

DX 200

Safecopy Instructions of the DX 200 BSC

Operating Manual
Document Class 2.3

NOKIA

The information in this document is subject to change without notice and describes only the product defined in the introduction of this documentation. This document is intended for the use of Nokia Networks' customers only for the purposes of the agreement under which the document is submitted, and no part of it may be reproduced or transmitted in any form or means without the prior written permission of Nokia Networks. The document has been prepared to be used by professional and properly trained personnel, and the customer assumes full responsibility when using it. Nokia Networks welcomes customer comments as part of the process of continuous development and improvement of the documentation.

The information or statements given in this document concerning the suitability, capacity, or performance of the mentioned hardware or software products cannot be considered binding but shall be defined in the agreement made between Nokia Networks and the customer. However, Nokia Networks has made all reasonable efforts to ensure that the instructions contained in the document are adequate and free of material errors and omissions. Nokia Networks will, if necessary, explain issues which may not be covered by the document.

Nokia Networks' liability for any errors in the document is limited to the documentary correction of errors. Nokia Networks WILL NOT BE RESPONSIBLE IN ANY EVENT FOR ERRORS IN THIS DOCUMENT OR FOR ANY DAMAGES, INCIDENTAL OR CONSEQUENTIAL (INCLUDING MONETARY LOSSES), that might arise from the use of this document or the information in it.

This document and the product it describes are considered protected by copyright according to the applicable laws.

NOKIA logo is a registered trademark of Nokia Corporation.

Other product names mentioned in this document may be trademarks of their respective companies, and they are mentioned for identification purposes only.

Copyright © Nokia Networks Oy 2002. All rights reserved.

No. of pages	Edited by	Author	Approved by	Previous issue
	19 Nov 1999	19 Nov 1999	19 Nov 1999	(7) approved
37/SAR	K Salo	I Haapamäki	S Tarvainen	19 Mar 1999

Contents

Summary of changes	5
1. Introduction	9
1.1. References	9
2. Concepts	10
3. Recommendations	12
3.1. General recommendations	12
3.2. When to restore backup	12
3.3. When to make a safecopy	12
3.3.1. General	12
3.3.2. Alarm 2518	13
4. Instructions for the use of the CTU	15
4.1. Inserting a DAT tape to the CTU	15
4.2. Displaying the contents of a DAT tape	16
4.3. Copying from hard disk to DAT tape	16
4.4. Copying from diskette to DAT tape	17
4.5. Copying from DAT tape to hard disk	18
4.5.1. Copying all files and directories in a file set	18
4.5.2. Copying all files in a desired directory of the file set	18
4.5.3. Copying a specific file in a desired directory of the file set	19
4.6. Copying from DAT tape to diskettes	20
4.7. Removing a DAT tape from the CTU	20
4.8. Cleaning the reading head of the CTU	20
5. Fallback of the software build and database	21
5.1. Preparatory actions	21
5.2. Fallback of the entire software build	21
5.3. Fallback of the data files only	22
5.4. Fallback of changed files only	22
5.5. Fallback via command calendar	22
5.5.1. Interrupted command execution	25
6. Backup copying to DAT tape	26
6.1. Backup copying of the BSC software build to DAT tape	26
6.1.1. Entire build to DAT tape	26
6.1.2. Data files to DAT tape	26
6.2. Backup copying of BTS software builds and hardware database to DAT tape	27
6.3. Backup copying of transmission equipment software builds to DAT tape	27

7. Backup copying to floppy disks	28
7.1. Backup copying of the BSC software build to floppy disks	28
7.1.1. Entire build to floppy disks	28
7.1.2. Data files only to floppy disks	28
7.2. Backup copying of BTS software builds and hardware database to floppy disks	28
7.3. Backup copying of transmission equipment software builds to floppy disks	29
8. Restoring the software build	30
8.1. BU build faulty	30
8.2. One Winchester disk is faulty	30
8.3. Both Winchester disks are faulty	31
8.3.1. Restore Fallback from DAT tape	32
8.3.2. Restore Fallback from floppy disks	33
8.4. Datafiles corrupted on disks, in memory and in fallback build in OMU	34
9. Restoring databases from DAT tape	35
9.1. Restoring BTS software build and hardware database from DAT tape	35
9.2. Restoring transmission equipment build database from DAT tape	35
10. Restoring databases from floppy disks	36
10.1. Restoring BTS software builds from floppy disks	36
10.2. Restoring BTS hardware database from floppy disks	36
10.3. Restoring transmission equipment software builds from floppy disks	36
11. Remote backup	37

Summary of changes

Changes made between issues 8 and 7

Chapters *Instructions for the use of the DAT drive* and *Recommendations* change places.

Structure of document after the chapter *Fallback of the software build and database* modified.

Chapter Concepts

Concepts Cartridge Tape Unit and Digital Audio Tape added.

Chapter Recommendations

Structure of chapter modified.

The description of alarm 2518 changed.

Chapter Instructions for the use of the CTU

Name of chapter updated (old name: *Instructions for the use of the DAT drive*).

Chapter Instructions for the use of the CTU, section Inserting a DAT tape to the CTU

Name of section updated

Chapter Instructions for the use of the CTU, the first section

The printout of section changed. Recommendation for the use of one tape added.

Chapter Instructions for the use of the CTU, section Displaying the contents of a DAT tape

DAT indexing changed from CTU, 0 to CTU,<x>.

Chapter Instructions for the use of the CTU, section Copying from hard disk to DAT tape

DAT indexing changed from CTU,0 to CTU,<x>.

Chapter Instructions for the use of the CTU, section Removing a DAT tape from the CTU

Name of section updated.

DAT indexing changed from CTU,0 to CTU,<x>.

Chapter Instructions for the use of the CTU, section Cleaning the reading head of the CTU

Name of section updated

Chapter Fallback of the software build and database, section Deleting the old fallback build

MML command changed from ZWQE: NAME=<FB_build_name>; to ZWQE: NAME=<FB_build_name>: DIRE=<fallback_dir>:MAFILE,;;

Chapter Fallback of the software build and database, section Preparatory actions

The needed space is 200 000 blocks.

Chapter Fallback of the software build and database, section Fallback via command calendar

MML command parameters has been changed from DIRE=FALLBACK; to DIRE=<fallback_dir>:MAFILE,;;

Chapter Backup copying to DAT tape, section Backup copying of transmission equipment software builds to DAT tape

New section.

Chapter Backup copying to floppy disks, section Backup copying of transmission equipment software builds to floppy disks

New section

Chapter Restoring databases from DAT tape, section Restoring transmission equipment build database from DAT tape

New section.

Chapter Restoring databases from floppy disks, section Restoring transmission equipment software builds from floppy disks

New section.

Changes made between issues 7 and 5

Software package changed to software build.

DAT indexing has been changed from CTU-N0 to CTU-N<x>

Chapter Instructions for the use of the DAT drive, section Copying all files and directories in a file set

<desired_directory> changed to be <root_directory>.

DIR-parameter use clarified.

Chapter Recommendations, section When to make safecopy

The recommendation is to take data files fallback daily.

New alarm 2518 added.

Chapter Fallback of the software build and database, section Preparatory actions

The needed space is 150000 blocks.

Chapter Restoring the software build

New database WAGONS added.

Chapter Restoring the software build, section One Winchester disk is faulty

Work order has been modified – first initialise then prevent file/disk update.

Chapter Restoring the software build, section Both Winchester disks are faulty

In ZMI formatting, the BLCODE, LFILES and MMDIRE directory sizes have been increased to 800(H) and HWDATA to 400(H).

Chapter Restoring the software build

Section Datafiles corrupted on disks, in memory and in fallback build in OMU is a new section.

Chapter Remote Backup

New chapter.

Changes made between issues 5 and 3

Chapter Instructions for the use of the DAT drive

New length and capacity possibilities added for DDS tapes.

Chapter Instructions for the use of the DAT drive, section Copying from hard disk to DAT tape

Service terminal extension MASHAN replaced with IBD command to delete the latest file set before continuing copying after interruption of copying.

Chapter Instructions for the use of the DAT drive, section Copying from DAT tape to hard disk

The IBC command has been added to all three instances to be given if the DAT has not been made in the same DX 200 element where restoring is made.

Chapter Fallback of the software package and database

The fallback command has changed from WQS to WKS.

Chapter Fallback of the software package and database, section Preparatory actions

Needed block amount increased from 80000 to 110000.

DUP command not needed to prevent disk updating because WKS command does it.

Chapter Fallback of the software package and database, section Fallback via command calendar

Session log status checking recommended to be done with the WKP command, not the IGO command.

DUR command not needed to resume updating because WKS command does it.

The new Back-up Application introduces a one-command safecopy thus command calendar files for remote safecopying are not needed.

Chapter Fallback of the software package and database, section Contents of command files

Section removed.

Chapter Fallback of the software package and database, section Executing command file

Section removed.

Chapter Fallback of the software package and database, section Interrupted command file execution

Text added concerning alarms 2393 and 2394.

Chapter Backup copying of the BSC software build to DAT tape, section Entire package to DAT tape

Copying ASWDIR added.

Chapter Restoring BTS software packages and hardware database from floppy disk

IBC command parameters added.

Chapter Restoring the software package

ASWDIR added to copying processes.

Chapter Restoring the software build, section One Winchester disk is faulty

File update checking command changed from DUD to DUQ.

1. Introduction

This document is compatible with the S9 software only.

The document describes how to make a safecopy to Winchester disks and a backup copy of software builds and software databases to a DAT tape or to floppy disks.

The chapter *Instructions for the use of CTU* gives some basic information about the use of the CTU and introduces the principles of backup copying.

The chapter *Recommendations* gives the recommendations for backup copying. Before you start copying, read this chapter carefully.

The chapter *Fallback of the software build and database* lists the routines for the fallback copying of software builds.

1.1. References

- /1/ *The Digital Audio Tape Drive in the DX 200 BSC, Operating Manual*
- /2/ *General Maintenance Procedures, Maintenance Manual*

2. Concepts

Backup (BU)

Software build status. The build on disk which is usually defined as active and in use.

Backup copying

The term backup copying is used to refer to taking a safecopy of the fallback build.

Command calendar

The command calendar is a program entity, which is used to execute MML commands and command files at a given time or on the basis of alarms.

Command file

Functions as a macro with .CMD extension. It can be used with the command calendar.

Cartridge Tape Unit (CTU)

CTU consist of an adapter and DAT driver unit.

Digital Audio Tape (DAT)

4 mm data cartridge tape, which is used in CTU.

Digital Data Storage (DDS)

This is a format for data storage drives which use and are building on DAT (Digital AudioTape) technology.

Fallback (FB)

Software build status. Usually an on-line safecopy of the BACKUP build.

Fallback copying

The term fallback copying is used to refer to taking a safecopy of the backup build on the Winchester disks.

Safecopy

In DX 200, safecopying means taking a copy of the BACKUP software build either to FALLBACK software build on disk or to any other medium (floppies or DAT).

Software build

Collection of programmes and files operating in a required system.

3. Recommendations

3.1. General recommendations

Avoid making database updates or other changes during backup.

Take fallbacks during low traffic, e.g. at night.

Always restore the entire backup to retain the consistency of a software build.

Have always at least the required amount of initialised diskettes available.

Name the backup file sets systematically on the DAT tape to specify the software build and release and the fallback activation time.

3.2. When to restore backup

Restore backup from the DAT tape or floppy disks when:

- both Winchesters of the OMU unit are faulty
- data files are corrupted on both Winchesters of the OMU and fallback build is also corrupted.

Restore backup from another Winchester disk if one Winchester unit of the OMU is faulty.

Restore backup from the fallback build whenever you want to activate the FB build and the conditions in the above instances are not met.

3.3. When to make a safecopy

3.3.1. General

After fallback copying, always backup copy the fallback to DAT tape or floppy disks.

Fallback copy always after the software build has been changed. When the new build turns out to function well, fallback copy the entire build and backup copy the fallback to the DAT tape or floppy disks.

After major data changes, always fallback copy data files and backup copy the entire build to the DAT tape or floppy disks.

It is recommend to make full fallback **at least once a week**. Fallback for data files is recommended to be made **daily**. When you make the fallback for the first time, you have to make the entire fallback.

When you make the backup from the fallback build to the DAT tape or floppy disks, you do not need to check the databases, or prevent the database or disk updating.

3.3.2. Alarm 2518

If the alarm 2518 "No valid fallback copy for default package" is set, check the reason for the alarm and follow the instructions below.

Reason for the alarm:

- 00 default package is a package with FB status
- 01 default package is a package with NW status
- 02 network element does not have a package with FB status
- 03 a package with FB status is not the backup copy of BU package
- 04 backup copy package is too old
- 05 finding out the age of the backup copy package fails

Instructions:

On the basis of the value of the supplementary information field of the alarm (reason for the alarm); act in a following way:

00: The default package is a package with FB status, so there is no backup copy for this package in the network element. If you wish to take the FB package into proper use, normalize the statuses of the software builds with the MML command WSR and make a backup copy of the software build with the MML command WKS.

01: The default package is a package with NW status, so there is no backup copy for this package in the network element. If you wish to take the NW package into proper use, change the status into BU with the MML command WSC and make a backup copy of the software build with the MML command WKS.

02: The network element does not contain a backup copy package (FB status). If you intend to use the present BU package permanently, make a backup copy with the MML command WKS.

03: A package with FB status is not the backup copy of the present BU package. If you intend to use the present BU package permanently in the network element, make a backup copy with the MML command WKS.

04: The backup copy package is older than recommended in the safecopying instructions (over 25h) Make a backup copy with the MML command WKS.

05: Finding out the age of the backup copy package fails. The reason may be for example that the time stamp of the backup copy package is newer than the present time of the network element. Make a backup copy with the MML command WKS.

Cancelling of the alarm

Do not cancel the alarm. After next successful backup copying the backup copying software cancels the alarm

For more information on the alarm, refer to the document class *Alarm Reference Manual*.

4. Instructions for the use of the CTU

The Cartridge Tape Unit (CTU) is located either in WDDC1 cartridge or in SD3C-S cartridge.

The following table describes the length and capacity of the recommended tapes:

Table 1. The length and capacity of the recommended DDS tapes

Tape drive type	Length of the tape	Capacity of the tape
DDS-1 tape drive	60 m	1.3 Gb
	90 m	2 Gb
DDS-2 tape drive	90 m	2 Gb
	120 m	4 Gb
DDS-3 tape drive	90 m	2 Gb
	120 m	4 Gb
	125 m	12 Gb

It is recommended to use 90m tape, because it can be use in all DAT drives.

You can check the type of your DAT drive from the front panel of the device:

DAT2G shows that it is a DDS-1 tape drive

DAT4G shows that it is a DDS-2 tape drive

DAT12G, DAT12-S shows that it is a DDS-3 tape drive

The capacity of the tape depends on the structure of the data that has been saved on the tape. During saving the data is compressed, which means that it is coded to a more concise form than the original.

It is recommended that the use of one tape is limited to 100 backup operations.

4.1. Inserting a DAT tape to the CTU

An empty tape is immediately ready to be used. The tape must be located in the DAT drive (CTU) to enable the operation of MML commands concerning the CTU.

If the tape is not in the CTU, check that the CTU is in the BL-SY-state with the IMD command:

```
ZIMD;
```

You can make sure that the tape is in the drive by checking the lights on the front panel of the drive: the tape is in the drive when the green light is on. If any other light colours or combinations occur, refer to *The Digital Audio Tape Drive in the DX 200 BSC /1/* for their meanings.

When the tape is in the drive the normal state of the CTU is WO-ID. This can also be checked with the IMD command.

The updating of the state information from BL-SY to WO-ID takes about a minute from the moment the tape has been inserted into the drive. If you enter, display, and copy commands for the CTU after the tape has been inserted, the state will also be updated from BL-SY to WO-ID.

4.2. Displaying the contents of a DAT tape

If the tape is not empty, you can display the file set in the tape with the IBX command. The command also displays the names of the files contained in the file set providing that the desired file set name has been defined in the command.

```
ZIBX;  
ZIBX:CTU,<x>,<file set>;
```

4.3. Copying from hard disk to DAT tape

This section instructs you to copy from hard disk to the DAT tape.

Set the source parameters with the IWY command:

```
ZIWY:S:SYSTEM=<own>,UNIT=OMU,PATH=<directory>,DRIVE=WDU-<x>;
```

Where:

<own>	name of own system
<directory>	source directory path
<x>	definition of hard disk

Use the IWY command to define the destination parameters:

```
ZIWY:D:SYSTEM=<own>,UNIT=OMU,PATH=/,DRIVE=CTU-N<x>;
```

Where:

<own>	name of own system
<x>	index of the tape drive (for example, 0, 1, ...)

Copy the files from a source directory with the IBC command:

```
ZIBC:,,,,,,,,,<xxx>:DSN=<file_set>:<yyy>;
```

Where <xxx> can be:

CON	Request confirmation before copying each file. The default is no confirmation.
DIR	Copy also subdirectories. The value can be used when the whole hard disk is copied to DAT. The default is file copying without subdirectories.
NDF	File is not set as default version.

and <file_set> can be:

file_set_name	If you do not wish to define the name of the file set, the system will name the file set as OMU_yymmdd.
LAST	Append files to the last file set on tape.

and <yyy> can be:

ADD	File set is stored after existing file sets.
NOADD	File set is stored at the beginning of the tape. Note: This parameter must be used on new tape. This will always overwrite any existing data on the DAT tape.

NOTE If you wish to interrupt copying or displaying the contents of the DAT tape, you **MUST** use an MML-guided command, in other words, press the key "S". If you interrupt the execution of the command in some other way, the tape will remain in the reserved state. If the state of the tape is reserved, the tape must not be removed from the tape drive before the state of the tape is released. Release the state of the tape with the command

```
ZIME: :CTU, <x>;
```

Before you continue copying to the same DAT tape you have to delete the latest file set from the tape with the command

```
ZIBD;
```

4.4. Copying from diskette to DAT tape

Make the copies as instructed in section *Copying from hard disk to DAT tape* in this chapter, with the exception that the source unit is the diskette drive, FDU-N0.

4.5. Copying from DAT tape to hard disk

There are three ways to copy the contents of the DAT tape to hard disk:

- copy all files and directories in a file set
- copy all files in a desired directory of the file set
- copy a specific file in a desired directory of the file set

4.5.1. Copying all files and directories in a file set

Use the IWY command to define from where to copy (DAT):

```
ZIWY:S:SYSTEM=<own>,UNIT=OMU,PATH=/,DRIVE=CTU-N<x>;
```

Using the same command define where to copy (hard disk):

```
ZIWY:D:SYSTEM=<own>,UNIT=OMU,PATH=<root_directory>,DRIVE=WDU-  
<x>;
```

Where:

<x> definition of hard disk (S or B or SB)

Use the IBC command to copy all files in a file set:

```
ZIBC:,,,,,,,,:SSN=<file_set_name>;
```

Subdirectories are created based on the indexed structure of the DDS format, when the DIR-parameter is not used.

NOTE If DAT tape has not been created in the same DX 200 element where restoring is attempted, the command syntax is

```
ZIBC:,,,,,,,,:SSN=<file_set_name>,SYSTEM=ALL,UNIT=ALL;
```

4.5.2. Copying all files in a desired directory of the file set

Use the IWY command to define the source directory on DAT. Give the directory name under which the files to be copied are:

```
ZIWY:S:SYSTEM=<own>,UNIT=OMU,PATH=<dir_on_the_DAT_containing_f  
iles>,  
DRIVE=CTU-N<x>;
```

Use the same command to define the destination directory (hard disk):

```
ZIWY:D:SYSTEM=<own>,UNIT=OMU,PATH=/<desired_directory>,DRIVE=WD
U-<x>;
```

Use the IBC command to copy all files in a directory:

```
ZIBC:,,,,,,,,,DIR:SSN=<file_set_name>;
```

DIR means that the file(s) are copied from a directory defined with the IWY command without creating a directory. Note that copying the files from a certain directory on DAT tape to hard disk takes some time because the whole tape will be read through.

NOTE If DAT tape has not been created in the same DX 200 element where restoring is attempted, the command syntax is

```
ZIBC:,,,,,,,,,DIR:SSN=<file_set_name>,SYSTEM=ALL,UNIT=ALL;
```

4.5.3. Copying a specific file in a desired directory of the file set

Use the IWY command to define the source directory on DAT tape.

```
ZIWY:S:SYSTEM=<own>,UNIT=OMU,PATH=/<desired_directory>,DRIVE=CT
U-N<x>;
```

Use the same command to define the destination directory (hard disk):

```
ZIWY:D:SYSTEM=<own>,UNIT=OMU,PATH=/<desired_directory>,DRIVE=WD
U-<X>;
```

Use the IBC command to copy the file:

```
ZIBC:,,<filename>,<ext>,,,,,DIR:SSN=<file_set_name>;
```

DIR means that the file is copied from the directory defined in the IWY command.

Note If DAT tape has not been created in the same DX200 element where restoring is attempted, the command syntax is

```
ZIBC:,,<filename>,<ext>,,,,,DIR:SSN=<file_set_name>,SYSTEM=ALL
,UNIT=ALL;
```

4.6. Copying from DAT tape to diskettes

Copying is performed as instructed in section *Copying from DAT tape to hard disk* in this chapter, with the exception that the destination unit is diskette drive, FDU-N0.

4.7. Removing a DAT tape from the CTU

Remove the DAT tape from the drive by pressing the eject button in the front panel of the CTU. Wait until the tape comes out.

When the tape is being removed, the drive will automatically rewind the tape to the beginning.

During copying the state of the drive is reserved and the eject button does not work. Therefore, it is not possible to interrupt copying accidentally by pressing the eject button. If you interrupt the execution without using an MML-guided command, the tape will remain in the reserved state. The only way to release the state in this case is to enter the following IME command:

```
ZIME: :CTU,0;
```

4.8. Cleaning the reading head of the CTU

Clean the tape drive as described in the *General maintenance procedures /2/*.

5. Fallback of the software build and database

A fallback copy can be made of the entire software build, all data files or all changed files to the FALLBACK directory. The directory can be defined by the operator as something else than FALLBACK. The directory name should, however, be defined so that the BSC user clearly understands that the directory contains a fallback copy of the software build.

5.1. Preparatory actions

Use the IWQ command to find out which is the system disk:

```
ZIWQ:;
```

Check the state of the Winchester disks with the ISI command. Both Winchester disks must be in the WO-BU state.

```
ZISI:;WDU;
```

Next, check the available disk space with the IWX command. Check that there is enough space for the fallback build on Winchester disks. The needed space is approximately 200 000 blocks.

```
ZIWX:;WS,NODEF:;%;
```

Check with the DBD command that you are taking a backup copy of a consistent database:

```
ZDBD:OMU;
```

5.2. Fallback of the entire software build

If you make the fallback for the first time, make an entire fallback.

For more information on when to make the fallback of the entire build or of the data files only or of changed files only, see the chapter *Recommendations*.

Before starting fallback creation, check with the USI command that the OMU computer unit is in the state WO-EX:

```
ZUSI:OMU;
```

The fallback build can only be made from the build that has BU status. Make the fallback with the WKS command:

```
ZWKS:MODE=FULL,NAME=<FB_build_name>,DIRE=<FB_directory>;
```

The WKS command always copies the default versions from the current directories to the backup directories if the module names are found from the Software Package Master File (MAFILE). The ASWDIR and SCMANA directories are also copied.

You can interrupt the copying with the WKQ command. All reserved resources and disk updating will be freed.

5.3. Fallback of the data files only

Use the WKS command to make the fallback of the data files:

```
ZWKS :MODE=DATA ;
```

The data files are copied to the fallback build directory (the build which has FB status).

5.4. Fallback of changed files only

Use the WKS command to make the fallback of changed files:

```
ZWKS :MODE=ARCHIVE ;
```

The changed files are copied to the fallback build directory (the build which has FB status). If the build ID has been changed (CD has been installed), it will also be updated.

5.5. Fallback via command calendar

Set the backup procedure into the command calendar permanently. Activate the command calendar. Note that every time you make a backup, you have to check from the session log whether the backup has been successfully made.

The command calendar can handle only one task at a time. If a task execution should start when the previous one is still on, it is set to pending and execution is delayed.

With the ICI command you define the command into the command calendar.

There are three modes for making a fallback:

1. ALL; creates a new fallback build.
2. DATA; makes a safecopy of data files.
3. ARCHIVE; makes a safecopy of changed files.

The format of the ICI command is as follows:

```
ZICI:<command>,::<executions parameter>;
```

Where <execution parameters> can be:

DATE	DATE OF EXECUTIONS
TIME	TIME OF EXECUTION
PTYPE	EXECUTION PERIOD TYPE
PNBR	NUMBER OF EXECUTIONS PERIODS
DAYS	EXECUTION WEEKDAYS
ALARM	EXECUTION ALARM NUMBER
AUNIT	ALARMING UNIT
DSTUN	DESTINATION UNIT OF ALARM
ASTATE	ALARM STATE
NBR	NUMBER OF EXECUTIONS
SAVE	SAVE COMMAND AFTER EXECUTION

After the ZICI command execution, the necessary parameters for the given MML command are requested.

```
<command>:MODE=<mode>,DIRE=<dire>,NAME=<name>;
```

DATA TYPE

Example:

According to this command line, the command calendar makes a safecopy of the data files every night at 01:00 a.m.:

```
ZICI:WKS,::TIME=01-00,PTYPE=DA,PNBR=1,NBR=255;
MODE=DATA;
```

ARCHIVE TYPE

Example:

According to this command line, the command calendar makes a safecopy of the changed files every night at 01.00 p.m.:

```
ZICI:WKS,::TIME=01-00,PTYPE=DA,PNBR=1,NBR=255;
MODE=ARCHIVE;
```

FULL TYPE

If command calendar is used for making a fallback of entire software build, the name and directory of FB build in the command should not exist or the FB build with the same name must be deleted from the Winchester disk before command execution. In the example the deleting command of existing fallback is added in the calendar before the actual fallback command, and sufficient amount of time is reserved for the deleting operation.

Example:

According to these command lines, the command calendar deletes the existing fallback build every night at 00:40 a.m. and then makes a safecopy of the entire software build every night at 01:00 a.m.:

```
ZICI:WQD,::TIME=00-40,PTYPE=DA,PNBR=1,NBR=255; //deleting of
existing fallback
DIRE=<fallback_dir>:MAFILE,::; // parameters for deleting
ZICI:WKS,::TIME=01-00,PTYPE=DA,PNBR=1,NBR=255; // making of
new fallback
MODE=FULL,DIRE=<fallback_dir>,NAME=<fallback_name>;
```

You can test the task execution of the command calendar with the ICT command. With the ICL command you can list the command calendar tasks.

It is strongly recommended that you display the log file of the fallback, to check that fallback is successfully completed. Use the WKP command for this.

```
ZWKP:<fallback_type>:<executions_parameter>;
```

Where <execution parameters> may be:

TOTAL	ALL PHASES AND FILES
PHASES	ALL PHASES
FILE	ALL OR DEFINED FILES
EMODE	PHASES AND FILES WHERE ERROR HAS OCCURRED

Fallback is successfully completed when no errors occur during the procedure. If there are any errors, fallback must be made again. Check in the supplementary information field of the alarm the usability of the copy.

Check also the states of databases. They should be normal or dumping, except the state of EQUIPM in the spare unit should be abnormal.

You can delete a command calendar task with ICD command.

5.5.1. Interrupted command execution

The alarm 2393 is set, if the fallback is interrupted and the fallback build can not be used.

The alarm 2394 is set, if an error occurs in finishing the fallback copying. The fallback copy is not, however, necessarily useless. The supplementary information field of the alarm indicates whether the copy is can be used. The following WKP command shows the error messages:

```
ZWKP:<fallback_type>:EMODE;
```

Other parameters for the command enable you to check what phases have been made before the interruption and which files have possibly been copied.

In a normal situation the following notices are output:

```
0027 SOFTWARE PACKAGE FALLBACK COPYING NOTICE STARTED
0033 FILE UPDATES TO DISK PREVENTED
0036 FILE UPDATES TO DISK RESUMED
0027 SOFTWARE PACKAGE FALLBACK COPYING NOTICE READY
```

If the execution of a command is for some reason interrupted, check the following:

1. Check with the DUD command, that all file updates in the queue are done on disk. Resume disk updating prevention's with the DUR command if needed.
2. Check with the ISI command the state of the Winchester disks. The state must be WO-BU. Dumping is not possible, if the state is TE-ID.
3. Ensure with the DBS command that the database states are restored to normal or dumping.
4. Check with the AHO command that all alarms related to the fallback copying are cancelled. The alarms 2393 and 2394 are cancelled only at the time of the next successful fallback.
5. Make a new fallback.

6. Backup copying to DAT tape

6.1. Backup copying of the BSC software build to DAT tape

6.1.1. Entire build to DAT tape

Each fallback directory is copied to its own file set. This is because when restoring just a certain directory of fallback from DAT tape, copying could take a fairly long time if the whole fallback build is in same file set. For more information about the naming of the file sets, see chapter *Recommendations*.

Copy the fallback build to the DAT tape:

```

ZIWY:D:SYSTEM=<own>,UNIT=OMU,PATH=/,DRIVE=CTU-N<x>;
ZIWY:S:SYSTEM=<own>,UNIT=OMU,PATH=<FB_directory>/BLCODE,
DRIVE=WDU-S;
ZIBC:,,,,,,,,,DIR:DSN=<BLCODE_file_set_name>;
ZIWY:S:SYSTEM=<own>,UNIT=OMU,PATH=<FB_directory>/LFILES,
DRIVE=WDU-S;
ZIBC:,,,,,,,,,DIR:DSN=<LFILES_file_set_name>;
ZIWY:S:SYSTEM=<own>,UNIT=OMU,PATH=<FB_directory>/MMDIRE,
DRIVE=WDU-S;
ZIBC:,,,,,,,,,DIR:DSN=<MMDIRE_file_set_name>;

```

Copy the SCMANA from the fallback directory (OMU) to the DAT tape:

```

ZIWY:S:SYSTEM=<own>,UNIT=OMU,PATH=<FB_directory>/SCMANA,DRIVE=
WDU-S;
ZIWY:D:SYSTEM=<own>,UNIT=OMU,PATH=/,DRIVE=CTU-N<x>;
ZIBC:,,,,,,,,,DIR:DSN=<SCMANA_file_set_name>;

```

Copy the ASWDIR from the fallback directory (OMU) to the DAT tape:

```

ZIWY:S:SYSTEM=<own>,UNIT=OMU,PATH=<FB_directory>/ASWDIR,DRIVE=
WDU-S;
ZIWY:D:SYSTEM=<own>,UNIT=OMU,PATH=/,DRIVE=CTU-N<x>;
ZIBC:,,,,,,,,,DIR:DSN=<ASWDIR_file_set_name>;

```

6.1.2. Data files to DAT tape

If a fallback has been made only for data files, it is recommended to copy the files also to the DAT tape:

```

ZIWY:D:UNIT=OMU,PATH=/,DRIVE=CTU-N<x>;
ZIWY:S:SYSTEM=<own>,UNIT=OMU,PATH=<FB_dir>/LFILES,DRIVE=WDU-S;
ZIBC:,,,,,,,,,DIR:DSN=<LFILES_file_set_name>;

```

6.2. Backup copying of BTS software builds and hardware database to DAT tape

With the following commands the BTS hardware database can be copied to DAT tape at the same time as the backup copy of BTS software builds is made.

```
ZIWY:S:UNIT=OMU,PATH=/BCF_PACK,DRIVE=WDU-S;  
ZIWY:D:UNIT=OMU,PATH=/,DRIVE=CTU-N<x>;  
ZIBC:,,,,,,,,,DIR:DSN=<file_set_name>;
```

If, however, only the backup of the BTS hardware database is needed, use the following commands:

```
ZIWY:S:UNIT=OMU,PATH=/BCF_PACK/HWDATA,DRIVE=WDU-S;  
ZIWY:D:UNIT=OMU,PATH=/,DRIVE=CTU-N<x>;  
ZIBC:,,,,,,,,,DIR:DSN=<file_set_name>;
```

6.3. Backup copying of transmission equipment software builds to DAT tape

The transmission equipment software builds can be copied to DAT tape with the following commands:

```
ZIWY:S:UNIT=OMU,PATH=/TRE_PACK, /<PACK_x>,DRIVE=WDU-S;  
ZIWY:D:UNIT=OMU,PATH=/,DRIVE=CTU-N<x>;  
ZIBC:,,,,,,,,,DIR:DSN=<file_set_name>;
```

Pack_x = can be named freely

7. Backup copying to floppy disks

7.1. Backup copying of the BSC software build to floppy disks

7.1.1. Entire build to floppy disks

Remember to reserve the required amount of formatted floppy diskettes for backup.

Copy the fallback build from the system disk (WDU-S) to the floppy disks:

```
ZIWY:S:UNIT=OMU,PATH=<FB_directory>/BLCODE,DRIVE=WDU-S;  
ZIWY:D:UNIT=OMU,PATH=/,DRIVE=FDU-N0;  
ZIBC;
```

```
ZIWY:S:UNIT=OMU,PATH=<FB_directory>/LFILES,DRIVE=WDU-S;  
ZIWY:D:UNIT=OMU,PATH=/,DRIVE=FDU-N0;  
ZIBC;
```

```
ZIWY:S:UNIT=OMU,PATH=<FB_directory>/MMDIRE,DRIVE=WDU-S;  
ZIWY:D:UNIT=OMU,PATH=/,DRIVE=FDU-N0;  
ZIBC;
```

```
ZIWY:S:UNIT=OMU,PATH=<FB_directory>/SCMANA,DRIVE=WDU-S;  
ZIWY:D:UNIT=OMU,PATH=/,DRIVE=FDU-N0;  
ZIBC;
```

```
ZIWY:S:UNIT=OMU,PATH=<FB_directory>/ASWDIR,DRIVE=WDU-S;  
ZIWY:D:UNIT=OMU,PATH=/,DRIVE=FDU-N0;  
ZIBC;
```

7.1.2. Data files only to floppy disks

If a fallback has been made only for data files, it is recommended to copy the files to the floppy disk:

```
ZIWY:S:UNIT=OMU,PATH=<FB_directory>/LFILES,DRIVE=WDU-S;  
ZIWY:D:UNIT=OMU,PATH=/,DRIVE=FDU-N0;  
ZIBC;
```

7.2. Backup copying of BTS software builds and hardware database to floppy disks

When copying BTS software, check first the existing subdirectories. To avoid confusion in the future, copy the hardware database and each BTS software build on its own floppy disk.

```
ZEWL;
```

```
ZIWY:S:UNIT=OMU,PATH=/BCF_PACK/<PACK_x>,DRIVE=WDU-S;  
ZIWY:D:UNIT=OMU,PATH=/,DRIVE=FDU-N0;  
ZIBC;
```

PACK_x refers to the directories where BTS software builds are stored.

Make the backup of BTS hardware database likewise:

```
ZIWY:S:UNIT=OMU,PATH=/BCF_PACK/HWDATA,DRIVE=WDU-S;  
ZIWY:D:UNIT=OMU,PATH=/,DRIVE=FDU-N0;  
ZIBC;
```

7.3. Backup copying of transmission equipment software builds to floppy disks

The transmission equipment software builds can be copied to floppy disk with the following commands:

```
ZEWL;  
ZIWY:S:UNIT=OMU,PATH=/TRE_PACK/<PACK_x>,DRIVE=WDU-S;  
ZIWY:D:UNIT=OMU,PATH=/,DRIVE=FDU-N0;  
ZIBC;
```

Pack_x = can be named freely

8. Restoring the software build

The fallback activation restores the situation that was present at the time the fallback was made. If any changes have been made after the last fallback, the changes must be made again.

Depending on the fault situation, there are several different tasks or routines that you have to do in order to get the network element working properly again.

8.1. BU build faulty

If the BU build is found faulty, the FB build can be restored to serve as the BU build.

Change the FB build to be the default. Note that changing the default build causes the system to restart. The system informs the user about this and asks verification.

```
ZWSD:STAT=FB;
```

When the FB build is working, you can roll back statuses so that the FB build is changed to the BU build:

```
ZWSR;
```

If necessary, you can verify the contents of the build with the WQB command.

8.2. One Winchester disk is faulty

Check the strapping of the new Winchester disk and replace the faulty disk. Check that the system recognises the disk:

```
ZISI:WDU;
```

Change the state of the Winchester to WO-ID with the ISC command.

Use a formatted Winchester disk, because the disk initialisation may take up to two hours. If no formatted Winchester disks are available, initialise a new Winchester disk with following the IWI command:

```
ZIWI:<bsc_name>,OMU:WB,<disk_name>,FF,2,<your_initials>;
```

Change the state of the new disk to WO-BU with the ISC command.

Before you copy anything, prevent the file updates and disk updates of all the databases, and check that all updates have been released from the disk. Use the following commands:

```
ZDUP;
ZDBP:<database_name>,<occurrence>:DISK;
ZDBX:<database name>,<occurrence>;
```

Copy the contents of the fault-free Winchester disk to the new disk:

```
ZIWI:S:SYSTEM=<own>,UNIT=OMU,PATH=/,DRIVE=WDU-S;
ZIWI:D:SYSTEM=<own>,UNIT=OMU,PATH=/,DRIVE=WDU-B;
ZIBC:,,,,,,,,,DIR;
```

Check that all file updates in the queue are written to disks:

```
ZDUQ:OMU;
ZDUQ:MCMU;
```

If the file and database updating are prevented, resume them:

```
ZDUR;
ZDBR:BSDATA,0:DISK;
ZDBR:EQUIPM,0:DISK;
ZDBR:OEDATA,0:DISK;
ZDBR:WAGONS,0:DISK;
```

Copy **BSDATA**, **EQUIPM**, **OEDATA** and **WAGONS** databases from memory to disk:

```
ZDBC:BSDATA,0;
ZDBC:EQUIPM,0;
ZDBC:OEDATA,0;
ZDBC:WAGONS,0;
```

Check that the databases are consistent on disks.

```
ZDBD:OMU;
```

Dump the data files from OMU and MCMU to disks of OMU.

```
ZDFC:OMU;
ZDFC:MCMU,<wo>;
```

8.3. Both Winchester disks are faulty

If both Winchester disks are faulty, restart the OMU to minidebugger mode. Check the strapping and initialise new Winchester disks.

When both disks are faulty, MML commands do not work. Formatting, creating directories and copying have to be done with the OMU Service Terminal commands.

Format disks using the following service terminal commands:

```
ZMI:W0-DISK_NAME,FF,2
ZMI:W1-DISK_NAME,FF,2
```

Use the MCD command to create directories to W0:

```
ZMCD:W0- /<Build_root_dir>,20
ZMCD:W0- /<Build_root_dir>/BLCODE,900
ZMCD:W0- /<Build_root_dir>/LFILES,900
ZMCD:W0- /<Build_root_dir>/MMDIRE,900
ZMCD:W0- /<Build_root_dir>/ASWDIR,FF
ZMCD:W0- /SCMANA,FF
ZMCD:W0- /BSCSTA,FFF
ZMCD:W0- /BCF_PACK,64
ZMCD:W0- /BCF_PACK/PACK_x,64
ZMCD:W0- /BCF_PACK/HWDATA,400
ZMCD:W0- /TRE_PACK/PACK_x,300
```

8.3.1. Restore Fallback from DAT tape

Restore the fallback software build from the DAT tape to the first Winchester disk

Copy with the following service terminal commands:

```
ZMM:C0- /<FB_directory>/BLCODE/,W0-
 /<Build_root_dir>/BLCODE/,<BLCODE_file_set_name>
ZMM:C0- /<FB_directory>/LFILES/,W0-
 /<Build_root_dir>/LFILES/,<LFILES_file_set_name>
ZMM:C0- /<FB_directory>/MMDIRE/,W0-
 /<Build_root_dir>/MMDIRE/,<MMDIRE_file_set_name>
ZMM:C0- /<FB_directory>/SCMANA/,W0-
 /SCMANA/,<SCMANA_file_set_name>
ZMM:C0- /<FB_directory>/ASWDIR/,W0-
 /<Build_root_directory>/ASWDIR/,
 <ASWDIR_file_set_name>
```

Copy the BTS software builds and the hardware database with the following command:

```
ZMMD:C0- /BCF_PACK/,W0- /, <BCFPACK_file_set_name>
```

Copy the transmission equipment software builds with the following command:

```
ZMMD:C0- /TRE_PACK/,W0- /, <TREPACK_file_set_name>
```

Copy the contents of the Winchester disk to the other with the command:

```
ZMMD:W0-/,W1-/
```

Restart the OMU by pushing the reset button.

When an MML session is available, restart the BSC with the USS command:

```
ZUSS:SYM:C=DSK;
```

After restarting, the system will automatically create the rest of the BCF_PACK subdirectories and start loading the BTSs.

8.3.2. Restore Fallback from floppy disks

Restore the fallback software build from the floppy diskettes to the first Winchester disk.

Copy with the following service terminal commands:

```
ZMM:F0-/*.* ,W0-/<Build_root_dir>/BLCODE/  
ZMM:F0-/*.* ,W0-/<Build_root_dir>/LFILES/  
ZMM:F0-/*.* ,W0-/<Build_root_dir>/MMDIRE/  
ZMM:F0-/*.* ,W0-/<Build_root_dir>/ASWDIR/
```

```
ZMM:F0-/*.* ,W0-/BCF_PACK/PACK_x/  
ZMM:F0-/*.* ,W0-/BCF_PACK/HWDATA/
```

BCF_PACK/PACK_x files are the BTS software builds.

```
ZMM:F0-/*.* ,W0-/TRE_PACK/PACK_x/
```

TRE_PACK/PACK_x files are the transmission equipment builds.

```
ZMM:F0-/*.* ,W0-/SCMANA/
```

Copy the contents of one Winchester disk to the other:

```
ZMMD:W0-/,W1-/
```

Restart the OMU by pushing the reset button.

When an MML session is available, restart the BSC with the USS command:

```
ZUSS:SYM:C=DSK;
```

After restart, the system will automatically create the rest of the BCF_PACK subdirectories and start loading the BTSs.

8.4. Datafiles corrupted on disks, in memory and in fallback build in OMU

If data files are corrupted in both the BU build and FB build on the hard disks of the OMU, you need to copy the data files (LFILES) from a DAT tape to the current build. To copy the data files from a DAT tape to the hard disk, follow the steps below.

Use the DUP command to prevent file updates.

```
ZDUP ;
```

Use the DBP command to prevent disk updates of databases.

```
ZDBP:BSDATA,0:DISK;  
ZDBP:EQUIPM,0:DISK;  
ZDBP:OEDATA,0:DISK;  
ZDBP:WAGONS,0:DISK;
```

Use the DBX command to check that all updates have been unpacked from the disk log to the disk database. The DBX command unpacks disk logs if they are not empty.

```
ZDBX:BSDATA,0;  
ZDBX:EQUIPM,0;  
ZDBX:OEDATA,0;  
ZDBX:WAGONS,0;
```

Copy the data files from the DAT tape to the current build.

```
ZIWI:S:UNIT=OMU,PATH=/<FB directory>/LFILES,DRIVE=CTU-N<x>;  
ZIWI:D:UNIT=OMU,PATH=/<build directory>/LFILES,DRIVE=WDU-SB;  
ZIBC:,,,,,,,,,DIR:SSN=<file set>;
```

Use the IWD command to delete the DBI*.* and DBA*.* files from the disks.

```
ZIWD:WSB,NODEF:<build directory>,LFILES:DBI%,IMG;  
ZIWD:WSB,NODEF:<build directory>,LFILES:DBA%,IMG;
```

Use the USS command to restart the system.

```
ZUSS:SYM:C=DSK;
```

Note that the system restart resumes the file updates.

When MML commands work again, you can use the USI command to interrogate the restart states of the units.

9. Restoring databases from DAT tape

9.1. Restoring BTS software build and hardware database from DAT tape

To restore the BTS software builds from DAT tape, use the following commands:

```
ZIWY:S:UNIT=OMU,PATH=/<BCF_pack_directory>,DRIVE=CTU-N<x>;  
ZIWY:D:UNIT=OMU,PATH=/BCF_PACK,DRIVE=WDU-SB;  
ZIBC:,,,,,,,,:SSN=<file_set_name>,SYSTEM=ALL,UNIT=ALL;
```

You can also restore one specific BTS software build, by specifying the build directory **<PACK_x>**:

```
ZIWY:S:UNIT=OMU,PATH=/<PACK_x>,DRIVE=CTU-N<x>;  
ZIWY:D:UNIT=OMU,PATH=/BCF_PACK,DRIVE=WDU-SB;  
ZIBC:,,,,,,,,DIR:SSN=<file_set_name>,SYSTEM=ALL,UNIT=ALL;
```

The hardware database can similarly be restored separately. In that case replace only **<PACK_x>** with HWDATA.

9.2. Restoring transmission equipment build database from DAT tape

To restore the transmission equipment software builds from DAT tape, use the following commands:

```
ZIWY:S:UNIT=OMU,PATH=/<TRE_pack_directory>,DRIVE=CTU-N<x>;  
ZIWY:D:UNIT=OMU,PATH=/TRE_PACK,DRIVE=WDU-SB;  
ZIBC:,,,,,,,,:SSN=<file_set_name>,SYSTEM=ALL,UNIT=ALL;
```

You can also restore one specific transmission equipment software build, by specifying the build directory **<PACK_x>**:

```
ZIWY:S:UNIT=OMU,PATH=/<PACK_x>,DRIVE=CTU-N<x>;  
ZIWY:D:UNIT=OMU,PATH=/TRE_PACK,DRIVE=WDU-SB;  
ZIBC:,,,,,,,,DIR:SSN=<file_set_name>,SYSTEM=ALL,UNIT=ALL;
```

10. Restoring databases from floppy disks

Depending on the situation, it may not be necessary to restore both BTS software builds and the hardware database. The following instructions describe how to restore either BTS software builds, the hardware database or equipment software builds.

10.1. Restoring BTS software builds from floppy disks

Copy the data files from the floppy disk to the WDU-SB.

```
ZIWIY:S:UNIT=OMU,PATH=/,DRIVE=FDU-N0;  
ZIWIY:D:UNIT=OMU,PATH=/BCF_PACK/<PACK_x>,DRIVE=WDU-SB;  
  
ZIBC:;
```

PACK_x is the directory where the specific BTS software build is to be copied.

The above copying command is repeated for each BTS software build until all desired BTS software builds be restored to hard disk.

10.2. Restoring BTS hardware database from floppy disks

Copy the data files from the floppy disk to both Winchester disks.

```
ZIWIY:S:UNIT=OMU,PATH=/,DRIVE=FDU-N0;  
ZIWIY:D:UNIT=OMU,PATH=/BCF_PACK/HWDATA,DRIVE=WDU-SB;  
ZIBC:;
```

10.3. Restoring transmission equipment software builds from floppy disks

Depending on the situation, it may be necessary to restore transmission equipment software builds. The following instructions describe how to restore equipment software builds.

Copy the data files from the floppy disk to the WDU-SB.

```
ZIWIY:S:UNIT=OMU,PATH=/,DRIVE=FDU-N0;  
ZIWIY:D:UNIT=OMU,PATH=/TRE_PACK/<PACK_x>,DRIVE=WDU-SB;  
ZIBC:;
```

11. Remote backup

Fallback and backup procedures can also be made from NMS. This requires an optional NMS feature: DX 200 Support for Remote Backup. For more information about this feature, please refer to NMS documentation *System Management Basic Operating Principles and Procedures*. For the instructions, please refer to NMS documentation *System Management Tasks*.