

,TITLE VT15 DISPLAY VISUAL TEST EXERCISER MODULE

,EBREL

/REVISED 3/1/71

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UODSW 600014

00000 R 600014 A
00001 R 000000 A
00002 R 000000 A
00003 R 000000 A
00004 R 001525 R
00005 R 000031 R
00006 R 262461 A
00007 R 654040 A
00010 R 002000 A
00011 R 000000 A
00020 R 000000 A
00021 R 000000 A
00022 R 000000 A
00023 R 000000 A
00024 R 000000 A
00025 R 000000 A
00026 R 000000 A
00027 R 000000 A
00030 R 000000 A

SERV /SERVICE ENTRANCE
VTIN /INITIALIZATION ENTRANCE
,SIXBT !VT15 !

2000 /MASK FOR CHAIN MODE

,BLOCK 7

SYSERR 0
ERWC 0
ERCODE 0
0
0
0
0
0

000000 A
040000 A
142000 A
146000 A
140000 A
144000 A
020000 A
202000 A
202200 A
202400 A
202600 A
203000 A
203200 A
203400 A
203600 A
200020 A
220004 A
220005 A
220006 A
220007 A
210014 A
210010 A
210003 A
210002 A
210060 A
210040 A
211400 A

CHARI=000000
CHARS=040000
GY=142000
GX=146000
PY=140000
PX=144000
INT=200000
INT0=202000
INT1=202200
INT2=202400
INT3=202600
INT4=203000
INT5=203200
INT6=203400
INT7=203600
SCALE=200020
SOLID=220004
DASH1=220005
DASH2=220006
DASH3=220007
LPON=210014
LPQF=210010
OSETN=210003
OSETF=210002
ROTON=210060
ROTOF=210040
BKON=211400

/CHARACTER INPUT MODE
/CHARACTER STRING MODE
/GRAPHPLOT MODE, Y DIRECTION
/GRAPHPLOT MODE, X DIRECTION
/POINT MODE, Y DIRECTION
/POINT MODE, X DIRECTION
/INTENSIFY POINT OR VECTOR
/INTENSITY 0
/INTENSITY 1
/INTENSITY 2
/INTENSITY 3
/INTENSITY 4
/INTENSITY 5
/INTENSITY 6
/INTENSITY 7
/SET SCALE
/ENABLE SOLID LINES
/DASHED LINE, LENGTH 1
/DASHED LINE, LENGTH 2
/DASHED LINE, LENGTH 3
/ENABLE LIGHT PEN
/DISABLE LIGHT PEN
/OFFSET ON
/OFFSET OFF
/ROTATE ON
/ROTATE OFF
/BLINK ON

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211000 A BKOF=211000 /BLINK OFF
.EJECT

210300	A	EDGON=210300	/EDGE FLAG ENABLE
210200	A	EDGOF=210200	/EDGE FLAG DISABLE
214000	A	ALT=214000	/ESCAPE ON ALT MODE
216000	A	CRET=216000	/ESCAPE ON CARRIAGE RETURN
204000	A	STOP=204000	/STOP DISPLAY
220300	A	ENSTP=220300	/ENABLE STOP INTERRUPT
220240	A	ENLP=220240	/ENABLE LIGHT PEN INTERRUPT
220220	A	ENEDG=220220	/ENABLE EDGE FLAG INTERRUPT
220210	A	ENPB=220210	/ENABLE PUSHBUTTON INTERRUPT
220200	A	DISABL=220200	/DISABLE ALL INTERRUPTS
235000	A	SKIP=235000	/UNCONDITIONAL SKIP
230400	A	SKPB=230400	/SKIP IF PUSHBUTTON(S) INDICATED IS SET
230000	A	STPB=230000	/SET INDICATED PUSHBUTTON(S)
231000	A	CLPB=231000	/CLEAR INDICATED PUSHBUTTON(S)
000200	A	B0=200	/PUSHBUTTON 0
000100	A	B1=100	/PUSHBUTTON 1
000040	A	B2=40	/PUSHBUTTON 2
000020	A	B3=20	/PUSHBUTTON 3
000010	A	B4=10	/PUSHBUTTON 4
000004	A	B5=4	/PUSHBUTTON 5
236000	A	SYNC=236000	/SYNC ON LINE FREQ
232000	A	SLPSI=232000	/SKIP ON LIGHT PEN SENSE INDICATOR
234400	A	LDNM=234400	/LOAD SKIP NAME
234200	A	SPNM=234200	/SKIP ON NAME
240000	A	SAVE=240000	/SAVE MODE
260000	A	RSTR=260000	/RESTORE MODE
340000	A	SLAVE=340000	/SLAVE/PLOTTER MODE
400000	A	V0=400000	/VECTOR DIRECTION 0
402000	A	V1=402000	/VECTOR DIRECTION 1
404000	A	V2=404000	/VECTOR DIRECTION 2
406000	A	V3=406000	/VECTOR DIRECTION 3
410000	A	V4=410000	/VECTOR DIRECTION 4
412000	A	V5=412000	/VECTOR DIRECTION 5
414000	A	V6=414000	/VECTOR DIRECTION 6
416000	A	V7=416000	/VECTOR DIRECTION 7
500000	A	INCR=500000	/BASIC INCREMENT MODE
600000	A	DJMP=600000	/DISPLAY JUMP
640000	A	DJMS=640000	/DISPLAY JUMP TO SUBROUTINE
200000	A	DNOP=200000	/NO OPERATION
010000	A	LPEN=10000	/LIGHT PEN ENABLE
040000	A	VLPEN=40000	/LIGHT PEN ENABLE (VECTOR AND INCREMENT MODES)

,EJECT

703012 A	RS1=703012	/READ STATUS 1
703032 A	RS2=703032	/READ STATUS 2
703152 A	RS3=703152	/READ STATUS 3
703072 A	RPC=703072	/READ PROGRAM COUNTER
703052 A	RYP=703052	/READ Y POSITION REGISTER
703112 A	RXP=703112	/READ X POSITION REGISTER
703001 A	SPSF=703001	/SKIP ON STOP FLAG
703021 A	SPLP=703021	/SKIP ON LIGHT PEN FLAG
703041 A	SPPB=703041	/SKIP ON PUSHBUTTON FLAG
703061 A	SPEF=703061	/SKIP ON EDGE FLAG
703101 A	SPDF=703101	/SKIP ON ANY DISPLAY FLAG
703121 A	SPDI=703121	/SKIP ON ANY DISPLAY INTERRUPT FLAG
703141 A	SSLP=703141	/SKIP ON SLAVE LIGHT PEN FLAG
703161 A	SPES=703161	/SKIP ON EXTERNAL STOP FLAG
703004 A	LSD=703004	/LOAD AND START DISPLAY
703024 A	SIC=703024	/SET INITIAL CONDITIONS
703044 A	STPD=703044	/EXTERNAL STOP DISPLAY
703064 A	RES=703064	/RESUME DISPLAY AFTER FLAG

.EJECT

```
/VT15EM DIAGNOSTIC EXPLANATIONS
/
/ERCODE 1=NO STOP FLAG
/WD#1=STATUS 1
/WD#2=STATUS 2
/WD#3=STATUS 3
/WD#4=DISPLAY PC
/WD#5=X POSITION
/WD#6=Y POSITION
/
/ERCODE 2=POINTPLOT ERROR
/WD#1=GOOD X
/WD#2=GOOD Y
/WD#3=ACTUAL X
/WD#4=ACTUAL Y
/
/ERCODE 3=SHORT VECTOR ERROR
/WD#1=GOOD X
/WD#2=GOOD Y
/WD#3=ACTUAL X
/WD#4=ACTUAL Y
/WD#5=VECTOR DIRECTION
/
/ERCODE 4=GRAPHPLOT ERROR
/WD#1=GOOD X
/WD#2=GOOD Y
/WD#3=ACTUAL X
/WD#4=ACTUAL Y
/
/ERCODE 5=BASIC VECTOR ERROR
/WD#1=GOOD X
/WD#2=GOOD Y
/WD#3=ACTUAL X
/WD#4=ACTUAL Y
/WD#5=VECTOR DIRECTION
/
/ERCODE 6=CHARACTER INPUT ERROR
/WD#1=GOOD X
/WD#2=GOOD Y
/WD#3=ACTUAL X
/WD#4=ACTUAL Y
/
/ERCODE 7=API ERROR
/WD#1=STATUS 1
/WD#2=STATUS 2
/WD#3=STATUS 3
/WD#4=DISPLAY PC
/WD#5=X POSITION
/WD#6=Y POSITION
      ,EJECT
```

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00031 R 000000 A VTIN 0
00032 R 777770 A LAW =10
00033 R 040065 R DAC CNT
00034 R 200031 R LAC VTIN
00035 R 041525 R DAC SERV
00036 R 140063 R DZM API
00037 R 140064 R DZM BRK
00040 R 140020 R DZM SYSERR
00041 R 140021 R DZM ERWC
00042 R 100071 R VISTST JMS CLEAR
00043 R 100103 R JMS M14 /POINT MODE
00044 R 100276 R JMS M50 /SHORT VECTOR
00045 R 100276 R JMS M50 /AGAIN
00046 R 100276 R JMS M50 /AND AGAIN
00047 R 100175 R JMS M10 /GRAPHPLOT
00050 R 100612 R JMS M40 /BASIC VECTOR
00051 R 101151 R JMS M0 /CHARACTER INPUT
00052 R 440065 R ISZ CNT
00053 R 600042 R JMP VISTST
00054 R 601615 R JMP TERM

/TEMPORARY STORAGE
00055 R 000000 A PRINT 0 /PRINT ROUTINE POINTER
00056 R 000000 A XREG 0 /GOOD X STORAGE
00057 R 000000 A XTEMP 0 /ACTUAL X STORAGE
00060 R 000000 A YREG 0 /GOOD Y STORAGE
00061 R 000000 A YTEMP 0 /ACTUAL STORAGE
00062 R 000000 A CNT1 0
00063 R 000000 A API 0
00064 R 000000 A BRK 0
00065 R 000000 A CNT 0
00066 R 000000 A ACSAV 0
00067 R 000000 A POINT 0
00070 R 000000 A PNT 0

/CLEAR ALL DISPLAY PARAMETERS
00071 R 000000 A CLEAR 0
00072 R 101647 R JMS HOLD
00073 R 201663 R LAC (CLRDF)
00074 R 101373 R JMS GOWAIT
00075 R 620071 R JMP* CLEAR
00076 R 202020 A CLRDF INT0!SCALE!0
00077 R 211252 A LPOF!OSETF!ROTOF!BKOF!EDGOF
00100 R 220204 A DISABL!SOLID
00101 R 220300 A ENSTP
00102 R 204000 A STOP
,EJECT

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/TEST POINT MODE (MODE 14)
M14 0
00103 R 000000 A
00104 R 777774 A
00105 R 041256 R
00106 R 201664 R
00107 R 040055 R
00110 R 140060 R
00111 R 201665 R
00112 R 040172 R
00113 R 140056 R
00114 R 201666 R
00115 R 340056 R
00116 R 040173 R
00117 R 101647 R
00120 R 201667 R
00121 R 101373 R
00122 R 101507 R
00123 R 440056 R
00124 R 200056 R
00125 R 541670 R
00126 R 741000 A
00127 R 600114 R
00130 R 140056 R
00131 R 201671 R
00132 R 040173 R
00133 R 201672 R
00134 R 340060 R
00135 R 040172 R
00136 R 101647 R
00137 R 201667 R
00140 R 101373 R
00141 R 101507 R
00142 R 440060 R
00143 R 200060 R
00144 R 541670 R
00145 R 741000 A
00146 R 600133 R
00147 R 441256 R
00150 R 600106 R
00151 R 620103 R
M14A LAC (PX!INT)
TAD XREG
DAC M14DF+2
JMS HOLD
LAC (M14DF)
JMS GOWAIT
JMS ERRCHK
ISZ XREG
LAC XREG
SAD (2000)
SKP
JMP M14A
DZM XREG
LAC (PX)
DAC M14DF+2
LAC (PY!INT)
TAD YREG
DAC M14DF+1
JMS HOLD
LAC (M14DF)
JMS GOWAIT
JMS ERRCHK
ISZ YREG
LAC YREG
SAD (2000)
SKP
JMP M14B
ISZ CNT2
JMP M14+3
JMP* M14
.EJECT
/INITIALIZE TYPEOUT TEXT FOR M14
/Y COORD=0
/SAVE Y POINT WORD IN DISPLAY FILE
/X COORD=0
/COMBINE POINT MODE WITH X COORDINATE
/SAVE X POINT WORD IN DISPLAY FILE
/PLOT POINT
/ANY ERRORS?
/+1 TO X COORD
/FINISHED ALL X COORDINATES?
/YES
/NO, DO NEXT POINT
/X COORD = 0
/SAVE X POINT WORD IN DISPLAY FILE
/SAVE Y POINT WORD IN DISPLAY FILE
/PLOT POINT
/ANY ERRORS?
/+ TO Y COORD
/FINISHED ALL Y COORDINATES?
/NO, DO NEXT POINT.

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00152 R 000000 A /TEXT "POINT MODE" FOR ERROR TYPEOUT
00153 R 201673 R TM14 0
00154 R 040067 R LAC (SAVBUF
00155 R 777777 A DAC POINT /INIT POINTER
00156 R 101503 R LAW =1 /STORE SYSERR
00157 R 777773 A JMS STATUS
00160 R 101503 R LAW =5 /STORE ERWC
00161 R 201674 R JMS STATUS
00162 R 101503 R LAC (2 /STORE ERROR#
00163 R 101454 R JMS SAVXY
00164 R 200020 R LAC SYSERR
00165 R 740200 A SZA /PREVIOUS ERROR?
00166 R 101564 R JMS BRKEX /YES
00167 R 101466 R JMS RESTAT /GET STATUS
00170 R 620152 R JMP# TM14

/POINT MODE DISPLAY FILE
00171 R 203020 A M14DF INT4!SCALE!0
00172 R 000000 A 0 /MODIFIED POINT MODE
00173 R 000000 A 0 /MODIFIED POINT MODE
00174 R 204000 A STOP
,EJECT
```



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/TEST GRAPHPLOT MODE (MODE 10)
M10 0
00175 R 000000 A      LAW      =4
00176 R 777774 A      DAC      CNT2
00177 R 041256 R      LAC      (TM10)
00200 R 201675 R      DAC      PRINT
00201 R 040055 R                               /INITIALIZE TYPE TEXT FOR M10

/GRAPHPLOT IN DIRECTION X (Y COORDINATES INPUT)
00202 R 201676 R      LAC      (1)
00203 R 040056 R      DAC      XREG
00204 R 040060 R      DAC      YREG
00205 R 101647 R      JMS      HOLD
00206 R 201677 R      LAC      (M10DFI)
00207 R 101373 R      JMS      GOWAIT
00210 R 201700 R      M10X    LAC      (GX!INT)
00211 R 340060 R      TAD      YREG
00212 R 040255 R      DAC      M10DF+1
00213 R 201701 R      LAC      (M10DF)
00214 R 101373 R      JMS      GOWAIT
00215 R 101507 R      JMS      ERRCHK
00216 R 440056 R      ISZ      XREG
00217 R 440060 R      ISZ      YREG
00220 R 200060 R      LAC      YREG
00221 R 541670 R      SAD      (2000)
00222 R 741000 A      SKP
00223 R 600210 R      JMP      M10X

/GRAPHPLOT IN DIRECTION Y (X COORDINATES INPUT)
00224 R 201676 R      LAC      (1)
00225 R 040056 R      DAC      XREG
00226 R 040060 R      DAC      YREG
00227 R 201677 R      LAC      (M10DFI)
00230 R 101373 R      JMS      GOWAIT
00231 R 201702 R      M10Y    LAC      (GY!INT)
00232 R 340056 R      TAD      XREG
00233 R 040255 R      DAC      M10DF+1
00234 R 101647 R      JMS      HOLD
00235 R 201701 R      LAC      (M10DF)
00236 R 101373 R      JMS      GOWAIT
00237 R 101507 R      JMS      ERRCHK
00240 R 440060 R      ISZ      YREG
00241 R 440056 R      ISZ      XREG
00242 R 200056 R      LAC      XREG
00243 R 541670 R      SAD      (2000)
00244 R 741000 A      SKP
00245 R 600231 R      JMP      M10Y
00246 R 441256 R      ISZ      CNT2
00247 R 600200 R      JMP      M10+3
00250 R 620175 R      JMP*    M10
                                .EJECT

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00251 R 144000 A /INITIALIZE DISPLAY FILE FOR GRAPHLOT
00252 R 140000 A M10DFI PX!0
00253 R 204000 A PY!0
STOP
/MODE 10 DISPLAY FILE
00254 R 203021 A M10DF INT4!SCALE!1
00255 R 000000 A 0
00256 R 204000 A STOP
/TEXT "GRAPHLOT MODE" FOR ERROR TYPEOUT
00257 R 000000 A TM10 0
00260 R 201673 R LAC (SAVBUF
00261 R 040067 R DAC POINT /INIT POINTER
00262 R 777777 R LAW =1
00263 R 101503 R JMS STATUS /STORE SYSERR
00264 R 777773 R LAW =5
00265 R 101503 R JMS STATUS /STORE ERWC
00266 R 201703 R LAC (4
00267 R 101503 R JMS STATUS /STORE ERROR #
00270 R 101454 R JMS SAVXY
00271 R 200020 R LAC SYSERR
00272 R 740200 A SZA /PREVIOUS ERROR?
00273 R 101564 R JMS BRKEX /YES
00274 R 101466 R JMS RESTAT /GET STATUS
00275 R 620257 R JMP* TM10
.EJECT

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/TEST SHORT VECTOR MODE (MODE 50)
M50 0
00276 R 000000 A          LAW      -10
00277 R 777770 A          DAC      CNT2
00300 R 041256 R          LAC      (TM50)
00301 R 201704 R          DAC      PRINT
00302 R 040055 R          DZM      SVEC
00303 R 140556 R          DZM      NUMMOV
00304 R 140557 R
/CLEAR SHORT VECTOR WORD
/CLEAR NUMBER OF MOVES

/DIRECTION 0
M5000
00305 R 200556 R          LAC      SVEC
00306 R 340560 R          TAD      INCDR0
00307 R 040553 R          DAC      M50DF1
00310 R 201705 R          LAC      (1000)
00311 R 040060 R          DAC      YREG
00312 R 340557 R          TAD      NUMMOV
00313 R 040056 R          DAC      XREG
00314 R 140611 R          DZM      TM50A
00315 R 777775 A          LAW      -3
00316 R 040555 R          DAC      M50CTR
00317 R 101647 R          JMS      HOLD
00320 R 201706 R          LAC      (M50DF)
00321 R 101373 R          JMS      GOWAIT
00322 R 101507 R          JMS      ERRCHK
00323 R 440555 R          ISZ      M50CTR
00324 R 600320 R          JMP      -4
/ANY ERRORS?

/DIRECTION 1
M5001
00325 R 200556 R          LAC      SVEC
00326 R 340561 R          TAD      INCDR1
00327 R 040553 R          DAC      M50DF1
00330 R 201705 R          LAC      (1000)
00331 R 340557 R          TAD      NUMMOV
00332 R 040060 R          DAC      YREG
00333 R 040056 R          DAC      XREG
00334 R 201676 R          LAC      (1
00335 R 040611 R          DAC      TM50A
00336 R 777775 A          LAW      -3
00337 R 040555 R          DAC      M50CTR
00340 R 101647 R          JMS      HOLD
00341 R 201706 R          LAC      (M50DF)
00342 R 101373 R          JMS      GOWAIT
00343 R 101507 R          JMS      ERRCHK
00344 R 440555 R          ISZ      M50CTR
00345 R 600341 R          JMP      -4
/ANY ERRORS?

.EJECT

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/DIRECTION 2
M50D2  LAC  SVEC  /GET SHORT VECTOR WORD
      TAD  INCDR2 /+ DIR 2
      DAC  M50DF1 /SAVE IN DISPLAY FILE
      LAC  (1000)
      DAC  XREG
      TAD  NUMMOV
      DAC  YREG
      LAC  (2
      DAC  TM50A
      LAW  =3
      DAC  M50CTR
      JMS  HOLD
      LAC  (M50DF)
      JMS  GOWAIT
      JMS  ERRCHK  /ANY ERRORS?
      ISZ  M50CTR
      JMP  =4

/DIRECTION 3
M50D3  LAC  SVEC  /GET SHORT VECTOR WORD
      TAD  INCDR3 /+ DIR 3
      DAC  M50DF1 /SAVE DISPLAY FILE
      LAC  (1000)
      TAD  NUMMOV
      DAC  YREG
      LAC  NUMMOV
      CMA
      TAD  (1001)
      DAC  XREG
      LAC  (3
      DAC  TM50A
      LAW  =3
      DAC  M50CTR
      JMS  HOLD
      LAC  (M50DF)
      JMS  GOWAIT
      JMS  ERRCHK  /ANY ERRORS?
      ISZ  M50CTR
      JMP  =4
      .EJECT

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/DIRECTION 4
M50D4 LAC SVEC /GET SHORT VECTOR WORD
      TAD INCDR4 /+ DIR 4
      DAC M50DF1 /SAVE IN DISPLAY FILE
      LAC (1000)
      DAC YREG
      LAC NUMMOV
      CMA
      TAD (1001)
      DAC XREG
      LAC (4
      DAC TM50A
      LAW =3
      DAC M50CTR
      JMS HOLD
      LAC (M50DF)
      JMS GOWAIT
      JMS ERRCHK /ANY ERRORS
      ISZ M50CTR
      JMP ,=4

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/DIRECTION 5
M50D5 LAC SVEC /GET SHORT VECTOR WORD
      TAD INCDR5 /+ DIR 5
      DAC M50DF1 /SAVE IN DISPLAY FILE
      LAC NUMMOV
      CMA
      TAD (1001)
      DAC XREG
      DAC YREG
      LAC (5
      DAC TM50A
      LAW =3
      DAC M50CTR
      JMS HOLD
      LAC (M50DF)
      JMS GOWAIT /
      JMS ERRCHK /ANY ERRORS?
      ISZ M50CTR
      JMP ,=4
      .EJECT

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/DIRECTION 6
M50D6 LAC SVEC /GET SHORT VECTOR WORD
      TAD INCDR6 /+ DIR 6
      DAC M50DF1 /SAVE IN DISPLAY FILE
      LAC (1000)
      DAC XREG
      LAC NUMMOV
      CMA
      TAD (1001)
      DAC YREG
      LAC (6
      DAC TM50A
      LAW =3
      DAC M50CTR
      JMS HOLD
      LAC (M50DF)
      JMS GOWAIT
      JMS ERRCHK /ANY ERRORS?
      ISZ M50CTR
      JMP ,=4

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/DIRECTION 7
M50D7 LAC SVEC /GET SHORT VECTOR WORD
      TAD INCDR7 /+ DIR 7
      DAC M50DF1 /SAVE IN DISPLAY FILE
      LAC NUMMOV
      TAD (1000)
      DAC XREG
      LAC NUMMOV
      CMA
      TAD (1001)
      DAC YREG
      LAC (7
      DAC TM50A
      LAW =3
      DAC M50CTR
      JMS HOLD
      LAC (M50DF)
      JMS GOWAIT
      JMS ERRCHK /ANY ERRORS?
      ISZ M50CTR
      JMP ,=4
      ,EJECT

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```

/HAVE FINISHED ALL DIRECTIONS
/NOW TEST FOR COMPLETION OF ALL COMBINATIONS OF SHORT VECTOR AMOUNTS
00527 R 440557 R      ISZ      NUMMOV      /+ TO NUMBER OF MOVES
00530 R 200556 R      LAC      SVEC          /GET SHORT VECTOR AMOUNT
00531 R 501714 R      AND      (1600)
00532 R 541714 R      SAD      (1600)      /ARE ALL 7 MOVES IN FIRST HALF OF WORD EXECUTED?
00533 R 600540 R      JMP      ,+5          /YES
00534 R 200556 R      LAC      SVEC          /NO
00535 R 341715 R      TAD      (200)      /+1 TO FIRST HALF INCREMENT MOVE
00536 R 040556 R      DAC      SVEC
00537 R 600305 R      JMP      M50D0      /REPEAT TEST
00540 R 440556 R      ISZ      SVEC          /+1 TO SECOND HALF INCREMENT MOVE
00541 R 200556 R      LAC      SVEC
00542 R 541716 R      SAD      (1610)      /FINISHED ALL INCREMENT MODE TESTS?
00543 R 741000 A      SKP
00544 R 600305 R      JMP      M50D0      /NO, DO NEXT INCREMENT
00545 R 441256 R      ISZ      CNT2
00546 R 600301 R      JMP      M50+3
00547 R 620276 R      JMP*     M50
      .EJECT

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/MODE 50 DISPLAY FILE
00550 R 203020 A M50DF INT4:SCALE!0
00551 R 141000 A PY:1000
00552 R 145000 A PX:1000
00553 R 000000 A M50DF1 0
00554 R 204000 A STOP

/
00555 R 000000 A M50CTR 0
00556 R 000000 A SVEC 0 /SHORT VECTOR WORD
00557 R 000000 A NUMMOV 0 /NUMBER OF MOVES

/SHORT VECTOR MODE WORD FILLS
00560 R 520100 A INCDR0 520100 /DIR 0
00561 R 522110 A INCDR1 522110 /DIR 1
00562 R 524120 A INCDR2 524120 /DIR 2
00563 R 526130 A INCDR3 526130 /DIR 3
00564 R 530140 A INCDR4 530140 /DIR 4
00565 R 532150 A INCDR5 532150 /DIR 5
00566 R 534160 A INCDR6 534160 /DIR 6
00567 R 536170 A INCDR7 536170 /DIR 7

/TEXT "SHORT VECTOR" FOR ERROR TYPEOUT
00570 R 000000 A TM50 0
00571 R 201673 R LAC (SAVBUF
00572 R 040067 R DAC POINT /INIT POINTER
00573 R 777777 A LAW -1
00574 R 101503 R JMS STATUS /STORE SYSERR
00575 R 777772 A LAW -6
00576 R 101503 R JMS STATUS /STORE ERWC
00577 R 201710 R LAC (3
00600 R 101503 R JMS STATUS /STORE ERROR #
00601 R 101454 R JMS SAVXY
00602 R 200611 R LAC TM50A
00603 R 101503 R JMS STATUS /STORE VECTOR DIRECTION
00604 R 200020 R LAC SYSERR
00605 R 740200 A SZA /PREVIOUS ERROR?
00606 R 101564 R JMS BRKEX /YES
00607 R 101466 R JMS RESTAT /GET STATUS
00610 R 620570 R JMP# TM50
00611 R 000000 A TM50A 0
.EJECT

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```

/MODE 40 BASIC VECTOR
00612 R 000000 A M40 0
00613 R 201717 R LAC (TM40)
00614 R 040055 R DAC PRINT /INITIALIZE TYPEOUT TEXT FOR M40
/DIRECTION 0 (START AT 0,0)
00615 R 141150 R DZM TM40A
00616 R 140056 R DZM XREG
00617 R 140060 R DZM YREG
00620 R 201665 R LAC (PY)
00621 R 041123 R DAC M40DF+1
00622 R 201671 R LAC (PX)
00623 R 041124 R DAC M40DF+2
00624 R 200056 R M40D0 LAC XREG /GET VECTOR LENGTH
00625 R 341720 R TAD (V0!INT) /ADD TO VECTOR DIRECTION 0
00626 R 041125 R DAC M40DF1 /SAVE IN DISPLAY FILE
00627 R 777775 A LAW =3
00630 R 041121 R DAC M40CTR
00631 R 101647 R JMS HOLD
00632 R 201721 R LAC (M40DF)
00633 R 101373 R JMS GOWAIT /PLOT VECTOR
00634 R 101507 R JMS ERRCHK /ANY ERRORS?
00635 R 441121 R ISZ M40CTR
00636 R 600632 R JMP ,=4
00637 R 440056 R ISZ XREG /+1 TO DELTA X
00640 R 200056 R LAC XREG
00641 R 541670 R SAD (2000) /FINISHED DIR 0?
00642 R 741000 A SKP /YES
00643 R 600624 R JMP M40D0
/DIRECTION 1 (START AT 0,0)
00644 R 201676 R LAC (1)
00645 R 041150 R DAC TM40A
00646 R 140056 R DZM XREG
00647 R 140060 R DZM YREG
00650 R 200056 R M40D1 LAC XREG /GET VECTOR LENGTH
00651 R 341722 R TAD (V1!INT) /ADD TO VECTOR DIRECTION 1
00652 R 041125 R DAC M40DF1 /SAVE IN DISPLAY FILE
00653 R 777775 A LAW =3
00654 R 041121 R DAC M40CTR
00655 R 101647 R JMS HOLD
00656 R 201721 R LAC (M40DF)
00657 R 101373 R JMS GOWAIT /PLOT VECTOR
00660 R 101507 R JMS ERRCHK /ANY ERRORS?
00661 R 441121 R ISZ M40CTR
00662 R 600656 R JMP ,=4
00663 R 440060 R ISZ YREG /+1 TO DELTA Y
00664 R 440056 R ISZ XREG /+1 TO DELTA X
00665 R 200056 R LAC XREG
00666 R 541670 R SAD (2000) /FINISHED DIR 1?
00667 R 741000 A SKP /YES
00670 R 600650 R JMP M40D1 /NO
,EJECT

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/DIRECTION 2 (START AT 1777,0)
00671 R 201674 R          LAC      (2
00672 R 041150 R          DAC      TM40A
00673 R 140060 R          DZM      YREG
00674 R 201723 R          LAC      (1777)
00675 R 040056 R          DAC      XREG
00676 R 341671 R          TAD      (PX)
00677 R 041123 R          DAC      M40DF+1
00700 R 201665 R          LAC      (PY)
00701 R 041124 R          DAC      M40DF+2
00702 R 200060 R          M40D2 LAC      YREG      /GET VECTOR LENGTH
00703 R 341724 R          TAD      (V2!INT)      /ADD TO VECTOR DIRECTION 2
00704 R 041125 R          DAC      M40DF1      /SAVE IN DISPLAY FILE
00705 R 777775 A          LAW      =3
00706 R 041121 R          DAC      M40CTR
00707 R 101647 R          JMS      HOLD
00710 R 201721 R          LAC      (M40DF)
00711 R 101373 R          JMS      GOWAIT      /PLOT VECTOR
00712 R 101507 R          JMS      ERRCHK      /ANY ERRORS?
00713 R 441121 R          ISZ      M40CTR
00714 R 600710 R          JMP      =4
00715 R 440060 R          ISZ      YREG      /+1 TO DELTA Y
00716 R 200060 R          LAC      YREG
00717 R 541670 R          SAD      (2000)      /FINISHED DIR 2?
00720 R 741000 A          SKP
00721 R 600702 R          JMP      M40D2      /YES
                                /NO

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/DIRECTION 3 (START AT 1777,0)
00722 R 201710 R          LAC      (3
00723 R 041150 R          DAC      TM40A
00724 R 140060 R          DZM      YREG
00725 R 201723 R          LAC      (1777)
00726 R 040056 R          DAC      XREG
00727 R 200060 R          M40D3 LAC      YREG      /GET VECTOR LENGTH
00730 R 341725 R          TAD      (V3!INT)      /ADD TO VECTOR DIRECTION 3
00731 R 041125 R          DAC      M40DF1      /SAVE IN DISPLAY FILE
00732 R 777775 A          LAW      =3
00733 R 041121 R          DAC      M40CTR
00734 R 101647 R          JMS      HOLD
00735 R 201721 R          LAC      (M40DF)
00736 R 101373 R          JMS      GOWAIT      /PLOT VECTOR
00737 R 101507 R          JMS      ERRCHK      /ANY ERRORS?
00740 R 441121 R          ISZ      M40CTR
00741 R 600735 R          JMP      =4
00742 R 777777 A          LAW      =1
00743 R 340056 R          TAD      XREG
00744 R 040056 R          DAC      XREG      /-1 TO DELTA X
00745 R 440060 R          ISZ      YREG      /+1 TO DELTA Y
00746 R 200060 R          LAC      YREG
00747 R 541670 R          SAD      (2000)      /FINISHED DIR 3?
00750 R 741000 A          SKP
00751 R 600727 R          JMP      M40D3      /YES
                                /NO

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.EJECT

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/DIRECTION 4 (START AT 1777,1777)
00752 R 201703 R LAC (4
00753 R 041150 R DAC TM40A
00754 R 201723 R LAC (1777)
00755 R 040056 R DAC XREG
00756 R 040060 R DAC YREG
00757 R 341665 R TAD (PY)
00760 R 041123 R DAC M40DF+1
00761 R 201726 R LAC (PX!1777)
00762 R 041124 R DAC M40DF+2
00763 R 200056 R M40D4 LAC XREG
00764 R 740001 A CMA
00765 R 501723 R AND (1777) /GET VECTOR LENGTH
00766 R 341727 R TAD (V4!INT) /ADD TO VECTOR DIRECTION 4
00767 R 041125 R DAC M40DF1 /SAVE IN DISPLAY FILE
00770 R 777775 A LAW =3
00771 R 041121 R DAC M40CTR
00772 R 101647 R JMS HOLD
00773 R 201721 R LAC (M40DF)
00774 R 101373 R JMS GOWAIT /PLOT VECTOR
00775 R 101507 R JMS ERRCHK /ANY ERRORS?
00776 R 441121 R ISZ M40CTR
00777 R 600773 R JMP =4
01000 R 777777 A LAW =1
01001 R 340056 R TAD XREG /=-1 TO DELTA X
01002 R 040056 R DAC XREG
01003 R 740100 A SMA /FINISHED DIR 4?
01004 R 600763 R JMP M40D4 /NO

/DIRECTION 5 (START AT 1777,1777)
01005 R 201711 R LAC (5
01006 R 041150 R DAC TM40A
01007 R 201723 R LAC (1777)
01010 R 040056 R DAC XREG
01011 R 040060 R DAC YREG
01012 R 200060 R M40D5 LAC YREG
01013 R 740001 A CMA
01014 R 501723 R AND (1777) /GET VECTOR LENGTH
01015 R 341730 R TAD (V5!INT) /ADD TO VECTOR DIRECTION 5
01016 R 041125 R DAC M40DF1 /SAVE IN DISPLAY FILE
01017 R 777775 A LAW =3
01020 R 041121 R DAC M40CTR
01021 R 101647 R JMS HOLD
01022 R 201721 R LAC (M40DF)
01023 R 101373 R JMS GOWAIT /PLOT VECTOR
01024 R 101507 R JMS ERRCHK /ANY ERRORS?
01025 R 441121 R ISZ M40CTR
01026 R 601022 R JMP =4
01027 R 777777 A LAW =1
01030 R 340056 R TAD XREG /=-1 TO DELTA X
01031 R 040056 R DAC XREG
01032 R 040060 R DAC YREG /=-1 TO DELTA Y
01033 R 740100 A SMA /FINISHED DIR 5?
01034 R 601012 R JMP M40D5 /NO

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,EJECT

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/DIRECTION 6 (START AT 0,1777)
01035 R 201712 R          LAC      (6)
01036 R 041150 R          DAC      TM40A
01037 R 140056 R          DZM      XREG
01040 R 201723 R          LAC      (1777)
01041 R 040060 R          DAC      YREG
01042 R 341665 R          TAD      (PY)
01043 R 041123 R          DAC      M40DF+1
01044 R 201671 R          LAC      (PX)
01045 R 041124 R          DAC      M40DF+2
01046 R 200060 R          M40D6 LAC      YREG
01047 R 740001 A          CMA
01050 R 501723 R          AND      (1777)          /GET VECTOR LENGTH
01051 R 341731 R          TAD      (V6!INT)          /ADD TO VECTOR DIRECTION 6
01052 R 041125 R          DAC      M40DF1          /SAVE IN DISPLAY FILE
01053 R 777775 A          LAW      =3
01054 R 041121 R          DAC      M40CTR
01055 R 101647 R          JMS      HOLD
01056 R 201721 R          LAC      (M40DF)
01057 R 101373 R          JMS      GOWAIT          /PLOT VECTOR
01060 R 101507 R          JMS      ERRCHK          /ANY ERRORS?
01061 R 441121 R          ISZ      M40CTR
01062 R 601056 R          JMP      =4
01063 R 777777 A          LAW      =1
01064 R 340060 R          TAD      YREG          /=1 TO DELTA Y
01065 R 040060 R          DAC      YREG
01066 R 740100 A          SMA
01067 R 601046 R          JMP      M40D6          /FINISHED DIR 6
                                /NO
/DIRECTION 7 (START AT 0,1777)
01070 R 201713 R          LAC      (7)
01071 R 041150 R          DAC      TM40A
01072 R 201723 R          LAC      (1777)
01073 R 040060 R          DAC      YREG
01074 R 140056 R          DZM      XREG
01075 R 200056 R          M40D7 LAC      XREG          /GET VECTOR LENGTH
01076 R 341732 R          TAD      (V7!INT)          /ADD TO VECTOR DIRECTION 7
01077 R 041125 R          DAC      M40DF1          /SAVE IN DISPLAY FILE
01100 R 777775 A          LAW      =3
01101 R 041121 R          DAC      M40CTR
01102 R 101647 R          JMS      HOLD
01103 R 201721 R          LAC      (M40DF)
01104 R 101373 R          JMS      GOWAIT          /PLOT VECTOR
01105 R 101507 R          JMS      ERRCHK          /ANY ERRORS?
01106 R 441121 R          ISZ      M40CTR
01107 R 601103 R          JMP      =4
01110 R 777777 A          LAW      =1
01111 R 340060 R          TAD      YREG          /=1 TO DELTA Y
01112 R 040060 R          DAC      YREG
01113 R 440056 R          ISZ      XREG          /+1 TO DELTA X
                                ,EJECT

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01114 R 200056 R          LAC      XREG
01115 R 541670 R          SAD      (2000)      /FINISHED DIR 7?
01116 R 741000 A          SKP
01117 R 601075 R          JMP      M40D7      /YES
01120 R 620612 R          JMP*     M40      /NO
01121 R 000000 A          M40CTR  0      /EXIT VECTOR MODE
/
/MODE 40 DISPLAY FILE
01122 R 203020 A          M40DF  INT4!SCALE!0
01123 R 140000 A          PY
01124 R 144000 A          PX
01125 R 400000 A          M40DF1  V0
01126 R 204000 A          STOP
/TEXT "BASIC VECTOR" FOR ERROR TYPEOUT
01127 R 000000 A          TM40  0
01130 R 201673 R          LAC      (SAVBUF
01131 R 040067 R          DAC      POINT      /INIT POINTER
01132 R 777777 A          LAW      =1
01133 R 101503 R          JMS     STATUS     /STORE SYSERR
01134 R 777772 A          LAW      =6
01135 R 101503 R          JMS     STATUS     /STORE ERWC
01136 R 201711 R          LAC      (5
01137 R 101503 R          JMS     STATUS     /STORE ERROR #
01140 R 101454 R          JMS     SAVXY
01141 R 201150 R          LAC      TM40A
01142 R 101503 R          JMS     STATUS     /STORE VECTOR DIRECTION
01143 R 200020 R          LAC      SYSERR
01144 R 740200 A          SZA
01145 R 101564 R          JMS     BRKEX      /PREVIOUS ERROR?
01146 R 101466 R          JMS     RESTAT     /YES
01147 R 621127 R          JMP*     TM40      /GET STATUS
01150 R 000000 A          TM40A  0
          .EJECT

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/TEST CHARACTER INPUT MODE (MODE 0)
M0      0
01151 R 000000 A      LAC      (TM0)
01152 R 201733 R      DAC      PRINT          /INITIALIZE TYPEOUT TEST
01153 R 040055 R      LAC      (1000)
01154 R 201705 R      DAC      YREG          /Y COORD=1000
01155 R 040060 R      LAC      (1052)        /X COORD=1007
01156 R 201734 R      DAC      XREG
01157 R 040056 R      LAC      (M0FIL)
01160 R 201735 R      DAC      M0PNT          /INITIALIZE CHARACTER FILE
01161 R 041264 R      LAW      =3000
01162 R 775000 A      DAC      CNT2
01163 R 041256 R      M0A     LAC*     M0PNT          /GET CHARACTER
01164 R 221264 R      SAD      (777777)        /FINISHED TABLE?
01165 R 541736 R      JMP      M0B          /YES
01166 R 601201 R      TAD      (CHARI:INT)
01167 R 341737 R      DAC      M0DF+3          /SAVE CHARACTER IN DISPLAY FILE
01170 R 041262 R      JMS      HOLD
01171 R 101647 R      LAC      (M0DF)
01172 R 201740 R      JMS      GOWAIT          /PLOT CHARACTER
01173 R 101373 R      JMS      ERRCHK          /ANY ERRORS
01174 R 101507 R      ISZ      CNT2
01175 R 441256 R      JMP      M0A
01176 R 601164 R      ISZ      M0PNT
01177 R 441264 R      JMP      M0A-2
01200 R 601162 R

/TEST CARRIAGE RETURN
M0B     LAC      (1000)
01201 R 201705 R      DAC      YREG
01202 R 040060 R      DZM      XREG
01203 R 140056 R      LAC      (CHARI:15)
01204 R 201741 R      DAC      M0DF+3
01205 R 041262 R      JMS      HOLD
01206 R 101647 R      LAC      (M0DF)
01207 R 201740 R      JMS      GOWAIT          /PLOT CARRIAGE RETURN
01210 R 101373 R      JMS      ERRCHK          /ANY ERRORS?
01211 R 101507 R

/TEST LINE FEED
M0C     LAC      (1000)
01212 R 201705 R      DAC      XREG
01213 R 040056 R      LAC      (712)
01214 R 201742 R      DAC      YREG
01215 R 040060 R      LAC      (CHARI:12)
01216 R 201743 R      DAC      M0DF+3
01217 R 041262 R      JMS      HOLD
01220 R 101647 R      LAC      (M0DF)
01221 R 201740 R      JMS      GOWAIT          /PLOT LINE FEED
01222 R 101373 R      JMS      ERRCHK          /ANY ERRORS?
01223 R 101507 R
,EJECT

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/TEST TAB
01224 R 201705 R MOD LAC (1000)
01225 R 040060 R DAC YREG
01226 R 201744 R LAC (1200)
01227 R 040056 R DAC XREG
01230 R 201745 R LAC (CHARI;11)
01231 R 041262 R DAC MODF+S
01232 R 101647 R JMS HOLD
01233 R 201740 R LAC (MODF)
01234 R 101373 R JMS GOWAIT /PLOT TAB
01235 R 101507 R JMS ERRCHK /ANY ERRORS?
01236 R 621151 R JMP# M0

/TEXT "CHARACTER MODE" FOR ERROR TYPEOUT
TM0 0
01237 R 000000 A LAC (SAVBUF
01240 R 201673 R DAC POINT /INIT POINTER
01241 R 040067 R LAW =1
01242 R 777777 A JMS STATUS /STORE SYSERR
01243 R 101503 R LAW =5
01244 R 777773 A JMS STATUS /STORE ERWC
01245 R 101503 R LAC (6
01246 R 201712 R JMS STATUS /STORE ERROR #
01247 R 101503 R JMS SAVXY
01250 R 101454 R LAC SYSERR
01251 R 200020 R SZA /PREVIOUS ERROR?
01252 R 740200 A JMS BRKEX /YES
01253 R 101564 R JMS RESTAT /GET STATUS
01254 R 101466 R JMP# TM0
01255 R 621237 R /
01256 R 000000 A CNT2 0
/
/CHARACTER INPUT MODE DISPLAY FILE
MODF INT4;SCALE;2
01257 R 203022 A PY;1000
01260 R 141000 A PX;1000
01261 R 145000 A CHARI
01262 R 000000 A /MODIFIED CHARACTER
01263 R 204000 A STOP
,EJECT

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01264	R	000000	A	M0PNT	0
01265	R	000100	A	M0FIL	100
01266	R	000101	A		101
01267	R	000102	A		102
01270	R	000103	A		103
01271	R	000104	A		104
01272	R	000105	A		105
01273	R	000106	A		106
01274	R	000107	A		107
01275	R	000110	A		110
01276	R	000111	A		111
01277	R	000112	A		112
01300	R	000113	A		113
01301	R	000114	A		114
01302	R	000115	A		115
01303	R	000116	A		116
01304	R	000117	A		117
01305	R	000120	A		120
01306	R	000121	A		121
01307	R	000122	A		122
01310	R	000123	A		123
01311	R	000124	A		124
01312	R	000125	A		125
01313	R	000126	A		126
01314	R	000127	A		127
01315	R	000130	A		130
01316	R	000131	A		131
01317	R	000132	A		132
01320	R	000133	A		133
01321	R	000134	A		134
01322	R	000135	A		135
01323	R	000136	A		136
01324	R	000137	A		137
01325	R	000040	A		40
01326	R	000041	A		41
01327	R	000042	A		42
01330	R	000043	A		43
01331	R	000044	A		44
01332	R	000045	A		45
01333	R	000046	A		46
01334	R	000047	A		47
01335	R	000050	A		50
01336	R	000051	A		51
01337	R	000052	A		52
01340	R	000053	A		53
01341	R	000054	A		54
01342	R	000055	A		55
01343	R	000056	A		56
01344	R	000057	A		57
01345	R	000060	A		60
01346	R	000061	A		61

.EJECT

01347	R	000062	A	62
01350	R	000063	A	63
01351	R	000064	A	64
01352	R	000065	A	65
01353	R	000066	A	66
01354	R	000067	A	67
01355	R	000070	A	70
01356	R	000071	A	71
01357	R	000072	A	72
01360	R	000073	A	73
01361	R	000074	A	74
01362	R	000075	A	75
01363	R	000076	A	76
01364	R	000077	A	77
01365	R	000040	A	40
01366	R	000126	A	126
01367	R	000124	A	124
01370	R	000061	A	61
01371	R	000065	A	65
01372	R	777777	A	777777

.EJECT

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/EXECUTE DISPLAY FILE AND WAIT FOR COMPLETION
01373 R 000000 A GOWAIT 0
01374 R 703004 A LSD /INITIALIZE DISPLAY
01375 R 101635 R JMS EXIT
01376 R 703001 A SPSF /SKIP ON STOP FLAG
01377 R 601401 R JMP NOSTOP /ERROR #1
01400 R 621373 R JMP* GOWAIT /HAVE STOP FLAG, EXIT
/NO STOP FLAG OR API ERROR
01401 R 201673 R NOSTOP LAC (SAVBUF
01402 R 040067 R DAC POINT /INIT POINTER
01403 R 777775 A LAW =3
01404 R 101503 R JMS STATUS /STORE SYSERR
01405 R 777771 A LAW =7
01406 R 101503 R JMS STATUS /STORE ERWC
01407 R 201676 R LAC (1
01410 R 101503 R JMS STATUS /STORE ERROR #
01411 R 703012 A N07 RS1
01412 R 101503 R JMS STATUS /STORE STATUS 1
01413 R 703032 A RS2
01414 R 101503 R JMS STATUS /STORE STATUS 2
01415 R 703152 A RS3
01416 R 101503 R JMS STATUS /STORE STATUS 3
01417 R 703072 A RPC
01420 R 101503 R JMS STATUS /STORE DISPLAY PC
01421 R 703112 A RXP
01422 R 101503 R JMS STATUS /STORE X POS
01423 R 703052 A RYP
01424 R 101503 R JMS STATUS /STORE Y POS
01425 R 200020 R LAC SYSERR
01426 R 740200 A SZA /PREVIOUS ERROR?
01427 R 101564 R JMS BRKEX /YES
01430 R 101466 R JMS RESTAT /GET STATUS
01431 R 703044 A STPD
01432 R 703161 A SPES
01433 R 741000 A SKP
01434 R 601437 R JMP ,+3
01435 R 703001 A SPSF
01436 R 601432 R JMP ,=4
01437 R 201746 R LAC (17400
01440 R 703024 A SIC
01441 R 101635 R JMS EXIT
01442 R 740040 A HLT /MONITOR ERROR
.EJECT

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/TEMPORARY STORAGE FOR ERROR STATUS
01443 R      A      SAVBUF ,BLOCK 11
/SAVE GOOD AND ACTUAL X AND Y
01454 R 000000 A      SAVXY 0
01455 R 200056 R      LAC      XREG
01456 R 101503 R      JMS      STATUS      /STORE GOOD X
01457 R 200060 R      LAC      YREG
01460 R 101503 R      JMS      STATUS      /STORE GOOD Y
01461 R 200057 R      LAC      XTEMP
01462 R 101503 R      JMS      STATUS      /STORE ACTUAL X
01463 R 200061 R      LAC      YTEMP
01464 R 101503 R      JMS      STATUS      /STORE ACTUAL Y
01465 R 621454 R      JMP*     SAVXY

/RETRIEVE ERROR STATUS FOR MONITOR
01466 R 000000 A      RESTAT 0
01467 R 777767 A      LAW      =11
01470 R 040062 R      DAC      CNT1      /INIT COUNT
01471 R 201747 R      LAC      (SYSERR
01472 R 040067 R      DAC      POINT     /INIT POINTER
01473 R 201673 R      LAC      (SAVBUF
01474 R 040070 R      DAC      PNT       /INIT POINTER
01475 R 220070 R      LAC*     PNT
01476 R 101503 R      JMS      STATUS      /STORE A WORD
01477 R 440070 R      ISZ     PNT
01500 R 440062 R      ISZ     CNT1      /DONE?
01501 R 601475 R      JMP      ,=4      /NO
01502 R 621466 R      JMP*     RESTAT

/STORE STATUS
01503 R 000000 A      STATUS 0
01504 R 060067 R      DAC*     POINT
01505 R 440067 R      ISZ     POINT
01506 R 621503 R      JMP*     STATUS

/CHECK FOR ERRORS
01507 R 000000 A      ERRCHK 0
01510 R 703052 A      RYP
01511 R 040061 R      DAC      YTEMP      /SAVE ACTUAL Y COORDINATE
01512 R 703112 A      RXP
01513 R 040057 R      DAC      XTEMP      /SAVE ACTUAL X COORDINATE
01514 R 200061 R      LAC      YTEMP
01515 R 540060 R      SAD      YREG      /COMPARE ACTUAL WITH EXPECTED Y COORDINATE
01516 R 741000 A      SKP
01517 R 601523 R      JMP      ,+4      /HAVE ERROR
01520 R 200057 R      LAC      XTEMP
01521 R 540056 R      SAD      XREG      /COMPARE ACTUAL WITH EXPECTED X COORDINATE
01522 R 741000 A      SKP
01523 R 120055 R      JMS*     PRINT
01524 R 621507 R      JMP*     ERRCHK
,EJECT

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/SERVICE ROUTINE
SERV 0
01525 R 000000 A DAC ACSAV
01526 R 040066 R LAC (400000
01527 R 201750 R SPI /API ON?
01530 R 705501 A JMP APIOFF /NO
01531 R 601550 R LAW =1
01532 R 777777 A DAC API
01533 R 040063 R SPDF /DISPLAY FLAG?
01534 R 703101 A SKP /NO
01535 R 741000 A JMP* EXIT /YES
01536 R 621635 R LAC (SAVBUF
01537 R 201673 R DAC POINT /INIT POINTER
01540 R 040067 R LAW =4
01541 R 777774 A JMS STATUS /STORE SYSERR
01542 R 101503 R LAW =7
01543 R 777771 A JMS STATUS /STORE ERWC
01544 R 101503 R LAC (7
01545 R 201713 R JMS STATUS /STORE ERROR#
01546 R 101503 R JMP NO7
01547 R 601411 R APIOFF SPDF /DISPLAY FLAG?
01550 R 703101 A SKP /NO
01551 R 741000 A JMP* EXIT /YES
01552 R 621635 R LAC BRK
01553 R 200064 R SNA /BREAK FLAG SET?
01554 R 741200 A JMP ,+5 /NO
01555 R 601562 R LAC SYSERR
01556 R 200020 R SZA /BREAK RETURN?
01557 R 740200 A SKP /NO
01560 R 741000 A JMP* EXIT /YES
01561 R 621635 R CLC /INDICATE PI AND NO DISPLAY FLAG
01562 R 750001 A JMP* SERV
01563 R 621525 R .EJECT

```

```

/BREAK EXIT TO THE MONITOR
01564 R 000000 A BRKEX 0
01565 R 703044 A STPD
01566 R 703161 A SPES
01567 R 741000 A SKP
01570 R 601573 R JMP BRKEX1
01571 R 703001 A SPSF
01572 R 601611 R JMP BRKEX2
01573 R 201746 R BRKEX1 LAC (17400
01574 R 703024 A SIC
01575 R 200020 R LAC SYSERR
01576 R 740200 A SZA /PREVIOUS ERROR?
01577 R 601602 R JMP ,+3 /YES
01600 R 777773 A LAW -5 /INDICATE NORMAL BREAK
01601 R 741000 A SKP
01602 R 777776 A LAW -2 /INDICATE MULTIPLE ERRORS
01603 R 040020 R DAC SYSERR
01604 R 777777 A LAW -1
01605 R 040064 R DAC BRK /SET BREAK FLAG
01606 R 101635 R JMS EXIT
01607 R 140064 R DZM BRK /CLEAR BREAK FLAG
01610 R 621564 R JMP# BRKEX
/
01611 R 201662 R BRKEX2 LAC HOLDSW
01612 R 741200 A SNA
01613 R 740040 A HLT
01614 R 601573 R JMP BRKEX1
/
/TERMINATION ROUTINE
01615 R 200020 R TERM LAC SYSERR
01616 R 741200 A SNA /ANY ERRORS?
01617 R 140021 R DZM ERWC /NO
01620 R 777774 A LAW -4
01621 R 040020 R DAC SYSERR
01622 R 140064 R DZM BRK
01623 R 703044 A STPD
01624 R 703161 A SPES
01625 R 741000 A SKP
01626 R 601631 R JMP ,+3
01627 R 703001 A SPSF
01630 R 601624 R JMP ,=4
01631 R 201746 R LAC (17400
01632 R 703024 A SIC
01633 R 101635 R JMS EXIT /MONITOR ERROR
01634 R 740040 A HLT
,EJECT

```

```

/EXIT TO THE MONITOR
01635 R 000000 A EXIT 0
01636 R 200063 R LAC API
01637 R 741200 A SNA /ENTERED BY API?
01640 R 601645 R JMP ,+5 /NO
01641 R 140063 R DZM API /CLEAR API FLAG
01642 R 200066 R LAC ACSAV /RESTORE AC
01643 R 703344 A DBR
01644 R 621525 R JMP* SERV
01645 R 750000 A CLA
01646 R 621525 R JMP* SERV

/HOLD EXECUTION ON AC SWITCH 7=1
01647 R 000000 A HOLD 0
01650 R 750004 A LAS
01651 R 501670 R AND (2000)
01652 R 740200 A SZA
01653 R 601656 R JMP ,+3
01654 R 141662 R DZM HOLDSW
01655 R 621647 R JMP* HOLD
/
01656 R 777777 A LAW =1
01657 R 041662 R DAC HOLDSW
01660 R 101564 R JMS BRKEX
01661 R 601650 R JMP HOLD+1
/
01662 R 000000 A HOLDSW 0
,EJECT

```

END UQDSW

```

000000 R
01663 R 000076 R #L
01664 R 000152 R #L
01665 R 140000 A #L
01666 R 164000 A #L
01667 R 000171 R #L
01670 R 002000 A #L
01671 R 144000 A #L
01672 R 160000 A #L
01673 R 001443 R #L
01674 R 000002 A #L
01675 R 000257 R #L
01676 R 000001 A #L
01677 R 000251 R #L
01700 R 166000 A #L
01701 R 000254 R #L
01702 R 162000 A #L
01703 R 000004 A #L
01704 R 000570 R #L
01705 R 001000 A #L
01706 R 000550 R #L
01707 R 001001 A #L
01710 R 000003 A #L
01711 R 000005 A #L
01712 R 000006 A #L
01713 R 000007 A #L
01714 R 001600 A #L
01715 R 000200 A #L
01716 R 001610 A #L
01717 R 001127 R #L
01720 R 420000 A #L
01721 R 001122 R #L
01722 R 422000 A #L
01723 R 001777 A #L
01724 R 424000 A #L
01725 R 426000 A #L
01726 R 145777 A #L
01727 R 430000 A #L
01730 R 432000 A #L
01731 R 434000 A #L
01732 R 436000 A #L
01733 R 001257 R #L
01734 R 001052 A #L
01735 R 001265 R #L
01736 R 777777 A #L
01737 R 020000 A #L
01740 R 001257 R #L
01741 R 000015 A #L
01742 R 000712 A #L
01743 R 000012 A #L
01744 R 001200 A #L
01745 R 000011 A #L
01746 R 017400 A #L

```


01747 R 000020 R *L

01750 R 400000 A *L

SIZE=02003

NO ERROR LINES

ACSAV	00066	R	ALT	214000	A	API	00063	R	APIOFF	01550	R
BKOF	211000	A	BKON	211400	A	BRK	00064	R	BRKEX	01564	R
BRKEX1	01573	R	BRKEX2	01611	R	B0	000200	A	B1	000100	A
B2	000040	A	B3	000020	A	B4	000010	A	B5	000004	A
CHARI	000000	A	CHARS	040000	A	CLEAR	00071	R	CLPB	231000	A
CLRDF	00076	R	CNT	00065	R	CNT1	00062	R	CNT2	01256	R
CRET	216000	A	DASH1	220005	A	DASH2	220006	A	DASH3	220007	A
DISABL	220200	A	DJMP	600000	A	DJMS	640000	A	DNOP	200000	A
EDGOF	210200	A	EDGON	210300	A	ENEDG	220220	A	ENLP	220240	A
ENPB	220210	A	ENSTP	220300	A	ERCODE	00022	R	ERRCHK	01507	R
ERWC	00021	R	EXIT	01635	R	GOWAIT	01373	R	GX	146000	A
GY	142000	A	HOLD	01647	R	HOLDSW	01662	R	INCDR0	00560	R
INCDR1	00561	R	INCDR2	00562	R	INCDR3	00563	R	INCDR4	00564	R
INCDR5	00565	R	INCDR6	00566	R	INCDR7	00567	R	INCR	500000	A
INT	020000	A	INT0	202000	A	INT1	202200	A	INT2	202400	A
INT3	202600	A	INT4	203000	A	INT5	203200	A	INT6	203400	A
INT7	203600	A	LDNM	234400	A	LPEN	010000	A	LPOF	210010	A
LPON	210014	A	LSD	703004	A	M0	01151	R	M0A	01164	R
M0B	01201	R	M0C	01212	R	M0D	01224	R	M0DF	01257	R
M0FIL	01265	R	M0PNT	01264	R	M10	00175	R	M10DF	00254	R
M10DFI	00251	R	M10X	00210	R	M10Y	00231	R	M14	00103	R
M14A	00114	R	M14B	00133	R	M14DF	00171	R	M40	00612	R
M40CTR	01121	R	M40DF	01122	R	M40DF1	01125	R	M40D0	00624	R
M40D1	00650	R	M40D2	00702	R	M40D3	00727	R	M40D4	00763	R
M40D5	01012	R	M40D6	01046	R	M40D7	01075	R	M50	00276	R
M50CTR	00555	R	M50DF	00550	R	M50DF1	00553	R	M50D0	00305	R
M50D1	00325	R	M50D2	00346	R	M50D3	00367	R	M50D4	00413	R
M50D5	00436	R	M50D6	00460	R	M50D7	00503	R	NOSTOP	01401	R
N07	01411	R	NUMMOV	00557	R	OSETF	210002	A	OSETN	210003	A
PNT	00070	R	POINT	00067	R	PRINT	00055	R	PX	144000	A
PY	140000	A	RES	703064	A	RESTAT	01466	R	ROTOF	210040	A
ROTON	210060	A	RPC	703072	A	RSTR	260000	A	RS1	703012	A
RS2	703032	A	RS3	703152	A	RXP	703112	A	RYP	703052	A
SAVBUF	01443	R	SAVE	240000	A	SAVXY	01454	R	SCALE	200020	A
SERV	01525	R	SIC	703024	A	SKIP	235000	A	SKPB	230400	A
SLAVE	340000	A	SLPSI	232000	A	SOLID	220004	A	SPDF	703101	A
SPDI	703121	A	SPEF	703061	A	SPE5	703161	A	SPLP	703021	A
SPNM	234200	A	SPPB	703041	A	SPSF	703001	A	SSLP	703141	A
STATUS	01503	R	STOP	204000	A	STPB	230000	A	STPD	703044	A
SVEC	00556	R	SYNC	236000	A	SYSERR	00020	R	TERM	01615	R
TM0	01237	R	TM10	00257	R	TM14	00152	R	TM40	01127	R
TM40A	01150	R	TM50	00570	R	TM50A	00611	R	UQDSW	00000	R
VISTST	00042	R	VLPEN	040000	A	VTIN	00031	R	V0	400000	A
V1	402000	A	V2	404000	A	V3	406000	A	V4	410000	A
V5	412000	A	V6	414000	A	V7	416000	A	XREG	00056	R
XTEMP	00057	R	YREG	00060	R	YTEMP	00061	R			

CHARI	000000	A	UODSW	000000	R	B5	000004	A	B4	000010	A
B3	000020	A	SYSERR	000020	R	ERWC	000021	R	ERCODE	000022	R
VTIN	000031	R	B2	000040	A	VISTST	000042	R	PRINT	000055	R
XREG	000056	R	XTEMP	000057	R	YREG	000060	R	YTEMP	000061	R
CNT1	000062	R	API	000063	R	BRK	000064	R	CNT	000065	R
ACSAV	000066	R	POINT	000067	R	PNT	000070	R	CLEAR	000071	R
CLRDF	000076	R	B1	000100	A	M14	000103	R	M14A	000114	R
M14B	000133	R	TM14	000152	R	M14DF	000171	R	M10	000175	R
B0	000200	A	M10X	000210	R	M10Y	000231	R	M10DFI	000251	R
M10DF	000254	R	TM10	000257	R	M50	000276	R	M50D0	000305	R
M50D1	000325	R	M50D2	000346	R	M50D3	000367	R	M50D4	000413	R
M50D5	000436	R	M50D6	000460	R	M50D7	000503	R	M50DF	000550	R
M50DF1	000553	R	M50CTR	000555	R	SVEC	000556	R	NUMMOV	000557	R
INCDR0	000560	R	INCDR1	000561	R	INCDR2	000562	R	INCDR3	000563	R
INCDR4	000564	R	INCDR5	000565	R	INCDR6	000566	R	INCDR7	000567	R
TM50	000570	R	TM50A	000611	R	M40	000612	R	M40D0	000624	R
M40D1	000650	R	M40D2	000702	R	M40D3	000727	R	M40D4	000763	R
M40D5	01012	R	M40D6	01046	R	M40D7	01075	R	M40CTR	01121	R
M40DF	01122	R	M40DF1	01125	R	TM40	01127	R	TM40A	01150	R
M0	01151	R	M0A	01164	R	M0B	01201	R	M0C	01212	R
M0D	01224	R	TM0	01237	R	CNT2	01256	R	M0DF	01257	R
M0PNT	01264	R	M0FIL	01265	R	GOWAIT	01373	R	NOSTOP	01401	R
N07	01411	R	SAVBUF	01443	R	SAVXY	01454	R	RESTAT	01466	R
STATUS	01503	R	ERRCHK	01507	R	SERV	01525	R	APIOFF	01550	R
BRKEX	01564	R	BRKEX1	01573	R	BRKEX2	01611	R	TERM	01615	R
EXIT	01635	R	HOLD	01647	R	HOLDSW	01662	R	LPEN	010000	A
INT	020000	A	CHARS	040000	A	VLPEN	040000	A	PY	140000	A
GY	142000	A	PX	144000	A	GX	146000	A	DNOP	200000	A
SCALE	200020	A	INT0	202000	A	INT1	202200	A	INT2	202400	A
INT3	202600	A	INT4	203000	A	INT5	203200	A	INT6	203400	A
INT7	203600	A	STOP	204000	A	OSETF	210002	A	OSETN	210003	A
LPOF	210010	A	LPON	210014	A	ROTOF	210040	A	ROTON	210060	A
EDGOF	210200	A	EDGON	210300	A	BKOF	211000	A	BKON	211400	A
ALT	214000	A	CRET	216000	A	SOLID	220004	A	DASH1	220005	A
DASH2	220006	A	DASH3	220007	A	DISABL	220200	A	ENPB	220210	A
ENEDG	220220	A	ENLP	220240	A	ENSTP	220300	A	STPB	230000	A
SKPB	230400	A	CLPB	231000	A	SLPSI	232000	A	SPNM	234200	A
LDNM	234400	A	SKIP	235000	A	SYNC	236000	A	SAVE	240000	A
RSTR	260000	A	SLAVE	340000	A	V0	400000	A	V1	402000	A
V2	404000	A	V3	406000	A	V4	410000	A	V5	412000	A
V6	414000	A	V7	416000	A	INCR	500000	A	DJMP	600000	A
DJMS	640000	A	SPSF	703001	A	LSD	703004	A	RS1	703012	A
SPLP	703021	A	SIC	703024	A	RS2	703032	A	SPPB	703041	A
STPD	703044	A	RYP	703052	A	SPEF	703061	A	RES	703064	A
RPC	703072	A	SPDF	703101	A	RXP	703112	A	SPDI	703121	A
SSLP	703141	A	RS3	703152	A	SPES	703161	A			