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7 / THIS PROGRAM SOURCE FILE IS SUPPLIED IN CONFIDENCE TO THE
8 / CUSTOMER; THE CONTENTS OR DETAILS OF ITS OPERATION MAY ONLY
9 / BE DISCLOSED TO PERSONS EMPLOYED BY THE CUSTOMER WHO
10 / REQUIRE A KNOWLEDGE OF THE SOFTWARE CODING TO CARRY OUT
11 / THEIR JOB. DISCLOSURE TO ANY OTHER PERSON MUST HAVE PRIOR
12 / AUTHORIZATION FROM THE DIRECTORS OF REDAC SOFTWARE LIMITED
13 /
14 /1 SUITE : P.C.B. LAYOUT
15 /2 PROGRAM TITLE : REDAL23 MARK2
16 /3 ROUTINE TITLE :
17 /
18 /4 AUTHOR :
19 /5 DATE :
20 /
21 /6 PURPOSE :
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23 /
24 /7 CALLING SEQUENCE AND DESCRIPTION OF ARGUMENTS :
25 /
26 /8 I/O DEVICES AND FUNCTIONS :
27 /
28 /9 REGISTERS USED :
29 /
30 /10 EXTERNAL COMMON AREAS :
31 /
32 /11 INTERNAL COMMON AREAS :
33 /
34 /12 EXTERNAL GLOBALS :
35 /
36 /13 INTERNAL GLOBALS :
37 /
38 /14 CONDITIONAL ASSEMBLY PARAMETERS :
39 /
40 /15 METHOD :
41 /
42 /16 AMENDMENTS :
43 /
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47 / VT15 DISPLAY - FORTRAN CALLABLE SUBPROGRAM PACKAGE
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50 / COPYRIGHT 1970, DIGITAL EQUIPMENT CORP., MAYNARD, MASS.
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53      /
54      .GLOBL LINE,TEXT,COPY,PRAMTR /SUBPICTURE ENTRIES
55      .GLOBL DINIT,PLOT,DCLOSE /MAIN FILE ENTRIES
56      .GLOBL MF.101,MF.102,VTPRIM
57      00000 R 000000 A VTPRIM 0 / DUMMY GLOBAL TO ENABLE ROUTINE TO BE INCLUDED
58      / IN .LIBR5 (THE USER LIBRARY FILE)
59      .IODEV 10
60      /
61      /SYMBOLS USED TO FORM INSTRUCTIONS.
62      /
63      140000 A PY=140000 /POSITION, Y DIRECTION
64      144000 A PX=144000 /POSITION, X DIRECTION
65      100000 A SVY=100000 /STROKE VECTOR, Y DIRECTION
66      100000 A SVX=100000 /STROKE VECTOR, X DIRECTION
67      660002 A DJMS2=660002 /DISPLAY JMS* +2
68      600001 A DJMP1=600001 /DISPLAY JMP +1
69      600002 A DJMP2=600002 /DISPLAY JUMP +2
70      620001 A DJMPI1=620001 /DISPLAY JMP* +1
71      402000 A V1=402000 /BASIC VECTOR, DIRECTION 1
72      410000 A V4=410000 /BASIC VECTOR, DIRECTION 4
73      414000 A V6=414000 /BASIC VECTOR, DIRECTION 6
74      060002 A CHARSI=060002 /CHARACTER STRING INSTRUCTION+2
75      000020 A SC=20 /SCALE ENABLE
76      002000 A INT=2000 /INTENSITY ENABLE
77      000010 A LP=10 /LIGHT PEN ENABLE
78      001000 A BK=1000 /BLINK ENABLE
79      000004 A DSH=4 /DASH ENABLE
80      000002 A OFST=2 /OFFSET ENABLE
81      000040 A ROT=40 /ROTATE ENABLE
82      000400 A LODN=400 /LOAD NAME REGISTER ENABLE
83      200000 A PRM1=200000 /PARAMETER WORD 1 OP CODE
84      200000 A DNOP=200000 /DISPLAY NOP
85      210000 A PRM2=210000 /PARAMETER WORD 2 OP CODE
86      220000 A PRM3=220000 /PARAMETER WORD 3 OP CODE
87      234000 A SKP2=234000 /SKIP2 OP CODE
88      235000 A SKIP=235000 /UNCONDITIONAL SKIP
89      240004 A SAVE4=240004 /SAVE INSTRUCTION +4
90      260000 A RSTR=260000 /RESTORE INSTRUCTION
91      162000 A GY=162000 /GRAPHPLOT, Y DIRECTION
92      703142 A RS3=703142 /READ STATUS 3 IOT
93      000010 A DATVT=10 /VT15 USES DAT SLOT 10
94      .EJECT

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95
96
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99
100      00001 R 000000 A
101      00002 R 201062 R
102      00003 R 041036 R
103      00004 R 201063 R
104      00005 R 041055 R
105      00006 R 200001 R
106      00007 R 600211 R
107
108
109
110      00010 R 000000 A
111      00011 R 201064 R
112      00012 R 041036 R
113      00013 R 201065 R
114      00014 R 041055 R
115      00015 R 200010 R
116      00016 R 600211 R
117
118
119
120      00017 R 000000 A
121      00020 R 201066 R
122      00021 R 041036 R
123      00022 R 201067 R
124      00023 R 041055 R
125      00024 R 200017 R
126      00025 R 600211 R
127
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129
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131
132
133      00026 R 000000 A
134      00027 R 200026 R
135      00030 R 100703 R
136      00031 R 141055 R
137      00032 R 100037 R
138      00033 R 201035 R
139      00034 R 540001 R
140      00035 R 600225 R
141      00036 R 600223 R
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/
/SUBPICTURE ENTRIES
/
/SUBROUTINE LINE
/
LINE      0
          LAC      (JMP 4
          DAC      ARGLG
          LAC      (1
          DAC      MODE
          LAC      LINE
          JMP      INIT
/
/SUBROUTINE TEXT
/
TEXT      0
          LAC      (JMP 2
          DAC      ARGLG
          LAC      (2
          DAC      MODE
          LAC      TEXT
          JMP      INIT
/
/SUBROUTINE COPY
/
COPY      0
          LAC      (JMP 3
          DAC      ARGLG
          LAC      (3
          DAC      MODE
          LAC      COPY
          JMP      INIT
/
/SUBROUTINE GRAPH
/
/
/SUBROUTINE PRAMTR
/
PRAMTR    0
          LAC      PRAMTR
          JMS      GETARG
          DZM      MODE
          JMS      PRM
          LAC      ARGF
          SAD      LINE
          JMP      INIT10
          JMP      INIT5
          .EJECT
/GO GET ARGUMENTS.
/SET FOR PRAMTR SUBR.
/IF LOCAL ARG POINTER NOW POINTS
/TO LAST ARG PICKED UP BY GETARG,
/THEN PNAME WAS NOT GIVEN.
/PNAME WAS GIVEN, GET IT.

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/LENGTH OF ARG LIST.

/SET FOR LINE SUBR.
 /GET RETURN ADDRESS AND
 /GO TO MAIN PROCESSING.

/LENGTH OF ARG LIST.

/SET FOR TEXT SUBR.
 /GET RETURN ADDRESS AND
 /GO TO MAIN PROCESSING.

/LENGTH OF ARG LIST.

/SET FOR COPY SUBR.
 /GET RETURN ADDRESS AND
 /GO TO MAIN PROCESSING

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00037 R 000000 A	PRM	0		
00040 R 201070 R		LAC	(ARG1	/SET UP PTR TO VALUES OF
00041 R 041035 R		DAC	ARGP	/FEATURES THAT NEED SETTING.
00042 R 141025 R		DZM	TEMP1	/CLEAR WORDS TO BE
00043 R 141026 R		DZM	TEMP2	/INSERTED IN DISPLAY FILE.
00044 R 141027 R		DZM	TEMP3	
00045 R 141030 R		DZM	TEMP4	
00046 R 141031 R		DZM	TEMP5	
00047 R 221037 R		LAC*	ARG1	/BITS INDICATING WHICH
00050 R 741000 A		SKP		/FEATURES TO SET.
00051 R 201032 R	PRM10	LAC	TEMP6	/REMAINING FEATURE BITS.
00052 R 741200 A		SNA		/DONE IF AC=0
00053 R 600067 R		JMP	PRM25	/GO FINISH UP.
00054 R 744020 A		RCR		/MOVE NEXT BIT TO LINK.
00055 R 041032 R		DAC	TEMP6	/SAVE REST.
00056 R 740400 A		SNL		/TEST FEATR BIT IN L.
00057 R 600065 R		JMP	PRM20	/NOT ON.
00060 R 441035 R		ISZ	ARGP	/GET NEXT SETTING VALUE.
00061 R 221035 R		LAC*	ARGP	
00062 R 041037 R		DAC	ARG1	
00063 R 221037 R		LAC*	ARG1	/ACTUAL VALUE IN AC.
00064 R 620127 R	PRM15	JMP*	PRMTBL	/DISPATCH.
00065 R 440064 R	PRM20	ISZ	PRM15	/POINT TO NEXT ROUTINE.
00066 R 600051 R		JMP	PRM10	/RECYCLE.
00067 R 200126 R	PRM25	LAC	JINST	/RESET DISPATCHER.
00070 R 040064 R		DAC	PRM15	
00071 R 201071 R		LAC	(TEMP1	/SET UP POINTER TO FILE TEMPS.
00072 R 041024 R		DAC	TEMP	
00073 R 201025 R		LAC	TEMP1	
00074 R 741200 A		SNA		/CHECK PARAMETER WORD 1.
00075 R 600101 R		JMP	PARAM2	/EQUAL ZERO, IGNORE.
00076 R 241072 R		XOR	(PRM1	
00077 R 061024 R		DAC*	TEMP	/STORE FOR DISPLAY FILE.
00100 R 441024 R		ISZ	TEMP	
00101 R 201026 R	PARAM2	LAC	TEMP2	
00102 R 741200 A		SNA		/CHECK PARAMETER WORD 2.
00103 R 600107 R		JMP	PARAM3	/EQUAL ZERO, IGNORE.
00104 R 241073 R		XOR	(PRM2	
00105 R 061024 R		DAC*	TEMP	/STORE FOR DISP. FILE
00106 R 441024 R		ISZ	TEMP	
00107 R 201027 R	PARAM3	LAC	TEMP3	
00110 R 741200 A		SNA		/CHECK PARAMETER WORD 3.
00111 R 600115 R		JMP	SKIP2	/EQUAL ZERO, IGNORE.
00112 R 241074 R		XOR	(PRM3	
00113 R 061024 R		DAC*	TEMP	/STORE FOR DISP. FILE.
00114 R 441024 R		ISZ	TEMP	

.EJECT

194	00115 R 201030 R	SKIP	LAC	TEMP4	
195	00116 R 741200 A		SNA		/CHECK SKIP 2 WORD.
196	00117 R 600123 R		JMP	PRMND	/EQUAL ZERO, IGNORE.
197	00120 R 241075 R		XOR	(SKP2	
198	00121 R 001024 R		DAC*	TEMP	/STORE FOR DISP. FILE.
199	00122 R 441024 R		ISZ	TEMP	
200	00123 R 777777 A	PRMND	LAW	-1	/SET STOP FOR STORE ROUTINE.
201	00124 R 001024 R		DAC*	TEMP	
202	00125 R 620037 R		JMP*	PRM	
203	00126 R 620127 R	JINST	JMP*	PRMTBL	
204		/			
205		/DISPATCH TABLE FOR PARAMETER SETTINGS			
206		/			
207	00127 R 000140 R	PRMTBL	SCALE		
208	00130 R 000145 R		INTENS		
209	00131 R 000154 R		LTPN		
210	00132 R 000162 R		BLINK		
211	00133 R 000166 R		DASH		
212	00134 R 000172 R		OFFSET		
213	00135 R 000175 R		ROTAT		
214	00136 R 000201 R		NAME		
215	00137 R 000206 R		SYNC		
216		/			
217		/GENERATE SCALE SETTING FROM VALUE IN AC.			
218		/			
219	00140 R 501076 R	SCALE	AND	(17	/MASK SETTING.
220	00141 R 241077 R		XOR	(SC	/ENABLE SCALE CHANGE.
221	00142 R 241025 R	T1R	XOR	TEMP1	/FORM SETTING(S) FOR PARAM. WD. 1.
222	00143 R 041025 R		DAC	TEMP1	/KEEP FOR DISPLAY FILE.
223	00144 R 600065 R		JMP	PRM20	/RETURN TO DISPATCHER
224		/			
225		/GENERATE INTENSITY SETTING FROM VALUE IN AC.			
226		/			
227	00145 R 744010 A	INTENS	CLL:RAL		
228	00146 R 742010 A		RTL; RTL; RTL		/MOVE SETTING INTO POSITION
	00147 R 742010 A				
	00150 R 742010 A				
229	00151 R 501100 R		AND	(1600	/MASK SETTING
230	00152 R 241101 R		XOR	(INT	/ENABLE INTENSITY CHANGE.
231	00153 R 600142 R		JMP	T1R	/INCLUDE IN PARAM. WD. 1.
232		/			
233		/GENERATE LIGHT PEN SETTING FROM VALUE IN AC.			
234		/			
235	00154 R 740200 A	LTPN	SZA		/1=ON, 0=OFF.
236	00155 R 201102 R		LAC	(4	/ON BIT.
237	00156 R 341103 R		TAD	(LP	/ENABLE LIGHT PEN SETTING.
238	00157 R 241026 R	T2R	XOR	TEMP2	/FORM SETTING(S) FOR PARAM. WD. 2.
239	00160 R 041026 R		DAC	TEMP2	/KEEP FOR DISPLAY FILE
240	00161 R 600065 R		JMP	PRM20	/RETURN TO DISPATCHER.
241			.EJECT		

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242
243 /GENERATE BLINK SETTING FROM VALUE IN AC.
244 /
245 00162 R 740200 A BLINK SZA /1=ON, 0=OFF
246 00163 R 201104 R LAC (400 /ON BIT.
247 00164 R 341105 R TAD (BK /ENABLE BLINK
248 00165 R 600157 R JMP T2R /INCLUDE IN PARAMETER WORD 2.
249 /
250 /GENERATE DASH SETTING FROM VALUE IN AC
251 /
252 00166 R 501067 R DASH AND (3 /MASK SETTING.
253 00167 R 241102 R XOR (DSH /ENABLE DASH.
254 00170 R 041027 R DAC TEMP3 /KEEP FOR DISPLAY FILE.
255 00171 R 600065 R JMP PRM20 /RETURN TO DISPATCHER
256 /
257 /GENERATE OFFSET SETTING FROM VALUE IN AC.
258 /
259 00172 R 501063 R OFFSET AND (1 /MASK SETTING.
260 00173 R 241065 R XOR (OFST /ENABLE OFFSET.
261 00174 R 600157 R JMP T2R /INCLUDE IN PARAMETER WORD 2.
262 /
263 /GENERATE ROTATE SETTING FROM VALUE IN AC.
264 /
265 00175 R 740200 A ROTAT SZA /1=ON, 0=OFF.
266 00176 R 201077 R LAC (20 /ON BIT.
267 00177 R 341106 R TAD (ROT /ENABLE ROTATE.
268 00200 R 600157 R JMP T2R /INCLUDE IN PARAMETER WORD 2.
269 /
270 /SET NAME REGISTER FROM VALUE IN AC.
271 /
272 00201 R 501107 R NAME AND (177 /MASK NAME SETTING.
273 00202 R 241104 R XOR (LODN /ENABLE LOAD NAME.
274 00203 R 241030 R T4R XOR TEMP4 /FORM SETTING(S)FOR SKIP2 WORD.
275 00204 R 041030 R DAC TEMP4 /KEEP FOR DISPLAY FILE.
276 00205 R 600065 R JMP PRM20 /RETURN TO DISPATCHER.
277 /
278 /SET SYNC FROM VALUE IN AC
279 /
280 00206 R 740200 A SYNC SZA /1=ON, 0=OFF.
281 00207 R 201101 R LAC (2000 /ON BIT.
282 00210 R 600203 R JMP T4R /INCLUDE IN SKIP2 WORD.
283 .EJECT

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284
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286
287 00211 R 040026 R INIT DAC RETAD2 /SAVE RETURN ADDRESS
288 00212 R 100703 R JMS GETARG /FETCH ARGUMENT POINTERS.
289 00213 R 200026 R LAC RETAD2 /GET RETURN ADDRESS.
290 00214 R 501110 R AND (17777 /POINTS TO JMP AROUND LIST.
291 00215 R 341036 R TAD ARGLG /FORM JMP INSTRUCTION.
292 00216 R 560026 R SAD* RETAD2 /SAME AS ACTUAL JMP?
293 00217 R 600225 R JMP INIT10 /YES, PNAME NOT GIVEN.
294 00220 R 501111 R AND (767777
295 00221 R 560026 R SAD* RETAD2
296 00222 R 600225 R JMP INIT10
297 00223 R 220001 R INIT5 LAC* LINE /NO, LAST ARG CONTAINS
298 00224 R 041057 R DAC PNAME /PNAME.
299
300 /SETUP SUBPICTURE FILE POINTERS, STOP DISPLAY, AND DISPATCH TO SUBPIC PROCESSING
301 /
302 00225 R 201057 R INIT10 LAC PNAME /BEGINNING OF FILE (PNAME(1))
303 00226 R 341065 R TAD (2 /MOVE TO FIRST DISP. LOC.
304 00227 R 040001 R DAC D1LOC /POINTER TO FIRST DISP. LOC.
305 00230 R 221057 R LAC* PNAME /=0 FOR NEW FILE.
306 00231 R 741200 A SNA /NOT = 0 FOR OLD FILE.
307 00232 R 201065 R LAC (2
308 00233 R 341057 R TAD PNAME
309 00234 R 041056 R DAC POINT /POINTS TO FIRST AVAIL. LOC.
310 00235 R 201055 R LAC MODE /WHAT IS CURRENT CALL?
311 00236 R 541063 R SAD (1
312 00237 R 600247 R JMP VECT /LINE SUBR.
313 00240 R 541065 R SAD (2
314 00241 R 600252 R JMP CHAR /TEXT SUBR.
315 00242 R 541067 R SAD (3
316 00243 R 600346 R JMP DSPJMS /COPY SUBR.
317 00244 R 541102 R SAD (4
318 00245 R 600413 R JMP GRPH /GRAPH SUBR.
319 00246 R 600414 R JMP RET /PRAMTR. SUBR.
320 .EJECT

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321
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324 00247 R 100457 R  /VECT JMS VECTOR /GO TO VECTOR ROUTINE
325 00250 R 600415 R  JMS RET5 /DELTA X=DELTA Y=0. NO ACTION
326 00251 R 600415 R  JMP RET5 /GO TO END PROCESSING
327
328
329
330 00252 R 201056 R  /CHAR LAC POINT /GET FILE POINTER.
331 00253 R 100255 R  JMS CHR /FORM CHAR. STRING INSTRUCTION.
332 00254 R 600414 R  JMP RET /GO TO END PROCESSING.
333
334
335
336
337 00255 R 000000 A  /CHR 0
338 00256 R 501110 R  AND (17777
339 00257 R 341112 R  TAD (CHARSI /INDIRECT REFERENCE TO LOC+2
340 00260 R 041025 R  DAC TEMP1 /STORE IN LOCAL STORAGE.
341 00261 R 501110 R  AND (17777
342 00262 R 341113 R  TAD (DJMP1
343 00263 R 041026 R  DAC TEMP2 /STORE DJMP INSTRUCTION.
344 00264 R 201037 R  LAC STR /ADDR. OF 5/7 ASCII.
345 00265 R 041027 R  DAC TEMP3
346
347
348
349 00266 R 221040 R  /TEST N AND INSERT ALT IF .NE. ZERO.
350 00267 R 741200 A  LAC* N /GET NO. OF CHARS.
351 00270 R 600343 R  SNA /IF N=0, DO NOT INSERT ALT.
352 00271 R 341114 R  JMP CHR10
353 00272 R 741100 A  TAD (-5
354 00273 R 600277 R  SPA
355 00274 R 441037 R  JMP .+4
356 00275 R 441037 R  ISZ STR /MOVE ARRAY POINTER DOWN
357 00276 R 600271 R  ISZ STR /BY 2 FOR EACH 5 CHARS.
358 00277 R 341115 R  JMP .-5
359 00300 R 740001 A  TAD (5 /POSITION FOR INSERTION OF ALT.
360 00301 R 041040 R  CMA
361 00302 R 221037 R  DAC N /=MINUS CH. POSITION IN WD. PAIR.
362 00303 R 441040 R  LAC* STR /GET FIRST WD. OF PAIR.
363 00304 R 600310 R  ISZ N /FIRST CH. POS?
364 00305 R 501116 R  JMP TST2 /NO.
365 00306 R 241117 R  AND (3777 /YES, FORM ALT CH.
366 00307 R 600342 R  XOR (764000
367 00310 R 441040 R  JMP ALTEND
368 00311 R 600315 R  TST2 ISZ N /SECOND CH. POS?
369 00312 R 501120 R  JMP TST3 /NO.
370 00313 R 241121 R  AND (774017 /YES, FORM ALT CHAR.
371 00314 R 600342 R  XOR (3720
372 .EJECT JMP ALTEND

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373	00315 R 441040 R	TST3	ISZ		/THIRD CH. POS?
374	00316 R 600327 R		JMP	TST4	/NO.
375	00317 R 501122 R		AND	(777760	/YES, FORM FIRST HALF OF ALT
376	00320 R 241076 R		XOR	(17	/AND
377	00321 R 061037 R		DAC*	STR	/STORE IT.
378	00322 R 441037 R		ISZ	STR	/BUMP ARRAY POINTER TO
379	00323 R 221037 R		LAC*	STR	/GET SECOND WD. OF PAIR.
380	00324 R 501123 R		AND	(77777	/FORM SECOND HALF OF ALT.
381	00325 R 241124 R		XOR	(500000	/
382	00326 R 600342 R		JMP	ALTEND	
383	00327 R 441037 R	TST4	ISZ	STR	/BUMP ARRAY POINTER TO
384	00330 R 221037 R		LAC*	STR	/GET SECOND WD. OF PAIR.
385	00331 R 441040 R		ISZ	N	/FOURTH CH. POS?
386	00332 R 600336 R		JMP	TST5	/NO.
387	00333 R 501125 R		AND	(700377	/YES, FORM ALT CHAR.
388	00334 R 241126 R		XOR	(76400	/
389	00335 R 600342 R		JMP	ALTEND	
390	00336 R 441040 R	TST5	ISZ	N	/FIFTH CH. POS?
391	00337 R 740040 A		HLT		/NO. (SHOULD NEVER OCCUR)
392	00340 R 501127 R		AND	(777401	/YES, FORM ALT CHAR.
393	00341 R 241130 R		XOR	(372	
394	00342 R 061037 R	ALTEND	DAC*	STR	/STORE WD. WITH ALT CHAR.
395	00343 R 777777 A	CHR10	LAW	-1	/SET STOP
396	00344 R 041030 R		DAC	TEMP4	/FOR STORE ROUTINE.
397	00345 R 620255 R		JMP*	CHR	/AND RETURN.
398			.EJECT		

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399
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401
402      00346 R 201056 R DSPJMS LAC POINT /GET FILE POINTER.
403      00347 R 100351 R      JMS  CPY  /GENERATE DJMS SEQUENCE.
404      00350 R 600414 R      JMP  RET  /GO TO RETURN PROCESSING.
405
406      /
407      /CPY - INSERT DISPLAY JMS FOR BOTH MAIN AND SUBPICTURE ENTRIES.
408      /
409      CPY      0
410      00351 R 000000 A      AND      (17777
411      00352 R 501110 R      DAC      TEMP      /SAVE 13-BIT ADDRESS.
412      00353 R 041024 R      TAD      (DJMS2
413      00354 R 341131 R      DAC      TEMP1      /SAVE DJMS INSTRUCTION.
414      00355 R 041025 R      LAC      TEMP
415      00356 R 201024 R      TAD      (DJMP2+1
416      00357 R 341066 R      DAC      TEMP2      /SAVE DJMP INSTRUCTION.
417      00360 R 041026 R      ISZ      PNAME1
418      00361 R 441040 R      LAC      PNAME1      /POINTER TO SUBPICTURE + 1.
419      00362 R 201040 R      DAC      TEMP3      /SAVE IN LOCAL STORAGE.
420      00363 R 041027 R      LAW      -1
421      00364 R 777777 A      DAC      TEMP4      /SET STOP FOR STORE ROUTINE.
422      00365 R 041030 R      LAC*     RST
423      00366 R 221037 R      SNA
424      00367 R 741200 A      JMP*     CPY      /TEST SAVE/RESTORE OPTION.
425      00370 R 620351 R      LAC      TEMP3      /NO, EXIT.
426      00371 R 201027 R      DAC      TEMP4      /YES, MOVE EXISTING INSTRUCTIONS DOWN
427      00372 R 041030 R      LAC      (2
428      00373 R 201065 R      TAD      TEMP2
429      00374 R 341026 R      DAC      TEMP3
430      00375 R 041027 R      LAC      (1
431      00376 R 201063 R      TAD      TEMP1
432      00377 R 341025 R      DAC      TEMP2
433      00400 R 041026 R      LAC      TEMP
434      00401 R 201024 R      TAD      (SAVE4
435      00402 R 341132 R      DAC      TEMP1      /STORE SAVE INSTRUCTION.
436      00403 R 041025 R      DZM      TEMP5
437      00404 R 141031 R      LAC      TEMP
438      00405 R 201024 R      TAD      (RSTR+4
439      00406 R 341133 R      DAC      TEMP6      /STORE RESTORE INSTRUCTION.
440      00407 R 041032 R      LAW      -1
441      00410 R 777777 A      DAC      TEMP7      /SET STOP FOR STORE ROUTINE.
442      00411 R 041033 R      JMP*     CPY
443      00412 R 620351 R      .EJECT

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/
/PROCESS CALL TO GRAPH
/
GRPH LAC* AX
.EJECT

00413 R 221041 R

/CHECK AXIS SETTING

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451 00414 R 100443 R RET JMS MSTORE /STORE INSTR. IN DISPLAY FILE.
452 00415 R 201134 R RET5 LAC (RET10) /
453 00416 R 040017 R DAC RETAD /SET RETURN FROM COMMON PROCESSING.
454 00417 R 200001 R LAC D1LOC /SET UP FOR END PROCESSING
455 00420 R 041025 R RET6 DAC D.1
456 00421 R 341135 R TAD (-2) /POINTS TO FIRST LOC. OF FILE.
457 00422 R 041024 R DAC D.0
458 00423 R 501110 R AND (17777
459 00424 R 341136 R TAD (DJMPI1
460 00425 R 061056 R DAC* POINT /STORE DJMP* FILE+1
461 00426 R 201056 R LAC POINT
462 00427 R 740001 A CMA /POINT - FILE = CURRENT
463 00430 R 341024 R TAD D.0 /LENGTH OF FILE.
464 00431 R 740001 A CMA
465 00432 R 061024 R DAC* D.0 /UPDATE FILE LENGTH.
466 00433 R 620017 R JMP* RETAD /RETURN.
467 00434 R 201054 R RET10 LAC RUNSW
468 00435 R 741200 A SNA
469 00436 R 600442 R JMP .+4
470 00437 R 201061 R LAC RUNSW1
471 00440 R 740200 A SZA
472 00441 R 100754 R JMS STARTV
473 00442 R 620026 R JMP* RETAD2 /RETURN TO CALLER.
474
475 /MSTORE - COMMON STORE ROUTINE FOR BOTH MAIN AND SUBPICTURE
476 / ENTRIES, EXCEPT FOR THOSE REQUIRING VECTOR OR GRAPHLOT COMMANDS.
477 /
478 00443 R 000000 A MSTORE 0
479 00444 R 201071 R LAC (TEMP1
480 00445 R 041024 R DAC TEMP /STARTING LOC OF LOCAL STORAGE.
481 00446 R 141014 R DZM DCTR /RESET COUNTER.
482 00447 R 221024 R MSTR15 LAC* TEMP /GET DISPLAY INSTR.
483 00450 R 541034 R SAD FENCE /-1=NO MORE.
484 00451 R 620443 R JMP* MSTORE
485 00452 R 061056 R DAC* POINT /STORE IN DISPLAY FILE.
486 00453 R 441014 R ISZ DCTR /KEEP COUNT.
487 00454 R 441056 R ISZ POINT /BUMP FILE POINTER.
488 00455 R 441024 R ISZ TEMP /POINTS TO NEXT INSTR.
489 00456 R 600447 R JMP MSTR15 /RECYCLE
490 .EJECT

```



```

492
493
494
495
496
497      00457 R 000000 A
498      00460 R 221040 R
499      00461 R 100561 R
500      00462 R 501137 R
501      00463 R 040255 R
502      00464 R 751400 A
503      00465 R 740001 A
504      00466 R 040037 R
505      00467 R 221037 R
506      00470 R 100561 R
507      00471 R 501137 R
508      00472 R 041060 R
509      00473 R 751400 A
510      00474 R 740001 A
511      00475 R 040351 R
512      00476 R 200255 R
513      00477 R 741200 A
514      00500 R 600524 R
515      00501 R 201060 R
516      00502 R 741200 A
517      00503 R 600534 R
518      00504 R 540255 R
519      00505 R 600541 R
520

/
/
/GENERATE REQUIRED VECTORS
/
/
VECTOR 0
      LAC*   ARG1+1
      JMS    SIGNM
      AND    (1777
      DAC    DELTAY
      SZL!CLA
      CMA
      DAC    SOY
      LAC*   ARG1
      JMS    SIGNM
      AND    (1777
      DAC    DELTAX
      SZL!CLA
      CMA
      DAC    SOX
      LAC    DELTAY
      SNA
      JMP    YZERO
      LAC    DELTAX
      SNA
      JMP    XZERO
      SAD    DELTAY
      JMP    YEQX
      .EJECT

/GET DELTA Y.
/CHECK SIGN AND MAG..
/MASK TO TEN BITS.
/AND SAVE.

/SIGN OF DELTAY; 0=PLUS, -1=MINUS.

/GET DELTAX.
/CHECK SIGN AND MAG..
/MASK TO TEN BITS.
/AND SAVE.

/SIGN OF DELTAX; 0=PLUS, -1=MINUS.

/START TESTS FOR BASIC VECTOR.
/DELTAY .EQ. ZERO
/DELTAY .NE. ZERO
/DELTAX .EQ. ZERO
/DELTAX .NE. ZERO
/ABS (DELTAY) .EQ. ABS (DELTAX)

```

521	00506 R 200351 R	LAC	SOX	
522	00507 R 740200 A	SZA		/SET SIGN FOR Y VECTOR
523	00510 R 201140 R	LAC	(4000	
524	00511 R 241060 R	XOR	DELTAX	
525	00512 R 241141 R	XOR	(SVX	/FORM INSTRUCTION
526	00513 R 100567 R	JMS	LSTOR	/AND STORE IT.
527	00514 R 441056 R	ISZ	POINT	/BUMP POINTER FOR NEXT INST.
528	00515 R 200037 R	LAC	SOY	
529	00516 R 740200 A	SZA		/SET SIGN FOR X VECTOR
530	00517 R 201140 R	LAC	(4000	
531	00520 R 240255 R	XOR	DELTAY	
532	00521 R 241141 R	XOR	(SVY	/FORM SECOND INSTRUCTION
533	00522 R 100567 R	JMS	LSTOR	/AND STORE IT.
534	00523 R 600556 R	JMP	VECND	/GO TO RETURN PROCESSING.
535	00524 R 541060 R	YZERO	SAD	DELTAX .EQ. ZERO TOO?
536	00525 R 620457 R	JMP*	VECTOR	/YES, RETURN, NO ACTION
537	00526 R 540351 R	SAD	SOX	/NO, CHECK SIGN OF DELTAX.
538	00527 R 341142 R	TAD	(-10000	/PLUS, VECTOR DIREC. 0
539	00530 R 341143 R	TAD	(V4	/MINUS, VECTOR DIREC. 4
540	00531 R 241060 R	YZER5	XOR	DELTAX
541	00532 R 100567 R	JMS	LSTOR	/FORM REST OF INSTRUCTION.
542	00533 R 600556 R	JMP	VECND	/STORE IN DISPLAY FILE.
543	00534 R 540037 R	XZERO	SAD	SOY
544	00535 R 341142 R	TAD	(-10000	/AND RETURN.
545	00536 R 341144 R	TAD	(V6	/X .EQ. 0, CHECK SIGN OF DELTAY.
546	00537 R 240255 R	XOR	DELTAY	/PLUS, VECTOR DIREC. 2
547	00540 R 600532 R	JMP	YZER5+1	/MINUS, VECTOR DIREC. 6
548	00541 R 750000 A	YEQX	CLA	/FORM REST OF INSTRUCTION.
549	00542 R 540351 R	SAD	SOX	/STORE IT AND RETURN.
550	00543 R 600547 R	JMP	YEQX5	/ABS DELTAY .EQ. ABS DELTAX
551	00544 R 540037 R	SAD	SOY	/CHECK SIGN OF X.
552	00545 R 600553 R	JMP	DTAB+2	/PLUS.
553	00546 R 600552 R	JMP	DTAB+1	/MINUS, CHECK SIGN OF Y.
554	00547 R 540037 R	YEQX5	SAD	SOY
555	00550 R 600554 R	JMP	DTAB+3	/DELTAX=MINUS, DELTAY=PLUS.
556	00551 R 341140 R	DTAB	TAD	/DELTAX=MINUS, DELTAY=MINUS.
557	00552 R 341140 R	TAD	(4000	/DELTAX=PLUS, CHECK DELTAY.
558	00553 R 341140 R	TAD	(4000	/PLUS, VECTOR DIREC. 1
559	00554 R 341145 R	TAD	(V1	/MINUS, VECTOR DIREC 7.
560	00555 R 600531 R	JMP	YZER5	/VECTOR DIREC. 5
561	00556 R 440457 R	VECND	ISZ	VECTOR
562	00557 R 441056 R	ISZ	POINT	/VECTOR DIREC. 3
563	00560 R 620457 R	JMP*	VECTOR	/VECTOR DIREC. 1
564		.EJECT		/GO FORM INST, STORE, AND RETURN.
				/BUMP FOR NORMAL RETURN.
				/POINTS TO NEXT FREE LOC.
				/RETURN.

```

565
566
567
568
569
570      00561 R 000000 A
571      00562 R 744100 A
572      00563 R 620561 R
573      00564 R 744003 A
574      00565 R 341063 R
575      00566 R 620561 R
576
577
578
579      00567 R 000000 A
580      00570 R 041024 R
581      00571 R 221041 R
582      00572 R 750200 A
583      00573 R 201146 R
584      00574 R 241024 R
585      00575 R 061056 R
586      00576 R 620567 R
587
588
589
590

```

/
 /SIGNM - SEPERATE SIGN AND MAGNITUDE. ENTER WITH DELTA IN
 / AC, EXIT WITH ABS (DELTA) IN AC, L=0 FOR PLUS,
 / L=1 FOR MINUS.
 /
 SIGNM 0
 CLL!SMA
 JMP* SIGNM /CLEAR L AND EXIT IF POS.
 CMA!STL /TWO'S COMPLEMENT AC
 TAD (1 /AND SET L IF NEG.
 JMP* SIGNM
 /
 /LSTOR - SET INTENSIFY BIT IF NECESSARY, AND STORE VECTOR INST.
 /
 LSTOR 0
 DAC TEMP /SAVE TEMPORARILY
 LAC* LT
 SZAICLA /CHECK INTENSITY ARG.
 LAC (20000 /ON, SET INTENSIFY BIT.
 XOR TEMP
 DAC* POINT /STORE VECTOR INST.
 JMP* LSTOR
 /
 /
 /
 .EJECT


```

592 /
593 /VT15 DISPLAY - FORTRAN CALLABLE SUBPROGRAM PACKAGE
594 /MAIN DISPLAY FILE GENERATION
595 /
596 /SUBROUTINE DINIT
597 /
598 00577 R 000000 A DINIT 0
599 00600 R 201147 R LAC (DINT10 /SET RETURN FOR
600 00601 R 040017 R DAC RETAD /.INIT. BELOW.
601 00602 R 200577 R LAC DINIT
602 00603 R 100703 R JMS GETARG /GET ARG.
603 00604 R 201037 R LAC ARG1 /GET FILE NAME
604 00605 R 041021 R DAC MAINFL /LOC. OF CURRENT MAIN FILE
605 00606 R 341063 R TAD (1
606 00607 R 041024 R DAC TEMP /ADDR. OF MF+1.
607 00610 R 221021 R LAC* MAINFL
608 00611 R 741200 A SNA /MAINFL(1)=0 FOR NEW FILES
609 00612 R 201065 R LAC (2
610 00613 R 341021 R TAD MAINFL
611 00614 R 041022 R DAC MFPTR /SAVE FILE POINTER AND
612 00615 R 041056 R DAC POINT /COPY FOR COMMON POINTER.
613 00616 R 201021 R LAC MAINFL
614 00617 R 341065 R TAD (2
615 00620 R 041023 R DAC MF.1 /ADDR. OF MF+2.
616 00621 R 061024 R DAC* TEMP /ADDR. OF MF+2 INTO MF+1.
617 00622 R 541022 R SAD MFPTR /IS THIS A NEW MAIN FILE?
618 00623 R 600641 R JMP DINT30 /YES, INSERT PARAM. WD.
619 00624 R 040634 R DINT5 DAC DINT20+2 /STARTING ADDR. FOR WRITE MACRO.
620 00625 R 600420 R JMP RET6 /GO CLOSE UP FILE.
621 00626 R DINT10 .INIT DATVT,0,0 /INITIALIZE DISPLAY
00626 R 000010 A *G CAL+0*1000 DATVT&777
00627 R 000001 A *G 1
00630 R 000000 A *G 0+0
00631 R 000000 A *G 0
622 00632 R DINT20 .WRITE DATVT,4,0,0 /START UP THE DISPLAY.
00632 R 004010 A *G CAL+4*1000 DATVT&777
00633 R 000011 A *G 11
00634 R 000000 A *G 0
*G .DEC
00635 R 000000 A *G -0
623 00636 R 777777 A LAW -1
624 00637 R 041054 R DAC RUNSW
625 00640 R 620577 R JMP* DINIT /RETURN.
626 /
627 00641 R 201150 R DINT30 LAC (215052 /NEW MAINFL, SET FOR CH ESC ON ALT.
628 00642 R 061022 R DAC* MFPTR /AND TO TURN OFF BLINK, OFST,ROTAT, AND LP.
629 00643 R 441022 R ISZ MFPTR /BUMP FILE POINTERS.
630 00644 R 441056 R ISZ POINT
631 00645 R 201023 R LAC MF.1 /GET START OF MAIN FILE.
632 00646 R 600624 R JMP DINT5
633 .EJECT

```

```

634
635
636
637      00647 R 000000 A
638      00650 R 201022 R
639      00651 R 041056 R
640      00652 R 200647 R
641      00653 R 040026 R
642      00654 R 100703 R
643      00655 R 221037 R
644      00656 R 041024 R
645      00657 R 100662 R
646      00660 R 100676 R
647      00661 R 600763 R
648
649
650
651      00662 R 000000 A
652      00663 R 201070 R
653      00664 R 041025 R
654      00665 R 341063 R
655      00666 R 041026 R
656      00667 R 221026 R
657      00670 R 541053 R
658      00671 R 620662 R
659      00672 R 061025 R
660      00673 R 441025 R
661      00674 R 441026 R
662      00675 R 600667 R
663

/
/SUBROUTINE PLOT
/
PLOT      0
          LAC      MFPTR
          DAC      POINT
          /SET UP COMMON FILE POINTER.
          LAC      PLOT
          DAC      RETAD2
          /SAVE RETURN ADDR.
          JMS      GETARG
          /GET ARGUMENT POINTERS
          LAC*     ARG1
          /TYPE OF PLOT
          DAC      TEMP
          /SAVE.
          JMS      MOVARG
          /MOVE ARG POINTERS DOWN.
          JMS      PLCOPY
          JMP      RETEN
/
/MOVARG - MOVE ARGUMENT POINTERS DOWN TO ENABLE COMMON PROCESSING.
/
MOVARG     0
          LAC      (ARG1
          DAC      TEMP1
          /POINTER TO ARG1 POINTER.
          TAD      (1
          DAC      TEMP2
          /POINTER TO ARG2 POINTER.
MOVARS     LAC*     TEMP2
          /GET ARGUMENT POINTER.
          SAD      ARGND
          /FINISHED?
          JMP*     MOVARG
          /YES, EXIT.
          DAC*     TEMP1
          /NO, MOVE ARG POINTER DOWN.
          ISZ      TEMP1
          /BUMP POINTERS USED FOR MOVE.
          ISZ      TEMP2
          JMP      MOVARS
          /RECYCLE.
          .EJECT

```

```

664
665
666
667 00676 R 000000 A
668 00677 R 201056 R
669 00700 R 100351 R
670 00701 R 201041 R
671 00702 R 620676 R
672
673
674
675 00703 R 000000 A
676 00704 R 041035 R
677 00705 R 221035 R
678 00706 R 501151 R
679 00707 R 041024 R
680 00710 R 201070 R
681 00711 R 041025 R
682 00712 R 441035 R
683 00713 R 201035 R
684 00714 R 501151 R
685 00715 R 541024 R
686 00716 R 600727 R
687 00717 R 221035 R
688 00720 R 740100 A
689 00721 R 600724 R
690 00722 R 041026 R
691 00723 R 221026 R
692 00724 R 061025 R
693 00725 R 441025 R
694 00726 R 600712 R
695 00727 R 201025 R
696 00730 R 341152 R
697 00731 R 040001 R
698 00732 R 201025 R
699 00733 R 541053 R
700 00734 R 620703 R
701 00735 R 161025 R
702 00736 R 441025 R
703 00737 R 600732 R
704
705
706
707 00740 R 000000 A
708 00741 R 141061 R
709 00742 R 441061 R
710
711
00743 R 000010 A *G
00744 R 000001 A *G
00745 R 000000 A *G
00746 R 000000 A *G

/
/PLOT A SUBPICTURE FROM THE MAIN FILE - PLOT(0,...)
/
PLCOPY 0
LAC POINT /GET MAIN FILE POINTER
JMS CPY /GENERATE DJMS SEQUENCE.
LAC ARG1+2 /GET CNAME POINTER AND
JMP* PLCOPY /RETURN.
/
/GENERAL GET ARGUMENT-POINTERS ROUTINE.
/
GETARG 0
DAC ARGP /STORE IN ARG POINTER.
LAC* ARGP /GET JMP OVER ARG LIST.
AND (7777 /STRIP OF CODE
DAC TEMP /AND SAVE.
LAC (ARG1 /POINTER TO START OF
DAC TEMP1 /LOCAL ARG STORAGE.
GTRG10 ISZ ARGP /BUMP POINTER.
LAC ARGP /DOES IT POINT
AND (7777 /PAST THE END OF
SAD TEMP /THE ARG LIST?
JMP GTRG20 /GO FINISH UP, IF SO.
LAC* ARGP /NO, GET THE ARG.
SMA /INDIRECT (BIT 0 ON)?
JMP GTRG15 /NO, STORE IT.
DAC TEMP2 /YES, GET REAL
LAC* TEMP2 /ARGUMENT POINTER.
GTRG15 DAC* TEMP1 /INSERT ARGUMENT.
ISZ TEMP1 /NEXT WORD IN LOCAL STORAGE
JMP GTRG10 /RECYCLE.
GTRG20 LAC TEMP1 /DOES ARG. PTR. POINT TO
TAD (-1 /SET UP POSSIBLE
DAC LINE /POINTER TO PNAME (IF GIVEN)
GTRG21 LAC TEMP1 /IN CASE OF SUBPIC ENTRY.
SAD ARGND /END OF LOCAL STORE?
JMP* GETARG /YES, EXIT.
DZM* TEMP1 /NO, ZERO REMAINING LOCS.
ISZ TEMP1
JMP GTRG21 /RECYCLE.
/
/STOPTV, STARTV - STOP/START DISPLAY WHILE MODIFYING MAINFILE.
/
STOPTV 0
DZM RUNSW1#
ISZ RUNSW1
.INIT DATV/T,0,0
CAL+0*1000 DATV/T&777
1
0+0
0
.WRITE DATV/T,2,0,0

```

	00747	R	002010	A	*G	CAL+2*1000 DATV/T&777
	00750	R	000011	A	*G	11
	00751	R	000000	A	*G	0
					*G	.DEC
	00752	R	000000	A	*G	-0
712	00753	R	620740	R		JMP* STOPIV
713	00754	R	000000	A	STARTV	0
714	00755	R	141061	R		DZM RUNSW1
715						.WRITE DATV/T,0,0,0
	00756	R	000010	A	*G	CAL+0*1000 DATV/T&777
	00757	R	000011	A	*G	11
	00760	R	000000	A	*G	0
					*G	.DEC
	00761	R	000000	A	*G	-0
716	00762	R	620754	R		JMP* STARTV
717						.EJECT

```

718
719
720
721 00763 R 040577 R
722 00764 R 201022 R
723 00765 R 041056 R
724 00766 R 100740 R
725 00767 R 100443 R
726 00770 R 200577 R
727 00771 R 741200 A
728 00772 R 601004 R
729 00773 R 201014 R
730 00774 R 742020 A
    00775 R 742020 A
731 00776 R 501153 R
732 00777 R 041014 R
733 01000 R 201022 R
734 01001 R 501123 R
735 01002 R 341014 R
736 01003 R 060577 R
737 01004 R 201056 R
738 01005 R 041022 R
739 01006 R 201154 R
740 01007 R 040017 R
741 01010 R 201023 R
742 01011 R 600420 R
743 01012 R 100754 R
744 01013 R 620026 R
745

/
/RETURN SEQUENCE FOR NEW DISPLAY CODE (PLOT, SETPT)
/
RETRN  DAC      CNAME      /SAVE POSSIBLE RET. ARG. ADDR.
      LAC      MFPTR
      DAC      POINT      /SET UP COMMON POINTER.
      JMS      STOPTH      /STOP DISPLAY TO UPDATE
      JMS      MSTOR      /STORE DISP. INSTR.
RTRN20 LAC      CNAME
      SNA
      JMP      RTRN25      /CNAME ASKED FOR?
      LAC      DCTR      /NO, FINISH UP.
      RTR: RTR      /YES, GET COUNT
                        /AND KEEP IN HIGH-
                        /ORDER 3 BITS OF
                        /POINTER THAT IS
                        /RETURNED.
                        AND      (700000
DAC      DCTR
LAC      MFPTR
AND      (77777
TAD      DCTR
DAC*     CNAME
RTRN25 LAC      POINT
      DAC      MFPTR      /SAVE NEW END OF MF.
      LAC      (RTRN30
      DAC      RETAD      /SAVE RETURN ADDRESS. AND
      LAC      MF.1
      JMP      RET6      /GO CLOSE UP FILE.
RTRN30 JMS      STARTV    /START UP DISPLAY.
      JMP*     RETAD2     /RETURN TO CALLER.
      .EJECT

```

```

746 /
747 /SUBROUTINE DCLOSE
748 /
749 01014 R 000000 A DCLOSE 0
750 01015 R 141054 R DZM RUNSW
751 .CLOSE DATVT /TURN OFF DISPLAY
01016 R 000010 A *G CAL DATVT&777
01017 R 000006 A *G 6
01020 R 621014 R JMP* DCLOSE /RETURN

752 /
753 /CONSTANTS AND STORAGE
754 /
755 /
756 01021 R 000000 A MF.101 /GLOBAL FOR FIRST LOC. OF CURRENT FILE.
757 01022 R 000000 A MF.102 /GLOBAL FOR CURRENT END OF CURRENT FILE.
758 001022 R MFPTR=MF.102 /POINTER TO CURRENT END OF DISPLAY FILE.
759 01023 R 000000 A MF.1 /POINTER TO FIRST DISPLAY COMMAND.
760 001021 R MAINFL=MF.101 /POINTER TO BEGINNING OF CURRENT DISP.FILE.
761 01024 R 000000 A TEMP /TEMPORARY STORAGE
762 01025 R 000000 A TEMP1 /STORAGE FOR CODE TO BE
763 01026 R 000000 A TEMP2 /INSERTED IN FILE.
764 01027 R 000000 A TEMP3
765 01030 R 000000 A TEMP4
766 01031 R 000000 A TEMP5
767 01032 R 000000 A TEMP6
768 01033 R 000000 A TEMP7
769 01034 R 777777 A FENCE -1 /-1 NEEDED AT END OF FILE STORAGE.
770 01035 R 000000 A ARGP /ARGUMENT POINTER.
771 01036 R 000000 A ARGLG /LENGTH OF ARG. LIST.
772 01037 R ARG1 /LOCAL ARGUMENT STORAGE.
773 01053 R 001053 R ARGND .BLOCK 14 /END OF LOCAL ARG. STORAGE.
774 01054 R 000000 A RUNSW /0=DISPLAY NOT RUNNING; -1=RUNNING.
775 01055 R 000000 A MODE /TYPE OF SUBPIC ENTRY.
776 01056 R 000000 A POINT /FILE POINTER (COMMON).
777 01057 R 000000 A PNAME /ADDR. OF SUBPIC FILE.
778 001024 R D.0=TEMP /ADDR. OF FIRST LOC. IN FILE (MAIN OR SUBPIC).
779 001025 R D.1=TEMP1 /ADDR. OF FIRST INSTR. IN FILE (MAIN OR SUBPIC).
780 001037 R RST=ARG1 /SAVE-RESTORE OPTION FLAG FOR COPY AND PLOT 0.
781 001037 R STR=ARG1 /ADDR. OF 5/7 ASCII ARRAY FOR TEXT AND PLOT 3.
782 001037 R DTA=ARG1 /ADDR. OF DATA POINTS FOR GRAPH.
783 001041 R AX=ARG1+2 /POINTED AXIS FOR GRAPH.
784 001040 R N=ARG1+1 /NO. OF DATA POINTS FOR GRAPH, OR NO. OF CHARS. FOR TEXT
785 001040 R PNAME1=ARG1+1 /ADDR. OF SUBPIC TO BE COPIED.
786 000001 R D1LOC=LINE /ADDR. OF FIRST INSTR. IN FILE (SUBPIC).
787 000017 R RETAD=COPY /COMMON RETURN.
788 000026 R RETAD2=PRAMTR /COMMON RETURN.
789 001045 R UVAR=ARG1+6 /MAJOR DELTA (VECTOR APPROX.)
790 001046 R VVAR=ARG1+7 /MINOR DELTA (VECTOR APPROX.)
791 001047 R UMW=ARG1+10 /2(UVAR-VVAR) (VECTOR APPROX.)
792 001050 R B=ARG1+11 /B VARIABLE FOR VECTOR APPROX.
793 001051 R A=ARG1+12 /A VARIABLE FOR VECTOR APPROX.
794 001052 R D=ARG1+13 /D VARIABLE FOR VECTOR APPROX.
795 000351 R SOX=CPY /SIGN OF DELTA X (VECTOR SUBR).

```

```

796      000037 R    SOY=PRM
797      01060 R 000000 A    DELTAX
798      000255 R    DELTAY=CHR
799      001041 R    LT=ARG1+2
800      001034 R    TRUE=FENCE
801      000577 R    CNAME=DINIT
802      001014 R    DCTR=DCLOSE
803      001014 R    NEED=DCLOSE
804      000647 R    RMN=PLOT
805      001055 R    ARG TYP=MODE
806      000000 A          .END

01062 R 600004 A *L
01063 R 000001 A *L
01064 R 600002 A *L
01065 R 000002 A *L
01066 R 600003 A *L
01067 R 000003 A *L
01070 R 001037 R *L
01071 R 001025 R *L
01072 R 200000 A *L
01073 R 210000 A *L
01074 R 220000 A *L
01075 R 234000 A *L
01076 R 000017 A *L
01077 R 000020 A *L
01100 R 001600 A *L
01101 R 002000 A *L
01102 R 000004 A *L
01103 R 000010 A *L
01104 R 000400 A *L
01105 R 001000 A *L
01106 R 000040 A *L
01107 R 000177 A *L
01110 R 017777 A *L
01111 R 767777 A *L
01112 R 060002 A *L
01113 R 600001 A *L
01114 R 777773 A *L
01115 R 000005 A *L
01116 R 003777 A *L
01117 R 764000 A *L
01120 R 774017 A *L
01121 R 003720 A *L
01122 R 777760 A *L
01123 R 077777 A *L
01124 R 500000 A *L
01125 R 700377 A *L
01126 R 076400 A *L
01127 R 777401 A *L
01130 R 000372 A *L
01131 R 660002 A *L
01132 R 240004 A *L

```

```

/SIGN OF DELTA Y (VECTOR SUBR).
/DELTA Y (VECTOR SUBR).
/LINE INTENSIFY FLAG.
/FORTRAN .T.
/POINTS TO DISPLAY COMMANDS INSERTED.
/COUNTER FOR GROUP COUNT
/WORDS NEEDED BY REQ. INSERTION.
/R-NEED
/TYPE OF ARGUMENT (PLOT SUBR.)

```

01133 R 260004 A *L
01134 R 000434 R *L
01135 R 777776 A *L
01136 R 620001 A *L
01137 R 001777 A *L
01140 R 004000 A *L
01141 R 100000 A *L
01142 R 770000 A *L
01143 R 410000 A *L
01144 R 414000 A *L
01145 R 402000 A *L
01146 R 020000 A *L
~~01147 R 000626 R *L~~
01150 R 215052 A *L
01151 R 007777 A *L
01152 R 777777 A *L
01153 R 700000 A *L
01154 R 001012 R *L

SIZE=01160

NO ERROR LINES

A	001051	793*							
ALTEND	00342	366	371	382	389	394*			
ARGLG	01036	102	112	122	291	771*			
ARGND	01053	657	699	773*					
ARGP	01035	138	149	164	165	676	677	682	683
		687	770*						
ARGTYP	001055	805*							
ARG1	01037	148	155	166	167	498	505	603	643
		652	670	680	772*	780	781	782	783
		784	785	789	790	791	792	793	794
		799							
AX	001041	446	783*						
B	001050	792*							
BK	001000	78*	247						
BLINK	00162	210	245*						
CHAR	00252	314	330*						
CHARSI	060002	74*	339						
CHR	00255	331	337*	397	798				
CHR10	00343	351	395*						
CNAME	000577	721	726	736	801*				
COPY	00017	54	120*	125	787				
CPY	00351	403	408*	423	441	669	795		
D	001052	794*							
DASH	00166	211	252*						
DATVT	000010	93*	621	622	710	711	715	751	
DCLOSE	01014	55	749*	752	802	803			
DCTR	001014	481	486	729	732	735	802*		
DELTAX	01060	508	515	524	535	540	797*		
DELTAY	000255	501	512	518	531	546	798*		
DINIT	00577	55	598*	601	625	801			
DINT10	00626	599	621*						
DINT20	00632	619	622*						
DINT30	00641	618	627*						
DINT5	00624	619*	632						
DJMP11	620001	70*	459						
DJMP1	600001	68*	342						
DJMP2	600002	69*	414						
DJMS2	660002	67*	411						
DNOP	200000	84*							
DSH	000004	79*	253						
DSPJMS	00346	316	402*						
DTA	001037	782*							
DTAB	00551	552	553	555	556*				
D.0	001024	457	463	465	778*				
D.1	001025	455	779*						
D1LOC	000001	304	454	786*					
FENCE	01034	483	769*	800					
GETARG	00703	135	288	602	642	675*	700		
GRPH	00413	318	446*						
GTRG10	00712	682*	694						
GTRG15	00724	689	692*						
GTRG20	00727	686	695*						
GTRG21	00732	698*	703						

GY	162000	91*							
INIT	00211	106	116	126	287*				
INIT10	00225	140	293	296	302*				
INIT5	00223	141	297*						
INT	002000	76*	230						
INTENS	00145	208	227*						
JINST	00126	171	203*						
LINE	00001	54	100*	105	139	297	697	786	
LODN	000400	82*	273						
LP	000010	77*	237						
LSTOR	00567	526	533	541	579*	586			
LT	001041	581	799*						
LTPN	00154	209	235*						
MAINFL	001021	604	607	610	613	760*			
MFPTR	001022	611	617	628	629	638	722	733	738
		758*							
MF.1	01023	615	631	741	759*				
MF.101	01021	56	756*	760					
MF.102	01022	56	757*	758					
MODE	01055	104	114	124	136	310	775*	805	
MOVARG	00662	645	651*	658					
MOVARS	00667	656*	662						
MSTOR	00443	451	478*	484	725				
MSTR15	00447	482*	489						
N	001040	349	360	362	367	373	385	390	784*
NAME	00201	214	272*						
NEED	001014	803*							
OFFSET	00172	212	259*						
OFST	000002	80*	260						
PARAM2	00101	177	181*						
PARAM3	00107	183	187*						
PLCOPY	00676	646	667*	671					
PLOT	00647	55	637*	640	804				
PNAME	01057	298	302	305	308	777*			
PNAME1	001040	416	417	785*					
POINT	01056	309	330	402	460	461	485	487	527
		562	585	612	630	639	668	723	737
		776*							
PRAMTR	00026	54	133*	134	788				
PRM	00037	137	147*	202	796				
PRMND	00123	196	200*						
PRMTBL	00127	168	203	207*					
PRM1	200000	83*	178						
PRM10	00051	157*	170						
PRM15	00064	168*	169	172					
PRM2	210000	85*	184						
PRM20	00065	163	169*	223	240	255	276		
PRM25	00067	159	171*						
PRM3	220000	86*	190						
PX	144000	64*							
PY	140000	63*							
RET	00414	319	332	404	451*				
RETAD	000017	453	466	600	740	787*			

RETAD2	000026	287	289	292	295	473	641	744	788*
RETRN	00763	647	721*						
RET10	00434	452	467*						
RET5	00415	325	326	452*					
RET6	00420	455*	620	742					
RMN	000647	804*							
ROT	000040	81*	267						
ROTAT	00175	213	265*						
RST	001037	421	780*						
RSTR	260000	90*	437						
RS3	703142	92*							
RTRN20	00770	726*							
RTRN25	01004	728	737*						
RTRN30	01012	739	743*						
RUNSW	01054	467	624	750	774*				
RUNSW1	01061	470	708	709	714				
SAVE4	240004	89*	433						
SC	000020	75*	220						
SCALE	00140	207	219*						
SIGNM	00561	499	506	570*	572	575			
SKIP	235000	88*							
SKIP2	00115	189	194*						
SKP2	234000	87*	197						
SOX	000351	511	521	537	549	795*			
SOY	000037	504	528	543	551	554	796*		
STARTV	00754	472	713*	716	743				
STOPTV	00740	707*	712	724					
STR	001037	344	355	356	361	377	378	379	383
		384	394	781*					
SVX	100000	66*	525						
SVY	100000	65*	532						
SYNC	00206	215	280*						
TEMP	01024	174	179	180	185	186	191	192	198
		199	201	410	413	432	436	480	482
		488	580	584	606	616	644	679	685
		761*	778						
TEMP1	01025	150	173	175	221	222	340	412	430
		434	479	653	659	660	681	692	693
		695	698	701	702	762*	779		
TEMP2	01026	151	181	238	239	343	415	427	431
		655	656	661	690	691	763*		
TEMP3	01027	152	187	254	345	418	424	428	764*
TEMP4	01030	153	194	274	275	396	420	425	765*
TEMP5	01031	154	435	766*					
TEMP6	01032	157	161	438	767*				
TEMP7	01033	440	768*						
TEXT	00010	54	110*	115					
TRUE	001034	800*							
TST2	00310	363	367*						
TST3	00315	368	373*						
TST4	00327	374	383*						
TST5	00336	386	390*						
T1R	00142	221*	231						

T2R	00157	238*	248	261	268	
T4R	00203	274*	282			
UMV	001047	791*				
UVAR	001045	789*				
VECND	00556	534	542	561*		
VECT	00247	312	324*			
VECTOR	00457	324	497*	536	561	563
VTPRIM	00000	56	57*			
VVAR	001046	790*				
V1	402000	71*	559			
V4	410000	72*	539			
V6	414000	73*	545			
XZERO	00534	517	543*			
YEQX	00541	519	548*			
YEQX5	00547	550	554*			
YZERO	00524	514	535*			
YZER5	00531	540*	547	560		