BACKREST.WS4

BackRest Hard-disk Backup and Restore Program

(Edited by Emmanuel ROCHE.)

This file describes the operation and use of the Concurrent
(TM) hard-disk backup and restore program, BackRest (TM).

WHAT IS BACKREST?

BackRest is a file maintenance program that gives you a safe,
convenient method for selectively copying your files from
Concurrent hard-disk partitions to floppy disks. BackRest's
restore facility allows you to specify which files you want
restored from backup disks to your hard disk.

BackRest identifies each of your backup disks with a unique
volume number and maintains report and directory files that
indicate the location and date of backup for each of the files
it copies.

You should back up your hard-disk files on a regular basis.
Doing so ensures that you have fairly up-to-date copies in case
your hard disk is accidentally erased or damaged. BackRest
makes it easy to protect your files because it backs up only

those files which have been created or modified since the last
backup.

BACKREST FUNCTIONS

BackRest lets you select which files you want backed up and
restored. Files may be selected according to subdirectory,
user number, filename, file extension, and hard-disk partition.
You can also tell BackRest to delete certain files after they
have been backed up (file migration). See "How to Tell
BackRest What You Want."

BackRest accepts either CP/M (R) or DOS media in your source
(hard-disk) and destination (floppy-disk) drives. The source
drive is the drive from which a file is copied; the destination
drive contains the disk on which the copy is placed. BackRest
can determine what type of file it is backing up and requests
that you place the appropriately formatted disk in the
destination drive.

If a hard-disk file is too large to fit on one backup disk,
BackRest can split the file and copy it to two or more disks.
BackRest then merges these file parts when asked to restore the
original file.

You can restore a file by the date it was backed up. You can
restore a particular group of files by giving BackRest an
ambiguous file specification.

You can also restore bad files automatically.   BackRest
considers a file "bad" if it is unable to copy the file (due to
a source media sector error, for example) to a backup disk.
When you select this option, BackRest locates the previously
backed up copy of the file and restores it to your hard disk.
See "REST" in "BackRest Commands" for more information on file
restoration.

BackRest generates reports of its backup and restore
operations. The reports are divided into four categories:
Backup, Restore, Hard-disk Statistics, and Errors. "BackRest
Reports" describes the form and content of each report section.

Note that you can access BackRest functions through the Backup
File(s) Menu in Concurrent's File Manager.

BACKREST FILES

To perform its backup and restore operations, BackRest needs
three files: BACK.CMD, REST.CMD, and CONTROL.BR. These files
must be on the disk in the current drive or on the drive from
which you enter a BackRest command.

BACK.CMD and REST.CMD are BackRest command files.   They
correspond to the BACK and REST commands described in "BackRest
Commands."

CONTROL.BR is BackRest's control file. It contains records
that control the operation of BACK and REST. If CONTROL.BR is
not on the disk in the current drive, neither BACK nor REST
will perform. CONTROL.BR has already been set up for use on
most personal computers that run Concurrent.

You can edit the records in CONTROL.BR to suit your particular
requirements and computer system. Be sure to make a copy of
CONTROL.BR before you modify it. Do not modify the original
file from your Concurrent distribution disk.

As BackRest processes your commands to back up files, it
creates permanent work files on the hard disk. All work files
created by BackRest have a .BR file extension.   BackRest
creates three kinds of work files: a directory file, a path
file and a report file. The directory file appears on your
disk as DIR.BR. BackRest uses DIR.BR to keep track of the
files it has copied to specific backup disks. The path file,
which appears as PATHS.BR, is used by BackRest to record all
the path names encountered during a backup session. The report
files, REPORT.BR and RESTRPT.BR, contain information on backup
and restore operations.

BackRest also creates files with an extension of BR@.   These
files are temporary work files. Do not erase, rename, or set
any "BR" file to Read-Only and do not use the BR extension when
naming your own files.

HOW BACKREST ORGANIZES YOUR FILES

Factors that affect a particular session can include: date of
backup, source and destination drives, filenames and

extensions, user numbers, subdirectories, and file media type.
It is important that you understand how BackRest handles such
"variables" during its backup and restore operations. This
section describes the methods BackRest uses to organize and
locate the files it copies to your backup disks.

Disk Volume Numbers

BackRest assigns a unique volume number to each disk it uses as
a backup disk. Volume numbers are assigned sequentially,
beginning with the first time you use BACK. Before your files
are copied from a Concurrent hard-disk partition, BackRest
writes a volume number file on the backup disk.   Backup disk
volume number files have filenames and extensions similar to
the example shown below:

    -C-00001.VOL

The second character of the example indicates which hard disk
(C) was used as the source drive. The remaining portion of the
filename is the backup disk volume number; the example shows
the number (00001) for the first backup disk containing files
copied from hard-disk drive C. All volume number files have
the VOL extension.

BackRest keeps track of your backup disks by the volume number
it assigns to each one. BackRest asks you to label each of
your backup disks with the volume number it displays. When you
need to restore a specific file to your hard disk, BackRest
requests a specific backup disk by its volume number.

BackRest's directory files are its key in matching volume
numbers to backed up files. When you request the restoration
of a specific file, BackRest searches for that file
specification in DIR.BR. DIR.BR indicates the names of all the
backed up files and the location of each by volume number.

BackRest Directory Files

BackRest keeps a record of all the files it has backed up in a
file named DIR.BR. DIR.BR contains the name of each file
backed up, the date it was backed up, and its backup disk
volume number. As BackRest performs subsequent backups, it
adds the current date, new filenames, and backup disk volume

numbers to DIR.BR.

When you request the restoration of a specific file, BackRest searches for its filespec in DIR.BR. If you request a file by backup date, BackRest reads DIR.BR until it finds a date that matches the one you have specified. Using the date as an index, BackRest reads the list of files in DIR.BR. When BackRest finds the matching filename in DIR.BR, it reads the volume number associated with the filename and asks that you place the backup disk with that volume number in the correct drive.

BackRest writes DIR.BR to the disk in the control drive and automatically copies it to the last backup disk used in a backup session. The control drive is the drive you tell BackRest to use as its system work drive. See the CONTROL DRIVE: record in "Control Records."

If DIR.BR is removed from the control drive, backup disk volume numbering begins again, starting from 00001. To avoid volume number repetition, never erase DIR.BR from your hard disk. If DIR.BR does become accidentally erased, use the COPY command to replace it with a copy of DIR.BR from your last backup disk. Never use any other copy of DIR.BR for this purpose.

CP/M Files: User Numbers and Passwords

BackRest can operate on the CP/M files you have organized by user numbers and protected with passwords. The CONTROL.BR file contains a record you can modify to tell BackRest which user numbers you want backed up. BackRest can then copy files fromW your CP/M hard-disk partition into the corresponding user numbers on the backup disk.

BackRest records every user number it has backed up in the REPORT.BR file. Printed reports indicate CP/M files by drive, user number, and backup disk volume number.

The CP/M files you protect with passwords are backed up and restored when you specify the passwords in the CONTROL.BR Exception Records. It is important that you also password-protect CONTROL.BR if it contains passwords for other files from your hard-disk drives. BackRest uses a default password for this purpose. See "Exception Records."

Note: BackRest does not password-protect the files it writes
to backup disks. If you use BackRest with password-protected
files, store your backup disks in a secure area.

DOS Files: Subdirectories and Paths

DOS subdirectories provide a useful way to separate and
organize your files. If you use subdirectories on your DOS
hard-disk partition, BackRest can store your files under the
same subdirectories on your DOS media backup disks. When your
DOS files are restored to your hard disk, BackRest returns them
to the same subdirectories from which they were originally
copied.

The REPORT.BR file records every subdirectory backed up.
Printed reports indicate DOS files by drive, backup disk volume
number, and path.

Subdirectory paths to your files can be passed to BackRest
through the File Manager (see the Backup File(s) Menu in
Section 2, "File Manager" of the Concurrent PC DOS User's
Guide). You can also indicate the subdirectories you want
backed up and restored with the PATH: record in "Control
Records."

SETTING UP BACKREST

Before you can use BackRest, you must copy three files to your
system drive. These files are: BACK.CMD, CONTROL.BR, and
REST.CMD. BACK.CMD and REST.CMD are the command files used to
back up and restore your hard-disk files; CONTROL.BR is
described later in this section. Use the PIP command to copy
BACK.CMD, REST.CMD, and CONTROL.BR from your distribution disk
to your system disk. See "Drives" in Section 1 of the
Concurrent PC DOS User's Guide to determine the system drive
for your computer. The following example is for a Personal
Computer XT with one floppy-disk drive (A:) and one hard-disk
divided into two partitions, DOS (C:), and CP/M (D:); in this
case, drive D is the system drive.

     A>PIP D:=BACK.CMD[OV]
     A>PIP D:=REST.CMD[OV]
     A>PIP D:=CONTROL.BR[OV]

The BackRest control file, CONTROL.BR, contains records that dictate how BackRest performs its backup and restore operations.

It controls how BackRest displays its messages on your screen; whether reports are printed; which user numbers and subdirectories are used; source and destination drive assignments; and which files are backed up, deleted, restored, or ignored.

What BackRest Needs to Know

The records in CONTROL.BR provide BackRest with information it needs to run its backup and restore operations. If a record that contains information vital to BackRest is missing from the control file, or if a record's information is incorrectly formatted, BackRest displays an error message indicating the missing or incorrect record.

Control file records are divided into five categories:

    1) Screen Control Records
    2) Printer Information Records
    3) Report Records
    4) Control Records
    5) Exception Records

Screen Control Records contain codes that enable BackRest to clear your computer's screen and display messages in different colors. Printer Information Records tell BackRest about your printer. Report Records control report content, report headings, and whether reports are printed automatically. Control Records provide important parameters of BackRest's operation, such as source and destination drives. Exception Records tell BackRest which files to treat as exceptions to the general backup procedures stated in the control records.

All control file records consist of a descriptor and one or more fields. A record descriptor is a one- or two-word label, ending in a colon, that describes the purpose of the record. For example,

    DEST DRIVE:

is the descriptor for the Control Record that defines the
backup disk destination drive.

The descriptor is followed by one or more fields. A field
defines a value for the record. Screen Control and Printer
Information record fields are made up of decimal numbers. The
first number for these fields is called a length field. The
length field tells BackRest how many numbers make up the second
field, called the code field. The following example shows the
descriptor and fields for the CLEAR: Screen Control Record:

     CLEAR: 2,27,69

The length field has a value of 2 because the code field is
composed of two numbers (27,69). Notice that the numbers for
both the length and code fields are delimited by a comma and
that spaces may be used freely in CONTROL.BR. BackRest sends
the code 27,69 to your computer so that it clears the screen.

Fields for other control file records can consist of a "true"
or "false" value, a drive specifier, or an actual number to be
used as follows:

     REPORT PRINT: true
     DEST DRIVE: a
     USERS: 0,1,2

"How to Tell BackRest What You Want" describes the purpose and
specific form of each control file record by category. The
CONTROL.BR file is shown in Listing B-1.

Listing 1. BackRest CONTROL.BR File

* This is the CONTROL.BR file that tells BackRest how to operate
* on your CP/M and DOS files under Concurrent.
* This control file is for a personal computer with a color screen
* and standard (80 column) printer.
* See "Setting Up BackRest" in BACKREST.DOC of the Concurrent
* distribution disk.

* SCREEN CONTROL RECORDS
* The CLEAR: record contains the code used to erase the screen.
* The seven ATTRIBUTE: records determine the colors BackRest will
* use to display its messages.

```
CLEAR: 2,27,69
ATTRIBUTE: start screen: 9,27,99,0,27,97,3,27,98,2    <-- Green
ATTRIBUTE: leave screen: 3,27,98,7              <-- Grey
ATTRIBUTE: general: 3,27,98,2                 <-- Green
ATTRIBUTE: errors: 3,27,98,15               <-- White
ATTRIBUTE: message: 3,27,98,14               <-- Yellow
ATTRIBUTE: data: 3,27,98,3              <-- Cyan
ATTRIBUTE: input: 3,27,98,12              <-- Red


* PRINTER INFORMATION RECORDS


PRINTER INIT: 1,13        <-- Start with a carriage return.
FORMFEED: 1,12          <-- Printer code for a form feed.
LENGTH: 60           <-- Number of lines per page.
WIDTH: 80          <-- Number of columns per page.


* REPORT RECORDS
* Change the "ID:" record field to the heading you want BackRest
* to print on its reports.


REPORT PRINT: true         <-- Print report when finished.
SHOW SKIPS: true          <-- Report on files not backed up.
ID: Concurrent PC DOS Hard Disk Backup


* CONTROL RECORDS
* The following records control backup and restore operations.


SPLIT: true           <-- Divide backup files if required.
BELL REPEAT: false         <-- Set to "true" for repeating bell
prompt.
DEST DRIVE: a          <-- Backup disk drive.
SOURCE: c,d          <-- Hard disk drives to be backed up.
CONTROL DRIVE: c          <-- BackRest system work drive.
VERIFY: true          <-- Verify each file by
read-after-write.
REUSE: false          <-- Do not reuse backup disks.
ERASE: true          <-- Always erase destination disk
first.
* Backup and restore the following user numbers on CP/M media:
USERS: 0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15


* EXCEPTION RECORDS
* Least ambiguous exceptions must appear first.
* DO NOT REMOVE THE FIRST TWO EXCEPTIONS.
* Only the DOS files that reside in the subdirectories declared
* by a preceding PATH: record will be affected by an exception
```

```
*   with "D" in the first field.
*   Five fields are mandatory for exception records.  These are:
*
*   1  ,2  ,3        ,4            ,5
*   user,drive,process flag,d(elete) or k(eep),filename.extension
*
*   Use "D" in the first field for DOS files.
*   A sixth field, password, may be added for CP/M files.


PATH: c:\                  <-- Subdirectories to backup and
restore.




EXC: ?,?,c,k,control?.br      <-- Backup control files if modified.
EXC: ?,?,n,k,*.br?            <-- Do not backup .BR files.
EXC: ?,?,n,d,*.bak           <-- Delete .BAK files.
EXC: ?,?,n,d,*.$$$           <-- Delete .$$$ files.


*   End of CONTROL.BR
```

How to Tell BackRest What You Want

The control records have already been configured for most
personal computers that run Concurrent. However, you might
want to change them so that BackRest performs according to your
particular requirements. If you do, make a working copy of
CONTROL.BR and modify it using a text editor such as DR EDIX or
any other text editor or word-processing program. Please read
the descriptions of the control file records carefully before
you change anything in CONTROL.BR.

The description of each record includes what the record does,
its form, an explanation of the form, whether the record's
presence in the control file is mandatory, and an example.

Note that BackRest operations can be accessed through
Concurrent's File Manager. See "Backup File(s) Menu" in
Section 2 of the Concurrent PC DOS User's Guide.

Screen Control Records

Two records, CLEAR: and ATTRIBUTE:, control how BackRest uses
the screen of your computer.

CLEAR:

BackRest reads the CLEAR: record to obtain the code for clearing the screen of your computer.

Form
CLEAR: length,code

Explanation
The CLEAR: record must contain two fields, the length field and the code field. The length field specifies the number of characters in the code required to clear the screen. The code field contains the decimal values that your computer uses to erase all characters currently being displayed on the screen.

The CLEAR: record's presence in CONTROL.BR is optional. If you remove CLEAR: from the control file, BackRest clears the screen by sending it 24 blank lines.

Example
CLEAR: 2,27,69

This example shows that two decimal numbers (2,) are required for the code (27,69) that clears the screen. This is the correct code for personal computers that run BackRest under Concurrent.

ATTRIBUTE:

If your computer has a color monitor, you can use the ATTRIBUTE: record to specify the colors BackRest should use for displaying its messages on your screen.

Form
ATTRIBUTE: type: length,code

Explanation
The ATTRIBUTE: record uses three fields, type:, length, and code.

There are seven type: fields for ATTRIBUTE: records:

1) start screen: Initialize the screen at the beginning of a backup or restore session.

2) leave screen: Set screen state at the end of a backup or restore session.

3) general: Set BackRest sign-on color.

4) errors: Set color for error messages.

5) message: Set color for BackRest messages.

6) data: Set color for display information.

7) input: Set color for your input to BackRest.

The length field specifies the number of characters required for the color code.

The code field is the code for the color your computer uses on the screen. This field consists of a series of decimal numbers, each separated by a comma.

Table B-1 shows the ATTRIBUTE: length field and code field values for several colors.

Table 1. ATTRIBUTE: Color Codes

Color	Length Code Field	Code Field
Blue	3,	27,98,1
Brown	3,	27,98,6
Cyan	3,	27,98,3
Red	3,	27,98,4
Green	3,	27,98,2
Grey	3,	27,98,7
Light Cyan	3,	27,98,11

Magenta   3,   27,98,13
White   3,   27,98,15
Yellow   3,   27,98,14

ATTRIBUTE: records are optional. When ATTRIBUTE: records are
not included in the control file, BackRest uses monochrome
screen displays.

Example
ATTRIBUTE: errors: 3,27,98,4

This ATTRIBUTE: record causes all BackRest error messages to be
displayed in red.

Printer Information Records

Four control file records provide BackRest with information
about your printer: PRINTER INIT:, FORMFEED:, LENGTH:, and
WIDTH:.

PRINTER INIT:

The PRINTER INIT: record sends a start-up command to your
printer.

Form
PRINTER INIT: length,command code

Explanation
Before BackRest sends its reports to your printer, it reads
this record to determine which command should precede printer
output. PRINTER INIT: has two fields, length and command code.
The length field specifies the number of decimal characters
that make up the command code. The command code is a series of
numbers that your computer sends to your printer for functions
such as compressed print mode, carriage return, or line feed.

PRINTER INIT: is an optional record. If you remove PRINTER
INIT: from the control file, BackRest uses a default command
that causes your printer to perform one carriage return.

Example
PRINTER INIT: 2,12,13

This PRINTER INIT: record causes your printer to perform a form
feed (12) and carriage return (13) before BackRest's reports
are printed.

FORMFEED:

BackRest uses the FORMFEED: record to begin printing a section
of its reports on a new page.

Form
FORMFEED: length,command code

Explanation
The FORMFEED: record consists of two fields, length and command
code. Both fields are made up of decimal values.

The FORMFEED: record is optional. BackRest uses three linefeed
commands if this record is not included in CONTROL.BR.

Example
FORMFEED: 1,12

The length field is 1 because the command code consists of one
number. The command code for a printer form feed on most
computers that run Concurrent is 12.

LENGTH:

The LENGTH: record specifies the number of lines to be printed
per BackRest report page.

Form
LENGTH: number of lines

Explanation
The LENGTH: record has only one field, a decimal value for the
number of lines to be printed per report page.

LENGTH: is an optional record. If you remove this record from
CONTROL.BR, BackRest uses a default value of 60 lines per page.

Example
LENGTH: 65

This LENGTH: record tells BackRest to print 65 lines per report
page.

WIDTH:

The WIDTH: record tells BackRest the number of columns per page
that your printer accommodates.

Form
WIDTH: number of columns

Explanation
The only field the WIDTH: record uses is a decimal value for
the number of columns your printer allows.

The WIDTH: record must be included in the control file.   If
WIDTH: is missing from CONTROL.BR, BackRest displays the
following error message and returns control to Concurrent:

Fatal Control File (CONTROL.BR) Error:
Incomplete control file

Example
WIDTH: 80

This record tells your printer to print 80 columns per page,
the standard for most personal computer printers. If your
printer can print 120 columns per page, you might want to
change the WIDTH: field to 120.

Report Records

BackRest uses three control file records for its reports. These
are: REPORT PRINT:, SHOW SKIPS:, and ID:.

REPORT PRINT:

Use the REPORT PRINT: record to control whether BackRest
automatically prints its reports at the end of backup or
restore operations.

Form
REPORT PRINT: true/false

Explanation
The REPORT PRINT: field can have either a "true" or "false"
value. If the field is "true," BackRest automatically sends
its reports to your printer. If you set the REPORT PRINT:
field to "false," BackRest does not send its reports to your
printer. If there is no printer attached to your computer, set
this field to "false."

You can tell BackRest to send its reports to your printer at
any time by issuing one of the following commands:

    A>BACK REPORT

for the backup report, or

    A>REST REPORT

for the restore report. Please see "BackRest Commands" for
more information about these commands.

REPORT PRINT: is an optional record. If you remove this record
from the control file, BackRest uses "true" for a default field
value.

Example
REPORT PRINT: true

This example REPORT PRINT: record causes BackRest to send its
reports to the printer automatically.

SHOW SKIPS:

The SHOW SKIPS: record determines whether BackRest includes a
report of the files excluded from a hard-disk backup.

Form
SHOW SKIPS: true/false

Explanation
The SHOW SKIPS: record uses a one-word field of either "true"
or "false." If you set the field to "true," BackRest includes
the "Files Skipped" section in its backup report (see "Backup
Reports"). Because this section of the report can be quite
long, you might want to set the SHOW SKIPS: field to "false."
BackRest always includes the "Files Skipped" section in a
backup report if you specify a complete hard-disk backup as
described in "BackRest Commands."

SHOW SKIPS: is an optional record. If you remove SHOW SKIPS:
from the control file, BackRest uses "true" for a default field
value.

Example
SHOW SKIPS: false

The report of files excluded from a hard-disk backup session
are not printed unless you specify a complete backup.

ID:

Use the ID: record to specify the heading BackRest prints on
all pages of its reports.

Form
ID: heading

Explanation
The field for the ID: record is the heading you want printed on
each page of BackRest reports. If you are using an 80-column
printer, use a maximum of 30 characters. This limits the
heading to a single line. In any case, do not use more than 60
characters.

The ID: record must be included in the control file. If ID: is
missing from CONTROL.BR:, BackRest displays the following error
message and then returns control to Concurrent:

    Fatal Control File (CONTROL.BR) Error:
    Incomplete control file

Example
ID: Pacific Grove Dental Clinic

This ID: record causes BackRest to print the following heading
on each page of its reports:

BackRest 2.x Report for Pacific Grove Dental Clinic done on 06/05/84

Control Records

The Control Records contain information that governs important
aspects of BackRest's operation. The control records are:
SPLIT:, BELL REPEAT:, DEST DRIVE:, SOURCE:, CONTROL DRIVE:,
VERIFY:, REUSE:, ERASE:, USERS:, and PATH:.

SPLIT:

The SPLIT: record controls whether a file too large to fit in
the space remaining on a disk is to be divided onto two or more
disks during backup.

Form
SPLIT: true/false

Explanation
The SPLIT: record field can have either a "true" or "false"
value. If the field is "true," BackRest copies as much of the
file as will fit in the disk's remaining space; the rest of the
file is then copied to the next backup disk. BackRest joins
the two files during restoration. A field value of "false"
causes BackRest to request a new backup disk if the current
disk's remaining space cannot accommodate the file. Note that
a value of "true" uses a disk's space completely and requires

fewer disks per backup session.

SPLIT: is an optional record. BackRest uses "false" as the
default field value if you remove SPLIT: from the control file.
BackRest always divides single files that are larger than the
capacity of a single blank backup disk despite the SPLIT: field
setting.

Example
SPLIT: true

This SPLIT: record causes BackRest to divide files between
disks.

BELL REPEAT:

The BELL REPEAT: record controls the tone prompt BackRest
sounds when a message is displayed and your attention is
required.

Form
BELL REPEAT: true/false

Explanation
The field for BELL REPEAT: can have either a "true" or "false"
value. If the field is "true," BackRest sounds the tone
repeatedly. A "false" value causes BackRest to sound the tone
just once.

The BELL REPEAT: record is optional. If you remove BELL
REPEAT: from the control file, BackRest uses "false" for its
default field value.

Example
BELL REPEAT: false

BackRest sounds the tone just once when your attention is
required.

DEST DRIVE:

Use DEST DRIVE: to specify the backup disk destination drive.

Form
DEST DRIVE: d

Explanation
The field for DEST DRIVE: is a one-letter designation
specifying the backup disk drive. BackRest writes copies of
the files to be backed up on the disk contained in this drive.
BackRest also reads files from the backup disk in this drive
during hard-disk file restoration.

The DEST DRIVE: record must be included in the control file.
If you remove it, BackRest displays the following error message
and then returns control to Concurrent:

    Fatal Control File (CONTROL.BR) Error:
    Incomplete control file

If you use an invalid drive designation in the DEST DRIVE:
field, BackRest displays the following error message before
returning control to Concurrent:

    Fatal Control File (CONTROL.BR) Error:
    Illegal Disk Drive Specified
    DEST DRIVE: d   <-- Backup disk drive

Example
DEST DRIVE: a

This example shows that BackRest writes to and reads files from
floppy disks placed in drive A. The drive you designate in the
DEST DRIVE: field depends upon the configuration of your
computer system. See "Drive Designation" in Section 1 of the
Concurrent PC DOS User's Guide.

SOURCE:

Use the SOURCE: record to specify the hard-disk drives you want
BackRest to back up and restore.

Form
SOURCE: d,d,d,d

Explanation
The SOURCE: record field is made up of one-letter hard-disk
partition designations. The hard-disk partitions specified in
the SOURCE: field are backed up to the disk drive specified in
the DEST DRIVE: record.

The SOURCE: record must be included in the control file. If
you remove it, BackRest displays the following error message
and then returns control to Concurrent:

    Fatal Control File (CONTROL.BR) Error:
    Incomplete control file

BackRest ignores a SOURCE: drive designation if it is also used
in the DEST DRIVE: record. In that case, BackRest continues
processing any valid drive designations that are remaining in
the SOURCE: field. When BackRest finishes its backup
operations, it prints the following message in its Error
Report:

Warning! Source and destination drive d: were the same,
skipped it as source.

When you specify invalid drive designations in the SOURCE:
record field, BackRest displays the following error message
before returning control to Concurrent:

Fatal Control File (CONTROL.BR) Error:
Illegal Disk Drive Specified
SOURCE: d,d,d   <-- Backup disk drive

If you change the SOURCE: field, BackRest performs a full hard-
disk backup during the next backup session.

Example
SOURCE: c,d

This example shows that files will be read from hard-disk
partitions C and D for backup. The drives you specify in the
SOURCE: record depend on the configuration of your computer
system. See "Drive Designation" in Section 1 of the Concurrent
PC DOS User's Guide.

CONTROL DRIVE:

Use the CONTROL DRIVE: record to tell BackRest which drive it
should use as its work drive.

Form
CONTROL DRIVE: d

Explanation
The field for the CONTROL DRIVE: record is a one-letter
designation specifying the BackRest system work drive; this is
the drive on which BackRest stores its DIR.BR, PATHS.BR,
REPORT.BR, RESTRPT.BR, and temporary work files.

The CONTROL DRIVE: record must be included in the control file.
If it is removed, BackRest displays the following error message
and then returns control to Concurrent:

    Fatal Control File (CONTROL.BR) Error:
    Incomplete control file

When an invalid drive designation is used in the CONTROL DRIVE:
record field, BackRest displays the following error message
before returning control to Concurrent:

    Fatal Control File (CONTROL.BR) Error:
    Illegal Disk Drive Specified
    CONTROL: d   <-- Backup system work drive.

You cannot specify the same drive in the CONTROL DRIVE: and
DEST DRIVE: fields. If you do, BackRest displays the following
error message and then returns control to Concurrent:

    Fatal Error!!
    Control drive matches Destination for Drive d:,
    Aborted backup.

Example
CONTROL: c

This example Control Record tells BackRest to use drive C as

its system work drive. The drive you assign as BackRest's
system work drive depends on the configuration of your
computer. See "Drive Designation" in Section 1 of the
Concurrent PC DOS User's Guide.

VERIFY:

Use the VERIFY: record to control whether BackRest checks the
backup files against the original source files for an exact
match.

Form
VERIFY: true/false

Explanation
The VERIFY: record field can be either "true" or "false." If
the field is "true," BackRest performs a read-after-write
operation to compare the backup file against the original
source file. If you set the VERIFY: field to "false," BackRest
will not verify its backup files.

The VERIFY: record is optional. When VERIFY: is not included in
the control file, BackRest uses "true" for its default field
value.

Example
VERIFY: true

This VERIFY record tells BackRest to check every backup file
against its source file for an exact match.

REUSE:

The REUSE: record specifies whether you want BackRest to reuse
backup disks.

Form
REUSE: true/false[,volume number]

Explanation
REUSE: has two fields. The first field can be set to "true" or

"false." If you set the field to "true," BackRest accepts a backup disk that contains previously backed up files. If the field is "false," BackRest does not accept a disk that contains previously backed up files.

The second field for REUSE: is the decimal value you want BackRest to use as the volume number for the first reused backup disk. This field is optional; BackRest will only use it if the first field is "true."

REUSE: is an optional record. If REUSE: is not contained in the control file, BackRest uses "false" for its default field value.

Example
REUSE: true,99

BackRest accepts a disk that contains previously backed up files in response to its prompt for you to insert a new disk. BackRest labels the disks used in the current backup session beginning with volume number 99.

BackRest assigns the same volume number (99) to the first reused disk in subsequent backup sessions.

Note: If you set REUSE: to "true," set the ERASE: record to "false." This will prevent BackRest from erasing existing backup files on the disk to be reused. See the description of ERASE: that follows.

ERASE:

Use the ERASE: record to tell BackRest if it is to erase destination disks before writing backup files to them.

Form
ERASE: true/false

Explanation
The ERASE: record field can be either "true" or "false." If the field is "true," BackRest erases all the files on the destination disks that reside in the user numbers and subdirectory paths declared in the USERS: and PATH: records.

Note, however, that BackRest does not erase any previously backed up files from these user numbers or subdirectories if the REUSE: record field is "false." In that case, BackRest prompts you for a new destination disk. If you want BackRest to use the remaining space on a backup disk without erasing any existing backup files, set ERASE: to "false" and REUSE: to "true." Note: If you set ERASE: to "true" and REUSE: to "true," BackRest erases disks before reusing them.

Example
ERASE: true

This record causes BackRest to erase any files in the user numbers or subdirectories specified in the USERS: and PATH: records from backup destination disks before it copies any files. If a disk contains previously backed up files and the REUSE: record is "false," BackRest prompts you for another backup disk.

USERS:

The USERS: record tells BackRest which CP/M user numbers to back up and restore.

Form
USERS: n,n,n,. . .

Explanation
The field for the USERS: record consists of the user numbers, separated by commas, to be backed up and restored. User numbers 0 - 15 may be specified in the USERS: field. Your backup sessions take less time if you limit this field to only those user numbers storing your hard-disk files.

USERS: is an optional record. If you remove it from the control file, BackRest uses user number 0 as its default. If you change the USERS: field, BackRest performs a full hard-disk backup during the next backup session.

Example
USERS: 0,1,4

This USERS: record causes BackRest to search through user numbers 0, 1, and 4 for files to be backed up and restored.

PATH:

Use PATH: to specify the DOS subdirectories that contain files
you want BackRest to back up and restore.

Form
PATH: d:\1st directory\2nd directory\3rd directory\. . .

Explanation
The PATH: record field consists of a source drive designation
(d:), the DOS root directory, and the hierarchical sequence of
directories that leads to the subdirectory containing the files
to be backed up and restored. Note the required colon after
the drive designation and the use of backslashes.

Note: If a subdirectory specified in a PATH: record does not
exist, BackRest ignores the record.

When the same subdirectory path exists on two or more drives
and you want the files in each to be backed up, the control
file must include separate PATH: records for each drive.

PATH: records affect only DOS files. DOS files are indicated
by EXC: records that contain "D" in the first field. Each
PATH: record specifies only the paths to the files declared in
the EXC: records that follow it.

The PATH: and EXC: records must follow all other control file
records.

The PATH: record is optional. If it is removed from the
control file, BackRest backs up only the files in the current
directory.

If you are using BackRest from Concurrent's File Manager, you
are not required to specify subdirectories in the PATH: record.W
BackRest can accept paths to your DOS files from the File
Manager (see the Backup File Menu in Section 2, "File Manager"
of the Concurrent PC DOS User's Guide).

Example

PATH: C:\terry\kit\sales

This PATH: record tells BackRest to back up the DOS files
contained in subdirectory "SALES" on source drive C as
specified in any EXC: records that may immediately follow.
This includes only those EXC: records which use "D" in the
first field. The subdirectory path declared in this record
will not be used for EXC: records that come after another PATH:
record or do not contain "D" in the first field.

Exception Records

Exception Records tell BackRest which files it should treat as
"exceptions" to the more general procedures governed by the
control records. Without Exception Records, BackRest backs up
every hard-disk file as declared in the SOURCE:, USER:, and
PATH: records. An Exception Record's descriptor is EXC:.

EXC:

Use EXC: to tell BackRest the backup process and disposition
you require for specific files.

Form
EXC: user/D,d,process,disposition,filename.ext,[password]

Explanation
Exception Records have six fields separated by commas. The
first field can be a user number or question mark (?) for CP/M
files, or "D" for DOS files. A question mark indicates all
user numbers are included. If you want your DOS files backed
up according to a preceding PATH: record, the first field must
contain a "D."

The second field is the source drive containing the files to be
backed up. You can use a question mark (?) in this field to
indicate any valid source drive specified in the SOURCE:
record. If the source drive field of an EXC: record specifying
DOS files does not correspond to the source drive designation
for the root directory in the preceding PATH: record, BackRest
displays the following error message before returning control
to Concurrent:

```
        Fatal Control File (CONTROL.BR) Error:
        Drive differs from previous "PATH:"
        EXC: D,c,a,k,*.TXT     <-- Always Backup DOS .TXT files
```

An EXC: record's third field is a single letter representing
the backup process you want BackRest to perform on the files
specified in the EXC: record. This field can be set to one of
the following:

        o "A" for Always backup the specified files
        o "C" for Conditionally backup the specified files
        o "N" for Never backup the specified files

Use "C" when you want BackRest to back up the files specified
in the EXC: record only if they have been modified since the
last backup session.

The fourth field is a single letter representing the
disposition of the specified files. Use one of the following
letters:

o "D" to Delete the files from the source drive. If "A" or
"C" is in the third (process) field, BackRest deletes
the files after they have been successfully backed up
on a destination disk.

o "K" to Keep the files on the source drive after backup.

The fifth field specifies the files the EXC: record acts upon.
If you use wildcard characters (? and *) for the file
specification in this field, BackRest searches the files on the
source drive for matching characters in the filenames and
extensions.

Note: You must place EXC: records that use wildcard characters
in a sequence of least ambiguous records first. EXC: records
that contain explicit file specifications must appear in
CONTROL.BR before those that use any form of ambiguous file
reference.

The sixth field, the password, is optional. Enter the
passwords for any password-protected CP/M files you want
BackRest to back up. If you use this field, the control file
will contain the passwords for your CP/M files. To protect
your passwords, use Concurrent's SET command to assign

"TSERKCAB" as a password for CONTROL.BR as shown below:

    A>SET D:CONTROL.BR[PASSWORD=TSERKCAB]

where "D:" is the drive containing the CONTROL.BR file. If you
use another password for CONTROL.BR, you must set the default
to the same password so that BackRest can access CONTROL.BR.
For example, if your password is "xyz," do the following:

    A>SET D:[DEFAULT=XYZ]

Note: BackRest does not password-protect files the backup
files it creates. If you use BackRest to back up password-
protected files, store your backup disks in a secure area.

Examples
EXC: ?,?,n,d,*.$$$

This example affects all user numbers (first "?") on all source
drives (second "?"). It tells BackRest never to back up (n)
temporary files (*.$$$) and to delete (d) these files from the
source drive.

    EXE: O,c,c,k,*.tex,eliot

This example marks all the files in user number 0 on source
drive C with an extension of TEX and a password of "ELIOT" as
exceptions. It tells BackRest to back up these files only if
they have been modified since the last backup and to keep the
original versions on source drive C.

    PATH: C:Eliot
    EXC: D,c,a,k,SALES.*

This example specifies all DOS files (D) on drive C (c) with a
filename of SALES. It tells BackRest to always back up these
files (a) and to keep (k) their original versions on drive C.
Use this EXC: record format for DOS files you want BackRest to
back up from a subdirectory declared by a preceding PATH:
record (in this example, Eliot).

BACKREST COMMANDS

This section describes the use of the BACK and REST commands.

BACK Command

The BACK command allows you to specify how your hard-disk files
are copied to backup disks. The forms of the BACK command are:

BACK
BACK FULL
BACK CONTROL=n
BACK REPORT

If you have previously copied BACK.CMD to your system drive,
you can enter any of the BACK commands from any drive.
BackRest does require, however, that the current drive contain
the CONTROL.BR file. Each of the BACK commands are described
below.

BACK -- Routine Hard-disk Backup

Use this form of the BACK command the first time you back up
your hard-disk files and afterwards for routine hard-disk
backup sessions. Subsequent use of this command will cause
BackRest to back up only new files or those which have been
modified since the last backup session.

This command causes hard-disk backup to occur according to the
default control file records in the CONTROL.BR file. Unless
you have previously set the system date (see DATE in Section 8
of the Concurrent PC DOS User's Guide), BACK asks you to enter
the correct date:

Please enter today's date correctly as MM/DD/YY ==>

You can optionally enter the correct date as part of the BACK
command line:

        A>BACK MM/DD/YY

Here, BACK accepts the date you type at the command line and does not prompt you for it. Once BACK has the correct date, BackRest signs on and indicates which drive and user number or subdirectory path will be backed up according to the SOURCE: record in CONTROL.BR:

    BackRest (tm) for Concurrent (tm) PC-DOS
    Hard-disk Backup Facility - Version 2.01
    Copyright (c) 1983, 84, Stok Software, Inc.

    Backing up drive x:, user n

After indicating which drive and user number or path is to be backed up, BACK prompts you to insert a backup disk in the destination drive as follows:

    Please insert a new CP/M Media disk in drive A:
    Touch RETURN key when ready ==>_

If the source drive is a DOS partition, the above prompt shows "DOS" in place of "CP/M." When you have inserted a properly formatted disk of the indicated media and pressed the Enter key, BACK begins reading the files to be backed up from the source drive and writing them to the backup disk in the destination drive. This is indicated by the messages:

    Backing up drive x:, user n
    Reading filename ext
and
    Backing up drive x:, user n
    Writing filename ext

When BACK has finished writing a file to the backup disk, it verifies that the backup file is the same as the source file. BACK reports that it is checking a file by displaying the following message:

    Backing up drive x:, user n
    Verifying filename ext

When a backup disk is full, BACK displays the disk's unique volume number so that you can label the disk appropriately. BACK asks for more backup disks when it requires them as follows:

Please remove the disk in drive A: and place a label on
it indicating volume:x

then insert a new CP/M Media disk.

Touch RETURN key when ready ==>_

When BackRest has finished its backup operations, it displays
the following message before sending its report to your
printer:

Printing report, please standby...
End of BackRest processing

If the REPORT PRINT: record field is "false," BackRest displays
the following message at the end of its backup operations:

End of BackRest processing

If you have modified the SOURCE: or USERS: record fields in the
CONTROL.BR file after BACK has used it to back up your hard-
disk files, BackRest displays the following message on your
screen:

I will obey the new parameters you placed in the
CONTROL.BR file with a FULL backup this time.

Is that all right? (Y or N) ===>

This message means that BackRest will back up every file (as
defined in CONTROL.BR) and not just those which have been
modified or created since BACK was last used. If you enter "N"
in response to this message, BackRest returns control to
Concurrent.

You can return control to Concurrent and stop BackRest from
processing a BACK command by typing "C" while holding down the
Ctrl key. When you cancel BACK processing, the program
responds by displaying:

Do you want to print the report (Y/N) ==>_

If you type "Y," BackRest sends its report to your printer. If
you enter "N," BackRest displays:

     User abort of backup process

and returns control to Concurrent. If you abort backup
processing, you must do a full backup the next time.

BACK FULL -- Complete Hard-disk Backup

Use this form of the BACK command to cause BackRest to perform
a complete hard-disk backup. BACK FULL forces BackRest to
ignore its references to previously backed up files. All hard-
disk files that satisfy the parameters in CONTROL.BR are backed
up. If BackRest cannot locate its DIR.BR file on the control
drive, backup disk numbering begins again from 00001.

BACK FULL is equivalent to using the BACK command form for a
first backup. You can include the date in the BACK FULL
command line in one of two ways:

     A>BACK FULL MM/DD/YY
or
     A>BACK MM/DD/YY FULL

The BACK FULL command causes BackRest to over-write its DIR.BR
file. This means that BackRest loses any reference to backup
operations it has performed prior to a complete hard-disk
backup initiated by BACK FULL. In all other aspects, BACK FULL
operates just like BACK.

BACK CONTROL=n -- Specialized Hard-disk Backup

The BACK CONTROL=n command tells BackRest to take its
instructions from the records in a special control file. "n"
indicates any character "A" through "Z" or "0" (zero) through
"9."

Special control files are actually modified copies of
CONTROL.BR. You can create a special control file by making a

copy of CONTROL.BR (use COPY), giving it a new name, and
modifying its control records. Special control files are
designated by an extra character in the filename. For example,
you can use CONTROLI.BR to identify a control file whose
records you have changed to control the backup and restoration
of inventory files. The following command would cause BackRest
to back up hard-disk files according to the records in
CONTROLI.BR:

BACK CONTROL=I

All files and backup disks used with this form of the BACK
command are identified with the character used to designate the
special control file. For example, "BACK CONTROL=I" would
cause the first backup disk volume number to be "I-1."

As with the other BACK commands, you can include the date in
the BACK CONTROL=n command line as follows:

     A>BACK MM/DD/YY CONTROL=n
or
     A>BACK CONTROL=n MM/DD/YY

The BACK CONTROL=n command displays the same messages as the
BACK command to request the date and backup disks and to notify
you of its current operation.

BACK REPORT -- Print Backup Report

The BACK REPORT command sends a report of backup operations to
your printer. BackRest prints its backup reports automatically
unless the REPORT PRINT: record field in CONTROL.BR is "false."
Use this command to print a record of the previous backup
operation. See "BackRest Reports."

REST Commands

The REST commands allow you to restore files you previously
backed up from your hard-disk partitions with the BACK
commands. There are three forms of the REST command:

REST
         REST CONTROL=n
         REST REPORT

If you have copied REST.CMD to your system drive as described
in "Setting Up BackRest," you can enter any of the REST
commands from any drive. BackRest does require, however, that
the current drive (the drive from which you enter the command)
contain the CONTROL.BR file. Each of the REST commands are
described below.

REST -- Routine Hard-disk File Restoration

Use this form of the REST command to restore your hard-disk
files according to the records in CONTROL.BR. When you type:

         A>REST

and press the Enter key, BackRest responds by displaying its
Restore Facility Menu. By offering you options and prompting
you for information, the Restore Facility Menu allows you to
specify which files you want restored to your hard disk. It
gives you the following options:

         Restore. .

         1 - Bad Files Automatically
         2 - Other Files

         [RETURN KEY] - End

If you type "1," REST reads the REPORT.BR file created by BACK
to determine which files were unusable at the time of the last
backup. REST then looks for the backup disk volume that
contains the most recently backed up version of the file. When
REST has located the last copy of the file that was known to be
usable, it prompts you to insert the disk with that specific
backup disk volume number in the proper drive:

         Please insert in drive d: disk volume: xx:
         Touch RETURN key when ready ==>_

If you insert the wrong backup disk in response to this prompt, REST displays

    Wrong volume. . .

and requests the correct volume number again.

If BACK did not encounter any "bad" files during the last backup operation, REST displays the following message in response to your selection of the first option:

    There are no bad files to restore

If you select the second option from the Restore Facility Menu by typing "2," REST prompts you for the source drive to be restored:

    Enter drive to restore [A-P] or [RETURN] for any ==>_

Reply to this prompt by typing one of the single-letter drive designations used in the SOURCE: control file record. Press the Enter key to indicate that you want REST to use any drive from the SOURCE: record to restore your files by user number or path, filename, and date of backup.

REST prompts you next for the user number or subdirectory path that you want restored:

    Enter user to restore [0-15] or [RETURN] for any ==>_
    Enter path to restore or [RETURN] for any ==>_

Type any number in the range of 0 to 15 to specify the user number that contains the files you want restored. Specify the DOS subdirectory according to the requirements discussed in the description of the PATH: record. If you press the Enter key, your files are restored by filename and/or date of backup. REST asks you which files you want restored by displaying:

    Enter file name to restore (may be wildcard) ==>_

You can enter the name of a single file or use wildcard characters (? and *) to specify a group of files. For example,

"*.txt" would tell REST to restore all files with an extension of TXT. Enter "*.*" to indicate every file previously backed up (see "Wildcards" in Lesson 2 of Getting Started with Concurrent PC DOS).

REST's last prompt asks you to specify the date of backup for the files you want restored:

        Enter restore date as MM/DD/YY or [RETURN] for latest ==>_

You can request a specific version of a file according to the date of backup or press the Enter key to tell REST that you want the most recently backed up copies. The date of backup is shown in the heading of the backup reports.

When REST finds the volume number of the backup disk that contains the files you have indicated, it asks you to insert that disk in the proper drive:

        Please insert in drive d: disk volume: xx
        Touch RETURN key when ready ==>_

If REST cannot locate any files that correspond to your specifications, it displays the following message and returns you to the Restore Facility Menu:

        Your request did not match any files backed up

After REST has restored all the files that match your specifications, it sends the restore report to your printer. REST notifies you of this with the message:

        Printing report, please standby . . .

When REST has finished the report, it displays

        End of BackRest processing

and returns control to Concurrent. Note that REST does not print its report if the REPORT PRINT: record field in the control file is set to "false." You can cancel restore processing at any time by holding down the Ctrl key and typing

"C". This causes REST to display the following message:

     Do you want to print the report (Y/N)? ==>_

If you type "Y," REST sends its report to your printer and then
returns control to Concurrent. Entering a response of "N"
causes REST to display this message immediately before
returning control to Concurrent:

     User Abort of restore process

REST CONTROL=n -- Specialized File Restoration

This form of the REST command tells BackRest to use the records
in a special control file. "n" indicates any character "A"
through "Z" or "0" (zero) through "9." Special control files
are described under the "BACK CONTROL=n" command above.

REST REPORT -- Print Restore Report

Use this command to print a report of the previous restore
operation by typing:

     A>REST REPORT

and then pressing the Enter key. BackRest displays the
following message before sending the report to your printer:

     Printing report, please standby . . .

When the report has been printed, REST displays

     End of BackRest processing

and returns control to Concurrent. If the REPORT PRINT: record
field in the control file is set to "false," REST does not
print its report in response to this command. If you have not
previously run REST, the report consists of only one line:

File RESTRPT.BR cannot be found.

Restoring Password-protected Files

REST will not over-write password-protected files. You must
therefore remove password protection from CP/M files on your
hard disk before restoring other versions of the files with
REST. Reset the password protection after the new versions of
the files have been restored.

REST restores a file with a temporary extension (.$$$) when an
existing version of the file is still password-protected. If
this occurs, erase the original file and rename the newly
restored, temporary version. Be sure to reinstate password
protection for the renamed file.

BACKREST REPORTS

BackRest sends its reports to your printer when its backup and
restore operations are completed. BackRest reports provide you
with a permanent reference of previous backup and restore
operations, hard-disk statistics, and any errors the program
encountered during its processing. All reports are formatted
according to the Report Records in BackRest's control file.

Backup Report

Backup reports are made up of four sections: files backed up,
files skipped, files deleted, and bad files. BackRest prints
the heading contained in the field of the ID: record on each
page of a backup report.

The first section of a backup report lists every file copied
during the previous backup session. Backed up files are
presented according to source drive, backup disk volume number,
and user number (CP/M files) or subdirectory path (DOS files).
BackRest also indicates the disposition of every file by
printing "D" or "K" after each filename according to the fourth
field of the control file EXC: records. Remember that "D"
shows that BackRest deleted the file after it created a backup
copy; "K" tells you that the source file was kept on the source
drive after BackRest copied it to a backup disk.

BackRest uses the letter "S" to indicate a split file.
BackRest splits any single file too large to fit on one blank
backup disk. If the SPLIT: record field is "true," BackRest
also splits files so that a disk's space is used completely.
The format of this section of a backup report is shown below.

BackRest 2.x Report for Pacific Grove Dental Clinic done on 06/05/84

Files Backed Up

Drive D   User 0   Backup Volume 00003

CONSOLE .BAS K   DELTA   .BAT K   DISPLAY .CMD K   DONE   .BAT K

Drive D   User 1   Backup Volume 00003

AUDIT   .DAT D   BATCH   .CMD K   CCPM   .SYS S

Figure 1. CP/M Backup Report

DOS files listed in a backup report are shown according to
subdirectory path:

Drive C Backup Volume 00004

Path:\ELIOT
APRIL   .GL K   AUGUST .GL K   FEBR   .GL K   JAN   .GL K

Figure 2. DOS Backup Report

The "Files Skipped" section of a backup report is included only
if the SHOW SKIPS: record field is "true." This section of a
backup report lists all the files not backed up according to
the EXC: records in the control file. This section of the
report also uses the "D" and "K" disposition indicators.

The third section of a backup report, "Files Deleted," provides
a breakdown of all the files deleted during the last backup
session. Only the "D" disposition indicator appears in this

section of the report.

The last section of a backup report lists all the files that
BackRest could not read during a backup session. These "bad
files" are not deleted. BackRest does not obey an EXC: record
if it would cause the program to erase an unreadable file. See
"The REST Command" for information on using BackRest to restore
"bad files."

Restore Report

BackRest prints a report of the files it has restored as part
of REST processing. An example restore report is shown
below. (Note that for CP/M files user number is indicated
instead of path.)

BackRest 2.x Report for Pacific Grove Dental Clinic done on 06/05/84

Files Restored

Drive C   Backup Volume 00001

Path:\
CTYPE .H   CURRENT .TXT   SAMPLE .C

Figure 3. DOS Restore Report

Hard-disk Statistics Report

The hard-disk statistics report shows the amount of disk space
and number of files in each user number (CP/M) or path (DOS) as
specified in the control file Exception Records or through
Concurrent's File Manager. This report also shows the number
of files backed up in each user number or subdirectory, the
total number of files backed up on a disk, the amount of hard-
disk space available, and the total number of directory areas
used for CP/M files.

BackRest 2.x Report for Pacific Grove Dental Clinic done on 06/05/84

Statistics Report

Date of last backup: 06/04/84

Drive D: User 0: 1043K in 102 files. 4 files backed up.
Drive D: User 1: 159K in 8 files. 4 files backed up.

Drive D: Total of 8 files backed up out of 110.
Drive D: 3293K available. 324 directory areas used.

Figure 4. CP/M Hard-disk Statistics Report

BackRest 2.x Report for Pacific Grove Dental Clinic done on 06/05/84

Statistics Report

Date of last backup: 06/04/84

Path:\
Drive C: 1254K in 108 files. 10 files backed up.

Path:\ELIOT
Drive C: 253K in 39 files. 4 files backed up.

Drive C: Total of 14 files backed up out of 147.
Drive C: 3909K available.

Figure 5. DOS Hard-disk Statistics Report

Error Report

This report lists any errors BackRest encountered during backup
and restore operations.

BackRest 2.x Report for Pacific Grove Dental Clinic done on 06/05/84

Error Report

Unresolved Error Source APRIL.AP on Drive D: User 0,
backup retried on new disk.

1 wrong volumes inserted by operator.

Figure 6. CP/M Error Report

This example shows that BACK encountered an error it could not
resolve while backing up the file APRIL.AP from user number 0,
drive D. The error message indicates that BACK copied the file
to another backup disk. The second error occurred when the
user inserted the incorrect backup disk during a restore
operation. In this case, REST would have prompted the user for
the proper disk.

Example Error Report Messages

Warning ! Source and destination drive X: were the same,
skipped it as source.

This message means the same drive was specified as both a
source and destination drive in the SOURCE: and DEST DRIVE:
control file records.

Verify error on file xxxxxxxx.xxx on Drive X: backup
retried on new disk.

This means the backup copy of the indicated file did not
exactly match the source file. BackRest attempted another copy
on a different backup disk.

Destination Backup Drive X: has a Sector Error
backup retried on new disk.

A media error occurred while BackRest was writing a backup
file. BackRest attempted another copy on a different backup
disk.

Source Disk Sector Error in File xxxxxxxx.xxx on
Drive X: skipped file.

A media error occurred while BackRest was reading a source
file. The file was not copied to a backup disk.

EOF