SRCCOM XVM
UTILITY MANUAL

DEC-XV-USRCA-A-D

XVM Systems

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LIST OF ALL XVM MANUALS

The following is a list of all XVM manuals and their DEC numbers, including the latest version available. Within this manual, other XVM manuals are referenced by title only. Refer to this list for the DEC numbers of these referenced manuals.

BOSS XVM USER'S MANUAL	DEC-XV-OBUAA-A-D
CHAIN XVM/EXECUTE XVM UTILITY MANUAL	DEC-XV-UCHNA-A-D
DDT XVM UTILITY MANUAL	DEC-XV-UDDTA-A-D
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FOCAL XVM LANGUAGE MANUAL	DEC-XV-LFLGA-A-D
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PREFACE

This manual describes the operation and use of the XVM/DOS system (Source Compare) utility program. It was assumed in the preparation of this manual that the reader is familiar with DIGITAL XVM hardware and operating system. If there are any questions in this area, consult the XVM/DOS User's Manual.

The sections within this manual which contain information applicable to the use of SRCCOM are referenced directly in the text. The following manuals also contain information useful in understanding and using SRCCOM:

XVM/DOS Users Manual
XVM/DOS Keyboard Command Guide

CHAPTER 1
INTRODUCTION

1.1 GENERAL DESCRIPTION

SRCCOM XVM (SRCCOM) is a utility program which compares any two symbolic programs (written in IOPS ASCII) and indicates the differences between the compared programs. This utility program is particularly useful for such functions as:

a. proofing an edited program by comparing it against the original to ensure that the desired changes were made;

b. keeping track of developmental changes by comparing old and new versions of the same program;

c. determining if two programs are the same (program identification).

In operation, the user must indicate to SRCCOM,, via the input keyboard, which program is to be regarded as the "original" against which the other is to be compared. During execution, SRCCOM outputs statements which indicate the type of modification made to the original (insertion, deletion, and changes) and the actual modification detected.

Four software switch options are provided in SRCCOM; one increases the efficiency of the comparison of programs coded in MACRO XVM (MACRO) (switch M), a second determines the form of SRCCOM output statements (switch A), a third permits input of non-printing characters to be ignored (switch C) and the fourth increases the efficiency of SRCCOM in detecting newly deleted and inserted lines.

1.1.1 Software Operating Environment

The SRCCOM utility program operates under control of the XVM/DOS operating system and requires some form of bulk storage. It uses the Monitor's I/O device handlers to achieve device independence. DECtape to DECtape or Disk to Disk comparisons with output statements sent to a line printer effect an increase in SRCCOM operating speed. This utility program can operate with either PI or API.

1.2 SPECIAL SYMBOLS

The following symbols are used throughout this program description to denote I/O teletype operations which do not result in a printed character.

SYMBOL	REPRESENTS
↴	Carriage return - line feed operation
→|	Tab
␣	Space

CHAPTER 2
OPERATION

2.1 CALLING PROCEDURE

SRCCOM is called by typing SRCCOM) after the monitor's $. When loaded, it types

```
SRCCOM XVM Vnxnnn
```

on the teleprinter and waits for your command string.

2.2 DEVICE ASSIGNMENTS

Appropriate device assignments should be made, using the Monitor ASSIGN command, prior to initiating execution of the SRCCOM program. SRCCOM .DAT slot usage is as follows:

.DAT Slot	Use
-14	Original file input
-15	New file input
-12	Output Listing
-2	Command string input
-3	Control device output

The teletype handler (TTA) should be assigned to .DAT slots -2 and -3; this is the control device. Only device handlers capable of handling .FSTAT, .READ, .SEEK, .ENTER, and IOPS ASCII data should be assigned to .DAT slots -14 and -15. Only handlers capable of handling IOPS ASCII data should be assigned to .DAT slot -12.

2.3 OPERATING SEQUENCE

When SRCCOM has been loaded into memory, it types

```
SRCCOM XVM Vnxnnn
>
```

on the teletype and waits for a command string from the user.

The user should first ready the input devices for the program to be compared, and then type his command string. It is important for the

user to follow the proper command string format; otherwise, the compare phase will not proceed as desired, or an error message will be generated. The compare phase of SRCCOM begins on termination of the command string. During the compare phase, the user has control over SRCCOM via the keyboard commands:

CTRL C	(Return to Monitor, printed as ↑C)
CTRL P	(Restart SRCCOM, printed as ↑P)

These commands are formed by depressing the CTRL key and striking the appropriate letter key. Control is normally returned to the user at the end of the compare phase. At this point, the user can type a command string to initiate another compare, or return to the monitor by typing CTRL C. CTRL C causes a return to the Monitor at any point during the operation of SRCCOM.

2.4 COMMAND STRING

The SRCCOM command string is typed after the right angle bracket (>) in the following general format.

$$w,x,y,z\leftarrow newfil \left\{\begin{matrix}:\\ \_\end{matrix}\right\} ext/oldfil \left\{\begin{matrix}:\\ \_\end{matrix}\right\} ext \Big) \quad \text{or ALT MODE}$$

where

w,x,y,z	=	switch options M,A,C,Rn
newfil	=	file name of new symbolic program
oldfil	=	file name of old symbolic program
ext	=	file name extension

If the command is terminated with an ALT MODE, SRCCOM exits to the monitor on completion of the requested task; if terminated with a carriage return SRCCOM restarts itself. The switch options M,A,C and R are defined as follows:

M Switch - Used in MACRO XVM comparisons to ignore comments and to perform space tab conversions.

A Switch - Used to specify abbreviated output format (affected lines are not printed)

C Switch - Used to ignore ASCII characters outside of the range 240-337 except for carriage return and horizontal tab characters.

Rn Switch- Used to determine the number of consecutive lines that SRCCOM must rematch in order to detect an insertion or deletion (i.e., rematch factor). This switch is written as Rn where n is any digit from 1 to 9. The default value of n is 6.

NOTE

When comparing programs which have had extensive modifications made in relatively small areas, the value of n in the R switch should be 6 or higher. Smaller values of n may result in erroneous SRCCOM reports.

Examples:

a. To compare MACRO program NEWFIL to MACRO program ORGFIL (with M switch on) type:

```
M←NEWFIL:SRC/ORGFIL:SRC)
```

b. To compare MACRO program NEWFIL to MACRO program ORGFIL with all switches on, type:

```
C,M,A,R5←NEWFIL  SRC/ORGFIL  SRC)
```

c. To compare two programs with no switches on, type:

```
←NEWFIL  SRC/ORGFIL  SRC)
```

2.5 USING NON-DIRECTORIED INPUT DEVICE

SRCCOM allows for comparison of a segmented paper tape with a DECtape file. When a non-directoried input device (e.g., PR) is assigned to .DAT slots -15 or -14, SRCCOM detects a physical end-of-medium at the end of input. At this point, SRCCOM types one of the following messages:

```
END OF NEW SRC--MORE?  (Y OR N?)
```

or

```
END OF ORIG SRC--MORE?  (Y OR N?)
```

If any character other than Y or N is typed, SRCCOM responds with a question mark (?) and waits for the user to type a Y or an N. If user desires more input, insert added medium into device (more paper tape into paper tape reader) and type Y.

2.6 DIRECTORIED SRCCOM LISTING

When a directoried device is assigned to .DAT slot -12, SRCCOM assumes the file name of the original program and supplies a COM extension. See example below:

```
M←NEW EXT/OLD EXT )
```

The file name and extension given to the SRCCOM listing would be:

```
OLD COM
```

CHAPTER 3
OUTPUT FORMATS

3.1 M SWITCH ON

The following paragraphs describe the general SRCCOM output formats for lines inserted, lines deleted, and lines changed with the M switch on. Examples are included in each paragraph for clarification. In each description, TAG represents the last label encountered in the program prior to the noted modification. The letter m represents the number of lines (decimal) from TAG to the last line before the modification. The letter n represents the number of lines (decimal inserted, deleted, or changed.

3.1.1 Lines Inserted

The following is the general format of unabbreviated output in the case of an insertion in the new program (M switch only).

```
n LINES INSERTED BELOW TAG+m

first line inserted
second line inserted
        .
        .
        .
```

If output is abbreviated (A Switch on also), only the following line is printed:

```
n LINES INSERTED BELOW TAG+m
```

Example

```
2 LINES INSERTED BELOW TAGONE+20

    DAC     SOME     /inserted          Unabbreviated
    ISZ     TOOB     /inserted          (A Switch off)
```

3.1.2 Lines Deleted

The following is the general format of unabbreviated output in the case of deletion in the new program (only M Switch on).

```
n LINES DELETED BELOW TAG+m

first deleted line
second deleted line
        .
        .
        .
```

If output is abbreviated (A Switch on also), only the following line is printed:

```
n LINES DELETED BELOW TAG+m
```

Example

```
3 LINES DELETED BELOW TAGONE+20

    DAC*POINT          /Deleted        Unabbreviated
    LAW THREE          /Deleted        (A Switch off)
    DAS SWITCH         /Deleted
```

3.1.3 Lines Changed

The following is the general format of unabbreviated output in the case of lines changed in the new program (M Switch on only).

```
n LINES CHANGED BELOW TAG+m

line it was changed to in the new symbolic program
line in original symbolic program

line it was changed to in the new symbolic program
next line in the original symbolic program
        .
        .
        .
```

If output is abbreviated (A Switch on also), only the following line is printed:

```
n LINES CHANGED BELOW TAG+m
```

Example

```
2 LINES CHANGED BELOW TAG+20

    DAC* POINTER     /new line
    DAC* POINT       /old line      Unabbreviated
                                    (A Switch off)
TOO LAC  FIVE        /new line
TO  LAW  THREE       /old line
```

3.2 M SWITCH OFF

The following paragraphs describe the general SRCCOM output formats for lines inserted, lines deleted, and lines changed with the M switch off. In each description, the letter n represents the number of lines (decimal) affected by the modification, and L represents the line number, also decimal. The first line of program is LINE 0.

3.2.1 Lines Inserted

The following is the general format of unabbreviated output in the case of an insertion in the new program (M Switch off).

```
n LINES INSERTED BELOW LINE L
line L
first line inserted
second line inserted
        .
        .
        .
```

If output is abbreviated (A Switch on), only the following lines are printed:

```
n LINES INSERTED BELOW LINE L
line L
```

Example:

```
12 LINES INSERTED BELOW LINE 58      Abbreviated
600   DO   30 I = 1,10   /line 58    (A Switch on)
```

3.2.2 Lines Deleted

The following is the general format of unabbreviated output in the case of a deletion in the new program (both A and M Switches off).

```
n LINES DELETED BELOW LINE L
line L
first line deleted
second line deleted
        .
        .
        .
```

If output is abbreviated (A Switch on), only the following lines are printed:

```
n LINES DELETED BELOW LINE L
line L
```

Example:

```
2 LINES DELETED BELOW LINE 300
    GO TO 500          /line L
100 A = B-C            /deleted    Unabbreviated
    WRITE (1,20)A      /deleted    (A Switch off)
```

3.2.3 Lines Changed

The following is the general format of unabbreviated output in the case of a change to the new program (both A and M Switches off).

```
n LINES CHANGED BELOW LINE L
line L
line it was changed to in the new program
line in original symbolic program
line it was changed to in the new program
next line in the original symbolic program
                .
                .
                .
```

If output is abbreviated (A Switch on), only the following lines are printed.

```
n LINES CHANGED BELOW LINE L
line L
```

Example:

```
2 LINES CHANGED BELOW LINE 38
    GO TO 500          /line 38
101 A = B-D            /new line   Unabbreviated
100 A = B-c            /old line   (A Switch off)
    READ(1,20)         /new line
    WRITE(1,20)        /old line
```

CHAPTER 4
ERROR RECOVERY

4.1 OPERATOR ERRORS

Operator errors that occur while the user is typing a command string are detected by SRCCOM. SRCCOM outputs a carriage return and line feed, accompanied by one of the following messages, before returning control to the user:

a. INVALID SWITCH
b. TOO MANY CHARS IN FILE OR EXT
c. BOTH FILES NOT SPECIFIED
d. BAD INPUT DATA
e. COM USED AS AN INPUT EXT
f. FILENAMES NOT ON INPUT DEVICES
g. IMPROPER DATA MODE

To recover from one of the above errors, the user must retype his command string in acceptable form.

4.2 SOFTWARE ERRORS

If SRCCOM look-ahead capability is exceeded because of gross differences between the two programs being compared, it types

```
LOOK-AHEAD CAPABILITY EXCEEDED AT LINE L
(actual contents of line L)
```

on the teletype, followed by

```
SRCCOM XVM Vnxnnn
>
```

to indicate that it is ready to accept a new command string.

If SRCCOM detects that there is not enough core available for its compare buffers, it outputs the following message and returns control to the monitor:

NO CORE FOR COMP BUFFS

4.3 DEVICE NOT ENABLED

If devices requested by the user in his command string are not enabled, the monitor outputs an IOPS 4 error message. To recover, enable the appropriate device, and type CTRL R on the teletype. (CTRL R is formed by depressing the CTRL key and striking the letter R and is printed as ↑R).

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