6.4 Performance Audit of "Implementation of the Integrated Mines and Minerals Management System (i3MS)"

Highlights

Implementation of the project without detailed feasibility study and user requirement specifications (URS) led to infructuous expenditure of ` 11.38 lakh on Radio Frequency Identification based mineral tracking system developed initially.

(Paragraph 6.4.10.2)

As against 43,464 e-Permits issued in Joda mining circle for 188.60 million tonnes of iron and manganese ore, e-Passes for only 19,053 permits for transportation of 88.39 million tonnes were available in the database indicating inadequate end to end tracking of transportation of minerals.

(Paragraph 6.4.11.1)

Minerals to the tune of 47,835.32 tonnes valued at ` 6.99 crore were transported through e-Passes in excess of the quantity permitted in 175 e-Permits issued to a lessee thereby defeating the objective of i3MS to restrict illegal transportation of minerals without permit.

(Paragraph 6.4.11.2)

Gaps in e-Pass serial numbers found in database fraught with the risk of loss of royalty of ` 12.14 crore.

(Paragraph 6.4.11.3)

Cross check of weighbridge data with the system data revealed discrepancy in transportation of 2,32,778 tonnes of bauxite valued at ` 633.37 crore by a lessee.

(Paragraph 6.4.11.7)

Partial capture of data for several important fields and lack of validation controls over several key fields/ parameters affected the reliability of the database.

(Paragraph 6.4.12.1)

Due to absence of exit management plan and non-imparting of training to State Government officials as envisaged in the Memorandum of Understanding (MoU), the Department continued to be dependent on the vendor / software developer.

(Paragraph 6.4.16.1)

6.4.1 Introduction

Integrated Mines and Minerals Management System (i3MS), a comprehensive information technology based e-Governance initiative by Government of Odisha (GoO) in Steel and Mines Department was introduced in the State in 2010. The system provides an end to end tracking of minerals produced, despatched and consumed and is spread across the State over all the 14 mining circles. The system involves many critical business processes such as:

- Monitoring statutory compliance of lessees as well as licensees in respect of mining operation and mineral despatch such as mining plan, forest clearance, environmental clearance etc.;
- Monitoring day-to-day as well as cumulative mineral production as against quantity approved in mining plan, environment clearance and clearances of Odisha State Pollution Control Board;
- Monitoring total permissible quantity to be despatched for domestic sale, export as well as consumption inside and outside the State;
- Monitoring / checking the activity at Government and mines weighbridges; and
- Checking of actual quantity despatched through check-gates.

The scope of the project was to customise, develop, test, deploy, operate and maintain a web based system for all the stake holders involved in mining activities in the entire State. The project was developed by IDCOL Software Limited (ISL), a Government of Odisha Undertaking, through a Memorandum of Understanding (MoU) signed in December 2010, followed by a supplementary MoU in April 2012. The project became operational in all the mining circles of the State with effect from June 2012.

6.4.2 Organisational set up

The Steel and Mines Department is the administrative department and is currently headed by a Principal Secretary. Two Directorates i.e. Directorate of Mines and Directorate of Geology and one public sector undertaking i.e. Odisha Mining Corporation Limited (OMC Ltd.) operate under the Department. The Directorate of Mines, headed by the Director of Mines, Odisha (DMO) is assisted by the Joint Director of Mines at the Headquarters level and Deputy Directors of Mines (DDMs) and Mining Officers (MOs) at the field level. The i3MS project is managed by the IT Project Management Unit (PMU) headed by a DDM at the Directorate of Mines.

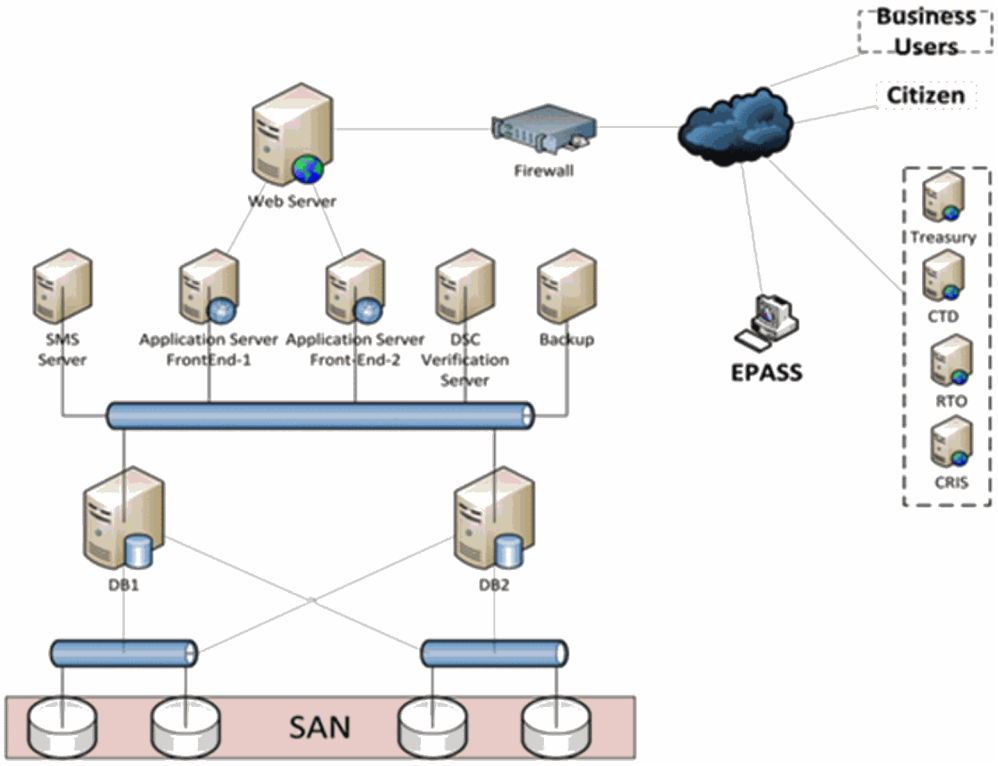
6.4.3 Funding pattern of the i3MS project

The State Government, in September 2010, approved five projects in the mining sector which included ` 3.13 crore related to implementation of i3MS

project. The project initially comprised of two phases i.e. Phase-1[1] and Phase-2[2] to be implemented in two pilot circles with an estimated cost of ` 3.13 crore. As against this, an actual expenditure of ` 2.56 crore was incurred in the two pilot circles. However, through a supplementary MoU signed in April 2012, Government approved an estimate of ` 2.30 crore which was spent in the next stage[3] of the project. Besides, for sustainability and continuance of the project, the Department has also approved a plan for business continuity model (2012-2017) to be developed with a cost of ` 160.17 crore from the expenditure budget of the Department which is to be met from the user fee collected at the rate of ` 1 per tonne during movement of minerals towards i3MS related online e-Governance services.

6.4.4 Features of the application software and system overview

The i3MS was developed by ISL through an agreement made with a third party namely, Cybertech Software and Multimedia Pvt. Limited (CSM), Bhubaneswar using Microsoft SQL server 2008 R2 as backend database and "Asp.Net" as front-end tool. The database is a centralised architecture with connectivity across all the mining circles headed by DDMs / MOs for synchronisation of data. The system architecture and flow chart are as follows.

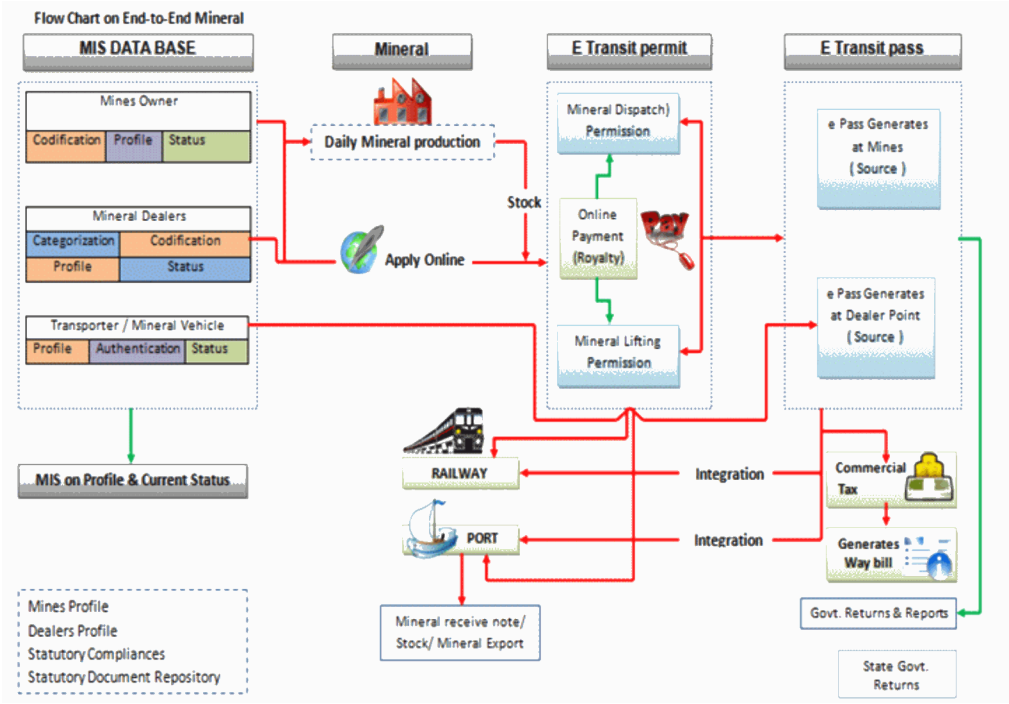


1 Phase-1 of the project comprised of creation of infrastructure in several pilot locations such as check gate at Lahanda, mines weighbridge (Roida-C, Jajang), Railway siding, Hopping point and mining circle office at Joda and development of software for MIS application, Permit & Pass management system and RFID based mineral transportation tracking system.

2 Phase-2 of the project comprises of creation of infrastructure in other locations like check gate (Nalda, Nayagad etc.), mines weighbridge, railway siding etc. and mining circle office at Keonjhar.

3 Next stage of the project to be implemented through supplementary MoU comprises of integration of the system with Ports, Customs, Railways, integration with electronic weighbridge for generation of bar coded e-pass and development of additional modules for major value addition to permit management system such as online submission of OMPTS returns, MCDR returns, grant of licence (Form-D) and issue of MDCC etc.

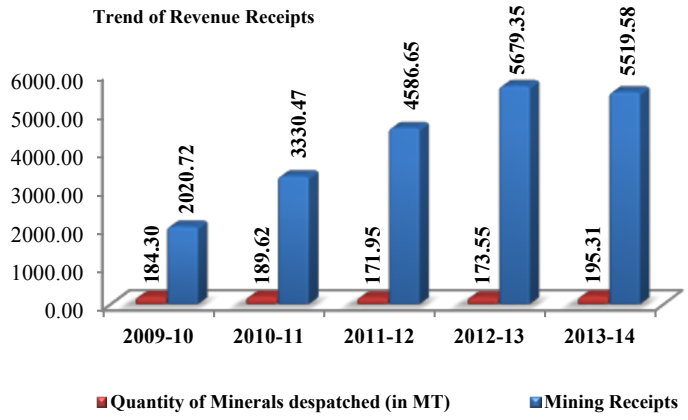
Flow Chart on End to End Mineral tracking



The system provides major application modules such as e-Permit, e-Pass, grant of licence, stake holder database, demand assessment, online returns to Government of India etc. Besides, there are also other modules for integration of i3MS with the information systems of other concerned departments like Transport Department, Commercial Tax Department, Government Treasury and Railway Authorities etc.

6.4.5 Trend of revenue receipts

The details regarding quantity of minerals despatched and mining revenue collected during last five years from 2009-10 to 2013-14 are given below:



(` in crore)

Source: Information furnished by the Department

6.4.6 Audit objectives

The Performance Audit was conducted to ascertain whether:

- the Department had an IT strategy that enables good IT Governance;
- performance of the vendor was in accordance with the agreement signed with the Government and the objectives of the project were achieved;
- there existed adequate general controls to ensure efficient and effective functioning of the system; and
- system functionality and application level controls were in place to ensure data integrity and mapping of business Rules.

6.4.7 Audit Criteria

Audit criteria were sourced from the following:

- The Mines and Minerals (Development & Regulation) Act, 1957;
- Mineral Concession Rules, 1960;
- Mineral Conservation & Development Rules, 1988;
- Odisha Minerals (Prevention of Theft, Smuggling & Illegal Mining & Regulation of Possession, Storage, Trading and Transportation) Rules, 2007;
- Executive instructions issued from time to time by the Central Government, State Government and the DMO;
- Memoranda of Understanding signed between Government of Odisha and ISL;
- Result Framework Document of Department of Mines, Government of India; and
- Best industry practices followed in implementation of IT systems.

6.4.8 Scope of Audit and audit methodology

The PA was conducted between April and September 2015 in 5[4] out of total 14 mining circles of the State, covering the period from December 2010 to March 2015. The circles were selected through stratified random sampling taking into consideration the risk perception on revenue collection. Audit analysed the entire database of the i3MS retrieved from data dump collected from the central database at State Data Centre with the help of the vendor. Besides, Audit examined e-records pertaining to royalty assessment, records relating to collection of various fees such as application fee, licence fee, permit fee etc. as well as fines, penalties and interest on belated payments in the offices of DDMs / MOs. An Entry Conference was held on 27 April 2015 wherein objectives, criteria and methodology were discussed. The audit findings were

[4] Bhawanipatna, Jajpur Road, Joda, Koraput and Talcher.

discussed in the Exit Conference held on 24 November 2015 and replies of the Government have been duly incorporated in the report.

6.4.9 Acknowledgement

Audit acknowledges the co-operation of the Department in providing necessary information and records to audit and for furnishing replies to the audit observations.

Audit findings

6.4.10 Implementation of the project

The State Level Task Force (SLTF), in its meeting held on 13 October 2009 under the chairmanship of the Chief Secretary, decided on deployment of technology including IT applications in mineral administration to prevent illegal mining operations at various stages including weighment, check gates, transportation and surveillance of boundaries. Accordingly, an inter organisational group (IOG) was constituted with members[5] from various departments. This team was to liaise with IIT, Kharagpur, various departments and organisations, of both the State and Central Government that could help in designing a technology package for mineral administration. In the first meeting held in December 2009, the IOG decided to

(a) develop Geographical Information System (GIS) application with respect to various leasehold areas under the administrative control of the Steel and Mines Department;

(b) develop a software for monitoring all mineral concession applications; and

(c) develop a software to monitor the despatched quantity of ore vis-à-vis the quantity of ore produced on real time basis.

In the second meeting of IOG held in January 2010, IIT, Kharagpur submitted a project proposal for 'Preparation of GIS based district-wise / mineral-wise composite mineral movement map and design of Global Positioning System (GPS) based online mineral movement tracking system' covering the decisions taken in the first meeting in respect of (b) and (c) above with project duration of three years.

However, in the third meeting held on 3 June 2010, the IOG took decisions for

(a) Creation of geo-reference cadastral maps for mining lease to be implemented by Odisha Remote Sensing Application Centre;

(b) Implementation of online permit management system by the National Informatics Centre (NIC), Bhubaneswar with the help of NIC, Karnataka; and

(c) Monitoring movement of ore and computerising transit pass information.

[5] (i) Additional Secretary to Government of Odisha, Steel and Mines Department, (ii) Deputy General Manager (IT), Odisha Mining Corporation, (iii) Assistant Director, Directorate of Survey and Settlement, (iv) Deputy Director, Directorate of Mines and (v) Representative of Odisha Remote Sensing Application Centre.

Audit noticed that although the IIT, Kharagpur had submitted the project proposal, the same was not considered. Similarly, decision taken by the IOG in its third meeting for developing "Online Permit Management System" by NIC, Bhubaneswar with the help of NIC, Karnataka was not pursued. However in the said meeting, a proposal was submitted voluntarily by IDCOL Software Limited (ISL) to take up IT activities in mines in Keonjhar and Jajpur districts on pilot basis and then rolling out the said activities to other areas of the State. Accordingly, ISL was selected (August 2010) on a 'nomination' basis as per a circular issued (September 2000) by the Industries Department authorising it to provide consultancy services in procuring hardware / software for various departments of Government as well as public sector undertakings. A Memorandum of Understanding (MoU) was signed between the Steel and Mines Department and ISL on 21 December 2010 for developing the various components of the project as follows at an estimated cost of ` 3.13 crore:

(a) Development and implementation of Management Information System (MIS);

(b) Development and implementation of Permit and Pass Management System (PPMS); and

(c) Development and implementation of Radio Frequency Identification (RFID) based Mineral Transportation Tracking System (MTTS).

Government stated (November 2015) that proposal submitted by IIT, Kharagpur was of three year duration and hence not considered. Considering the urgency and to expedite the work, the decision was taken to distribute the work to Government agencies working in the concerned areas. However, the fact remains that ISL did not have the expertise in the concerned areas and therefore it outsourced the project to CSM Limited. Hence, by awarding the work to ISL due to urgency, the quality of the project was impacted.

The status of implementation of various components of Phase-1, Phase-2 under the MoU and next stage of the project under the supplementary MoU are detailed below.

Component / activities		Status
Phase-1	Creation of infrastructure in several pilot locations	Completed
	Development of software for MIS application	Completed
	Permit and permit pass management system	Completed
	RFID based mineral transport tracking system	Software module developed but abandoned.
Phase-2	Creation of infrastructure like check gates in other locations (Nalda, Nayagad etc.)	Completed
	Creation of infrastructure in mines weighbridge	Completed
	Creation of infrastructure in railway sidings	Completed
	Creation of infrastructure in mining circle office at Keonjhar	Completed

Component / activities		Status
Next Stage (Supplementary MoU)	Integration of the system with Ports	Completed but not fully operational
	Integration of the system with Railways	Completed but not fully operational
	Integration with electronic weighbridge for generation of bar coded e-Pass	Completed
	Development of additional modules for major value addition to permit management system such as online submission of OMPTS returns, MCDR returns, grant of licence (Form-D), issue of MDCC etc.	Completed
	Online submission returns by MoU signed steel plants	Completed but not used
	Creation of additional hardware such as setting up network and online support for Paradeep	Not done due to non-availability of line of sight.

Audit examined the records relating to implementation of the project and noticed several deficiencies as discussed in the succeeding sub-paragraphs.

6.4.10.1 Abandonment of Radio Frequency Identification based mineral transportation tracking component of the project due to absence of feasibility study

As a part of the scope of the project, the MoU signed between the Department and ISL in December 2010 provided for Radio Frequency Identification (RFID) based tracking system which was to be developed and implemented in two mining circles on pilot basis at an estimated cost of ` 34.78 lakh. The said system was also intended to be replicated in other 12 circles subsequently after successful implementation in the above pilot circles.

Audit noticed that after incurring an expenditure of ` 11.38 lakh[6] in one pilot circle in phase-1, the Department abandoned the RFID tracking system on the ground that rolling out the system across all licensees and circles would require huge logistic support, high level human and financial resources, maintenance of infrastructure, other overheads apart from day to day technical challenges due to lack of connectivity. It instead opted for a 2-D barcode tracking system on advice of the vendor. This indicated that implementation of RFID based tracking system was taken up without foreseeing the above aspects and without conducting a feasibility study which resulted in infructuous expenditure of ` 11.38 lakh. Though possibility of reuse of RFID cards was discussed in seventh Steering Committee[7] meeting held on 25 June 2012, the same remained unused till date (August 2015).

Government stated (November 2015) that as per the decision of the Steering Committee in the meeting held on 2 June 2011, the roll out of the RFID software was put on hold. However, there was a plan for implementation of RFID across the State in the approved five year plan of the Department through engagement of professional service provider and the Department would revisit the proposal of implementation of RFID across the State.

[6] Development of RFID software: ` 8.78 lakh and cost of RFID cards (10 Nos.): ` 2.60 lakh.

[7] Steering Committee was formed to provide strategic guidance and periodical review of the progress at implementation stage.

6.4.10.2 Implementation of the project without adequate infrastructure and human resources

Government of Odisha in Steel and Mines Department in their Notification[8] dated 30 September 2011, directed, among other things, that on introduction of e-Pass system, truck details with weight need to be entered in a computer to generate the Pass at the exit point and the lessee/ licensee would, for this purpose, have adequate IT facility and internet connectivity so that the weight of the load was recorded on real time basis in the central server and adjusted against the permitted quantity.

Audit noticed that despite these instructions, provision was made in i3MS to generate off-line e-Passes (Desktop and Mobile versions) where no internet connectivity was available at exit points. Due to provision for off-line issue of e-Passes in i3MS, updation of transportation details could not be made on real time basis which defeated the objective of the system for end to end tracking of mineral transportation. Further, posting of Government checking staff at private weighbridges was not ensured as prescribed under Rule 11 of the OM Rules, 2007.

Government, while accepting the facts, stated (November 2015) that basic IT infrastructure like computer and internet was made available to all circle mining offices. The OMC Ltd. is being pursued to provide checking staff, security guards in all the check gates and weighbridges. However, internet connectivity and checking staff in the check gates are basic prerequisite for such web based project which requires real time data updation and end to end tracking of minerals movements.

6.4.10.3 Non-completion / non-inclusion of various components of i3MS

In the supplementary MoU signed between the Department and ISL on 30 April 2012 for rolling out the application software in all the 14 circles at an estimated cost of ` 2.30 crore, the following additional components / modules were proposed for development:

1. Design, Development and implementation of "web based application software"
2. Additional modules under i3MS project [9]
3. Additional hardware and onsite support[10]

Audit observed that "Setting up Network and onsite Support for Paradeep" which was part of additional hardware proposed in the supplementary MoU was not undertaken by the vendor. Similarly number of modules/ sub-modules of i3MS such as "port integration", "railway integration", "linkage coal and fuel supply arrangement" and "Demand Assessment for online assessment of royalty of lessee mineral transactions" were also not made fully operational.

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8 Notification No. 7742/ SM, dated 30 September 2011.

9 Online Submission of OMPTS/MCDR Returns, Online grant of Licence, issued of MDCC Certificate, Registration of Mineral Carrying Trucks.

10 Setting up Network & Onsite Support for Paradeep, Camera along with related hardware accessories and onsite support in 3 check gates at Joda.

Further, Audit noticed that though there was a module in the i3MS for assessment and collection of royalty, no module for assessment and realisation of dead rent and surface rent was provided in the system due to non-inclusion of the same in the scope of the project while signing the original or supplementary MoU. As a result, the Department completely depended upon manual intervention in case of assessment of dead rent[11] and surface rent[12]. Besides, the i3MS did not cover the assessment of minor minerals.

While accepting the fact, Government stated (November 2015) that there was a plan to set up a Closed User Group (CUG) network connection between DDM office, Jajpur Road and the AMO office, Paradeep, but due to unavailability of line of sight, the same was not taken up. Government further stated that port and railway integration would be made in consultation with the concerned authorities and coal linkage already implemented in Rourkela circle would be extended to Sambalpur and Talcher circles within three months. Regarding the module for online payment of dead rent, surface rent etc., it was stated that the same would be enforced from the financial year 2015-16 onwards. As regards minor minerals assessment and collection of royalty, it was stated that the same would be covered under i3MS after amendment of Odisha Minor Mineral Concession Rules, 2004.

6.4.11 Mapping of business rules into i3MS

As per Section 23C of the Mines and Minerals (Development and Regulations) Act, 1957 (MMDR Act) the State Government may, by notification in the Official Gazette, make rules for preventing illegal mining, transportation and storage of minerals and for the purposes connected therewith. Accordingly, GoO framed Odisha Minerals (Prevention of theft, smuggling & illegal mining and regulation of possession, storage, trading and transportation) Rules, 2007 (OM Rules). As per the said rules, there are two different types of mineral users i.e. Lessee and Licensee.

- A lessee can be a person, a company, a firm or an organisation in whose name there is a mining lease.
- Other than the lessee, a person/ company/ firm/ organisation who intends to transport or remove minerals from any place either for its own consumption or trading is treated as licensee.

As per Rule 10 of the OM Rules, a lessee has to apply in Form 'J' and obtain Transit Permit (TP) in Form 'L'. Similarly, the licensee has to apply in Form 'H' and obtain a TP in Form 'I' to transport or to remove any mineral from any place. In the TP, quantity and grade of mineral to be despatched / transported is mentioned along with the name of the party and place of destination. The lessee is required to pay royalty at the rate prescribed by Government of India on the quantity of minerals despatched from mines whereas a licensee is not required to pay the same. Based on

[11] When the mine is temporary closed, the lessee has to pay dead rent prescribed in MMDR Act, 1957. A lessee is liable to pay royalty or dead rent whichever is higher.

[12] A lessee is liable to pay for the surface area used by him for the purpose of mining operation at such rate not exceeding land revenue assessable on the land.

the quantity permitted in the TPs, transit passes are issued in Form 'M' to lessee and in Form 'G' to licensee for transportation of minerals.

The Department introduced e-Permit system in 13[13] out of 14 mining circles between March 2011 and August 2013. Similarly, the e-Pass system was introduced in the above 13 circles between February 2012 and August 2013 under the i3MS. The e-Permit / e-Pass numbers are unique and auto generated serial numbers and there should be no gap in between these numbers.

Audit noticed several deficiencies in operation of e-Permit and e-Pass systems as discussed in the succeeding paragraphs.

6.4.11.1 Failure in tracking of transport of minerals through introduction of e-Permits and e-Passes

During analysis of i3MS database in Joda mining circle, Audit noticed that during the period from 10 March 2011[14] to 31 March 2015, total 43,464 e-Permits were issued to 28 lessees for transportation of 188.60 million tonnes of iron and manganese ore. However, the details of 65,37,101 e-Passes used against 19,053 e-Permits only for transportation of 88.39 million tonnes of ore were available in the database and in respect of the remaining 24,411 e-Permits issued for transportation of 100.21 million tonnes of ore, no e-Passes were available.

This indicated that the Department failed to monitor end to end tracking of transportation of minerals after issue of e-Permits and e-Passes under i3MS. Besides**,** there is no provision in i3MS to calculate royalty taking into account the transported / despatched quantity of minerals as the manual method of assessment of royalty is still in existence. Thus, the database appeared to be unreliable.

While accepting the audit observation in the Exit Conference, Government stated that provisions would be made in the system to record all modes / types of transportation of minerals i.e. through truck or railway or conveyor belt.

6.4.11.2 Transportation of excess quantity of minerals through e-Passes due to non-mapping of business rules

The i3MS provides an end to end tracking of minerals produced, despatched and consumed and is spread across the State over all the 14 circles. One of the main objectives of i3MS was to check actual quantity despatched through check gates and verification of original transit passes, which is sometimes tampered to do illegal transportation.

During analysis of i3MS data in Joda Circle, Audit noticed that during the period from January 2012 to February 2015, as against 175 e-Permits issued for transportation of 13,79,072.79 tonnes of minerals, the lessees transported 14,26,908.11 tonnes of minerals on the strength of 87,174

[13] E-Permit and e-Pass system was not implemented in Phulbani mining circle as there were no mines and no licensees available.

[14] The date from which issue of e-Permit through the system was introduced.

e-Passes thereby resulting in transportation of 47,835.32 tonnes of minerals valuing ` 6.99 crore in excess of the permitted quantity. As e-Passes are the trip sheets generated against e-Permits, the sum total of transported quantity through e-Passes should not have exceeded the quantity permitted. The excess transportation of minerals through e-Passes in respect of these 175 e-Permits indicated deficiency in mapping of the business rule. Thus, cost of 47,835.32 tonnes of minerals transported over and above the permitted quantity needs to be recovered as per the provisions of Section 21(5) of the MMDR Act, 1957.

During the Exit Conference, Government, while accepting the audit observations, stated that provisions would be made in the system to issue distinct permit numbers to lessees and licensees.

6.4.11.3 Gaps in serial numbers of e-Passes

During analysis of data on transportation of minerals by a lessee under the DDM, Joda, Audit noticed that during the period from May 2011 to March 2014, the lessee was issued with 103 e-Permits to transport 20.15 million tonnes of iron ore. As against the above 103 e-Permits, printed e-Passes were issued in respect of 29 and online e-Passes were issued in respect of the remaining 74 e-Permits. Audit analysed the quantity of minerals transported through online e-Passes against 74 e-Permits and noticed the following discrepancies in respect of 8 out of the 74 e-Permits:

- In respect of six e-Permits against which transportation of 64,679 tonnes of minerals was permitted, the serial numbers of 1,155 e-Passes were found missing in the database.
- In respect of one e-Permit (No. 7949) in which transportation of 46,886 tonnes of mineral was permitted, data was found missing in the log table of the database.
- In respect of one e-Permit (No. 52676) in which transportation of 1,12,089 tonnes of mineral was permitted, though serial numbers of the e-Passes were in order there were 27 duplicate serial numbers[15] in the log table.

As online e-Passes are generated serially, the missing serial numbers of e-Passes in the database without mentioning the reasons for the missing e-Passes in the system, indicated the possibility of manipulation of data in the back end. This is also fraught with risk of escapement of royalty of ` 12.14 crore as detailed below since transportation of the entire quantity of minerals through the above e-Passes could not be ruled out:

e-Permit number	Month in which e-Permit issued	Rate of royalty (in `)	Non-lifted quantity (in tonne)	Amount of Royalty (in `)
7949	February 2012	544.60	46,886.000	2,55,34,422
8403	February 2012	544.60	13,753.154	74,89,968
8762	March 2012	692.10	11,552.156	79,95,247
9228	March 2012	692.10	725.220	5,01,925
9251	March 2012	692.10	9,710.360	67,20,540

[15] e-Pass Serial Nos. 234 to 244, 535 to 547 and 595 to 597 (Total-27).

e-Permit number	Month in which e-Permit issued	Rate of royalty (in `)	Non-lifted quantity (in tonne)	Amount of Royalty (in `)
9623	March 2012	692.10	562.050	3,88,995
33773	June 2012	779.20	28,376.600	2,21,11,047
52676	March 2014	451.70	1,12,089.000	5,06,30,601
Total			**2,23,654.540**	**12,13,72,745**

During the Exit Conference, Government stated that instructions would be issued to the vendor to provide proper validation controls in the system to record valid reasons for cancellation / deletion of e-Passes which were the main reasons for gaps in e-Pass serial numbers.

6.4.11.4 Missing e-permits in the i3MS due to gaps

Since commencement of e-Permit system till 31 March 2015, the Department issued 71,116 e-Permits to different lessees in Form 'L' and 1,44,388 e-Permits to different licensees in Form 'I'. During analysis of database, Audit however noticed that there were 302 missing e-Permits in case of lessees and 1,646 e-Permits in case of licensees due to gaps which was fraught with the risk of manipulation / tampering of the database.

Government stated (November 2015) that since 2011-12, portable document format (PDF) tool was used to generate e-Permits but later on, provisions were made for generating multiple e-Permits on a single request of lessees / licensees and in these cases PDF tool could not accommodate the sequence of e-Permits. As a result, the e-Permits already generated were missing from the database. It was further stated that due to corrections made in the e-Permits on the request of lessees / licensees, the e-Permits might have been deleted. The reply is not acceptable as trail of such corrections made were not available in the database.

6.4.11.5 Non-registration of mineral carrying vehicles by the Directorate of Mines

As per Rule 45(13) of Mineral Conservation and Development Rules, 1988 (MCD Rules), as amended in February 2011, vehicle used for transportation of minerals shall be required to be registered with the Department handling mining matters in the State Government and the lessee shall maintain trip-sheets (either in the form of written record or on computers) of the vehicles, the nature and weight of minerals and the approximate time of the trip and its destination. GoO in Steel and Mines Department, in their Notification, instructed (November 2011) that no truck / vehicle shall be permitted to transport mineral / ore on expiry of three months from the date of issue of such notification unless the vehicle is registered with the Directorate of Mines.

During analysis of i3MS data, Audit noticed that in Joda Circle, 72,406.18 tonnes of iron ore was shown as transported by a lessee through 811 e-Passes in four vehicles[16]. However, on verification of the registration numbers of the said vehicles from the RTO database, it was found that

[16] Vehicle numbers: OD09A1242, OD09A1243, OD09A1244 and OD09A1245.

those vehicles were two-wheelers[17]. This indicated that the approval of Directorate of Mines for registration of mineral carrying vehicles under i3MS as required under MCD Rules were either not adhered to or the approval was made without proper verification. Further, this indicated that the integration of i3MS database with that of RTOs which was a part of the project, was not complete in validating the process of approval of mineral carrying vehicles.

Government stated (November 2015) that temporary registration numbers were allotted by the RTO, Keonjhar in respect of above four vehicles which were allotted permanent registration number[18] later on and the lessee used these vehicles during the period from 23 February 2013 to 02 March 2013 for mineral transportation. In the Exit Conference, Government assured that proper validation control would be provided in the system to register vehicles for transportation of minerals which have a valid / permanent registration number.

6.4.11.6 Non-fixing of minimum carrying capacity of vehicles under i3MS

A lessee under DDM, Joda obtains e-Permits for transportation of iron ore from its mines to the crusher site of a licensee situated within the premises of the lessee. The transported minerals are weighed on the weighbridge of lessee. The entire quantity of ore transported by the lessee is finally taken by the licensee for its captive consumption.

Audit noticed that during the period from May 2011 to March 2014, the lessee transported 14.90 million tonnes of iron ore through 2,73,505 e-Passes engaging 43 mineral carrying vehicles (MCVs). However, on analysis of trip wise mineral transportation data, it was seen that the MCVs transported less quantity of minerals than their carrying capacity. The percentage of mineral carried by these vehicles per trip ranged between 13.08 and 62.19 *per cent* of their actual carrying capacity. In absence of fixation of minimum carrying capacity of MCVs at the time of registration in i3MS, the possibility of re-filling the remaining capacity after weighment and escapement of royalty thereon cannot be ruled out.

Government stated (November 2015) that transportation of less quantity of minerals by the mineral carrying vehicles was due to presence of voids caused by oversized boulders which are loaded mechanically. However, it was admitted that the system does not indicate the minimum mineral loading capacity of the vehicle.

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17 Hero Honda make.

18 OD09A1331, OD09A1332, OD09A1333 and OD09A1334

6.4.11.7 Unauthorised raising / transportation / consumption of bauxite by a lessee

Scrutiny of records at DDM, Koraput revealed that a lessee was allowed to transport bauxite for its captive consumption on payment of highest grade of royalty and exempted from stacking and sampling of minerals by the DMO in November 2013 under provisions of Rule 10(7) of OM Rules. As per the conditions laid down in the letter of the DMO in which exemption was allowed, adequate electronic weighing facility for minerals to be despatched should be provided by the lessee and the same should be integrated with the i3MS for proper determination of ores / minerals despatched.

Audit conducted a joint verification of the mines weighbridge of the lessee on 21 July 2015 along with the officers of the DDM, Koraput and one of the officials of the lessee. It was noticed that the weighbridge of the lessee was not integrated with the i3MS server due to non-availability of internet at the mines end. The lessee used to generate offline e-Passes from the plant office which is 25 kilometers away from the mine and hands over the same to the transporters for recording the quantity of minerals to be despatched through the weighbridge of the lessee located at the mine. After weighment of the minerals at the mines weighbridge, the gross weight, tare weight and mineral weight along with the vehicle numbers were entered manually in the printed e-Passes in duplicate. Minerals were then transported by the transporters to the plant of the lessee along with the e-Passes. After receipt of minerals at the plant office, details of transportation were updated later on by the lessee into the i3MS database.

Analysis of the i3MS database revealed that during the period from 26 May 2013 to 31 March 2015, the lessee was issued with 38 e-Permits to transport 5.07 million tonnes of bauxite against which the lessee transported 4.68 million tonnes of mineral using 2,08,045 e-Passes. To verify the quantity of minerals disclosed in e-Passes with the actual quantity of minerals recorded in the weighbridge data, Audit called for the backup of weighbridge data relating to the above period. However, the lessee could provide sporadic backup data for the period between April 2014 and March 2015 and expressed its inability to provide the data relating to the period prior to April 2014 as the same was stated to have been lost due to “thundering problem”. The weighbridge data provided to Audit by the lessee contained information on 45,918 e-Passes only which matched with the i3MS data.

Cross verification of the details of the above 45,918 e-Passes as reflected in the weighbridge data with the i3MS data revealed the following discrepancies.

- In 33,920 e-Passes, all the details such as permit number, pass number, vehicle number and quantity of minerals matched with the i3MS data. However, in 2,926 e-Passes, though the permit number, pass number, vehicle number were the same, the actual transported quantity as shown in weighbridge data was however higher by

19,840.42 tonnes valued at ` 54.18 crore indicating manipulation of printed e-Passes.

- In 202 e-Passes, the transported quantity as per weighbridge data was less by 944.38 tonnes than the i3MS data.
- In 8,712 e-Passes, though the permit numbers and pass numbers were the same in both the i3MS and weighbridge data, the vehicle numbers did not match. Due to mismatch of vehicle numbers, transportation of 2,09,249.04 tonnes of minerals valued at ` 569.20 crore by the vehicles recorded in the weighbridge data over and above 1,91,544.52 tonnes reflected in the i3MS database are thus illegal.
- In 158 cases, invalid e-Pass serial numbers were found in weighbridge data through which 3,688.63 tonnes of minerals valued at ` 9.99 crore were transported.
- The weighbridge data produced to audit by the lessee was only 22.07 *per cent* of the total number of e-Passes used for transportation of minerals during the period from 26 May 2013 to 31 March 2015. As such, possibility of occurrence of the discrepancies of above nature in the remaining e-Passes cannot be ruled out.

As the details entered manually into the printed e-Passes were error prone and subject to manipulation / tampering, reconciliation of i3MS data with the weighbridge data was essential for ascertaining actual quantity of minerals transported. However, it was noticed that the DDM, Koraput had never reconciled the weighbridge data with the printed copies of e-Passes retained by the lessee. Further, no Government staff was engaged at the weighbridge of the lessee to verify the quantity of transportation of minerals made through the weighbridge.

Thus, in absence of IT infrastructure and internet connectivity for online tracking and non-deployment of Government officials at the weighbridge of the lessee for checking of the details of weighment, there was a discrepancy of 2,32,778.09 tonnes[19] of bauxite valued at ` 633.37 crore. The Department may reconcile the above discrepancy and initiate action as per the provisions of Act and Rules.

In the Exit Conference, Government agreed with the audit observation on failure of Directorate of Mines and assured to comply both the issues i.e. online connectivity of the weighbridges of the lessee with i3MS and posting of Government staff at the weighbridges. Government also instructed for a departmental enquiry into the matter immediately and to fix responsibility.

6.4.11.8 Mismatch between e-Passes generated vis-à-vis utilised and updated

In the i3MS, there was no provision to ascertain total number of e-Passes of different versions[20] issued to the lessee. The number of e-Passes allowed

[19] 19840.423 tonne + 2,09,249.04 tonne +3,688.630 tonne

[20] Different versions of e-Passes: (1) e-Pass (Web), (2) e-Pass (Desktop) and (3) e-Pass (Mobile).

to be generated by the lessee was based on a formula[21]. The above formula was based on average 10 tonne of minerals in one trip. The lessee, while transporting the minerals from its weighbridge was allowed to generate online e-Passes and quantity of minerals transported in each trip were deducted till completion of transportation of the entire quantity permitted. Similarly, in case of offline e-Passes the lessee was allowed to generate e-Passes offline and the quantity of minerals transported through e-Passes were updated later. In the i3MS database, total number of e-Passes generated are recorded in 'M_EPASS_PERMIT_STS' table and the number of e-Passes through which minerals were transported by the lessee is recorded in 'T_EPASS_MINERALTRANSPORT' table.

During analysis of data relating to transport of minerals through e-Passes against 41,577 e-Permits, Audit noticed that in respect of 2,654 e-Permits, though maximum e-Passes generated as shown in 'M_EPASS_PERMIT_STS' table is less, number of e-Passes through which minerals transported were higher as reflected in 'T_EPASS_MINERALTRANSPORT' table. For example, in case of the following two permits (out of 2,654 permits) the discrepancies reflected in the system are detailed below:

Permit Number	Number of e-Passes generated as reflected in table 'M_EPASS_PERMIT_STS'	Number of e-Passes through which minerals were transported as reflected in table 'T_EPASS_MINERALTRANSPORT'	Difference in number of e-Passes as reflected in these two tables.
9219	1,526	4,300	2,774
17552	1	352	351

As there was no provision in the system to reconcile the total number of e-Passes generated, number of e-Passes utilised and number of e-Passes not utilised, the above discrepancy remained undetected.

In the Exit Conference, Government agreed to sort out the issue by way of providing validation controls in the system so that proper reasons would be recorded wherever there is cancellation / deletion of e-Passes. It was also assured that provisions would be made in the system so that cancellation / deletion cannot be made in the system unless justified reasons are recorded.

6.4.12 Application Controls

6.4.12.1 Incomplete database/ data quality

An efficient system should have built in features to capture all the details required on a particular aspect for providing efficient e-Governance to the stakeholders.

During analysis of i3MS data, Audit noticed that the system captured partial data as detailed below:

- In 15 cases, the system accepted transactions without entries of lease period.
- In 243 cases, the dates of registration of lease deeds were left blank.

[21] Number of passes to be generated: permitted quantity in tonne ÷ 10 tonne per trip + 50 e-Passes extra.

- In 27 cases, validity / expiry date of lease deeds were found blank.

While accepting the fact, Government stated (November 2015) that the system only checks the statutory clearances like mining plan, forest clearance, environment clearance, pollution clearance, lease status during issue of permit. Government further stated that it would be ensured to update the lease period of all the working leases, date of registration and details of validity / expiry date of all lease deeds.

6.4.12.2 Absence of key fields/ parameters for determining royalty

The key features of i3MS includes calculation of royalty automatically basing on the permit application duly inspected by the Senior Inspector of Mines (SIM) which is dependent on grade and type of mineral and sale value of minerals published by Indian Bureau of Mines (IBM) etc. During analysis, Audit noticed that the system did not map some of the crucial parameters for determining royalty. Some of these are given below.

- Provision has not been made in the system to determine the latest sale value of minerals published by IBM for All India or for the State in case of non-availability of the IBM published rate for the concerned assessment period as required under Rule 64-D of MC Rules, 1960.
- No provision has been made in the system to identify the status of mines i.e. captive or non-captive according to the lease records / deeds and Mining Lease / Renewal of Mining Lease applications filed, linking with nature of despatch of minerals as captive or non-captive as per returns filed by the lessees. During analysis of data, Audit noticed that some of the lessees under 'non-captive' category were filing returns irregularly exhibiting themselves under 'captive' category. This would affect the fixation of sale price of minerals since determination of sales price of minerals by IBM depends on average sale value of top ten non-captive producers of the State.

Government stated (November 2015) that publication of average sale price of mineral is delayed by almost a quarter each time. Royalty is therefore assessed in the system based on the latest sale value published by IBM. On publication of sale price of required month, the same is again updated in the i3MS for recalculation of royalty as per the provision under 64-B of MC Rules, 1960. Now Government of India has requested Government of Odisha to develop mobile apps for submission of monthly return in form F, so that the average sale price could be determined quickly. Further**,** Government of Odisha has already started the development of mobile applications.

However, the facts remains that provision under 64-D of MC Rules, 1960 for adoption of All India price in case of non-publication of sale price for the previous month of the State was not customised in the system.

6.4.12.3 Lack of continuity of request ID numbers

A sequential numbering pattern is required to be followed by the system while auto-generating request ID numbers and processing permit applications of lessees / licensees. Similarly, a unique sequential numbering pattern is required to be adopted in permit numbers of lessees / licensees in the system.

During data analysis, Audit noticed that:

- In 16 out of 50,701 permit applications received, request ID numbers of lessees were found missing.
- In 115 out of 1,32,413 permit applications received, request ID numbers of licensees were found missing.

Lack of continuity of request IDs in above cases is fraught with the risk of backend manipulations.

Government, while accepting the fact, stated (November 2015) that skipping of serial number of request IDs was due to technical error which would be addressed in consultation with the software developer.

6.4.12.4 Deficiencies in the system design

The i3MS was developed taking into consideration the provisions of OM Rules, MCD Rules and MC Rules. Besides, the system design comprises several tables with various fields in each table to accommodate the provisions of the above Rules. During data analysis, Audit noticed that the system did not map some of the provisions of OM Rules, MCD Rules and MC Rules as given below:

- Since there are two types of mineral users i.e. lessee and licensee, the permit numbers are required to be allotted in a coding pattern to easily distinguish between the lessee permits and the licensee permits. Audit however observed that no such distinguishable numbering pattern has been adopted. This led to difficulty in identifying the lessee permit with that of licensee permits as there were 69,844 permits with same numbers, appearing both in lessee permits as well as in licensee permits.
- Since trading of minerals by the licensees through e-Permits are sourced from the mines leased out to lessees, the e-Permits of licensees are required to be linked to the e-Permits of lessees. It was however noticed that no such linkage has been provided in the system.

As permits issued to the lessee and licensee were not inter-linked and are issued on parallel basis, the main objective of the system for end to end tracking of minerals could not be achieved.

Government stated (November 2015) that table used for recording permit request by lessee and licensee are two different tables. In a common table in "T_E_PASS_MINERALTRANSPORT", the pass type is used to identify the permit type Form L for 1, Form I for 2 and Form I of MCL for 3. However the suggestion of Audit would be examined and necessary follow up would be ensured in consultation with the software developer.

Regarding non-linkage of permits of lessee and licensee, Government stated that the e-Permits of licensees have since been duly linked to the e-Permits of the lessees.

6.4.12.5 Master data management

Scrutiny of records and analysis of master data tables of i3MS revealed that several redundant codes were allotted in various master tables which indicated poor master data quality.

Name of the Master table	Name of the mineral/ Company	Code allotted	Date of creation	Whether active
Mineral Code	Felspar	8	-	Yes
	Feldspar	47	-	Yes
Company Master	Deepak Steel and Power Limited	2565, 2566	30 August 2012	Yes
	Ispat Alloys Limited	2349, 2350, 2351, 2352 and 2353	12 June 2012	Yes

Further, the registration number allotted to lessees / licensees by the IBM were not adopted while allotting codes to lessees / licensees as a unique identifier instead of allotment of several master codes thereby resulting in redundancy in master data.

Government stated (November 2015) that there are different form of same mineral like *felspar*, *feldspar* and *fluorospar*. All the different forms are given different codes. However the fact remains that there is no such mineral named as *feldspar* as per the minerals notified in the schedule under MMDR Act, 1957. Thus allotment of code to *feldspar* was not proper. Further, it was stated that the user at times enters the company name in more than one way like Ispat Alloys Pvt. Ltd. and Ispat Alloys Private Ltd which would be rectified during the one State one licence concept as per new amended OM Rules 2015.

6.4.13 Validation controls

6.4.13.1 Lack of validation control in issue of e-Permits

As per Rule 10 (3) of the OM Rules 2007, e-Permits in Form 'I' are required to be issued to licensees within seven days from the date of application. The period of e-Permit shall not exceed one month from the date of its issue. Similarly, as per Rule 10(8) of the above Rules, in case of lessees, e-Permits in Form 'L' shall be issued within seven days from the date of receipt of stack verification report from the Senior Inspector of Mines (SIM).

During analysis of database and scrutiny of records relating to issue of e-Permits for the period from April 2012 to March 2015, Audit noticed the following discrepancies due to lack of validation controls:

- Out of 1,34,137 e-Permits issued to licensees during the period, in 67 cases, the closing dates of e-Permits preceded the respective starting dates by 2 to 664 days (upto 30 days in 39 cases, beyond 30 days but upto 180 days in 17 cases, beyond 180 days but upto 365 days in 5 cases and beyond 365 days in 6 cases).

- Out of 1,34,137 e-Permits, in 3,836 cases, e-Permits were issued beyond the prescribed period of seven days and the delay ranged between 1 and 441 days (upto 30 days in 3,786 cases, beyond 30 days but upto 180 days in 46 cases, beyond 180 days but upto 365 days in 2 cases and beyond 365 days in 2 cases).
- In respect of 5,459 e-Passes, though valid mineral weights and vehicle numbers were available in the database, yet the said e-Passes had been marked as deleted without recording any reasons thereof.

Government while accepting the fact stated (November 2015) that initially at the time of issue of permit, the system was not checking the application date with issue of permit date for which validation was provided subsequently and the suggestion of Audit was noted for updation in the system. Regarding deletion of e-Passes, it was stated that initially e-Pass cancellation was done centrally where no reasons were mentioned. However, after introduction of e-Pass cancellation module, every cancelled e-Pass has a valid reason recorded in the i3MS.

6.4.13.2 Lack of validation control in mapping OM Rules

As per Rules 10(5) and 10(6) of the OM Rules 2007, after proper dressing, stacking, grading and analysis of minerals, the lessee shall apply to the MO / DDM, notifying his intention of removing such minerals. The SIM shall verify the stacks with reference to the chemical analysis report, land from which mineral raised, balance stock from previous quantity, total stock at mines sites and forward the application to the MO / DDM with his verification report within seven days of receipt of the application. On receipt of the verification report of SIM, the MO / DDM shall issue a permit within seven days.

Analysis of database and scrutiny of records for the period from April 2012 to March 2015 revealed that 37,174 inspections were conducted by SIMs during the period. Audit noticed lack of validation controls due to non-mapping of the provisions of OM Rules as follows:

- In 3,674 cases, the verification reports of SIMs were submitted beyond the stipulated period of seven days from the date of receipt of the application. The period of delay in submission ranged between 1 and 214 days (upto 30 days in 3,645 cases, beyond 30 days but upto 180 days in 28 cases and beyond 180 days in 1 case).
- In 65 cases, the system accepted dates of inspections which were prior to the dates of receipt of applications from lessees.
- Out of 60,646 e-Permits issued to lessees during the period, 2,116 e-Permits were issued with delays ranging between 1 and 240 days beyond the prescribed period of seven days (upto 30 days in 2,024 cases, beyond 30 days but upto 180 days in 84 cases and beyond 180 days in 18 cases).

Government stated (November 2015) that at the time of issue of permit, the system was not checking the application date during submission of report. Subsequently, validation of 30 days were provided for permit approval cycle.

However, the suggestion of audit would be taken into consideration for validation in the system.

6.4.13.3 Existence of invalid dates and status of receipt of minerals

Analysis of i3MS database revealed that 1,90,09,974 e-Passes were used by lessees / licensees for transportation of minerals since the date of implementation of i3MS till 31 March 2015. Transportation of minerals made by the lessees and licensees was recorded in the database under e-Pass Type 1 (ePT1) and e-Pass Type 2 (ePT2) respectively. Similarly, transportation of coal was recorded under e-Pass Type 3 (ePT3). The category-wise details of e-Passes utilised and recorded in i3MS are given below:

e-Pass Type	Receive Status "0"	Receive Status "1"	Deleted e-Passes	e-Pass Wise Total
e-Pass Type 1	29,81,283	99,01,804	6,697	1,28,89,784
e-Pass Type 2	8,66,707	9,58,912	9,348	18,34,967
e-Pass Type 3	15,91,999	26,92,780	417	42,85,196
e-Pass Type 11	-	-	27	27
Total	**54,39,989**	**1,35,53,496**	**16,489**	**1,90,09,974**

Audit noticed lack of validation controls as follows:

- Out of 1,28,83,087 e-Passes issued to lessees (ePT1), receive dates of minerals were mentioned as "01-01-1900" in 3,82,654 cases and "14-03-1905" in 6,65,858 cases.
- Out of 18,34,967 e-Passes issued to licensees (ePT2), receive dates of minerals were mentioned as "01-01-1900" in 12,25,679 cases.
- In 54,39,989 out of total 1,89,93,485 e-Passes issued (excluding deleted e-Passes), mineral receive status were mentioned as "0" despite entry of valid mineral quantities and vehicle numbers therein.

Thus, presence of invalid dates of receipt of minerals, status of receipt of minerals as "0" despite entry of valid mineral quantities and vehicle numbers indicated inadequate validation and security controls.

While admitting the fact, Government stated (November 2015) that due to technical error in setting of date and time in the respective computers at receiving end, the lessees and licensees were requested to ensure proper date and time setting while executing any action in i3MS.

6.4.13.4 Grant / renewal of trading licences preceded the dates of applications

As per Rule 4 of the OM Rules, 2007, any person who intends to procure, possess, store, sell, trade in, consume or otherwise deal with any minerals shall make an application for trading licence for each mineral in form 'A'. Further, as per Rule 8 of the said rules, the licence can be renewed for further period not exceeding two years on application in Form A1, which would be processed in the same manner as the new licence.

During analysis of i3MS database and scrutiny of records relating to grant / renewal of trading licences, Audit noticed that in two cases of grant of new trading licences and one case of renewal of licence, the system accepted dates of grant / renewal of licences preceding to the dates of applications of licensees. This indicated lack of validation controls in respect of grant / renewal of licences.

Government stated (November 2015) that instead of applying renewal application the lessee applied for a new licence after expiry of earlier licence. On the date of approval, DDM put the licence validity period from earlier licence expiry period. This was not treated as renewal of earlier licence by the competent authority. The reply is not acceptable as there was no validation in the system to distinguish between grant of new licence and renewal of licence.

6.4.14 Generation of MIS reports

The application software of i3MS has the facility of generating several MIS reports such as royalty related reports; permit related reports, lessee / licensee profiles etc. During analysis of i3MS database, MIS reports available in the web portal (www.orissaminerals.gov.in) and scrutiny of records in the offices of DDM / MO and DMO, Audit observed that several MIS reports required under different Statutory Rules or required by the Management for decision support system, were not customised properly for effective utilisation and monitoring of mineral administration. Some of these are given below.

- A Report showing lessee-wise details of permitted quantity of minerals, advance royalty paid, actual quantity of minerals despatched / transported through e-Passes, returns submitted, royalty assessed etc. has not been customised.
- Provision has not been made in the system for generation of an MIS report on average sale price of minerals taking into consideration the sale price of top ten non-captive producers of the State based on the returns filed by them so as to use the same in assessment of royalty in case of delay in publication of sale value of minerals by IBM.

Government stated (November 2015) that individual MIS reports are available in i3MS for permitted quantity of minerals, advance royalty paid, permitted quantity vis-à-vis despatched quantity. Further the software developer is being requested to customise few analysis reports which would facilitate decision making on policy matters by Government. However the fact remains that the MIS reports reconciling the permitted quantity vis-à-vis despatched quantity, advance royalty paid, return submitted and assessment report of lessee were not readily available.

Regarding MIS report on average sale price of minerals, Government stated that IBM is the authorised body to publish the average sale price of minerals across the country on the basis of "F" series data. As requested by Ministry of Mines, Government of India, a mobile application is being developed for the above details of production, despatch and average sale price on real time basis. This would automatically be populated in the MIS report under i3MS. However, the fact remains that the current sale price of mineral was not available in the system through a customised MIS report.

6.4.15 Security and Backup

6.4.15.1 Inadequate Access controls

The i3MS is a web-based application and the database is centralised with connectivity across all DDMs / MOs for synchronisation of data. Hence the system required high standard of security both in physical and logical access controls. The Department of Electronics and Information Technology (DEITY), Ministry of Communication and Information Technology, Government of India have also issued e-Governance Password Management Guidelines to implement password controls. Further, advanced security features can also be implemented as controls improvement depending upon the criticality as envisaged in e-Governance Security Standards Framework (e-SAFE) guidelines.

Audit observed inadequacy of access controls in the following cases:

- No policy had been adopted to prevent reuse of last five passwords and for locking of user account in case of five successive invalid user logins.
- Use of digital signature of DDMs/ MOs in generation of all e-Permits and licences was not done though it had been decided in the review meeting on hardware held on 24 September 2011.
- The decision not to mention numbers below the barcode in the e-Permits generated from the system for security purpose taken in the third Steering Committee meeting held on 2 April 2011 was not complied with.
- Provision was not made for generating SMS prompts to the stakeholders / lessees / licensees for each transaction as decided in the third Steering Committee meeting held on 2 April 2011.

Further analysis of database revealed misuse of privileges as given below:

- Though all the lessees and licensees had been provided with user Ids, it was however noticed that out of 45,413 applications filed by lessees for issue of e-Permits, 240 applications were filed using departmental user Ids.
- Out of total 1,89,93,485 e-Passes issued (excluding deleted e-Passes), in respect of 1,03,13,750 e-Passes (54 *per cent*), administrative privileged user Ids were used.
- Though instruction to Senior Inspectors of Mines for detailed verification of stacking of minerals are to be given by the DDMs / MOs using their departmental Ids, it was however noticed that 127 out of 37,628 such instructions were issued using the user Ids provided to concerned lessees.
- Out of 37,174 inspection reports submitted by the Senior Inspectors of Mines, in 120 cases the inspection reports were submitted using the user Ids of the lessees.

- Out of 37,539 inspection reports placed before the MO for assessment of royalty or for other considerations, in 123 cases, the applications were recommended for rejection using the user Ids of lessees.
- Out of 36,766 applications of lessees for issue of e-Permits placed before concerned DDMs / MOs for final permission / rejection, 118 applications were rejected using the user Ids of lessees.

Government stated (November 2015) that locking of user account in case of five consecutive login has been suggested to the software developer for customisation as suggested by Audit. Digital signature of NIC for DDM / MO in generation of permit and licence introduced in the year 2011-12 did not sustain due to hardware incompatibility issues. Number below barcode is written in e-permit for easy identification by the user agency. Due care has been taken to remove the number below the bar code.

Due to limited service of the SMS gateway, SMS prompts given to the stakeholders were stopped. However steps are being taken to provide the facility.

In respect of observations relating to user Ids, Government stated that when the permit application is rejected by the concerned DDM / MOs and reapplied by the lessee, the system updates the lessee user Id in the "action taken by" field of the table "T_PMS_Form_Action" in all the actions taken by different users before rejection. Further in case of request not approved / rejected by the DDM within 30 days from the date of application, the system automatically cancels the application putting a remark as "Request has been cancelled due to non-approval within 30 days". In such cases "the action taken by" is updated as lessees. The same has been rectified in the system.

6.4.16 Exit Management Plan

6.4.16.1 Complete dependence on vendor / software developer due to absence of exit management plan

The MoU and supplementary MoU signed between the State Government and ISL envisaged that training and hand holding is to be imparted to the stakeholders, users and Government officers at State level as well as at mining circles level for operating the system. Further, there should be regular / continuous training on different functionalities of the application and enhancement of modules and introduction of new modules and capacity building programmes should be planned among Government officials for ultimate takeover of the project as a long term plan.

The Department had no comprehensive plan for the exit management for the project. The pilot phases of i3MS project started during the year 2010 as per MoU signed in December 2010 were completed by March 2011. Similarly, some additional works of the project as per supplementary MoU signed in April 2012 were completed by June 2012. Subsequently, a five year business continuity model and strategic plan for implementation of IT (from 2012-2017) was formulated and implemented from the year 2013. A tripartite agreement was signed on 3 February 2014 by Director of Mines with

ISL (vendor) and CSM (software developer) for carrying out the IT services such as:

1. Annual maintenance contract (AMC) for the software;
2. Change request processes;
3. Development of new modules, enhancement; and
4. Operational Support Unit.

Audit observed that there was complete dependency of the Department on third party vendor / software developer in the i3MS project. Even after five years of operation and maintenance business continuity model (2012-2017), there was no plan for complete takeover of the IT system / exit management plan by the Department. Further, in the event of the vendor / software developer abandoning the IT services as envisaged in the tripartite agreement abruptly at any time, the Department has no contingency action plan to manage the project.

Government stated (November 2015) that the observation of Audit would be duly taken care of through exit management plan and vendor would be requested to work out an exit management plan within three months.

6.4.17 Conclusion

The Performance Audit of Implementation of IT project of Integrated Mines and Minerals Management System brought out several deficiencies. The objective of the system in curbing illegal mining by end to end tracking of mineral movement / transportation could not be achieved due to several deficiencies such as non-updation of transportation made through off-line e-Passes, absence of internet connectivity and non-integration of weighbridges with the system. Deficient user requirement specifications, inadequate feasibility study, system study, non-use of Radio Frequency Identification system already developed in initial phase besides resulting in infructuous expenditure also affected the end to end tracking system. Excess despatch of minerals against the permitted quantity defeated the objective of the system to restrict illegal transportation of mineral without permit and failed in end to end tracking of mineral movement. Despite computerisation, continued dependence on manual intervention in arriving at royalty assessment continued due to belated receipt of sale value of minerals for top ten non-captive producers from Indian Bureau of Mines. Capture of incomplete data in crucial fields along with lack of validation control in the system affected the reliability of database. Further, provision for online assessment of royalty by reconciling the e-Permits issued with actual quantity transported through e-Passes, advance royalty paid and return submitted by lessee was not customised in the system.

6.4.18 Recommendations

The Government may consider:

- making it mandatory for all lessees and licensees to install electronic weighbridges with internet connectivity as well as for integration of weighbridges with i3MS;
- ensuring end to end tracking of mineral movement by way of updating data of end destination on real time basis;
- making it mandatory to capture data for all important fields to maintain transparency in transactions made by lessees / licensees;
- developing the MIS by linking it with the average sale value of minerals of top ten non-captive mineral producers to arrive at the current average sale price for assessment of royalty in absence of IBM published sales price; and
- ensuring proper mapping of the provisions of OM Rules for lessee, licensee and trading licensees.

While accepting all the recommendations in the Exit Conference (November 2015), Government appreciated Audit for undertaking such a comprehensive study of the i3MS bringing out issues relating to system deficiencies which would result in value addition to the project. Government assured, it would implement the recommendations latest by May 2016.