

6.2 Information Technology Audit of SAP Enterprise Resource Planning System at Research Centre Imarat, Hyderabad

The ERP system implemented at a cost of ` 15 crore in August 2011 after a delay of three years, was utilised partially due to incomplete mapping of business rules, inadequate usage of modules leading to manual intervention in generation of MIS report and decision making. The inventory data in the ERP system is incomplete as it was ported partially only from the legacy database. Further, the data in the ERP database have wrong codification. The Project System module was used only for procurement related activities integrated with Material Management module and not utilised for scheduling and monitoring of projects.

6.2.1 Introduction

Research Centre Imarat (RCI) Hyderabad, a laboratory of Defence Research and Development Organisation (DRDO) was established to design and develop state of the art technologies which will produce reliable indigenous weapon systems. It is pursuing research on navigation, control and guidance system, imaging infrared and radio frequency seekers, batteries and flight instrumentation technology areas. In March 2005, RCI initiated proposal for implementation of SAP ERP⁵⁸ system with the objectives of effectively managing the mega Research and Development (R&D) projects having a lot of uncertainties and challenges, reduce the project risk in terms of technical performance, schedule and cost, integrate the existing scientific software and utility software to protect the previous IT investment, integrate all the divisions of RCI, other research and educational institutions and various DRDO labs, integrate all the data for decision making and automate project monitoring and have on-line generation of various reports, including management information report. In September 2007, RCI engaged M/s Tata Consultancy Service (TCS) as prime contractor and M/s Computer Maintenance Corporation (CMC) as sub-contractor for setting up of a data centre and implementation of SAP ERP system on turnkey basis at a total cost of ` 14.91 crore. RCI has implemented 23 modules under ERP system in August 2011, after a delay of three years, from the envisaged schedule. The SAP ERP is made available to the users through web based portal and SAP GUI provided in the PCs/Thin Clients.

The audit reviewed business process re-engineering, hardware and software procurement, customisation and implementation of SAP ERP system during January to April 2015 and the data for the calendar year 2011 to 2014 was analysed. The Project System (PS) and Material Management (MM) module were selected. The PS module deals with preparation of project proposal, sanction, project scheduling to procurement and inventory management while MM module deals with planning, organising and controlling the flow of materials from their initial purchase through internal operations to the service point.

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<sup>58</sup> SAP ERP is enterprise resource planning software developed by German Company SAP and incorporates all the key functions of an organisation.

## 6.2.2 Audit findings

### 6.2.2.1 Control Weaknesses

Adequate and appropriate IT controls ensure that adequate measures have been designed and are operated to minimise the exposure to various risks. IT control objectives relate to the confidentiality, integrity, and availability of data and the overall management of the IT function of the business enterprise.

#### (A) Physical Control

In order to prevent easy access to sensitive data maintained in RCI Data centre, provision was made in the contract for installation of access control devices like access control system, finger print reader, surveillance system (CCTV), magnetic door contact and controller. The responsibility of Data centre was entrusted to private parties including maintenance of access control system. However, we observed that the door was kept open for easy access to the data centre.

On seeking clarification regarding access control at the data centre, DRDO stated (August 2015) that the entry in the data centre room was not required for all the software maintenance/installation/administration staff, which could be done from outside the data centre at Command centre. The entry of maintenance team into data centre was controlled by the data centre in-charge and the movement of people was recorded by CCTV.

The reply is not acceptable in audit, since, there is free movement of personnel in the data centre and the system being followed by RCI is reactive rather than proactive. Further, log files of access control device were not maintained to monitor unauthorised access. Considering the confidentiality of data in the system relating to Research activities under taken by RCI in the field of Missiles and Defence sector equipment, weakness in the physical access control exposes the systems and data to unauthorised access.

#### (B) Logical and Authorisation control

##### Password policy

The system protection parameters from unauthorised access, their functions, the SAP standard settings and the recommended settings vis-à-vis actual settings at RCI were examined in audit. We observed that the period for expiry of the password and changing the password was not set in the system. Further, analysis of the profile parameters pertaining to password changes revealed that the users changing the password was minimal as out of 630 users, only 48 users have changed their password within 90 days, which is inadvisable for IT Security.

In reply to audit query, DRDO stated (August 2015) that ERP system of RCI is the first integrated automation system implemented in the organisation and bit complex to be used for naïve users. DRDO further stated that in order to make the use of ERP system simple for RCI employees, flexible password

policies has been defined which can be made slowly strict over a period of time. It was also stated that action will be taken up to implement frequent password changing policy. The reply confirms that even though four years have lapsed since Go-Live of the system the password policy has not been strengthened. This indicates that the present logical and authorisation control in the system are weak which compromises the IT Security of RCI.

### **Segregation of duties**

Separation of duties occurs when one person provides a check on the activities of another and prevents one person from carrying out an activity from start to finish without the involvement of another person. Inadequate segregation of duties increases the risk of errors being made and remains undetected, chances of fraud and adoption of inappropriate unethical working practice. This can be achieved through the existence of and compliance with job descriptions. Notwithstanding the above,

- i. A developer was granted full access to PS Module, who could modify an existing programme in production, configure the production environment to limit monitoring, conceal irregular development practices and can modify data in tables and run programme using inappropriately modified data. Thus, entrusting all powers of PS module to a developer is contradictory to best practices of IT security.

On pointing out in audit, DRDO stated (August 2015) that these officials are not a User of the Module but all the problem resolutions specific to this module is addressed by these experts and they do not have any authorisation of financial/non-financial approval role.

- ii. As Integrated Financial Advisor (IFA) was not exploiting the facility extended to them, all the documents requiring IFA approval that were obtained on paper, were fed into the system by Director of Contracts and Material Management, RCI on behalf of IFA using his Username and Password. This leads to compromising best IT Security practices and would compromise the vital control over expenditure.

In reply DRDO stated (August 2015) that one official is doing approvals on behalf of IFA, once manual signature is done on the file. It was further added that once IFA starts using the ERP system, the referred step will not be required.

The reply is not tenable in audit as the above system indicates inadequate segregation of duties as officials are performing multiple roles leading to risk of data manipulation, irregular sanction of procurements.

### *(C) Internal Audit*

The organisation of PCDA/CDA (R&D) is responsible for carrying out the Internal Audit of the accounts maintained by the DRDO. The internal audit's objective is to ensure that the accounting system and the mechanism are efficient and the accounting reports are accurate and to disclose all the

material facts. Further, this involved conducting a systematic examination of the records, systems and procedures and operation of an organisation as a service to the Executive. The internal audit of financial accounts of the R&D projects undertaken by these Laboratories/Establishments/Units is also conducted by CDA (R&D). In the process, the LAO does the linking, pairing, casting and checking closing/opening book balances.

We observed that module for discharging functions of internal audit was not incorporated in the ERP system, which would not only result in accounts remaining unaudited through ERP system but also in maintenance of manual records for the purpose of internal audit.

On being pointed out, DRDO stated (August 2015) that proactive involvement of CDA (R&D) was essential. It was further stated by DRDO that CDA can access the documents using ERP from their location if they want, on real time basis without waiting till month end and can take corrective measures. In addition, manual copy was generated through ERP for the last couple of years. However, CDA (R&D) in their reply stated that there is no 'Audit Module' incorporated in the system and they were not associated in implementation of the modules.

As such reply of DRDO is not tenable in audit, since audit module has not been incorporated in the ERP system as confirmed by CDA (R&D) despite lapse of four years from Go-live of the system.

#### **6.2.2.2 Business Continuity and Disaster Recovery plan**

The objective of Business continuity, disaster recovery plan and associated controls is to ensure that the organisation can still accomplish its mission and it would not lose the capability to process, retrieve and protect information maintained in the event of an interruption or disaster leading to temporary or permanent loss of computer facilities. We observed that RCI did not establish backup servers outside the data centre building or out of the same seismic zone, thus exposing to the risk of loss of data/continuity of business due to natural calamities.

In reply, DRDO stated (August 2015) that they would consider suitable place for safe storage of back up data. As regards disaster recovery and business continuity plan DRDO stated that the same would be implemented on receipt of financial sanction. The absence of well-defined and tested Business continuity and disaster recovery plan may pose threats to the very existence of the organisation in the event of disaster.

### **6.2.3 Material Management Module**

Basic functionalities of MM module under SAP implementation at RCI, were maintaining Material Master and Vendor Master, Material procurement (demand, tender processing, TPC, supply orders, preparation of vouchers *etc.*), inventory management and material valuation.

### 6.2.3.1 *Business Rules not mapped into the system*

Business rules are abstractions of the policies and practices of a business organisation which define and control the structure, operation, and strategy of an organisation. The mapping of rules automates the action to be taken under specific conditions.

We observed that some of the Business Rules have not been correctly mapped in the Material Management module as detailed in the following paragraphs:

#### (A) *Non-mapping of fields*

Audit requisitioned details pertaining to 64 fields relating to procurement of stores, subsequent to implementation of SAP ERP in RCI. The data requisitioned was to assess the process flow, compliance to the procurement rules, time taken to obtain the sanction till placement of supply order and its materialisation. However, RCI in their reply stated that the data relating to 21 fields could not be generated through ERP system, which included, the availability of funds, date by which stores were required, financial sanction, issue of EDEC/CDEC, TDS, amount of liquidated damages for delayed delivery, date of issue of stores to users, final payment voucher No and date, among others.

On seeking clarification in audit, DRDO stated (August 2015) that some of the transactions are carried outside the system viz., CDEC/EDEC, TDS, amount of LD and efforts would be continued in implementation regarding the process that needed to be mapped. It was also stated that as and when ERP is implemented across DRDO and CDA module will be effectively in use, all these transactions will be available in system.

The reply is not acceptable in audit since this indicated that the procurement process is still not fully automated despite implementation of SAP ERP system in August 2011, thereby defeating the very intention of digitising the entire procurement process.

#### (B) *Tender Process and Authorisation control -Demand initiation*

DRDO Purchase Management Manual 2006 stipulated authority/level for initiation of Demands for procurement of stores against projects, build-up, maintenance and general use. Extraction of the records revealed that 3392 demands valuing ` 15.11 crore were initiated by officials of the rank below Scientist 'C', who were not authorised to initiate Demands. On being pointed out in audit, DRDO stated (August 2015) that the additional authorisation was given to few employees based on the Technology Director's request who duly approved the demand in those cases and the system would be corrected as per rules. The reply is not tenable in audit as the present system of demand initiation is not as per rules.

#### (C) *Booking of Capital expenditure under Revenue*

As per para 5.6 of Store Management Guidelines for DRDO, non consumable items costing more than ` 10 lakh and having a life of seven years are to be

categorised as Capital items. However, in 381 cases valuing ` 34.75 crore where the cost of the item was less than ` 10 lakh, were demanded under Capital Head. Four of the supply orders for annual maintenance for ` 31.48 lakh were also demanded under Capital Head. Further, no field was catered in the system to capture the life of the store to verify the correctness of the nature of booking.

On being pointed out in audit, DRDO stated (August 2015) that the cases where the cost was less than ` 10 lakh has been booked under capital because they had shelf life more than seven years.

The reply is not tenable in audit as the Stores Management Guidelines stipulates condition of cost and seven years of life for Capital expenditure.

*(D) Acceptance of tenders without approval of Stores Procurement Committee (SPC)*

Para 4.4 of DRDO purchase manual stipulated that demands in excess of ` one lakh were to be processed with the approval of SPC. Audit however, observed that in 137 cases valuing ` 12.38 crore, where the estimated cost of the item was more than ` one lakh, the demands were processed without the approval of SPC. DRDO replied (August 2015) that presently all the cases above ` one lakh were routed through SPC.

The reply is not tenable in audit, as DRDO is silent about mapping of rules in the system.

*(E) Non recording of collection of tender fees from non-registered vendors*

As per para 7.4.5 of DRDO Purchase Management manual, tender fees was to be realised from non-registered vendors. It was observed that in 232 cases wherein the amount of tender fee involved was ` 1.08 lakh, the field to record receipt of tender fee was kept blank. On raising the issue in audit, it was stated that the tender fees was received from all non- registered vendors through Demand Drafts and manually recorded in the register. Further it was stated that DRDO was planning collection of tender fee through payment gateway on e-procurement platform.

The reply is not tenable in audit, as the details regarding actual collection of tender fee was not entered in the designated field even after receipt of the amount. The rules regarding collection of tender fees were not captured in MM Module. This indicates that rules for issue of tenders have not been mapped in the system which may lead to issue of tender free of cost.

**6.2.3.2 Validation Control**

Information technology system may have in-built controls to automatically check that the input data is accurate and valid. In the SAP R/3 System, all input values are validated by a program or against tables or master files except some types of validations which are not standardised but such programme could be created to validate transactions specific to the organisation. The



validation function enables to check values and ranges of values as they are being entered in the system thus ensuring that only valid data is entered and processed.

(A) *Material Master*

In SAP system when a new material is procured, a master record is created. There should be a unique Material Code Number for the material thereby avoiding duplication. It is used as a central source for retrieving the material specific data. The Material Master Record for a material would be created only once across all the Directorates (Plants).

This information was to be stored in individual Material Master Records in two categories one in 'descriptive nature' with information content such as name, size, or dimension. Another category of the data to perform a price control function. As such, every material would have a single master record created, which means all the information pertaining to material e.g. Purchasing, Inventory, Accounting, Quality etc., would be maintained in a single record, thereby redundancy was avoided.

In this context, during the test check of the Material Master functions, the following points were noticed in audit:-

- ξ The Material master contained 64226 items out of which 6311 items have 19336 material codes. Even, the material code number was not unique as the same material code number was repeated two to 43 times.
- ξ The Unit of measurement was not correctly captured for items like filter oil and coolant. The unit of measurement for Machinery was "Box" instead of "Number". For items that were to be measured as "litre" were counted as "number".

Misrepresentation of items would result in incorrect reporting of the Quantity of Stock held in the stores, leading to likelihood of ordering the item despite holding the same in stock or otherwise.

On being pointed out in audit, DRDO replied (August 2015) that necessary action would be taken to rectify the above mentioned errors.

(B) *Material coding*

Under Material Master, RCI adopted codification logic based on the North Atlantic Treaty Organisation (NATO) codification standards, wherein, the code consisted of 18 digits, including two hyphens. The first two digits represented 'Industry Sector', second two digits represented 'Material type', third two digits represented 'Main category' of material and the fourth two digits indicated 'Sub Category' of the items. The last eight digits represented unique material code number for a specific item. Analysis of the material master records revealed that the material coding had deviated from the standards set, thereby undermining the correctness and completeness.

- ξ The first two digits that represent “Industry” should range from 01 to 12. However, the coding was assigned beyond this range.
- ξ Text characters were used instead of digits.
- ξ Under material type, consumables were classified under the code for “Non-consumables” and vice-versa. There were mis-classification under main category and sub-category items viz., under ‘Weapons’, items such as Wet Canteen, LPG spares and ‘Computer printer Cartridges’ and Computer Printers were classified under ‘Cartridges’ of ‘Ammunition & Explosives’.

On being pointed out in audit, DRDO replied (August 2015) that necessary action would be taken to rectify the above mentioned errors.

Search by using wrongly coded material master would result in mis-reporting that may lead to under/over provisioning of stores. As RCI is dealing with explosive stores also, there is likely hood of the same landing in unsecured storage location.

*(C) Payment more than the order value*

Out of 4578 cases, in 144 cases valuing ` 35.03 crore, the system reflected that the actual payment made was amounting to ` 38.96 crore, which is ` 3.93 crore more than the supply order value. This indicated that there was no link between the supply order value and the total payment made to the vendors. Moreover, there was no indication regarding revision of the sanctioned amount in the data given. On being queried in audit, DRDO stated (August 2015) that in the mentioned 144 cases payment made was more than the supply order value due to exchange rate variation, tax structure revision, etc. It was also stated that ERP will not allow excess payment without proper additional financial sanction and same is enrolled and processed through ERP.

The reply is not tenable in audit as DRDO in reply regarding ‘non-mapping of fields’ had stated that transactions like CDEC/EDEC, Financial sanction etc. are carried out outside the system. This indicates that the controls in the system to restrict the payment within the supply order value does not exist and consequent poor validation check.

*(D) Down payment more than the order value*

As reflected in the system, in 16 cases worth ` 6.53 crore ‘the down payment’ made was ` 7.74 crore, which is ` 1.22 crore more than the supply order value. This indicated that there was no link between the order value and the actual payment. On being pointed out in audit, DRDO stated (August 2015) that the same was due to errors occurred during transition from manual system to ERP and there was no over payment. Legacy supply orders were created in the system for making the balance payment but entire amount was booked against the supply order. It was further stated that actual payment is always linked with the order value and this in turn is linked to the financial sanction. The reply of DRDO is not tenable in audit as the system could not restrict the



down payment within the supply order value. Thus, there is a deficiency in control to restrict the down payments with reference to the supply order value, financial sanction, etc.

### **6.2.3.3 Transactions still being carried outside the system**

#### *(A) Accounting of Security Deposit*

Para 7.11 of Purchase Management manual stipulated that qualified vendors shall deposit 'Security' equivalent to an amount not exceeding 10 per cent of the value of supply order before release of the order. The Deposit shall be made in favour of Controller of Defence Accounts (R&D) [CDA (R&D)] and will not be held in the Public Fund Account of the Lab/Establishment.

We observed that, the amount received as Earnest Money Deposit / Security Deposit / Performance Guarantee in the form of Demand Draft was handed over to Finance Section by Directorate of Contracts and Material Management (DCMM), RCI. The Demand Drafts were then deposited in the Public Fund Cash Book of RCI which was then converted into Fixed Deposit (FD) in the name of RCI. The Fixed Deposit Receipts (FDR) was kept in the safe custody of Accounts Officer. Upon maturity, the FDR was encashed and the amount so realised was credited into Public Fund Cash Book. The amount due to the contractor was then refunded and the interest received was credited to the Government through Military Receivable Order. As of February 2015, a sum of ` 84.68 lakh was held with RCI under various FDRs, the oldest being of the year 2005. There was no field in the ERP to indicate the trail of the amount of Security Deposits received from the vendors in the MM Module as the same is transacted offline. On being pointed out in audit DRDO stated that the matter has been referred to CDA for clarification.

The above practice being followed was incorrect and susceptible to mis-appropriation as the same was kept outside Public Fund Cash Book during the tenure of FD and the same is not reflected in assets and liability statement. In addition, the interest earned from these FDs could be mis-utilised as security deposit is not intended to generate income to the Government. Hence, the Security Deposit needed to be deposited with CDA and necessary fields may be incorporated in the ERP for its audit trail.

#### *(B) Non-computerisation of Vouchers*

With the introduction of ERP it was expected to generate various types of vouchers in respect of stores viz. Receipt Voucher, Issue Voucher, External Issue Vouchers, etc through system. However, we observed that vouchers were being raised manually instead of through ERP. On being pointed out, DRDO stated (August 2015) that after completion of the stock verification, execution of the various types of vouchers would be maintained in ERP. This indicated that the MM Module is partially complete even after four years of Go-Live.

#### **6.2.3.4 Non utilisation of the system for Decision making**

IT systems are used as a tool for effective and faster decision making by providing complete and reliable data to the management for the decision making. We observed in the following instances that ERP system is still not being effectively employed for decision making process.

##### *(A) Vendor Registration*

RCI issued 10084 limited tenders to various vendors. Analysis of the Supply order process revealed that the 47.50 per cent of the vendors did not respond, 55 vendors who received the tenders never responded and action was not taken to de-register/black list such vendors as stipulated under para 3.4 of the DRDO Purchase Management.

On flagging the above issues in audit, DRDO replied (August 2015) that ERP system automatically generates warning letter to the vendors who did not respond to the limited tenders. As regards vendors who never responded, DRDO stated that a report will be handed over to vendor registration committee for necessary action as per provision of Purchase Management Manual 2006.

The reply is not tenable in audit as Para 3.4(b) of the manual stipulated that if the firm fails or neglects to respond to three consecutive invitations to tender within the range of products for which it is registered, the vendor shall be removed from approved list of suppliers. The vendor registration committee did not utilise this data proactively in blacklisting/blocking such unresponsive vendors.

#### **6.2.3.5 Inaccurate and Unreliable data**

Data reliability is a state that exists when data is sufficiently complete, relevant and valid. Master data is a crucial element of a business such as products, raw materials, vendors etc. The presence of unreliable data impact the ability to make timely decision and to manage operational performance.

##### *(A) Vendor Master*

Vendor Master is one of the basic requirements of MM module. Vendors are the business partners who will be supporting with the supply of material or services. All the vendors would be maintained in the system with unique code numbers. Business transactions were to be posted to various accounts and managed using the data in the Vendor Master.

Vendors were required to submit mandatory information to the lab during registration viz., Application Date, Vendor Name, Registration type, Address, Telephone No., Fax Number, e-mail id, Vendor upper limit, etc. We observed that :

- The database does not reflect the correct number of vendors. Vendor master contained 2680 vendor names, which included 270 duplicate vendor Name records.

- In respect of 105 vendors, the Material category was not available in Material Master and in respect of 13 vendors the material for which the vendor had registered was missing. In respect of 94 vendors, mandatory field, address, was blank and in respect of 95 vendors, addresses were repeated. This may lead to non-issue of tenders to these vendors and issue of tenders to wrong vendors.
- Against 768 vendors the upper monetary limit for supply of material was 'zero'. This would result in issue of orders to incompetent vendors.
- Bank Account Number was not available for 1900 vendors and eight vendors were with duplicate Bank account numbers. This would defeat the ECS mode of payments adopted by DRDO. Duplicate bank account number may result in payment to wrong vendor.

On pointing out the above, DRDO stated (August 2015) that the above discrepancies were due to wrong categorisation of vendors due to wrong selection from the dropdown lists, data entry mistake, non-availability of information on vendors, etc. It was also stated that corrective action wherever necessary will be initiated and the ERP vendor database is being replaced / updated through e-procurement platform which would ensure validity of vendor database. The reply is not acceptable in audit, since the Supply orders were placed against these vendors, without complying with the stipulated conditions. Moreover, DRDO did not capture the complete information of vendors as required for business transactions in ERP. The input control could not prevent entry of duplicate Bank Account Numbers and fictitious numbers. Therefore, the data in the present form was not reliable and the automation envisaged by implementing the ERP was deficient.

*(B) Incomplete porting of Inventory Legacy data*

Prior to implementation of SAP ERP, inventory was maintained in MILMAN software and the same was to be brought forward. However, we observed that from the legacy data, 13887 items with positive balance in the stock were not brought forward to the SAP ERP system. Total value of stores remaining unaccounted in ERP was to the tune of ` 848.74 crore.

On being pointed out in audit, DRDO stated (August 2015) that the Stock taking board was formed by the Director RCI to validate the inventory. Based on their recommendations legacy inventory data would be uploaded to ERP. This proves that the database in the ERP system was incomplete and unreliable.

*(C) Inventory Holding*

In SAP, inventory held under a Directorate was shown as Plant and the place where the material was physically held was shown as storage location. Further, no item with multiple material code number was expected to be held. However, in respect of 1985 items valuing ` 471.15 crore, there was duplication in description of the item, within the same Plant and within the same storage location. Holding the same item under different Inventory code concealed the actual quantity held by the Division.

In respect of 51 items, storage locations, which needed to be confined within a plant was spilling over to other Plants and in respect of 773 items, Inventory Holder names was shown as 'DO NOT USE'.

On raising the above issues in audit, DRDO stated (August 2015) that stock taking board is under progress and after completion of the stock taking the finalised list will be verified and updated into the system. As regards spill over of storage location DRDO stated that due to reorganisation some of the storage location became part of the different plant. This indicates the present database is inaccurate and not reliable. Further stores available with RCI would not be available for use until the reorganisation of storage locations is completed as well as system deficiencies is rectified.

*(D) Period of holding of Retention money*

Para 7.23 of DRDO purchase manual stipulated for retention of 10 per cent of the supply order amount towards risk coverage during warranty period. The period of holding of retention money ranged from 0 days to 1787 days. This indicated that no standard procedure was followed. Further, the conditions regarding warranty in the supply order was not captured on the data base so as to reflect the correct period of guarantee required for the product.

On being pointed out in audit, DRDO stated(August 2015) that the system was having provision to enrol these details. It was further stated that the retention money might have been paid manually through CDA (R&D) and the same is not reflected in the system and effective use of CDA (R&D) module will ensure online payment related updates in ERP system.

This indicates that there is no linkage between DRDO and CDA (R&D) regarding release of retention money thereby resulting in DRDO maintaining incomplete database. This may result in early release of retention money and the same would not be monitored through the system till CDA (R&D) utilises the system.

*(E) Incomplete details of Bank Guarantee*

The data maintained by RCI on Performance Bank Guarantee (PBG) was scrutinised and it was observed that vital information viz., date of completion/installation of the item / machinery, inspection document No, date, date of acceptance of the item, BG No and date, amount of PBG retained, validity of PBG and extended validity of PBG were not captured. On being queried in audit, DRDO stated (August 2015) that the System was having the provision to record the details of Bank Guarantee which was enrolled at the time of preparation of Supply Order. All the details observed in audit are available in manual form of records and the same will be recorded into ERP system.

The absence of such data indicates weakness in the controls in securing the interest of the DRDO in case of contractor violating the warranty conditions mentioned in the contract.

## 6.2.4 Project Systems (PS) Module

The SAP PS module optimises the business processes from project planning through project progress analysis. The Project System Module manages the mega R&D projects with a lot of uncertainties and challenges effectively, reduces the project risk in terms of technical performance, schedule and cost, and integrates the existing scientific software, data and utility software to protect the previous IT investment for decision making. It also automates project monitoring and have on-line generation of various reports, including management information report.

### 6.2.4.1 Sub-optimal use of Project System module

DRDO project proposals includes Critical Path Method (CPM), Decision Aid for Technology Evaluation (DATE), Performance Evaluation Review Techniques (PERT) chart, Earned Value Analysis, Milestone Trend analysis and cost-benefit analysis. Funds for the project are allotted year-wise and Head wise and expenditure is monitored. Assets created are accounted under the Projects which are transferred to build-up after closure of the Project. On completion of the project a closure Report is also being prepared, indicating the results of the Project, financial position among others. The entire activity was to be mapped into PS Module. Accordingly the Business Blue Print (BBP) was framed to suit the above requirements of RCI.

RCI was executing 23 projects, including sub-projects, Memorandum of Understandings (MoU) valuing ` 1066.63 crore, which were at various stages of implementation. Audit scrutiny of the PS Module pertaining to ongoing projects revealed the following:

Out of 23 projects, details of six projects were available on the ERP system and the data in respect of remaining 17 projects were not maintained or partially maintained in the ERP system. Details of seven projects closed after the year 2012 were not available on ERP system, though as per BBP it was required to be maintained; Work Breakdown Structure (WBS) was available in respect of only one project; one of the Project offices had stated that technical documents were not loaded in the ERP due to its sensitive nature; Project procurement aspects was available in all the projects sanctioned after 2012. Further, test check of nine projects revealed that the percentage of PS module utilisation ranged from 12.5 to 81 *per cent*, as such, the Module was not fully utilised by the Project offices. In addition to this, functions such as, network activities, project structure, re-appropriation of funds, were stated to be 'in the process' of implementation.

On pointing out the above aspects in audit, DRDO stated (August 2015) that there is no shortfall in implementation of project management functionalities but the technical structure is not being used by many project groups. It was also stated that adoption of creating the technical structure and regular update of status in the system depending on the progress is required from the user side. Once it is done, ERP will certainly bring visibility, control and effectiveness leading to in time delivery of project. Further it was stated that the Project officers may not be aware/fully knowledgeable about the technical

aspects of PS Module. As regards classified projects it was stated that project offices would not be able to upload documents on the system pertaining to such projects due to its confidential nature.

Thus, the PS module is yet to be fully utilised by the Lab for effective management of projects. As such, the objectives envisaged before implementation of SAP ERP system could not be achieved even after four years of 'Go-live' of the PS Module.

#### **6.2.4.2 Mis-match in Project Expenditure**

Consequent on implementation of the Project System module in SAP ERP system, the mis-match in budget – expenditure figures generated at various levels of the organisation was to be minimal. We observed from the project expenditure figures generated at two levels of RCI *i.e.*, Monthly Expenditure Return (MER) of Planning and Production Group (PPG) and FICO Module were not in synchronisation with each other. The mis-match ranged from 1.83 *per cent* to 374.46 *per cent*. On being pointed out in audit, DRDO stated (August 2015) that the difference in expenditure figures was due to off-line payments made by the CDA and could be achieved only when CDA becomes fully online.

The reply indicates that the module was not being fully exploited even after four years of 'Go-Live'.

### **Conclusion**

The ERP system that was installed in August 2011 after a delay of three years suffered from inadequate physical and logical access controls, input controls and validation checks. Further, incomplete mapping of all the business requirements and inadequate usage of the modules led to underutilisation of the ERP SAP solution. The inventory data ported in the system was incomplete, unreliable and inaccurate. These inadequacies resulted in incompatibility of the system to meet all business requirements, created risk of defective/delayed MIS reporting and decision-making leading to manual intervention. The underutilisation of the system implemented at a cost of ` 15 crore has compromised the basic objectives of leveraging information for improving operational efficiency, productivity and achieving higher user service and satisfaction.