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GENERAL MANAGER  
SANTA BARBARA PLANT



**Burroughs Corporation**



COMPUTER SYSTEMS GROUP  
SANTA BARBARA PLANT

B1800/B1700 SYSTEM/COMPARE

**PRODUCT SPECIFICATION**

REV LTR	REVISION ISSUE DATE	APPROVED BY	REVISIONS
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SANTA BARBARA PLANT

COMPANY CONFIDENTIAL  
B1800/B1700 SYSTEM/COMPARE  
P. S. 2222 2723 REV A

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### GENERAL DESCRIPTION

SYSTEM/COMPARE is a utility program providing the ability to compare pairs of files, printing and identifying by record number all non-matching record pairs. Such non-identical records are printed in EBCDIC and hexadecimal representations with all differing hexades (four-bit hexadecimal digits) flagged with an asterisk pointer character. The files to be compared may be on any combination of disk, card, or tape media. Should both files be on disk, a special mode of operation may be selected wherein both files are compared sector-by-sector rather than record-by-record, allowing maximum speed. Other features include the ability to cause automatic cessation of a comparison after a specified number of errors, to interrogate the number of records currently processed, or to terminate a comparison at will. If the files to be compared have differing record lengths, SYSTEM/COMPARE emits a warning message and pads the shorter records with blanks.

### RELATED DOCUMENTATION

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

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### OPERATING INSTRUCTIONS

SYSTEM/COMPARE is executed from the SPO by the following message:

EX SYSTEM/COMPARE

Input to the program may be provided in either of two ways. A user desiring to compare exactly one pair of files may execute the program and file-equate the desired files to internal file names "A" and "B". The utility performs the specified comparison and goes to EQJ. Use of SYSTEM/COMPARE in this "one compare" mode precludes the ability to use the sector-by-sector mode of operation or to be able to specify the maximum number of comparison errors before termination (a default of 15 is used). Should files A and B not be file-equated, the program processes commands entered through the SPO. Input is requested after each pair of files has been processed until the program is terminated by a blank accept. The input syntax has been chosen to be similar to that of DMPALL to maximize ease of use.

Switch 0 informs SYSTEM/COMPARE of the number of characters on the user's print train or chain. This affects the EBCDIC printout of the data, as characters not printable based on this switch setting are translated to blanks. Users with one printer or multiple printers with the same character set will find it convenient to permanently modify the program to have the appropriate SW 0 value based on the following chart:

SW 0 = 0	64-character (default)
0 = 1	48-character
0 = 2	72-character
0 = 3	96-character

If the value of SW 0 exceeds 3, the program will assume a 64-character set.

By default, SYSTEM/COMPARE expresses results as zero-relative quantities, meaning that the first bit of the first record is bit 0 of record 0. Some users may be accustomed to the complexity of thinking of numbers in a one-relative manner. If SW 9 is set to one, quantities will be so expressed, with the above bit example reflecting bit one of record one. The origin in use is printed as part of the error listing heading should errors actually be detected.

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Commands must conform to the following syntax:

```
>----->
  |-- <device pair specifier> -->|
  >>-- <file identifier A> ----->
        |-- <record size> ----->|
                | <blocking |
                |-- factor> -->|
  >>-- <file identifier B> ----->
        |-- <record size> ----->|
                | <blocking |
                |-- factor -->|
  >>----->
  |-- MAX ----- <error limit> ----->|
        |-- = -->|
```

Valid values for <device pair specifier> include:

DSKDSK  
 DSKCRD  
 DSKTAP  
 CRDDSK  
 CRDCRD  
 CRDTAP  
 TAPDSK  
 TAPCRD  
 TAPTAP

\* (the asterisk character)

If no <device pair specifier> is provided, DSKDSK will be used. The asterisk ("\*") is the means of instructing SYSTEM/COMPARE to compare two files sector-by-sector. A warning message is emitted if the user specifies a record size or blocking factor for either file in "sector" mode.

<File identifier A> and <file identifier B> are standard system external file names. File names whose first component is all numeric or is equivalent to a <device pair specifier> (when none is specified) must be enclosed in quotes to distinguish them as file identifiers.

Record sizes and blocking factors are integer values; should the latter be specified, a record size must be also specified to avoid ambiguity. The blocking factor is normally used only for unlabelled tapes or for blocked card files.

<Error limit> is an integer value which tells SYSTEM/COMPARE to terminate after that many errors are detected. The default value is 15, and the value given must exceed zero.

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Examples of valid input include:

TAPDSK SALES/AUGUST MASTERFILE

\* (SOURCE)/QMIKLOG BACKUPCOPY/QMKLOGSRCE

TAPTAP UL-1 80 9 UL-2 80 4 MAX=5

FORTRAN RELEASE/FORTRAN/

SPO input for additional comparisons may be provided at any time; commands will be tanked if a comparison is currently in progress. The following requests may also be provided at any time:

ST or STATUS gives current record count and error count  
QUIT or ABORT terminates current comparison  
CLLP closes printer file to free it for other users

Note that the above information requests are not enqueued and are processed immediately, whether or not additional specifications have been provided.

The occurrence of a parity error on either record of a pair being compared causes an informative message to be emitted on file LINE and the comparison of that pair to be suppressed.



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### ERROR MESSAGES

SYSTEM/COMPARE provides a comprehensive set of informative, warning, and error messages through the SPO. In cases of invalid operator input, the error message generally indicates the syntactic token that caused the problem. The occurrence of an error terminates a given comparison and the utility processes the next queued-up command or requests new SPO input, as appropriate.

### FATAL ERRORS

1. INCOMPATIBLE SYSTEM SOFTWARE- MUST BE <level> MCP...EOJ

SYSTEM/COMPARE is concerned with certain software structures that are transparent to users. These structures may change between releases, so the program must protect itself with this fatal error message.

2. INSUFFICIENT DYNAMIC MEMORY TO EXECUTE SYSTEM/COMPARE; RERUN WITH ME GEQ 4320 BITS

SYSTEM/COMPARE makes heavy use of dynamic memory; 4320 bits is necessary as a minimum. Note particularly that there is no efficiency gained by running the program with a higher value than this figure unless message "6" below is emitted.

3. SYSTEM ERROR: VARIABLE RANDOM FILES

Please submit the dump that is produced and KA's of the two files should this program trap be sprung.

### RECOVERABLE ERRORS

4. COMMAND QUEUE FULL...SPECS IGNORED

More than ten commands are stacked up while a comparison is in progress. In the unlikely event that this tank size is insufficient, file TANK may be file-equated or modified to a higher value with the QUEUE.MAX.MESSAGES file attribute.

5. <filename> IS AN EMPTY FILE

SYSTEM/COMPARE will not process a disk file with an EOF of zero.

6. INSUFFICIENT DYNAMIC MEMORY TO COMPARE <filename> TO <filename>; RERUN WITH ME GEQ <number> BITS

Comparison of files with high record sizes may evoke this message. The value needed for dynamic memory to perform a given comparison is 16 times the record size in bytes of the longer file. The default (minimum) value of 4320 bits thus suffices to compare files up to  $4320/16=270$  bytes in record

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length. Users who have frequent need to compare larger record files will probably desire to modify the program to the appropriate higher ME value.

7. INTEGER EXPECTED FOR <ERROR LIMIT> AFTER "MAX"

The syntactic entity following "MAX" (or "MAX=") was not an integer.

8. INTEGER EXPECTED FOR 2ND BLOCKING FACTOR

The entity following a record size specification for the second file was neither the word "MAX" nor an integer.

9. INTEGER EXPECTED FOR 2ND RECORD SIZE

The syntactic entity following the second filename specifier was neither the word "MAX" nor an integer.

10. "MAX" or <EMPTY> EXPECTED HERE

Following a blocking factor specification for the second file, an unrecognized token was found.

11. MISSING FILE ID'S

The user neglected to provide any input beyond the <device pair specifier>.

12. MISSING FINAL QUOTE IN FILE NAME

An unmatched pair of quotation marks was found, which presumably were intended to delimit a file name component with special characters.

13. MISSING 2ND FILE ID

SYSTEM/COMPARE scanned the input specifications without finding other than the first file identifier.

14. NAME CAN'T START WITH SLASH

A file name specifier erroneously started with the slash character.

15. NAME GTR 10 CHARACTERS

The system permits at most ten characters in each component of a file name; SYSTEM/COMPARE enforces this limit.

16. NO FILE <filename>

A disk file specified was not on disk. Note that this terminates the comparison attempt. A "no file" condition on

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card or tape causes the MCP to request the appropriate file.

17. NON-CONGRUENT AREAS ON RANDOM FILES

Either the patterns of allocated and unallocated areas did not match on the two files, or the records/area differed for the two files.

18. RANDOM DISK FILE <filename> CAN BE COMPARED ONLY TO ANOTHER RANDOM DISK FILE

It is meaningless to try to compare a file with interspersed empty areas to a serial type file, disk or otherwise.

19. UNRECOGNIZED TRAILING INPUT

SYSTEM/COMPARE successfully decoded a line of operator input, then found unknown information when it expected to be through.

20. VARIABLE-RECORD DISK FILE <filename> CAN BE COMPARED ONLY TO ANOTHER VARIABLE-RECORD DISK FILE

The specialized format of such records makes it illogical to attempt comparison to a file with fixed length records.

WARNINGS

21. EXTRANEIOUS GARBAGE IGNORED

Unrecognized input occurred in a query (non-command) AX.

22. RECORD AND/OR BLOCK SIZE SPECS IGNORED IN SECTOR MODE

When processing disk files sector-by-sector, the actual record and block sizes of those files are superfluous and irrelevant. It should be noted that the MCP zero-fills the area between end-of-block and end-of-sector, so the user need not fear invalid comparisons due to garbage in this unused portion of certain disk segments.

23. UNEQUAL RECORD SIZES: <filename A>=<rsz A>;  
 <filename B>=<rsz B>

Files to be compared did not have identical record sizes.

24. VARIABLE RECORD FILES WILL BE COMPARED IN SECTOR MODE

To eliminate special handling of variable-record disk files, SYSTEM/COMPARE treats them sector-by-sector whether or not "\*" is provided as the <device pair specifier>.

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### INFORMATIVE MESSAGES

#### 25. COMPARISON TERMINATED

This message is the acknowledgment of a "QUIT" or "ABORT" request.

#### 26. EOF ON <filename>

The two files had differing numbers of records. SYSTEM/COMPARE stops a comparison when EOF on the shorter file is reached.

#### 27. ERROR LIMIT REACHED

The specified (or default) number of comparison errors occurred before EOF was reached.

#### 28. [<n>/NO] ERRORS IN <n> [RECORDS/SECTORS]

The results of each comparison are displayed. This is also the response to a "SI" or "STATUS" request.

#### 29. NO COMPARISON IN PROGRESS

"SI", "STATUS", "QUIT", or "ABORT" was entered while SYSTEM/COMPARE was waiting for operator input, with no comparison being performed.

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