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User/Programmer Guide for UCMD 83

Extraction of a Macro from a File Drawing and Appending it to a Drawing on the Table

Donald K. Robbins

Prepared by Sandia Laboratories, Albuquerque, New Mexico 87115
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User/Programmer Guide for UCMD 83 ?

Extraction of a Macro from a File Drawing and Appending it to a Drawing on the Table.

Donald K. Robbins
Computer Aids System Development Division 9624
Sandia Laboratories
Albuquerque, NM 87115

ABSTRACT

This document describes program UCMD 83 -- an Applicon AGS/870 User Command for extracting a macro from a file drawing and appending it to a drawing 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 83 Program Documentation	14
3.1	Documentation Guidelines	14
3.2	Date of Documentation	14
3.3	Name of Program	14
3.4	Name of Author of Program	14
3.5	Name of Program Administrator	14
3.6	Date Program was Completed	14
3.7	Brief Description of Program	14
3.8	Full Narrative Description of Program	15
3.8.1	General	15
3.8.2	Initialization	15
3.8.2.1	I/O Buffers	15
3.8.2.2	Arrays	16
3.8.3	Options	16
3.8.4	RUN	17
3.8.5	RUN1	17
3.8.6	STOR	17
3.8.7	END	17
3.8.8	Subroutines	18
3.8.8.1	Utilities	18
3.8.8.2	STR.CMD	19
3.9	Hardware Configuration Required	20
3.10	Language Used	20
3.11	Operation System Used	20
3.12	Type of Program	20
3.13	Special Routines Used	20
3.14	Form of Program	20
3.15	Program Flow Chart	21
3.16	Program Listing	23
3.17	Backup Capability	23
4.0	Record of Changes to the Program	23
5.0	Key Words	23
6.0	References	24
7.0	Distribution	25

*

1.0 Introduction

Macros are normally added to a drawing (which is on the table) by keying in the complete macro from the keyboard. UCMD83 allows a macro to be obtained from any drawing in the system and for that macro to be appended to the drawing on the table (if there is space available).

2.0 Executing Instructions

The Applicon Graphics System (AGS) provides a dictionary for a drawing. UCMD 83 provides a mechanism for obtaining a a macro from any drawing dictionary in the system and for appending that macro to the drawing on the table.

2.1 Input

UCMD 83 is executed from an AGS activity.

The FILENAME [GROUP,USER] and macro name are input from the keyboard. This macro will be found and appended to the drawing on the table.

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 appended to the drawing on the table.

c. 'A'bort — This aborts UCMD 83 and returns to the AGS system

2.2 Output

The execution messages produced by UCMD 83 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. If an illegal option is selected, then this is noted along with the opportunity to retry.

*

2.3 Operation Procedure

UCMD 83 should be loaded and executed from the CTRL mode. If the 'T' option is selected, UCMD 83 proceeds to request the macro to be added to the dictionary of the drawing on the table.

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 83;   UCMD 83;
 USER COMMAND 83 - VERSION 1.1
 ADD TO DICTIONARY


 NEXT ENTRY IS A ONE CHARACTER OPTION. CHOICES ARE
                                        D,R,A;

 'D' GIVES A DESCRIPTION, 'R' RUNS THE PROGRAM,
 'A' ABORTS PROG.


D;


 OPTION SELECTED WAS 'D'

 THE PURPOSE OF THIS PROGRAM IS TO FIND A MACRO
 IN A FILENAME [GROUP,USER] DICTIONARY AND TO APPEND
 IT TO A DRAWING ON THE TABLE.  IF SEVERAL MACROS FROM
 A DRAWING ARE DESIRED, THE USER CAN ADD THESE
 SUCCESSIVELY WITHOUT RE-ENTERING THE FILENAME
 [GROUP,USER].


 NEXT ENTRY IS A ONE CHARACTER OPTION. CHOICES ARE
                                      D,R,A,

 'D' GIVES A DESCRIPTION, 'R' RUNS THE PROGRAM,
 'A' ABORTS PROG.


A;


 OPTION SELECTED WAS 'A'


 END OF UCMD 83
```


*

```
UCMD 83;   UCMD 83;
 USER COMMAND 83 - VERSION 1.1
 ADD TO DICTIONARY


 NEXT ENTRY IS A ONE CHARACTER OPTION. CHOICES ARE
                                          D,R,A,

 'D' GIVES A DESCRIPTION, 'R' RUNS THE PROGRAM,
 'A' ABORTS PROG.


R;


 OPTION SELECTED WAS 'R'


 PLEASE ENTER DRAWING NAME AND GROUP,USER ID IN FORM
 NAME [GROUP,USER]
DKR2 [D,R];


 FILE NAME GROUP,USER ID WAS
 DKR2 [D,R]

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


Y;


 RESPONSE WAS Y
 PLEASE ENTER MACRO DESIRED
M;


 MACRO NAME WAS
 M

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


Y;


 RESPONSE WAS Y
 THE MACRO SELECTED WAS


MMODE *1
 NOT ENOUGH SPACE IN ANY SECTOR TO STORE MACRO

 END OF UCMD 83
```

```
R;

 OPTION SELECTED WAS 'R'

 PLEASE ENTER DRAWING NAME AND GROUP,USER ID IN FORM
 NAME [GROUP,USER]
DKR2 [D,R];

 FILE NAME GROUP,USER ID WAS
 DKR2 [D,R]

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

N;

 RESPONSE WAS N

 PLEASE ENTER DRAWING NAME AND GROUP,USER ID IN FORM
 NAME [GROUP,USER]
DKR6 [D,R];

 FILE NAME GROUP,USER ID WAS
 DKR6 [D,R]

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

Y;

 RESPONSE WAS Y
 PLEASE ENTER MACRO DESIRED
FO;

 MACRO NAME WAS
 FO

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

Y;

 RESPONSE WAS Y
 DIDN'T FIND FILE [GROUP,USER]

 PLEASE ENTER DRAWING NAME AND GROUP,USER ID IN FORM
 NAME [GROUP,USER]
```

```
R;

 OPTION SELECTED WAS 'R'

 PLEASE ENTER DRAWING NAME AND GROUP,USER ID IN FORM
 NAME [GROUP,USER]

DKR2 [D,R];

 FILE NAME GROUP,USER ID WAS
 DKR2 [D,R]

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

Y;

 RESPONSE WAS Y
 PLEASE ENTER MACRO DESIRED

&;

 MACRO NAME WAS
 &

 NEXT ENTRY IS A ONE CHARACTER OPTION. CHOICES ARE
                                        D,R,A,

 'D' GIVES A DESCRIPTION, 'R' RUNS THE PROGRAM,
 'A' ABORTS PROG.

A;

 OPTION SELECTED WAS 'A'

 END OF UCMD 83
```

```
UCMD 83;   UCMD 83;
 USER COMMAND 83 - VERSION 1.1
 ADD TO DICTIONARY


 NEXT ENTRY IS A ONE CHARACTER OPTION. CHOICES ARE
                                          D,R,A,

 'D' GIVES A DESCRIPTION, 'R' RUNS THE PROGRAM,
 'A' ABORTS PROG.


R;


 OPTION SELECTED WAS 'R'


 PLEASE ENTER DRAWING NAME AND GROUP,USER ID IN FORM
 NAME [GROUP,USER]


DKR2 [D,R];


 FILE NAME GROUP,USER ID WAS
 DKR2 [D,R]

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


Y;


 RESPONSE WAS Y
 PLEASE ENTER MACRO DESIRED


G;


 MACRO NAME WAS
 G

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


Y;


 RESPONSE WAS Y
 MACRO PRESENT ON TABLE
 PLEASE ENTER MACRO DESIRED
```

```
*

GTXT;

 MACRO NAME WAS
 GTXT

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

Y;

 RESPONSE WAS Y
 DIDN'T FIND MACRO
 PLEASE ENTER MACRO DESIRED

EDXN;

 MACRO NAME WAS
 EDXN

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

Y;

 RESPONSE WAS Y
 THE MACRO SELECTED WAS

EDXNEDIT;XEQN
 MACRO STORED IN SECTOR  2


 PLEASE ENTER MACRO DESIRED

&;

 MACRO NAME WAS
 &


 NEXT ENTRY IS A ONE CHARACTER OPTION. CHOICES ARE
                                        D,R,A,

 'D' GIVES A DESCRIPTION, 'R' RUNS THE PROGRAM,
 'A' ABORTS PROG.

A;

 OPTION SELECTED WAS 'A'
```



```
*       END OF UCMD 83
```

3.0 UCMD 83 Program Documentation

3.1 Documentation Guidelines

This manual documents program UCMD 83 per "Guidelines for 9624 System Program Documentation," dated January 15, 1975.

3.2 Date of Documentation

July 1977

3.3 Name of Program

UCMD 83

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

July 1977

3.7 Brief Description of Program

UCMD 83 extracts a macro from any drawing in the system and appends that macro to the dictionary of the drawing on the table.

3.8 Full Narrative Description of Program

3.8.1 General

UCMD 83 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 four 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 83 are setup in cells 140 thru 160.
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 two KB buffers, ANS and ANS1. One command buffer (CMD) is used for storing the macro after extraction from a file and awaiting storage to a sector.

3.8.2.2 Arrays

There are 6 arrays.

a) FNM. A one-dimensional array of 32 cells for storing the FILENAME to be used for searching.

b) GRP. A one-dimensional array containing 16 cells for storing the GROUP to be used for searching.

c) USR. A one-dimensional array containing 16 cells for storing the USER to be used for searching.

d) NAM. A one-dimensional array containing 10 cells for storing the MACRO name to be used for searching.

e) FREE. A six-word array for storing the free space in each dictionary sector.

f) CMD. A 110-word array where the macro extracted is stored.

3.8.3 Options

Next, the program writes out a message to the user identifying itself (UCMD 83) and also lists the different options which are available.

The options are 'D'escribe, 'R'un, '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'ug
This CASE turns SW to 1. This results in much intermediate output is used for debugging. Control returns to 3.8.3

c) 'R'un
This case transfers to 3.8.4

d) 'A'bort
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 RUN

Control is transferred to this label if the 'R'un option is used. Thru some dialogue with the user, the FILENAME [GROUP, USER] is obtained.

3.8.5 RUN1

Control drops to here from 3.8.4. Here, thru dialogue with the user, the Macro name desired is obtained. Next the subroutine RD.DSK is called with the names from 3.8.4 and 3.8.5. If the FILENAME [GROUP,USER] is not found, then control is returned to 3.8.4. If the Macro name is not found, control is returned to 3.8.5. The drawing on the table is checked for the presence of the macro. If it is present, a message is written and control is returned to 3.8.5. If a hit is made, the macro desired is copied from the file into the array CMD. DECODE.TABLE is called to obtain the amount of free storage available in each of the sectors for the drawing on the table. This information is stored in array FREE. This array is scanned to see if there is room to add the macro contained in CMD to any of the sectors. If not, control goes to 3.8.7, the END of UCMD83. If there is room, control goes to 3.8.6. Entering '&' for a MACRO name will return control to 3.8.4. After a MACRO has been stored, the program awaits a <CR> to proceed.

3.8.6 STOR

Here the macro in CMD 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 3.8.5 so that another macro can be selected if desired.

3.8.7 END

This terminates UCMD83, 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) FILENAME. This routine extracts the FILENAME and puts it in the FNM array. Input is from the keyboard.
j) GROUP. This routine extracts the GROUP and puts it in the GRP array. Input is from the keyboard.
k) USER. This routine extracts the USER and puts it in the USR array. Input is from the keyboard.
l) NAME. This routine extracts the Macro name and puts it in the NAM array. Input is from the keyboard.
m) COMPAR. This routine compares the GRP,USR with the GROUP, USER portion of the file structure.
n) COMPAR1. This routine compares the FNM with the FILENAME portion of the file structure.
o) COMPAR2. This routine compares NAM with the Macro name read by DECODE.SECTOR.
p) PRINTMACRO. This routine prints out CMD, which contains the Macro name and macro body.
q) DECODE.TABLE. This routine reads all six sectors for the drawing on the table and extracts the free storage available per sector and puts that information in the array FREE.
r) CHKMAC. This routine checks the drawing on the table for the presence of the MACRO to be added.

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 book-keeping 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 2 byte header. This header contains a code which tells which of the three types the entry is. The routine branches to 1 of 3 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 COMPAR2. 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 83 executes on an Applicon Graphics System using a Digital Equipment Corporation PDP-11 minicomputer. Peripheral devices required for input/output operations are a HP 2644/5A or a DECwriter.

3.10 Language Used

UCMD 83 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 UCMD83.MAC are written and assembled in PDP-11 MACRO.

3.11 Operating System Used

UCMD 83 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 83 is composed of a main program and sub programs which execute under the Applicon Operating System.

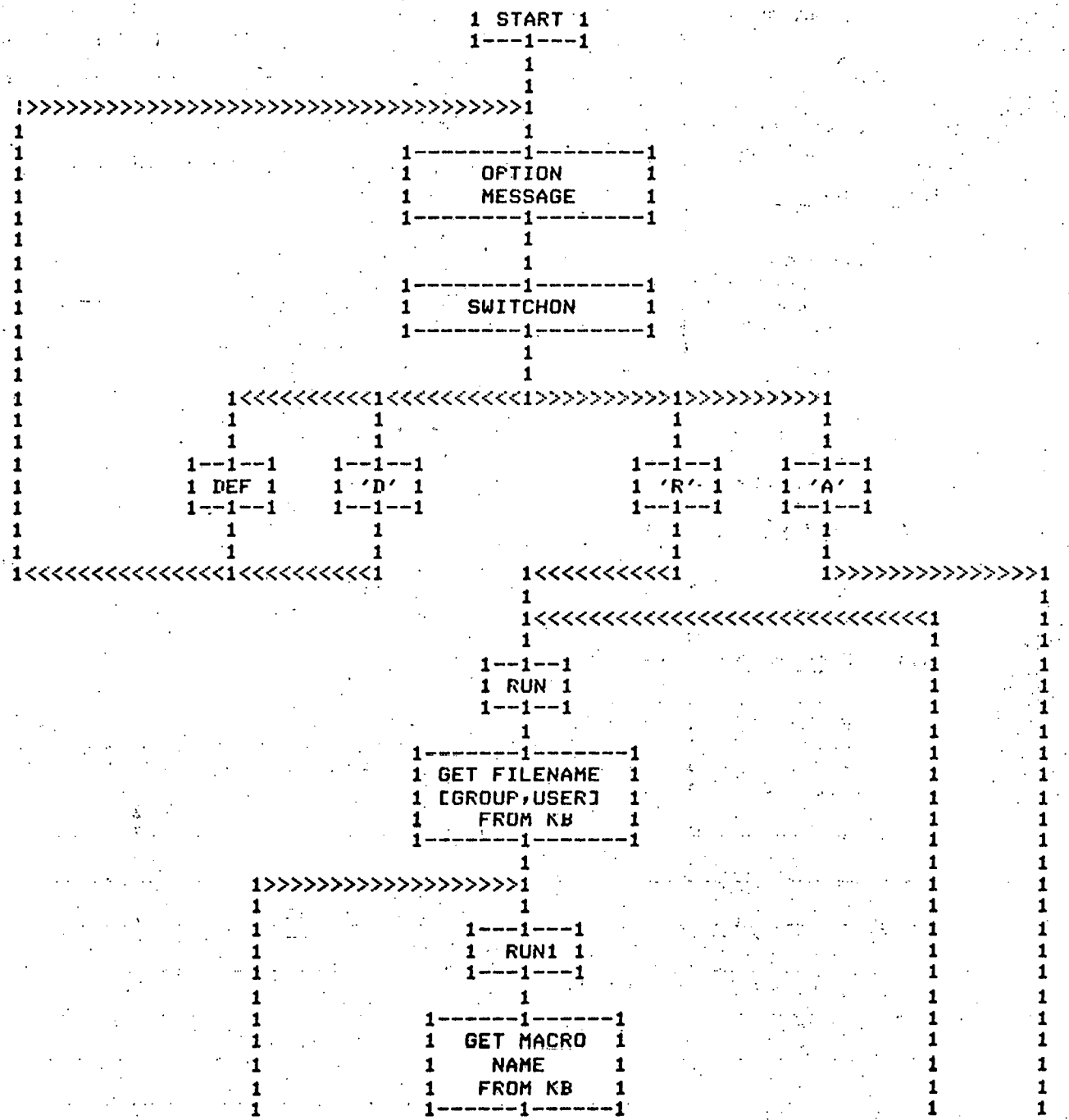
3.13 Special Routines Used

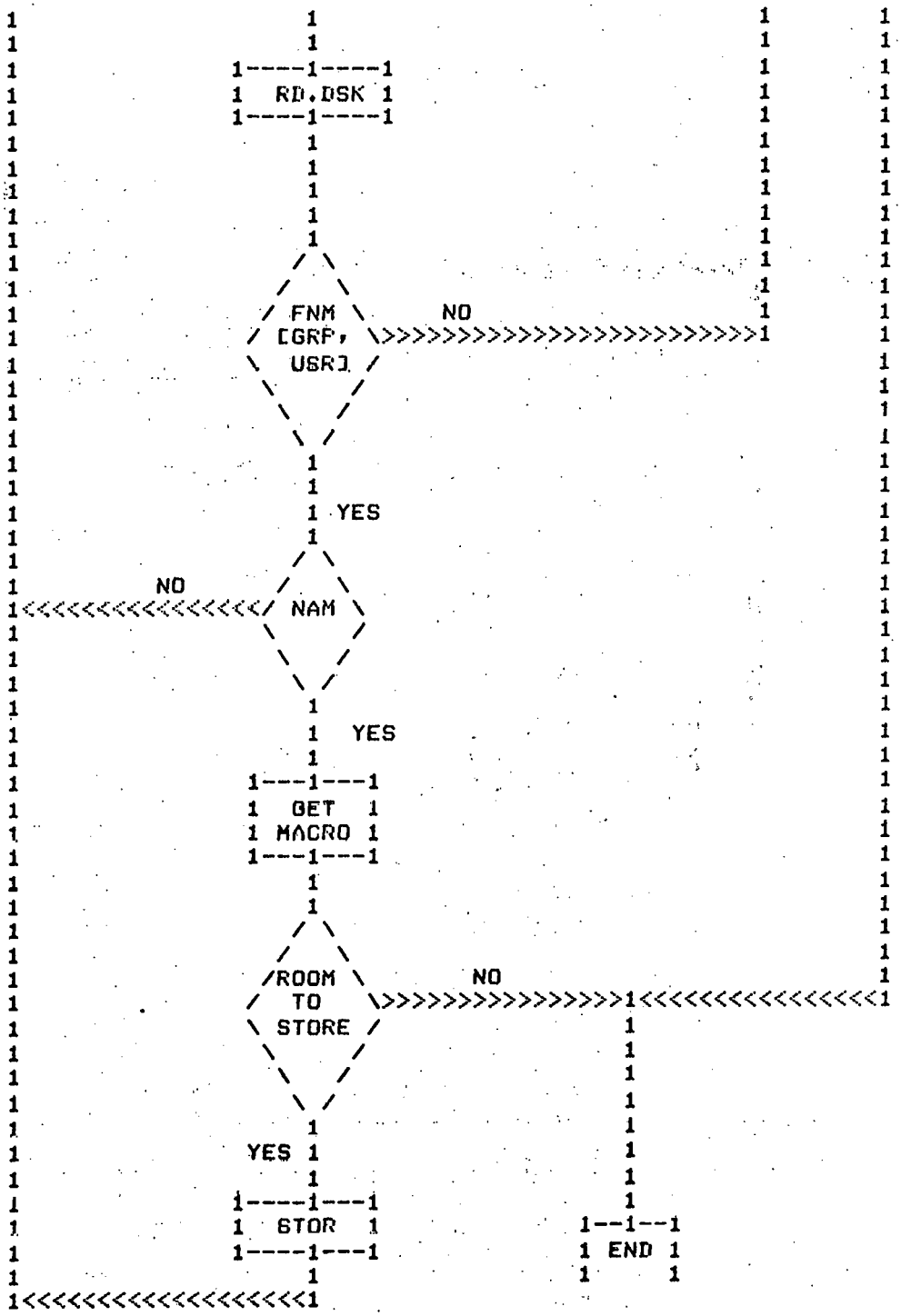
Special routines used within UCMD 83 are linked from the Applicon Library Modules LIB762.OBJ. In addition various globals are obtained from files COMMON, DADEF, and MSSDEF. The BCPL interfaces for the file structure require routines AFILE, IOS, and OFILE. The BCPL file support libraries are AGSFIL and 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 83 is an absolute load module formatted for execution on the AGS System by the utility LOVALL. Because of the nature of this user command, it should be resident on the system disc.

3.15 Program Flow Chart




RD.DSK
FNM
[GRP,
USR]
NO
YES
NAM
NO
YES
GET
MACRO
ROOM
TO
STORE
NO
YES
STOR
END

3.16 Program Listing

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 83. Included in this list is a file named UCMD83.BAT. This file contains all of the DOS/BATCH commands to assemble, link, and LOVALL the UCMD 83 program. The current backup tape and version should be obtained from the Software Certificate.

```
DIRECTORY DD0: [300,15 ]

10-MAY-77

AGS183.MAC       3  22-APR-77 <233>
DCTADD.BPL      54  10-MAY-77 <233>
UCMD83.BAT       1  28-APR-77 <233>
UCMD83.MAC       1  22-APR-77 <233>
UCMT83.MAC       1  28-APR-77 <233>
```

4.0 Record of Changes to the Program

See Software Certificate

5.0 Key Words

Applicon Graphic system, Append Macro to Dictionary

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, 1875.

d. T. R. Glauner, MADDS User Guide AGS/700, Sandia Laboratories, Org. 9623, September 1976.

e. J. M. Hudson, BCPL User's Manual, August 1, 1974.

7.0 Distribution

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