned in advance, constituted more than 70 *per cent* of the overall excess holdings and as discussed earlier, the periodic turnaround TPM were planned activities; the Company could have fixed norms for such items.

5.4.6 Other point of interest

The status of 441 POs issued between 1 April 2002 and 31 March 2006 against which no material was received and 337 POs issued prior to April 2006 against which more than 90 *per cent* of ordered quantity was received still remained *open*. Keeping the PO as *open* had the risk of entry of further transactions on such orders. The Ministry stated (February 2009) that a user friendly query has been developed recently and made operational in order to scrutinise such POs. However, it was seen that such facility was not used to close the PO's.

5.5 Conclusion

Absence of on line integration of Refinery at Nagapatinam and ten leased sales points necessitated manual intervention for loading data from these units into RAMCO e

Applications system even after six years of implementation. As such trial balance could not be generated from the system on real time basis. It further compromised the data integrity due to manual intervention. The input control and validation checks were deficient and the integrity of data could not be assured due to deficiencies in access controls. The Company also did not utilise the application for effective inventory control, leading to excess procurement and higher inventory carrying cost. Thus, the Company could not utilise the RAMCO e Applications system to achieve the stated objectives.

5.6 Recommendations

- The Company should integrate all the systems to have an online single point MIS for effective control over and to avoid continued dependency on manual controls.
- Input and validation controls need to be built into the system to make the data complete, accurate and reliable.
- The Company should strengthen the logical and physical access control and inbuilt audit trails in the system.
- The Company should evolve a suitable IT security policy.
- The procurement processes like indents, PRs, POs *etc.* need to be linked with each other for better monitoring.
- The Company should utilise the system effectively for better Inventory Management.