Burroughs Corporation Ⓑ
COMPUTER SYSTEMS GROUP
SANTA BARBARA PLANT

| PLANT IDENT | 0 1 4 |

Product Specifications

DOCUMENT TRANSMITTAL

CONTROL DOC.	REV
None	

SYSTEM/PRODUCT ___B1800/B1700___   DISTRIBUTION TYPE _____

UNIT NAME _____   PROJ. NO. _____

COORD. _____ CHKR. _*Karl x*_ RECORDS ISSUE DATE _____

DOC PFX OR DWG SIZE	DOCUMENT NUMBER	REV OR ISSUE	DOCUMENT DESCRIPTION	ENG. RECORDS ONLY				REMARKS
				QTY REV PAGE	COPIES EACH PAGE	BOND	VELLUM	
P.S.	2222 2632	B	DISKMAP/UTILITY	11	6²			
							RECEIVED
							JUN 20 1980
							GENERAL MANAGER SANTA BARBARA PLANT
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2222 2632

Burroughs Corporation **B**

COMPUTER SYSTEMS GROUP
SANTA BARBARA PLANT

B1800/B1700 DISKMAP/UTILITY

PRODUCT SPECIFICATION

REV LTR	REVISION ISSUE DATE	APPROVED BY	REVISIONS
A	3/7/78	*(signature)*	Software Release Level Mark 7.0. Formerly released as section three of P. S. 2212 5579, B1800/B1700 MCP UTILITIES. 2-2: Added exception to Phase 1.
B	6/3/80	*(signature)*	Software Release Level Mark 10.0.

B, continued:

1-1   Added "DSKAVL" to list of options.

2-1   Rewrote first 3 paragraphs of "OPERATING INSTRUCTIONS" section.
       Changed value of ALPHA.
       Added "DSKAVL, ALPHA" to "SENSE SWITCHES."
       Added "SENSE SWITCH 6" section.

2-2   Updated "MAP or CHECK is set" sentence in Phase 1 section.

2-3   Updated "INVALID DFH.HDR.SIZE" error message.
       Added "INVALID BPS NUMBER" error message.

2-4   Updated "DATA-RECORD" format and added "CREATE_TIME" and "UPDATE_DATE."

3-1   Updated 5, 6, 7, and 9.

TABLE OF CONTENTS

GENERAL DESCRIPTION

DISKMAP/UTILITY accesses the MCP disk directory and available tables to produce a "map" of the disk or one of the options listed below.

CHECK — Sort disk information by address; check for disk integrity errors.

MAP — Causes listing to be printing during disk integrity check. Sets CHECK option by default.

ALPHA — Sort disk information alphabetically by file-name; print in a format similar to a KA listing.

SAVE — Create a file on disk containing the data printed during ALPHA in a format accessible by UPL/COBOL programs.

DECK — Punch a deck of cards containing the file-names of all files on disk, one per card.

DSKAVL — Create listing showing all available areas of disk as well as totals of areas, segments, and the size of the largest available area.

RELATED DOCUMENTATION

Name	Number
B1800/B1700 MCP II	P. S. 2212 5462
B1800/B1700 Software Operational Guide	1068731

OPERATING INSTRUCTIONS

DISKMAP/UTILITY is initiated by an execute statement. The
program generates an ACCEPT message requesting the unit-mnemonic
of the disk to be mapped and also any desired options. If the
system has multiple system drives, specifying one of those drives
causes all of them to be mapped.

If the user does not specify any options via the ACCEPT message,
the program sets MAP, CHECK, DSKAVL, and ALPHA by default.

The execute sequence is illustrated below:

        EX DISKMAP/UTILITY
         DISKMAP/UTILITY =1 BOJ. ...
         % DISKMAP/UTILITY =1 ENTER <UNIT-MNEMONIC> AND OPTION(S).
        1AXDPA MAP DECK DSKAVL

SENSE SWITCH 0

The program switches may be used to specify the options, thus
avoiding the ACCEPT message. If the user wishes to map the
system disk, setting switch 0 to some non-zero value will
automatically produce this result. It should be noted, however,
that the program cannot access a user disk with switch 0 set in
this manner. To access a user disk, switch zero must be set to
zero and the ACCEPT message must be used.

SENSE SWITCHES 1, 2, 3, 4

These switches control the options. Setting any one of these to
a non-zero value will suppress the option portion of the ACCEPT
message and set the options as indicated below:

SWITCH	VALUE	OPTIONS SET
1	1	CHECK
1	2-15	MAP, CHECK
2	1	ALPHA
2	2-15	DSKAVL, ALPHA
3	1-15	SAVE
4	1-15	DECK

SENSE SWITCH 6

This switch may be used to override the empty mix requirement for
the mapping of system disks. If switch 6 is set to a non-zero
value, the mapping of systems disk is allowed even though jobs
other than DISKMAP/UTILITY are executing. It should be noted
there could possibly be discrepancies in the map listing due to
temporary areas of disk being used by the programs which are
executing. Also note that this switch has no relevance or effect

for disks other than system disks, and should be used only when
necessary.

PROGRAM EXECUTION

The DISKMAP/UTILITY program executes in three phases.   These are
explained below.

Phase 1

Access the directory, available tables, and headers on the
specified disk;   build temporary work files for use in the other
phases.

During this phase, nothing may be allowed to disturb the disk
being mapped, or the output may be in error. This means that no
library maintenance instructions (REMOVE or CHANGE) may be
performed, nor any message that affects the disk directory or
available tables (e.g., XC, XD, TL, SL).   Also, no programs may
be scheduled or executed while mapping systems disk.   There is
one exception to the Phase 1 prohibition against disk activity,
and that exception applies only to a systems disk.   If neither
MAP or CHECK is set, or if switch 6 is non-zero, other disk
activity is permitted.

Phase 2

This phase is invoked only if MAP or CHECK is specified.   It
consists of sorting the disk information obtained during the
first phase by address, then checking it for integrity errors.
If MAP is specified, a listing of the disk areas by address will
also be performed.

The listing produced by the MAP option will contain one line for
each logical "chunk" of disk space, giving the starting and
ending addresses, the size in disk segments, a description of the
chunk, plus the area number and file-id for all files.   Any
errors detected will be identified by a descriptive error
message, as follows:

MISSING DISK AREA	The specified chunk of disk is unaccounted for in all MCP directories and available tables. Note that the chunk may have been explicitly removed by an "XD".
OVERLAPPING DISK AREAS	The specified chunk of disk is described by more than one header, directory, or available table entry.
INVALID DFH.SELF	The DFH.SELF address in the header is not the same as the address from which the header was actually read.

DFH.AREAS.RQST > 105   The header requests more than 105 areas,
                              the maximum allowed.

DFH.AREAS.CTR > DFH.AREAS.RQST
                              The count of areas in use in the header
                              is greater than the maximum number of
                              areas it requested to use.

INVALID DFH.HDR.SIZE   The DFH.HDR.SIZE field in the header is
                              incorrect   (computed   from:
                              DFH.AREA.ADDR.OFFSET   +   (36   *
                              DFH.AREAS.RQST)).

INVALID DISK.SELF   The DISK.SELF address in a directory
                              segment is not the same as the address
                              from which the directory segment was
                              actually read.

INVALID BPS NUMBER   The Base Pack serial number contained in
                              this continuation pack's label, does not
                              match that in the DISK.ADDRESS.

Areas of disk described as TEMPORARY will appear on the listing
when mapping systems disk; these are work areas in use by
DISKMAP/UTILITY and will be returned at program EOJ.

Phase 3

This phase is invoked if ALPHA, SAVE or DECK is specified. It
consists of sorting the disk header information by file-name,
then producing the type of output requested. Any one or all of
the three types of output may be produced during a single run.

The file produced by the SAVE option has the following
attributes:

        internal-file-name: "USER"
        external-file-name: "USER"
        record size: 180 bytes
        records per block: 5
        areas: 25
        blocks per area: 100

The information for each file on the disk will occupy from 1 to 4
records in this file, depending upon the number of disk areas in
use by the file. The record format (in COBOL notation) is as
follows:

```
    01  DATA-RECORD
        02  FILE-IDENT                PIC X(20).
        02  RECORD-COUNT              PIC 9       COMP.
        02  HEADER-DISK-ADDRESS       PIC 9(12) COMP.
        02  RECORD-SIZE               PIC 9(04) COMP.
        02  RECORDS-PER-BLOCK         PIC 9(04) COMP.
        02  BLOCKS-PER-AREA           PIC 9(06) COMP.
        02  SEGMENTS-PER-AREA         PIC 9(06) COMP.
        02  AREAS-DECLARED            PIC 999   COMP.
        02  AREAS-IN-USE              PIC 999   COMP.
        02  EOF-POINTER               PIC 9(07) COMP.
        02  FILE-TYPE                 PIC 999   COMP.
        02  CREATION-DATE             PIC 9(05) COMP.
        02  LAST-ACCESS-DATE          PIC 9(05) COMP.
        02  SAVE-FACTOR               PIC 9(04) COMP.
        02  CREATE-TIME               PIC 9(07) COMP.
        02  UPDATE-DATE               PIC 9(05) COMP.
    01  AREA-ADDRESSES REDEFINES DATA-RECORD.
        02  AREA-ADDRESS OCCURS 30    PIC 9(12) COMP.
```

The RECORD-COUNT field contains the count of how many records are required for the file description. For example, if a file has less than 16 areas in use (AREAS-IN-USE), it will only require 1 record; for 16-45 areas in use, it will require 2 records; and so forth.

Disk addresses are stored in the following format:

```
    01  DISK-ADDRESS-FORMAT.
        02  SERIAL-NUMBER-FLAG        PIC 9       COMP.
        02  PORT-NUMBER               PIC 9       COMP.
        02  CHANNEL-NUMBER            PIC 99      COMP.
        02  UNIT-NUMBER               PIC 99      COMP.
        02  DISK-ADDRESS              PIC 9(06) COMP.
```

If the SERIAL-NUMBER-FLAG is 1, PORT-NUMBER, CHANNEL-NUMBER, and UNIT-NUMBER are not used; DISK-ADDRESS contains a disk cartridge or disk pack serial number (for multi-pack files). If the SERIAL-NUMBER-FLAG is 0, the other fields contain decimal values describing the disk address.

Note that the entire AREA-ADDRESS field will be zero for an unallocated area.

The AREA-ADDRESSES are stored using the above format 30 to each 180-byte record (except for the first record). The first 15 AREA-ADDRESSES are stored in the second half of the first record, as shown below.

AREA NUMBER	RECORD NUMBER	SUBSCRIPTS
1 - 15	1	16 - 30
15 - 45	2	1 - 30
46 - 75	3	1 - 30
76 - 105	4	1 - 30

Thus, the address for area number 3 is located in
AREA-ADDRESS(18) of record #1; the address for area number 30 is
located in AREA-ADDRESS(15) of record #2; and so forth.

DISKMAP/UTILITY requires approximately 3000 segments of system
disk for work file space and sorting if either the MAP or CHECK
options are specified. Disk requirements for the files used by
the other options will vary, depending upon the number of files
contained on the disk being accessed.

ERROR MESSAGES

1. PROGRAM ERROR

    An attempt to read disk has failed. Possibly due to invalid
    port/channel/unit,   disk-off-line,   or   bad   destination
    address.   A program memory dump will be done automatically,
    and execution will terminate.

2. <unit-mnemonic> HAS BEEN DISTURBED--RUN TERMINATED.

    If mapping system disk, indicates that some job has been
    scheduled and/or gone to BOJ.   If mapping a user disk,
    indicates that   the user count in the PACK.INFO.TABLE is no
    longer zero. Program execution will terminate.

3. INVALID OPTION: <option>

    An undefined option has been entered in the ACCEPT message.

4. MISSING <unit-mnemonic>.

    A blank ACCEPT message was entered for the disk unit to be
    mapped. Try again.

5. INVALID UNIT-MNEMONIC: <unit-mnemonic>

    An undefined unit was entered for the disk to be mapped.
    Try again.

6. UNIT IS NOT A DISK DEVICE: <unit-mnemonic>

    A unit was entered that is not disk. Try again.

7. UNIT IS OFF LINE: <unit-mnemonic>

    The disk unit requested is not on-line. Try again.

8. ACTIVITY MUST CEASE ON <unit-mnemonic> PRIOR TO PHASE 1.

    If mapping system disk, the mix and/or schedule is still
    active.   If mapping a user disk, the user count in the
    PACK.INFO.TABLE is not zero.   The program will wait until
    all activity stops, then begin executing phase 1.

9. NO (or <integer>) OVERLAP ERRORS AND NO (or <integer>)
    OVERALL ERRORS DETECTED IN DISK INTEGRITY.

    Final information message displayed if "MAP" or "CHECK" is
    specified, indicating number of integrity or overlap errors
    found.

10. WORKFILE OVERFLOW.
RE-EXECUTE WITH: "FILE WORK AREAS=<integer>;"

The workfile is not large enough to hold all the necessary records. Program will terminate, and should be re-executed with the specified "FILE" statement.

11. DO NOT DISTURB <unit-mnemonic> UNTIL FURTHER NOTICE.

Displayed at the beginning of phase 1 as a reminder that nothing may be allowed to access the disk being mapped.

12. <unit-mnemonic> IS NOW AVAILABLE FOR USE.

Displayed at the end of phase 1 to indicate that normal activity may resume on the disk being mapped.

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