

/PAL III
/PART V
/PAGE 36
*2000

/ROUTINE TO HANDLE ORIGINS
/LENGTH: 13 REGISTERS

STAR,	PUSHJ	/ORIGIN SETTING, GO ASSEMBLE EXPRESSION
	CSYM	/ADDRESS FOR PUSHJ HANDLER
	TAD BINW	/PICK UP ASSEMBLED BINARY WORD
	DCA AACT	/RESET ABSOLUTE ADDRESS COUNTER
	DCA INFO	/SAY NO TO MAIN
	CMA	/WHICH PASS IS THIS?
	TAD PF	/DO NOT PUNCH ON PASS1 OR PASS3
	SZA CLA	
	POPJ	/EXIT ON PASS1 OR PASS3
	CLL CML	/SET LINK FOR ORIGIN PUNCH IN BINP
	TAD AACT	/PICK UP ORIGIN
	JMS I PUNI	/GO PUNCH IT
	POPJ	/EXIT

PSHLST, 0 /PUSH DOWN LIST
*,+13

/PAGE 37
/CHECK ROUTINE

/DISTINGUISHES BETWEEN NUMBERS, LETTERS, SPECIAL CHARACTERS
/NUMBERS HAVE CODES BETWEEN 260 AND 271
/LETTERS HAVE CODES BETWEEN 301 AND 332
/ANY CHARACTER NOT A NUMBER OR A LETTER IS A SPECIAL CHARACTER
/HOWEVER, SPECIAL CHARACTERS ARE MEANT TO INCLUDE ONLY
/PLUS, MINUS, COMMA, EQUAL, STAR, PERIOD, SPACE, RETURN, DOLLAR

/EXIT TO SPSHUL IF CHAR IS A SPECIAL CHARACTER
/EXIT TO CALLING ADDRESS+1 IF CHAR IS NUMBER
/EXIT TO CALLING ADDRESS +2 IF CHAR IS LETTER

/LENGTH: 23 REGISTERS

NCHEK,	0	
	TAD CHAR	/IS CHAR < 260?
	TAD M260	/GET CHAR=260
	SPA	
	JMP I SPECI	/CHAR<260,SPECIAL CHARACTER
	TAD M12	/IS CHAR<272?
	SPA	/FORM CHAR=272
	JMP NUMBEX	/YES, 260<CHAR<272
	TAD M7	/IS CHAR<301?
	SPA	
	JMP I SPECI	/NO,CHAR IS A SPECIAL CHARACTER
	TAD M32	/IS CHAR<333?
	SMA	
	JMP I SPECI	/NO, CHAR IS A SPECIAL CHARACTER
LETREX,	ISZ NCHEK	/EXIT FOR LETTERS
NUMBEX,	CLA	
	TAD CHAR	/TRIM CHAR TO SIX BITS
	AND SL6	
	DCA CHAR	/PUT IT BACK
	JMP I NCHEK	/EXIT
M260,	-0260	
M7,	-0007	
M32,	-0032	

/PAGE 38

/SYMBOL TABLE SEARCH ROUTINE

/EXITS TO CALLING ADDRESS+1 IF SYMBOL NOT IN TABLE

/EXITS TO CALLING ADDRESS+2 IF SYMBOL IN TABLE

/ENTRY ADDRESS IS RETURNED IN AC IF NOT IN TABLE

/ADDRESS OF VALUE IN AC IF IN TABLE

/LENGTH: 41 REGISTERS

SYMGET, 0

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      TAD SATAB
      DCA SORT2
      TAD SORT2
      IAC
      DCA TEM3
LOOP,  TAD SPNT                      /END OF SYMBOLS YET?
      CLL CMA IAC
      TAD SORT2
      SNA CLA                      /SKIP IF NOT TESTED ALL
      JMP NITBL                    /TERMINATE SEARCH, TABLE FULL
      TAD SYMPNT                    /GET ADDRESS-1 OF SYM1
      DCA SORT1                    /IN AN INDEX REGISTER
      JMS I SYMCM1                  /COMPARE TWO SYMBOLS
      JMP INTABL                    /THEY MATCH IF RETURN IS HERE
      NOP                          /THEY DON'T MATCH
      ISZ SORT2                    /INDEX TO NEXT SYMBOL
      JMP LOOP-3
NITBL, TAD TEM3                    /CHECK TABLE OVERFLOW
      CIA CLL                      /COMPARE AGAINST PAGE
      TAD RBGN                    /SYMBOLS STOP AT 6600
      SZL CLA
      JMP NTEXT                    /OK, ROOM FOR THIS SYMBOL
      TAD SYMPNT
      IAC                          /ADDRESS OF SYMBOL
      PUSH
      TAD C3                      /CODE FOR ST IS 3
      PUSHJ                      /GO TO ERROR ROUTINE
      ERROR1
      HLT                          /HALT ON S.T. ERROR
      JMP .-1                      /NO RECOVERY
NTEXT, TAD TEM3                    /ADDRESS TO STORE IN
      JMP I SYMGET                  /EXIT
INTABL, TAD I SORT2
      DCA SYMVAL                    /PUT IT IN SYMVAL
      TAD TEM3                    /RETURN WITH ADDRESS
      TAD C3
      ISZ SYMGET
      JMP I SYMGET                  /EXIT
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SYMPNT, SYM1-1

SATAB, OPTABL-1

/PAGE 39

/ROUTINE TO HANDLE COMMAS

/LENGTH: 22 REGISTERS

Symsto,	TAD PF	/WHICH PASS IS THIS?
	SZA CLA	
	JMP EXIT	/IGNORE SYMBOL DEFINITIONS, PAS2
	TAD I TEM3	/PICK UP THE FIRST WORD OF SYMBOL
	SPA CLA	/HAS IT ALREADY BEEN DEFINED?
	JMP DEFIN	/NO, GO PROCESS IT
	TAD TEM3	/YES, COMPLAIN ABOUT A DOUBLE TAG
	PUSH	/SAVE ENTRY ADDRESS OF SYMBOL
	TAD C2	/CODE FOR D.T. IS 2
	PUSHJ	
	ERROR1	/ERROR ROUTINE
	JMP EXIT	/DON'T PROCESS IT
DEFIN,	TAD I TEM3	/MAKE THE SYMBOL DEFINED
	AND MASK	
	DCA I TEM3	/PUT IT BACK
	ISZ TEM3	/INCREMENT POINTER TO VALUE
	ISZ TEM3	
	ISZ TEM3	
	TAD AACT	/GET THE CURRENT LOCATION
	DCA I TEM3	/STORE IT AS THE VALUE OF THE WORD
EXIT,	DCA INFO	/CLEAR INFO
	JMP I FFF	/BACK TO CSYM

/THE FIELD PSEUDO-OP

/PUNCHES A WORD IN THE FORM

/11 XXX 000

/LENGTH: 14 REGISTERS

FLD,	PUSHJ	/EVALUATE EXPRESSION
	CSYM	/ADDRESS
	TAD PF	/WHICH PASS IS THIS?
	SPA SNA CLA	
	JMP ,+7	/NOT PASS 2
	TAD BINW	/IT IS PASS 2
	AND SL3	/JUST THREE BITS
	CLL RTL	/MOVE LEFT 3 PLACES
	RAL	
	TAD KON6	/BITS FOR LOADER
	JMS I BBB	/PUNCH IT
	DCA INFO	/NOTHING FOR MAIN
	POPJ	/EXIT
KON6,	0300	/BITS FOR LOADER

L20,

/ROUTINE TO FIX MEMORY REFERENCE INSTRUCTIONS

/LENGTH: 11 REGISTERS

/CAN BE GIVEN ONLY AFTER EXPUN

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FIXY,  PUSHJ          /RECURSIVE CALL TO MAIN PROCESSOR
       CSYM          /ADDRESS FOR PUSHJ HANDLER
       DCA INFO
       TAD PF        /WHICH PASS IS THIS?
       SZA CLA       /IGNORE FIX ON PASS2 OR PASS3
       POPJ          /EXIT
       TAD I MCRIPA  /ONE MORE MEMORY
       TAD M4        /REFERENCE INSTRUCTION
       DCA I MCRIPA
       POPJ          /EXIT

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MCRIPA, MICRP

/ROUTINE TO HANDLE PARAMETER ASSIGNMENTS

/ALLOWS FOR MULTIPLE DEFINITIONS OF THE TYPE A=B=C=...,1

/LENGTH: 28 REGISTERS

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EQUAL, TAD TEM3      /GET ENTRY ADDRESS OF SYMBOL
       DCA TEM5      /SAVE IT IN A SPECIAL TEMP REGISTER
       TAD I TEM5    /MAKE THE SYMBOL DEFINED
       CLL
       SMA
       CML          /ALREADY DEFINED C(L)=1
       AND MASK
       DCA I TEM5    /PUT IT BACK
       SZL
       JMP EQERR     /REDEFINING
DEFGO, TAD C3
       TAD TEM5
       PUSH          /PUSH IT DOWN FOR POSSIBLE RECURSION
       PUSHJ        /RECURSIVE CALL TO PROCESSOR
       CSYM          /ADDRESS FOR PUSHJ ROUTINE
       POP           /GET THE LATEST SYMBOL VALUE ADDRESS
       DCA TEM5      /PUT IT BACK IN TEM5
       TAD BINW      /PICK UP THE BINARY VALUE
       DCA I TEM5    /STORE IT AS THE VALUE OF THE SYMBOL
       DCA INFO      /NO PUNCHING
       POPJ          /EXIT
EQERR, TAD TEM5      /ADDRESS OF SYMBOL
       PUSH
       TAD P10
       PUSHJ        /RD CODE=10
       ERROR1        /ERROR TYPE 1
       JMP DEFGO     /NOW DEFINE IT
P10,   0010

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/PAGE 41

/ERROR MESSAGE TABLE

TABLE, 2501	/UA
0424	/DT
2324	/ST
1103	/IC
1122	/IR
2017	/PO
2025	/PU
2204	/RO

/INCLUSIVE OR ROUTINE
/ENTER WITH ONE ARGUMENT IN C(AC);
/AND WITH THE OTHER IN SYMVAL
/SYMVAL IS UNCAHNGED; ANSWER IN C(AC)
/LENGTH: 7 REGISTERS

IQR, 0	
DCA ITEM	/SAVE C(AC)
TAD SYMVAL	/PICK UP ARGUMENT
CMA	
AND ITEM	/PERFORM OPERATION
TAD SYMVAL	
JMP I IQR	/EXIT

L22, /END OF PAGE

PAUSE