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**User/Programmer Guide for UCMD 84—^(M)
Edit of a Macro for a Drawing
on the Table**

Donald K. Robbins

MASTER

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User/Programmer Guide for UCMD 84 ^(M)

Edit of a Macro for a Drawings on the Table

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ABSTRACT

This document describes program UCMD 84 -- an Applicon AGS/870 User Command for editing a MACRO using the HP 2644/5 and returning it to the drawings on the table.

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CONTENTS

	Page
1.0 Introduction	7
2.0 Execution Instructions	7
2.1 Input	7
2.2 Output	7
2.3 Operating Procedure	8
2.4 Error Messages	8
2.5 Example	8
3.0 UCMD 84 Program Documentation	11
3.1 Documentation Guidelines	11
3.2 Date of Documentation	11
3.3 Name of Program	11
3.4 Name of Author of Program	11
3.5 Name of Program Administrator	11
3.6 Date Program was Completed	11
3.7 Brief Description of Program	11
3.8 Full Narrative Description of Program	12
3.8.1 General	12
3.8.2 Initialization	12
3.8.2.1 I/O Buffers	12
3.8.2.2 Arrays	13
3.8.3 Options	13
3.8.4 RUN1	14
3.8.5 FOUND	14
3.8.6 STOR	15
3.8.7 END	15
3.8.8 Subroutines	15
3.8.8.1 Utilities	15
3.8.8.2 STR.CMD	16
3.8.8.3 DECODE.SECTOR	16
3.9 Hardware Configuration Required	17
3.10 Language Used	17
3.11 Operating System Used	17
3.12 Type of Program	17
3.13 Special Routines Used	17
3.14 Form of Program	17
3.15 Program Flow Chart	18
3.16 Program Listing	20
3.17 Backup Capability	20
4.0 Record of Changes to the Program	20
5.0 Key Words	20
6.0 References	21
7.0 Distribution	22

1.0 Introduction

MACROS are normally edited for a drawing (which is on the table) by keying in the complete MACRO from the keyboard. UCMD 84 allows a MACRO to be displayed on the screen of the HP 2644/5. The editing capability of the HP 2644/5 is used and then the edited MACRO can be added to the dictionary of the drawing on the table.

2.0 Executing Instructions

The Applicon Graphics System (AGS) provides a dictionary for a drawing. UCMD 84 provides a mechanism for obtaining a MACRO from a drawing dictionary on the table and for editing that MACRO with the HP 2644/5. This MACRO is then returned to the dictionary.

2.1 Input

UCMD 84 is executed from an AGS activity.

The MACRO name is input from the keyboard. This MACRO will be found and displayed on the screen of the HP 2644/5.

Three options are available from the keyboard. The options are:

- a. 'D'escribe This lists the options available.
- b. 'T'able This runs the program. The MACRO requested will be found and displayed on the screen of the HP 2644/5.
- c. 'A'bort This aborts UCMD 84 and returns to the AGS system

2.2 Output

The execution messages produced by UCMD 84 start with the initial prompting message to allow the user to select the appropriate option. All input is echoed back to verify what the computer sees.

2.3 Operation Procedure

UCMD 84 should be loaded and executed from the CTRL mode.

If the 'T' option is selected, UCMD 84 proceeds to request the MACRO to be selected. The dictionary of the drawing on the table is searched for the MACRO.

Escape from the MACRO name message is via '&', which will return to the beginning of the program. Also if a mistake has been made at some point then a '?' will restore the dictionary to the state it was before the activity started on the MACRO.

A MACRO can be deleted by sending '&&?'. In other words, if all of the characters in the first line of the macro are deleted, except the && and X?, then this information when ENTERed will delete the MACRO.

2.4 Error Messages

There are a few error messages which are produced if the program runs into an unexpected input.

2.5 Example

UCMD 84; UCMD 84;

USER COMMAND 84 - VERSION 1.1
EDIT OF MACRO

NEXT ENTRY IS A ONE CHARACTER OPTION. CHOICES ARE:

'D' GIVES A DESCRIPTION, 'T' RUNS THE PROGRAM,
'A' ABORTS PROG.

D;

OPTION SELECTED WAS 'D'

DESCRIPTION OF HEADINGS AND PROGRAM

DICTIONARY IS CONTAINED IN 6 SECTORS
EACH SECTOR CONTAINS 512 BYTES
COMMANDS DO NOT CROSS SECTORS

A SECTOR IS CLOSED-UP WHEN A COMMAND IS DELETED
A MACRO IS EXTRACTED AND PLACED ON THE HP SCREEN.
AFTER EDITING IT IS RETURNED TO A SECTOR WHICH HAS SPACE.
THE MACRO WILL BE DISPLAYED ON THE HP BETWEEN
PAIRS OF SYMBOLS THUS: && MACRO &? .
THIS CAN BE EDITED ON THE HP AND THEN THE CURSOR
POSITIONED AND THE ENTER KEY WILL PLACE THE EDITED
MACRO BACK INTO THE DICTIONARY.

NEXT ENTRY IS A ONE CHARACTER OPTION. CHOICES ARE:

'D' GIVES A DESCRIPTION, 'T' RUNS THE PROGRAM,
'A' ABORTS PROG.

A;

OPTION SELECTED WAS 'A'

END OF UCMD 84

UCMD 84; UCMD 84;
USER COMMAND 84 - VERSION 1.1
EDIT OF MACRO

NEXT ENTRY IS A ONE CHARACTER OPTION. CHOICES ARE:

'D' GIVES A DESCRIPTION, 'T' RUNS THE PROGRAM,
'A' ABORTS PROG.

T;

OPTION SELECTED WAS 'T'

PLEASE ENTER MACRO DESIRED

SN;

MACRO NAME WAS
SN

Y IF OKAY, N TO RETRY, S TO GO TO START ,

Y;

RESPONSE WAS Y

&&SNTU *1 1;&?;

PLEASE ENTER MACRO DESIRED

SN;

MACRO NAME WAS
SN

Y IF OKAY, N TO RETRY, S TO GO TO START ,

Y;

RESPONSE WAS Y

PREVIOUS MACRO STORED IN SECTOR 5

&&SNTU *1 2;&?;

PLEASE ENTER MACRO DESIRED

SN;

MACRO NAME WAS
SN

Y IF OKAY, N TO RETRY, S TO GO TO START ,

Y;

RESPONSE WAS Y

PREVIOUS MACRO STORED IN SECTOR 5

&&SNTU *1 2;&?;

PLEASE ENTER MACRO DESIRED

Y;

MACRO NAME WAS
?

DICTIONARY NOT CHANGED
PLEASE ENTER MACRO DESIRED
SN;

MACRO NAME WAS
SN

Y IF OKAY, N TO RETRY, S TO GO TO START ,
Y;

RESPONSE WAS Y

%%SNTU *1 2;8?

888?;

THIS MACRO DELETED
PLEASE ENTER MACRO DESIRED
8;

MACRO NAME WAS
8

NEXT ENTRY IS A ONE CHARACTER OPTION. CHOICES ARE:

'D' GIVES A DESCRIPTION, 'T' RUNS THE PROGRAM,
'A' ABORTS PROG.

A;

OPTION SELECTED WAS 'A'

END OF UCMD 84

3.0 UCMD 84 Program Documentation

3.1 Documentation Guidelines

This manual documents program UCMD 84 per "Software Documentation Guidelines and Procedures," SAND77-0188, dated March 1977.

3.2 Date of Documentation

December 1977

3.3 Name of Program

UCMD 84

3.4 Name of Author of Program

D. K. Robbins - 9624

3.5 Name of Program Administrator

Nancy Nelson - 9621

3.6 Date Program was Completed

December 1977

3.7 Brief Description of Program

UCMD 84 extracts a MACRO from a drawing on the table and displays that MACRO on the screen of the HP 2644/5. The MACRO can be edited using the HP 2644/5 and then returned to the dictionary of the drawing on the table.

3.8 Full Narrative Description of Program

3.8.1 General

UCMD 84 is written in the BCPL Programming Language.

The source code was developed on the HP 2644/5A terminal. This video interactive terminal permits easy editing of existing code. Accordingly the program is highly commented.

Because of the number of messages in the program (which causes a STATIC table overflow in the BCPL compiler), the program is separated into three segments. These are indicated by a single period on a line by itself. The global entities used by each segment must be declared.

3.8.2 Initialization

The program starts with a comment block as to what is afoot. This is followed by declaring the globals and variables used. The files AGSLIB.HDR and FILDEF.HDR are obtained with the GET command. These two files contain global declarations for the BCPL support library. Cells 1 thru 139 are accounted for by these globals. The subroutines used by UCMD 84 are setup in cells 140 thru 156.

The STATIC statements reserve locations for the various variables used in the program.

Vectors are set up for the variables which need vectors.

These vectors fall into two categories:

- a) I/O buffers (keyboard)
- b) Arrays

3.8.2.1 I/O Buffer

There are 5 KB buffers, ANS, ANS1, and YN and YN1. One buffer (BUFF) is used for storing the dictionary sector read from the disc.

3.8.2.2 Arrays

There are six arrays.

- a) NAM. A one dimensional array containing ten cells for storing the MACRO name to be used for searching.
- b) FREE. A six word array for storing the free space in each dictionary sector.
- c) CMD. A 120 word array where the MACRO extracted is stored.
- d) CMD1. A 120 word array where the edited MACRO is constructed awaiting re-entry to the dictionary.
- e) WRK1. A 80 word array where the first line of the edited MACRO is entered.
- f) WRK2. A 80 word array where the second line (if needed) of the edited MACRO is entered.

3.8.3 Options

Next, the program writes out a message to the user identifying itself (UCMD 84) and also lists the different options which are available.

The options are: 'D'escribe, 'T'able, 'A'bort.

The first character of one of the above is entered from the keyboard followed by a <CR>. This is accepted by the routine GETSTRING, packed by PACKSTRING, and listed out to the user. The option selected then goes into a multi-branch switch construct (SWITCHON) of BCPL. If any other character other than one of the above is typed, then the DEFAULT CASE rejects it and returns to 3.8.3 for another try.

- a) 'D'escribe
This CASE calls out the subroutine DESCRIP and returns to 3.8.3.
- b) 'B'us
This CASE turns SW to 1. This results in much intermediate output which was used for debussing. Control returns to 3.8.3.
- c) 'T'able
This case transfers to 3.8.4.
- d) 'A'hort.
This case transfers control to 3.8.7.
- e) Default
Any other character ends up here. A message is written to the user and control returns to 3.8.3.

3.8.4 RUN1

Control is transferred to this label if the 'T'able option is used. Through some dialogue with the user, the MACRO name is obtained. Also the NAM array is cleared. The six sectors of the dictionary are read and the free space in each one is stored in the FREE array. This information is used for re-insertion of the MACRO into the dictionary. Next the dictionary is read and searched for the MACRO name stored in NAM. If a match is made, then control is transferred to 3.8.5. If not, then control goes to 3.8.4 to look for another MACRO name. If the character '&' is entered as the response to the MACRO name, then control goes to 3.8.3. If '?' is entered, no change is made in the dictionary and control goes to 3.8.4.

3.8.5 FOUND

Control is transferred to here from 3.8.4 if a MACRO name match is found. The MACRO is extracted from the dictionary by the routine ADJUST. This closes up the space in the sector. Also the FREE array is updated. The MACRO is written out to the screen by WRITELN. Two lines are used if the MACRO was more than 60 characters long. The AGS system has a special use for the ';'. This is treated as a <CR>. A MACRO can contain the ';' symbol. There is a cell in the system which contains the ';'. To be able to read that symbol (';') on input, the cell was changed to 'Q'. After re-entry of the edited MACRO the cell is changed back. CMU.TERM is the routine where this takes place. The one or two lines of the MACRO are then edited on the HP 2644/5. When they are satisfactory, the cursor is positioned at the line and the entry key on the HP 2644/5 is pushed. The MACRO is re-constituted in CMD1 and then control is transferred to 3.8.6.

3.8.6 STOR

Here the MACRO in CMD1 is added to the sector with enough free space to accommodate it. STR.CMD is the routine which reads the proper sector, adds the MACRO, and writes the sector back to the disc for the drawing which is on the table. Control goes to 3.8.4 so that another MACRO can be selected if desired.

3.8.7 END

This terminates UCMD 84, writes a message out to that effect and returns to the AGS system.

3.8.8 Subroutines

3.8.8.1 Utilities

- a) GETSTRING. This routine reads a character from the keyboard and places it in an array.
- b) PRINTUSER. This routine prints the User's name on the output device.
- c) DEBUG. This routine tests the error cell. If zero it RETURNS. If not, it prints out the cell in octal, as well as the message.
- d) DESCRIP. This routine consists only of messages which are put out to the output device explaining the options available.
- e) UNPACK. This routine unpacks two bytes per word to an array with one byte per word, right justified.
- f) PACK. This routine packs the byte array back into the word array.
- g) PRINTBUFF. This routine decodes a word buffer and prints the bytes in octal.
- h) COMPACT. This routine compresses the space in a byte array where a dictionary entry has been removed.
- i) NAME. This routine extracts the MACRO name and puts it in the NAM array. Input is from the keyboard.
- j) COMPAR2. This routine compares NAM with the MACRO name read by DECODE.SECTOR.
- k) ADJUST. This routine reads the proper disc sector which contained the MACRO and compacts that sector. The free storage cell is also updated.
- l) DECODE.FREE. Extracts free storage count from each of six sectors and places it in FREE array.
- m) CMD.TERM. This routine sets the escape character to '@' or '!',
- n) CMD.RTN. This routine takes the bytes from the ANS array and puts them in the WRK array when the ENTER key is hit on the HP.
- o) WRITELN. This routine writes the MACRO onto the HP screen with characters to denote the MACRO limits.

3.8.8.2 STR.CMD

This routine inserts a dictionary entry at the end of the J'th sector. First the J'th sector is read from the disc and 256 words are unpacked. The MACRO contained in CMD is added in the free space available at the end of the sector. The bookkeeping entries of the sector are updated. Next the byte array is packed and written back to disc.

3.8.8.3 DECODE.SECTOR

This routine is the one where the dictionary is read. The J'th sector is read from the disc. Next the buffer is unpacked into a 512 byte array.

There are three types of entries permitted in a dictionary sector. These are: 1) Command Symbols, 2) MACROS, 3) Menus. Each entry has a two byte header. This header contains a code which tells which of the three types the entry is. The routine branches to one of three places to decode the bytes which follow according to the proper pattern.

If the type is a MACRO, then the MACRO name in NAM is compared to the MACRO name by COMPARE2. If a match is found, the MACRO is copied to CMD and a return is made to the calling routine. If the MACRO doesn't match, another command is read.

3.9 Hardware Configuration Required

UCMD 84 executes on an Applicon Graphics System using a Digital Equipment Corporation PDP-11 minicomputer. Peripheral device required for input/output operations is an HP 2644/5A.

3.10 Language Used

UCMD 84 is written in BCPL and assembled with PDP-11 MACRO. The support modules for the FIRST sub program, the user command table and sub program UCMD84.MAC are written and assembled in PDP-11 MACRO.

3.11 Operating System Used

UCMD 84 executes in the user command environment of an Applicon AGS/870 Operating System of version 7.3, or greater.

3.12 Type of Program

UCMD 84 is composed of a main program and sub programs which execute under the Applicon Operating System.

3.13 Special Routines Used

Special routines used within UCMD 84 are linked from the Applicon Library Modules LIB762.OBJ. In addition various globals are obtained from files COMMON, DADEF, and MSSDEF. The BCPL interfaces for the file structure require routines AFILE, IOS, and OFILE. The BCPL file support libraries are AGSFIL and BCPLIB. The basic BCPL functions are contained in the object module RES762, AGSLIB and LLIB. All of the above files are in UIC [1,1].

3.14 Form of Program

UCMD 84 is an absolute load module formatted for execution on the AGS System by the utility LOVALL. Due to the nature of this user command it should be resident on the system disc.

3.16 Program Listings

A current listing should be obtained from the 9624 Software Coordinator.

3.17 Backup Capability

The following DOS PIP directory shows all of the files necessary to rebuild UCMD 84. Included in this list is a file named UCMD84.BAT. This file contains all of the DOS/BATCH commands to assemble, link, and LOVALL the UCMD 84 program. The current backup tape and version should be obtained from the Software Certificate.

DIRECTORY DD0: [300,16]

10-MAY-77

AGS184.MAC	3	25-MAY-77 <233>
EDTMAC.BPL	54	25-MAY-77 <233>
UCMD84.BAT	1	25-MAY-77 <233>
UCMD84.MAC	1	25-MAY-77 <233>
UCHT84.MAC	1	25-MAY-77 <233>

4.0 Record of Changes to the Program

See Software Certificate

5.0 Key Words

Applicon Graphic system, Edit Macro.

6.0 References

- a. MACRO User Command Interface Option AGS/872 System Reference Manual, Version 3.000, Applicon Incorporated, Burlington, Massachusetts, February 1976.
- b. DOS/BATCH Handbook, DEC-11-ODBHA-A-D, Digital Equipment Corporation, Maynard, Massachusetts, April 1974.
- c. PDP-11 Processor Handbook, Digital Equipment Corporation, Maynard, Massachusetts, 1975.
- d. Glauner, T. R. MADDS User Guide AGS/700, Sandia Laboratories, Org. 9623, September 1976.
- e. BCPL User's Manual, J. M. Hudson, August 1, 1974.

7.0 Distribution

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