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**Business Continuity Plan -  
Over The Counter Exchange of India**

**Report on Stage Two**

**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  
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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 a Business Continuity Plan. 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 our work on development of Stage 2 - Strategy Selection (discussed subsequently), and take pleasure in submitting our report for this stage.

### Background

The purpose of Business Continuity Plan (BCP) is to minimise the impact of disaster on the normal business functions of OTCEI.

The development of a Business Continuity Plan is divided into 3 stages:

- Stage 1 : The Business Impact Analysis - is concerned with identifying those business functions which are critical to the business continuity of the organisation
- Stage 2 : Strategy Selection - is concerned with choosing the most appropriate backup and disaster recovery options from those available.
- Stage 3 : Plan preparation, testing and maintenance - involves preparation of a Business Continuity Plan and preparing specific disaster recovery procedures based on the strategies selected in Stage Two.

We had prepared the first stage, covering the Corporate Office and Western Region Office, both situated at Mumbai, and submitted the final report of this stage on January 31, 97.

### Stage 2 - Strategy Selection

We commenced work on Stage Two - Strategy Selection, immediately after submission of the Stage One report. The functions identified in Stage One were reduced to sixty-one critical functions performed at the Corporate Office.

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Under this stage we also developed current and minimum system and non-system resources, and current human resources needed for the critical functions (aforesaid). The resources that have been considered do not include resources such as VSATs which OTCEI was in the process of procuring at the time of this project.

Based on this the one time costs for setting up system and non-systems resources at the recovery site were identified. The costing suggests an expenditure of about Rupees 11.8 crores. These do not include any premise cost at the backup location, staffing costs or any other ongoing costs at this location.

This stage also involved identification of volumes of vital paper records for each department and costing for backup measures for records; as well as reviewing the backup strategies for computer systems.

Next Steps:

The third stage of Business Continuity Plan is 'Plan Preparation'. In this Stage a detailed plan is prepared for effecting recovery in case of a disaster. I would like to clarify that the plan preparation, testing and maintenance would be the primary responsibility of OTCEI, with the involvement of PW-FIRE. For OTCEI to commence Stage Three, it must make decisions regarding the following:

- Identification and procurement of back up site and procurement of resources needed at the site
- Appointing a person responsible for plan testing and maintenance. This will involve a substantial commitment of time during the preparation of the plan
- Procurement of software to aid in the development of the plan

PW-FIRE will review the status of the management actions on above on a mutually convenient date, and decide on our involvement in aiding OTCEI in the third stage.

We would be pleased to discuss the enclosed report with you, as well as any other matters related to the 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.



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

Sincerely yours,

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

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Table II-A-1 : Recovery Timescale Analysis

Location : Corporate Office

		Recovery Timescales			
		Critical			Vital
		<than 10mins	One hour	Same day	Next day
<b>Functional Area : Accounts and finance</b>					
1. Petty Cash	-Withdrawal, issue and reconciliation -Issue of IOU's			✓	
2. Receipt of cheques				✓	
3. Investments	-Maintaining all investment records and approvals and Redemption tracking -Negotiating price, interest and brokerage on purchase & sale of securities				✓
4. Payroll	-Checking, processing and payment the salaries received from Personnel (Function Area)				✓
5. Statutory requirements	-Deduction and payment of TDS on payment to contractors, salaries, etc.				✓

Table II-A-1 : Recovery Timescale Analysis

Location : Corporate Office

		Recovery Timescales			
		Critical			Vital
		<than 10mins	One hour	Same day	Next day
<b>Functional Area : Administration</b>					
1. Utilities	-Airconditioners and maintenance of telephones & payment of bills and movement of equipment -Photocopier/ fax/ telephones and electrical circuit upkeep and payment of bills and provision of storage space			✓	
2. Payment of wages					✓
3. Counter receipts & Stationery	-Procurement of CR stationery from Tata Press and stationery requisition & inventory -Procurement of stationery for office				✓

Table II-A-1 : Recovery Timescale Analysis  
 Location : Corporate Office

	Recovery Timescales			
	Critical			Vital
	<than 10mins	One hour	Same day	Next day
<b>Functional Area : Business Development</b>				
1. Press Relations (On specific occasions)			✓	

Table II-A-1 : Recovery Timescale Analysis  
 Location : Corporate Office

		Recovery Timescales			
		Critical			Vital
		<than 10mins	One hour	Same day	Next day
<b>Functional Area : Compliance</b>					
1. Monitoring compliance of Members	-Compliance of members/ dealers with exchange and SEBI guidelines -Monitoring of net worth and net business exposure of members/ dealers				✓

Table II-A-1 : Recovery Timescale Analysis  
 Location : Corporate Office

	Recovery Timescales			
	Critical			Vital
	<than 10mins	One hour	Same day	Next day
<b>Functional Area : Secretarial &amp; Legal</b>				
1. Court Cases - Appearance in court (also by regional offices)			✓	

Table II-A-1 : Recovery Timescale Analysis  
 Location : Corporate Office

		Recovery Timescales			
		Critical			Vital
		<than 10mins	One hour	Same day	Next day
<b>Functional Area : Listing</b>					
1. Information to market participants	<ul style="list-style-type: none"> <li>-Disseminating information regarding book closure dates, results, corporate actions</li> <li>-Broadcasting information received from the companies to the market</li> </ul>			✓	
2. Delisting/ suspension of securities-	<ul style="list-style-type: none"> <li>-Instructing regional offices to take appropriate action</li> <li>-Receiving directives from regulatory bodies for delisting/ suspension</li> <li>-Checking compliance and issuing letters for companies and other tradable instruments (regional office)</li> </ul>			✓	

Table II-A-1 : Recovery Timescale Analysis

Location : Corporate Office

		Recovery Timescales			
		Critical			Vital
		<than 10mins	One hour	Same day	Next day
<b>Functional Area : Member/Dealer</b>					
1. Admission of member/ dealer	-On completion of all formalities, introducing and enabling member/dealer on the systems and activating member/dealer in permitted securities			✓	
2. Suspension of membership/dealership			✓		
3. Activation/ termination	-Activating/ terminating market maker's account in respective Scrips on the system after receiving activation/ termination notice from market maker and keeping track of expiry period of market maker and Extending automatically on expiry of market making terms for every three months till termination notice is received from the market maker -Issuing offer letter, appointment letter etc. and receiving information regarding various formalities completed by the member/ dealers			✓	

Table II-A-1 : Recovery Timescale Analysis

Location : Corporate Office

		Recovery Timescales			
		Critical			Vital
		<than 10mins	One hour	Same day	Next day
<b>Functional Area : Market Operations (Listed Securities)</b>					
1. Regulatory Compliance	<ul style="list-style-type: none"> <li>-Monitoring of 0.5 % exposure for transfers and report from systems on the level reached in acquisition</li> <li>-Co-ordination with registrars, custodians on levels reached in takeover/acquisitions and freezing of distinctive number ranges</li> </ul>			✓	
2. Co-ordination(other functional areas)	-Systems for freezing of CRs of counters/investors when lost/stolen			✓	
3. Initial allotment				✓	
4. Investor services	-Customer Care Cell ( CCC) and change of holders, nomination etc.				✓
5. Information dissemination on stock in and stock out (listed securities)					✓
6. Stationery control					✓
7. Counter complaints/investor complaints					✓
8. Monitoring of movement of transfer documents					✓

Table II-A-1 : Recovery Timescale Analysis

Location : Corporate Office

	Recovery Timescales			
	Critical			Vital
	<than 10mins	One hour	Same day	Next day
<b>Functional Area : Market Operations (permitted securities/listed mutual funds physical settlements, Cash settlements and other functions )</b>				
1. Admission of security -Coordinating with regions for details of the securities (such as permitted security / listed mutual fund ) to be included, systems for activating the security and updating scrip database for press reports -Informing TCS for updation of scrip master at their end and informing couriers			✓	
2. Press releases			✓	

Table II-A-1 : Recovery Timescale Analysis  
 Location : Corporate Office

		Recovery Timescales					
		Critical			Vital		
		<than 10mins	One hour	Same day	Next day		
3.	Obligations processing Downloading/Sending reports at the end of trading week to the clearing house (TCS)	-Stock in/out and sending (faxing) the courier list of counters from whom deliveries are to be collected.				✓	
4.	Auction processing	-Receiving defaulting counters report , rejection report from TCS, sending information to counters on shortfalls/ bad deliveries/deliveries rectified etc., Conducting auctions, Obligation processing and pay in/out information to regions and clearing house counters at the end of the auction trading cycle				✓	

Table II-A-1 : Recovery Timescale Analysis

Location : Corporate Office

		Recovery Timescales			
		Critical			Vital
		<than 10mins	One hour	Same day	Next day
5. Funds operations	-Sending reports to accounts & regions regarding regional offices payment status, receiving information from the clearing banks on payment defaults, loading and sending pay in/out information into Cash Monitoring System and monitoring funding to counters -Sending reports to the clearing banks pay in, pay out for listed and permitted securities and auction trading			✓	
6. Book closure activities	-Ensuring systems has frozen trading during book closure period and informing TCS about book closure dates			✓	

Table II-A-1 : Recovery Timescale Analysis

Location : Corporate Office

	Recovery Timescales			
	Critical			Vital
	<than 10mins	One hour	Same day	Next day
7. Activation of counters ( new dealer )			✓	
8. Stop allocation			✓	
9. Bad deliveries -Generate the deal reversal rates, access database of deal prices from the system end, determine the deal reversal rate as per OTCEI procedure and list all affected and defaulting counters for sending to region				✓
10. Counter complaints				✓

Table II-A-1 : Recovery Timescale Analysis

Location : Corporate Office

		Recovery Timescales			
		Critical			Vital
		<than 10mins	One hour	Same day	Next day
<b>Functional Area : Personnel</b>					
1. Salary	-Legal proceedings in respect of statutory requirements -Computation of salary and payment of ESIC/ PF/ Profession Tax/ Gratuity				✓

Table II-A-1 : Recovery Timescale Analysis  
 Location : Corporate Office

	Recovery Timescales			
	Critical			Vital
	<than 10mins	One hour	Same day	Next day
<b>Functional Area : Market Surveillance</b>				
1. Price movements/ quotes –Monitoring price movements of scrips including abnormal price movements, monitoring erratic quotes flashed by any member in the same scrip and ensuring market maker compliance to hold minimum inventory at all points of time and implementing the same. (Monitoring is done by regions of those scrips where market makers are situated . At corporate level monitoring is done for the whole market)			✓	

Table II-A-1 : Recovery Timescale Analysis

Location : Corporate Office

	Recovery Timescales			
	Critical			Vital
	<than 10mins	One hour	Same day	Next day
2. Inspection while freezing quotes	-Validating the request for quotes freezing and instructing the concerned personnel for freezing of quotes (is done at regional levels for the market makers situated at that region . In case of emergency and in cases where entire regions market makers quotes have to be frozen, freezing of quotes is done at corporate level.)			
3. Monitoring Trading and Index monitoring			✓	
4. Corporate actions and Recalibration / modification of market trading parameters			✓	
5. Market risk management			✓	
6. Inspection at the time of freezing quotes	-Inspection of the counter's site for verification, in case of a physical failure			

Table II-A-1 : Recovery Timescale Analysis  
 Location : Corporate Office

		Recovery Timescales			
		Critical			Vital
		<than 10mins	One hour	Same day	Next day
7. Market Intelligence	-Collecting information on prices of those scrips which are listed on the other stock exchanges			✓	
8. Price movements/ quotes	-Issuing show cause notice to the member giving erratic quote			✓	
9. Market Intelligence	-Collecting information on broker's position on other stock exchanges and the scrips in which he is trading heavily.				✓

Table II-A-1 : Recovery Timescale Analysis  
 Location : Corporate Office

	Recovery Timescales			
	Critical			Vital
	<than 10mins	One hour	Same day	Next day
<b>Functional Area : Networking and Technology</b>				
1. Network management		✓		
2. Local counters(dialup/leased)		✓		
3. UPS/Power management		✓		
4. Airconditioner management		✓		

Table II-A-1 : Recovery Timescale Analysis

Location : Corporate Office

		Recovery Timescales			
		Critical			Vital
		<than 10mins	One hour	Same day	Next day
<b>Functional Area : Systems</b>					
1. System Startup	-Unloading of quotes into system file, updating post trading active standard quotes of yesterday with today's trading time, deleting quotes of previous day for permitted securities as well as on-standard quotes for listed securities, starting feed to PTI, NicNet and Reuters, creating the best quotes file every half an hour and backing up system files		✓		
2. Stop of the day			✓		
3. Database/system administration			✓		
4. System administration	-System start-up/shutdown, user creation, disk usage, remove fragmentation and performance tuning -Access restrictions and memory management		✓		

Table II-A-1 : Recovery Timescale Analysis

Location : Corporate Office

		Recovery Timescales			
		Critical			Vital
		<than 10mins	One hour	Same day	Next day
5. After Stop of the day	-Listing of the companies, book closure dated etc., stop trading of the companies, loading/modification of business rules and activating compulsory and additional market makers		✓		
6. Information dissemination and broadcasting through Assets			✓		
7. Complaints handling	-Trading complaints and co-ordination with regions for solving technical problem		✓		
8. Start-up	-Updating news display			✓	
9. End of the day processes				✓	

Table II-A-1 : Recovery Timescale Analysis

Location : Corporate Office

		Recovery Timescales			
		Critical			Vital
		<than 10mins	One hour	Same day	Next day
10. After Stop of the day	-Back up of all Databases on tapes (two backups), sending one backup by courier to be stored off site, generating (before 12.00 p.m.) reports viz. SWH (Scripwise Holding), CBD (Transferred CRs Bought out during the day) and TOS (Transferred of securities to be download only at the time of book closure), SRR (Services Request Registered ), PSR (Pending Services Request), IRD (Investors Registered During the day)			✓	
11. Complaints handling	-Understanding the problem from regions/counters/registrars give suggestions			✓	
12. Connectivity with other agencies like registrars, custodians.				✓	
13. Backup				✓	

### **III. STRATEGY SELECTION**

#### **A. Background**

In the event of loss or damage to the operating location, a department should be prepared to relocate its essential business functions to an alternate site and resume operations in the necessary time-frames. The functions of every department to be relocated and the time-frames within which these functions should be resumed are identified in the Stage One report.

To enable these functions to be recovered it is imperative that the alternate site is maintained at an appropriate level of readiness with regard to availability, equipment and supplies of other resources.

The recovery plan is designed to recover business operations from a disaster, within a pre-determined time-frame. A disaster for the development of Business Continuity Plan, necessarily means a threat to the physical safety of fixed assets such as building, equipment and other supplies. It is generally caused by an external event such as a bomb blast, earthquake, fire etc.

A disaster does not include program bugs and other operational threats to resources. We have analysed such threats and recommended precautionary/ remedial measures, wherever available, in the Stage One report.

## B. Objectives of Stage Two

In the report submitted for Stage One, the functions were identified as Critical, Vital, Essential and Non-essential.

Stage Two involves selecting a strategy which should be translated into a business continuity plan to recover the critical functions in Stage Three. This plan would be followed in case a disaster were to strike the operations of the stock exchange. The disaster could be in the nature of fire, riots, bomb blasts, civic disorder, floods etc.

Strategy selection is concerned with choosing the most appropriate backup and disaster recovery options from those available. Backup procedures identify the steps that are taken on a regular basis to ensure stand-by arrangements for resources such as data, systems, applications, operating systems, for archiving and / or to support business continuity. Data backup is normal part of IT operations that should be tightly co-ordinated with BCP.

In this stage, the following issues have been addressed :

1. Identification of most critical functions out of total functions identified in the first stage, for the purpose of strategy selection.
2. Identification of existing and minimum recovery resources for critical business processes.

The resources included here are :

- Software
- Hardware
- Communications links
- Vital records, data
- Personnel
- Office equipment

The resources that have been considered do not include resources such as VSATs which OTCEI was in the process of procuring at the time of this project.

3. Identification of volumes of vital paper records for each department and costing for backup measures for records.
4. Considering alternative strategies for backing up data on various media, to select appropriate off site storage facilities and to determine the frequency and content of backups.
5. Identification of one time costs for setting up resources at the recovery site. These do not include any premise cost at the backup location, staffing costs or any other ongoing costs at this location.

### C. Assumptions for strategy selection

Based on the discussions with OTCEI management, the following assumptions were made for the purpose of strategy selection:

1. It is assumed that there is only one disaster scenario
2. It is assumed that all the critical departments will shift to only one location in the case of disaster.
3. In case of a contingency, all the departments would perform only the critical functions as identified in Stage One using minimum resources, irrespective of whether they are directly affected by the disaster or not.
4. All the departments (critical and non critical) would have shared communication facilities.
5. Since the location of backup site is not finalised, for the purpose of costing of leased lines it is taken to be within 50 kms from Cuffe Parade.
6. The minimal resources for systems and technology to be installed at the back up site will be similar to those currently available at the Corporate office. Possibility of procuring alternate resources available in the market is not considered.
7. Possibility of moving some of existing resources to the back up site is not considered.
8. All costs for recovery options are taken as replacements costs.
9. The report contains one time costs to be incurred for systems and non-system resources for the back up site (to be set up for recovery from a disaster).

### D. What we did - Steps involved

PW Fire project, jointly with representatives of OTCEI, developed:

1. minimum resources as regards personnel, systems and supplies required for the performance of critical functions of each department at each recovery location
2. telecommunication requirement under disaster scenario
3. one time costs for setting up systems and non-systems resources at the recovery locations

Based on the assumptions stated under section C, the actual one time costs to be incurred for recovery within the required time-frames for the disaster is Rs.11,85,58,829/-.

It should be noted that the continuing costs for staffing the recovery locations has not been determined; since continuing cost depends upon the strategy selected. Also, the one time costs does not include any premise cost at the back up location or any other costs at this location. Therefore, this should be done early in Stage Three. The development of the detailed plan will be dependent on the recovery time frames ultimately agreed to.

#### **IV. MINIMUM RESOURCES AND COST ANALYSIS**

##### **A. Resource requirements and costs for the disaster scenarios**

The functions can be recovered, in the given time-frame, with the help of the requisite resources. The Business Continuity Plan should address the recovery of these resources within the recovery time-scale for the concerned function. It should be realised that considerable resources may be required to recover the functions required to be recovered within an hour.

For the disaster scenario, an analysis of the resources required in the recovery site has been done.

The resource analysis is based on the assumptions given in Section III.

The total current resources for all the departments are provided in Annexure IV-A-4 and the total minimum resource requirements i.e. those needed to continue with the critical functions, for all the departments is given in Annexure IV-A-5.

The back-up site should necessarily have connectivity with other offices of OTCEI and external entities such as members and clearing bank. Currently members are connected via leased lines, I-net and dial up.

The detailed resource requirements for the recovery site for the disaster scenario has been summarised in Annexure IV-A-1. These resources are for completing the identified critical functions having different recovery timescales.

The costs for providing the above resources are presented in Annexure IV-B. The Table below gives the list of Annexures to be referred to for the details, for each disaster scenario and each recovery site.

## Annexure IV-A-1 : Recovery within one hour

## Functional Area : Networking &amp; Technology

## Number of Functions : Four

Function	Systems Resources	Non system Resources
1. Network management	1. VAX 4705-A Cluster system 2. TCP/ IP (software) 3. CISCO routers 4. PCs for - network monitoring - working - testing 5. Server Terminal 6. Dumb Terminals/ PCs 7. X.25 Switches 8. Hubs 9. Fibre Switches 10. U.P.S.	1. Telephone lines -Leased Lines -High speed leased lines -Dial-up 2. Modems 3. Cables 4. A.C. 5. Manuals/logs

## Annexure IV-A-1 : Recovery within one hour

Function	Systems Resources	Non system Resources
2. Local counters(dialup/leased)	<ol style="list-style-type: none"> <li>1. PCs</li> <li>2. ASSETS software</li> <li>3. Hub</li> <li>4. Switch</li> <li>5. Printer</li> </ol>	<ol style="list-style-type: none"> <li>1. Telephone lines               <ul style="list-style-type: none"> <li>-Leased Lines</li> <li>-High speed leased lines</li> <li>-Dial-up</li> </ul> </li> <li>2. Modems</li> <li>3. CR stationery</li> </ol>
3. UPS/Power management	-	<ol style="list-style-type: none"> <li>1. UPS</li> <li>2. Batteries</li> <li>3. Manuals/logs</li> <li>4. 3 phase power supply</li> </ol>
4. Airconditioner management		<ol style="list-style-type: none"> <li>1. 6 tonnes AC</li> <li>2. Cables</li> <li>3. Ventilators</li> <li>4. AC/Humidity indicator</li> </ol>

## Annexure IV-A-1 : Recovery within one hour

## Functional Area : Systems

## Number of Functions : Seven

Function	Systems Resources	Non system Resources
1. System Startup –Unloading of quotes into system file, updating post trading active standard quotes of yesterday with today's trading time, deleting quotes of previous day for permitted securities as well as on-standard quotes for listed securities, starting feed to PTI, NicNet and Reuters, creating the best quotes file every half an hour and backing up system files	1. VAX 4705 system 2. Operating System (OS) & Application software 3. Server Terminal 4. Dumb Terminals/ PCs 5. Printer	1. Telephone lines -Leased Lines -High speed leased lines -Dial-up 2. Cables 3. Fax 4. Modem
2. Stop of the day	1. VAX 4705 system 2. OS & Application software 3. Server Terminal 4. Dumb Terminals/ PCs 5. Printer	1. Telephone lines -Leased Lines -High speed leased lines -Dial-up 2. Cables 3. Fax 4. Modem

## Annexure IV-A-1 : Recovery within one hour

Function	Systems Resources	Non system Resources
3. Database/system administration	1. VAX 4705 system 2. RDB database 3. DBMS software 4. Server Terminal 5. Dumb Terminals/ PCs 6. Printer	-
4. System administration -System start-up/shutdown, user creation, disk usage, remove fragmentation and performance tuning -Access restrictions and memory management	1. VAX 4705 system 2. RDB database 3. DBMS software 4. Server Terminal 5. Dumb Terminals/ PCs 6. Printer	-

## Annexure IV-A-1 : Recovery within one hour

Function	Systems Resources	Non system Resources
5. After Stop of the day –Listing of the companies, book closure dated etc., stop trading of the companies, loading/modification of business rules and activating compulsory and additional market makers	1. VAX 4705 system 2. RDB database 3. Rally 4. Application software 5. Connectivity to all regions 6. Server Terminal 7. Dumb Terminals/ PCs 8. Printer	1. Telephone lines -Leased Lines -High speed leased lines -Dial-up 2. Cables 3. Fax 4. Modem
6. Information dissemination and broadcasting through Assets	1. Connectivity to TWS/ CTS 2. PC 3. ASSETS software	1. Telephone 2. Modem
7. Complaints handling –Trading complaints and co-ordination with regions for solving technical problem	1. PC	1. Telephone 2. Modem 3. Fax

**Functional Area : Accounts and finance**

**Number of Functions : One**

<b>Function</b>	<b>Systems Resources</b>	<b>Non system Resources</b>
1. Petty Cash -Withdrawal, issue and reconciliation - Issue of IOU's	1. PC 2. LRS system 3. Foxpro	1. Cheque books 2. IOU forms

**Annexure IV A-2 : Recovery within same day**

**Functional Area : Administration**

**Number of Functions : One**

<b>Function</b>	<b>Systems Resources</b>	<b>Non system Resources</b>
1. Utilities - Airconditioners and maintenance of telephones & payment of bills and movement of equipment - - Photocopier/ fax/ telephones and electrical circuit upkeep and payment of bills and provision of storage space	1. PC 2. TRS system	1. Telephone

Annexure IV-A-2 : Recovery within same day

**Functional Area : Business Development**

**Number of Functions : One**

<b>Function</b>	<b>Systems Resources</b>	<b>Non system Resources</b>
1. Press Relations (On specific occasions)	1. PC 2. Windows 3. Ms-office 4. Press List file	1. Phone 2. Fax

**Annexure IV-A-2 : Recovery within same day**

**Functional Area : Secretarial & Legal**

**Number of Functions : One**

<b>Function</b>	<b>Systems Resources</b>	<b>Non system Resources</b>
1. Court Cases -Appearance in court (also by regional offices)	1. PC 2. Own database 3. Printer	1. Required documents

## Annexure IV-A-2 : Recovery within same day

## Functional Area : Listing

Number of Functions : Two

Function		Systems Resources	Non system Resources
1. Information to market participants	<ul style="list-style-type: none"> <li>-Disseminating information regarding book closure dates, results, corporate actions</li> <li>-Broadcasting information received from the companies to the market</li> </ul>	<ol style="list-style-type: none"> <li>1. Computer</li> <li>2. E-mail</li> <li>3. PTI software</li> <li>4. MS-office</li> <li>5. Windows</li> <li>6. LAN</li> </ol>	<ol style="list-style-type: none"> <li>1. Telephone</li> <li>2. Modem</li> </ol>
2. Delisting/ suspension of securities	<ul style="list-style-type: none"> <li>-Instructing regional offices to take appropriate action</li> <li>-Receiving directives from regulatory bodies for delisting/ suspension</li> <li>-Checking compliance and issuing letters for companies and other tradable instruments (regional office)</li> </ul>	<ol style="list-style-type: none"> <li>1. Computer</li> <li>2. E-mail</li> <li>3. PTI software</li> <li>4. MS-office</li> <li>5. Windows</li> <li>6. LAN</li> </ol>	<ol style="list-style-type: none"> <li>1. Telephone</li> <li>2. Modem</li> </ol>

## Annexure IV-A-2 : Recovery within same day

## Functional Area : Member / Dealer

## Number of Functions : Three

Function	Systems Resources	Non system Resources
1. Admission of member/ dealer –On completion of all formalities, introducing and enabling member/dealer on the systems and activating member/dealer in permitted securities	1. PC 2. Connectivity to trading server 3. Windows 4. MS-office 5. E-mail 6. Foxpro 7. Printer	1. Telephone 2. Modem 3. Fax 4. Photocopy machine
2. Suspension of membership/dealership	1. PC 2. Connectivity to trading server 3. Foxpro 4. E-mail 5. Windows 6. MS-office	1. Telephone 2. Modem 3. Fax

## Annexure IV-A-2 : Recovery within same day

Function	Systems Resources	Non system Resources
<p>3. Activation/ termination</p> <ul style="list-style-type: none"> <li>-Activating/ terminating market maker's account in respective Scrips on the system after receiving activation/ termination notice from market maker and keeping track of expiry period of market maker and Extending automatically on expiry of market making terms for every three months till termination notice is received from the market maker</li> <li>-Issuing offer letter, appointment letter etc. and receiving information regarding various formalities completed by the member/ dealers</li> </ul>	<ol style="list-style-type: none"> <li>1. PC</li> <li>2. Connectivity to trading server</li> <li>3. Windows</li> <li>4. MS-office</li> <li>5. E-mail</li> <li>6. Foxpro</li> <li>7. Printer</li> <li>8. Member/dealer software</li> </ol>	<ol style="list-style-type: none"> <li>1. Telephone</li> <li>2. Modem</li> <li>3. Fax</li> </ol>

## Annexure IV-A-2 : Recovery within same day

**Functional Area : Market Operation (Listed)****Number of Functions : Three**

Function	Systems Resources	Non system Resources
1. Regulatory Compliance –Monitoring of 0.5 % exposure for transfers and report from systems on the level reached in acquisition –Co-ordination with registrars, custodians on levels reached in takeover/acquisitions and freezing of distinctive number ranges	1. E-mail 2. Windows 3. Ms-office	1. Telephone 2. Modem
2. Co-ordination(other functional areas) –Systems for freezing of CRs of counters/investors when lost/stolen	1. E-mail 2. Windows 3. Ms-office	1. Telephone 2. Modem
3. Initial allotment	-	-

## Annexure IV-A-2 : Recovery within same day

**Functional Area : Market Operations****(Permitted Securities/Listed Mutual Funds physical settlements, Cash Settlements and Other functions )****Number of Functions : Eight**

<b>Function</b>	<b>Systems Resources</b>	<b>Non system Resources</b>
1. Admission of security –Coordinating with regions for details of the securities (such as permitted security / listed mutual fund ) to be included, systems for activating the security and updating scrip database for press reports –Informing TCS for updation of scrip master at their end and informing couriers	1. PC 2. Windows 3. MS-office 4. E-mail 5. Floppies 6. Printer	1. STD Line 2. Modem
2. Press releases	1. Special software - Press 2. PC 3. Email	1. Telephone 2. Modem 3. Fax
3. Obligations processing Downloading/Sending reports at the end of trading week to the clearing house (TCS) –Stock in/out and sending (faxing) the courier list of counters from whom deliveries are to be collected.	1. PC 2. Connectivity to trading server 3. Email 4. Special software programs on trading system	1. Telephone 2. Modem 3. Fax

## Annexure IV-A-2 : Recovery within same day

Function	Systems Resources	Non system Resources
<p>4. Auction processing</p> <p>–Receiving defaulting counters report , rejection report from TCS, sending information to counters on shortfalls/ bad deliveries/deliveries rectified etc., Conducting auctions, Obligation processing and pay in/out information to regions and clearing house counters at the end of the auction trading cycle</p>	<p>1. PC</p> <p>2. Email</p> <p>3. Connectivity to trading server</p> <p>4. Batch file for deal reversal rate</p>	<p>1. Telephone</p> <p>2. Modem</p>
<p>5. Funds operations</p> <p>–Sending reports to accounts &amp; regions regarding regional offices payment status, receiving information from the clearing banks on payment defaults, loading and sending pay in/out information into Cash Monitoring System and monitoring funding to counters</p> <p>–Sending reports to the clearing banks pay in, pay out for listed and permitted securities and auction trading</p>	<p>1. PC</p> <p>2. Connectivity</p> <p>- to trading server</p> <p>- to Regions</p> <p>3. Email</p> <p>4. Special software programs</p> <p>5. Printer</p> <p>6. Floppies</p>	<p>1. Telephone</p> <p>2. Modem</p>
<p>6. Book closure activities</p> <p>–Ensuring systems has frozen trading during book closure period and informing TCS about book closure dates</p>	<p>1. PC</p> <p>2. Email</p> <p>3. Windows</p> <p>4. Ms-office</p>	<p>1. Telephone</p> <p>2. Modem</p>
<p>7. Activation of counters ( new dealer )</p>	<p>1. PC</p> <p>2. Email</p> <p>3. Printer</p>	<p>1. Telephone</p> <p>2. Modem</p>

**Annexure IV-A-2 : Recovery within same day**

<b>Function</b>	<b>Systems Resources</b>	<b>Non system Resources</b>
8. Stop allocation	1. PC 2. Email 3. Windows 4. Ms-office	1. Telephone 2. Modem

Annexure IV-A-2 : Recovery within same day

**Functional Area : Market Surveillance**

**Number of Functions : Eight**

Function	Systems Resources	Non system Resources
<p>1. Price movements/ quotes</p> <p>-Monitoring price movements of scrips including abnormal price movements, monitoring erratic quotes flashed by any member in the same scrip and ensuring market maker compliance to hold minimum inventory at all points of time and implementing the same. (Monitoring is done by regions of those scrips where market makers are situated . At corporate level monitoring is done for the whole market)</p>	<p>1. PC                  2. Connectivity to trading server                  3. E-mail                  4. Windows                  5. Ms-office                  6. MASS &amp; ASSETS software                  7. Printer</p>	<p>1. STD line                  2. Fax</p>
<p>2. Inspection while freezing quotes</p> <p>-Validating the request for quotes freezing and instructing the concerned personnel for freezing of quotes (is done at regional levels for the market makers situated at that region . In case of emergency and in cases where entire regions market makers quotes have to be frozen, freezing of quotes is done at corporate level.)</p>	<p>1. PC                  2. Connectivity to trading server                  3. E-mail                  4. Windows                  5. Ms-office                  6. MASS &amp; ASSETS software                  7. Printer</p>	<p>1. STD line                  2. Fax</p>

Annexure IV-A<sup>12</sup> : Recovery within same day

Function	Systems Resources	Non system Resources
3. Monitoring Trading and Index monitoring	1. PC 2. Connectivity to trading server 3. E-mail 4. Windows 5. Ms-office 6. MASS & ASSETS software 7. Printer	1. STD line 2. Fax
4. Corporate actions and Recalibration / modification of market trading parameters	1. PC 2. Connectivity to trading server 3. E-mail 4. Windows 5. Ms-office 6. MASS & ASSETS software 7. Printer	1. STD line 2. Fax
5. Market risk management	-	1. STD line 2. Fax
6. Inspection at the time of freezing quotes -Inspection of the counter's site for verification, in case of a physical failure	1. PC 2. Connectivity to trading server 3. E-mail 4. Windows 5. Ms-office 6. MASS & ASSETS	1. STD line 2. Fax

## Annexure IV-A-2 : Recovery within same day

Function	Systems Resources	Non system Resources
	software	
7. Market Intelligence -Collecting information on prices of those scrips which are listed on the other stock exchanges	-	1. STD line 2. Fax
8. Price movements/ quotes -Issuing show cause notice to the member giving erratic quote	1. PC 2. Windows 3. Ms-office 4. Printer	1. STD line 2. Fax

Annexure IV-A-3 : Recovery by next day

**Functional Area : Accounts and finance****Number of Functions : Four**

<b>Function</b>		<b>Systems Resources</b>	<b>Non system Resources</b>
1. Receipt of cheques		1. PC 2. Windows 3. Ms-office 4. Database of investment records	
2. Investments	–Maintaining all investment records and approvals and Redemption tracking –Negotiating price, interest and brokerage on purchase & sale of securities	1. PC 2. Windows 3. Ms-office 4. Database of investment records 5. records	1. Telephone 2. Fax 3. Photocopy machine
3. Payroll	–Checking, processing and payment the salaries received from Personnel (Function Area)	1. PC 2. Payroll system 3. Foxpro 4. Printer	1. Cheque book
4. Statutory requirements	–Deduction and payment of TDS on payment to contractors, salaries, etc.	1. PC 2. LRS 3. Foxpro	1. Various challans 2. Cheque books

Annexure IV-A-3 : Recovery by next day

**Functional Area : Administration****Number of Functions : Two**

<b>Function</b>	<b>Systems Resources</b>	<b>Non system Resources</b>
1. Payment of wages	1. PC 2. Windows 3. Ms-office 4. LRS	
2. Counter receipts & Stationery –Procurement of CR stationery from Tata Press and stationery requisition & inventory –Procurement of stationery for office	-	1. Telephone

Annexure IV-A-3 : Recovery by next day

**Functional Area : Compliance**

**Number of Functions : One**

<b>Function</b>	<b>Systems Resources</b>	<b>Non system Resources</b>
1. Monitoring compliance of members –Compliance of members/ dealers with exchange and SEBI guidelines –Monitoring of net worth and net business exposure of members/ dealers		1. Telephone

Annexure IV-A-3 : Recovery by next day

**Functional Area : Market Operation (Listed)****Number of Functions : Five**

<b>Function</b>	<b>Systems Resources</b>	<b>Non system Resources</b>
1. Investor services -Customer Care Cell ( CCC) and change of holders, nomination etc.	1. PC 2. Windows 3. Ms-office 4. CCC package 5. Printer	1. Telephone 2. Stationery
2. Information dissemination on stock In and stock out (listed securities)	1. PC 2. Connectivity to trading server 3. E-mail 4. Floppies	1. Telephone
3. Stationery control	-	-
4. Counter complaints/investor complaints	-	1. Telephone
5. Monitoring of movement of transfer documents	-	1. Telephone

Annexure IV-A-3 : Recovery by next day

**Functional Area : Market Operations****(Permitted Securities/Listed Mutual Funds physical settlements, Cash Settlements and Other functions )****Number of Functions : Two**

Function	Systems Resources	Non system Resources
1. Bad deliveries –Generate the deal reversal rates, access database of deal prices from the system end, determine the deal reversal rate as per OTCEI procedure and list all affected and defaulting counters for sending to region	1. PC 2. Connectivity to Regions 3. Windows 4. MS-office 5. E-mail 6. Floppies	1. STD line 2. Modem 3. Fax
2. Counter complaints		1. Telephone 2. Fax

Annexure IV-A-3 : Recovery by next day

**Functional Area : Personnel**

**Number of Functions : One**

<b>Function</b>	<b>Systems Resources</b>	<b>Non system Resources</b>
1. Salary -Legal proceedings in respect of statutory requirements -Computation of salary and payment of ESIC/ PF/ Profession Tax/ Gratuity	1. PC 2. Windows 3. MS-Office 4. LRS	

Annexure IV-A-3 : Recovery by next day

**Functional Area : Market Surveillance**

**Number of Functions : One**

<b>Function</b>	<b>Systems Resources</b>	<b>Non system Resources</b>
1. Market Intelligence -Collecting information on broker's position on other stock exchanges and the scrips in which he is trading heavily.	1. PC	1. Telephone

## Annexure IV-A-4 : Summary of current resources

## Current System Resources

	PCs	Diskless Terminals	LAN	VAX System	Special Software	Printers
			Annexure A		Annexure B	
1. Managing Director's Office	2	-	✓	-	-	1 Laser
2. Accounts and finance	2	4	✓	-	a*	Common <sup>1</sup> + One 132 clm. dot matrix
3. Administration, Compliance and Personnel	1	5	✓	-	b*	Common <sup>1</sup>
4. Business Development	3	-	✓		c*	Common <sup>1</sup>
5. Secretarial & Legal	4	-	✓	-	d*	Common <sup>1</sup>
6. Listing	2	-	✓	-	e*	Common <sup>1</sup>
7. Member / Dealer	1	-	✓	✓	f*	Common <sup>1</sup>
8. Market Operation (Listed)	1	-	✓	-	g*	Common <sup>1</sup>
9. Market Operations (Permitted Securities/Listed Mutual Funds physical settlements, Cash Settlements and Other functions)	5		✓	✓	h*	Common <sup>1</sup> + One 80clm dot-matrix
10. Market Surveillance	2	Annexure C	✓	✓	i*	Common <sup>1</sup>
11. Networking & Technology	Annexure D					
12. Systems	Annexure D					
Note : The list of resources does not include Internal Audit, Product Development and MIS departments as none of the functions of these functional areas get critical in case of disaster.						

- Common<sup>1</sup> ⇒ Laser Printers (2 nos)
- ✓ ⇒ Resource is required by the functional area
- Annexure A ⇒ LAN Configuration
- Annexure B ⇒ Various Special Software required by each functional area
- a\* to i\* ⇒ These are various components of Annexure B
- Annexure C ⇒ Resources for Market Surveillance
- Annexure D ⇒ Resources for Networking & Technology and Systems

## Annexure IV-A-4 : Summary of current resources

## Current Non-System Resources

	Direct lines	STD lines	EPABX lines	Email	Pager	Copier machine	Fax	Others
1. Managing Director's Office	1	1	Common <sup>1</sup>	Common <sup>2</sup>		Common <sup>3</sup>	1	*
2. Accounts and finance		1	Common <sup>1</sup>	Common <sup>2</sup>		Common <sup>3</sup>	Common <sup>4</sup>	**
3. Administration, Compliance and Personnel	2	1	Common <sup>1</sup>	Common <sup>2</sup>		Common <sup>3</sup>	Common <sup>4</sup>	***
4. Business Development	1	-	Common <sup>1</sup>	Common <sup>2</sup>		Common <sup>3</sup>	Common <sup>4</sup>	
5. Secretarial & Legal	1	-	Common <sup>1</sup>	Common <sup>2</sup>			Common <sup>4</sup>	
6. Listing	1	-	Common <sup>1</sup>	Common <sup>2</sup>		Common <sup>3</sup>	Common <sup>4</sup>	
7. Member / Dealer	-	-	Common <sup>1</sup>	Common <sup>2</sup>		Common <sup>3</sup>	Common <sup>4</sup>	
8. Market Operation (Listed)	-	-	Common <sup>1</sup>	Common <sup>2</sup>		Common <sup>3</sup>	Common <sup>4</sup>	
9. Market Operations (Permitted Securities/Listed Mutual Funds physical settlements, Cash Settlements and Other functions)	3	-	Common <sup>1</sup>	Common <sup>2</sup>	1	Common <sup>3</sup>	Common <sup>4</sup>	
10. Market Surveillance	1	-	Common <sup>1</sup>	Common <sup>2</sup>		Common <sup>3</sup>	Common <sup>4</sup>	
11. Networking & Technology			Annexure D		5			
12. Systems			Annexure D					
Note : The list of resources does not include Internal Audit, Product Development and MIS departments as none of the functions of these functional areas get critical in case of disaster.								

\* One Cellular phone

\*\* Six calculators, one safe and one cash box

\*\*\* One car

Common<sup>1</sup> ⇒ EPABX - 4 nos

Common<sup>2</sup> ⇒ Email - 1 no

Common<sup>3</sup> ⇒ Copier machine - 1 no

Common<sup>4</sup> ⇒ Fax - 1 no

## Annexure IV-A-4 : Summary of current resources

## Current human resources

Functional Areas	Professional Staff				Other Staff
	General Manger	Managers	Officers	Management trainees & others	Secretarial Staff
1. Managing Director's Office	-	-	-	-	1
2. Accounts and finance	-	2	2	1	1
3. Administration, Personnel and Compliance	1	2	-	2	1
4. Business Development	-	2	-	-	1
5. Secretarial & Legal	-	2	-	-	1
6. Listing	-	1	-	-	1
7. Member / Dealer	-	-	1	-	1
8. Market Operation (Listed)	-	-	1	-	-
9. Market Operations (Permitted Securities/Listed Mutual Funds physical settlements, Cash Settlements and Other functions )	-	2	2	-	1
10. Market Surveillance	-	2	-	-	-
11. Networking & Technology	-	3	3	2	1
12. Systems	1	7	2	5	1
<b>Total</b>	<b>2</b>	<b>22</b>	<b>11</b>	<b>11</b>	<b>10</b>
Note : The list of resources does not include Internal Audit, Product Development and MIS departments as none of the functions of these functional areas get critical in case of disaster.					

**Annexure A: LAN Configuration**

The LAN Configuration is:

1. Three servers - CP, SYS and Mail
2. Novell Netware
3. Windows and Ms office
4. 5 nos. Modems

## Annexure IV-A-4 : Summary of current resources

**Annexure B: List of Special Software required by each functional area**

<b>Ref</b>	<b>Functional Areas</b>	<b>Name of the special software(s)</b>
a	Accounts and finance	LRS, Financial Accounting / Payroll
b	Administration, Compliance and Personnel	LRS, Payroll and Loan Accounting System
c	Business Development	PTI software and Internet-Access Software
d	Secretarial & Legal	Jurix and Bull's Eye
e	Listing	Company Information System ( It is under development )
f	Member / Dealer	Member/dealer software, Foxpro, Market Monitoring Details Software, M/D Performance Evaluation System and Automated Test Management Systems (ATMS)
g	Market Operation (Listed)	Customer Care Cell, Customer Complaint Cell System and Register Monitoring System
h	Market Operations (Permitted Securities/Listed Mutual Funds physical settlements, Cash Settlements and Other functions)	MASS, ASSETS, Bank Settlement Information Software and Cash Monitoring System
i	Market Surveillance	ASSETS, VAX, Press software, Cash Mon, IDSS , Obligation processing software, Scrip Circuit Breaker & Suspension Software, Reuters Monitoring System, PTI Monitoring System (Stocks) and PTI News Monitoring System
j	Networking & Technology	Application Software - ASSETS , DELTA SERVER, DB SERVER, EVENT LOGGER, QUOTE SERVER, STOCKSCANMOD, STOCKSCANNIC, NEWSTK, MON_INDEX, MF SERVER, MF_DBSERVER, WATCHDOG, Liberty/WordScan, MASS and IVRS System Software - VAX, MULTINET, RDB, RALLY, BASE-VMS-250136, VMS USER, BOOKBROWSER, C-RunTime, CDD-PLUS, NET-APP_SUPP-300, PMDF-SERVER, VOLSHAD, DISKEEPER, THRUWAY, CISCO Remote (Including Netscape) and TCP/IP
k	Systems	LRS, Borland C++ 3.0, visual C++ 1.51, Visual Basic 4.0, Powerbuilder 4.0, MS Access 2.0, Foxpro 2.0, Ms office 4.2

Annexure IV-A-4 : Summary of current resources

**Annexure C: Terminal resources for Market Surveillance**

1. Reuters Terminal and UNIX Server
2. PTI Stockscan Terminal
3. PTI News Terminal

## Annexure IV-A-4 : Summary of current resources

## Annexure D : Resources For Networking &amp; Technology and Systems

<i>Resource</i>	<i>Current Nos.</i>
CISCO 2500	20
CISCO 4500	1
CODEX 3266 X 21 ( Rack Mounted )	11
• Module card	1
• Back Panel	1
3 Com Hub	8
X.25 MEMOTEC PAD	3
ALPHA Server 2100 (Digital)	1
RS 6000 (IBM)	1
IBM Power PC	1
SUN NETRA	1
ASM 20 RAD Modem Bank X 14 ( Rack Mounted )	1
VAX 4705 / ANTARIKSH / SWAR / PRITHVI in cluster	3
VAX 4700 - PARAM	1
VAX 4200 - ALPHA	1
3 Com Switch	2
Dumb Terminals	10
Terminal Server	1
PCs	4
IVRS	1
Dial up lines	120
Leased Lines	50
INET Lines 64 KBPS	16
Printer (132 Column)	1

## Annexure IV-A-5 : Summary of minimum resources

## Minimum System Resources

	PCs	Diskless Terminals	LAN	VAX System	Special Software	Printers
			Annexure A		Annexure B	
1. Managing Director's Office	2		✓			1 laser
2. Accounts and finance	2	2	✓		a*	Common <sup>1</sup>
3. Administration	1	1	✓		b*	Common <sup>1</sup>
4. Business Development	1		✓		c*	Common <sup>1</sup>
5. Compliance	1	1	✓		b*	Common <sup>1</sup>
6. Secretarial & Legal	1		✓		d*	Common <sup>1</sup>
7. Listing	1		✓		e*	Common <sup>1</sup>
8. Member / Dealer	1		✓	✓	f*	Common <sup>1</sup>
9. Market Operation (Listed)	1		✓		g*	Common <sup>1</sup>
10. Market Operations (Permitted Securities/Listed Mutual Funds physical settlements, Cash Settlements and Other functions)	3		✓	✓	h*	Common <sup>1</sup>
11. Personnel	1	1	✓		b*	Common <sup>1</sup>
12. Market Surveillance	2	Annexure C	✓	✓	i*	Common <sup>1</sup>
13. Networking & Technology	Annexure D					Common <sup>1</sup>
14. Systems	Annexure D					Common <sup>1</sup>
Note : The list of minimum resources does not include Internal Audit, Product Development and MIS departments as none of the functions of these functional areas get critical in case of disaster.						

Common<sup>1</sup> ⇒ 1 no. laser + 1 no. 80 ctm. dotmatrix + 1 no. 132 ctm. dotmatrix (all users will have common access to all printers)

✓ ⇒ Resource is required by the functional area

Annexure A ⇒ LAN Configuration

**Annexure IV-A-5 : Summary of minimum resources**

- Annexure B** ⇒ Various Special Software required by each functional area
- a\* to i\*** ⇒ These are various components of Annexure B
- Annexure C** ⇒ Resources For Market Surveillance
- Annexure D** ⇒ Resources For Networking & Technology and Systems

## Annexure IV-A-5 : Summary of minimum resources

**Minimum Non-system Resources**

	Direct lines STD/ISD	High speed lines 64KBPS	Email	Pager	Copier machine	Fax
1. Managing Director's Office	1	Mumbai - Delhi Mumbai - Calcutta Mumbai - Chennai Mumbai - Nariman Point and two additional **		*		1
2. Accounts and finance						
3. Administration						
4. Business Development						
5. Compliance						
6. Secretarial & Legal						
7. Listing						
8. Member / Dealer						
9. Market Operation (Listed)						
10. Market Operations (Permitted Securities/Listed Mutual Funds physical settlements, Cash Settlements and Other functions)						
11. Personnel						
12. Market Surveillance						
13. Networking & Technology						
14. Systems					5	
15. Common	12		4 + 2	1		1

Note : The list of minimum resources does not include Internal Audit, Product Development and MIS departments as none of the functions of these functional areas get critical in case of disaster.

\* One Cellular phone

\*\* Two additional leased lines for PTI and Reuters terminals

## Annexure IV-A-5 : Summary of minimum resources

## Minimum human resources

Functional Areas	Professional Staff				Secretarial Staff
	General Manger	Managers	Officers	Management trainees & others	Secretarial Staff
1. Managing Director's Office	-	-	-	-	1
2. Accounts and finance	-	2	2	1	1
3. Administration, Personnel and Compliance	1	2	-	2	1
4. Business Development	-	2	-	-	1
5. Secretarial & Legal	-	2	-	-	1
6. Listing	-	1	-	-	1
7. Member / Dealer	-	-	1	-	1
8. Market Operation (Listed)	-	-	1	-	-
9. Market Operations (Permitted Securities/Listed Mutual Funds physical settlements, Cash Settlements and Other functions )	-	2	2	-	1
10. Market Surveillance	-	2	-	-	-
11. Networking & Technology	-	3	3	2	1
12. Systems	1	7	2	5	1
<b>Total</b>	<b>2</b>	<b>22</b>	<b>11</b>	<b>11</b>	<b>10</b>
Note : The list of resources does not include Internal Audit, Product Development and MIS departments as none of the functions of these functional areas get critical in case of disaster.					

**Annexure A: LAN Configuration**

The LAN Configuration is:

1. Three servers - CP, SYS and Mail
2. Novell Netware
3. Windows and Ms office
4. 5 nos. Modems

## Annexure IV-A-5 : Summary of minimum resources

**Annexure B: Special Software required by each functional area**

Ref	Functional Areas	Name of the special software(s)
a	Accounts and finance	LRS, Financial Accounting / Payroll
b	Administration, Compliance and Personnel	LRS, Payroll and Loan Accounting System
c	Business Development	PTI software and Internet Access Software
d	Secretarial & Legal	Jurix and Bull's Eye
e	Listing	Company Information System ( It is under development )
f	Member / Dealer	Member/dealer software, Foxpro, Market Monitoring Details Software, M/D Performance Evaluation System and Automated Test Management Systems (ATMS)
g	Market Operation (Listed)	Customer Care Cell, Customer Complaint Cell System and Register Monitoring System
h	Market Operations (Permitted Securities/Listed Mutual Funds physical settlements, Cash Settlements and Other functions)	MASS, ASSETS, Bank Settlement Information Software and Cash Monitoring System
i	Market Surveillance	ASSETS, VAX, Press software, Cash Mon, IDSS , Obligation processing software, Scrip Circuit Breaker & Suspension Software, Reuters Monitoring System, PTI Monitoring System (Stocks) and PTI News Monitoring System
j	Networking & Technology	Application Software - ASSETS , DELTA SERVER, DB SERVER, EVENT LOGGER, QUOTE SERVER, STOCKSCANMOD, STOCKSCANNIC, NEWSTK, MON_INDEX, MF SERVER, MF_DBSERVER, WATCHDOG, Liberty/WordScan, MASS and IVRS System Software - VAX, MULTINET, RDB, RALLY, BASE-VMS-250136, VMS USER, BOOKBROWSER, C-RunTime, CDD-PLUS, NET-APP_SUPP-300, PMDF-SERVER, VOLSHAD, DISKEEPER, THRUWAY, CISCO Remote (Including Netscape) and TCP/IP
k	Systems	LRS, Borland C++ 3.0, visual C++ 1.51, Visual Basic 4.0, Powerbuilder 4.0, MS Access 2.0, Foxpro 2.0, Ms office 4.2

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Annexure IV-A-5 : Summary of minimum resources

**Annexure C: Terminal resources For Market Surveillance**

1. Reuters Terminal and UNIX Server
2. PTI Stockscan Terminal
3. PTI News Terminal

## Annexure IV-A-5 : Summary of minimum resources

**Annexure D: Resources For Networking & Technology and Systems**

<i>Resource</i>	<i>Minimum Nos.</i>
CISCO 2500	8
CISCO 4500	1
CODEX 3266 X 21 ( Rack Mounted )	6
• Module card	1
• Back Panel	1
3 Com Hub	3
X.25 MEMOTEC PAD	2
ALPHA Server 2100 (Digital)	1
ASM 20 RAD Modem Bank X 14 ( Rack Mounted )	4 modems only
VAX 4705 / ANTARIKSH / SWAR / PRITHVI in cluster	3
VAX 4700 - PARAM	1
3 Com Switch	1
Dumb Terminals	8
Terminal Server	1
PCs	4
IVRS	1
Dial up lines	128
INET Lines 64 KBPS	2
Printer (132 Column)	1

## Annexure IV-B : Cost of minimum resources

**Cost of Minimum Resources**

One time procurement cost of above mentioned minimum system and non-system resources work out to Rs.11,85,58,829/-. These costs are based on quotations received by OTCEI from various vendors or information internally available with, and given by officials of, OTCEI (cost of minimum system resources does not include cost of software developed in-house but the cost of licensed software is included in the said cost).

**Table IV-B : One Time Procurement Cost Of Minimum System And Non-System Resources**

		Total Cost (Rs.)
<b>A.</b>	<b>Total Cost of Systems, Networking &amp; Technology resources*</b>	<b>(Table IV-B-1) 70830107</b>
<b>B.</b>	<b>Total Cost of Other Office System resources *</b>	<b>(Table IV-B-2) 5188600</b>
<b>C.</b>	<b>Total Cost of Software</b>	<b>(Table IV-B-3) 42540122</b>
	<b>Total One Time Procurement Cost Of Minimum System And Non-System Resources</b>	<b>118558829</b>

\* excludes cost of software

## Annexure IV-B : Cost of minimum resources

Table IV-B-1 : Costing of Systems, Networking &amp; Technology resources

Systems, Networking & Technology resources	Minimum (No.) A	Rate (Rs.) B	Total Cost (Rs.) A*B	Remarks
1. CISCO 2500	8	95000	760000	
2. CISCO 4500	1	805000	805000	
3. CODEX 3266 X 21 ( Rack Mounted )	6	840000	5040000	
• Module card	1	142800	142800	
• Back Panel	1	113850	113850	
4. Com Hub	3	17340	52020	
5. MEMOTEC PAD	2	279000	558000	
6. ALPHA Server 2100 (Digital)	1	6500000	6500000	
7. ASM 20 RAD	8	60000	480000	
8. VAX 4705 / ANTARIKSH / SWAR / PRITHVI in cluster	3	11500000	34500000	
9. VAX 4700 - PARAM	1	11500000	11500000	
10. Com Switch	1	600000	600000	
11. Dumb Terminals	8	15000	120000	
12. Terminal Server	1	300000	300000	
13. PCs	4	80000	320000	
14. IVRS	1	2850000	2850000	
15. Dial up lines	128	15000	1920000	
16. Leased Line - Reuters	2	187500	375000	
17. Leased Line - PTI	2	187500	375000	

## Annexure IV-B : Cost of minimum resources

Systems, Networking & Technology resources	Minimum (No.)	Rate (Rs.)	Total Cost (Rs.)	Remarks
	A	B	A*B	
18. INET Lines 64 KBPS from back up site to				
- Cuffe Parade	2	187500	375000	
- Delhi	1	817312	817312	
- Calcutta	1	1406250	1406250	
- Chennai	1	714375	714375	
- Nariman Point	1	187500	187500	
19. Printer (132 Column)	1	18000	18000	
Total Cost of Networking, Systems & Technology resources			70830107	

## Annexure IV-B : Cost of minimum resources

Table IV-B-2 : Costing of Other Office System resources

Other Office System resources	Minimum (No.) A	Rate (Rs.) B	Total Cost (Rs.) A*B	Remarks
1. LAN Configuration : Three servers - CP, SYS and Mail Novell Netware Windows and Ms office 5 Modems	2	1200000	2400000	
2. PCs	17	80000	1360000	
3. Diskless Terminals	5	40000	200000	
4. Laser Printers	2	250000	500000	
5. 80 clm dot matrix printer	1	25000	25000	
6. 132 clm dot matrix printer	1	35000	35000	
7. Resources For Market Surveillance - Reuters Terminal and UNIX Server	1	453600	453600	
- PTI Stockscan Terminal	1	90000	90000	
- PTI News/OTCEI SCAN Terminal	1	85000	85000	
8. Pagers	5	5000	25000	
9. Cellular Phone	1	15000	15000	
<b>Total Cost of Systems and Other resources</b>			<b>5188600</b>	

## Annexure IV-B : Cost of minimum resources

Table IV-B-3 : Costing of Software

Software	Minimum (No.) A	Rate (Rs.) B	Total Cost (Rs.) A*B	Remarks
PTI software	3	----	NIL	It is available free of cost
Internet Access Software	3	----	NIL	It is available free of cost
Jurix	1	45000	45000	
Bull's Eye	1	44250	44250	
Reuters Monitoring System	2	----	----	It is available free of cost
IVRS	1	----	----	It comes free with hardware
MULTINET (TCP/IP) Server	1	15000	15000	
RDB and RALLY	4	----	34000000	Minimum 1000 licenses @ Rs.34000/- per user
BASE-VMS-250136	1	----	----	It comes free with hardware
VMS USER	1			These come together for unlimited user licenses
C-RunTime	4	----	22,08,120	
BOOKBROWSER	NL	----	----	It is available with OTCEI
CDD-PLUS	NL	----	----	It is available with OTCEI
NET-APP SUPP-300	4	----	2400000	It is for unlimited number of users
PMDf-SERVER	1	----	8,69,680	
VOLSHAD	3	----	1200000	It is for unlimited number of users
DISKEEPER	1	----	200000	
THRUWAY	5	----	3,02,651	It is for unlimited number of users
CISCO Remote (Including Netscape)	NL	----	----	It is available with OTCEI
POLY -Watchdog (Consolidator)	1			These come together for unlimited user licenses
POLY -Watchdog ( Agent)	5	----	8,02,012	
WordScan	1	35000	35000	
Borland C++ 3.0	1	22500	22500	

## Annexure IV-B : Cost of minimum resources

Software	Minimum (No.) A	Rate (Rs.) B	Total Cost (Rs.) A*B	Remarks
Visual C++ 1.51,	1	15300	15300	
Visual Basic 4.0	1	37250	37250	
Powerbuilder 4.0	1	50000	50000	
MS Access 2.0	1	8359	8359	
Ms office 4.2	20	10000	200000	
Foxpro 2.0	1	10000	10000	
IDSS	1	75000	75000	
Total Cost of Software			42540122	

NL : No License Required

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**Backup Strategy****V. BACK UP OPTIONS FOR DATA AND VITAL RECORDS****A. Data And Application Software**

The current backup procedures of OTCEI are found to be generally adequate in case of disaster. However, it is recommended that at least one copy of all the backup (taken on media such as cartridge tapes, DATs and floppies etc.) should be kept off-site.

Data is a critical component for business recovery. It is imperative to have the necessary data available at the recovery locations to enable the business functions to continue operations. Data is critical in two types of business disruptions viz.

- Loss of data due to Operational hazards, such as virus attack, data corruption, disk failures etc.
- Loss of data due to disaster such as a bomb blast making the entire Maker Towers building non operational.

## Backup Strategy

## 1. Backup strategy to recover data from operational threats and also useful in case of recovery from disaster

No.		Type	Frequency	Media	Storage Location	Recycling Schedule
1.	Backup measures on OTCEXI	Database and Sources of Param	Daily	Cartridge	On site	After 20 working days
		Important system files -	Daily	Disk and Cartridge	Off site	Not recycled
		Reports and Server files	Monthly	Disk and Cartridge	On site	Not recycled
		CPD files	Monthly	Disk and Cartridge	On site	Not recycled
		Quotes files	Quarterly	Disk and Cartridge	On site	Not recycled
		System Images	Quarterly	Cartridge	On site	After 9 months
2.	Backup measures on Development Server (Param)	Important system files, application software and source files	Daily	Disk	On site	Not recycled
3.	Backup measures on Application Server (GAMA)	Image of system and Application disk	Not regular	Disk	On site	After 9 months

## Backup Strategy

No.		Type	Frequency	Media	Storage Location	Recycling Schedule
4.	Backup measures on CP server	Divided into 6 areas viz. 1. SYS - System files 2. APP1 - Software 3. APP2 - LRS 4. APP3 - Software 5. CP - User files 6. TEMP - General	Daily - APP2, CP  Weekly - SYS, APP1, APP3, TEMP  Friday - All files on CP server  Monthly - CP server	DATs	On site	Daily - After one month from the backup date  Weekly - After one month from the backup date  Friday - After one month from the backup date  Monthly - Not Recycled
5.	Backup measures on SYSTEMS server	Divided into 3 areas viz. 1. SYS 2. VOL1 3. VOL	Weekly - All files	DATs	On site	Weekly - After one month from the backup date
6.	Backup measures on MAIL server	Divided into 3 areas viz. 1. SYS 2. MAIL 3. SCANNER	Daily - MAIL  Weekly - SYS and SCANNER	DATs	On site	Daily - After one month from the backup date  Weekly - After one month from the backup date

**2. *Back-up strategy to recover data and operate from another site in case of a disaster***

**Recommendations :**

1. All database as well as Sources of Param should be stored offsite.
2. Backup on GAMA should be taken on daily incremental basis and (also) stored offsite.
3. Daily backup on CP server (lan) should be stored offsite.
4. CP server (lan) backup should be taken daily.
5. DAT life should be determined depending upon the recycling schedule and accordingly, disposal schedule should be prepared.
6. LRS monthly backup (containing data relating to accounts) is maintained upto 4 years. This may be preserved upto 8 years
7. Backups stored offsite should be tested periodically (say once a month).

## Backup Strategy

**B. Vital Records**

OTCEI does not have any backups for vital records and all original documents are kept at site. The alternatives for backing up these vital paper records are given below :

The estimated volume of paper records for each department is given below :

Functional Area	Volume of Vital documents as on April, 1997
	Nos
1. Accounts and finance	1,53,015
2. Administration	2375
3. Business Development	0
4. Compliance	2000
5. Internal Audit	0
6. Secretarial & Legal	61,104
7. Listing	414
8. Member / Dealer	3,760
9. Market Operation (Listed)	104
10. Market Operations (Permitted Securities/Listed Mutual Funds physical settlements, Cash Settlements and Other functions)	0
11. Personnel	5180
12. Product Development	0
13. Market Surveillance	500
14. Networking & Technology	1740
15. Management Information Services	0
16. Systems	1625
<b>Total</b>	<b>231817</b>

Note: For the purpose of costing, a volume of 3 Lacs documents was assumed as vital requiring to be backed up.

## Backup Strategy

A comparison of the options for backing up the vital paper records is as below:

Parameters	Microfilming	Scanning
Back up media options	Microfilm	CD / DATs
Type of retrieval from back up	Sequential	Random/ Sequential
Durability of back up media	Claimed to be 500 years (not tested)	About 30 years
Risk of technology change	Low Existing since world war II	High
Risk of damage due to flooding, tampering of the media	Low	Moderate
Ease of partial retrieval in case of damage	High	Low
Requirement of storage space	Moderate	Moderate
Data integrity	High	Low
Legal acceptance of back up media	Secondary evidence	None
Clearance of backlog of documents	3 days	4 months
Cost of media	Rs. 9.83/- per document	Rs. 3.35/- per document
One time costs of equipment *	Rs. 28.99 Lacs	Rs. 8.13 Lacs
Period costs of outsourcing *	Rs. 0.50 Lacs	Rs. 1.92 Lacs

\* For the detailed breakup of costs, refer Annexure V - 1, V- 2.

The possibility of photocopier as a backup option has not been considered. Maintenance of paper backups requires a lot of space (as paper is bulky), whereas information on microfilm/ CD takes approximately 3-4% of the space consumed by paper.

The statistics are based on information received from a vendor.

## Backup Strategy

## Annexure V - 1 : Cost of Microfilming Vital Documents

## Alternative One : Microfilming vital documents

## A. One time cost

Equipment	No. of Units	Unit price	Total (Rs. Lacs)
Camera	1	13.98 lacs	13.98
Processor	1	4.41 lacs	4.41
Reader printers	1	6.83 lacs	6.83
Film	50	340	.17
Intelligent controller (optional)	1	3.09 lacs	3.09
Key pad (optional)	1	0.51 lacs	.51
<b>Total equipment cost</b>		<b>(a)</b>	<b>28.99</b>

## B. Period cost

Type	No. of months	Cost per month (Rs.)	Total (Rs. Lacs)
Processing charges	1	50000	0.50
<b>Total period cost</b>		<b>(b)</b>	<b>0.50</b>

<b>Total one time cost</b>		<b>(a) + (b)</b>	<b>29.49</b>
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## Backup Strategy

## Annexure V - 2 : Cost of Scanning Vital Documents

## Alternative Two : Scanning vital documents

## A. Equipment cost

Equipment	No. of Units	Unit price	
		(Rs.)	(Rs. Laacs)
Scanner	5	43000	2.15
CD Writer	1	75000	0.75
Mapping Software	1	40000	.40
486 processors	6	420000	4.20
DATs	11	3000	.33
CDs	75	400	.30
<b>Total equipment cost</b>		<b>(a)</b>	<b>8.13</b>

## B. Period cost

Type	No. of months	Cost per month	
		(Rs.)	(Rs. Laacs)
Processing charges	4	48000	1.92
<b>Total period cost</b>		<b>(b)</b>	<b>1.92</b>
<b>Total one time cost</b>		<b>(a) + (b)</b>	<b>10.5</b>

## **VI. STEPS IN STAGE THREE - PLAN PREPARATION, TESTING AND MAINTENANCE**

This stage will have to be carried out by OTCEI. It involves preparation of a draft Business Continuity plan and preparing specific disaster recovery procedures. It also lays down the steps for plan testing and plan maintenance.

### **A. Contents of the Plan**

- Purpose of the plan
- Criteria to determine when the plan is to be used
- Steps to be taken immediately after a disaster has occurred
- Procedures necessary to recover the critical and necessary business activities
- Composition, responsibilities and tasks for all disaster recovery teams
- Composition, responsibilities and tasks for all critical department teams

### **B. Laying down procedures**

- Disaster declaration procedures which include first point of contact, emergency services to be contacted, co-ordination within the business recovery team - all steps leading to a declaration of disaster
- Business recovery team procedures which include starting, coordinating and monitoring the recovery effort
- Emergency response procedures related to the immediate responses in the event of a disaster
- Damage assessment and salvage team procedures which the concerned team uses for damage assessment before invoking the disaster recovery plan. The deciding factors are the situation resulting from the disaster and the length of time that the operations will be stopped. This team will also study whether it is possible to salvage anything from the original facility

- Off site storage team procedures which involves co-ordination of off site backups
- Computer recovery teams procedures laying down the procedures to restore hardware, application software and systems and communication facilities
- Similarly there will be detailed step by step procedures for restoration of the supplies, vital records, equipment, transport and utilities
- Critical department team procedures which contain instructions for operating the critical and necessary business procedures under recovery conditions

**C. Plan Testing and Maintenance**

The objective of this phase is to discover and remedy any inadequacies or errors in the plan and produce plan testing and maintenance procedures for ongoing use