```
+-------------------------+  +-----------------------------------------------------+
|                         |  |                                      APPENDIX A     |
|        INTEL            |  |                                                     |
|                         |  |                          STFS TEST COMMANDS         |
|                         |  |                                                     |
+-------------------------+  +-----------------------------------------------------+
```

The Customer Engineer diagnostics are based on the System Test Foundation Software (STFS). The individual STFS test commands are described in table A-1. Please note that any of the commands can be abbreviated to the first three letters of the command name (the TEST command also can be abbreviated with the letter T). Commands are entered following the STFS prompt (*) and are terminated by pressing the RETURN key (indicated by <cr>).

Table A-1. STFS Command Summary

Command Name	Abbrev-iation	Command Description
BASE	BAS	Displays or changes the default base for most numeric data shown on CRT. The initial default base is hexadecimal. This command is the output companion to the SUFFIX command.
CLEAR	CLE	Sets the test summary tables test execution and error counts to zero for the test(s) specified (if no test is specified, the entire table is cleared).
COUNT/END	COU/END	Sets up a loop composed of several STFS commands. Maximum number of iterations for loop is specified by number following keyword. The extent of the command is defined by the use of the END command.
DEBUG	DEB	Sets, clears, or reports the status of the debug switch that controls display or error messages.
DESCRIBE	DES	Describes the status (recognized or ignored) for the test(s) specified; (if no test is specified, the status of all tests is displayed).

Table A-1. STFS Command Summary (Cont'd)

Command Name	Abbreviation	Command Description
ERRORONLY	ERR	Displays or modifies the status of the erroronly variable; typically disables the output of any data except when failure occurs during test execution.
ESCAPE	ESC	Interrupts test execution and returns control to STFS. The escape sequence is initiated by pressing the ESC key.
EXIT	EXI	Ends test session and returns control to ISIS.
FINISH	FIN	Clears remaining variables in a test if it was stopped prior to test completion.
IGNORE	IGN	Prevents execution of specified test(s). An ignored test must be recognized before it can be executed.
INITIALIZE	INI	Invokes the test program and initializes summary table and internal values.
LIST	LIS	Outputs a copy of all prompts, input line echoes and all error messages displayed on the ISIS:CO: device to a disk file. It will overwrite present data in a given ISIS file if named.
RECOGNIZE	REC	Enables previously ignored test(s) to be executed.
REPEAT/END	REP/END	Sets up a loop composed of several STFS commands. The escape sequence is initiated by pressing the ESC key.
SUFFIX	SUF	Displays or changes the default base for most numeric data that is entered by the operator without a base designating suffix.

Table A-1. STFS Command Summary (Cont'd)

Command Name	Abbrev- iation	Command Description
SUMMARY	SUM	Displays a test activity table listing the number of times each test was run and the number of times each test returned an error.
TEST	TES, T	Invokes all/specified tests. Several parameters are available to specify test conditions.
VARIABLE	V	Displays or modifies the status of the user variables.

A-1. LINE EDITING

Line editing commands may be used to correct or modify command entries at any time before the RETURN key is pressed. Table A-2 lists and summarizes the line editing commands supported at the Series II or Series III terminal.

Table A-2. Line Editing Commands

Edit Commands	System Response
CONTROL + P	Inputs next character literally
CONTROL + R	Echoes entire input line
CONTROL + X	Deletes entire input line
CONTROL + Z	Same as CONTROL + X above
SHIFT + DELETE	Deletes last charactrer typed in input line
BACKSPACE	Same as SHIFT + DELETE above

A-2. COMMAND NOTATIONAL CONVENTIONS

Table A-3 summarizes the notational conventions used in the
description of the test manager commands.

Table A-3.   Command Notational Convention

Notation	Description
UPPERCASE	Elements in uppercase are specific keywords that must be entered exactly as shown (or abbreviated as described in table A-1).
lowercase underlined	Elements in lowercase and underlined identify tokens. Select and enter a specific identifier from each set.
[ ]	Brackets indicate optional arguments or parameters. When two or more elements are enclosed in brackets, all elements are optional, but only one element may be entered.
{ }	Braces indicate that only one of the elements can be entered.
. . .	Ellipses indicate the the preceding argument may be repeated.
punctuation	Punctuation other than ellipses, braces, and brackets must be entered as shown.
<cr>	Indicates that the carriage return key must be pressed.

A-4. STFS COMMANDS

The following paragraphs describe each of the STFS test commands
and provide the syntax and example entries for each command. In
the examples, the command prompt for user imput is indicated by
an asterisk (*). Test lines without an asterisk are output
messages from the test program or from the STFS test manager.

BASE COMMAND

The BASE command displays or changes the default base for most
numeric data shown on the CRT. The initial default base is
hexadecimal. This command is output companion to the SUFFIX
command.

Syntax for the BASE command is as follows:

```
          | ̄  Y    ̄ |      Y     = Binary (base 2)
          |  O or Q  |      O/Q   = Octal (base 8)
   BASE  |=  T       |      T     = Decimal (base 10)
          |  H       |      H     = Hexadecimal (base 16)
          |  ASCII   |      ASCII = ASCII value of each byte
          |_        _|
```

Example entries for the BASE command are as follows:

    1.   To display output default base:
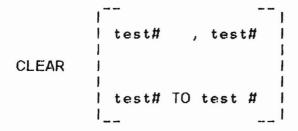
        *BASE<cr>

    2.   To set output default base to binary:

        *BAS = Y<cr>

CLEAR COMMAND

Execution and error counts for each individual test accumulate in a test activity summary table. The CLEAR command allows the user to set the execution and error counts for any or all tests to zero. The CLEAR command does not affect test status (ignored or recognized); nor does test status affect the summary table. (See the SUMMARY command for instructions on displaying the test activity summary table).

Syntax for the CLEAR command is as follows:

```
          --                --
         |                    |
         | test#    , test#   |
         |                    |
 CLEAR   |                    |
         |                    |
         | test# TO test #    |
         |__                __|
```

Example entries for the CLEAR command are as follows:

1. To clear all execution and error counts:

   *CLEAR(cr)

2. To clear execution and error counts for test 14 through 20H (inclusive):

   *CLE 14 TO 20(cr)

3. To clear execution and error counts for tests 3, 5, and CH:

   *CLE 3, 5, C(cr)

COUNT/END COMMAND BLOCK

The COUNT/END command block sets up a loop composed of several
STFS commands. The loop block is introduced by the COUNT keyword
and the maximum number is iterations is specified by the number
following the keyword. The extent of the COUNT command block is
defined by the use of the END command.

Syntax for the COUNT/END command is as follows:

```
                 _      _
                |        |
        COUNT   |  nnn   |
                |_      _|

        .*
        .*
        .*
```

Example entry for the COUNT/END command are as follows:

        To loop tests 10H and CH 100 times:

        *COUNT 100T<cr>
        .*TEST 10<cr>
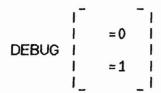   .*TEST C<cr>
        .*END<cr>

DEBUG COMMAND

The DEBUG command is used to set, clear, or display the status
of the DEBUG switch. When DEBUG = 1, error messages are dis-
played. When DEBUG = 0 (default), error message are sup-
pressed.

Syntax for the DEBUG command is as follows:

```
               -         -
              |           |
              |     =0    |
     DEBUG    |           |
              |     =1    |
              |_         _|
```

Example entries for the DEBUG command are as follows:

1. To display current DEBUG status:
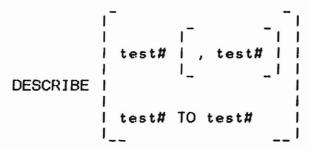
    *DEBUG<cr>
    0000H

2. To set the DEBUG switch to display error messages:

    *DEB=1<cr>

3. To clear the DEBUG switch to suppress error messages:

    *DEB-0<cr>

DESCRIBE COMMAND

The DESCRIBE command displays the test number and test name for any or all the tests in the test program currently loaded into memory. Also displayed is the test status (ignored or recognized).

Syntax for the DESCRIBE command is as follows:

```
                  _                    _
                 |  _          _        |
                 | |          |  |      |
        DESCRIBE | | test# | , test# |  |
                 | |_          _|      |
                 |                     |
                 |                     |
                 | test# TO test#      |
                 |__                 __|
```

Example entries for the DESCRIBE command are as follows:

    1.   To describe all the tests of a test program:

         *DES<cr>
         0000H CPU TEST
         0001H ON-BOARD RAM MEMORY TEST
         0002H FAILSAFE TIME TEST   ***IGNORED***
         0003H OFF-BOARD RAM MEMORY TEST
         0004H 8253 TIMER TEST
         0005H 8259A INTERRUPT TEST
         0006H BUS ARBITRATION TEST
         0007H PROM CHECKSUM TEST
         *

    2.   To describe tests 1 through 4 of a test program:

         *DESCRIBE 1 TO 4<cr>
         0001H ON-BOARD RAM MEMORY TEST
         0002H FAILSAFE TIME TEST   ***IGNORED***
         0003H OFF-BOARD RAM MEMORY TEST
         0004H 8253 TIMER TEST
         *

ERRORONLY COMMAND

The ERRORONLY command is used to set, clear, or display the status of the ERRORONLY switch. When ERRORONLY=1, all messages for tests that pass are suppressed. When ERRORONLY=0, (default), messages for tests that pass are displayed.

Syntax for the ERRORONLY command is as follows:

```
                 |‾        ‾|
                 |    =0    |
     ERRORONLY   |         |
                 |    =1    |
                 |_        _|
```

Example entries for the ERRORONLY command are as follows:

1. To display current ERRORONLY status:

    *ERRORONLY<cr>
    0000H

2. To set the ERRORONLY switch to suppress error
    messages for tests that pass:

    *ERR=1<cr>

3. To clear the ERRORONLY switch to display error
    messages for tests that pass:

    *ERR=0<cr>

EXIT COMMAND

The EXIT command terminates the test session and returns
control to ISIS.

Syntax for the EXIT command is as follows:

    EXIT

The following example terminates a test session:

    EXIT<cr>

    .

FINISH COMMAND

The FINISH command clears any remaining variables in a test if
that test was stopped prior to test completion. Normally the
test tables are returned to a preset configuration for the next
execution.

Syntax for the FINISH command is as follows:

    *FINISH
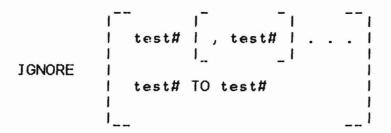
Example entry for the FINISH command is as follows:

    To reset Test 0001H variables:

    *FIN<cr>

IGNORE COMMAND

The IGNORE command prevents specified tests from being invoked by the TEST command. Once ignored, the specified tests cannot be executed until enabled by the RECOGNIZE command.

Syntax for the IGNORE command is as follows:

```
           --       -       -    --
          |          |          |    |
          |  test# |  , test# |  . . .  |
          |          |_       _|    |
IGNORE    |                          |
          |  test# TO test#          |
          |                          |
          |__                    __|
```

Example entries for the IGNORE command are as follows:

   1.   To ignore all tests:

        *IGNORE<cr>

   2.   To ignore tests 14 through 20H (inclusive):

        *IGN 14 TO 20<cr>

   3.   To ignore tests 3, 9, and C:

        *IGN 3, 9, C<cr>

INITIALIZE COMMAND

This command is used to load the program (typically the system test program) and initialize STFS in preparation for performing the required testing.

Syntax for the INITIALIZE command is as follows:

    INITIALIZE (file name)

Example entry for the INITIALIZE command is as follows:

    To initialize the CE diagnostic program:

    *INI :F4:SIIWIN.CE<cr>

LIST COMMAND

The list command causes a copy of all subsequent output, including prompts, user input, line echo, and test messages to be sent to the line printer or teletype.

Syntax for the LIST command is as follows:

    LIST :LP:

Example entry for the LIST command is as follows:

    To send subsequent test displays to the line printer:

    *LIST<cr>

RECOGNIZE COMMAND

The RECOGNIZE command permits tests previously specified as ignored to be invoked by the TEST command.

Syntax for the RECOGNIZE command is as follows:

```
              _        _      _ |       _ |
             |        |        |       |  |
             | test#  | , test# |  . . . |
             |        |        _|       |  |
   RECOGNIZE |                           |
             | test# TO test#            |
             |_                         _|
```

Example entries for the RECOGNIZE command are as follows:

1. To recognize all tests:

    *RECOGNIZE<cr>

2. To recognize tests F through 15H (inclusive):

    *REC F TO 15<cr>

3. To recognized tests 1 through 4 (inclusive), test B, and test 14H:

    *REC 1 TO 4, B, 14<cr>

REPEAT/END COMMAND BLOCK

The REPEAT/END command block repeats the sequence of commands
entered within the command block. All commands entered after
the REPEAT command and before the END command are looped the
specified number of times. If the number of repeats is not
specified, the sequence repeats forever. The number of repeat
iterations (nnn) may be specified in hexadecimal (H) (the de-
fault base), decimal (T), octal (O or Q), or binary (Y) number
bases. The maximum number of iterations specified by (nnn) is
65,535T. Note that a nested prompt (.*) is issued for all
commands entered in the REPEAT/END command block, including the
END command.

Syntax for the REPEAT/END command block is as follows:

```
REPEAT (nnn)
  command
  command
  . . .
END
```

The following example runs a series of tests 1000 times and
displays the execution and error count for test 6 after each
pass through the sequence:

```
*REPEAT 1000T<cr>
.*ERR=1<cr>
.*DEB=1<cr>
.*TEST 0 TO C<cr>
.*SUM 6<cr>
.*END
```

The test sequence begins execution immediately following the
last carriage return (<cr>).

SUFFIX COMMAND

The SUFFIX command is used to display or change the default base
for most numeric data that is entered by the operator without a
base designating suffix. Similar to the BASE command, the
initial default base is hexidecimal.

Syntax for the SUFFIX command is as follows:

```
                 |‾  Y      ‾|    Y      = Binary (base 2)
                 |   O or Q  |    O or Q = Octal (base 8)
                 |   T       |    T      = Decimal (base 10)
      SUFFIX  | = H          |    H      = Hexidecimal (base 16)
                 |   ASCII    |    ASCII  = ASCII value of each byte
                 |_         _|
```

Example entries of the SUFFIX command are as follows:

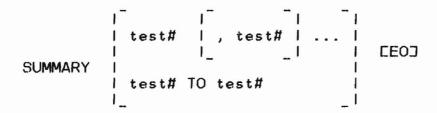1. To display input default base:

    *SUFFIX<cr>

2. To change the default base to decimal:

    *SUF = H<cr>

SUMMARY COMMAND

The SUMMARY command displays the test activity summary table for
any or all tests in the test program. The summary table contains
the following information about each test: (1) test number,
(2) test name, (3) execution count, and (4) error count. The
summary table will also list the ignored tests. The counts in
the summary table accumulate until the test program is reini-
tialized or until the CLEAR command is entered. If the errors
only (EO) switch is selected, only the tests that have failed
one or more times will be included in the summary display.

Syntax for the SUMMARY command is as follows:

```
              ┌─      ┌─      ─┐  ─┐
              │ test# │ , test# │ ... │
              │       │_      _│     │        [EO]
     SUMMARY  │                      │
              │ test# TO test#       │
              │_                    _│
```

Example entries for the SUMMARY command are as follows:

    1. To display the summary table entry for test 9:

        *SUMMARY 9<cr>
        0009H FLOPPY DISK SEEK TEST 0005 FAILED IN 0017 TRIALS
        *

    2. To display all tests that failed:

        *SUM EO<cr>
        0004H ON-BOARD RAM TEST   0001 FAILED IN 0017 TRIALS
        0009H FLOPPY DISK SEEK TEST 0005 FAILED IN 0017 TRIALS
        00AH PROM CHECKSUM TEST   0017 FAILED IN 0017 TRIALS
        *

TEST COMMAND

The TEST command loads and executes specified tests in numerical
order (regardless of the order in which the test numbers are
entered). When no test numbers are specified, all tests are
executed. Tests specified as ignored are not invoked by the
TEST command.

To terminate a test sequence, press the ESC key.

TEST Command Parameters

The TEST command uses a REPEAT element with any one of four
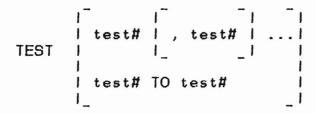modifiers: FOREVER, nnnn, UNTIL ERROR, and UNTIL NOERROR.

If REPEAT FOREVER is used with the TEST command (or REPEAT with-
out a modifier), the specified tests execute in numerical order
regardless of errors until the ESC key is pressed.

If REPEAT nnnn is used with the TEST command, the specified
tests loop nnnn times. When nnnn=0, the first specified test
test is loaded into memory but is not executed. The modifier
nnnnmay be hexadecimal (H), decimal (T), octal (O or Q), or
binary (Y). The default number base is hexadecimal. The maximum
number of iterations specifiable by nnnn is 65,535T.

If REPEAT UNTIL ERROR is used with the TEST command, the speci-
fied tests loop until one test returns an error condition.

If REPEAT UNTIL NOERROR is used with the TEST command, the
specified tests loop until all tests pass.

Syntax for the TEST command is as follows:

```
         _         _          _    _
        |         |          |    |
        | test#   |  , test# |  ...|
 TEST   |         |_        _|     |
        |                          |
        | test# TO test#           |
        |_                        _|
```

Example entries for the TEST command are as follows:

1. To run all (recognized) tests:

    *TEST<cr>

2. To run a sequence of test 50 times:

    *T 3 TO 1B 50t<cr>

3.   To loop test A indefinitely:

     *T A REPEAT FOREVER<cr>

4.   To loop tests 3, 5, 7, and 9 until an error occurs:

     *T 3, 5, 7, 9 REP UNTIL ERROR<cr>

5.   To loop all tests until the entire sequence passes:

     *TES REP UNT NOERROR<cr>

VARIABLE COMMAND

The VARIABLE command is used to display or modify the status of
the user variables. There are 16 variables reserved by STFS
which allows the operator to use the variables either as switches
that only recognize one of two values or as levels where
several values have significance.

Syntax for the VARIABLE command is as follows:

     V (expression) [expression]

Example entries for the VARIABLE command are as follows:

1.   To display the user variable:

     *V(2)

2.   To modify the user variable:

     *V(1) = 01H