

PN. ACB-455

95482

**Management Information Systems (MIS)  
for Data Processing Operations - OTCEI**

**Report on Phase 1**

**Financial Institutions Reforms and  
Expansion (FIRE) Project**

**August 5, 1997**

**Financial Institutions Reform and Expansion (FIRE) Project  
US Agency for International Development (USAID/India)  
Contract #386-0531-C-00-5010-00  
Project #386-0531-3-30069**

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## *Price Waterhouse LLP*



August 5, 1997

Mr. M. Pushpangadan  
Managing Director  
Over The Counter Exchange of India  
42, Maker Tower F, 9th Floor  
Cuffe Parade, Mumbai 400 005

Dear Mr. Pushpangadan,

As part of the contract with USAID, PW-FIRE has undertaken to assist OTCEI in developing Management Information Reporting for the Data Processing Operations. Mr. Walter Pugh, Senior Partner (Retd), Price Waterhouse LLP, USA was engaged to supervise this activity. Mr. Pugh was assisted by a team of consultants from Price Waterhouse, India. We have now completed the first phase of this project (discussed subsequently), and take pleasure in submitting our report for this phase.

### Background

The purpose of this study is to enable the Head of Systems and Technology to monitor the activities of System and Technology, specifically relating to the Trading Operations.

At the commencement of this project, a list of reports was prepared and key data elements were identified, which could be used for reporting activities related to data processing operations. Of these, certain reports were short-listed which should be used as a starting level.

The short listed reports, along with the exhaustive list prepared by us, were submitted to the General Manager (Systems & Technology). The feedback received recommended certain additional reports.

This effort was (as mutually decided) divided into two phases. The first phase covered the following reports:

1. Downtime Report
2. Change to Operating System
3. Change to Database
4. Audit Trails

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For each report, reporting formats, sources of information and guidelines for reporting have been prepared.

The guidelines and/ or sources of information include actions recommended, as well as areas in which decisions will have to be taken by OTCEI for implementing the MIS Report. For ease of referencing, these are also mentioned separately in Annexure 1 to the report.

#### Next Steps:

The MIS system for reports covered in Phase 1 *should* be utilised by OTCEI for six weeks, to enable the management to determine if the data in the MIS reports is providing necessary information to monitor the departmental operations. This will also allow to make any necessary adjustments to the data needed in the Phase 2.

To ensure uniformity in implementation of the reports, OTCEI must ensure that any modifications to the reports formats, if required, must be approved by authorised official(s) only.

#### Phase 2

In the next phase, the additional reports that would be covered for reporting to the top management relate to:

- Back-up of computer systems and data
- Other house keeping activities (restore, archival and unarchival)
- Data Security - System Access Violation
- Software Maintenance (Bug Report)

We would be pleased to discuss the enclosed reports with you, as well as any other matter related to the aforesaid project.

Finally, we would like to express our appreciation to you and your other colleagues at OTCEI for the time, courtesy and cooperation extended to us during the study.

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Please do not hesitate to contact PW/FIRE Project, Mr.Bimal Bhavanani, PE Senior Manager or me, at 494 6630/ 496 3599, if you require any clarifications on this draft report.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'W. Dennis Grubb' followed by a stylized flourish.

**W. DENNIS GRUBB**  
**PRINCIPAL CONSULTANT CAPITAL MARKETS**

A small, handwritten mark or signature in the bottom right corner of the page.

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## **INTRODUCTION**

### **BACKGROUND**

The study of 'Management Information Systems (MIS) for Data Processing Operations' is being conducted to design Management Reports for the Over The Counter Exchange of India management.

The purpose of this study is to enable the top level management (Head of Systems and Technology) to monitor the activities of System and Technology, specifically relating to the Trading Operations. While this exercise is not designed to create MIS for the middle/lower level management, nor set up a system for reporting, guidelines for setting up such procedures are provided for each of the reports identified which should aid the management in their implementation.

### **APPROACH**

A team approach is crucial to the success of any such exercise. Accordingly, a team consisting of representatives from OTCEI and PW-FIRE was formed for this purpose. The exercise was divided into following stages:

#### **1. Identification of reports and key data elements**

This stage requires identification of reports for Management's Information, and the key data elements that should be included in each report.

#### **2. Determination of sources of information**

This stage involves determination of the source of information for each of the key data elements to be reported. The sources of information are identified from systems and procedures existing in the organisation, keeping in view the effort (as perceived by the team) involved in collecting the information.

#### **3. Development of Reporting formats and Guidelines for Reporting**

In this stage reporting formats are developed and guidelines established for implementing each report.

## **PHASE 1**

At the commencement of this exercise, a list of reports was prepared and key data elements were identified, which could be used for reporting activities related to data processing operations. Of these, certain reports were short-listed which should be used as a starting level.

The short listed reports, along with the exhaustive list prepared by us, were submitted to the General Manager (Systems & Technology). The feedback received recommended certain additional reports.

This effort was (as mutually decided) divided into two phases. The first phase covered the following reports:

1. Downtime Report
2. Change to Operating System
3. Change to Database
4. Audit Trails

It was also agreed that reports for information systems security will be taken up at a later date.

Under the following section ('Reports') reporting formats, sources of information and guidelines for reporting have been discussed for each of the reports identified for the first phase.

The guidelines and/ or sources of information include actions recommended, as well as areas in which decisions will have to be taken by OTCEI for implementing the MIS Report. For ease of referencing, these are also mentioned separately in Annexure 1.

The reports have been designed based on the system (computerised / manual procedures relating to the activity covered) prevailing at OTCEI at the time of conducting the study.

## **REPORTS**

### ***DOWNTIME***

#### **Background**

OTCEI provides its services (to member/ dealer's) through its Trading system. This system comprises of a 'Front End' system (at trading counter) set up at the member/ dealer's end, connected via leased lines/ dial ups/ VSATs/ I-net, to the Central Trading System or the 'Back End' system at OTCEI's premises at Mumbai. The main components of the Trading system are Hardware, Network, Application software and System Software.

One of the critical factors for the success of Trading System is its uptime i.e. the time for which the system is available to member/ dealers to conduct their work, specially during trading hours. OTCEI is responsible for ensuring that downtime, if any, due to problems in any of the component at the Central Trading System, networks, and the application at the member/ dealer end is minimised. The source of the problem may be in the Front End system, or Central Trading System (including networks). The problem may impact the activities of a trading counter, group of counters or all the counters.

When a problem occurs, the trading counter(s) generally contact the regional office where they are assisted by the official(s) of Technology Department who manage the 'Help Desk' function. The solution may be provided by issuing instructions over the telephone to the caller where possible, or by deputing appropriate official(s) to investigate the problem and provide the solution. In certain cases, officials at the Central office may be contacted as the source of the problem may be in the Central Trading System.

**This report attempts to estimate the downtime based on the difference in time:**

- complaint is received and
- solution is provided

**Thus, the reports will not indicate the exact downtime.**

#### Study for designing of problem logs

For the purpose of this exercise activities of Mumbai Regional Office were studied. Based on the study, and further discussions with officials at the Corporate office, logs were designed for recording the problems at the Corporate office, and at Regional Offices. The purpose of these logs are to provide:

- a mode for tracking of problem and their solution
- record of details, which would aid in reporting and analysis

The following logs were designed:

A. Logs to be maintained at Regions:

- Counter Problem Log (Region)

B. Logs To Be Maintained By Corporate Office

- Counter Problem Log (CTS)
- Log Of Counter Problems Reported From Regions (At Corporate Office)

(note: CTS stands for the "Central Trading Server" located at the Corporate Office)

Format for these logs are enclosed separately.

Maintenance of logs and preparation of reports

A. At the Regions

1. Problem reported by a trading counter to the regional office would be recorded in the log (Counter Problem log (Region)).
2. In case it is found that a number of counters have been affected, the same entry would be used for the log - the number of counters affected would be noted in the log in such a case.
3. Where the problem is reported to Corporate Office (this will be done in case the solution needs to be found at the Corporate Office), the same would be noted in the Remarks column.

B. At Corporate Office

1. At the Corporate office, following types of problems may occur:
  - Problems relating to the Central Trading System, and related networks. Typically in such problems, all the counters or a group of counters would be affected.
  - Problems in the systems at the Corporate office relating to (the reporting) trading counter
2. Separate logs *should be* maintained for recording details regarding these problems. These are:
  - Counter Problem Log (CTS);
  - Log Of Counter Problems Reported From Regions (At Corporate Office);respectively.

3. While preparing consolidated reports at Corporate Office (discussed later), entries in the logs maintained at Corporate Office and Regional Office would need to be reconciled for :
  - duplicate entries of the same compliant

C. General

1. The following would be applicable to maintenance of logs at both, Regions and Corporate Office:

In each case, the source of the problem would be clear after due investigation. While recording the details of the solution the type of problem would be noted. Problems can be classified as:

- Hardware
  - Network
  - Application
  - Systems Software
2. Any problem relating to the network hardware at the terminating ends (at the trading counter and Central Trading System) *must be* classified as Hardware problem.
  3. Record of the action taken will be made after solution is provided.
  4. It is important to note the date and time of resolution as accurately as possible as it impacts calculation of downtime.

*Key officials responsible for the activity*

- ◆ At the region, the help desk official(s)/ technology official(s) assist the caller, and co-ordinate with the relevant officials to provide solution(s)
- ◆ At corporate office, officers of systems and technology department carry out the necessary activities to provide solution(s)

**Log To Be Maintained By Regions**

**1. Counter Problem Log (Region)**

*Format*

**COUNTER PROBLEM LOG (REGION)**

| Sr | Counter Code | Problem Reported | Report Date | Report Time | Reported To | Problem source & Action Taken <sup>1</sup> | No of Counters Affected <sup>2</sup> | Date Resolved | Time Resolved | Attended By | Problem Type <sup>3</sup> | Remarks <sup>4</sup> |
|----|--------------|------------------|-------------|-------------|-------------|--|--------------------------------------|---------------|---------------|-------------|---------------------------|----------------------|
|    |              |                  |             |             |             |  |                                      |               |               |             |                           |                      |

<sup>1</sup> Mention if solution is (R) - resolution or (B) - bypass

<sup>2</sup> If other counters are also affected

<sup>3</sup> H - Hardware, N - Network,  
A- Application, S - System Software

<sup>4</sup> If problem source is at CTS, mention in this column

**Logs To Be Maintained By Corporate Office**

**1. Counter Problem Log (CTS)**

**Format**

**Counter Problem Log (CTS)**

| Sr | Problem Reported | Report Date | Report Time | Reported To | Problem source & Action Taken <sup>1</sup> | No of Counters Affected <sup>2</sup> | Date Resolved | Time Resolved | Attended By | Problem Type <sup>3</sup> |
|----|------------------|-------------|-------------|-------------|--|--------------------------------------|---------------|---------------|-------------|---------------------------|
|    |                  |             |             |             |  |                                      |               |               |             |                           |

<sup>1</sup> Mention if solution is (R) - resolution or (B) - bypass

<sup>2</sup> If particular region(s) are affected, mention number of counters affected at each region

<sup>3</sup> H - Hardware, N -Network,  
A- Application, S - System Software

**2. Log Of Counter Problems Reported From Regions (At Corporate Office)**

**Format**

**LOG OF COUNTER PROBLEMS REPORTED FROM REGIONS (AT CORPORATE OFFICE)**

| Sr | Region Reporting | Regional log Sr no | Counter Code | Problem Reported | Report Date | Report Time | Reported To | Problem source & Action Taken <sup>1</sup> | Date Resolved | Time Resolved | Attended By | Problem Type <sup>2</sup> | Remarks |
|----|------------------|--------------------|--------------|------------------|-------------|-------------|-------------|--|---------------|---------------|-------------|---------------------------|---------|
|    |                  |                    |              |                  |             |             |             |  |               |               |             |                           |         |

<sup>1</sup> Mention if solution is (R) - resolution or (B) - bypass

<sup>2</sup> H - Hardware, N -Network,  
A- Application, S - System Software

## Guidelines for Reporting

### Purpose

The purpose of these reports is to inform the management regarding downtime in the Trading Network, classified by reasons.

### Reporting responsibilities

#### *Region*

1. Officials *should be* appointed (made responsible) at each region to maintain log of problems reported, and solutions provided.
2. This log would account for entries in the log indicating that the source of the problem was at the Corporate office (and that the problem was solved there).
3. Further, an official at each region and at corporate office *should be* responsible to review the log.
4. The logs shall be sent to the Corporate Office (frequency discussed subsequently).

#### *Corporate Office*

1. Official(s) should be appointed (made responsible) at the corporate office to:
  - maintain the following logs:
    - Counter Problem Log (CTS)
    - Log Of Counter Problems Reported From Regions (At Corporate Office)
  - receive & review the reports from the regions
  - prepare consolidated report at Corporate office (this work will include reconciling entries in the logs maintained at Corporate Office and Regional Office to remove effect of duplicate entries of the same compliant)
  - review the reports prepared at the Corporate Office.
2. Downtime will be reported separately for each type of problem

### Frequency recommended:

- Reporting frequency: fortnightly
- Log to be received from regions (along with a copy of the log): two days after end of the fortnight
- Report to be submitted: four days after end of the fortnight

**Report To Prepared At Corporate Office**

**DOWNTIME REPORT (CONSOLIDATED)**

**Reporting Format**

**CONSOLIDATED DOWNTIME REPORT**

|               |             |           |
|---------------|-------------|-----------|
| <b>PERIOD</b> | <b>from</b> | <b>to</b> |
|---------------|-------------|-----------|

| <b>PROBLEM TYPE</b>          | <b>PROBLEM DESCRIPTION</b> | <b>COUNTERS AFFECTED<br/>IN EACH REGION</b> | <b>DOWN TIME</b> | <b>REMARKS</b> |
|------------------------------|----------------------------|---|------------------|----------------|
| <b>HARDWARE - CTS</b>        |                            |   |                  |                |
| <b>NETWORK</b>               |                            |   |                  |                |
| <b>APPLICATION</b>           |                            |   |                  |                |
| <b>SYSTEM SOFTWARE - CTS</b> |                            |   |                  |                |

**Sources of Information**

| Data Elements/ sub data elements        | Source of Information  |
|---|--|
| <b>PROBLEM TYPE &amp; DESCRIPTION</b>   | The entries during the period would be classified by problem type. Similar problem would be grouped together   |
| <b>COUNTERS AFFECTED IN EACH REGION</b> | <p><i>For CTS</i><br/>This information would be derived from the Counter problem logs maintained at Corporate Office</p> <p><i>For Regions</i><br/>Information needs to be compiled from logs received from regions</p>  |
| <b>DOWNTIME</b>                         | <p><i>For CTS</i><br/>This information would be derived from the Counter problem logs maintained at Corporate Office. Downtime is calculated as a difference of 'Time resolved' and 'Time Reported'</p> <p><i>For Regions</i><br/>Information needs to be compiled from logs received from regions</p> |
| <b>REMARKS</b>                          | if any, for any information that needs to be informed to the management  |

## **OPERATING SYSTEM PARAMETER CHANGE**

### **Background**

The operating system (software) is a collection of programs that control operations of the system (consisting of hardware including communication devices, and software) and manage it's resources by:

- providing means for users to communicate with hardware devices that make up the system
- creating a working environment in the system in which users can access resources needed to perform tasks, without interfering with other users' activities on the system
- scheduling use of Central Processing Unit (CPU), physical memory, peripheral devices (e.g. terminals, printers), etc. to provide equitable access for all users, while using these resources as efficiently as possible

To meet the needs of the organisation, operating system is customised by defining suitable values for parameters relating to users, (operating) system activities, etc. Additional software are also used to enhance features of the basic operating system software.

For requesting any change to the parameters of operating system the form 'Requisition for parameters to be changed in the System' form is used at OTCEI. This request is to be formally authorised prior to carrying out any change to the Operating System.

*Key officials responsible for the activity*

Responsibility for effecting these changes is with the System Administrator.

### **Guidelines for Reporting**

#### Purpose

The purpose of the report is to inform the management about:

- ◆ modifications made to the parameters in the operating system
- ◆ monitor the impact of these changes on the system

#### Reporting responsibilities

The primary responsibility for preparation of the report must be on

- ◆ Systems Administrator

The report *should be* verified independently.

#### Frequency recommended:

Weekly.

**Reporting Format**

CHANGE TO OPERATING SYSTEM

PERIOD: from  to

REPORT DATE:

| REQUEST NUMBER | CATEGORY <sup>1</sup> | DESCRIPTION | REASON FOR CHANGE | REQUESTED BY | AUTHORISED BY | STATUS            |                        | VALUE |     | EFFECT <sup>2</sup> |
|----------------|-----------------------|-------------|-------------------|--------------|---------------|-------------------|------------------------|-------|-----|---------------------|
|                |                       |             |                   |              |               | START DATE & TIME | COMPLETION DATE & TIME | OLD   | NEW |                     |
|                |                       |             |                   |              |               |                   |                        |       |     |                     |

Prepared by:  Verified by:

<sup>1</sup> Category may be: User-Specific/ System Wide/ Product Specific

<sup>2</sup> Describe effect on Memory/ Response/ Control/ Other Effects (Specify); quantify where possible

Sources of Information

| Data Element/ sub data elements |     | Source of Information   |
|---------------------------------|-----|---|
| Request Number                  |     | Every request form ("Requisition for Parameters to be Changed in the (Operating) System") received <i>should be</i> allotted a number. This number would be noted in this column  |
| Category                        |     | OS Parameter Change may be either:<br>User-Specific : relating to user setup<br>System-Wide : relating to system tuning<br>Product-specific : relating to products added to the OS<br><br>This depends on the change needed (which is mentioned in the request form).<br>Category of change <i>should also be</i> included in the request form. |
| Description                     |     | Information is available in the request form.   |
| Reason For Change               |     | Information is available in the request form.   |
| Requested By                    |     | Information is available in the request form.   |
| Authorised By                   |     | Information is available in the request form.   |
| Completion Date & Time          |     | Information is available in the request form.   |
| Value                           | Old | Information <i>should be</i> noted in the request form before making the changes.   |
|                                 | New | Information <i>should be</i> noted in the request form after making the changes.  |

| Data Element/ sub data elements | Source of Information   |   |
|---------------------------------|---|---|
| Effect                          | The effect of change <i>should be</i> identified before the end of the day after carrying out the change. |   |
|                                 | The effect of change can be identified from:  |   |
|                                 | Change Type   | Source  |
|                                 | user control  | understanding of the system<br>understanding of the system & Reports generated by Poly-Center Software  |
|                                 | system tuning<br><br>add-on products  | understanding of the system & reports generated by 'Poly- Center 'Software<br>understanding of the system & reports generated by 'Poly-Center' Software |

## **DATABASE CHANGE**

### **Background**

Database software is designed to manage storage and retrieval of (user) data. Today, databases are also designed to meet the needs of users in a multi-user environment. Database design has two aspects:

- Logical design: relates to the logical relationships amongst all objects in the database
- Physical design: relates to storing and retrieving database objects in files on a storage medium

One of the main tasks in designing (logical design) of a database is defining 'metadata'. Metadata describes data and its uses; it includes tables, storage areas, domains, constraints, etc. that is defined by the user (administrator), and system relations which are defined by the database.

Generally data is input, modified and processed using the application software designed for users. However, it is also possible to modify data in the database, using Structured Query Language (SQL). Using SQL it is also possible to modify the metadata definitions. The change script *should be* reviewed by another official prior to its execution to gain comfort that the script is complete and correct. Also, the "Rdb report" relating to changes effected in the system *should be* generated (from the database) and reviewed independently to gain comfort that only authorised changes have been carried out in the database.

For requesting any change in database (metadata/ data) the form 'Request for change in production database' is used. This request is to be formally authorised prior to carrying out the changes.

### *Key officials responsible for the activity*

The responsibility for effecting changes is with:

- ◆ Database Administrator for Metadata
- ◆ Officer (Trading Operations) for Data

## **Guidelines for Reporting**

### **Purpose**

The purpose of the reports is to inform the management about:

- ◆ modifications made to the database
- ◆ implementation of proper procedures e.g. review of modifications effected, documentation of script prepared

For changes to data, the report *should* be prepared for the following:

- ◆ Delisting of scrips
- ◆ Merger of scrips
- ◆ Book closure of scrips
- ◆ Deactivation/ Activation of scrips
- ◆ Other non-regular operations
- ◆ All (other) cases which require change by preparation of SQL scripts

### **Reporting responsibilities**

The primary responsibility for preparation of the report will be on:

- ◆ Officer (Trading Operations) for data changes in Database
- ◆ Database Administrator for metadata changes in Database

These reports must be verified independently. For this, official(s) *should be* appointed (made responsible).

### **Frequency recommended:**

For Data Change: Daily

For Metadata Change: One day after change in metadata is effected

**Report - Change of data in Database**

**Format**

**CHANGE OF DATA IN DATABASE**

PERIOD: from \_\_\_\_\_ to \_\_\_\_\_

| REQUEST NUMBER | DESCRIPTION OF CHANGE | FIELDS AFFECTED | VALUE MODIFIED |      | REASON FOR CHANGE | REQUESTED BY | AUTHORISED BY | CHANGED BY | STATUS     |          | RDB LOG REVIEWED BY <sup>1</sup> | SCRIPT REVIEWED BY <sup>1</sup> | REMARKS IF ANY |
|----------------|-----------------------|-----------------|----------------|------|-------------------|--------------|---------------|------------|------------|----------|----------------------------------|---------------------------------|----------------|
|                |                       |                 | TO             | FROM |                   |              |               |            | STARTED ON | ENDED ON |                                  |                                 |                |
|                |                       |                 |                |      |                   |              |               |            |            |          |                                  |                                 |                |

PREPARED BY: \_\_\_\_\_ VERIFIED BY: \_\_\_\_\_

<sup>1</sup> If not reviewed, please state reasons under Remarks

**Sources of Information**

| Data Elements/ sub data elements |            | Source of Information  |
|----------------------------------|------------|--|
| Request Number                   |            | Every request form ("Requisition for changes in the Production Database") received should be allotted a number. This number would be noted in this column  |
| Description Of Change            |            | Describe the change being affected. This will be based on information available in the request form  |
| Fields Affected                  |            | This information should be noted in the request form   |
| Value Modified                   | From       | Can be identified based on description of change   |
|                                  | To         | Can be identified based on description of change   |
| Reason For Change                |            | Information is available in the request form   |
| Requested by                     |            | Information should be available in the request form  |
| Authorised                       |            | Information is available in the request form   |
| Changed By                       |            | Information is available in the request form   |
| Status                           | Started On | Information is available in the request form   |
|                                  | Ended On   | Information should be available in the request form  |
| Rdb Report Reviewed by           |            | Rdb report should be generated for commands that have been entered by SQL. The official who has reviewed the report must sign off on the report. The name of the official should be included here. |
| Script Documented Reviewed by    |            | Change script documentation is appended to the request form. This should be reviewed and confirmed by an independent official.   |

| Data Elements/ sub data elements | Source of Information  |
|----------------------------------|--|
| Remarks, if any                  | Reason for not generating the report must be reported here by the official responsible for it's review. Also, Uncommon observations, if any, found while reviewing the Rdb log or script must be reported by the reviewer. |

**Report - Change to Metadata in Database**

**Format**

CHANGE TO METADATA IN DATABASE

PERIOD: from  to

| REQUEST NUMBER | DESCRIPTION OF CHANGE | TYPE OF CHANGE AFFECTED <sup>1</sup> | REASON FOR CHANGE | REQUESTED | AUTHORISED | CHANGED | STATUS     |          | RDB LOG                  | SCRIPT                   | REMARKS IF ANY |
|----------------|-----------------------|--------------------------------------|-------------------|-----------|------------|---------|------------|----------|--------------------------|--------------------------|----------------|
|                |                       |                                      |                   | BY        | BY         | BY      | STARTED ON | ENDED ON | REVIEWED BY <sup>2</sup> | REVIEWED BY <sup>2</sup> |                |
|                |                       |                                      |                   |           |            |         |            |          |                          |                          |                |

PREPARED BY:  VERIFIED BY:

<sup>1</sup> Type of change may be change to Area/ Table/ Index etc.

<sup>2</sup> If not reviewed. please state reasons under Remarks

**Sources of Information**

| <b>Data Elements/ sub data elements</b> |                   | <b>Source of Information</b>  |
|---|-------------------|---|
| <b>Request Number</b>                   |                   | Every request form ("Requisition for changes in the Production Database") received should be allotted a number. This number would be noted in this column   |
| <b>Description Of Change</b>            |                   | Describe the change being affected. Information is available in the request form  |
| <b>Type Of Change Effected</b>          |                   | This information should be noted in the request form  |
| <b>Reason For Change</b>                |                   | Information is available in the request form  |
| <b>Requested by</b>                     |                   | Information should be available in the request form   |
| <b>Authorised by</b>                    |                   | Information is available in the request form  |
| <b>Change done by</b>                   |                   | Information is available in the request form  |
| <b>Status</b>                           | <b>Started On</b> | Information is available in the request form  |
|   | <b>Ended On</b>   | Information should be available in the request form   |
| <b>Rdb Report Reviewed by</b>           |                   | Rdb report should be generated for commands that have been entered by SQL. The official who has reviewed the report must sign off on the report. The name of the official must be included here                           |
| <b>Script Reviewed by</b>               |                   | Change script documentation is appended to the request form. This should be reviewed and confirmed by an independent official   |
| <b>Remarks, if any</b>                  |                   | Reason for not generating the report must be reported here by the official responsible for it's review. Also, uncommon observations, if any, found while reviewing the Rdb log or script must be reported by the reviewer |

## **AUDIT TRAIL: DATA LOADING FOR AUCTION**

### **Background**

After the completion of a Trading Cycle for Permitted Securities (Monday to Friday), TCS (the Clearing Agency for Permitted Securities) receives the stock in and stock out positions on a floppy diskette from Market Operations (Permitted). TCS verifies the securities received, processes trading data, and sends to Market Operations (Permitted) by Tuesday morning the details of defaults including defaulters and defaultees (i.e. data for auction) on a floppy diskette. Prior to the Auction (which takes place on Wednesday between 3.30 PM to 4.30 PM) this data is uploaded at the Systems Department on the Trading System.

### Key responsibilities

- ◆ Manager (Market Operations) is responsible liasioning with TCS for sending and receiving data (on floppy diskettes)
- ◆ Officer (Trading Systems) is responsible for loading the data on to the Trading System

### **Guideline for Reporting**

#### **Purpose**

The purpose of the report is to inform the management about:

- ◆ status of loading of data for auction on the Trading System prior to Auction
- ◆ problems encountered in loading of data, if any

#### **Reporting responsibilities:**

The primary responsibility for preparation of the report will be on:

- ◆ Officer (Trading Operations)

#### **Frequency recommended:**

Every Wednesday (i.e. the Auction day ) by 10 AM

### Reporting Format

#### TRAIL OF DATA LOADING FOR AUCTION

|                 |      |
|-----------------|------|
| REPORTING DATE: | TIME |
|-----------------|------|

| TRADING  |        |
|----------|--------|
| CYCLE NO | PERIOD |
|          |        |

| AUCTION DATA LOADING |         |             |
|----------------------|---------|-------------|
| DATE                 | DONE BY | VERIFIED BY |
|                      |         |             |

|                      |  |
|----------------------|--|
| STATUS OF<br>LOADING |  |
|----------------------|--|

|                                   |  |
|-----------------------------------|--|
| PROBLEMS<br>ENCOUNTERED<br>IF ANY |  |
|-----------------------------------|--|

|              |
|--------------|
| PREPARED BY: |
|--------------|

**Sources of Information**

| Data Elements/<br>sub data elements |             | Source of Information   |
|-------------------------------------|-------------|---|
| Trading                             | Cycle No    | This information would be available in the covering letter received from TCS along with the floppy diskette containing data to be loaded for auction                            |
|                                     | Period      | As per Trading Calendar (generally Monday to Friday).<br>In case of deviation, information would be received from Market Operations (Permitted)                                 |
| Auction Loading Data                | Date        | As per Trading Calendar (generally on Wednesday following the end of a Trading Cycle).<br>In case of deviation, information would be received from Market Operation (Permitted) |
|                                     | Done By     | Name of the person who has carried out the process of loading the data on to the Trading System   |
|                                     | Verified By | Name of the person who has verified the data loaded on to the Trading System for<br>- completeness<br>- accuracy  |
| Status of Loading                   |             | Whether complete / incomplete;<br>if incomplete, note estimated time by which the data would be loaded  |
| Problems Encountered if Any         |             | Note problems if any encountered in loading of data   |

## **AUDIT TRAIL: INITIAL DATA LOADING**

### **Background**

For Listed Securities and Debentures, details of data of initial placement/ allotment of security/ debenture received from the company or its registrars is loaded on the system at Corporate Office. Trading in these securities can commence only after the loading is completed.

Softcopy of allotment data is received from Registrar by the Regional Office (RO). The Listing section of RO prepares 'Scrip Master' form and sends it along with softcopy to Officer (Trading Systems) at Corporate Office.

At Corporate Office, a log sheet is maintained (at the Systems Department) for recording details regarding receipt of data. The record is maintained in a running serial number; this number is noted on the covering letter (the serial number *should be also* be noted on the Scrip Master form).

### *Key responsibilities*

Officer (Trading System) is responsible for loading the data on to the Trading system.

### **Guideline for Reporting**

#### Purpose

The purpose of the report is to inform the management about:

- ◆ status of initial data loading process, and
- ◆ problems in the loading process, if any

#### Reporting responsibilities

The primary responsibility for preparation of the report will be on:

- ◆ Officer - Trading System

#### Frequency recommended:

Monthly

**Reporting Format**

TRAIL OF INITIAL DATA LOADING

PERIOD: from \_\_\_\_\_ to \_\_\_\_\_

| SR NO | SCRIP CODE | COMPANY | REGISTRAR | REGIONAL OFFICE | DATA RECEIVED DATE | STATUS OF DATA PROCESSING | PROCESSING COMPLETED ON | PROCESSED BY | DATA SENT TO REGION ON | SENT BY |
|-------|------------|---------|-----------|-----------------|--------------------|---------------------------|-------------------------|--------------|------------------------|---------|
|       |            |         |           |                 |                    |                           |                         |              |                        |         |

PREPARED BY: \_\_\_\_\_ VERIFIED BY: \_\_\_\_\_

**SOURCES OF INFORMATION**

| Data Elements/<br>sub data elements | Source of Information                                   |
|-------------------------------------|---|
| Log Sr No                           | Information is available in the log sheet               |
| Scrip Code                          | Information is available in the Scrip Master form       |
| Company                             | Information is available in the Scrip Master form       |
| Registrar                           | Information is available in the Scrip Master form       |
| Region Office                       | Information is available in the log sheet               |
| Data Received Date                  | Information is available in the log sheet               |
| Status of Data Processing           | Information is available in the log sheet               |
| Processing Completed On             | Information is available in the log sheet               |
| Processed By                        | Information <i>should be</i> available in the log sheet |
| Data Sent To Region On              | Information is available in the log sheet               |
| Sent By                             | Information <i>should be</i> available in the log sheet |

## **NEXT STEPS**

### **Implementation of Phase 1**

The MIS system for reports covered in Phase 1 *should* be utilised by OTCEI for a period of time to enable the management to determine if the data in the MIS reports is providing necessary information to monitor the departmental operations. This will also allow to make any necessary adjustments to the data needed in the Phase 2.

To ensure uniformity in implementation of the reports, OTCEI must ensure that any modifications to the reports formats, if required, must be approved by authorised official(s) only.

### **Phase 2**

In the next phase, the additional reports would be covered for reporting to the top management.

## ANNEXURE 1 - LIST OF ACTIONS RECOMMENDED AND DECISIONS TO BE TAKEN BY MANAGEMENT FOR IMPLEMENTATION OF THE REPORTS

1. The action to be taken by OTCEI for the implementation of these reports include:
  - A. It is suggested that official(s) be appointed to:
    1. monitor implementation of the reports
    2. approve any change in reporting procedures and report format
  - B. For Downtime report:
    - Separate logs *should be* maintained for recording details regarding problems at Regions and Corporate office.
    - Official(s) *should be* appointed (made responsible) at each Region and Corporate office to :
      - maintain logs
      - review logs
      - prepare reports
      - review reports
  - C. For Change to Operating System report:
    - the source of information is Request Form. Every request form ("Requisition for Parameters to be Changed in the (Operating) System") received *should be* allotted a number.
    - category of change *should also be* included in the request form.
    - information regarding Value *should be* noted in the request form before making the changes (i.e. Old Value) and also after making the changes (i.e. New Value).
    - the effect of change *should be* identified before the end of the day after carrying out the change and included in the request form.
    - this report *should be* verified independently for which an official must be appointed (made responsible).

**D. For Change to Database report:**

- the change script (SQL script) prepared for effecting data changes in database *should be* reviewed by another official (i.e. other than the official carrying out the change) prior to it's execution to gain comfort that the script is complete and correct.
- the Rdb report relating to changes effected in the system *should be* generated (from the database) and reviewed independently (to gain comfort that only authorised changes have been carried out in the database).
- every request form ("Requisition for Parameters to be Changed in the (Operating) System") received *should be* allotted a number.
- following information *should be* available in the request form
  - ◆ Fields Affected
  - ◆ Requested By
  - ◆ Status (Ended On)
- Rdb report *should be* generated for commands that have been entered by SQL. The official who has reviewed the report must sign off on the report. The name of the official *should be* included in this report.
- Change script documentation is appended to the request form. This *should be* reviewed and confirmed by an independent official.

**E. For Audit Trails report: Initial Data Loading**

- at corporate office, a log sheet is maintained (at the Systems Department) for recording details regarding receipt of data. The record is maintained in a running serial number; this number is noted on the covering letter (the serial number *should be also* be noted on the Scrip Master form).
- following information *should be* available in the log sheet:
  - ◆ Processed By
  - ◆ Sent By