STCPOST Program For Online Subsystem Testing

**FRIEND Function
Reference Manual**

FE-013-4   Version 3.0

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of changes, the publication will be
revised. Comments concerning the con-
tents of this manual should be directed
to FE Technical Systems Development
Department at the address below. A pre-
. paid Reader's Comment Form is provided
at the back of the manual.

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SUMMARY OF CHANGES

FE-013-4, August 1984, is a new edition that describes STCPOST Version 3.0A.

Differences between Version 2.0A and Version 3.0A are:

- Support for up to sixteen COMPARE and DUMP commands per CCW chain.

  The DECREASE and INCREASE commands allow a CCW chain to be modified and repeated.

  FRIEND command input may be input from tape, card, or disk in addition to from the opeerator's console.

This edition contains information about features of STCPOST that are not yet available for general use. The following information should be used for planning purposes only:

- All information about remote operation of STCPOST, including the STCPOST REMOTE function.

- All information about FBA DASD, including 3370 devices.

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PREFACE

SCOPE

This manual describes the STCPOST FRIEND function and the messages issued by the FRIEND function.

Instructions for installing STCPOST and descriptions of the other functions are found in STCPOST REFERENCE MANUAL FE-001.

Message descriptions for other functions are found in STCPOST MESSAGES AND CODES FE-012.

The STCPOST Stand-Alone Executive (SAE) is described in the STCPOST STAND-ALONE EXECUTIVE REFERENCE MANUAL FE-010.

RELATED DOCUMENTATION

This manual and the STCPOST manuals listed below can be ordered from:

Storage Technology Corporation
FE Documentation Subscription Service MD FW
2270 South 88th Street
Louisville, Colorado 80028

Phone: (303) 673-6789 or (303) 673-4840

This manual should be used with the following manuals:

STCPOST REFERENCE MANUAL	FE-001
STCPOST REFERENCE HANDBOOK	FE-009
STCPOST STAND-ALONE EXECUTIVE REFERENCE MANUAL	FE-010
STCPOST MESSAGES AND CODES	FE-012

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CHAPTER 1

INTRODUCTION

The FRIEND function allows an FE to create and execute CCW chains to a test device. The function accepts symbolic input for CKD DASD and tape CCW command codes and data areas and creates the CCW and the CCW data area. The CCW chains created by FRIEND can be executed with a varity of options.

The only inputs to the FRIEND function are commands that are normally entered at the operator's console. The FRIEND READER command allows the commands to be read from cards or tape.

FRIEND output can be directed to the operator's console or to the STCPOST printer output file or to both by using the FRIEND OUTPUT command. All FRIEND output can be suppressed by the NOPRINT parameter of the GO command.

To execute a CCW chain on a device the following FRIEND commands would normally be entered at the operator's console:

- The DEVICE command assigns a CCW chain area to the device.

- The CCW commands for the device are entered.

- The LOOP command sets the number of times the CCW chain is to be executed.

- The GO command starts the CCW chain execution.

Reader input and CCW/TIO execution can be suspended at any time by replying to message STCK211. Reader input and CCW/TIO execution is restarted by entering the RESUME command. RESUME has the same parameters as the GO command.

CONTROL CARD FORMAT

The format of the FRIEND control card is as follows:

```
FRIEND [ HELP ]
```

CONTROL CARD PARAMETERS

The only parameter of the FRIEND function is:

HELP

All five of the FRIEND help selections are printed before FRIEND starts normal operation.

OPERATION CONSIDERATIONS

- The FRIEND function can be run only when STCPOST is running with the Stand-Alone Executive or OS/VS.

- FRIEND supports up to eight devices. The devices are defined using the standard STCPOST DD types 1, 2, 3, 4 or 5. Only the DDnames SYSUT1 - SYSUT8 are used.

- FRIEND supports up to eight CCW chains. Each CCW chain is assembled and executed in its own CCW chain area. The CCW chain areas are numbered 1 - 8. The DEVICE command assigns a CCW chain area to the specified device. Any number of CCW chains (up to eight) may be assigned to the same device.

- If more than one CCW chain is assigned to the same device, the chains will be executed in random order when the GO command is entered. To have the chains executed in sequential order, the WAIT command must be entered for each of the chains.

CHAPTER 2

FRIEND COMMANDS

There are three types of FRIEND commands:

- General commands that are used to control the overall execution of the FRIEND function.

- Device commands that are used to control the execution of a CCW chain.

- CCW commands that define a single CCW and its data areas.

GENERAL COMMANDS

FRIEND general commands may be entered at any time.

DEVICE COMMANDS

FRIEND device commands may be entered only when a CCW chain area is assigned. The DEVICE command is used to assign a CCW chain area to a device. When more than one CCW chain area is assigned, the SELECT command is used to switch between the assigned areas. Most FRIEND device commands affect only the currently selected CCW chain area.

CCW COMMANDS

CCW commands may be entered only when a CCW chain area is assigned. The CCW is assembled into the currently selected CCW chain area.

FRIEND COMMAND SYNTAX

FRIEND and CCW commands are one or more words separated by blanks. A FRIEND command may have one or more parameters. A CCW command may have one or more modifiers. The command, FRIEND or CCW, must be separated from the parameters or modifiers by a comma (,). The parameters or modifiers, if there are more than one, are separated by blanks. The comma is not required if there are no parameters or modifiers.

    Examples: READ DATA,BC 32 SKIP
                 WRITE , DATA 80 X40   SLI
                 NOP

FRIEND uses only the first 72 characters of each input line. If
the first non-blank character of an input line is an asterisk (*)
the entire input line is treated as a comment and ignored. An
input line may contain more than one FRIEND or CCW command. A
slash (/) is used to separate the commands.

    Examples: HELP/WRITE,DATA 1000 XFF /NOP
                 DEVICE,SYSUT1 / CCW,ALL/ HELP

COMMAND SYNTAX DESCRIPTION

The following symbols must be coded as they appear in the syntax
format:

- Equal Sign   =

- Parenthesis   ( )

- Single Quote '
  If a single quote is to be used within a parameter surrounded
  by quotes, then two quotes must be used:

  <u>Example</u>: 'this is a ''quote'' within'

The following symbols define the syntax presented in this manual:

NOTATION	DESCRIPTION

Abbreviations

Where abbreviation of a name is permitted, the abbreviated version is represented by uppercase letters. If the abbreviation is not a truncation, it appears on a separate line under the fully spelled parameter.

Example: KEYword

KEY and KEYWORD are acceptable.

Example: PARAMETER
          PRM

PRM and PARAMETER are acceptable.

Bar |

Separates mutually exclusive parameters or alternative parameter values.

Example: a|b

Selection of a or b is required.

Brackets [ ]

Indicate an option which may be omitted entirely.

Example: [A|B|C]

Select A, B, or C or omit the choices alto-gether.

Ellipsis ...

Indicates that entries may be repeated as often as necessary.

Example: SOMETHING=aaa1,aaa2...

Lower Case Letters

Indicate a parameter must be substituted. The parameter may be entered in either upper or lower case.

Example: XX=yyyyy

A value must be supplied for yyyyy.

Quotes

A parameter containing blanks, commas, dashes, or asterisks must be contained within single quotes. If a quote is included as

NOTATION	DESCRIPTION
	part of the parameter two quotes must be used.
	Example: 'THIS CONTAINS A QUOTE '' MARK'
Upper Case Letters	Indicate that the entry must be spelled exactly as shown. The parameter may be entered in either upper or lowercase.
	Example: ACTIVE
	The word 'active' must be spelled out.
Underscore	Indicates the system default. If no parameter is entered, the system supplies the underscored value.
	Example: A|B|C
	If neither A,B, nor C is selected, C will be the default.

BUILDING CCW CHAINS

Before a FRIEND device or CCW command can be entered, a CCW chain area must be assigned to the test device that is to be used. This is done with the DEVICE command. When more than one CCW chain area is assigned, the SELECT command is used to switch between the assigned areas.

Each CCW chain area contains only one CCW chain of one to thirty-two CCWs. Each CCW command assembles one CCW that is added to the end of the current CCW chain.

If a CCW command does not contain the required information to complete the CCW, FRIEND will either supply default values or issue an error message.

Transfer In Channel (TIC) CCWs are not automatically inserted into CKD DASD CCW chains. The SLI flag bit is not automatically set for any type of CCW. The CCW chain is assembled exactly as the user specifies. When a CCW chain is built, use these general rules:

• Set the SLI flag bit in write type CCWs if required by the device (such as tape).

• Use the TIC CCW after search type CCWs for CKD DASD devices.

- When an unnamed data area is used for a CCW, the data in that area can not be displayed or modified.

The TIO|NOTIO command can be used to switch between the CCW chain and a TIO instruction.

The CCW command code is determined only by the CCW name entered and the command modifier, if any, used.

The CCW flag byte is determined only by the flag byte modifier(s) used. The command chaining flag bit is automatically set in all CCWs except the last CCW in the chain. However, if the CCW being built is replacing a previously built CCW, the chaining flag is not set unless specified.

The CCW byte count is determined as follows:

- By the BC modifier.

- By the DL or DATA modifier if DL or DATA is the only modifier specified.

- By the FROM, INTO or USING modifier.

- For some commands, the byte count will be computed based on the data modifier(s) used. For example, a CKD DASD write CKD command byte count is computed using the lengths of the key and data fields specified.

- If none of the above determinations are used, a default value is supplied for non-write CCWs.

The CCW data is assembled as follows:

- If only the DL or DATA modifier is used, the specified data is used.

- If the FROM, INTO or USING modifier is used, the specified data area is used.

- For some CCW commands, the data specified by the data modifiers is assembled into an unnamed area. For example, a CKD DASD write CKD command assembles the count, key and data fields from the CYL, HD, REC, key and data modifiers specified.

- If no data modifiers are specified, an unnamed area of binary zeros is used.

PREFIX CCWS

The prefix CCWs for a CKD DASD device are: SEEK (07), SET FILE
MASK (1F), and TIC (08). The prefix CCWs for a tape device are:
MODESET (CB, C3, D3, etc), and TIC (08). When STCPOST is running
online, these CCWs cannot be suppressed. When STCPOST is running
under the Stand-Alone Executive, these CCWs can be suppressed by
using the NOPREFIX command.

When prefixing is in effect, the DASD SET FILE MASK CCW is con-
verted to a NOP and the data specified replaces the file mask
byte of the operating system. The file mask byte is modified
before the CCW chain is executed: if DD type 1 is used, all
WRITE commands are disabled; if DD type 2, 3, or 4 is used and a
SEEK CCW is built that seeks outside the allocated dataset but
not to a CE track, all WRITE commands are disabled; if a SEEK CCW
is built that seeks outside the allocated dataset but not to a CE
track, all diagnostic type commands are disabled. Whenever a
DEVICE or INITIALIZE command is entered, the file mask byte for
the operating system prefixed SET FILE MASK CCW is set to allow
all seeks, head switching, and writes (including WRITE HA and
RO).

The current operating system file mask byte is displayed by the
CCW command.

Prefixing has no effect on tape CCWs.

USING DASD MULTI-TRACK COMMANDS

The Multi-Track (MT) modifier is ignored if the DD TYPE 2, 3, or
4 allocated dataset is not allocated in full cylinders.

USING DASD DIAGNOSTIC COMMANDS

Seeking to a CE track and executing a diagnostic CCW on that
track is always allowed. Use the following command sequence:

1.   SET FM (allowing diagnostic commands),

2.   SEEK (to a CE track),

3.   'DIAGNOSTIC' CCW.

When prefixing is enabled, diagnostic commands for DD types 2, 3,
or 4 can only be executed on the first track of the allocated
dataset. Use the following command sequence:

1.   SET FM (allowing diagnostic commands),

| 2.   'DIAGNOSTIC' CCW.

| When prefixing is disabled, DIAGNOSTIC commands for DD types 2,
| 3, or 4 can be executed on any track within the allocated data-
| set. Use the following command sequence:

| 1.   SEEK (to the desired track),

| 2.   SET FM (allowing DIAGNOSTIC TYPE commands),

| 3.   'DIAGNOSTIC' CCW.

USING SYMBOLIC DATA AREAS

FRIEND supports up to twenty six symbolic data areas. These
areas are known as $A - $Z. Initially all twenty six areas are
undefined. The DEFINE command is used to define an area. The
INITIALIZE,ALL command will undefine all areas. When the area is
defined, the data in the area is set to binary zero. The ALTER
and DISPLAY commands are used to alter and display the contents
of an area.

COMMAND ERROR HANDLING

When an error is detected in a command, the command is not pro-
cessed and the remainder of the input line is ignored.

FRIEND COMMAND INFORMATION

There are two types of FRIEND commands:

- **General Commands**
  The following commands can be entered at any time, even when
  no CCW chain area is assigned. These commands assign and
  unassign CCW chain areas, select CCW chain areas, define and
  alter symbolic data areas, control output message routing, and
  request help information.

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- **Device Commands**

  The following commands are used to display or alter information with a CCW chain area. These commands can be entered only when a CCW chain is assigned. Unless the command has the optional 'ALL' parameter the command effects only the currently selected CCW chain.

NOTE

In the following descriptions the symbols j, k and n represent numbers. Unless stated otherwise, j and k can be a decimal value, 1 - 65535, or a hex value, X1 - Xffff. n must be a decimal number, 1 - 65535.

ALTER

The ALTER command is used to alter the contents of a symbolic data area.

Command	Required Parameters	Optional Parameters
Alter	, $x+j Xhh...|Cx...	k

Required Parameters

$x+j
$x is the name, $A - $Z and j is the offset into the area.
If +j is omitted, it defaults to +0.

Xhh...|Cx...
The data in hex format (Xhh...) or the data in character format (Cx...)..

Optional Parameters

k
The number of bytes to store. If K is omitted data is stored until the end of the area is reached.

The data is stored into the area starting at the offset location. Also see the DEFINE and DISPLAY commands.

Example

Define $A as 1000 bytes, set the first 500 bytes to the character G, set the second 500 bytes to hex 55 and display offsets +480 TO +519.

```
DEFINE,$A 1000
ALTER,$A CG 500
ALTER,$A+500 X55
DISPLAY,$A+480 40
```

CCW

The CCW command is used to display CCW chain and symbolic data area definitions.

Command	Required Parameters	Optional Parameters
CCW		, ALL

Required Parameters

There are no required parameters. If CCW is entered without parameters, the current CCW chain and symbolic data area definitions are displayed.

Optional Parameters

ALL
If ALL is specified, all of the CCW chains and symbolic areas are displayed.

COMPARE¦NOCOMPARE

The COMPARE commands are used to compare data in the defined symbolic areas. After each execution of the CCW chain the symbolic areas are compared.

Command	Required Parameters	Optional Parameters
COMPARE CMPR CMP	, $x $y	j
NOCOMPARE NOCMPR NOCMP		

Required Parameters

$x $y
   The area names, $A - $Z. The differences between $x and
   $y are displayed.

Optional Parameters

j
   The number of bytes to compare. If j is omitted, the num-
   ber of bytes compared is equal to the size of the smallest
   area.

Only the first sixteen unequal bytes are displayed. No compare
is done if either the CCW chain ends with an error or a TIO is
executed. One to sixteen COMPARE commands per CCW chain area are
allowed. The NOCOMPARE command resets all sixteen COMPARE com-
mands.

CSWMASK

The CSWMASK command is used to specify the bits of the CSW status
bytes that are ignored at the end of the CCW chain execution.

Command	Required Parameters	Optional Parameters
CSWMASK CSWMSK CM	, xxxx	

Required Parameters

xxxx
 Specifies the bits of the CSW status bytes that are
 ignored at the end of the CCW chain execution. For exam-
 ple,

        CSWMASK , 0200

Ignores all unit check errors. xxxx must be four hex dig-
its.

DECREASE | NODECREASE

The DECREASE command is used to decrease a CCW byte count, a counter, or a pair of counters after each execution of a CCW chain.

Command	Required Parameters	Optional Parameters
DECREASE DECREMENT DECR	, a1 s1 i1 j1 k1	a2 s2 i2 j2 k2
NODECREASE NODECREMENT NODECR		

Required Parameters

 a1 s1 i1 j1 k1

  a1
   The CCW number (1 to 32) or the name of a symbolic data area ($A to $Z). The data area name can be followed by an offset (e.g., $M+5). If an offset value is not specified, it defaults to zero.

  s1
   Counter Size, one to four bytes (counter size is forced to 2 if CCW was specified).

  i1
   Starting Value

  j1
   Decrement Value

  k1
   Ending Value

Optional Parameters

 a2 s2 i2 j2 k2
  a2, s2, i2, j2, and k2 are the CCW number or area name (and offset), area size, starting value, decrement value, and ending value (respectively) for the second counter of a pair of counters.

The first DECREASE (INCREASE) specification is used to set the CCW chain loop count. The loop command is ignored. If a pair of counters is specified, the second counter is decremented when the first counter has reached its minimum value. When the second counter has reached its minimum value, the value of the first counter is reset to its initial value. Up to eight pairs of counters may be specified for each CCW chain.

The NODECREASE command resets all of the DECREASE and INCREASE values previously specified for the CCW chain.

The GO command causes all counters to be set to their starting values. After each execution of the CCW chain, the counter (or counter pair) is decreased by the decrement value ($j1$). If one counter is specified, the chain is repeated until the counter is less than the ending value ($k1$). If a pair of counters is specified, the CCW chain is repeated until the second counter is less than the ending value ($k2$).

See the INCREASE and NOINCREASE commands.

DEFINE

The DEFINE command is used to define a symbolic data area.

Command	Required Parameters	Optional Parameters
DEFine	, $x j	

Required Parameters

$x
   The area name, $A - $Z.

j
   The area size.

The area is initialized to binary zero. See the ALTER and DISPLAY commands.

DELAY|NODELAY

The DELAY command is used to specify the number of milliseconds
of delay between executions of the CCW chain or TIO.

Command	Required Parameters	Optional Parameters
DELAY DLY	, j	
NODELAY NODLY		

Required Parameters

j

    The number of milliseconds to delay. j may be 0 - 99999
or X0 - X1869F.

NODELAY cancels any delay previously specified.

DELETE

The DELETE command is used to delete a CCW chain area.

Command	Required Parameters	Optional Parameters
DELete	, ccw	

Required Parameters

ccw
   ccw is a single digit, 1 to 8. Also see the REMOVE command.

DEVICE

The DEVICE command is used to assign an available CCW chain area
to a device.

Command	Required Parameters	Optional Parameters
DEVice		, addr｜ddname [ccw]

Required Parameters

> There are no required parameters. If this command is
> entered without parameters, a summary of the devices avail-
> able is displayed. Also see the SELECT command.

Optional Parameters

addr
> The three or four digit address of the device to use.

ddname
> The ddname of the device to use, SYSUT1 - SYSUT8.

ccw
> The CCW chain area number to use, 1 - 8. If ccw is omit-
> ted, the first available CCW chain area is used.

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DISPLAY

The DISPLAY command is used to display the contents of a symbolic data area.

Command	Required Parameters	Optional Parameters
Display	, $x+j [k]	

Required Parameters

There are no required parameters. If DISPLAY is entered without parameters, a summary of the symbolic areas is displayed. Also see the ALTER and DEFINE commands.

Optional Parameters

$x+j
$x is the name, $A - $Z and j is the offset into the area. If +j is omitted, it defaults to +0.

k
The number of bytes to store. If k is omitted, it defaults to 64.

The contents of an area can also be displayed at the end of a CCW chain execution by using the DUMP command.

DUMP | NODUMP

The DUMP command is used to dump the symbolic area $x after each execution of the CCW chain.

Command	Required Parameters	Optional Parameters
DUMP NODUMP	, $x	j

Required Parameters

$x
   The symbolic area $A -$Z.

Optional Parameters

j
   The number of bytes to dump. If j is omitted, it defaults to 64.

One to sixteen DUMP commands per CCW chain area are allowed. The NODUMP command resets all sixteen DUMP commands.

END

The END command terminates the FRIEND function.

Command	Required Parameters	Optional Parameters
END		

There are no parameters for this command.

GO

The GO command starts the execution of the CCW or TIO commands
that are defined and not currently stopped.

Command	Required Parameters	Optional Parameters
Go		, NOPRINT|NOPRT|NP

Required Parameters

There are no required parameters.

Optional Parameters

NOPRINT|NOPRT|NP
The options NOPRINT, NOPRT or NP supress all FRIEND output
until the next FRIEND command is required. Also see the
START and STOP commands.

HALT|NOHALT

The HALT command is used to stop a CCW chain or TIO execution if an error is detected.

Command	Required Parameters	Optional Parameters
HALT|NOHALT		

There are no parameters for this command. Refer to the START command.

HELP

The HELP command displays the help information file.

Command	Required Parameters	Optional Parameters
Help		

The HELP information file contains general information, commands, CCW commands, and examples. The HELP information can also be printed.

ID

The ID command allows an ID to be assigned to each CCW chain area. This ID is displayed in various messages.

Command	Required Parameters	Optional Parameters
ID	, id-msg	

Required Parameters

There are no required parameters. If ID is entered without id-msg, the ID message is reset.

Optional Parameters

id-msg
The one to thirty-two character id message. id-msg may not contain blank characters.

INCREASE|NOINCREASE

The INCREASE command is used to increase a CCW byte count, a
counter, or a pair of counters after each execution of a CCW
chain.

Command	Required Parameters	Optional Parameters
INCREASE INCREMENT INCR	, a1 s1 i1 j1 k1	a2 s2 i2 j2 k2
NOINCREASE NOINCREMENT NOINCR		

Required Parameters

    a1 s1 i1 j1 k1

        a1
          The CCW number (1 to 32) or the name of a symbolic
          data area ($A to $Z). The data area name can be fol-
          lowed by an offset (e.g., $M+5). If an offset value
          is not specified, it defaults to zero.

        s1
          Counter Size, one to four bytes (counter size is
          forced to two if CCW was specified).

        i1
          Starting Value

        j1
          Increment Value

        k1
          Ending Value

Optional Parameters

    a2 s2 i2 j2 k2
        a2, s2, i2, j2, and k2 are the CCW number or area name
        (and offset), area size, starting value, increment value,
        and ending value (respectively) for the second counter of
        a pair of counters.

The first INCREASE (DECREASE) specification is used to set the CCW chain loop count. The loop command is ignored. If a pair of counters is specified, the second counter is incremented when the first counter has reached its maximum value. Each time the second counter is incremented, the value of the first counter is reset to its initial value. Up to eight pairs of counters may be specified for each CCW chain.

The NOINCREASE command resets all of the INCREASE and DECREASE values previously specified for the CCW chain.

The GO command causes all counters to be set to their starting values. After each execution of the CCW chain, the counter (or counter pair) is increased by the increment value (j1). If one counter is specified, the chain is repeated until the counter is greater than the ending value (k1). If a pair of counters is specified, the CCW chain is repeated until the second counter is greater than the ending value (k2).

See the DECREASE and NODECREASE commands.

INITIALIZE

The INITIALIZE command is used to delete the current CCW chain
and associated symbolic area or all CCW chains and symbolic areas
that are defined.

Command	Required Parameters	Optional Parameters
Initialize INIT		, ALL

Required Parameters

> There are no required parameters. If INITIALIZE is entered
> without parameters, the current CCW chain is deleted.

Optional Parameters

> **ALL**
> If ALL is specified, all CCW chains and symbolic data
> areas are deleted.

LOOP

The LOOP command is used to define the number of times a CCW chain or TIO is to be executed.

Command	Required Parameters	Optional Parameters
Loop LP	, j	

Required Parameters

j

    The number of times to loop the current CCW chain. j may be 1 - 99999 or X1 - X1869F.

OUTPUT

The OUTPUT command is used to direct the FRIEND output to the
operator's console, the STCPOST printer file, the console and the
printer, or neither.

Command	Required Parameters	Optional Parameters
OUTput		, Print|CONsole|BOTH PRT

Required Parameters

There are no required parameters. If OUTPUT is entered
without parameters, the current ouput setting is displayed.

Optional Parameters

PRinT|CONsole|BOTH
Directs the FRIEND output to the operator's console, the
STCPOST printer file, the console and the printer, or nei-
ther. The parameter default is console.

PREFIX|NOPREFIX

The PREFIX commands control prefixing of DASD and TAPE CCW chains
when STCPOST is running under SAE.

Command	Required Parameters	Optional Parameters
PREFIX		
NOPREFIX		

There are no parameters for this command.

The PREFIX command enables prefixing of DASD and TAPE CCW chains
with the standard operating system prefix CCWs. The NOPREFIX
command disables prefixing of CCW chains. The initial status for
prefixing is enabled.

READER

The READER command reads input from an STCPOST FRIEND dataset.

Command	Required Parameters	Optional Parameters
READER RDR		, addr type [file]|ON|OFF

Required Parameters

> There are no required parameters. Specifying the READER command without parameters causes FRIEND to resume reading command input from the reader data set.
>
> The data set may be contained on cards or tape (if under SAE) or cards, tape, or DASD (if under OS/VS). All input is read from the data set until end-of-file is reached, or until suspended by any input from the operator's console.

Optional Parameters

> **addr type [file]**
>   Begin reader input from the data set when STCPOST is executing under SAE.
>
>   **addr**
>   The three (3) or four (4) digit address of the card reader or tape.
>
>   **type**
>   Card or tape must be specified as the reader type.
>
>   **file**
>   The tape file number (1 to 99). Default: 1
>
> **ON**
>   Starts the reader input from the data set when STCPOST is executing under OS/VS1 or OS/VS2 (MVS). The STCPOST JOB JCL must contain the following:
>
>   DD Card with DDNAME of PSTK2RDR
>
>   Data set with Fixed or Fixed Blocked 80-byte records.
>
> **OFF**
>   Stops the input from the reader data set.

REMOVE

The REMOVE command is used to delete all CCW chains for a device.

Command	Required Parameters	Optional Parameters
REMOVE RMV		, addr|ddname

Required Parameters

addr
The three (3) or four (4) digit address of the device to remove.

ddname
The ddname of the device to remove, SYSUT1 - SYSUT8.

Also see the DELETE command.

REPLACE

The REPLACE command is used to replace a previously defined CCW
in the current CCW chain.

Command	Required Parameters	Optional Parameters
REPlace	, j	

Required Parameters

j
Specifies the CCW number, from 1 to 32.

The next CCW defined for the currently selected CCW chain
replaces the CCW specified by this command.

SELECT

The SELECT command is used to select another CCW chain.

Command	Required Parameters	Optional Parameters
SELECT	, ccw	

Required Parameters

ccw
The CCW chain area to select a number from 1-8. A CCW chain area must be selected before any CCWs can be built. If ccw is omitted, a summary of the CCW chain areas is displayed. Also see the DEVICE command.

SENSEMASK

The SENSEMASK command is used to specify that bits of sense bytes
0 and 1 are to be ignored at the end of the CCW chain execution.

Command	Required Parameters	Optional Parameters
SENSEMASK SNSMSK ... SM ...	, xxxx	

Required Parameters

xxxx
Specifies the bits of sense bytes 0 and 1 that are ignored
at the end of the CCW chain execution. For example,

SENSEMASK , 8000

Ignores all command reject errors. xxxx must be four hex
digits.

START

The START command is used to enable the execution of the CCW
chain(s) or TIO(s).

Command	Required Parameters	Optional Parameters
START	, ALL	

Required Parameters

There are no required parameters. If START is entered with-
out parameters, only the current CCW chain is enabled.

Optional Parameter

ALL
Enables all CCW chains.

STOP

The STOP command is used to disable the execution of the CCW chain(s) or TIO(s).

Command	Required Parameters	Optional Parameters
STOP	, ALL	

Required Parameters

> There are no required parameters. If STOP is entered without parameters, only the current CCW chain is disabled.

Optional Parameter

> **ALL**
> Disables all CCW chains.

TIO|NOTIO

The TIO command is used to switch between the defined CCW chain and TIO instruction.

Command	Required Parameters	Optional Parameters
TIO|NOTIO		, ALL

Required Parameters

There are no required parameters. If TIO or NOTIO is entered without parameters, only the current CCW chain is switched

Optional Parameter

ALL
Switches all CCW chains.

The TIO command can not be used if STCPOST is running under OS/VS.

WAIT

The WAIT command is used to define the number of seconds that FRIEND is allowed to wait for a CCW chain to complete.

Command	Required Parameters	Optional Parameters
WAIT NOWAIT	, j	

Required Parameters

j

    The number of seconds to wait. j may be 0 - 99999 or X0 - X1869F.

CHAPTER 3

FRIEND CCW COMMANDS

FRIEND CCW COMMANDS

The following tables show the CCW commands accepted by FRIEND. The CCW command is shown in the CODE column, the default byte count in the COUNT column. The NOTE(S) column shows the recommended modifiers.

FRIEND accepts symbolic names for the CKD and TAPE CCWs described below. The HEX CCW command may be used to generate any CCW for any device type.

CKD DASD CCW COMMANDS

The following rules apply only to CKD DASD CCW commands:

- For all commands flagged (*) below, the DL or DATA modifiers, when used alone, specify the entire data area. If the DL or DATA modifier is used with the CYL, HD, REC, KL, or KEY modifier, the DL or DATA modifier specifies only the data field data.

- For all commands flagged (**) below, the DL or DATA modifier, when used alone, specifies the entire data area. If the DL or DATA modifier is used with the KL or KEY modifier, the DL or DATA modifier specifies only the data field data.

- For SEARCH HA and all SEARCH ID commands, the DL or DATA modifier, when used, specifies the entire data area. If the CYL, HD, or REC modifier is used with the DL or DATA modifier, the CYL, HD, or REC modifier is ignored.

COMMAND	CODE	COUNT	NOTE(S)
DIAG LOAD	53	1	
DIAG WRITE	73	512	
ERASE	11*	0	CYL, HD, REC, KEY AND DATA
RECAL	13	1	
READ C	12	8	
READ CKD	1E**	0	KL AND DL
READ D	06	0	BC OR DL
READ DS1	44	16	

Friend CCW Commands

COMMAND	CODE	COUNT	NOTE(S)
READ HA	1A	5	
READ IPL	02	24	
READ KD	0E**	-	KL AND DL
READ MCKD	5E	-	BC OR DL
READ R0	16**	16	
READ SECTOR	22	1	
RESTORE	17	1	
READ BL	24	128	
READ RESET BL	A4	24	
SEARCH HA EQ	39	0	CYL AND HD
SEARCH ID EH	71	0	CYL, HD AND REC
SEARCH ID EQ	31	0	CYL, HD AND REC
SEARCH ID HI	51	0	CYL, HD AND REC
SEARCH KEY EQ	29	0	KEY
SEARCH KEY EH	69	0	KEY
SEARCH KEY HI	49	0	KEY
SEEK	07	0	CYL AND HD
SEEK CYL	0B	0	CYL AND HD
SEEK HEAD	1B	0	CYL AND HD
SET FM	1F	1	
SET SECTOR	23	1	
SPACE C	0F	0	KL AND DL
WRITE CKD	1D*	0	CYL, HD AND REC KEY AND DATA
WRITE D	05	0	DATA
WRITE ERASE	11*	0	KL AND DL
WRITE HA	19	0	DATA
WRITE KD	0D*	0	KEY AND DATA
WRITE R0	15*	0	CYL, HD AND REC KEY AND DATA
WRITE SCKD	01*	0	CYL, HD AND REC KEY AND DATA

TAPE CCW COMMANDS

COMMAND	CODE	COUNT	NOTE(S)
BSB	27	1	
BSF	2F	1	
DMS	0B	1	
DSE	97	1	
ERG	17	1	
FSB	37	1	
FSF	3F	1	
LWR	8B	-	DATA
MS hh	hh	1	
RDF	02	-	BC OR DL
READ	02	-	BC OR DL

COMMAND	CODE	COUNT	NOTE(S)
RDB	0C	-	BC OR DL
READ BACK	0C	-	BC OR DL
READ BACKWARD	0C	-	BC OR DL
RTIE	1B	1	
REW	07	1	
RUN	0F	1	
SENSE RESERVE	F4	24	
SENSE RELEASE	D4	24	
SET DIAG	4B	4	
WRT	01	-	DATA AND SLI
WRITE	01	-	DATA AND SLI
WTM	1F	1	

OTHER CCW COMMANDS

COMMAND	CODE	COUNT	NOTE(S)
DEV RELEASE	94	24	
DEV RESERVE	B4	24	
HEX hh	hh	1	
NOP	03	1	
READ	02	-	
SENSE	04	24	
SENSE ID	E4	7	
TIC	08	-	SAME AS TIC *-8
TIC *+j	08	-	
TIC *-j	08	-	
UNCOND RESERVE	14	24	
WRITE	01	-	

FRIEND CCW MODIFIERS

There are four types of CCW modifiers:

- Command code modifiers,

- Flag byte modifiers,

- Byte count modifiers,

- Data value modifiers.

NOTE

In the following descriptions, the symbols j, k, and n represent numbers. Unless stated otherwise, j and k can be a decimal value, 1 - 65535, or a hex value, X1 - Xffff. n must be a decimal number, 1 - 65535.

COMMAND CODE MODIFIERS

The following modifier can be used to alter the basic CCW command code:

MT

This modifier can be used only with CKD DASD CCW to change the basic CCW to the multi-track version of the same CCW.

FLAG BYTE MODIFIERS

The CCW flag byte value is determined by the following modifiers:

CC

Set the Chain-Command flag.

NOTE

The command chaining flag bit is set in each CCW created (except the last). Use the CC modifier when replacing a CCW in a CCW chain. See the REPLACE command.

DC

Set the Chain-Data flag.

FLAG xx

Set the flag byte in the CCW to the value xx. xx must be two hex digits. CCW bits 36 - 39 can not be set to 1, only CCW bits 32 - 35 can be set.

```
bit 32 (x'80') = Chain-Data flag
bit 33 (x'40') = Chain-Command flag
bit 34 (x'20') = Suppress-Length-Indication flag
bit 35 (x'10') = Skip (suppress data transfer)
```

SKIP

Set the Skip (suppress data transfer) flag.

SLI

Set the Suppress-Length-Indication flag.

BYTE COUNT MODIFIERS

The CCW byte count can be set using the following modifiers:

BC j

The BC modifier sets the CCW byte count to the value j. The BC modifier overrides the CCW byte count that is implied by the DATA, KEY DL, KL, FROM, INTO, or USING modifiers. However, BC may not specify a value that is larger than the data area that is assembled by the DATA, KEY, DL, KL, FROM, INTO, or USING modifiers.

DATA VALUE MODIFIERS

The data value can be modified using the following modifiers:

```
DATA [ n ] Xhh...
KEY  [ n ] Xhh...
```

An unnamed data area of size n will be used. The data area will be initialized to the hex data specified. If n is omitted, the area size defaults to the number of bytes specified by the data pattern. The KEY modifier is ignored if the CCW is not a CKD DASD CCW that requires the key field data to be specified. The FROM, INTO and USING modifiers may not be used with the DATA or KEY modifier.

NOTE

n MUST be specified in decimal.

```
DATA [ n ] Cx...
KEY  [ n ] Cx...
```

An unnamed data area of size n will be used. The data area will be initialized to the character data specified. If n is omitted, the area size will be set to the number of characters in the data pattern. The KEY modifier is ignored if the CCW is not a CKD DASD CCW that requires the key field data to be specified. The

NOTE

n MUST be specified in decimal.

DL j
KL j

These modifiers will use an unnamed data area that is initialized
to binary zero. j is the size of the area. The KL modifier is
ignored if the CCW is not a CKD DASD CCW that requires the key
field length to be specified. The FROM, INTO and USING modifiers
may not be used with the DL or KL modifiers.

FROM [j] $x
INTO [j] $x
USING [j] $x

The USING command points to the symbolic area $x that will be
used. If the area is defined, and if j is specified, only the
first j bytes of the area will be used. j can not be greater
than the size of the area. If the area has not been defined, j
must be specified. The area will be defined with length j and
initialized to binary zeros. The DATA, KEY, DL, and KL modifiers
may not be used if the FROM, INTO, or USING modifier is used.

CYL j
HD j
REC j

The CYL, HD, and REC modifiers are used only with CCWs for CKD
DASD. The modifiers are used to specify cylinder, head, and
record number information for the following CKD DASD CCWs:

● Write R0, Write CKD, Write SCKD, Write Erase, and Erase.

● Search HA and all forms of Search ID.

● All forms of Seek.

NOTE

These modifiers are ignored if either the FROM, INTO,
USING, DL or DATA modifier is specified.

APPENDIX A

OPERATION EXAMPLES

EXAMPLE 1

Read record 10 on cylinder 202 head 13. The record is known to have a four byte key field and a 100 byte data field.

```
INIT,ALL
DEVICE,SYSUT1 1
SEEK, CYL 202 HD 13
SEARCH ID EQ, CYL 202 HD 13 REC 9
TIC
READ CKD, KL 4 DL 100
```

EXAMPLE 2

The record in example 1 will be written. The record will have a four byte KEY field and a 100 byte DATA field. The COUNT, KEY and DATA fields will be written from separate data areas using data chaining.

```
INIT,ALL
DEVICE,SYSUT1 1
SEEK, CYL 202 HD 13
SEARCH ID EQ, CYL 202 HD 13 REC 9
TIC
WRITE CKD, CYL 202 HD 13 REC 10 KL 4 DL 100 BC 8 DC
HEX 00, DATA 4 C1234 DC
HEX 00, DATA 100 CABCDEFGH
```

EXAMPLE 3

Write and read R1 on every track of a 3350. The record will have a key length of 0 and a data length of 64.

```
INIT,ALL
* DEFINE THE DATA AREAS AND THE DEVICE
* SEEK DATA BUFFER
DEFINE,$S 6
* SEARCH DATA BUFFER
DEFINE,$I 5
* WRITE DATA BUFFER
```

```
DEFINE,$W 72
ALTER,$W X00000000001000040 8
* READ DATA BUFFER
DEFINE,$R 72
DEVICE,SYSUT1 1
* THE CCW CHAIN
SEEK, USING $S
SEARCH ID EQ, USING $I
TIC *-8
WRITE CKD, FROM $W
SEARCH ID EQ, USING $I
TIC *-8
READ CKD, INTO $R
* SPECIFY THE INCREASE AND COMPARE PARAMETERS
INCR, $S+4 2 0 1 29 $S+2 2 0 1 554
INCR, $I+4 2 0 1 29 $I   2 0 1 554
INCR, $W+4 2 0 1 29 $W   2 0 1 554
COMPARE,$W $R 8
* EXECUTE THE CHAIN (16650 TIMES)
GO
```

APPENDIX B

STCPOST FRIEND MESSAGES

STCPOST STANDARD ERROR MESSAGE

All STCPOST functions and diagnostics use a standard I/O opera-
tion checking routine. This routine issues a standard error mes-
sage for errors that occur. This error message appears with a
different message number, depending on which function or diagnos-
tic is being executed. The format of this standard error message
is:

```
STCxxxx      message 1                              TIME hh.mm.ss
    or
DIAGxxxx
             message 2
             DEV Oaaa CC b STATUS ccdd RBC eeee ECB ff CPU gg PATH hhhh
             SENSE ii..ii
             SEEK ADDR jjjj.kkkk.11 (HEX) -- mmmm.nn.ooo (DECIMAL)
             CCW 01 pp-qq-rrrr message 3  message 4
             ...
             CCW zz pp-qq-rrrr
             END OF MESSAGE STCxxxx
```

where:

1.   STCxxxx/DIAGxxxx is the message number,

2.   hh.mm.ss is the time in hours (hh), minutes (mm) and seconds
     (ss),

3.   message 1 indicates the reason the error message was
     printed. The possible messages and their meanings are:

     a)   CSW COMMAND ADDRESS INCORRECT - The actual CCW address
          in the CSW did not match the expected CCW address in the
          CSW.

     b)   DATA COMPARE ERROR AT OFFSET +sssss - The data transfer-
          red by this CCW did not match the data expected to be
          transferred by this CCW. The mismatch occurred at offset
          sssss into the data. The expected data and the actual
          data are printed following the CCW that failed. The
          mismatched data is flagged with an *. See Appendix F
          for a description of the data format.

c) EXPECTED CSW RBC tttt - The actual CSW residual byte count eeee did not match the expected CSW residual byte count tttt.

d) EXPECTED CSW STATUS uuuu - The actual CSW status ccdd did not match the expected CSW status uuuu.

e) EXPECTED ECB vv - The actual ECB completion code ff did not match the expected ECB completion code vv. The definitions of the ECB completion codes are:

  i)   41 is a permanent error,

  ii)   42 is a data set extent violation error,

  iii) 44 is an intercepted operation (the I/O operation described by this error mesage was not performed because the previous I/O operation ended with channel end and device end separately, and error status was received with the device end), and

  iv)   7F is no error.

f) EXPECTED SENSE wwww - The actual sense bytes 0 and 1 did not match the expected sense bytes 0 and 1 (wwww).

g) OPTION IOCHECK - The error message was produced (even though no error may have occurred) because the OPTION IOCHK parameter was specified.

4. message 2 is one or more optional messages issued by the executing function.

5. aaa is the device address,

6. b is the SIO condition code,

7. ccdd is the unit (cc) and channel (dd) status from the CSW,

8. eeee is the residual byte count from the CSW,

9. ff is the Event Control Block (ECB) completion code,

10. gg is the CPU id of the CPU where the error occurred,

11. hhhh is the actual path address where the error occurred,

12. ii..ii is the sense information,

13. jjjj.kkkk.ll is the seek address cylinder (jjjj), head (kkkk) and record (ll) in hex,

14. mmmm.nn.oo is the seek address cylinder (mmmm), head (nn) and record (oo) in decimal,

15. pp-qq-rrrr is the CCW command code (pp), flags (qq) and byte count (rrrr),

16. message 3 is *FAILED* to indicate that the error occurred while executing that CCW, or blank if no error occurred while executing that CCW, and

17. message 4 is an informational message for that CCW and may or may not appear. Possible messages and their meanings are:

     a) CCW DATA - The data transferred by this CCW follows.

     b) CCW DATA UNKNOWN - The data transferred by this CCW could not be determined.

     c) DATA XFER SUPPRESSED - The skip flag was set in the CCW flag byte.

     d) FIRST nnnnn BYTES - The first nnnnn bytes of the data transferred by the CCW follow. Refer to the Option DATACNT parameter for more information.

     e) NO DATA XFERED - No data was transferred by this CCW.

STCPOST STANDARD ERROR MESSAGE EXAMPLE

The following is an example of the STCPOST standard error message
that is printed for an error that occurs while executing the
WRTREAD function.

```
STC235    EXPECTED ECB 7F                          TIME 01.15.44
          UNRECOVERABLE ERROR
          DEV 0190 CC 0 STATUS 0200 RBC 4A7D ECB 41 CPU 00 PATH 0190
          SENSE 8000000D804A2402000000000000000000000000002E0F02
          SEEK ADDR 014A.0004.10 (HEX) -- 0330.04.016 (DECIMAL)
          CCW 01 07-40-0006          CCW DATA--
          +00000 C ......
                 Z 000400
                 N 001A04
                 S 0      .
          CCW 02 1F-40-0001          CCW DATA--
          +00000 C .
                 Z 5
                 N 8
                 S 0
          CCW 03 08-40-0001
          CCW 04 23-40-0001          CCW DATA--
          +00000 C .
                 Z 1
                 N 5
                 S 0
          CCW 05 31-40-0005          CCW DATA--
          +00000 C .....
                 Z 04001
                 N 1A040
                 S 0
          CCW 06 08-40-0001
          CCW 07 0D-60-4A7D *FAILED* FIRST 100 BYTES--
          +00000 C B....V..B....V..B....V..B....V..B....V...
                 Z C14A3EB5C14A3EB5C14A3EB5C14A3EB5C14A3E...
                 N 2A3DD5C22A3DD5C22A3DD5C22A3DD5C22A3DD5...
                 S 0      .   1   .   2   .   3   .   4...
          CCW 08 22-00-0001
          END OF MESSAGE STC235
```

STCPOST FRIEND FUNCTION MESSAGES

STCK200 STCPOST FRIEND

STCPOST FRIEND is executing.

STCK201 PARAMETER ERROR (x)

The FRIEND control card contains an invalid parameter x.
The invalid parameter will be ignored.

STCK202 CONTROL CARD ERROR(S) IGNORED

The FRIEND control card contained one or more invalid
parameters. The invalid parameters have been ignored.

STCK203 ** GETMAIN FOR DATA AREAS FAILED **

FRIEND was unable to obtain the main storage that is used
to hold the CCW data areas and symbolic data areas.
Increase the amount of main storage available to STCPOST
and try again.

STCK204 ** FRIEND INITIALIZATION FAILED **

FRIEND initialization failed. This message is preceeded
by another FRIEND message that describes the problem.
Correct that problem and execute FRIEND again.

STCK205 DDNAME d, DEVICE ADDRESS a, TYPE t
[x TRACKS, FIRST TRACK IS x.x, LAST TRACK IS x.x]

The device defined by the DD card d, address a, type t is
available to FRIEND. CCW chains can be executed on this
device.

The second line is printed if the device is a CKD DASD
device, and lists the number of tracks in the allocated
dataset and the starting and ending track.

STCK206 NO CCW CHAIN AREA SELECTED --
USE THE 'DEVICE' OR 'SELECT' COMMAND

No CCW chain area is currently selected or defined.
Enter a DEVICE command to define and select a CCW chain
area.

STCK207 nK AVAILABLE FOR DATA AREAS

nK of main storage is available for FRIEND data areas.

STCK209 ----- STCPOST FRIEND INITIALIZED -----

The FRIEND function has initialized itself due to an
INITIALIZE command. All CCW chain definitions and sym-
bolic data areas have been deleted.

STCK210 CCW CHAIN n, DEVICE a IS CURRENTLY SELECTED

CCW chain area n is currently selected. FRIEND device or
CCW chain commands may be entered for this CCW chain
area. To select a different CCW chain area enter a
SELECT or DEFINE command.

STCK211 ENTER COMMAND, CCW, HELP OR END

FRIEND is waiting for command input. Enter a FRIEND gen-
eral, device or CCW command.

STCK214 DEVICE d NOT DEFINED

A DEVICE command specified a DD name or device address
that is not currently defined to FRIEND.

STCK219 ** NO CCW(S) OR TIO(S) TO EXECUTE **

A GO command was entered but there are no CCW chain areas
defined or there are no CCW chain areas with a CCW chain
defined or there are no CCW chain areas with the TIO
option in effect.

STCK220 ** NO CCW CHAIN AREA AVAILABLE **

A DEVICE command was entered but all eight CCW chain
areas are in use. The command and any additional com-
mands on the same input line have been ignored. One or
more CCW chain areas must be deleted before a new CCW
chain area can be defined. Use the DELETE, REMOVE, or
INITIALIZE command to delete one, more than one, or all
of the current CCW chain area definitions.

| STCK225 END-OF-FILE ON FRIEND COMMAND READER

The end of the FRIEND READER input file has been reached.
FRIEND will switch to the console for its command input.

| STCK226 FRIEND COMMAND READER DEFINED

The FRIEND READER command was sucessful. FREIND will
switch to the reader device for its command input.

| STCK227 ** READER DEVICE NOT ONLINE AND READY **

The FRIEND reader device could not be defined because it
is not online and ready. Insure that the device is
online and ready and issue the command again.

| STCK228 ** UNABLE TO DEFINE READER DEVICE **

The FRIEND reader device could not be defined because the
the maximum number of device definitions now exist.
Delete one test device definitioh before trying the
READER command again.

| STCK229 ** UNABLE TO OPEN READER DEVICE **

The FRIEND reader device could not be opened. Insure
that the STCPOST job JCL contains a DD card with the
ddname PSTK2RDR.

STCK231 ** BOTH CYL AND HD REQUIRED TO GENERATE SEEK ADDRESS **

A CKD DASD Seek command was entered without either the
DATA modifier or the CYL and HD modifiers. The command
and any additional commands on the same input line have
been ignored. Re-enter the CCW command and specify
either the DATA modifier (defining the 6 byte seek
address BBCCHH) or specify the CYL and HD modifiers.

STCK232 ** KL AND DL REQUIRED TO GENERATE SPACE COUNT CCW DATA **

A CKD DASD Space Count CCW was entered without either the
DATA modifier or the KL (key length) or DL (data length)
modifiers. The command and any additional commands on
the same input line have been ignored. Re-enter the CCW
command and specify either the DATA modifier (defining
the 3 byte key and data length fields) or specify the KL
and DL modifiers.

STCK233 ** CYL, HD AND REC REQUIRED TO GENERATE SEARCH CCW
DATA **

A CKD DASD Search HA or ID CCW command was entered with-
out either the DATA or CYL, HD, and REC modifiers (REC is
not required for Search HA). The command and any addi-
tional commands on the same input line have been ignored.
Re-enter the CCW command and specify either the DATA mod-
ifier (defining either the four byte HA address, CCHH, or
the five byte record address, CCHHR) or specify the CYL
and HD or CYL, HD, and REC modifiers.

STCK235 ** CYL, HD AND REC REQUIRED TO GENERATE COUNT FIELD *

A CKD DASD Format Write type CCW was entered and either
the DATA modifier or the CYL, HD, REC, KL/KEY or DL/DATA
modifiers where not specified. The command and any addi-
tional commands on the same input line have been ignored.
Re-enter the CCW command specifing either the DATA modi-
fier (defining the entire count, key and data fields) or
specify the CYL, HD, REC and the key and data field
lengths or specify data. Use either the KL or KEY modi-
fier for the key field and the DL or DATA modifier for
the data field.

STCK236 ** ERROR -- KEY LENGTH > 255 *

The KL or KEY modifier used specifies a key field length
greater than 255 bytes. The command and any additional
commands on the same input line have been ignored.
Re-enter the CCW command and specify a key field length
of 1 to 255 bytes.

STCK238 ** KL OR KEY REQUIRED TO GENERATE COUNT FIELD *

A CKD DASD Format Write type CCW command was entered and
the CYL, HD and REC modifiers were used but the KL or KEY
modifier was not. The command and any additional com-
mands on the same input line have been ignored. Re-enter
the CCW command and specify the CYL, HD, REC, KL, or KEY,
and the DL or DATA modifiers.

STCK239 ** ERROR -- KEY AND DATA FIELDS > 65535 BYTES *

A CKD DASD Write or Read CCW was entered but the count,
key, and data field lengths exceed 65535 bytes. The com-
mand and any additional commands on the same input line
have been ignored. Re-enter the CCW command and specify
fewer key or data field bytes.

STCK241 ** CCW CHAIN AREA n CCW BUFFER FULL *

The CCW chain area n contains 32 CCWs. No additional
CCWs can be entered for the CCW chain area. The command
and any additional commands on the same input line have
been ignored.

STCK242 NO DEVICES AVAILABLE -- CHECK DEVICE DEFINITIONS

No devices are defined for FRIEND use. Check the device
definitions.

STCK244 DDNAME d, DEVICE ADDRESS a, TYPE t
[x TRACKS, FIRST TRACK IS x.x, LAST TRACK IS x.x]

The device defined by the DD card d, address a, type t is
available to FRIEND. CCW chains can be executed on this
device.

The second line is printed if the device is a CKD DASD
device, and lists the number of tracks in the allocated
dataset and the starting and ending track.

STCK245 CCW CHAIN n / DEVICE a, DDNAME d

CCW chain area n is currently assigned to device a.
Device a is defined by DD card d.

STCK246 n CCW CHAIN AREAS(S) AVAILABLE

n CCW chain areas are currently unused and available.

STCK247 ** EXTRA DATA IGNORED -- x **

A FRIEND command or CCW command was followed by extra
data x. The extra input data has been ignored.

STCK248 DEFINITION OF AREA xx WILL BE REPLACED

A command has specified a new size or data content for
the symbol data area xx. The old definition of the area
has been replaced by the new definition.

STCK251 CCW CHAIN n / DEVICE a --

This message is the response to a CCW command. The cur-
rent state of CCW chain area n is displayed.

STCK252 CHAIN n / CCW m = cc-ff-bbbb [USING $x]

CCW m has been added to or has been replaced in CCW chain
area n. The new CCW command code is cc, the flag byte ff
and the byte count is bbbb. The first sixty-four bytes
of the CCW data follows this message.

STCK253 CCW CHAIN n /DEVICE a DELETED

CCW chain area n has been deleted. The area was assigned
to device a.

STCK254 ** STORAGE NOT AVAILABLE FOR CCW DATA AREA **

The amount of storage required to assemble a CCW data
area exceeds the storage currently available. The com-
mand and any additional commands on the same input line
have been ignored. Re-enter the CCW command and specify
a smaller CCW byte count or initialize the FRIEND func-
tion using the INITIALIZE,ALL command.

| **STCK255 ** STORAGE NOT AVAILABLE TO DEFINE xx ****

FRIEND is unable to define the symbolic area xx because
there is not enough storage available. Storage allocated
to symbolic areas is not released or reclaimed unless an
INITIALIZE,ALL command is entered.

STCK256 AREA $x DEFINED

The symbolic data area $x has been defined.

STCK257 AREA $x IS n BYTES

This is the response to a DISPLAY command. Symbolic data
area $x is currently defined as n bytes.

STCK258 NO SYMBOLIC AREAS DEFINED

This is the response to a DISPLAY command when no sym-
bolic data areas are defined.

STCK259 OUTPUT, x

This is the response to an OUTPUT command. x is the cur-
rent setting for FRIEND output routing: CONSOLE, PRINT,
or BOTH.

| **STCK260 CCW CHAIN i -- LOOP SET TO jjjjjjjj**

The GO command has set the loop count for CCW chain i to
the value jjjjjjjj because at least one INCREASE or
DECREASE command has been specified for the CCW chain.

STCK261 AREA $x IS n BYTES --

This is the response to a DISPLAY,$x command. Symbolic
data area $x is currently defined as n bytes. The con-
tents of the data area, as requested by the DISPLAY com-
mand, follow this line.

STCK262 AREA $x ALTERED

This is the response to an ALTER,$x command. The speci-
fied bytes of symbolic data area $x have been modified.

STCK263 ** MT MODIFIER IGNORED **

The MT command code modifier was ignored. Multi-Track
commands are not allowed on datasets that are not allo-
cated on full cylinder boundaries.

STCK265 ** ERROR -- CCW BYTE COUNT IS ZERO **

A CCW command was entered that did not specify the CCW
byte count and there is no default byte count. The com-
mand and any additional commands on the same input line
have been ignored. Re-enter the CCW command and specify
the DATA or DL modifier.

STCK266 ** CCW BYTE COUNT > DATA AREA SIZE **

A CCW command specified the BC modifier with a value that
is greater than the CCW byte count assembled by FRIEND.
The command and any additional commands on the same input
line have been ignored. The BC modifier can not set the
CCW byte count to a value greater than the CCW data area
size. Re-enter the CCW command and either specify a
smaller value for the BC modifier or specify a larger
data area in the DL or DATA modifier.

STCK267 ** SPACE NOT AVAILABLE FOR COMPARE ENTRY **

The maximum number of data compare entries has been
defined for a CCW chain.

STCK267 ** SPACE NOT AVAILABLE FOR DUMP ENTRY **

The maximum number of data dump entries has been defined
for a CCW chain.

STCK267 ** SPACE NOT AVAILABLE FOR DECR/INCR ENTRY **

The maximum number of decrease and increase entries has
been defined for a CCW chain.

STCK268 ** CCW CHAIN n IS NOT DEFINED **

CCW chain n can not be selected because it is not cur-
rently defined.

STCK269 ** AREA xx IS NOT DEFINED **

Symbolic area xx is not currently defined. A symbolic
area must be defined before it can be used.

STCK271 ** INVALID COMMAND -- x **

An invalid command x has been entered. The command and
any additional commands on the same input line have been
ignored.

STCK272 ** INVALID CCW MODIFIER -- x **

A CCW command specifies an invalid CCW modifier x. The
command and any additional commands on the same input
line have been ignored. Re-enter the CCW command using
the correct modifier.

STCK273 ** COMMAND NOT VALID NOW -- x **

A FRIEND device or CCW command has been entered when no
CCW chain is selected. The command and any additional
commands on the same input line have been ignored. Only
FRIEND general commands may be entered if no CCW chain
area is selected. Enter a DEVICE command to select a CCW
chain area and assign it to a device.

STCK274 ** PARM ERROR -- x -- y **

An error was detected in command x. y is either an
invalid parameter for the command or y is a description
of the error condition. The command and any additional
commands on the same input line have been ignored.
Re-enter the command and specify the correct parameter.

STCK275 ** WARNING -- x **

FRIEND has detected a condition that may or may not be
critical. x describes the condition.

STCK281 CCW CHAIN n / DEVICE a -- LOOP m --

An unusual condition has been detected on loop m of CCW chain n. The CCW chain area is assigned to device a. The condition is one of the following:

- The loop count has been reached.

- Stop on error (HALT) is in effect and an error has been detected.

- A CCW chain or a TIO has received unusual condition code or status information.

- A data compare error has been detected.

- Data dump (DUMP) has been specified.

STCK282 ALL CCW/TIO OPERATIONS COMPLETED

All currently defined CCW chains and/or TIO operations have been completed. Enter the next FRIEND command by replying to the outstanding reply message STCK211. If this message is not currently displayed on the operator's console, enter the SAE command DISPLAY R to find out the reply id.

STCK290 ----- STCPOST FRIEND STARTING -----

| FRIEND initialization is complete.

| STCK291 FRIEND HELP INFORMATION AVAILABLE--

| This is the response to a HELP command. The five differ-
| ent help selections are listed following this line.

| STCK292 ENTER HELP SELECTION--1, 2, 3, 4, 5 OR P

| This message follows message STCK280. Reply with the
| number of the HELP selection to be displayed or to obtain
| a printer listing of all five HELP selections enter P.

| STCK293 INVALID HELP SELECTION

| The response to message STCK292 was invalid. Messages
| STCK291 and STCK292 will be repeated.

| STCK294 STCPOST FRIEND HELP INFORMATION REQUESTED

| The FRIEND control card specifies the HELP parameter.
| All five of the HELP selections are printed before FRIEND
| begins normal operation.

| STCK295 END OF STCPOST FRIEND HELP INFORMATION

| All five of the FRIEND HELP selections have been printed.

| STCK298 -C- xx..xx
| - or -
| -R- xx..xx

| The first form of this message indicates that the command
| xx..xx was read from the console. The second form of
| this message indicates that the command xx..xx was read
| from the reader device.

STCK299 ----- STCPOST FRIEND ENDING -----

        The FRIEND function is terminating. If this message
        appears and FRIEND does not terminate immediately, proba-
        bly a device that FRIEND was doing I/O to is hung. Issue
        the SAE DISPLAY A command to determine if any I/O opera-
        tions are in progress.

APPENDIX C

FRIEND COMMAND SUMMARY

Command	Required Parameters	Optional Parameters
Alter	, $x+j Xhh...|Cx...	k
CCW		, ALL
COMPARE CMPR CMP	, $x $y	j
NOCOMPARE NOCMPR NOCMP		
CSWMASK CSWMSK CM	, xxxx	
DECREASE DECREMENT DECR	, a1 s1 i1 j1 k1	a2 s2 i2 j2 k2
NODECREASE NODECREMENT NODECR		
DEFine	, $x j	
DELAY DLY	, j	
NODELAY NODLY		
DELete	, ccw	
DEVice		, addr|ddname [ccw]
Display	, $x+j [k]	

Command	Required Parameters	Optional Parameters
DUMP NODUMP	, $x	j
END		
Go		, NOPRINT|NOPRT|NP
HALT|NOHALT		
Help		
ID	, id-msg	
INCREASE INCREMENT INCR	, a1 s1 i1 j1 k1	a2 s2 i2 j2 k2
NOINCREASE NOINCREMENT NOINCR		
Initialize INIT		, ALL
Loop LP	, j	
OUTput		, Print|CONsole|BOTH PRT
PREFIX| NOPREFIX		
READER RDR		, addr type [file]|ON|OFF
REMOVE RMV		, addr|ddname
REPlace	, j	
SELECT	, ccw	
SENSEMASK SNSMSK ... SM ...	, xxxx	

Command	Required Parameters	Optional Parameters
START	, ALL	
STOP	, ALL	
TIO|NOTIO		, ALL
WAIT NOWAIT	, j	

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INDEX CONT.

INDEX CONT.

Please check or fill in the items; adding explanations / comments in the space provided.

Which of the following terms best describes your job?

[] Field Engineer   [] Manager   [] Programmer
[] Systems Analyst   [] Engineer   [] Systems Programmer
[] Sales Representative   [] Systems Engineer   [] Instructor
[] Operator   [] Student/Trainee   [] Other (explain below)
[] Systems Support Representative

How did you use this publication?

[] Introductory text   [] Reference manual   [] Student/[] Instructor text

[] Other (explain)_____

Did you find the material easy to read and understand?

[] Yes   [] No (explain below)

Did you find the material organized for convenient use?

[] Yes   [] No (explain below)

Specific criticisms (explain below)

Clarifications on pages _____

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Errors on pages _____

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