SAND77-1051
Unlimited Release

User/Programmer Guide for UCMD 81 : Map of Drawing Dictionary

Donald K. Robbins

Prepared by Sandia Laboratories, Albuquerque, New Mexico 87115
and Livermore, California 94550 for the United States Energy Research
and Development Administration under Contract AT(29—1)-789

Printed July 1977

Sandia Laboratories

SF 2900 Q(7-73)

DISCLAIMER

Issued by Sandia Laboratories, operated for the United States Energy Research & Development Administration by Sandia Corporation.

NOTICE

SAND77-1051
Unlimited release
Printed June 1977

User/Programmer Guide for UCMD 81; Map of Drawing Dictionary

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

ABSTRACT

This document describes program UCMD 81 -- an Applicon AGS/870 User Command for mapping the contents of a drawing dictionary. Input is either from a drawing file or from a drawing on the table. Output is either hard or soft copy.

Printed in the United States of America
Available from
National Technical Information Services
U. S. Department of Commerce
5285 Port Royal Road
Springfield, VA 22161
Price: Printed Copy $4.50; Microfiche $3.00

CONTENTS

1.0 Introduction

The Applicon Graphics System (AGS) provides the capability of getting a directory of the dictionary using the command DDIC. DDIC provides a listing of all the different names contained in the dictionary, as well as a number which (in a sense) represents the space available. UCMD 81 expands this capability by listing, by sectors, the commands or macros contained, as well as the number of bytes available for storage by sector. In addition, the complete macro is listed. Also for menu commands, the menu in use, dimension of the menu, and the commands assigned to each menu position are listed.

1.1 Background

The complete dictionary is contained in six disc sectors of 512 bytes each. There are 506 bytes available for storage in the first sector and 508 bytes available in each of the following five sectors. There are three types of entry in the dictionary: 1) Command Symbols (CS), 2) Macros, and 3) Menu commands. When an entry is deleted from the dictionary, its space is taken by moving following entries up. Thus the free space is at the bottom of the sector. Entries do not cross sector boundaries. Therefore, it is possible that the pieces of free storage available at the end of each sector are unusable. With the map from UCMD 81 it may be possible to shuffle the commands to make better use of the free space available.

2.0 Executing Instructions

The Applicon Graphics System (AGS) provides a mechanism for listing the contents of the dictionary by using DDIC. UCMD 81 permits a more extensive dictionary listing. Since the listing is by sector, it is possible to better ascertain where commands are stored and the space available by sector.

2.1 Input

UCMD 81 is executed from an AGS activity with a graphics display (GD) and keyboard (KB) or from an activity with a DECwriter. UCMD 81 is aware which input device is being used and inserts appropriate pauses when the GD is used. Hitting the Return Key erases the screen and displays the next page. Several options are selectable from the keyboard. The options are selected by a single letter <CR>. The options are

a. 'D'escribe — This lists the options available.

b. 'R'un — This runs the program with KB interaction to allow insertion of # FILENAME [GROUP,USER]. A search is made of the disc for this entry

c. 'A'bort — This aborts UCMD 81 and returns to the AGS system

d. 'T'able — This reads the dictionary for the drawing on the table.

2.2 Output

The execution messages produced by UCMD 81 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, or a FILENAME in an improper form is entered, then this is noted, along with the opportunity to retry.

2.3 Operation Procedure

UCMD 81 should be loaded and executed from the CTRL mode. If the 'R'un option is selected, a FILENAME [GROUP,USER] must be supplied. Opportunity is provided for inspection of the FILENAME entered. It can be retyped, or if it is not found on a search of the disc, it can be re-entered. If the 'T' option is selected, UCMD 81 proceeds at once to list out a map of the dictionary. Once execution is started, the user is guided by the messages outputted by the program.

2.4 Error Messages

During development of UCMD 81 several print statements were incorporated to trace its execution through the various functions described in Chapter 8 of the Macro Interface Manual (Ref a.).

Each of these functions produces an error number. When this error number is non-zero, it is printed with the function name.

2.5 Bail out

It is possible to bail out at a desired stage of the execution of the program by lifting Switch 0. This completes the sector currently being listed and returns to the AGS monitor. A keyboard message is displayed. SW 0 should be down before attempting to rerun.

2.6 Example

```
UCMD 81;   UCMD 81;
 USER COMMAND 81 - VERSION 1.1
 MAP OF DICTIONARY


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

 'D' GIVES A DESCRIPTION, 'R' RUNS THE PROGRAM,
 'T' DICT FROM TABLE,     'A' ABORTS PROG.


D;


 OPTION SELECTED WAS 'D'

 DESCRIPTION OF HEADINGS AND PROGRAM

 TYPES ARE
          S = COMMAND SYMBOL
          M = MACRO
          D = DIGITIZER

 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
 FOR EACH COMMAND IN THE DICTIONARY THE TYPE(TY),
 BYTE POSITION (BP), NUMBER OF BYTES USED BY THE
 COMMAND ($BT) AND THE NAME ARE LISTED


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

 'D' GIVES A DESCRIPTION, 'R' RUNS THE PROGRAM,
 'T' DICT FROM TABLE,     'A' ABORTS PROG.
```

```
T;

 OPTION SELECTED WAS 'T'


 SECTOR IS 1

 TOTAL NUMBER COMMAND SYMBOLS (CS) AND MACROS = 128
 NUMBER OF CS AND MACROS IN THIS SECTOR = 25
 UNUSED BYTES THIS SECTOR ARE  10

 TY   BP #BT NAME
  M    6  41 KJOB=CTRL;XEQ;STOR *1;XEQ;ETAB;YES;LOGO;
  M   47  37 SELA=SELC -16383 -16383 16383 16383;
  M   84  49 MAKE=EDT;REMC;P10;C10;PA20SQA;C11;;CHGA;CHGB;FL;
  S  133  10 ADD;
  S  143  10 ADD;
  S  153  10 ADD;
  S  163  10 ADD;
  M  173  12 EL=XEDT;EDT
  M  185  12 RL=XREF;REF
  M  197  29 QUIT=CTRL;XEQ;ETAB;YES;LOGO;
  M  226  13 DRC=IO 60 I;
  M  239  15 EXDRC=IO 60 G;
  S  254  14 ADD;
  S  268  12 CAL 2 1;
  D  280   7 MENU = 2, DIM =  1 X  1
  D  287   8 CURSOR MENU = 2 POS = -1,1 DF;
  D  295   8 CURSOR MENU = 2 POS = -2,1 DC;
  D  303   8 CURSOR MENU = 2 POS = -3,1 DS;
  D  311   8 CURSOR MENU = 2 POS = -4,1 DM;
  M  319  29 FORM1=UNSA;ADD 0 0 10 0;FIT;
  S  348  25 UNSA;SELC;AVTX 1;
  S  373  21 IO 50 TNGT;
  M  394  32 SLDL=ECMP Z1G04112X PATH *1 15;
  M  426  33 FL=SELA;FLCX 0 0;UNSA;EDIT;XEQN;
  M  459  43 FAR=ECMP *1 *2;XEQN;MAKE;CDEF *1;FINDW *1;
 SW 0 ON

 END OF UCMD 81
```

```
UCMD 81;   UCMD 81;
 USER COMMAND 81 - VERSION 1.1
 MAP OF DICTIONARY

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

 'D' GIVES A DESCRIPTION, 'R' RUNS THE PROGRAM,
 'T' DICT FROM TABLE,     'A' ABORTS PROG.


R;

 OPTION SELECTED WAS 'R'

 PLEASE ENTER DRAWING NAME AND GROUP,USER ID IN FORM
 NAME [GROUP,USER]
DKR1 [D,R];

 FILE NAME GROUP,USER ID WAS
 DKR1 [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]
DKR5 [D,R];

 FILE NAME GROUP,USER ID WAS
 DKR5 [D,R]

 Y IF OK, 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]

DKR1 [D,R];

 FILE NAME GROUP,USER ID WAS
 DKR1 [D,R]

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

```
S;

 RESPONSE WAS S


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

 'D' GIVES A DESCRIPTION, 'R' RUNS THE PROGRAM,
 'T' DICT FROM TABLE,     'A' ABORTS PROG.


R;

 OPTION SELECTED WAS 'R'

 PLEASE ENTER DRAWING NAME AND GROUP,USER ID IN FORM
 NAME [GROUP,USER]
DKR1 [D,R];


 FILE NAME GROUP,USER ID WAS
 DKR1 [D,R]

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


Y;


 RESPONSE WAS Y.


 SECTOR IS 1

 TOTAL NUMBER COMMAND SYMBOLS (CS) AND MACROS = 128
 NUMBER OF CS AND MACROS IN THIS SECTOR = 25
 UNUSED BYTES THIS SECTOR ARE  10

 TY  BP #BT NAME
  M   6  41 KJOB=CTRL;XEQ;STOR *1;XEQ;ETAB;YES;LOGO;
  M  47  37 SELA=SELC -16383 -16383 16383 16383;
  M  84  49 MAKE=EDT;REMC;P10;C10;PA20SQA;C11;;CHGA;CHGB;FL;
  S 133  10 ADD;
  S 143  10 ADD;
  S 153  10 ADD;
  S 163  10 ADD;
  M 173  12 EL=XEDT;EDT
  M 185  12 RL=XREF;REF
  M 197  29 QUIT=CTRL;XEQ;ETAB;YES;LOGO;
  M 226  13 DRC=IO 60 I;
  M 239  15 EXDRC=IO 60 G;
  S 254  14 ADD;
  S 268  12 CAL 2 1;
  D 280   7 MENU = 2, DIM =  1 X  1
  D 287   8 CURSOR MENU = 2 POS = -1,1 DF;
  D 295   8 CURSOR MENU = 2 POS = -2,1 DC;
  D 303   8 CURSOR MENU = 2 POS = -3,1 DS;
  D 311   8 CURSOR MENU = 2 POS = -4,1 DM;
  M 319  29 FORM1=UNSA;ADD 0 0 10 0;FIT;
  S 348  25 UNSA;SELC;AVTX 1;
```

```
 S 373  21 IO 50 TNGT;
 M 394  32 SLDL=ECMP Z1G04112X PATH *1 15;
 M 426  33 FL=SELA;FLCX 0 0;UNSA;EDIT;XEQN;
 M 459  43 FAR=ECMP *1 *2;XEQN;MAKE;CDEF *1;FINDW *1;


SECTOR IS 2

NUMBER OF CS AND MACROS IN THIS SECTOR = 33
UNUSED BYTES THIS SECTOR ARE  36

TY  BP #BT NAME
 M   4  18 SREM=IO 50 'SREM;
 S  22  11 ETXT;
 S  33  11 TEAC;
 S  44  11 DBUF;
 S  55   9 CWIN;
 S  64  12 FIT;XEQ;
 S  76  13 FWIN;XEQ;
 S  89   9 MAGD;
 S  98   9 MAGI;
 S 107  11 WIND;
 S 118  11 WINR;
 S 129  11 WINR;
 S 140  11 WINU;
 S 151   9 SELC;
 S 160   9 SELE;
 S 169   9 SELN;
 S 178   9 UNSA;
 S 187   9 UNSN;
 S 196  11 UNSV;
 S 207  25 UNSA;SELC;NAMS;XEQ;
 S 232  11 FLCX;
 S 243  11 FLCY;
 S 254  13 DFLC;
 S 267  23 UNSA;ADDS;ETXT;
 S 290   9 DCOM;
 M 299  16 DSHL=Z2G00011X;
 M 315  15 LDL=Z1G04112X;
 M 330  15 PHL=Z9UK0011X;
 D 345   8 MENU = 2, POS =  1 X  1, NAME = 1 1
 M 353  24 SADD=IO 50 'SADD *1 *2;
 M 377  27 GP1=IO 33 0 1 0 0;XEDT 16;
 S 404  11 WINL;
 M 415  61 CHGB=RPCS;PA20SQA;CDEF PA20SQD;UNSA;RPCS;C11;;CDEF C10;UNSA
;


SECTOR IS 3

NUMBER OF CS AND MACROS IN THIS SECTOR = 33
UNUSED BYTES THIS SECTOR ARE   5

TY  BP #BT NAME
 S   4  12 FTX;
 S  16  12 FTY;
 S  28  13 MTXT;
 S  41  12 ADD;
 S  53  27 UCMD 21;UNSA;XEQ;
 M  80  11 M=MODE *1;
 S  91   8 ADD;
 S  99   8 ADD;
 S 107   8 ADD;
 S 115   8 ADD;
 S 123  10 ADD;
 S 133  13 COPY;
```

```
 S 146   9 DELE;
 S 155   9 DELC;
 S 164  11 DELV;
 S 175  13 FLPX;
 S 188  13 FLPY;
 S 201  15 MARC;
 S 216  11 MOVE;
 S 227  11 RCCW;
 S 238  10 RCW;
 S 248  19 DC;
 S 267  17 DF;
 S 284  15 DS;
 S 299  12 SGRD 50;
 S 311  12 SGRD 25;
 S 323  13 DPLG;
 S 336  11 ADDV;
 S 347  14 TCW;
 S 361  36 XEDT;XREF;EDT 1 2 7 10 12;XEQ;
 S 397  38 XEDT;XREF;EDT 3 4 7 10 12;XEQ;
 M 435  29 GET=CTRL;XEQ;ADEF WR-COMP[P]
 M 464  43 CHGA=RPCS;P10;C10;;CDEF P11;CDEF C11;UNSA;


SECTOR IS 4

NUMBER OF CS AND MACROS IN THIS SECTOR = 18
UNUSED BYTES THIS SECTOR ARE  19

TY  BP #BT NAME
 S   4   9 GRID;
 S  13   9 GRID;
 S  22  11 PLCG;
 S  33  11 PLOC;
 S  44  47 XREF;XEDT;EDT 1 2 3 4 7 10 11 12;XEQ;
 M  91  34 FIND=UNSA;REMC;*1;;RPCS;*1;;XEQS;
 S 125  15 TCCW;
 M 140  86 FORMAT=CTRL;XEQ;ADEF DWG-FORMATS[COMMON] *1;EDIT;XEQN;SSIZ
7 *2;SSIZ 8 *3;M *1;FORM1;
 M 226  39 SYMB=CTRL;XEQ;ADEF DWG-FORMATS[COMMON]
 M 265  31 GETS=CTRL;XEQ;ADEF SAT-COMP[P]
 S 296  11 ADDS;
 M 307  32 SPHL=ECMP Z9UK0011X PATH *1 10;
 M 339  33 SDIMA=UCMD 21 TL 15 MT NLK CELL;
 M 372  18 GREP=RPCU;GPARTS;
 M 390  20 GREM=REMC 3;GPARTS;
 M 410   8 \=XEQS;
 S 418  27 UNSA;ADDS;ETXT 0 0;
 M 445  48 XYN2=IO 1 *1 32 1 1 1 1 *2 0 0 3 1 0 0 0 80 20;


SECTOR IS 5

NUMBER OF CS AND MACROS IN THIS SECTOR = 15
UNUSED BYTES THIS SECTOR ARE  44

TY  BP #BT NAME
 M   4  19 GP2=IO 33 1 *1 3 1
 M  23  51 FINDW=UNSA;REMC;*1;;RPCS;*1;;REMU;;FIT;MAGD;REPU;;
 S  74  11 ADDS;
 S  85  11 ADDS;
 S  96  11 ADDS;
 M 107  11 TT=IO 40 T
 M 118  24 CCDEF=COPY 0 0;CDEF *1;
 M 142  14 CL=Z8QV0011X;
 M 156  14 CP=Z9UK3772X;
 M 170  33 SDSHL=ECMP Z2G00011X PATH *1 10;
```

```
  M 203   31 SCL=ECMP Z8QV0011X PATH *1 10;
  M 234   31 SCP=ECMP Z9UK3772X PATH *1 10;
  M 265   69 LT2=SPHL 30;XEQN;SLDL 30;XEQN;SDSHL 30;XEQN;SCL 30;XEQN;SCP
 30;XEQN;
  M 334   86 XYNPLOT=XREF;FIT;WDTH *2;SELA;MOVE -*3 -*4;UNSA;XYN*1 *5 *6
;SELA;MOVE *3 *4;UNSA;FIT;
  M 420   48 XYN4=IO 1 *1 32 1 1 1 1 *2 0 0 3 1 0 0 0 40 10;


 SECTOR IS 6

 NUMBER OF CS AND MACROS IN THIS SECTOR =  4
 UNUSED BYTES THIS SECTOR ARE 226

 TY  BP #BT NAME
  M   4   69 LT4=SPHL 15;XEQN;SLDL 15;XEQN;SDSHL 15;XEQN;SCL 15;XEQN;SCP
 15;XEQN;
  M  73   71 SDIM2=SDIMA;UCMD 21 SNAP 10 TO 0 TSZ *1 NDP 3 ASZ 90 15 WSP
 31 TSP 31;
  M 144   71 SDIM4=SDIMA;UCMD 21 SNAP 10 TO 0 TSZ *1 NDP 3 ASZ 45 10 WSP
 15 TSP 15;
  M 215   71 GPARTS=AMBLES;AMBLES.PH;PRE1;POST1;POST2;POST3;GBLOCS;GERBE
R;TXT;FILM;


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

 'D' GIVES A DESCRIPTION, 'R' RUNS THE PROGRAM,
 'T' DICT FROM TABLE,     'A' ABORTS PROG.


A;


 OPTION SELECTED WAS 'A'


 END OF UCMD 81
```

3.0 UCMD 81 Program Documentation

3.1 Documentation Guidelines

This manual documents program UCMD 81 per "Guidelines for 9624 System Program Documentation," dated January 15, 1975.

3.2 Date of Documentation

June 1977

3.3 Name of Program

UCMD 81

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

April 1977

3.7 Brief Description of Program

UCMD 81 contains two options. One option searches the disc for a particular FILENAME. Another option maps the drawing which is on the table. The output is a sector by sector map of the entries (Command Symbols, Macros,Menus) contained in that sector. The number of bytes of free storage per sector is also listed. The relative starting point and length of each entry are included in the map.

3.8 Full Narrative Description of Program

3.8.1 General

UCMD 81 is written in the BCPL Programming Language

The source code was developed on the HP 2644A 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 3 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 and with references to Ref a. for intimate details for the included file manipulation routines. This is followed by declaring the globals and variables used. The files AGSLIB.HDR and FILDEF.HDR are obtained with the GET command. These 2 files contain global declarations for the BCPL support library. Cells 1 thru 139 are accounted for by these globals. The subroutines used by UCMD 81 are setup in cells 140 thru 154. The STATIC statements reserve locations for the various variables used in the program. SW1 is one of the variables which is set by the options chosen for communication with the subsequent parts of the program. It is initialized to 0 and can be a 1 (indicating 'T'able) or 2 (indicating 'R'un). Vectors are set up for the variables which need vectors. These vectors fall into 3 categories:

a) Buffer (disc),
b) I/O buffers (keyboard),
c) Buffers to hold FILENAME, GROUP name and USER name.

The first function of the program is to call DEVICE which determines whether output is to the GO or DECwriter.

3.8.3 Options

Next, the program writes out a message to the user identifying itself (UCMD 81) and also lists the different options which are available. The options are: 'D'escribe, 'R'un, 'A'bort, 'T'able. 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 a character other than one of the above is typed, then the DEFAULT CASE rejects it and returns to 3.8.3 for another try.

3.8.3.1 'D'escribe

This CASE calls out the subroutine DESCRIP and then returns to 3.8.3

3.8.3.2 'B'ug

This CASE turns SW to 1. This results in much intermediate output which was used for debugging. Control returns to 3.8.3

3.8.3.3 'R'un

This case sets SW1 to 2 and transfers to 3.8.4

3.8.3.4 'A'bort

This case transfers control to 3.8.6

3.8.3.5 'T'able

This case sets SW1 to 1 and transfers to 3.8.5

3.8.3.6 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. Three functions are performed serially here:

1) The user dialogue to get the proper FILENAME, GROUP, USER name is initiated.
2) The FILENAME, GROUP, USER are unpacked.
3) The subroutine RD.DSK is called to search the file-structure for the FILENAME, GROUP, USER.

On return from RD.DSK, if the filename is not found, control returns to 3.8.4. If the filename were found then control returns to 3.8.3.

3.8.5 TABL

Control is transferred to this label if the 'T'able option is used. The 6 disc sectors are read and each of the 256 word buffers is transferred to DECODE.SECTOR where the map for that sector is produced. Control is returned to 3.8.3 after 6 sectors have been read.

3.8.6 END

This is the termination point of UCMD 81. A message is written and control returns to the AGS system.

*

3.8.7 Subroutines

3.8.7.1 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) CLEAR.SCREEN. This routine calls the sequence of commands used to clear the Graphics Display.
f) UNPACK. This routine unpacks two bytes per word to an array with one byte per word, right-justified.
g) DEVICE. This routine exams certain cells to determine whether the device in use is the Graphics Display or the DECwriter.
h) COMPAR. This routine compares the GROUP,USER supplied from the keyboard with the GROUP,USER gotten from the disc.
i) COMPAR1. This routine compares the FILENAME supplied from the keyboard with the FILENAME gotten from the disc.
j) PRINTBUFF. This routine decodes a word buffer and prints the bytes in octal.

3.8.7.2 RD.DSK

This routine searches the drawing file structure for the FILENAME [GROUP,USER] supplied from the keyboard. The routine first reserves some vectors. These vectors fall into 4 categories:

a) A Device Block for disc
b) File Data Blocks (FDB)
c) Disc buffers
d) Buffers for FILENAME, GROUP, USER to be used for comparison.

The function SYSTEM.DISK.NAME returns the type of disc with which the system is equipped. This is stored in cell DP.

After file initialization, the system reads the file structure, checking for the GROUP,USER supplied to the subroutine as an argument. If the GROUP,USER is not found, then this is noted and return is made to the calling program. If the GROUP,USER is found, control drops to the next portion of the routine where the particular FILENAME supplied is searched for. Again if the FILENAME supplied is not found, this fact is noted and return is made to the calling program. If the FILENAME is found, then control drops to the next section where the 6 sectors which comprise the dictionary are read from the disc. DECODE.SECTOR is called for each of these, and that routine prints out the map. After all six sectors are mapped, the file structure is closed and then a return is made to the calling program.

*

3.8.7.3 DECODE.SECTOR

This routine is the one where the map is produced. The arguments supplied are 1) the 256 word array which constitutes a sector, 2) which sector it is, and 3) an indicator as to the output device (GD or DECwriter).

The first thing this routine does is to unpack the 256 word array into a 512 byte array. Next the control words at the beginning of the array are listed. These contain the number of commands in a sector, as well as the number of free bytes in the sector. In addition the first sector contains the total number of commands in all six sectors.

There are 3 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 3 types the entry is. The routine branches to 1 of 3 places to decode the bytes which follow according to the proper pattern.

The lines of output are counted, and if the output is to the Graphics Display, a pause is inserted to prevent overwriting on the screen. Hitting the Return key will erase the display and continue to the next page.

When all the commands contained in the sector are decoded, return is made to the calling program.

3.9 Hardware Configuration Required

UCMD 81 executes on an Applicon Graphics System using a Digital Equipment Corporation PDP-11 minicomputer. Peripheral devices required for input/output operations are a graphics device and a keyboard or a DECwriter.

3.10 Language Used

UCMD 81 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 UCMD81.MAC are written and assembled in PDP-11 MACRO.

3.11 Operating System Used

UCMD 81 executes in the user command environment of an Applicon AGS/870/880 Operating System of version 7.3, 8.3 or greater.

3.12 Type of Program

UCMD 81 is composed of a main program and sub programs which execute under the Applicon Operating System.

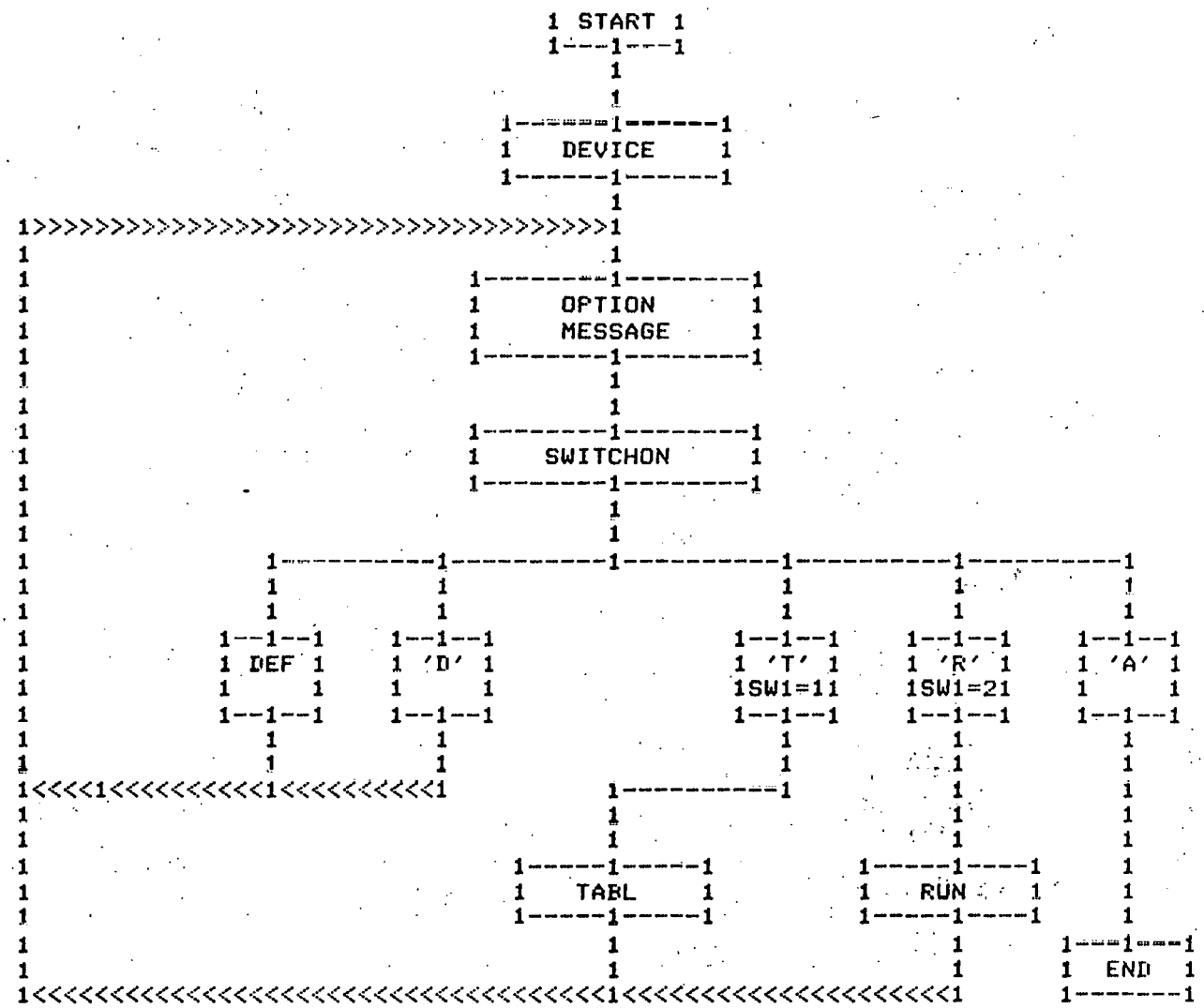
3.13 Special Routines Used

Special routines used within UCMD 81 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 81 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 Flow Chart



3.17 Program Listing

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

3.18 Backup Capability

The following DOS PIP directory shows all of the files necessary to rebuild UCMD 81. Included in this list is a file named UCMD81.BAT. This file contains all of the DOS/BATCH commands to assemble, link, and LOVALL the UCMD 81 program. The current backup tape and version should be obtained from the Software Certificate.

```
DIRECTORY DD0: [300,13 ]

13-APR-77

AGS181.MAC       4  21-FEB-77 <233>
DICTMP.BPL      54  12-APR-77 <233>
UCMD81.BAT       1  21-FEB-77 <233>
UCMD81.MAC       1  21-FEB-77 <233>
UCMT81.MAC       1  21-FEB-77 <233>
```

4.0 Record of Changes to the Program

See Software Certificate

5.0 Key Words

Applicon Graphic system, Map of 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

The Bendix Corporation
Kansas City Division
P.O. Box 1159
Kansas City, Missouri 64141
Attn: D. R. Lambeth, FD42
For: J. H. Mynatt

8323 A. G. Schuknecht
8430 W. A. Little
9620 R. W. DeVore
9621 R. A. Richards (2)
9621 N. J. Nelson
9624 Gino Carli
9624 W. C. Burd
9624 D. A. Oliver
9624 D. K. Robbins
9624 G. R. Urish
9624 K. E. Wiesandt
9624 File (5)
9624 Software Coordinator
9636 T. R. Glauner

8266 E. A. Aas (2)
3141 C. A. Permueller (5)
3151 W. L. Garner (3)
For ERDA/TIC (Unlimited Release)

ERDA/TIC (25) (R. P. Campbell, 3171-1)