FINANCE DEPARTMENT

3.3 Audit of Computerisation of Treasury Operation System in Tripura

With a view to exercise better expenditure control and monitoring of fund flow, the Government initiated the computerisation of Treasuries in 1998, which was implemented in all treasuries and sub-treasuries in 2003-04 at a cost of Rs. 1.47 crore. Audit of Treasury Operation System (TOS) was conducted to evaluate the efficiency and effectiveness of the system as well as the adequacy of the controls in terms of the stated objectives of the system.

Highlights

There was a delay in implementation of the system. Non incorporation of important modules like PLA, Pension, Deposit and Stamp account etc led to only limited use of system.

(Paragraphs 3.3.6.1 and 3.3.7.1)

Deficiency in designing of database structure resulted in slowing down of the system.

(Paragraph 3.3.7.2)

In the absence of change management control policy, different versions of application software were being run in treasuries and sub-treasuries thereby increasing the risk of non recovery of data in the event of data loss due to disaster like virus attack etc.

(Paragraph 3.3.8.4)

Lack of adequate processing controls resulted in payment of bills other than salary/wages being passed under salary/wages sub-object head without ascertaining the availability of funds in the concerned head of account.

(Paragraph 3.3.9.2 (i))

Discrepancy in the figures of expenditure generated by the system and actual payment made by the treasury were noticed, due to generation of expenditure reports from allocation table instead of actual payment transaction tables.

(Paragraph 3.3.9.3(i))

In the absence of segregation of duty, the treasury personnel were performing the duties interchangeably and in some cases the data entry operators were virtually discharging the duty of Treasury Officers. This posed a major risk to the system.

(Paragraph 3.3.13.2)

3.3.1 Introduction

The Government of Tripura initiated in 1998 the project Treasury Operation System (TOS) to computerise all treasuries. An agreement was made with RITES, a Government of India Undertaking, for the system development and implementation. The TOS was developed in Oracle 8i in Windows NT environment. The project was implemented in all treasuries and sub-treasuries in 2003-04. Till March 2007, the Department had spent Rs 1.47 crore, including Rs. 0.04 crore for training, Rs. 0.38 crore for software and Rs.1.05 crore for hardware.

### 3.3.2 Objectives of the computerisation

The main objectives of the computerised Treasury Operation System were to:

- Make available DDO-wise expenditure at treasuries/sub-treasuries level;

- Ensure passing of bills only within allocation of funds and stopping excess expenditure over budget allocations;

- Make available up-to-date expenditure to the Finance Department for expenditure control;

- Ensure effective implementation of the Finance department's instructions by treasuries/sub-treasuries; and

- Help in effective monitoring of funds flow.

3.3.3 Organisational set up

The Commissioner and Secretary, Finance assisted by a Special Secretary, is responsible for implementation of the computerisation of treasury operations. There are five treasuries and nine sub-treasuries in the State, which are under the administrative control of the District Magistrates and Sub-Divisional Magistrates respectively. The Treasury Cell in the Finance Department is headed by a Deputy Secretary.

Organisational Chart of Treasury Operation System
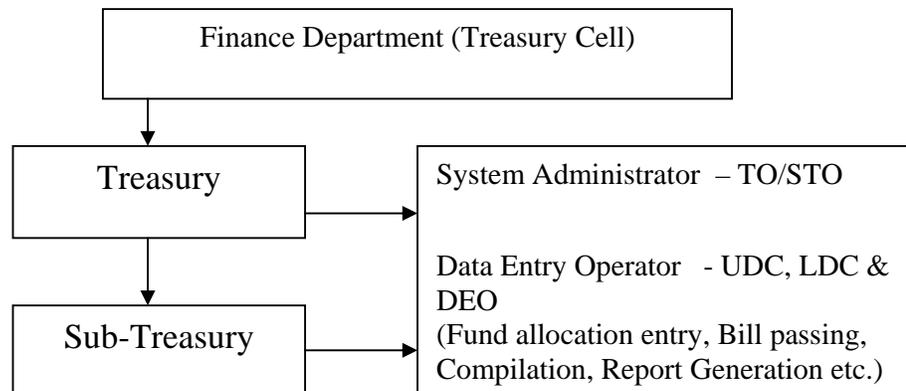
3.3.4   Audit objectives

The objectives of the audit were to verify whether:

- the Treasury Operation System (TOS) had been designed and was functioning in terms of the stated objectives;

- the processing of transactions by TOS was being done as per rules governing them;

- the controls were adequate and information/ reports generated were reliable, complete and accurate;

- the human resources were adequate to carry out the responsibility of Treasury Officers.

3.3.5   Scope of audit and Audit methodology

The audit of Treasury Operation System (TOS) was conducted during 2nd April to 15th May 2007 by examination of documents in Finance Department and the hardware and software in the treasuries/ sub-treasuries. The application package was evaluated with respect to Central Treasury Rules (CTR) adopted by Government of Tripura. The adequacy of controls was verified and back up data of treasuries and sub-treasuries were uploaded into a dummy server and analysed using IDEA software. The systems in three out of five treasuries (Agartala Treasury No. I, Agartala Treasury No. II and Udaipur) and three out of nine sub-treasuries (Sonamura, Khowai and Belonia) were physically verified.

Audit findings
3.3.6   Systems Development
3.3.6.1 Delay in development of software

There was inordinate delay in the development of software. The targeted time for the development of the software (TOS) was within 9.5-10 months of the agreement (24 November 1998). A Supervisory Group was constituted (21 June 1999) to supervise the contract with RITES, seven months after the agreement. Despite delay in achieving all the milestones mentioned in the agreement, there was no evidence whether the Supervisory Group had analysed the reasons for delay and taken steps to facilitate the implementation. The application software was developed in August 2001 but it was first implemented in Agartala Treasury II a year later, in August 2002. Due to delayed procurement of computer hardware and networking materials, the TOS was implemented in other treasuries and sub-treasuries only in 2003-04.

3.3.7   System Deficiency
3.3.7.1 Exclusion of important modules

The Department did not prepare any User Requirement Specification (URS). The important modules like Personal Ledger Account, Pension, Deposit and Stamp account were not incorporated in the initial project documents i.e. System Design Report prepared by the RITES (vendor) and as such were not included in the Treasury Operation System (TOS). Due to exclusion of the aforesaid modules, these functions were carried out either manually or not

carried out at all. For example, entries of the payment of monthly pension made by the banks were not being recorded in the pension registers maintained in the treasuries/ sub-treasuries due to large volume of records, leaving no scope to cross check the payment made by the banks vis-à-vis pension authorized by the Accountant General, and ensure that the payment was as per the authority. The Department stated (July 2007) that necessary provision would be made in the software.

3.3.7.2 Deficiency in designing of database structure

Quick retrieval of information is one of the main advantages of an Oracle RDBMS. The following important features, available in Oracle RDBMS, were not properly defined at the time of development of the application software, which resulted in slowing down of the system:

(i) Tablespace: An oracle database can be divided into smaller logical areas of space known as tablespaces which provide a fine-grained control of disk space management. Separate tablespaces for different segments, are required to make the system more effective by ensuring flexibility in the database administration and quick and instant transaction processing. On scrutiny of the database, it was seen that only one tablespace had been created for the whole database.

(ii) Partition: Scalability and availability are major concerns when a table in the database has high concurrent usage. In such case data within a table may be stored in several partitions to make the system more responsive. However, not a single table in the TOS database had been partitioned.

(iii) Normalisation: Normalisation of data reduces the repetition of data, i.e. data redundancy, which causes storage and access problems leading to a slow and sluggish system. Though the concept of normalisation was kept in view while defining some tables meant for fund allocation, it was not considered in case of table relating to bill passing and compilation of vouchers. The main transaction table was defined so poorly that it had 82 columns and data like Name, Designation of DDO, Head of Account, etc. were being entered repeatedly.

Because of using single tablespace and absence of partitioning and normalisation, the system has been less effective, less responsive and slow, leading to delays in preparation of accounts by the Treasury Officers. The Department stated (July 2007) that it would make efforts to modify the software.

3.3.7.3　No provision to record details of Abstract Contingent (AC) and Detailed Contingent (DCC) bills

The system had no provision to record the details of sanctioning authority, purpose of drawal and check validation on the total amount field to ensure that the DDOs withdraw money through AC bills within the financial limits fixed by the Government. It was also noticed that in the absence of information of DC bills (for adjustment of AC bills) in the application software the Treasury

Officers were unable to refuse payment of AC bills even when DC bills were pending for more than the maximum permissible 90 days[30]. The DDOs were routinely violating the orders of the Government limiting the amount of AC bills to Rs. 50,000. A number of DDOs were observed to have drawn large sums of money by splitting the amount into several bills. The maximum number of AC bills were drawn in March to avoid the lapse of budget. A few instances in Agartala Treasury No. I and II are given below:

Table No. 3.3.1

DDO Designation	Amounts drawn during 2005-06		Amounts drawn in March 2006	
	No. of Bills	Amount (Rs.)	No. of Bills	Amount (Rs.)
Agartala Treasury No. I				
BDO, Bishalgrh RD Block	285	13,661,883	285	13,661,883
BDO, Hezamara RD Block, Sadar	301	14,925,145	217	10,725,145
IS, Mohanpur	90	2,226,500	60	1,500,000
Executive Engineer, RD Division Krishnanagar, Agartala	79	7,155,836	43	3,969,556
BDO, Jampuijala RD Block, Agartala	66	3,117,414	66	3,117,414
IS, Bishalgarh, Tripura West	358	8,482,500	120	2,906,000
Agartala Treasury No. II				
Executive Engineer, Agriculture Department (Civil), Agartala	27	12,907,890	27	12,907,890
Executive Engineer, Mechanical, Agriculture Department, Agartala	2	4,200,000	2	4,200,000
Superintendent of Agriculture, Mandai Agriculture Sub Division	83	1,995,000	71	1,615,000
Superintendent of Agriculture, Jirania Agriculture Sub-Division	66	1,273,000	63	1,210,000
Superintendent of Agriculture, Mohanpur Agriculture Sub-Division	96	1,797,795	54	1,018,800
Superintendent of Agriculture, Bishalgarh	94	2,611,957	24	912,957

3.3.8   General Controls
3.3.8.1 No physical access control

Physical access controls are designed to protect the computer hardware and software from fire, theft and any unauthorised access, especially into the server room. In Agartala Treasury No. II, Belonia and Khowai Sub-Treasuries the server and client machines were installed in the same room. In Sonamura and Khowai Sub-Treasuries, physical access control was compromised by allowing visitors into the computer room as no alternative provision had been made for the visitors coming for submitting bills, challans etc. The Department stated (July 2007) that attempt would be made for implementation of physical access controls.

3.3.8.2 Password policy

Password policy had not yet been adopted by the Department and hence the users were not mandatorily changing their passwords, though the system had a

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[30] Rule 26 of Delegation of Financial Power Rules, Tripura 1994.

provision for changing passwords. In Ambassa Treasury the user ID and password were noticed to have a single character.

In the absence of appropriate password policies and procedures, no standard practices were being followed while creating User ID and password. The system was vulnerable to unauthorised access, which may lead to fraud and disaster. The Department stated (July 2007) that attempt would be made to adopt and implement a password policy.

3.3.8.3 Environmental controls

Environmental controls are required to protect the system from fire, dust, vagaries of weather etc. During visit of treasuries/sub-treasuries[31] it was noticed that preventive measures like AC machines, fire extinguishers etc were absent and the client and server rooms were found to be full of dust. The Department stated (July 2007) that necessary steps would be taken for providing proper environment in the treasuries/ sub-treasuries.

3.3.8.4 Change management controls

An IT system requires regular review to identify and sort out any programming fault and carry out changes as per new requirement. Though changes had been made in the system several times, the Department had not kept any documentation of the changes nor had adopted any change management policy to control the changes and maintain uniformity in application software running across the treasuries/sub-treasuries. The following deficiencies were noticed:

▪ Changes were made in the system at Agartala Treasury No. I and Agartala Treasury No. II for providing high degree of security features to restrict unauthorised access for various levels of officials, such changes were not made in other treasuries.

▪ In Agartala Treasury No. I and Agartala Treasury No. II, some tables capturing history of various transactions. No such tables were available in the databases at Sonamura, Udaipur, Belonia and Khowai treasury/sub treasuries.

Absence of change management control policy leads to lack of uniformity in the use of the software in different treasuries, which increases the risk of non-recovery of data in the event of data loss due to disaster like virus attack, etc. The Department stated (July 2007) that modified software would be installed in all other treasuries/ sub-treasuries and documentation of changes would be institutionalised.

3.3.8.5 Disaster Recovery and Business Continuity Planning

No Disaster Recovery Policy and Backup Policy had been formulated by the Department. The following deficiencies were noticed in audit:

(i) Treasury Offices were taking backup in the hard disk of server/client machine instead of storing at offsite locations and in fireproof cabinets.

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[31] Agartala Treasury No. I, Agartala Treasury No. II, Udaipur, Sonamura, Belonia and Khowai.

(ii)   Periodic testing of database backup was not being done in any treasury.

(iii) Treasuries and sub-treasuries had not been provided with stand-by server. In the event of break-down of server the work of treasury would be stopped completely.

(iv)   Antivirus software in the Server and Client machines was not updated in the treasuries/sub-treasuries[32] visited by the audit party.

The Department stated (July 2007) that attempt would be made to implement a disaster recovery policy.

3.3.9   Application controls

Application controls ensure that the transactions are processed according to the rules and regulations governing them and the data is accurate and reliable. The following deficiencies were noticed in the application controls:

3.3.9.1 Input controls

Input controls ensure that the data received for processing are genuine, complete, accurate, properly authorised and are entered accurately without duplication.

(i)   Existence of duplicate bill numbers

The DDO has to maintain a single bill register and submit bills to the treasury/sub-treasury with a unique bill number. However, due to inadequate validation check, and absence of any other controls the database had a large number of duplicate bills under the same DDO. As such there was a risk of passing the same bill twice or more by the treasury. The number of duplicate bills noticed in the database during 2005-06 is shown below:

Table No. 3.3.2

Name of Treasury	Number of DDOs	Number of Bills	Number of repetition of the same bill no.
Agartala-I	16	76	2 to 5
Agartala-II	102	6325	2 to 15
Khowai	61	583	2 to 116
Sonamura	23	315	2 to 10

The Department stated (July 2007) that remedial action would be taken to provide proper check in the system.

(ii) Absence of validation checks in the application

In the manual system, bills were approved after proper verification of sanction order, powers of sanctioning authority, DDO's signature and necessary documentary proofs etc. Though the System Design Report of TOS had provisions in the application to prompt the bill passing person to say 'Yes/No' for the validation checks like endorsement, DDO authority, Controlling Officer's signature, head of account, signature of DDO etc before passing bills, the TOS application software did not have any such checks except the

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[32] Agartala Treasury No. I, Agartala Treasury No. II, Udaipur, Sonamura, Belonia and Khowai

DDO signature in the Bill Verification screen. As such, particulars of each bill were being verified manually before entering into the computer, which defeated the very purpose of computerisation. The Department stated (July 2007) that attempt would be made to implement the checks as pointed out.

3.3.9.2 Processing controls

Processing controls perform further validation of transactions by checking data for duplication and consistency. The following discrepancies were found in the database due to inadequate processing controls.

(i) Bills other than salary/wages were being passed under salary/wages sub-object head, without ascertaining the allocation of funds in the respective head of account

Provisions for capturing DDO-wise funds and passing bills against available funds had been made in the Treasury Operation System. Up to 2004-05, the entries of DDO-wise fund allocation relating to salary and wages bills were made in the system. Subsequently, the software was modified to provide that when salary or wages bills are passed through the system, the amount of that bill will automatically get stored in the Fund allocation table and update the corresponding DDO's expenditure tables. This has given rise to the risk of passing a salary and wages bill without provision in the budget. A print screen of the message showing that '***Salary/Wages funds not to be entered'*** is given in **Appendix 3.6**.

The absence of this processing control was being misused to book expenditure other than salary and wages under salary/wages sub-object head. For instance, during 2005-06, Rs. 28,28,104 against bill type 'CONTINGENT', Rs. 1,03,82,601 against bill type 'OTHER', Rs. 3,55,143 against bill type 'AC BILL' and Rs. 20,42,429 against bill type 'Fully Vouched' were passed under salary/ wages sub-object code.

In absence of on-line connectivity of treasuries with the Finance Department and non-maintenance of central database, the Treasury Officer cannot exercise check on excess expenditure over the grants.

There was a risk of drawal in excess of budget provision due to wrong booking of expenditure other than salary under salary sub-object head. The Department stated (July 2007) that remedial action would be taken to introduce suitable check in the system to prevent its misuse.

(ii) Absence of validation check between drawing and disbursing officers (DDOs) and the Head of Accounts

As per Treasury Rules, the DDOs are authorised to draw bills in respect of only those head of accounts, which they are authorised to operate. It was noticed that the budget provisions made for Khowai and Sonamura Sub-Treasury under Head of Account 2054-00-097-07-06 and 2054-00-097-07-08 respectively were being utilised by the DDOs belonging to Agartala Treasury No. I, as shown in the following table:

Table No. 3.3.3

Financial Year	DDO code	Major-head	Sub-Major head	Minor head	Sub Minor head	Object head	Sub Object head	No. of bills	Amount (Rs.)
2004-05	8002	2054	00	097	07	06	01	15	4,64,517
2004-05	8003	2054	00	097	07	06	01	28	2,72,980
2005-06	8002	2054	00	097	07	06	01	16	4,54,926
2005-06	8002	2054	00	097	07	08	13	3	4,938
2005-06	8003	2054	00	097	07	06	01	28	2,69,291
2005-06	8003	2054	00	097	07	06	13	1	4,930

The Department stated (July 2007) that remedial action would be taken.

3.3.9.3 Output controls

Weakness in processing may be compensated by strong controls over output. On the other hand, a well-controlled system for input and processing is likely to be completely undermined if the output is uncontrolled. The following discrepancies were noticed during audit:

(i) Discrepancy in expenditure report

It was seen that the figures of the expenditure reports generated through the system did not tally with the actual payments made by treasury. The expenditure reports are generated from Allocation table instead of Payment table where data of actual expenditure is stored. The records of Allocation table automatically get updated when a bill is verified and passed. But the actual payment made by the treasury is to be derived from Payment transaction table where records are updated after compilation (i.e. on receiving of vouchers from the bank after payment). Thus total expenditure available in Allocation table may not match (if payment is not made by the banks due to some discrepancies in the bill) with the amount in the Payment table. For instance, the discrepancies between the expenditures recorded in the Payment and Allocation tables are given in **Appendix 3.7**, DDO-wise. The Department stated (July 2007) that necessary rectification would be made in the software to restrict the occurrence of such cases.

(ii) MIS Report

The treasuries are generating limited number of reports like daily scrolls for sending to bank along with vouchers, head of account-wise monthly receipts and payments/transactions etc. But there is no provision to generate many MIS reports essential to ensure the effectiveness and monitoring of the system e.g.,

- Reports relating to users log-on and log-off time to detect whether database is unauthorisedly accessed beyond office hours or holidays.

- Reports relating to existence of the same bill number more than once for the same DDO in a financial year.

- Reports showing bills not passed by the Treasury Officer to verify whether any fresh bills were submitted by the DDO against these pending bills.

- ▪ Reports relating to bills passed by the Treasury Officer to verify on a certain date whether payments against those bills had been made by the bank.

The Department stated (July 2007) that it would make necessary modification in the software to generate the MIS reports.

3.3.10 Master/Standing Data file controls

These are meant to ensure the integrity and accuracy of the master files and standing data. Information on master files may affect related financial transactions and so must be adequately protected. During scrutiny of the master tables of the databases, the following irregularities were noticed:

(i) Account code master tables were not uniform in all treasuries though codal provisions are common for all treasuries. Some important Major/ Minor heads were missing from the master tables leading to wrong classification by treasuries.

(ii) As per CTR Rule 649, sums received in advance from municipalities or other bodies for payment of compensation for land acquired are to be credited to Special Deposit Head 8443-00-117-**Deposits for work done for Public bodies or private individuals**. But due to absence of Minor head 117 under Major Head 8443 in the master table, the amount received for aforesaid purposes were being booked under 8443-00-106 (PL account of LA Collector) instead of being credited to head 8443-00-117.

3.3.11 Delay in submission of accounts to AG office

Despite the computerisation, the initial accounts, required to be sent to AG office latest by 10th of the following month, were not being sent in time and there were delays up to 43 days in the year 2006-07. The Treasury Officers of Agartala Treasuries (No. I and II) stated that such delays were due to slow processing system, shortage of staff, inadequate trained persons, delay in receiving of accounts from sub-treasuries etc. The delays were noticed across the treasuries which are evident from the following table:

Table No. 3.3.4

Sl. No.	Name of Treasury[33]	Month of accounts	Delay (in days)
1	Agartala I	April 2006	43
		March 2007	36
2	Agartala II	April 2006	39
		March 2007	29
3	Udaipur	August 2006	30
		March 2007	28
4	Kailashahar	January 2007	26
		March 2007	22
5	Dhalai	September 2006	26
		March 2007	16

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[33] There are five treasuries in Tripura *viz.* Agartala Treasury No. I, Agartala Treasury No. II, Udaipur, Kailasahar and Dhalai.

3.3.12   Inadequate documentation

The Department had not documented the 'User Requirement Specification'. The System Analysis and System Design Report prepared by RITES are available with Finance Department, but other documentations like User Manual, Operation Manual, IT Security and Backup policy etc were not prepared by the Department (July 2007). Even the desktop operational instructions for the Data Entry Operators (DEOs) were not available, which may affect the smooth and efficient operation of the work.

3.3.13   Personnel management
3.3.13.1 Inadequate training to treasury personnel

TOS is being controlled and monitored by the Treasury Cell in the Finance Department, comprising one qualified software engineer from RITES and one officer of State Government. Treasury/ Sub-Treasury Officers act as system administrators in their respective treasuries/sub-treasuries. The treasuries and sub-treasuries do not have database administrator / programmer for rectifying any errors in the database. Even for minor faults in the system, Treasury Officer/Sub-Treasury Officer has to contact the Treasury Cell. A formal training on the TOS had been imparted by the vendor to the staff of treasuries at the time of implementation. But there was no documented policy for training the newly recruited staff or for training to restore the TOS within a reasonable time if the system was disrupted.

3.3.13.2 Segregation of duties

A well-defined segregation of duties among the staff operating the computer system ensures better and effective implementation of an IT system and also reduces the risk of error and fraud. There was no documented policy for assigning duties for working on the TOS, due to which the treasury personnel were performing different duties interchangeably.

In Sonamura, Khowai and Belonia Sub-Treasuries, the DEOs were doing all types of data entry like funds allotment, bill entry, bill passing and compilation, which was tantamount to DEO virtually discharging the duties of Treasury Officer and hence was a major risk. In Sonamura Sub-Treasury even a Gestetner operator was entrusted with data entry.

3.3.14   Conclusion

The TOS could not be treated as reliable. Manual verification of bills was still being done before entering in the system as the required validation checks were deactivated. Maintenance of various accounts and ledgers outside the computerised environment and manual interventions at various stages of processing defeated the purpose of computerisation to a large extent. Faulty database design not only slowed down the system but also did not provide for foolproof masters and reconciliation of data flowing into the system from various levels. Lack of documentation had led to complete dependence on the TOS developer. Standard practices for password management, data back-up, retrieving and archiving of data were not being followed. In the absence of change management policy, uniformity of application software was not

maintained across the treasuries and sub-treasuries, which may create problem in recovery of data in the event of data loss due to disaster like virus attack etc.

3.3.15 Recommendations

- The TOS needs to be improved by incorporating new modules like Personal Ledger Account, Pension, Deposit, Stamp Account etc with strong input, processing and output controls.

- Proper segregation of duty in conjunction with audit trail in the application software needs to be enforced to prevent fraud and fix accountability and responsibility.

- Database structure needs to be reviewed thoroughly so that modifications could be made to exercise control over CCO/DDO-wise, demand-wise, head of account-wise, scheme-wise and treasuries/ sub-treasuries-wise expenditure.

- Policy and procedure regarding data security, password management, backup, data restoration and change management should be formulated and implemented.

- A detailed user manual, system data flow diagrams and system maintenance manuals should be prepared in respect of the duties to be performed at the treasuries and sub-treasuries.

- The Department should adopt a Personnel Management Policy to train the personnel in the treasuries in project and data management as well as in accounting system.

- All treasuries and sub-treasuries should be equipped with dust free, temperature-controlled environment with proper fire safety system.