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PRODUCT SPECIFICATION

REV LTR	REVISION ISSUE DATE	APPROVED BY	REVISIONS
F	3/9/82	<i>A. S. S.</i>	<p>Changes for Mark 11.0 Release</p> <p>1-2 Updated "Remote Open". Updated "?EX(ECUTE)".</p> <p>1-3 Updated "Pass".</p> <p>3-2 Updated "Broadcast" command.</p> <p>3-6 Added "Close" command.</p> <p>3-7 Added "Continue" command.</p> <p>3-13 Changed "Start" commands name to "Initiate" command.</p> <p>3-15 Added "Logon" command.</p> <p>3-33 Updated the semantics of the "Stop" command.</p> <p>3-35 Updated the syntax and semantics of the "Tabs" command.</p> <p>3-36 Added the "Terminate" command.</p> <p>3-41 Updated the "?" command.</p> <p>A-1 Major update to the syntax.</p> <p>A-2 Updated "NO-EOF" semantic.</p> <p>A-3 Added "COPIES = <integer>, MESSAGES, USERCODE, and USERFILE" semantics.</p> <p>D Added section D on "MACRO PROCEDURES".</p>

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Burroughs Corporation



COMPUTER SYSTEMS GROUP
SANTA BARBARA PLANT

2219 0482

B1800/B1700 SUPERVISORY MESSAGE CONTROL SYSTEM

PRODUCT SPECIFICATION

REV LTR	REVISION ISSUE DATE	APPROVED BY	REVISIONS
E	11/05/80	<i>J. Hale</i>	Changes for MARK 10.0 Release 2-2 Inserted "TABS" in list of unrestricted control statements. 3-2 Updated "Semantics:" paragraph of BROADCAST command. 3-19 Added "<ONLINE>" to Example for REPORT command. 3-29 Updated SYSTEM command Syntax, Semantics and Example. 3-30 Added TABS command Syntax, Semantics and Example. 3-34 Updated "The <string> will..." paragraph of ZIP command. 3-35 Updated Semantics of "?" command. A-1 Changed "NO-SESSION" to "NO-RR" in Syntax diagram. A-2 Changed "NO-SESSION" to "NO-RR" in list of Semantics and updated explanation. Changed "NO-SESSION" to "NO-RR" in "Sample job file:".

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PRODUCT SPECIFICATION

REV LTR	REVISION ISSUE DATE	APPROVED BY	REVISIONS
C	11/20/78	<i>J. Hale</i>	<p>MARK VIII.0 RELEASE (cont'd)</p> <p>3-25 Added FREQUENCY to NDL station attributes. Added "the command must be prefixed" sentence.</p> <p>3-27 Updated SYSTEM explanation.</p> <p>3-28 Updated TRACE explanation.</p> <p>3-29 Updated TRANSLATE explanation.</p> <p>3-31 Updated ZIP syntax.</p> <p>3-32 Updated Semantics.</p> <p>A-2 Added NO SESSIONS X, AUTO FIRE X, FILLER X(12), LINE NUMBER X(8) and descriptions to JOB FILE listing.</p> <p>A-3 Changed String length from X(80) to X(72).</p> <p>A-4 Updated "Note: The job file" paragraph.</p> <p>A-5 Added 8 - NO.SESSIOIN and 9 - AUTO FIREUP to SAMPLE JOB FILE *FIELDS.</p> <p>C-4 Updated TEXT FORMAT table.</p>
D	10/4/79	<i>J. Hale</i>	<p>Changes for MARK 9.0 Release</p> <p>Replaced SPO with ODT throughout.</p> <p>1-5 Added (the Host ODT is considered to be a Remote ODT).</p> <p>2-2 Added HARDWARE and START to control statements only at host ODT.</p> <p>3-1 Replaced subtract with delete. Replaced subtracted with deleted.</p> <p>3-9 Rewrote HARDWARE section.</p> <p>3-11 Added "the "RD" program is active" paragraph.</p> <p>3-13 Updated syntax. Updated ODT paragraph.</p> <p>3-14 Added "the Host ODT" to CON paragraph.</p> <p>3-17 Rewrote "command is valid" paragraph.</p> <p>3-19 Updated Examples.</p> <p>3-23 Updated syntax. Rewrote Semantics.</p> <p>3-24 Added SIGN OFF paragraph. Added Semantics, Default, Examples, and Note.</p> <p>3-25 Added START section.</p> <p>3-29 Added SYSTEM section.</p> <p>3-30 Added LIST to syntax. Added Default and Examples.</p> <p>3-32 Changed user to usercodes in "the station is currently logged on" paragraph.</p> <p>3-33 Updated "Any input" paragraph.</p> <p>A-1, 2 Rewrote APPENDIX A - JOB FILE section. Deleted SAMPLE JOB FILE section.</p>

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GENERAL DESCRIPTION

The Supervisory Message Control System (SMCS) program is intended to be the supervisor for a data communications software system which includes such Burroughs software as CANDE, RJE, HASP and other on-line packages of either Burroughs or customer origin. SMCS also serves as a base which can be easily augmented to meet any customer requirements for a specialized or more inclusive systems supervisor.

MAJOR FEATURES

SMCS provides all of the features of the previously released Illustrative MCS (MCSII) and several new features that considerably expand the flexibility of remote terminals. MCSII, for example, provided message switching (terminal-to-terminal, terminal-to-ODT, ODT-to-terminal), attachment to user programs via a remote file, information about the remote network, and internal (MCS) error reporting as some of its basic functions. The new SMCS will provide all of these features in addition to allowing users to:

- Designate terminals as remote operator display terminals (ODTs) and have access to MCP commands and information about the status of the system. From terminals designated as unrestricted, jobs can be executed as if the remote stations were an ODT. This type of terminal is referred to as a remote ODT station.
- Designate terminals as controllers which enables certain network reconfiguration commands from that terminal. This type of terminal is referred to as a controller station.
- Participate in the basic file security mechanism supported by the MCP and spawn jobs in accordance with the requirements of file security. Furthermore, SMCS supports a job file for storing execute instructions that are tailored to a particular user's or program's needs and a mail file for storing information that is returned from a user program or a host system. SMCS automatically checks the job file for special execute requirements and allows users to check the mail file for information that is received from a host system or an application program (PROGRAM-PASS input).
- Allow a user at a remote terminal, through the PASS command and the PROGRAM-PASS message interface, to request a function of a program in the host system without signing on to the program. In this way, for example, an edited file may be transferred from the host system to a remote system via the RJE interface while the

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user continues to edit another file.

- Receive expanded network reporting that is tailored to individual remote stations (designated as restricted) or that involves the whole network and the operating system (unrestricted stations).
- Initiate system tracing, from unrestricted stations only, to take advantage of the debugging facilities provided by the B1800/B1700 operating system.

REMOTE OPENS

One of the major facilities provided by the SMCS is the execution of application programs which open remote files. The SMCS aids in executing these programs by checking an internal job file, described more fully in Appendix A, for special instructions about how the job should be executed: e.g., priority, number of remote stations allowed, file equations, etc.

There are two forms of execution, one secure and the other not, that are allowed by SMCS. Only remote ODTs may use the un-secure form of execution. In addition, SMCS provides a mechanism for passing information between remote terminals and jobs that are executed from a remote station. These facilities are defined as follows:

?EXECUTE)

A station using this method of execution must be logged onto the system by the USER <usercode>/<password> syntax if the station is not a remote ODT station. After entering ?EX <program name>, the specified program will be spawned. No reference is made to the job file. If a station list is present in the remote file open and all of the stations are not controlled by SMCS, the station list is used; otherwise, only the initiating station is approved in the remote file open request.

SIGN ON

A station which may or may not be logged on enters the following command.

SIGN ON <program name>

If <program name> is not running, it will be spawned including any specifications in the job file. All stations (up to the limit declared in NUMBER.OF.STATIONS) entering SIGN ON for that program will be approved in the open. If the program is running, its remote file is open and the number of stations currently attached does not exceed NUMBER.OF.STATIONS declared in the open, then the station will be attached.

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If, at either open or attach time the file to which the station(s) must be attached already has as many stations attached as declared in NUMBER.OF.STATIONS, then a new copy of the program will be zip executed and the remaining stations marked as waiting for that open. This process is recursive for each open or attach.

The effect of this method is that NUMBER.OF.STATIONS (NST in file equates) in a remote file open will determine how many stations can be handled by the program.

NST = 1 => 1 copy of program per SIGN ON

NST = 5 => 1 copy of program per five SIGN ONs

At SIGN OFF, the station is detached from the file. If this was the last station on the file, then an EOF branch is sent to the file (unless the job file NO EOF specification exists). Typically, an EOF branch on a remote file read will cause the job to perform a STOP (go to EOJ).

PASS

A station enters

PASS <program name> <string>

<Program name> is treated exactly as in SIGN ON with the exception that the station that PASSEd is not approved in the open, nor is it attached if the program was already running.

SMCS notes that this station has successfully PASSEd to this program and later PASSEs from this station will not cause a new copy to be zipped. However, PASS to this program from a station which previously had not PASSEd to it will cause SMCS to determine the need to zip execute another copy dependent upon NUMBER.OF.STATIONS exactly as in SIGN ON above.

When a station enters BYE, it is removed from the list of known PASSers on the files to which it PASSEd. This command is similar to SIGN OFF except that no detach is sent. If any of these files then have no station attached (either by PASS or SIGN ON), then an EOF branch is sent to the file, unless the job file specification, NO EOF, exists.

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Note: If a program which opens a remote file (such as CANDE) is executed from the host ODT, then SMCS will approve its open giving it as many stations as it can, disallowing only those stations which are already active through SMCS. It is recommended that this not be done since the SMCS would then have no way to retrieve those stations without each one being explicitly SIGNED OFF.

STATIONS

The SMCS allows for the definition or creation of a station as a remote ODT via the MAKE or CHANGE commands or by definition in the station section of the network controller. A station is considered to be a remote ODT if its frequency (transmit) is greater than 249. Only a remote ODT station may initiate restricted control statements (the Host ODT is considered to be a remote ODT). Work stations are forced to log on with the USER command before making use of SMCS capabilities. Until the user logs on, the only command valid from that station are HELP, ID, REPORT, SEND, and TRANSLATE.

RELATED DOCUMENTATION

Name -----	Number -----
B1800/B1700 Message Control System Interface	P. S. 2212 5447
B1800/B1700 Network Definition Language	P. S. 2212 5223
B1800/B1700 NDL/Library	P. S. 2212 5215
B1800/B1700 Datacomm Audit	P. S. 2212 5421
B1800/B1700 Systems Software Operational Guide	1068731
B1700 Network Definition Language (NDL) Reference Manual	1073715

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OPERATIONAL PROCEDURES

SMCS contains most of the basic building blocks which would be required, in one form or another, for a comprehensive MCS. Every effort has been made to keep the SMCS as modular as possible, so that changes may be readily effected. The modularization also renders the program a more readable document.

The internal file name of SMCS' remote file is "REMOTE". When executed, a file equation may be used to equate "REMOTE" with the desired file name. The external file name expected is "MCSREMOTE".

CONTROL MESSAGE

Control messages can be entered through remote stations only. The syntax is shown below:

Syntax:

```
>----- <unrestricted control statement> -->#
  |-- <signal character> --| |-- <restricted control statement> --|
```

Semantics:

The signal character is "*" unless changed by the SIGNAL command and is used to communicate to the SMCS when the station has been signed on to some other program. A station with frequency (receive) greater than 249 is considered a controller station. These stations may enter both restricted and unrestricted commands; other stations can use only the unrestricted commands. Note that any control statement is free-field form.

Statements:

The following are unrestricted control statements available at any station:

```
BROADCAST
BYE
CONTINUE
HELP
ID
JOBS
LOGON
MAIL
NAKE <lsn> [NOT] SCROLL
PASS
READY
```

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REPORT
SEND
SIGN OFF
SIGN ON
STATUS
TABS
TERMINATE
TRANSLATE
USER
?

The following are restricted control statements available at remote ODT stations:

ZIP
NEWS
SYSTEM

The following are network configuration control statements available at controller stations:

ATTACH
CHANGE
CLEAR
DETACH
DUMP
MAKE
MOVE
REMOVE
SIGNAL
TRACE

The following are control statements available only at the host ODT:

CLOSE
DYNAMIC
HARDWARE
INITIATE
STOP

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SYNTAX CONVENTIONS

The following command descriptions make use of a simple diagrammatic convention for displaying all the possible valid syntax combinations.

- () Optional command part. The abbreviation in the example is "Z". If not present, there is no abbreviation allowed.
- < > Syntax item

Examples:

```
>----- <MCP control string> ----->#
|-- Z(IP) -->|

>- M(AKE) ---- <lsn> ----- READY ----->#
|-- <station name> ---->||-- NOT --| |-- ENABLED --|
|-- <usercode or ID> -->|
```

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COMMANDS

ATTACH

DETACH

Syntax:

```
>-- ATTACH) ----->>
|           |-- TO -->| | |-- PROGRAM --- <job number> ----->| |
|           |           | |           |-- <program name> -->| |
|--DETACH) ----->| |           |           |           |
|           |-- FROM -->| |           |           |           |
|           |           | |-- FILE --- <remote file number> -->|
|           |           | |-- <remote file name> -->|
|           |           | |<-----, -----|
|           |           | |           |           |
>>-----<lsn> ----->#
|-- STATION -->| |-- <station name> -->|
```

Semantics:

Both commands are valid from all controller stations. See SIGN ON and SIGN OFF for normal station-to-program attachment.

ATTACH and DETACH commands are used to add or delete stations from a given remote file.

These commands are used to modify a given remote file station list. The stations to be added or deleted must follow the rules set up in P. S. 2212 5447, NCS Interface, for the ATTACH and DETACH messages.

If a program name is used, then the first remote file in the remote file table of SMCS is the subject of these commands. If no program or file is specified, then the station is attached (or detached) to (from) SMCS's remote file.

Example:

```
ATTACH PROGRAM EDITOR 3,4,5
```

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BROADCAST

Syntax:

>---- BRO(ADCAST) ----- <message> ----->#

Semantics:

The BROADCAST command sends a given message to all active SMCS stations -- those which have logged on, used the ID command, or those whose state is not unattached state. It is valid from all stations.

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BYE

Syntax:

>----- B(YE) ----->#

Semantics:

This command logs the current user off SMCS. It is valid from all stations except the host ODT. If the station sending the command is the last currently active station and a STOP command has previously been entered, SMCS will terminate after processing the BYE. If the station was marked as having PASSED to a remote file and this is the only (or last) station so marked, SMCS will cause an "EOF" branch on the PASSED remote file.

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CHANGE

Syntax:

```
>----- CHANGE) ----- <lsn> ----->>
      I-- STATION -->| I-- <station-name> -->|

>>---- TRAN(RECEIVE) ----- <variable> -->#
      I-- TRAN(TRANSMIT) ----->| I-- TO -->| I
      I-- ADDRESS ----->| I
      I          I-- (RECEIVE) -->| I
      I          I-- (TRANSMIT) -->| I
      I-- FREQUENCY(RECEIVE) ----->| I
      I-- FREQUENCY(TRANSMIT) ----->| I
      I-- RETRIES ----->| I
      I-- PHONE ----->| I
      I
      I-- READY ----- ON -----|
      I-- GOODRESULTS -->| I-- TO -->| I-- OFF -->|
      I-- DIAGNOSTIC -->| I-- TRUE -->|
      I-- LOGICALACK -->| I-- FALSE -->|
      I-- 1 ----->|
      I-- 0 ----->|
```

For <variable> value format on the CHANGE message, see P. S. 2212 5447, MCS Interface.

Semantics:

The CHANGE command is only valid from controller stations and is used to dynamically change various NDL station attributes. The NDL attributes are changed appropriately to the new value.

Examples:

```
CHA 5 PHONE 123-4567
```

```
CHA STATION ST2 READY ON
```

```
CHA STATION 4 ADDRESS TO "D4" (This command changes both receive
and transmit addresses to D4.)
```

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CLEAR

Syntax:

```
>-- CLEAR -- FILE ----- <remote file number> ----->#  
|---- <remote file name> -->|
```

Semantics:

CLEAR is valid from all controller stations. It disables flags indicating the file is waiting for a response. Whenever a file state is waiting for external response (such as attach reply - see P. S. 2212 5447, MCS Interface), and the program responsible for the response does not respond (DSed or program error), one should invoke this command to reset the file status.

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CLOSE

Syntax:

CLOSE -----|

Semantics:

The **CLOSE** command is used to close the **JOBS** file. The **JOBS** file will only stay closed until **SMCS** needs to access it again. This command is valid only when entered at the **ODT**.

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CONTINUE

Syntax:

CONTINUE -----|

Semantics:

The CONTINUE command is a new work station command. The CONTINUE command is used to continue a step macro which was suspended by a "WAIT CONTINUE" step macro command.

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DUMP

Syntax:

>----- DUMP ----->#

Semantics:

The DUMP command is valid from either a controller station or the host ODT. It causes the SMCS to zip a "<SMCS job number> DM command" to the MCP which creates a dump file and responds to SMCS with the correct file name/number. SMCS sends a message containing this file name/number to the originating terminal.

Note: This command is normally used only for network and program debugging.

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DYNAMIC

Syntax:

```
>----- DYN(AMIC) ----->#  
          |-- ON ---->|  
          |-- OFF -->|
```

Semantics:

Dynamic is valid from the host ODT only. If "OFF" is entered, SMCS will automatically make 'not ready' any station which incurs an exception (such as retry consecutive timeouts from having been turned off). If "ON" is entered, then stations will not be automatically made 'not ready'. If no option is entered, the current setting of DYNAMIC is reported.

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FILE

Syntax:

```
>----- F(FILE) ----- (<usercode>)/<filename> ----->#
```

Semantics:

This command is used to display current information for a specified (by name) file. It is valid from all stations. The user station need not be logged on or signed on to make use of this command.

Example:

```
Input:      F (SMCS)/TESTFILE
Response:   *(SMCS)/TESTFILE* IS A PRIVATE DATA FILE OF
           150 RECORDS (90 BYTES, 20 PER BLOCK) IN
           8 BLOCKS (80 PER AREA, 1 AREA) CREATED ON
           01/05/78, LAST ACCESSED ON
           01/12/78 (ACCESS SECURITY IS INPUT OUTPUT) AND
           CURRENTLY IN USE BY 0 USERS
```

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HARDWARE

Syntax:

```
>----- HARD(WARE) --- LP ----->#
                               |---> <attribute> --->|
```

Semantics:

This command provides the capability to "adjust" the SMCS's utilization of the system's Line Printer "print line size" attribute to take advantage of a 132 position printer if it is available. Primarily the SMCS uses the line printer for either direct printer-tracing or for printing the disk-trace file when required.

attribute = an integer representing the actual print line of a line printer; either "120" or "132".

null option = no option specified is the same as a "status" request.

Default: The system's default will be "120" positions and is established at initialization time as required.

Example 1: (Change the line printer attribute to "132".)

Input: --- HARDWARE LP 132

Reply: --- LINE PRINTER ATTRIBUTE CHANGED TO 132

Example 2: (Obtain current line printer size attribute.)

Input: --- HARD LP

Reply: --- CURRENT LINE PRINTER ATTRIBUTE IS 132

Note: This change is considered "permanent"; until such time as it is changed via another entry of this command.

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HELP

Syntax:

>----- H(ELP) ----->#

Semantics:

HELP is valid from all stations. It initiates a display to the user of all commands valid for that station at that time. The display will vary depending upon the type and current state of the station.

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INITIATE

Syntax:

```
>----- INITIATE ---- <program id> ----->#
```

Semantics:

This command provides the capability to "start" up a job from the host ODT in lieu of being forced into an auto-start mode by or doing a PASS/SIGN-ON from a terminal. Using this command, a job can be spawned selectively for any number of reasons and requires no further action from the operator. The specified job will be spawned in the same way as if it had been auto-started by SMCS; no stations are initially attached and any station spawned can thereafter either PASS or SIGN-ON at will.

program id = program id as specified in JOBS file.

Default: No defaults.

Example: (Start up "SYCOM".)

Input: --- <smcs job #> AX START SYCOM

Reply: --- PROGRAM SPECIFIED HAS BEEN STARTED

Notes: None.

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JOBS

Syntax:

>----- J(OBS) ----->

Semantics:

This command is valid from all stations except the host ODT. It returns information about all jobs in the host, both active and scheduled.

JOBS allows a non-remote ODT station to observe the total activity on the host, not limited by the security imposed by usercode. Since this is a passive, unsecured MCP communication, it will not allow the non-remote ODT station to affect the host activity. This facility can be of use in deciding whether or not the system will bear another job.

SMCS effects the JOBS command by sending to the MCP the following commands in one ZIP:

MX; WS=; ML;

The responses will be from the MCP.

If however, the "RD" program is currently active and known to the SMCS, it will be sent the "JOBS" command string and the response will come from that program.

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LOGON

Syntax:

```
LOGON ----- ADD ----- <LOG-ON DEFAULT COMMAND> -----|
      |                                     |
      |----- CHANGE -----|
      |
      |----- LIST -----|
      |
      |----- DELETE -----|
```

Semantics:

The "LOGON" command is used to add, change, delete, and list the default log-on command. The default log-on command is processed after the log-on with the USER command is complete. If a command is entered with the USER command, that command is processed first, then the default log-on command. The default log-on command is restricted to 90 characters in length. In order to use this feature, program switch 3 must be set to 1 (same switch for macro feature) and the user must be logged on with the USER command. SMCS does not scan for "[" or "]" in the default log-on command.

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MACRO

The MACRO command adds, changes, or lists MACRO procedures stored in the SMCS/DIRECTORY file. The MACRO command is valid from all station types. The station must be logged on with the USER command and program switch 3 must be set to 1. MACRO procedures are stored under the usercode with which the station is logged on. Refer to Appendix D for more information on MACRO procedures in SMCS.

Syntax:

```
MACRO ----- ADD ----- <macro name> ----- <macro text> -----|
|
| -- CHANGE -- |
|
| -- DELETE ----- <macro name> -----|
|
| -- LIST -----|
|
| -----|
```

Semantics:

- ADD** The ADD option writes <macro text> into a portion of the SMCS/DIRECTORY file under the usercode of the station and <macro name>.
- CHANGE** The CHANGE option changes an existing MACRO procedure, <macro name>, to <macro text>. The MACRO procedure to be changed is deleted and rewritten in the SMCS/DIRECTORY file. All restrictions listed under the ADD option apply to the CHANGE option.
- DELETE** The DELETE option deletes an existing MACRO procedure, <macro name>, from the SMCS/DIRECTORY file.
- LIST** The LIST option displays a directory listing of all existing MACRO procedures for the station's usercode or lists the contents of a specific MACRO procedure. If <macro name> is not specified, a directory list of all MACRO procedures for the station's usercode is displayed with the date and time that the MACRO procedures was created.
- <macro name>** <macro name> is the token used to reference the MACRO procedure. It must be ten characters or less beginning with an alphabetic character.
- <macro text>** <macro text> is the MACRO procedure that is invoked when the <macro name> is referenced.

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<macro text> can be up to 23 lines of text. The control string that is zipped as a result of invoking the MACRO procedure is invoked must be 1000 characters or less. Column 80 is reserved for step macros and must be blank.

Examples:

```
MACRO ADD COBOL
  CO P WITH COBOL;
  FILE CARDS DSK NAME P-S;
  FILE LINE U.N NO HAR NO ATP NAME #P;

MACRO CHANGE COBOL
  CO P WITH COBOL;
  FILE CARDS DSK NAME C;
  FILE SOURCE NAME S;
  FILE LINE U.N NO HAR NO ATP NAME #P;

MACRO LIST

MACRO LIST COBOL

MACRO DELETE COBOL
```

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MAIL

Syntax:

```
>--- M(AIL) ----->#
      |-- <id> -----|
          |-- <string> -----|
```

Semantics:

MAIL is valid from all stations. The formats and responses are shown below. See Appendix B for an explanation of the mail system.

MAIL Returns current mail count for that station. If the station is the host ODT, then the total MAIL file count is displayed.

MAIL <id> Returns current mail count for <id> if it is logged on.

MAIL <id><string> Places <string> in mail file under <id>. <String> is not sent to any station.

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MAKE

Syntax:

```
>----- MAKE ----->
      |-- STATION -->|   |-- <lsn> ----->|
                        |-- <station-name> -->|
>>-- SIGNAL <single character> ----->#
>----- READY ----->#
      |-- NOT -->|           |-- ODT ----->|
                        |-- SCROLL REVERSE -->|
                        |-- CON ----->|
```

Semantics:

The MAKE command achieves the same effect as using the CHANGE command to change a subset of the station attributes. It changes whatever station attribute is specified by the user.

The station SIGNAL option is valid from any station, for itself only, and is only permitted when that station is "signed-on" to a program such as SYCOM. The new station signal character is effective only during its attachment to that program; at signoff, that station's signal character automatically reverts back to the SMCS signal character. The only restriction for a signal character is that it cannot be a period "."; SYCOM requirement.

READY is valid from all stations and sets STATION.READY to 0 if NOT is specified. Otherwise, the attribute is set to 1. NOT READY is valid from controller stations only.

ODT is a valid attribute change only from the host ODT. This request initiates a change request to the network controller for the specified STATION to set FREQUENCY(TRANSMIT) to 250. If no more remote ODTs are allowed, then a message is sent to the terminal to inform the user of this restriction.

SCROLL REVERSE and NOT SCROLL REVERSE are valid from all stations, but the station specified must be that of the requestor. The station must not be in forward scroll mode.

Note: Forward scroll mode is disabled by entering "?-" at the station.

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SCROLL REVERSE causes all input from all stations (and the responses) to be scrolled down in the following manner.

1. Input is received by SMCS.
2. Cursor is positioned at left margin of third line.
3. Line insert is performed (This scrolls down the entire screen).
4. Input is then rewritten on the third line. (This echo is to maintain a history on the screen of input and associated output.)
5. Cursor is positioned at home.
6. Output is sent by SMCS.
7. Cursor is positioned at left margin of third line.
8. Line insert is performed.
9. Output is written.
10. Cursor is positioned at home.

CON is a valid attribute change from all controller stations and the host ODT. A change request is sent to the network controller to change the value of FREQUENCY(RECEIVE) to 250.

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MOVE

Syntax:

```
>-- MOV(E) --- <number> ----->>
      I-- ALL --->| I-- FROM -->| I-- STATION -->|
      I-- ONE --->|

>>---- <lsn> ----- TO ----->>
      I-- <station-name> -->|           I-- STATION -->|

>>----- <lsn> ----->#
      I-- <station-name> -->|
```

Semantics:

MOVE is valid from all controller stations and enables a station to re-route messages. It re-queues the output of one station into the output queue of another.

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NEWS

Syntax:

```
>-- N(NEWS) ----->#
      |--- - (minus sign) ----->|
      |-- <string> ----->|
```

Semantics:

This command is valid from all stations. It displays or changes the message displayed when a station logs on. If no option is supplied, the current news message is displayed. If "-" (minus sign) is supplied, then the news buffer will be cleared. If <string> is supplied, then the news message is changed to <string> and displayed. NEWS - and NEWS <string> options are, however, only valid from a remote ODT.

Examples:

```
Input:  NEWS  PACK DC IS NOW ONLINE
Response: NEWS: PACK DC IS NOW ONLINE

Input:  NEWS -
Response: NEWS BUFFER CLEARED

Input:  N
Response: NEWS: <current message>
```

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PASS

Syntax:

```
>----- P(ASS) -- <program id> ----- <string> ----->#
```

Semantics:

This command is valid from all stations except the host ODT, however, the station must be logged on via the US command if the station is not a remote ODT. The <program id> must be declared in SMCS/JOBS (see Appendix A).

<String> is passed by a PROGRAM-PASS message, depending upon the protocol type in the open received from the program <program name>. See Appendix C.

The purpose of the PASS command and PROGRAM-PASS message interface is to allow an operator at a terminal to request a function of a program in the host system without signing on to the program. In this way, for example, an edited file may be transferred from the host system to a remote system via the RJE interface while the operator continues to edit another file.

Example:

```
PASS RJE .LOG
```

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READY

Syntax:

```
>----- READY ---- <lsn> ----->#
      |-- <station-name> -->|
```

Semantics:

READY is valid from all stations. It causes a change request to be sent to the handler for <lsn> READY to be set to 1.

At BOJ, all stations are assumed to be online. Notification from the Network controller that a station is not responding will be displayed during the SMCS initialization stage. If a station becomes responsive or a ready for that station is entered, it will be marked online. When any previously online station is reported as not responding by the Network controller, the SMCS displays "STATION <lsn> IS OFFLINE" at the host ODT and the station is marked offline.

The effect of this system is that the host operator can attempt to make a station ready and observe the success or failure of that attempt.

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REPORT

Syntax:

```
>----- R(EPOR) ----->#
      |-- ALL ----->|
      |-- # ----->|
      |-- > ----->|
      |-- <station identifier list> -->|
```

Form:

Semantics:

REPORT Report all stations which are either logged on or attached to some program.

REPORT ALL Report all stations known.

REPORT # Count and report number of stations either logged on or attached only.

REPORT > Report only the state of the station from which the command was received.

REPORT <station identifier list> Report all valid stations in the list. A station identifier is a usercode or id active at the station, the station name or the lsn.

This command is valid from all stations. It displays information about all known stations.

Example:

```
E474 : "JOHN" ON JOB# 1234 "CANDE"
1 STATION REPORTED AT 7:45 7/17/77
```

If the requesting station is a controller or a remote DDT, then more information is provided.

Example:

```
E474 (DDT): <ONLINE>
E576 (C&D): ON JOB# 1234 "CANDE"
E678 (CON): "GEORGE"
E789 : (USER.YOU) ON JOB# 1244 "MEDIC"
>E899 : (USER.ME) <ONLINE>
5 STATIONS REPORTED AT 7:45 7/17/77
```

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REMOVE

Syntax:

```
>>-- REM(OVE) ----- <number> ----->>
      |-- ALL ----->| |-- FROM -->| |-- STATION -->|
      |-- ONE ----->|
```

```
>>----- <lsn> ----->#
      |-- <station-name> --->|
```

Semantics:

This command purges part or all of the output queue of a given station. It is valid from all controller stations.

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SEND

Syntax:

```
>-- SEND ----- ALL ----->>
      |-- TO -->| |-- ODT ----->|
          |           |
          |           |<----- , -----| |
          |----->|
          |-- STATION --| |-- <number> -->|
                   |-- <name> ---->|

>>-----<message> ----->#
      |-- : -->|
```

Semantics:

The SEND statement is used for sending messages and for message switching. A message may be sent to all stations on the network or to a select few. The stations are specified by their NDL name or by their lsn. This command is valid from all stations.

SMCS queues messages for the appropriate station and sends an acknowledgment (i.e., MESSAGE SENT) to the originating station. The acknowledgment does not imply that all stations received the message. It merely signifies that messages were queued for output for the relevant stations.

Examples:

```
SEND ST3: HELLO

SEND 2,3 : HELLO

SEND TO STATION ST5: HELLO
```

HELLO is sent to station ST3 and to LSNs 2 and 3 and ST5, respectively.

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SIGNAL

Syntax:

>----- SIGNAL -- <one character> ----->

Semantics:

The SIGNAL command, valid only from controller stations, provides the user with the ability to change the signal character. For this command to effect the current signal character, no stations can be logged-on at the time the command is entered; otherwise it is simply rejected.

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SIGN ON

SIGN DEF

Syntax:

```

>----- ON ----- <program id> ----->
|           | |           |-- PROGRAM -->| |-- <job number> --|
|-- S(IGN) -->| |
|
|
|-- OFF ----->#
|
|--> CLEAR -->|

>>----->#
|
|-- <string> ----->|

```

Semantics:

SIGN ON is valid from all stations except the host DDT. The SIGN ON control message permits a station to attach itself to a user program. This program must be declared in SMCS/JOB (see Appendix A). A station can be attached to only one non-MCS program at a time. (Note: A station may be attached to several MCS's.) However, a user program may have several stations attached to it at the same time.

When SMCS receives a SIGN ON message it goes through its program tables to determine if the program under consideration has been initiated. If the program has not been initiated, SMCS checks its job file for an entry for the specified <program id>. If found, SMCS executes it using the zip string associated with the entry for that <program id> in SMCS/JOB. SMCS then makes an appropriate entry in its program table. If not found, SMCS issues an error message. When the program comes into the mix it should open a remote file. This open is received by SMCS. SMCS then attaches all stations that were waiting to sign on to this program by approving the remote file open for these stations. The station then receives an acknowledgment message indicating that it is signed on.

If the program has been initiated but the remote file open has not been received, then SMCS links this station to the other stations waiting for the open of the given program.

If the program is currently executing and it has opened a remote file, then the station is attached to that remote file by an attach command sent to the network controller. The station then receives acknowledgment indicating that it is signed on.

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While a station is signed onto a user program, it may not sign on to another program. All messages entered from a signed on station, except for those which begin with a signal character, are sent directly to the user program. Those messages which begin with a signal character are sent to SMCS. All messages written by the user program are sent to its stations.

The optional <string> in SIGN ON, if supplied, will be sent to the program which is being signed on. An example of the use of this facility would be:

SIGN ON CANDE MY/USER

which would cause the station to be attached to CANDE and the input MY/USER queued to CANDE. If this is a valid usercode and password combination, then CANDE will log the user on immediately.

SIGN OFF is also valid from all stations except the host ODT. To detach itself from a user program, a station must do a SIGN OFF. When detachment is complete the station receives an acknowledgment that sign off is complete. At this point the station will be at the same status as it was prior to its signing on. The user program will receive an EOF branch from SMCS whenever its station count is zero (i.e., no stations are signed on to it and no stations which have PASSED are still logged on to SMCS).

Semantics: CLEAR = the presence of this optional keyword will cause the station involved to be "cleared" from the MCP Remote File FIB; which makes available to the system, a station position which otherwise might be tied up.

Default: Standard station detachment.

Example: (In this example, the user program is "CANDE".)

Input: --- *OFF

Reply: --- SIGNED OFF "CANDE"

Note: Because the station signing-off is attached to an application program and the "SIGN OFF" is a SMCS command, the SMCS "signal character" must prefix this command when entered.

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SIATUS

Syntax:

```
>-- STACTUS) ----->#
|  |-- STATION -->| |-- <lsn> ----->|
|                    |-- <station name> ----->|
|                    |-- <user id> ----->|
|                    |
|-- PROGRAM ----->|
|                    |-- <job number> ----->|
|                    |-- <program name> ----->|
|                    |
|-- FILE ----->|
|                    |-- <remote file number> -->|
|                    |-- <file name> ----->|
```

Semantics:

The STATUS command is valid from all stations. It is used to determine the current status of a program, a file or a station.

1. A STATUS PROGRAM command returns information on the following:

Program name
 Program job number
 Remote file name and number
 Remote file status (open, not opened)

2. A STATUS FILE command returns information on the following:

File name
 Remote file number
 Open type
 Current stations
 Max stations permitted
 GOODRESULTS ON or OFF
 SMCS control
 Protocol type, NO EOF status, NO.SCROLL status
 LOG ON status, EXCEPTION OK status, SESSIONS status
 PASS lsn list

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3. A STATION status command returns information on the following:

Logical Station Number (LSN)

Station name

SIGN ON status

Program attachment (if any)

SMCS attachment (if any)

Signal character (if not default)

The value of the following NDL station attributes:

READY
ENABLED
TERMINAL TYPE
BUFFER SIZE
MYUSE
ADDRESS
TRAN NUMBER
FREQUENCY
RETRIES
OUTPUT MESSAGES
LOGICALACK STATUS
DIAGNOSTIC REQUEST STATUS
GOOD RESULTS STATUS
PRIMARY FILE
SECONDARY FILE
STATION PHONE
CURRENT LINE #
NUMBER OF LINES
LINE INFORMATION
TRANSLATE STATUS
AUDIT STATUS

Note: The default for STATUS is STATION, which then defaults to the requesting LSN. If PROGRAM or FILE is specified without a program name or a filename, then the program or file to which the requesting LSN is attached is assumed.

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STOP

Syntax:

>----- STOP ----->

Semantics:

The STOP command is valid at the host ODT only. It prevents any further LOG-ON, SIGN-ON, ATTACH, PASS, or any other active command.

A message is sent to all users requesting that they log-off. SMCS displays a list of active stations on the ODT. After sending the message, SMCS will attempt to terminate every 30 seconds or will terminate immediately when the last user logs off.

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SYSTEM

Syntax:

```
>----- SYS(TEM) ----->#
|-----> TRANSLATE ----->|
|                               |--> ON ----->|
|                               |--> OFF ----->|
|-----> VERSION ----->|
```

Semantics:

The SYSTEM command is used to maintain the "system-translate" parameter. In addition to display options, a host ODT is permitted to change the "system-translate" parameter.

TRANSLATE = a keyword for "system-translate".

VERSION = a keyword for the SMCS's "version-id".

Default: No option specified assumes a "group" inquiry.

Example: (Display system information.)

Input: --- SYS

Reply: --- HOST NAME: SYSTEM1
 SYSTEM-TRANSLATE: ON
 SYSTEM-VERSION: B1000 SMCS MARK 10.0.00D
 (09/25/80 14:26)

Note: All system parameters are maintained on disk.

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TERMINATE

Syntax:

TERMINATE -----|

Semantics:

The TERMINATE command is used to terminate the station's currently running step macro.

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TRACE

Syntax:

```
>----- TRACE ----->#
      |-- ON -->|
      |-- OFF-->|
      |-- DISK ->|
      |-- MARK ->|
      |-- LIST ->|
```

Semantics:

The TRACE command provides a trace capability for all data that is either read or written by the SMCS remote file. It is valid only from a controller station or the host ODT. The ON option initiates printer tracing. If no option is specified, the current status of "trace" is displayed. The OFF option causes tracing to be stopped. When the DISK option is specified, the SMCS will commence I/O tracing to the disk trace file. The file is of a rotary type which limits the amount of disk space consumed. Printing of the disk trace file will be via the DMPALL utility program. The MARK option provides the facility to write a "marker" record into the trace file; for whatever reason.

Default: If no option is specified or the option is invalid, a "status" request is assumed.

Example 1: (Obtain current TRACE status.)

Input: --- TRACE

Reply: --- CURRENT TRACE STATE = ON/DISK (<count>)

Example 2: (Print the DISK trace file.)

Input: --- TRACE LIST

Reply: --- TRACE FILE PRINT INITIATED

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TRANSLATE

Syntax:

```
>----- TRAN(SLATE) ----->#  
    |-- ON --->|  
    |-- OFF -->|
```

Semantics:

TRANSLATE, valid from all stations, is used to force all lower case characters in the input message into upper case. The ON option sets a flag for the station and all further input accepted from the station will be translated. No option specified displays the current setting of the translate flag. The OFF option is used to turn translating "off".

Note: This command can be entered to the SMCS with either a upper case or lower case command string.

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USER

ID

Syntax:

```
>-- US(ER) -- <usercode>/<password> ----->#
                                |-- <command> -->|

>-- ID -- <identifier> ----->#
                                |-- <command> -->|
```

Semantics:

These commands are valid from all stations except the host ODT. After being entered, <usercode>/<password> will be validated and then used on all MCP (?) communications. <Identifier> or <usercode>/<password> will be stored and used for station identification. The command is optional; however, if it is supplied, it will be taken as a normal input to the SMCS after log-on is complete.

If either <usercode>/<password> or <identifier> is already logged-on, (at some other station) the current log-on attempt will be allowed. The new station will be advised that other stations are already logged-on under the same <ID> or <US>. All messages directed by usercode or id will go to all stations having that usercode or id.

If the station is currently logged on, the log-on will automatically cause log-off of the previous user or id. The new usercode or id will then be logged-on as usual.

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ZIP

Syntax:

```
>---- Z(IP) ----- <string> ----->
```

Semantics:

ZIP is valid from all remote ODT stations except the host ODT. The command may be abbreviated as Z, however that is optional. <String> is sent to the MCP and any response from the MCP is sent to the terminal.

This command is supplied to enable the user to send MCP strings which begin with a valid SMCS command such as US.

Any input from a remote ODT station which is found not to be a valid SMCS command and whose first token is either a number or characters, is passed to the MCP automatically.

The <string> will be unsecure, meaning that it will not have a usercode associated with it (unless "US" is part of <string>).

Valid examples:

```
Z EX DMPALL
```

```
ZIP US ME/A EX DMPALL
```

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2

Syntax:

>----- ? ----- <string> ----->

Semantics:

This command is valid from all stations except the host ODT. To use it, the station must be logged-on via the US command or be designated as a remote ODT. If the station is not a remote ODT but is logged on with a valid usercode and password, <string> is zipped to the MCP with usercode/password and "RR1".

<String> will be secure, meaning "?MX" will return the user's mix only, if the station is logged on.

If the station is a remote ODT and not logged-on, <string> will be zipped without a usercode and "RR0". A remote ODT that is logged-on will cause the <string> to be zipped "secure"; the same as for a non-remote ODT.

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APPENDIX A = JOB FILE

If a file exists named SMCS/JOB, then it is used to execute jobs under certain supplied specifications. The file contains data concerning a particular job to be run in cooperation with the SMCS. When a SIGN ON or PASS input command occurs, SMCS will check the information in the job file for any defaults, special needs, etc. before executing the job.

The job file is a disk data file (UPL type), each physical record consisting of 90 characters, twenty records per block. Comments are allowed in the file. Anything to the right of a percent sign (%) is ignored. Each logical entry in the job file consists of one or more physical records having the following format.

Syntax:

```

$ <program id> ----->
|-----+
|
|-----+
|----->
|-(1)-- LOG-ON -----|
|-(1)-- EXCEPT -----|
|-(1)-- NO-SCROLL -----|
|-(1)-- NO-RR -----|
|-(1)-- AUTO-START -----|
|-(1)-- COPIES = <integer> -----|
|-(1)-- MESSAGES -----|
|-(1)-- NO-EOF -----|
|
|          |
|          |-( ( -----<seconds> ) -| |
|          |          |
|          |          |-- <minutes>: -|
|          |          |
|          |          |-- <hours>: --|
|
|-(1)---- USERCODE = ----- <usercode> -----|
|          |          | |
|          |          |- <partial-usercode>? ----|
|          |          |
|          |          |- USERFILE = <file name> -----|
|          |          |
|          |          |-- ( <us>/<pw> ) --|
|
|----- ; ----- <zip string> -----|

```

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Where the syntax for the userfile records is as follows:

```

      |<-----|
      |
-----| <usercode> -----|
      |
      |-- <partial-usercode>? -----|
  
```

Note: <program id> may be up to 32 characters in length.

Except for the fact that the "\$" must be the very first character in a job specification (i.e., no leading blanks), this is totally free format and may cross records in the jobs file.

Semantics:

NO-EOF

SMCS will not send an EOF-BRANCH message to the job after all signed-on stations have been detached and all stations having PASSED have logged off SMCS. SMCS allows a timer value to be specified on the NO-EOF option in the jobs file. If a timer is specified, SMCS will wait that amount of time before sending the EOF branch to the program. The hours, minutes, and seconds fields must be integer values.

NO-SCROLL

Any station signing on to the associated program will automatically be taken out of scroll and after sign off will be automatically put back into scroll (if it was in scroll before sign on).

LOG-ON

When a station signs on to the associated program, if the station is logged on with a valid usercode and password, then that usercode and password will be sent as the first input to the program.

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EXCEPT When a station is signed off via "SIGN OFF", an exception-branch is caused on the associated program.

NO-RR The associated program is to be executed without "RR" being set.

AUTO-START The associated program is spawned during SMCS initialization processing.

COPIES = <integer> The maximum number of copies that will be spawned is specified by <integer>.

MESSAGES The LS boolean is set when the job is spawned, and all stations signed on to the program receive all ODT output messages for the program.

USERCODE SMCS allows a job, signed on to or passed to, to be limited to certain usercodes. If only one usercode is to be allowed to sign on or pass to the job, the USERCODE option is used; if more than one usercode is allowed to sign on or pass to the job, the USERFILE option is used.

USERFILE The USERFILE option specifies the name of the file which contains the set of usercodes allowed. The record length of the file must be less than or equal to 90 characters and only the first 72 bytes of the record are looked at. If a usercode/password is required to access the file, (i.e., the file is private) the usercode/password required to access the file must be specified following the userfile option: "(<us>/<pw>)".

A partial usercode may be specified for the usercode option and partial usercodes may be specified in the userfile. For example, if "USERCODE = CA?" is specified in the jobs file for a job, only the stations logged on with a usercode beginning with the letters "CA" will be allowed to SIGN ON or PASS to the program.

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Sample job file:

```
$ MAK NO-RR; EX MAK;
$ CANDE NO-EOF LOG-ON EXCEPT NO-RR AUTO-START;
  US ABC EX CANDE; ME 5760;PR 13;PT
$ RL;
  US ABC EX REMOTE/LISTER; PR 12;FI RMT PTL 3
$ SYCOM NO-EOF LOG-ON EXCEPT NO-RR AUTO-START;
  EX SYCOM; PR 12;FI LINK NAM HUBLINK
$ RD NO-EOF NO-SCROLL LOG-ON EXCEPT AUTO-START;
  EX RD; PP 14;MP 7
```

In this example:

SMCS uses <program id> in its "ons" and "passes". If someone does an "ON RL" they will become attached to the program REMOTE/LISTER. If someone does an "ON REMOTE/LISTER" they will get the error message

"REMOTE/LISTER" NOT IN THE JOBS FILE".

The <program id> for RD must be "RD" for "J", "MX", and "MY" to be automatically forwarded to RD.

Example:

SIGN ON X/Y => EX A FI L NO HAR;

JOBS FILE record - \$X/Y; EX A FI L NO HAR;

PASS A/B/C <x> => US QT/PW EX D/E; SW0=1; FILE A DSK DEF

JOBS FILE record - \$A/B/C; US QT/PW EX D/E; SW0=1; FILE A DSK DEF

Note: The job file may be created using an editor or using DMPALL through the card reader. The file must be 90 characters per record. To use DMPALL, one must supply "DATA" and "END" cards.

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APPENDIX B = MAIL SYSTEM

A file named MAIL/<dayname> is maintained by the MCS. <Dayname> is the name of the current day. Entries to it will be made when the MCS receives:

- Standard ODT output for a user
- PROGRAM-PASS input (type 60).

The file is serial, disk, 80 characters per record, 9 records per block and capable of being read by any program. This allows an editor such as CANDE to LIST or FIND on the file or DMPALL to create a separate file of selected records. SMCS currently contains no facility to retrieve MAIL entries (See Note 3, this section).

The format of each mail file entry is:

Field	Length COBOL PIC Format	Description
----	-----	-----
ID	X(10)	Message identification as specified in PROGRAM-PASS input message. This id will normally be a usercode but may be the first 10 characters of a program name in literal form. Examples: GEORGE (a usercode) RJE (a program name) TD800/EDIT (a program name) RJE/CONTRO (the first 10 characters of a program name = RJE/CONTROLLER)
FILLER	X	Blank
TIME	X(5)	The time of entry of this message to the mail file. The form is HH:MM where HH is the 2 character military hour value and MM is the 2 character minute value.
FILLER	X	Blank
MESSAGE	X(63)	The message (left-justified in the field). Any message longer than 63 characters will be broken into 63 character pieces and placed contiguously in the mail file with identical ID and time fields.

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- Note 1: At BOJ, the file will be created if it does not already exist. If it exists, it will be opened and spaced to EOF where new entries will be made. When 8192 records have been written to the file, it will be closed lock and an attempt will be made to create a new mail file named MAIL/TODAY. If this file already exists and is dated today or has been opened by some other program, then SMCS will display a message informing the operator of this condition and will not write any messages until the file is released.
- Note 2: At midnight, SMCS will automatically close its current mail file lock and open a new day's file. Note that this allows six days' previous mail files and today's full file, plus an overflow file (MAIL/TODAY) to exist simultaneously.
- Note 3: Currently, SMCS only makes entries to the file, there is no mechanism to remove them other than the automatic removal of the entire file after seven days. The process of removing entries is sufficiently complex (if it is to provide any reasonable set of user-specified operations on the file) that it should be performed outside of the SMCS. The concept of a "Mail Handler" program is suggested as the right way to provide a full, complete "MAIL" system. Such a program does not exist at this time, but will be the subject of future enhancements.

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APPENDIX C - PROGRAM-PASS MESSAGES

PROGRAM-PASS INPUT MESSAGE

Written by: Application program
 Read by: MCS
 Purpose: Transfer a message from a program to a station under direction of the MCS.
 Format: The message consists of two parts:
 - A header (for remote files with headers) or
 a Key (for remote files with remote key)
 - Text

HEADER FORMAT

Field	Length (COBOL PIC Format)	Description
MESSAGE TYPE	99	"60"
FILLER	X	
LSN	999	Logical station number
MESSAGE TEXT SIZE	9999	Numeric input required
DESTINATION REMOTE FILE NUMBER	999	The file to which the message must be sent (the MCS's remote file)
FILLER	X(37)	

KEY FORMAT

Field	Length	Description
RSN	999	File-relative station number
MESSAGE TEXT SIZE	9999	Numeric input required
MESSAGE TYPE	999	Must be "060"

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TEXT FORMAT

<u>Field</u>	<u>Length</u>	<u>Description</u>
SUB TYPE	99	Indicates destination stations
SUB VARIANT	9	Indicates mail file destination
ID	X(30)	Information used in determining destination, dependent on sub type
FILLER	X(10)	Reserved for future use
SUB TEXT	X(MESSAGE TEXT SIZE - 43)	Actual text of the message

The ID field varies depending on sub type as follows:

<u>SUB TYPE</u>	<u>ID FIELDS</u>	<u>LENGTH PIC</u>	<u>DESTINATION DESCRIPTION</u>	<u>MAIL ID</u>
00	FILLER	X(30)	LSN	Usercode or ID if present*
01	USERCODE INDEX	9999	Station(s) with this usercode index	Usercode*
02	FILLER REMOTE FILE NO.	X(26) 999	Station(s) attached to this remote file no.	Usercode or ID if present*
03	FILLER USERCODE	X(27) X(10)	Station(s) logged on under this usercode	Usercode*
04	FILLER PROGRAM NAME	X(20) X(30)	Station(s) attached to this program	Program name
05	USER ID FILLER	X(10) X(20)	Mail or MCS only	User ID

*If destination cannot be found, then the message cannot be mailed or sent to any station.

The sub variant field indicates special destination as follows:

<u>SUB VARIANT</u>	<u>Description</u>
0	Send to destination as specified by sub type and put in mail file
1	Send to destination only
2	Put in mail file only
3	No destination, no mail file. Message is for the MCS only. (Program direct communication to the MCS - no implementation as yet.)

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PROGRAM-PASS QUIPVI MESSAGE

Written by: MCS
 Read by : Application program
 Purpose: Transfer a message from a station under control of the MCS to a program. The message is formatted according to OPEN.PROTOCOL.TYPE as specified in the program's remote file.
 Format: The message consists of two parts:
 - A header (for remote files with headers) or a key (for remote files with remote key)
 - Text

HEADER FORMAT

Field	Length (COBOL PIC Format)	Description
-----	-----	-----
MESSAGE TYPE	99	"61"
FILLER	X	
LSN	999	Logical station number
MESSAGE TEXT SIZE	9999	
DESTINATION REMOTE FILE NUMBER	999	The file to which the message must be sent (application file)
FILLER	X(37)	

KEY FORMAT

Field	Length	Description
-----	-----	-----
RSN	999	File-relative station number
MESSAGE TEXT SIZE	9999	
MESSAGE TYPE	999	Must be "061"

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TEXT FORMAT

Text is dependent upon OPEN.PROTOCOL.TYPE.

<u>PROTOCOL TYPE</u>	<u>FIELD</u>	<u>LENGTH</u>	<u>DESCRIPTION</u>
00			(Invalid for PROGRAM-PASS output message. SMCS will send messages by type "01" instead of "61" when a station PASSES to a program whose OPEN.PROTOCOL.TYPE is 0.)
01	USERCODE INDEX	9999	Usercode index of user for whom this message is destined.
	FILLER	X(10)	Future use
	SUB TEXT	X(MESSAGE TEXT SIZE -14)	
02	FAMILY.ID	X(10)	
	"MCPQ or ## <number>"	X(10)	
	USERCODE	X(10)	
	PASSWORD	X(10)	
	USERCODE INDEX or BLANKS	X(4)	
	SINGLE CHARACTER	X(1)	
	BLANKS	X(9)	
	SUB TEXT	X(MESSAGE TEST SIZE -54)	
03			
04-09			Reserved for future use

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APPENDIX D = MACRO PROCEDURES

GENERAL

The invocation of MACRO procedures enable the user to zip lengthy MCP control strings or enter SMCS commands without having to enter the entire string or command. This is specially useful with control strings that require numerous file equations, or with a series of control strings that are to be executed followed by optional parameters and their replacement strings delimited by square brackets ([]). Once the MACRO procedure has been expanded out by the SMCS program, the control string is treated as though the user had entered it directly. A MACRO invocation can appear in a control string zipped from a workstation, controller station, or a remote ODT station. MACRO invocations can also appear in unsecured control strings zipped from a remote ODT station.

MACRO CREATION

MACRO procedures are created using the MACRO command or they can reside in a file under the stations's usercode.

MACRO INVOCATION

A MACRO procedure is invoked by enclosing the name of the MACRO procedure in square brackets ([]) along with any parameters and their replacement strings. The first token after the left bracket ([) is the MACRO name. The SMCS program first searches for the MACRO procedure in the SMCS/DIRECTORY file under the station's usercode. If the MACRO name is not found in the SMCS/DIRECTORY file, the SMCS program attempts to open up a file using the MACRO name and the station's usercode. If the file is not present, the brackets are ignored. The SMCS program then scans the MACRO procedure for the parameters. If a parameter is found, it is replaced by the replacement string. The SMCS program then concatenates the text portion of the records in the MACRO procedure and removes extra blanks to produce a text string. If a percent sign (%) is found in a record, the remaining text in the record is not scanned. SMCS will not scan for "[" in a PASS string. The following are examples of MACRO procedures and the resultant zip strings with and without parameters.

Example 1 (without parameters):

MACRO procedure MIX contains:

ML;
MX;
WY;

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WS =/=;

Entering *Z [MIX] causes the following control string to be zipped to the MCP;

ZIP QU SMCS/MCPQ LS SZ 21 RR 0 ML; MX; WY; WS =/=;

The result is returned to the terminal from which the command originated.

The previous example shows how a user can zip often-used combinations of ODT commands with one command. However, compile and execute strings usually use a standard format with a file name substituted throughout the file equations. This type of operation can be accomplished using MCARD parameter.

Example 2 (with parameters):

The MACRO procedure COBOL contains:

```
COMPILE P COBOL LIBRARY;
FILE CARDS DSK NAME P.S;
FILE LINE U.N NO HAR NO ATP NAME #P;
```

Entering * [COBOL P TEST] causes the following control string to be zipped to the MCP:

```
ZIP QU SMCS/MCPQ LS SZ 21 RR 1 US TIQ/ COMPILE TEST COBOL
LIBRARY; FILE CARDS DSK NAME TEST.S; FILE LINE U.N NO HAR
NO ATP NAME #TEST;
```

In this example, the parameter is the token "P" and the replacement string is "TEST". The period in the token, "P.S", is used as a delimiter for a token search. The valid delimiters are:

<space> = " () # ; % _ . * , | - []

The above delimiters, when encountered by the SMCS program are left in the control string. A special delimiter exists that is not put in the control string. This is the vertical bar delimiter. In the second example, if the token, P.S, was P|S, the replacement string is TESTS instead of TEST.S.

NOTE: The vertical bar character (|) is created by entering an exclamation point (uppercase I) on a MT 983/TD 830-TD 820 terminal. It is represented by the EBCDIC code 24F2.

Combinations of multiple MACRO invocations and text can be zipped in one control string. For example, using the MACRO procedure in the second example, the following can be invoked:

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* WT; [COBOL P TEST1]; THEN [COBOL P TEST2];

This produces the following control string:

```
ZIP QU SMCS/MCPQ LS SZ 21 RR 1 US TIO/ WT; COMPILE TEST1
COBOL LIBRARY; FILE CARDS DSK NAME TEST1.S; FILE LINE
U.N NO HAR NO ATP NAME #TEST1; THEN COMPILE TEST2 COBOL
LIBRARY; FILE CARDS DSK NAME TEST2.S; FILE LINE U.N NO
HAR NO ATP NAME #TEST2;
```

A MACRO invocation can invoke another MACRO procedure. For example, the MACRO procedure, C, contains the following:

```
COMPILE X Y LIBRARY;
FILE CARDS NAME XIISRC;
```

The MACRO procedure, NOW, contains the following invocation of the MACRO procedure C:

```
[C X PAYROLL Y COBOL]
```

The invocation of the MACRO NOW, [NOW], produces the following MCP control string:

```
ZIP QU SMCS/MCPQ LS SZ 21 RR 1 US TIO COMPILE PAYROLL
COBOL LIBRARY; FILE CARDS DSK NAME PAYROLLSRC;
```

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Macro procedures can also invoke SMCS commands. For example, if the MACRO procedure, SETTABS, contains the following:

TABS 9 20 30 40 50 60 70 80

The invocation of this MACRO procedure, [SETTABS], causes the TAB stops to be set. Using the TABS command in a MACRO procedure can be especially useful to the RPG programmer.

RESTRICTIONS

The following restrictions exist in creating and invoking MACRO procedures:

1. The length of the MACRO procedure entered by the MACRO ADD or the MACRO CHANGE command cannot exceed 23 lines.
2. The length of the control string spawned as a result of a MACRO invocation cannot exceed 1000 characters.
3. Column 80 of the MACRO procedure entered by the MACRO ADD or the MACRO CHANGE commands must be blank. Column 80 is reserved for step macros.
4. There can be up to 10 parameters in each MACRO procedure.
5. The SMCS program does not scan for MACRO invocations in the PASS or MACRO commands.
6. A parameter is limited to ten characters.
7. The replacement field of a parameter is limited to ten characters.

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STEP MACROS

Column eighty must be non blank to signify a step. A step can be a record destined for the MCP, remote file or SMCS itself. After SMCS recognizes a step, if the first character is not a signal character and this station is attached (or in the process of being attached) to a remote file, the data is given to the remote file as normal input. If the first character is the signal character or if no remote file is attached to this station, SMCS will act on this step. It will check columns one and two (two and three if a signal character was present) for two pound signs (##). If no match was found SMCS will treat it as any other input from a terminal. That is, look to see if it is an SMCS command and act upon it if it is, otherwise zip it off to the MCP. If ## was found SMCS will expect one of the step commands to follow on the same record. This is the syntax and meaning for the step commands.

```

---- ## --- NULL ----- <<
|
| - TERMINATE -----|
|
| - GOTO ----- <integer> -----|
|           |-- + --|
|           |-- - --|
|
| - WAIT --- ATTACH -----|
|
|   - DETACH -----|
|
|   - CONTINUE -----|
|
|   - FOR ----- <time> --|
|
|   - UNTIL -----|
|           |         |
|           | - <date> -|
|
| - job -----|

```

NULL SMCS will just read the next step in the step macro.

TERMINATE SMCS will terminate the step macro.

GOTO This command will cause SMCS to read the indicated relative (to one) record as the next step in the step macro. SMCS puts some constraints on the use of this command so it will not loop. It will work effectively when used in conjunction with the WAIT job option.

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WAIT job

If the token following WAIT is not one of the key words ATTACH, DETACH, CONTINUE, FOR or UNTIL it will be taken as a string to be zipped to the MCP. This string itself may be a simple macro and would be expanded accordingly before the zip. If this zip caused at least one job to be executed, the job number of the first schedule record read will be stored. Any others will be ignored. SMCS will then suspend this step macro until an EOJ record with the matching job number is read. When the step macro is started again, it will be started at the next record if the EOJ was normal with no syntax errors, the next record + 1 if it was an abnormal EOJ or the next record + 2 if it was a normal EOJ but had syntax errors.

If a step of a step macro is not a WAIT, the step macro is not suspended, the next step will be read. The step macro will be terminated after the last record is processed (if it was not a GOTO).

Step macros will not work from macros in a disk file. The size of the replace from and to fields has changed. They are 5 and 15 characters respectively.

Here are some examples of a step macro.

MACRO ADD CYCLE

```
*OFF                Z 1 Log off any program you might be on.
*##WAIT DETACH      Z 2 Wait for the detach to occur.
ON CANDE G X        Z 3 Log on to CANDE and get the source.
P 0                 Z 4 Get a page of source.
*##WAIT CONTINUE    Z 5 Wait till I stop making changes.
SAVE                Z 6 Issue a SAVE.
BYE                 Z 7 Issue a BYE.
*##WAIT DETACH      Z 8 Wait for the detach to occur.
*Y X                Z 9 Issue macro Y with source X. This record
                    will become more clear when this macro is
                    used in conjunction with the next macro.
*[RD]              Z 10 Back to RD.
```

In a macro it is important when and when not to use a signal character. Use a signal character when you want this step of the macro to be processed by SMCS and there is a chance a remote file might be attached (in the primary slot). These examples hopefully can give you some indication when a signal character can be used.

The invocation of the previous macro, CYCLE, looks like [CYCLE X SOURCE Y <MACRO>]. If I am repeatedly working on one source file then I will create another macro to invoke CYCLE. It looks like:

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MACRO ADD CC
 [CYCLE X SOURCE-NAME Y [DCTR] 0 1700]

So now I just type in *[CC] to start editing.

Another macro involving a compile might look like;

```
MACRO ADD BC
*OFF                Z 1 Log off whatever you might be on.
***WAIT DETACH     Z 2 Wait for detach or a BYE from RL.
ON CANDE G XIISRC Z 3 On to CANDE and get source file.
P C                 Z 4 Get a page.
***WAIT CONTINUE   Z 5 Wait for CONTINUE command.
SAVE                Z 6 Issue SAVE.
BYE                 Z 7 Issue BYE.
***WAIT DETACH     Z 8 Wait for detach.
[RD]                Z 9 Back to RD. I leave my terminal on RD.
***WAIT [C]        Z 10 Suspend macro until compile is done.
***TERMINATE       Z 11 NORMAL EOJ
***NULL            Z 12 ABNORMAL EOJ DS DP. Fall thru to next step.
*OFF                Z 13 SYNTAX ERRORS. Log off RD.
***WAIT DETACH     Z 14 Wait for detach.
EX RL               Z 15 Execute RL.
## WAIT ATTACH     Z 16 Wait for RL to become attached.
G XIIBKP           Z 17 Get the backup file.
ERR                Z 18 Look for errors.
***GOTO 2          Z 20 Go back and wait for the BYE.
```

Records 10 thru 13 show the use of the "WAIT job" option. The invocation of this macro would be [BC X TST]. Replace all occurrences on X with TST, the source file name. It is important to point out that the replace operation (X with TST) will take place on any internal macro invocations as well and will be remembered thru suspensions.

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BURROUGHS CORPORATION
COMPUTER SYSTEMS GROUP
SANTA BARBARA PLANT

COMPANY CONFIDENTIAL
B1000 SMCS
P. S. 2219 0482 (F)

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