IDENTIFICATION

PRODUCT CODE: MAINDEC-08-DHKMA-D-D

PRODUCT NAME: PDP-8E EXTENDED MEMORY DATA & CHECKERBOARD TEST

RELEASE DATE MAY 1978

MAINTAINER: DIAGNOSTIC ENGINEERING

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1. ABSTRACT

MODIFIED TO RUN ON APT SYSTEMS, APRIL 1975.
SEE NOTES AT END OF DOCUMENT.

MODIFIED TO RUN ON CLASSIC 8 SYSTEMS (CONSOLE PACKAGE).
SEE SECTION 10.

MODIFIED TO RUN ON SYSTEMS WITH NO CONSOLE TERMINAL.
REFER TO SECTIONS STARTING AT SECTION 11 FOR PROGRAM INITIALIZATION, OPERATING PROCEDURES, SWITCH REGISTER SETTINGS AND ERROR REPORTING.

THE DIAGNOSTIC HAS BEEN MODIFIED TO ACCOMOSATE THE KT8-A MEMORY MANAGEMENT OPTION WITH MEMORY ADDRESSING OF UP TO 128K WORD OF READ WRITE MEMORY.

THE PDP-8E EXTENDED MEMORY DATA & CHECKERBOARD TEST IS DESIGNED TO DETECT MEMORY FAILURE DUE TO SENSE-LINE NOISE UNDER WORST CASE CONDITIONS. THE FOUR WORST CASE PATTERNS PROVIDED WILL GENERATE WORST CASE NOISE CONDITIONS IN ALL STANDARD AND SPECIALLY PURCHASED PDP-8E CORE STACKS, AND WILL TEST SYSTEMS EQUIPPED WITH FROM 8K TO 128K WORDS OF CORE MEMORY. THE ALL 0'S AND ALL 1'S PATTERNS ARE PROVIDED TO IDENTIFY BASIC MEMORY FAILURES. AUTOMATIC PROGRAM RELOCATION IS PROVIDED IN ORDER TO TEST ALL MEMORY FIELDS FROM EACH MEMORY FIELD. TELETYPE PRINTOUTS ARE PROVIDED FOR ERROR IDENTIFICATION, AND THE OPERATOR IS GIVEN A DEGREE OF CONTROL OVER THE PROGRAM BY VARIOUS SWITCH REGISTER SETTINGS.

2. REQUIREMENTS

2.1 EQUIPMENT

A PDP-8E COMPUTER EQUIPPED WITH AT LEAST 8K OF CORE MEMORY.

2.2 STORAGE

THE PROGRAM OCCUPIES CORE LOCATIONS 0000 TO 7577 IN THE PRESENT FIELD.

2.3 PRELIMINARY PROGRAMS

THE BINARY LOADER MUST BE IN MEMORY. ALSO, ALL DIAGNOSTICS FOR A BASIC 4K PDP-8E MUST HAVE BEEN PREVIOUSLY RUN SUCCESSFULLY. IF A KT8-A IS AVAILABLE, THE KT8-A DIAGNOSTIC MUST BE RUN SUCCESSFULLY.

3. LOADING PROCEDURE

LOAD THE PROGRAM WITH THE BINARY LOADER (BIN). THE PROGRAM MAY BE LOADED INTO ANY FIELD.

4. OPERATING PROCEDURE

TO START THE PROGRAM:

A. SET THE SR TO 1F AND 0F OF THE FIELD THAT CONTAINS THE PROGRAM.

B. PRESS KEY EXTD ADDR LOAD.

C. SET THE SR EQUAL TO 0200.

D. PRESS KEYS ADDR LOAD, CLEAR, AND CONT. THE FOLLOWING WILL BE PRINT IF A TERMINAL IS AVAILABLE.

"PDP-8E/8A EXT MEM DATA & CHKBD"

KM8-E OR KM8-A DIALOGUE

"KM8 SELECTED FOR TESTING"
KT8-A DIALOGUE
"KT8 SELECTED FOR TESTING"

THE ABOVE INFORMATION TELLS THE OPERATOR WHICH OPTION WAS FOUND FOR TESTING. IF A KT8-A IS AVAILABLE AND THE KM8 MESSAGE IS PRINTED, THE KT8-A DIAGNSOTIC SHOULD BE RERUN.

THE PROGRAM WILL THEN PRINT:

"SELECT FIELD PARAMETERS"

E. SET THE SWITCH REGISTER FOR THE DESIRED FIELD PARAMETERS ACCORDING TO THE FOLLOWING TABLE

SR00-05 THESE SWITCHES DEFINE THE STARTING FIELD LIMIT.(USUALLY 0)
SR06-11 THESE SWITCHES DEFINE THE ENDING FIELD LIMIT.(USUALLY 37)

F. PRESS CONTINUE. THE PROGRAM WILL THE. PRINT:
"SELECT TEST PARAMETERS"

G. SET THE SR FOR DESIRED OPERATION ACCORDING TO THE FOLLOWING TABLE.

SWITCH	0 (DOWN)	1 (UP)
SR00	CONTINUE AFTER ERROR	HALT AFTER ERROR
SR01	TYPEOUT ERRORS	INHIBIT ERROR TYPEOUTS
SR02	NORMAL	TTY BELL ON ERROR
SR03	RELOCATE PROGRAM	INHIBIT PROGRAM RELOCATION
SR04	NORMAL	CHANGE FIELD LIMITS
SR05	NORMAL	HALT AFTER CURRENT TEST

F. PRESS KEY CONT.

4.1 DETAILED SR EXPLAINATION

SR00-02 SR02, IF SET, WILL RING THE TTY BELL ONCE FOR EACH ERROR. SR00 AND SR01 HAVE NO EFFECT WITH SR02 SET.

SR03 SR03 MAY BE SET OR RESET AT ANY TIME AND THE PROGRAM WILL ACT ACCORDINGLY.

SR04 SR04 ALLOWS THE OPERATOR TO CHANGE THE FIELD LIMITS AS DEFINED BY SR06-11.

SR05 SR05 IS NORMAL HALT FOR PROGRAM.

SR06-08 THESE SWITCHES DEFINE THE STARTING FIELD LIMIT

4.2 EXAMPLE OF SELECTING FIELDS FOR TEST

EXAMPLE 1: SR = 0037, 28K SYSTEM
FIELDS SELECTED FOR TESTING ARE 0:6543210

EXAMPLE 2: SR = 0004, 28K SYSTEM
FIELDS SELECTED FOR TESTING ARE 0:43210

EXAMPLE 3: SR = 0202, 28K SYSTEM
FIELDS SELECTED FOR TESTING ARE 0:2 (NO RELOCATION WILL OCCUR).

EXAMPLE 4: SR = 0401, 28K SYSTEM
FIELDS SELECTED FOR TESTING ARE 0:64310

NOTE 1: FIELDS NOT IN THE SYSTEM ARE AUTOMATICALLY DESELECTED AS IN EXAMPLE 1. FIELD 7 IS NOT PRESENT, THEREFORE, NOT SELECTED.

NOTE 2: DO NOT SELECT A FIELD THAT CONTAINS A ROM.

NOTE 3: A SINGLE FIELD CAN BE SELECTED FOR TESTING PROVIDING THE PROGRAM IS NOT IN THAT FIELD AS IN EXAMPLE 3.

NOTE 4: ANY FIELD OR GROUP OF FIELDS CAN BE BY-PASSED AS IN EXAMPLE 4. FIELDS 2 AND 3 ARE NOT SELECTED, FIELD 7 IS NOT PRESENT.

NOTE 5: THE ABOVE INFORMATION ALSO APPLIES TO SYSTEMS WITH UPTO 128K WORDS OF READ WRITE MEMORY. FOR EACH ADDITIONAL BANK OF MEMORY THE PROGRAM WILL PRINT THE FOLLOWING DEPENDING ON THE AMOUNT OF MEMORY AVAILABLE.

"FIELDS SELECTED FOR TESTING 3:76543210 2:76543210 1:76543210 0:76543210"

5. ERRORS

A TEST ERROR WILL OCCUR ANYTIME THE DATA WRITTEN DOES NOT MATCH THE DATA READ. A RELOCATION ERROR WILL OCCUR IF THE RELOCATION COMPARISON CHECK FAILS.

5.1 TEST ERROR TYPEOUTS

FOR THE FIRST ERROR ENCOUNTERED A HEADER WILL BE TYPED OUT FOLLOWED BY THE PERTINENT DATA. FOR ALL SUBSEQUENT ERRORS, ONLY THE PERTINENT DATA WILL BE TYPED. THE FORMAT IS AS FOLLOWS:

PR.LOC.. FAIL. ADR..GOOD..BAD..PATTERN

PR LOC = THE PROGRAM ADDRESS WHERE THE ERROR JMS OCCURRED.
(INCLUDES FIELD).

FAIL ADR = THE ADDRESS OF THE LOCATION IN ERROR.
(INCLUDES FIELD).

GOOD = THE DATA THAT WAS WRITTEN.

BAD = THE DATA THAT WAS READ.

PATTERN= THE PRESENT TEST PATTERN AND THE NUMBER
OF TIMES IT WAS COMPLEMENTED.
NC (NOT COMPLEMENTED).
1C (ONE COMPLEMENT).
2C (TWO COMPLEMENTS).

5.2 RELOCATION ERROR TYPEOUTS

ALL RELOCATION ERRORS ARE IN THE FOLLOWING FORMAT:

XXXXXX RELOCATION ERROR AT LOCATION YYYYYY

XXXXXX = THE PROGRAM ADDRESS WHERE THE ERROR JMS OCCURRED.
(INCLUDES FIELD).

YYYYYY = THE ADDRESS OF THE LOCATION IN ERROR.
(INCLUDES FIELD).

NOTE: AFTER EACH ERROR PRINT-OUT THE PROGRAM CONTINUES
ON WITH THE NEXT SEQUENTIAL MEMORY LOCATION.

5.3 PARITY ERROR TYPEOUTS

IF THE 8E SYSTEM CONTAINS A PARITY OPTION THE INTERRUPT WILL
BE TURNED ON TO ALLOW PARITY ERRORS WHEN THE PROGRAM IS
EXECUTING FROM FIELD 0. THE FOLLOWING 3 TYPEOUTS CAN OCCUR
WITH A PARITY OPTION:

A. PARITY ERROR, LOC 0=XXXX TSTAD=XXXXXX (PRESENT PATTERN)

B. INTERRUPT FROM KEYBOARD

C. UNWANTED INTERRUPT OCCURRED

6. RESTRICTIONS

6.1 STARTING RESTRICTIONS

THE PROGRAM MAY BE RESTARTED AT ANY TIME FROM LOCATION 0200
OR 0202 OF THE FIELD THE PROGRAM IS PRESENTLY IN.

6.2 OPERATING RESTRICTIONS

THE PARITY ERROR TYPEOUT CAN NOT BE INHIBITED.

7. EXECUTION TIME

THE TIME TO WRITE AND READ ALL SIX PATTERNS IN ONE FIELD IS APPROXIMATELY 6 SECONDS.

DURING PROGRAM EXECUTION A 15 WILL BE TYPED ON THE TTY APPROXIMATELY EVERY 15 MINUTES OF PROGRAM RUN TIME. THIS ALLOWS THE OPERATOR TO DETERMINE APPROXIMATE RUN TIME BEFORE A FAILURE OCCURRED.

NOTE: IT SHOULD BE NOTED THAT IF THE PROGRAM IS RELOCATING THE DIAGNOSTIC WILL PRINT AN END OF PASS MESSAGE AT THE COMPETION OF ALL FIELDS SELECTED FOR RELOCATION. THE MESSAGE WILL BE AS FOLLOWS:

"END OF PASS XXXX"
WHERE XXXX= THE OCTAL VALUE OF THE NUMBER OF TIMES THE PROGRAM HAS RELOCATED THROUGH ALL SELECTED FIELDS.

8. SCOPE LOOPS

8.1 SCOPE LOOP 1

THIS SCOPE LOOP DOES A READ, COMPLEMENT, WRITE ON THE ADDRESS SPECIFIED BY THE SR. THE ADDRESS BEING LOOPED ON CAN BE CHANGED SIMPLY BY CHANGING THE SWITCH SETTING. THE PREVIOUS ADDRESS WILL BE LEFT WITH ITS ORIGINAL CONTENT.

A. SET THE SR TO THE INSTRUCTION FIELD THAT THE PROGRAM IS IN AND THE DATA FIELD WANTED TO TEST.

B. PRESS KEY EXTD ADDR LOAD.

C. SET THE SR EQUAL TO 5200.

D. PRESS KEY ADDR LOAD.

E. SET THE SR EQUAL TO THE ADDRESS TO TEST.

F. PRESS KEYS CLEAR, AND CONT.

8.2 SCOPE LOOP 2

THIS SCOPE LOOP DOES A READ, COMPLEMENT, WRITE ON THE TWO ADDRESSES INPUT VIA THE SR. TO CHANGE THE ADDRESSES, THE LOOP MUST BE RESTARTED.

A. SET THE SR TO THE INSTRUCTION FIELD THAT THE PROGRAM IS IN THE DATA FIELD WANTED TO TEST.

B. PRESS KEY EXTD ADDR LOAD.

C. SET THE SR EQUAL TO 5400.

D. PRESS KEYS ADDR LOAD, CLEAR, AND CONT.

E. FOLLOW DIRECTIONS THAT ARE TYPED OUT.

8.3 SCOPE LOOP 3

THIS SCOPE LOOP DOES A READ, COMPLEMENT, WRITE ON THE GROUP OF ADDRESSES INPUT VIA THE SR. THE STARTING ADDRESS SPECIFIED MUST BE LESS THAN THE ENDING ADDRESS SPECIFIED.

A. SET THE SR TO THE INSTRUCTION FIELD THAT THE PROGRAM IS IN AND THE DATA FIELD WANTED TO TEST.

B. PRESS KEY EXTD ADDR LOAD.

C. SET THE SR EQUAL TO 5600.

D. PRESS KEYS ADDR LOAD, CLEAR, AND CONT.

E. FOLLOW DIRECTIONS THAT ARE TYPED OUT.

8.4 SCOPE LOOP 4

THIS SCOPE LOOP DOES A READ, COMPLEMENT, WRITE ON THE ADDRESS INPUT VIA THE SR USING THE DATA SPECIFIED BY THE SR. THE DATA CAN BE CHANGED SIMPLY BY CHANGING THE SWITCH SETTING.

A. SET THE SR TO THE INSTRUCTION FIELD THAT THE PROGRAM IS IN AND THE DATA FIELD WANTED TO TEST.

B. PRESS KEY EXTD ADDR LOAD.

C. SET THE SR EQUAL TO 6000.

D. PRESS KEYS ADDR LOAD, CLEAR, AND CONT.

E. A MESSAGE WILL BE TYPED OUT TO SET THE SR TO THE SELECTED ADDRESS.

F. SET SR TO THE SELECTED ADDRESS AND DEPRESS CONT.

G. SET SR TO SELECTED DATA (SCOPE LOOP IS CYCLING).

8.5 SCOPE LOOP 5

THIS SCOPE LOOP DOES A READ, COMPLEMENT, WRITE ON THE GROUP OF ADDRESSES INPUT VIA THE SR USING THE DATA SPECIFIED BY THE SR. THE STARTING ADDRESS SPECIFIED MUST BE LESS THAN THE ENDING ADDRESS SPECIFIED.

A. SET THE SR TO THE INSTRUCTION FIELD THAT THE PROGRAM IS IN AND THE DATA FIELD WANTED TO TEST.

B. PRESS KEY EXTD ADDR LOAD.

C. SET THE SR EQUAL TO 5700.

D. PRESS KEYS ADDR LOAD, CLEAR, AND CONT.

E. FOLLOW THE TYPED OUT MESSAGE THAT INPUTS THE ADDRESS SELECTION.

F. SET SR TO SELECTED DATA (SCOPE LOOP IS CYCLING).

NOTE 1: THE ADDRESS(S) SPECIFIED WILL BE LOOPED UNTIL STOPPED BY THE OPERATOR WITH KEY HALT. NO ERROR CHECKING IS DONE. TO RESUME NORMAL OPERATION, RESTART PROGRAM AT ADDRESS 0200 OR 0202 OF THE CURRENT INSTRUCTION FIELD.

9. PROGRAM DESCRIPTION

9.1 TEST PATTERNS

THE FOLLOWING TEST PATTERNS ARE EMPLOYED BY THE PROGRAM:

A. BASIC ALL 0'S PATTERN.

B. BASIC ALL 1'S PATTERN.

C. 0000-7777 WORST CASE CHECKERBOARD PATTERN.

D. 7777-0000 WORST CASE CHECKERBOARD PATTERN.

E. 2525-5252 WORST CASE CHECKERBOARD PATTERN.

F. 5252-2525 WORST CASE CHECKERBOARD PATTERN.

9.2 PROGRAM RELOCATION

PROGRAM RELOCATION IS GOVERNED BY THE STATUS OF SR BIT 3 OR BY THE FACT THAT ONLY ONE FIELD IS SELECTED FOR TESTING. WITH SR BIT 3 DOWN (0 POSITION) PROGRAM RELOCATION OCCURS EACH TIME THE TEST PATTERN AND ITS COMPLEMENT HAVE BEEN COMPLETELY TESTED IN EACH SELECTED FIELD. THE PROGRAM FIRST RELOCATES TO THE HIGHEST ORDER 4K FIELD UNDER TEST. THE PROGRAM KEEPS RELOCATING TO THE NEXT LOWER FIELD UNDER TEST UNTIL IT REACHES THE LOWEST ORDER FIELD UNDER TEST. THE TESTING AND RELOCATION CYCLE IS THEN REPEATED. THE CONTENTS OF THE ENTIRE FIELD ARE RELOCATED WHICH ENABLES ANY OTHER INFORMATION (RIM-BIN) TO BE CARRIED WITH THE PROGRAM.

THE PROGRAM PROVIDES A DEGREE OF PROTECTION FOR ITSELF BY REMEMBERING ALL FIELDS WHERE ERRORS OCCUR. WHEN A FAULTY FIELD IS NEXT IN SEQUENCE TO CONTAIN THE PROGRAM, THE PROGRAM WILL SKIP THE FAULTY FIELD AND RELOCATE TO THE FIRST LOWER ORDER FIELD WHICH IS ERROR FREE. IF ALL OTHER SELECTED FIELDS ARE FAULTY, PROGRAM RELOCATION WILL NOT TAKE PLACE.

DURING RELOCATION A COMPARISON CHECK IS MADE TO INSURE NO PROGRAM LOSS.

9.3 TEST PROCEDURE

A. WRITE THE PATTERN IN ALL SELECTED FIELDS (EACH LOCATION IS THEN TREATED AS FOLLOWS):

B. READ-WRITE THE LOCATION 11 TIMES.
C. READ-WRITE-TEST THE LOCATION (NC).
D. READ-WRITE THE LOCATION 11 TIMES.
E. READ-COMPLEMENT-WRITE THE LOCATION.
F. READ-WRITE THE LOCATION 11 TIMES.
G. READ-WRITE-TEST THE LOCATION (1C).
H. READ-WRITE THE LOCATION 11 TIMES.
I. READ-COMPLEMENT-WRITE THE LOCATION.
J. READ-WRITE THE LOCATION 11 TIMES.
K. READ-WRITE-TEST THE LOCATION (2C).
L. GO ON TO NEXT LOCATION REPEATING B-K.
M. GO ON TO NEXT PATTERN REPEATING A-L WHEN ALL LOCATIONS OF ALL SELECTED FIELDS ARE COMPLETED.

FOR FURTHER UNDERSTANDING OF HOW THE TEST IS PERFORMED, REFER TO THE LISTING.

THE WORST CASE CHECKERBOARD PATTERN CONSISTS OF ALTERNATING 4 MEMORY CORES CONTAINING 0000 AND 4 MEMORY CORES CONTAINING 1111 ON A MEMORY PLANE. THIS PATTERN IS REVERSED EVERY 400 OCTAL LOCATIONS. (THIS TEST PATTERN IS GENERATED ACCORDING TO THE STRINGING OF THE STACK AND THE WIRING OF THE MEMORY SYSTEM. IT IS THE SAME PATTERN FOR ALL 8E STACKS).

Y LINES (MA6L THRU MA11L)

		ADDRESS BIT 9 HIGH				ADDRESS BIT 9 LOW						->		
		00	01	02	03	04	05	06	07	10	11	->	76	77
	00	1	1	1	1	0	0	0	0	1	1		0	0
ADDRESS	01	1	1	1	1	0	0	0	0	1	1		0	0
BIT 3 HIGH	02	1	1	1	1	0	0	0	0	1	1		0	0
	03	1	1	1	1	0	0	0	0	1	1		0	0
	04	0	0	0	0	1	1	1	1					
ADDRESS	05	0	0	0	0	1	1	1	1					
BIT 3 LOW	06	0	0	0	0	1	1	1	1					
	07	0	0	0	0	1	1	1	1					
	10	1	1	1	1									
	11	1	1	1	1									
	76	0	0	0	0									
	77	0	0	0	0									
	176	0	0	0	0	EMA2L USED IF AN 8K MEMORY								
	177	0	0	0	0									

X LINES MA0L THRU MA5

THE ABOVE REPRESENTS ONE MEMORY PLANE.

10. CONSOLE PACKAGE ADDENDUM

10.1. DESCRIPTION

THE CONSOLE PACKAGE HAS BEEN ADDED TO THIS DIAGNOSTIC TO ALLOW THE PROGRAM TO RUN WITH NO HARDWARE SWITCH REGISTER AND TO HAVE COMMUNICATIONS WITH THE DIAGNOSTIC VIA A TERMINAL. THE DIAGNOSTIC CAN BE RUN IN TWO MODES WITH THE CONSOLE PACKAGE . 1) RUNNING WITH THE CONSOLE PACKAGE ACTIVE - THIS ALLOWS THE OPERATOR CONTROL OF THE DIAGNOSTIC THROUGH THE TERMINAL. THE DIAGNOSTIC WILL ASK FOR THE VALUE OF THE PSEUDO SWITCH REGISTER,BEFORE CONTINUING WITH EXECUTION OF THE DIAGNOSTIC. ALL ERRORS AND PASS COMPLETES WILL BE PRINTED AT THE TERMINAL. NO HALTS WILL BE EXECUTED.
2) CONSOLE PACKAGE NOT ACTIVE-THIS WILL RESULT IN THE NORMAL STANDALONE OPERATION OF THE PROGRAM AS DISCRIBED IN SECTIONS 1 THROUGH 9 OF THIS DOCUMENT.

10.2 RESTRICTIONS

1) WHEN RUNNING THE CONSOLE PACKAGE SOME SUBTESTS MAY NOT BE EXECUTED.

2) THE CONSOLE PACKAGE WILL USE EITHER THE HARDWARE OR PSEUDOSWITCH REGISTER DPENDING UPON THE CONDITION OF BIT 0 OF ADDRESS 21(HCW1). (SEE SECTION 10.8 FOR EXPLANATION)

3) ONCE RUNNING THE CONSOLE PACKAGE NONACTIVE AND NOW DESIRE TO RUN IT ACTIVE. ONE MUST RELOAD THE DIAGNOSTIC AND INITILIZE FOR A ACTIVE CONSOLE PACKAGE.

10.3 INITIALIZATION

FOR A ACTIVE CONSOLE PACKAGE

1.) SET LOCATION 22 BIT3=1 TO INDICATE CONSOLE PACKAGE ACTIVE.

2.) SET LOCATION 21 BIT0=0 TO INDICATE USE PSEUDO SWITCH REGISTER.

3.) SET LOCATION 21 BIT0=1 TO INDICATE NOT TO USE PSEUDO SWITCH REGISTER, BUT TO USE HARDWARE SWITCHES.

10.4 CONTROL C..ARACTERS

CONTROL CHARACTERS ARE USED TO GIVE THE OPERATOR THE ABILITY TO PERFORM THE FOLLOWING FUNCTIONS.
NOTE: THE PROGRAM WILL RESPOND TO THE CONTROL CHARACTER IN FIVE (5) SECONDS OR LESS.

CONTROL C

THIS RESTORES THE LOADER (PGS 37 OF FLD 0 & 1) AND STARTS IT AT LOC 7600 OF FLD 0.

CONTROL S

THIS WILL STOP ANY OUTPUT TO A CONSOLE TERMINAL. THE ONLY WAYS TO CONTINUE IS TO TYPE CONTROL Q TO RESUME PRINTING OR CONTROL C TO ABORT THE PROGRAM COMPLETELY. THIS IS A NONPRINTING CHARACTER.

CONTROL Q

THIS IS TO CONTINUE A PROGRAM AFTER A CONTROL S IS TYPED.THIS IS A NONPRINTING CHARACTER.

CONTROL G

THE CONTROL G ALLOWS THE OPERATOR TO CHANGE THE VALUE OF THE PSEUDO SWITCH REGISTER. UPON TYPING "CTRL" AND A "G" SIMULTANEOUSLY THE KEYBOARD WILL RESPOND WITH "^G" AND PRINT THE SWITCH REGISTER QUESTION. (SEE SECTION 10.5 FOR DETAILS) AT THIS POINT THE OPERATOR MAY CAHNGE THE ALUE OF THE PSEUDO SWITCHES OR TYPE A TERMINATING CHARACTER. IN ANY EVENT ONLY THE PSEUDO SWITCH REGISTER IS CHANGE. IT HAS NO EFFECT UPON THE HARDWARE SWITCHES.

10.5 SWITCH REGISTER MESSAGE

THIS MESSAGE IS USED TO SETUP THE PSEUDO SWITCH REGISTER
BEFORE PROGRAM EXECUTION TAKES PLACE OR TYPING A CONTROL G.
THE PSEUDO SWITCH REGISTER IS SET UP UPON TYPING A TERMINATOR
THE TERMINATORS ARE AS FOLLOWS:

<CR> CARRIAGE RETURN:	THIS CAUSES THE PROGRAM TO RESUME TESTING FORM WHERE IT LEFT OFF.
<LF> LINEFEED:	THIS CAUSES THE PROGRAM TO RESTART THE TESTING FROM THE BEGINNING.

****

SR=0000 4000<CR>	CARRIAGE RET' 'N
	PROGRAM RESUMES TES'ING FROM
	POINT OF INTERRUPTION.
SR=0000 4000<LF>	LINEFEED
	CAUSES PROGRAM TO RESTART.

UNDER SCORING INDICATES OPERATOR RESPONSE

10.6 ERRORS

THE STANDARD ERROR REPORTS AS DESCRIBED IN SECTION 6
OF THIS DOCUMENT WILL BE USED.

10.7 SWITCH REGISTER SETTINGS

THE STANDARD SWITCH SETTINGS AS DESCRIBED IN SECTION 5
OF THIS DOCUMENT WILL BE USED.

10.8 PARAMETER CONTROL WORDS

THE CONSOLE PACKAGE USES THE LOCATIONS 20 21 22 FOR THE
FOLLOWING PURPOSES.

LOCATION 20
PSEUDO SWITCH REGISTER

LOCATION 21
HARDWARE IDENTIFIER 1

LOCATION 22
HARDWARE IDENTIFIER 2

LOCATION 002

BIT	OCTAL VALUE	FUNCTION WHEN 0	FUNCTION WHEN 1
0	4000	USE PSEUDO SWITCHES	USE HARDWARE SWITCHES
1	2000	NO OPTION 1	HAS OPTION 1
2	1000	NO OPTION 2	HAS OPTION 2
3	400	NO 8A SIMULATOR	HAS 8A SIMULATOR
4	200	NO OPTION SIMULATOR	HAS OPTION SIMULATOR
5	100	NOT ON 8A XOR	ON 8A XOR
6	40	NOT PDP8-E TYPE CPU	PDP8-E TYPE CPU
7-11		8A MEMORY SIZE EX. 1K=00 2K=01 7K=06 32K=31	

LOCATION 0022

BIT	OCTAL VALUE	FUNCTION WHEN 0	FUNCTION WHEN 1
0	4000	NOT ON ACT8A LINE	ON ACT 8A LINE
1	2000	NOT ON ACT 8E LINE	ON ACT 8E LINE
2	1000	NOT YET DEFINED	
3	400	DEACTIVE CONSOLE PACKAGE	ACTIVE CONSOLE PACKAGE

11.0. NON CONSOLE TERMINAL SYSTEM ADDENDUM

11.1. DESCRIPTION

THE PROGRAM HAS BEEN MODIFIED TO RUN WITHOUT A CONSOLE TERMINAL BY MEANS OF A SPECIAL STARTING ADDRESS AND OPERATING PROCEDURES. THIS ALLOWS THE DIAGNOSTIC TO BE RUN ON THOSE SYSTEMS WITHOUT A CONSOLE TERMINAL. ALL ERRORS AND FIELD LIMIT CHANGES WILL RESULT IN A HALT OR HALTS INSTEAD OF TYPEOUTS ON THE CONSOLE TERMINAL.

11.2. RESTRICTIONS

1. IF THE CONSOLE PACKAGE WAS ENABLED, THE PROGRAM WILL DISABLE IT AT THE START OF THE PROGRAM.

2. FIELD LIMITS MUST BE SET AT PROGRAM START, OTHERWISE, THE PROGRAM WILL HALT TO ALLOW THE OPERATOR TO SET THE FIELD

LIMITS IN THE SWITCH REGISTER.

3. TO RUN THIS PROGRAM, A MINIMUM OF 8K OF MEMORY IS REQUIRED.

4. MEMORIES TO BE TESTED MUST BE IN SEQUENTIAL ORDER STARTING AT FIELD 0.

11.3 INITIALIZATION

THE PROGRAM WHEN LOADED IS INITIALIZED TO USE THE HARDWARE SWITCH REGISTER. IF NO HARDWARE SWITCH REGISTER IS AVAILABLE, DO THE FOLLOWING TO DISABLE THE SWITCH REGISTER SELECTION FROM HARDWARE TO A SOFTWARE PSEUDO SWITCH REGISTER (LOCATION 0020).

1. SET BIT 0 EQUAL TO A 0 IN LOCATION 21 TO INDICATE TO THE PROGRAM THAT LOCATION 20 WILL BE USED AS THE PSEUDO SWITCH REGISTER. THE PROGRAM WHEN STARTED WILL THEN SET THE PSEUDO SWITCH REGISTER TO FIELD LIMITS FOR A NORMAL SYSTEM STARTUP. PSEUDO SWITCH REGISTER WILL EQUAL XX00 WHERE XX EQUALS SWITCH REGISTER BITS, PREVIOUSLY SET, 0 EQUALS STARTING FIELD LIMIT AND 7 EQUALS ENDING FIELD LIMITS.

   IF IT IS DESIRED TO INITIALIZE THE FIELD LIMITS TO OTHER THAN THE ABOVE DO THE NEXT STEP.

2. SET LOCATION 0021 TO 00XX WHERE XX IS THE MEMORY SIZE IN 4K INCREMENTS.

11.4 OPERATING PROCEDURES

TO START THE PROGRAM:

A. SET THE IF AND DF TO THE FIELD THAT CONTAINS THE PROGRAM

B. LOAD ADDRESS TO 0201

C. IF THE HARDWARE SWITCH REGISTER IS USED, SET THE SWITCH REGISTER TO 0037.

D. PRESS "INIT" AND THEN "RUN".

E. THE PROGRAM WILL AGAIN HALT. AT THIS TIME SELECT THE DESIRED TEST PARAMETERS.

F. PRESS "INIT" AND "RUN".

G. THE PROGRAM WIL NOW RUN UNTILL AN ERROR IS ENCOUNTERED OR A SWITCH REGISTER OPTION IS SELECTED TO CAUSE THE PROGRAM TO HALT REFER TO LISTING FOR ALL HALTS.

H. SETTING THE SWITCH REGISTER TO 0100, WILL CAUSE THE PROGRAM TO HALT AFTER THE CURRENT TEST-REFER TO LISTING FOR HALT.

I. SETTING THE SWITCH REGISTER TO 0200 WILL CAUSE THE PROGRAM TO HALT FOR FIELD LIMIT CHANGES VIA THE SWITCH REGISTER. REFER TO LISTING FOR ADDRESS OF THE HALT.

11.5 SWITCH REGISTER SETTINGS

SR0=1	HALT AFTER ERROR
SR1=1	INHIBIT ERROR HALTS EXCEPT HALT AFTER ERROR SWITCH
SR2=1	INHIBIT OPERATION OF SR0 AND SR1
SR3=1	INHIBIT PROGRAM RELOCATION
SR4=1	HALT PROGRAM FOR FIELD LIMIT CHANGES
SR5=1	HALT AFTER CURRENT TEST

11.6 ERRORS

ALL ERRORS ENCOUNTERED WILL RESULT IN A ERROR HALT WITH ERROR INFORMATION IN THE AC. REFER TO THE LISTING FOR THE TYPE OF ERROR HALT AND GO TO THE APPROPRIATE PARAGRAPH BELOW.

A TEST ERROR WILL OCCUR ANYTIME THE DATA WRITTEN DOES NOT MATCH THE DATA READ. A RELOCATION ERROR WILL OCCUR IF THE RELOCATION COMPARISON CHECK FAILS.

11.7 TEST ERROR HALTS

FOR ERRORS ENCOUNTERED TESTING MEMORIES, THE PROGRAM WILL HALT WITH PERTINENT INFORMATION IN THE AC. REFER TO THE STEPS BELOW FOR THE TEST ERROR INFORMATION

A. PRESS "CONT". THE PROGRAM WILL HALT AT 3115 WITH THE AC EQUAL TO THE PROGRAM ADDRESS OF THE ERROR JMS.

B. PRESS "CONT". THE PROGRAM WILL HALT AT 3121 WITH THE CONTENTS OF AC BITS 7,8,9,10 AND 11 EQUAL TO THE FIELD BEING TESTED.

C. PRESS "CONT". THE PROGRAM WILL HALT AT 3124 WITH THE AC EQUAL TO THE FAILING ADDRESS IN THE FIELD BEING TESTED.

D. PRESS "CONT". THE PROGRAM WILL HALT AT 3127 WITH THE AC EQUAL TO THE EXPECTED DATA THAT WAS PUT INTO THE FAILING ADDRESS.

E. PRESS "CONT". THE PROGRAM WILL HALT AT 3132 WITH THE AC EQUAL TO THE ACTUAL DATA THAT WAS READ FROM THE FAILING ADDRESS.

F. PRESS "CONT". THE PROGRAM WILL HALT AT ADDRESS 3136 WITH THE PATTERN NUMBER IN THE AC. THE PATTERN NUMBER CORRESPONDS TO THE PATTERNS BELOW.

AC=0 - NO TEST PATTERN
AC=1 - BASIC ALL 0'S PATTERN
AC=2 - BASIC ALL 1'S PATTERN
AC=3 - 0000-7777 WCP PATTERN
AC=4 - 7777-0000 WCP PATTERN
AC=5 - 2525-5252 WCP PATTERN
AC=6 - 5252-2525 WCP PATTERN

H. PRESS "CONT" TO CONTINUE THE PROGRAM ON TO THE NEXT SEQUENTIAL TEST MEMORY ADDRESS.

I. ERROR HALTS MAY BE INHIBITED BY SETTING SR1 TO A 1

11.8 RELOCATION ERROR HALTS

ALL RELOCATION ERRORS WILL RESULT IN A HALT WITH PERTINENT INFORMATION IN THE AC. REFER TO THE STEPS BELOW FOR THE ERROR INFORMATION.

A. THE PROGRAM WILL HALT AT ADDRESS 2735 WITH THE CONTENTS OF THE AC EQUAL TO THE PROGRAM LOCATION OF THE ERROR JMS.

B. PRESS "CONT". THE PROGRAM WILL HALT AT ADDRESSS 2741 WITH THE CONTENTS OF AC BITS 7,8,9,10, AND 11 EQUAL TO THE FIELD THAT PROGRAM TRIED TO PUT THE INSTRUCTION INTO.

C. PRESS "CONT". THE PROGRAM WILL HALT AT ADDRESS 2744 WITH THE CONTENTS OF AC EQUAL TO THE LOCATION IN THE FAILING FIELD IN ERROR.

D. PRESSING "CONTINUE" AGAIN WILL RESULT IN THE PROGRAM CONTINUING WITH THE NEXT SEQUENTIAL MEMORY LOCATION.

11.9 PARITY ERROR HALTS

IF THE SYSTEM CONTAINS A PARITY OPTION, THE INTERRUPT WILL BE TURNED ON TO ALLOW PARITY ERRORS WHEN THE PROGRAM IS EXECUTING FROM FIELD 0. THERE ARE 3 TYPES OF FAILURES UNDER THIS ERROR, REFER TO THE APPROPRIATE PARAGRAPH BELOW FOR THE FAILING ADDRESS.

11.9.1 PARITY ERROR

A. THE PROGRAM WILL HALT AT ADDRESS 3355 WITH THE CONTENTS OF THE AC EQUAL TO THE INTERRUPTED PC.

B. PRESS "CONT". THE PROGRAM WILL HALT AT ADDRESS 3361 WITH THE CONTENTS OF THE AC EQUAL TO THE DATA FIELD AT THE TIME OF THE PARITY ERROR.

C. PRESS "CONT". THE PROGRAM WILL HALT AT ADDRESS 3364 WITH THE CONTENTS OF THE AC EQUAL TO THE ADDRESS IN THE TEST FIELD BEING TESTED.

D. PRESS "CONT". THE PROGRAM WILL HALT AT ADDRESS 3136 WITH THE CONTENTS OF THE AC EQUAL TO THE PATTERN NUMBER. REFER TO STEP G FOR PATTERN BEING EXECUTED IN SECTION 11.7.

E. PRESS "CONT". THE PROGRAM WILL CONTINUE UNTIL ANOTHER ERROR IS ENCOUNTERED OR THE PROGRAM IS STOPPED.

11.9.2 INTERRUPT FROM KEYBOARD

THE PROGRAM WILL HALT AT ADDRESS 3404. THIS SIGNIFIES THAT THE PROGRAM DETECTED A PARITY OPTION AND TURNED THE INTERRUPT ON. UPON TURNING THE INTERRUPT ON, A INTERRUPT WAS RECEIVED FROM THE CONSOLE TERMINAL. TO RECOVER FROM THIS ERROR PRESS CONTINUE.

11.9.3 UNWANTED INTERRUPT OCCURRED

THE PROGRAM WILL HALT AT ADDRESS 3425 FOR THIS ERROR. THIS ERROR SIGNIFIES THAT AN INTERRUPT OCCURED FROM SOME OTHER DEVICE THAN THE PARITY OPTION OR THE CONSOLE KEYBOARD. PRESS "CONTINUE" TO RECOVER FROM THIS ERROR.

12.0 APT HOOKS

12.1 DESCRIPTION

THE APT INTERFACES PROVIDES A MEANS OF COMMUNICATING WITH THE APT MOTHER AND THE SYSTEM UNDER TEST. IT FURTHER PROVIDES A MEANS OF LOADING DIAGNOSTICS.

TWO INTERFACES ARE PROVIDED FOR THIS COMMUNICATION. THEY ARE:

1. TIMING
2. ERROR REPORTING

EACH WILL BE DESCRIBED AT A LATER TIME.

12.2 APT INITIALIZATION

SHOULD BIT ZERO OF HCW2(ADDRESS 22) BE SET TO A ONE(1), APT IS ASSUMED TO BE PRESENT. THE PROGRAM WILL SET THE PSEUDO-SWITCH REGISTER TO 0037 AND THE NOTTY INDICATOR IS SET SO AS TO DISABLE ALL TERMINAL COMMUNICATION. AT THIS POINT AN EXIT BACK TO MAIN LINE CODE TO DETERMINE IF A KT8-A IS PRESENT IN THE SYSTEM. AFTER DETERMINING THIS THE PROGRAM WILL AUTO-SIZE MEMORY AND SET UP THE APPROPRIATE FIELD STATUS BITS. AFTER AUTO-SIZING MEMORY THE CONTENTS OF FIELD 7, ADDRESSES 6000-7777 ARE MOVED TO FIELD ZERO.

SHOULD LESS THAN 32K OF MEMORY BE FOUND BANK ZERO FIELD 7 OF THE FIELD STATUS WORDS IS SET SO AS NOT TO ENABLE TESTING FIELD 7 OF BANK ZERO.

FROM THIS POINT ON ALL APT INTERFACING IS DONE FROM THE PROGRAM FIELD. THIS ALLOWS TEST OF A FULL 32 K SYSTEM. IT ALSO PROVIDES A MEANS OF TESTING UPTO 128K OF MEMORY.

12.3 APT INTERFACES

12.3.1 TIMING

THE TIMING INTERFACE PROVIDES THE NECESSARY INFORMATION TO THAT THE DIAGNOSTIC IS RUNNING ERROR FREE. THE TIME INTERVAL IS BETWEEN 2 AND 5 SECONDS.

12.3.2 ERRORS

THE ERROR INFORMATION THAT IS PASSED TO THE APT HOST CONSISTS OF THE FIELD THE PROGRAM IS CURRENTLY IN AND THE PC OF THE ERROR CALL.

NOTE:
IT SHOULD BE NOTED THAT THIS PROGRAM NO LONGER SUPPORTS THE APT PROM. THE NEW INTERFACE MUST BE USED. THE NEW INTERFACE CONSITS OF A BOOT ROM TO LOAD IN THE ACTUAL ROM CODE FOR APT INTO MEMORY. IF FIELD 7 IS NOT PRESENT THEN THE MS8-A MUST BE USED IN PLACE OF MEMORY.

```
                /PDP-8E EXTENDED MEMORY DATA AND CHECKERBOARD TEST
                /
                /MAINDEC-08-DMMA-C-L
                /
                /COPYRIGHT (C) 1972, 1975, 1976 DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASS. 01754
                /PROGRAMMER, VERNON FREY


                /
                /
                /SR00=1         HALT AFTER ERROR
                /SR01=1         INHIBIT ERROR TYPEOUT
                /SR02=1         BELL ON ERROR (USEFUL FOR MAINTENANCE)
                /SR03=1         INHIBIT PROGRAM RELOCATION
                /SR04=1         CHANGE FIELD LIMITS
                /SR05=1         HALT AFTER CURRENT TEST
                /
                /
                /PROGRAM STARTING ADDRESS
                /0200
                /
                /
                /M-CRD
                /
                /
                /DEFINE NPAGE
                /<      JMP I   (.+20007600>
                /
                /PDP-8E IOT COMMANDS & MICRO INSTRUCTIONS
                /
                /EXPANDED MODE COMMANDS USED IN THIS TEST
          6204  CDF=6204
          6274  SDF=6274
          0001  KTBA=1
          6200  LAM=    6200                    /LOAD EXPANDED MODE REGISTER.
          6230  RIM=    6230
          6260  LMSR=   6260
          6240  LRR=    6240
          6250  RRR=    6250
          6203  CDI=6203                        /CHANGE TO DF & IF 0
          6107  SPO=6107                        /SKIP ON PARITY OPTION
          6101  SNP=6101                        /SKIP IF NO PARITY ERROR
          6104  CPP=6104                        /CLEAR PARITY ERROR FLAG
          6004  GTF=6004                        /GET INTERRUPT FLAGS
          6005  RTF=6005                        /RESTORE INTERRUPT FLAGS
          7701  ACL=7701                        /LOAD MQ INTO AC
          7002  BSW=7002                        /SWAP BYTES IN AC
          7421  MQL=7421                        /LOAD MQ FROM AC THEN CLR AC
          7521  SWP=7521                        /SWAP AC AND MQ
          6000  SKON=6000                       /SKIP IF INTERRUPT ON, & TURN OFF
          6007  CAF=6007                        /CLEAR ALL FLAGS


          0000  *0
```



```
0000 0304           *0                      /INTERRUPT ADDRESS
0001 3074           DCA     SAC             /SAVE AC
0002 7701           ACL
0003 3075           DCA     SMQ             /SAVE MQ
0004 5777'          JMP     INTRQJ


0005 5600   IAPTER, APTER                           /APT/
0006 5652   IAPTCK, APTCK                           /APT/


          0020  *20


0020 0007   PSR,    7                               /APT/
0021 4000   MCW1,   4000                            /APT/
0022 0000   MCW2,   0                               /APT/

0023 0000   INMODE, 0
                /
                /PAGE 0 CONSTANTS AND POINTERS
                /
0024 0000   BANK,   0
0025 0000   ENTFLG, 0
0026 4000   SR00,   4000            /HALT AFTER ERROR
0027 2000   SR01,   2000            /INHIBIT ERROR TYPEOUT
0030 1000   SR02,   1000            /BELL ON ERROR
0031 0400   SR03,   400             /INHIBIT PROGRAM RELOCATION
0032 0200   SR04,   200             /CHANGE FIELD LIMITS
0033 0100   SR05,   100             /HALT AFTER CURRENT TEST
0034 0070   SR68,   70              /STARTING FIELD (0-7)
0035 0007   SR911,  7               /ENDING FIELD (0-7)
0036 0000   CS,     0               /COMPLEMENT STATUS
                                            /0000=NO (NO COMPLEMENT)
                                            /BIT 1=1C (ONE COMPLEMENT)
                                            /BIT 2=2C (TWO COMPLEMENTS)
0037 0000   TS,     0               /TEST STATUS
                                            /0000=NO TEST
                                            /BIT 0=ALL ZEROS TEST
                                            /BIT 1=ALL ONES TEST
                                            /BIT 2 = 0000-7777 WCP TEST
                                            /BIT 3 = 7777-0000 WCP TEST
                                            /BIT 4 = 2525-5252 WCP TEST
                                            /BIT 5 = 5252-2525 WCP TEST
                                            /BIT 6= MARCH PATTERN
0040 0000   FS,     0               /FIELD STATUS BANK0
0041 0000   FS1,    0               /FIELD STATUS BANK 1
0042 0000   FS2,    0               /FIELD STATUS BANK 2
0043 0 00   FS3,    0               /FIELD STATUS BANK 3
                                            /BITS 0-7 COINCIDE WITH FIELDS
                                            /0-7. FOR EACH FIELD NOT IN
                                            /THE SYSTEM THE EQUIVALENT BIT
                                            /IS SET.
0044 0000   RS,     0               /RELOCATION STATUS BANK 0
0045 0000   RS1,    0               /RELOCATION STATUS BANK1
```

```
0046  0000    RS2,    0                       /RELOCATION STATUS BANK 2
0047  0000    RS3,    0                       /RELOCATION STATUS BANK 3
                                              /BITS 0-7 COINCIDE WITH FIELDS
                                              /0-7. FS IS XFERRED INTO RS.
                                              /EACH FIELD THAT FAILS SETS THE
                                              /EQUIVALENT BIT SO THAT PROGRAM
                                              /WILL NOT RELOCATE TO A FAILING FIELD.
0050  0000    CRELO,  0                       /0 = INHIBIT PROGRAM RELOCATION
0051  0000    PROFLD, 0                       /PROGRAM IN FIELD 00X0
0052  0000    TSTFLD  0                       /TESTING FIELD 00X0
0053  0000    COUNT,  0                       /MOVE ERROR COUNTER
0054  0000    MOVE,   0                       /MOVE ADDRESS COUNTER
0055  0000    HEAD1,  0                       /7777 MEANS TYPEOUT ERROR HEADING
0056  0000    TEMP,   0                       /TEMP STORAGE LOCATION
0057  0000    TSTAD,  0                       /TEST ADDRESS COUNTER
0060  0000    FCNT,   0                       /COUNT # OF FIELDS PRESENT
0061  0000    RELCNT, 0                       /END OF PASS COUNTER.
0062  0000    STARTF, 0                       /STARTING FIELD 00X0
0063  0000    ENDF,   0                       /ENDING FIELD 00X0
0064  0000    INSAME, 0                       /PROGRAM IN SELECTED FIELD
0065  0000    LEGALO, 0                       /LEGAL FIELD SELECTION CONTROL
0066  0000    A,      0                       /A REG TO WRITE/READ
0067  0000    B,      0                       /B REG TO WRITE/READ
0070  0000    P2,     0                       /CONTROLS 2 PAGES
0071  0000    W4,     0                       /CONTROLS 4 WORDS
0072  0000    GDATA,  0                       /GOOD DATA = DATA WRITTEN
0073  0000    BDATA,  0                       /BAD DATA = DATA READ
0074  0000    SAC,    0                       /SAVE AC (INT)
0075  0000    SMQ,    0                       /SAVE MQ (INT)
0076  0000    NOTTY,  0                       /PROGRAM FLAG FOR NO TELETYPE TO ABORT PRINTOUTS
0077  0000    NUMFLD, 0                       /NUMBER OF FIELDS BEING TESTED.
0100  0000    FIVE,   0                       /THIS IS NOW 15 MINUTE COUNTER
0101  6570    MINS,   6570




      4502    ENDHLT=JMS I    .
0102  0341            XENDHL                  /END OF TEST LAS
      4503    PRINT=JMS I     .
0103  5400            XPRINT
      4504    GETSR=JMS I     .
0104  4747            XGETSR
      4505    CBCAL=JMS I     .
0105  4723            XCBCAL
      4506    SETFS=JMS I     .
0106  0522            XSETFS
      4507    SETRS=JMS I     .
0107  0532            XSETRS
      4510    RACA=JMS I      .
0110  5117            XRACA
      4511    RACB=JMS I      .
0111  5142            XRACB

      0200    *200
```



```


0200  5325            JMP     START+1         /APT/200 = START ADDRESS.
0201  5324            JMP     START           /STARTING ADDRESS IF NO TTY AVAILABLE

0202  4251            JMS     DFEIF           /202 = RESTART ADDRESS
0203  7410            SKP

0204  4777'           JMS     TITLE           /TYPEOUT PROG TITLE
0205  6002    PATA,   IOF
0206  1376            TAD     (7200
0207  6200            LXM                     /LOAD EXPANDED MODE REGISTER
0210  7200            CLA                     /MAKE SURE AC CLEAR
0211  6230            REM
0212  7710            SPA CLA                 /SKIP IF KT8A NOT ENABLED
0213  7340            CLL CLA CMA
0214  3025            DCA     EXMFLG          /SET KT8A ACITV
0215  4775'           JMS     PNTOPT
0216  4774'           JMS     SETSW           /SETUP SR
0217  3036            DCA     CS
0220  3037            DCA     TS
0221  3040            DCA     FS
0222  3044            DCA     RS
0223  7240            STA
0224  3050            DCA     CRELO           /CLEAR INH RELO
0225  3057            DCA     TSTAD           /CLEAR TEST ADDRESS COUNTER
0226  1101            TAD     MINS            /SET UP COUNTER
0227  3100            DCA     FIVE
0230  7240            STA
0231  3055            DCA     HEAD1           /RESET ERROR HEADING
0232  4773'           JMS     FSSET           /SET FIELD STATUS & TYPE SELECTION
0233  4772'           JMS     APTFL
0234  7240            STA                     /AC=-1
0235  1060            TAD     FCNT            /-1 TO FIELDS IN SYSTEM
0236  3060            DCA     FCNT
0237  4771'           JMS     LEGAL           /CHECK FOR LEGAL FIELD SELECTION
0240  1077            TAD     NUMFLD          /SET UP PASS COUNTER
0241  7041            CIA                     /NEGATE IT
0242  3061            DCA     RELCNT          /SAVE IT.
0243  1050            TAD     CRELO
0244  7650            SNA CLA
0245  5261            JMP     PATM            /NO RELOCATE & TEST ONLY 1 FIELD
0246  4770'           JMS     CSR03
0247  5301            JMP     PATO            /RELOCATION PROGRAM
0250  5270            JMP     PATN            /INHIBIT PROGRAM RELOCATION



              /
              /MAKE DF = IF
              /
0251  0000    DFEIF,  0
0252  6002            IOF
0253  7300            CLA CLL
0254  6224            RIF
0255  1176            TAD     [6201
```

```
0256  3257            DCA     .+1
0257  6201            CDF     0
0260  6681            JMP I   CREIF


                      /
                      /NO PROGRAM RELOCATION AND TEST ONLY 1 FIELD
                      /
0261  6224   PATM,    RIF
0262  3051            DCA     PROFLD
                      
0263  4767'           JMS     PNOREL          /TYPEOUT NO RELOCATION
0264  4766'   PATMO,  JMS     TEST
                      
0265  4502            ENDHLT                  /TEST FOR END OF PASS INFORMATION
0266  5205            JMP     PATA            /YES
                      
                      
0267  5264            JMP     PATMO           /NO
                      
                      
                      /
                      /NO PROGRAM RELOCATION BUT TEST ALL SELECTED FIELDS
                      /
0270  6224   PATN,    RIF
0271  3051            DCA     PROFLD
                      
0272  4767'           JMS     PNOREL          /TYPEOUT NO RELOCATION
0273  4766'   PATNO,  JMS     TEST
                      
0274  4502            ENDHLT                  /TEST FOR END OF PASS INFORMATION
0275  5205            JMP     PATA            /YES
                      
0276  4770'           JMS     CSR03           /NO
0277  5301            JMP     PATO            /RELOCATE PROGRAM
0300  5273            JMP     PATNO           /CONTINUE
                      
                      
                      /
                      /CHECK ALL SELECTED FIELDS FROM EACH SELECTED FIELD
                      /
0301  6224   PATO,    RIF
0302  3051            DCA     PROFLD
0303  1040            TAD     FS
0304  3044            DCA     RS              /SETUP RELO STATUS
0305  1041            TAD     FS1
0306  3045            DCA     RS1
0307  1042            TAD     FS2
0310  3046            DCA     RS2
0311  1043            TAD     FS3
0312  3047            DCA     RS3
                      
0313  4765'           JMS     PREL            /TYPEOUT RELOCATION
0314  4766'   PATOO,  JMS     TEST
                      
```



```
0315  4502            ENDHLT                  /TEST FOR END OF PASS INFORMATION
0316  5205            JMP     PATA            /YES
                      
0317  4770'           JMS     CSR03           /NO
0320  7410            SKP
0321  5270            JMP     PATN            /INHIBIT PROGRAM RELOCATION
0322  4764'           JMS     SETREL          /GO TEST RELOCATION
0323  5314            JMP     PATOO           /CONTINUE
                      
                      
0324  5334   START,   JMP     .+10
0325  3076            DCA     NOTTY           /SAVE TTY FLAG STATUS
0326  4763'           JMS     APTIZ           /GO SETUP MEMORY SIZE FROM PSR OR SR
0327  1076            TAD     NOTTY           /GET TTY FLAG
0330  7650            SNA     CLA             /TTY AVAILABLE
0331  5204            JMP     PATA-1          /YES GO PRINT TITLE
0332  6002            IOF                     /NO, TURN THE INTERRUPT OFF
0333  5205            JMP     PATA            /GO START WITHOUT TITLE
0334  1022            TAD     HCW2            /GET HARDWARE WORD 2
0335  0362            AND     (7377           /MASK OUT CLB BIT
0336  3022            DCA     HCW2
0337  7240            CLA     CMA
0340  5325            JMP     START+1         /GO SET FLAG FOR NO TELETYPE
                      
                      /
                      /THIS ROUTINE DETERMINES IF HALT AFTER TEST SELECTED
                      /AND/OR CHANGE FIELD LIMITS SELECTED
                      /IF FIELD LIMITS ARE TO CHANGE RETURN CALL +1 IF THEY ARE NOT TO
                      /CHANGE RETURN CALL +2.
                      /
0341  0000   XENDHL,  0
0342  4504            GETSR                   /GET CURRENT SWITCH VALUE
0343  0033            AND     SR05            /HALT AFTER TEST
0344  7650            SNA CLA                 /SKIP IF HALT AFTER TEST SELECTED
0345  5350            JMP     .+3             /DON'T HALT
0346  4505            CDCAL                   /TEST FOR ACTIVE CONSOLE
0347  7402            HLT                     /NON ACTIVE CONSOLE, JUST HALT
0350  4504            GETSR                   /GET SWITCHES AGAIN
0351  0032            AND     SR04            /ISOLATE CHANGE FIELD LIMITS SWITCH
0352  7650            SNA CLA                 /SKIP IF FIELD LIMITS ARE TO CHANGE
0353  2341            ISZ     XENDHL
0354  5741            JMP I   XENDHL
                      /
0362  7377
0363  5622
0364  0400
0365  4154
0366  0600
0367  4115
0370  1607
0371  1470
0372  5704
0373  1615
0374  4071
0375  1726
```

```
0376  7200
0377  4043
      0400          PAGE
                /DETERMINE WHICH RELOCATION ROUTINE TO USE.
                /
0400  0000     SETREL, 0
0401  1025          TAD     EMMFLG
0402  7510          SZA CLA                 /SKIP IF EXPANDED MODE NOT ENABLED
0403  5434          JMP     KT8REL
                /
                /SETUP TO RELOCATE THE PROGRAM
                /
                /THIS ROUTINE IS USED ONLY IF KM8E OR KM8A FUNCTIONS ARE TO BE TESTED
                /
0404  7200     KM8REL, CLA                     /MAKE SURE AC IS CLEAR
0405  6224          RIF                     /GET INSTRUCITON FIELD OF PROGRAM
0406  3051          DCA     PROFLD          /SAVE THE VALUE
0407  1051          TAD     PROFLD
0410  7112          CLL RTR
0411  7010          RAR                     /MOVE INTO PROPER POSITION
0412  3777'         DCA     FLOCNT
0413  7240          STA
0414  1777'         TAD     FLOCNT
0415  0035          AND     SR911
0416  3777'         DCA     FLOCNT
0417  1777'         TAD     FLOCNT
0420  1376          TAD     (TRSTAB         /ESTABLISH POINTER OF STATUS
                                              /ROUTINE
0421  3056          DCA     TEMP            /SAVE THE POINTER
0422  1456          TAD I   TEMP            /GET ROUTINE TO EXECUTE
0423  3272          DCA     TRS             /AND SAVE IT
0424  4672          JMS I   TRS             /GO TEST STATUS
0425  5213          JMP     KM8REL+7
0426  1777'         TAD     FLOCNT          /SET UP FIELD TO GO
0427  0035          AND     SR911           /ISOLATE  BITS 8-11
0430  7106          CLL RTL
0431  7004          RAL                     /SET UP FOR INSTRUCTION
0432  5263          JMP     CSAME           /GO TEST FOR SAME FIELD
                /
0433  5213          JMP     KM8REL+7
                /
                /
                /THIS ROUTINE WILL TEST THE KT8A FUNCTIONS.
                /
0434  7200     KT8REL, CLA                     /MAKE SURE AC IS CLEAR
0435  6224          RIF                     /GET PROGRAM FIELD
0436  3051          DCA     PROFLD          /AND SAVE IT
0437  1051          TAD     PROFLD
0440  4510          RACA
0441  3777'         DCA     FLOCNT          /SAVE THE BINARY COUNT VALUE OF FIELD
0442  7240          STA
0443  1777'         TAD     FLOCNT
0444  0375          AND     (37
```



```
0445  3777'         DCA     FLOCNT
0446  1777'         TAD     FLOCNT          /ADD IN OFFSET
0447  0035          AND     SR911
0450  1376          TAD     (TRSTAB         /GET STARTING ADDRESS OF ROUTINE POINTER
0451  3056          DCA     TEMP            /SAVE THE POINTER ADDRESS
0452  1456          TAD I   TEMP            /GET ACTUAL ROUTINE ADDRESS
0453  3272          DCA     TRS             /SAVE THE ROUTINE ADDRESS
0454  4672          JMS I   TRS             /GO TEST FOR PROPER FIELD SELECTION
0455  5242          JMP     KT8REL+6
0456  1777'         TAD     FLOCNT          /DECREMENT FIELD VALUE
0457  0375          AND     (37             /ISOLATE 5 BITS
0460  4511          RACB                    /REARANGE INTO PROPER FORMAT
0461  5263          JMP     CSAME           /GO TEST FOR VALID FIELD SELECTION
0462  5242          JMP     KT8REL+6
                /
0463  3052     CSAME,  DCA     TSTFLD          /SAVE FIELD VALUE TO TEST
0464  4774'          JMS     SAME            /PROFLD=TSTFLD
0465  5600          JMP I   SETREL          /YES
0466  4773'          JMS     RELO            /GO RELOCATE PROGRAM
0467  6224          RIF                     /GET PROGRAM LOCATION
0470  3051          DCA     PROFLD
0471  5600          JMP I   SETREL          /EXIT RELOCATION ROUTINE
                /
0472  0000     TRS,    0                       /STORAGE FOR TEST STAUS ROUTINE
0473  3703     TRSTAB, TRS0
0474  3712          TRS1
0475  3722          TRS2
0476  3732          TRS3
0477  3743          TRS4
0500  3754          TRS5
0501  3705          TRS6
0502  4000          TRS7
                /
                /
                /TEST COMPLEMENT STATUS
                /RETURN IF NC, RETURN+1 IF 1C, RETURN+2 IF 2C
                /
0503  0000     TCS,    0
0504  7230          CLA
0505  1036          TAD     CS
0506  7450          SNA
0507  5703          JMP I TCS               /NC
0510  2303          ISZ     TCS
0511  7106          CLL RTL
0512  7430          SZL
0513  5703          JMP I   TCS             /1C
0514  2303          ISZ     TCS
0515  7710          SPA CLA
0516  5703          JMP I   TCS             /2C
0517  7000     APTEOB, NOP                     /APT/
0520  7402          HLT                     /ERRONEOUS STATUS BITS SET
0521  5320          JMP     .-1
                /
                /SET UP PROPER FIELD STATUS BITS
```

```
                        /
0522  0000    XSETFS, 0
0523  1777'             TAD     FLDCNT          /GET FIELD TO DO
0524  7112              CLL RTR
0525  7010              RAR                     /MOVE BANK SELECT INTO POSITION
0526  0372              AND     (3
0527  1371              TAD     (FS             /ESTABLISH POINTER TO ADDRESS OF STATUS
0530  3056              DCA     TEMP            /AND SAVE THE POINTER
0531  5722              JMP I   XSETFS          /AND EXIT
                        /
                        /ESTABLISH RELOCATION STATUS POINTER
                        /
0532  0000    XSETRS, 0
0533  1777'             TAD     FLDCNT          /GET FIELD TO DO
0534  7112              CLL RTR
0535  7010              RAR
0536  0372              AND     (3
0537  1371              TAD     (FS
0540  3056              DCA     TEMP            /SAVE THE POINTER
0541  5732              JMP I   XSETRS
                        /
                        /
0571  0040
0572  0003
0573  4200
0574  1600
0575  0037
0576  0073
0577  : -6
      0600              PAGE
                        /
                        /TEST PATTERN CONTROL
                        /
0600  0000    TEST,   0
0601  4777'             JMS     PAR
0602  7200              CLA
0603  3066              DCA     A
0604  3067              DCA     B
0605  4776'             JMS     STS0            /ALL ZEROS TEST
0606  4253              JMS     TEST0
0607  7240              STA
0610  3066              DCA     A
0611  7240              STA
0612  3067              DCA     B
0613  4775'             JMS     STS1            /ALL ONES TEST
0614  4253              JMS     TEST0
0615  7240              STA
0616  3067              DCA     B
0617  3066              DCA     A
0620  4774'             JMS     STS2            /0000-7777 MCP TEST
0621  4253              JMS     TEST0
0622  7240              STA
0623  3066              DCA     A
```



```
0624  3067              DCA     B
0625  4773'             JMS     STS3            /7777-0000 MCP TEST
0626  4253              JMS     TEST0
0627  7200              CLA
0630  1175              TAD     [2525
0631  3066              DCA     A
0632  1174              TAD     [5252
0633  3067              DCA     B
0634  4772'             JMS     STS4            /2525-5252 MCP TEST
0635  4253              JMS     TEST0
0636  7200              CLA
0637  1174              TAD     [5252
0640  3066              DCA     A
0641  1175              TAD     [2525
0642  3067              DCA     B
0643  4771'             JMS     STS5            /5252-2525 MCP TEST
0644  4253              JMS     TEST0
0645  7200              CLA
0646  3037              DCA     TS              /CLEAR TEST STATUS
0647  6002              IOF
0650  4770'             JMS     MOSTST          /GO PERFORM MARCH PATTERN
0651  5600              JMP I   TEST
                        /
                        /TEST ALL FIELDS SELECTED FOR TEST
                        /
0652  5653    KTEST,  JMP I   TEST0
0653  0000    TEST0,  0
0654  3767'             DCA     FLDCNT          /CLEAR FIELD INDICATOR
0655  3024              DCA     BANK            /CLEAR BANK VALUE
0656  4307              JMS     NUFLD           /GO TEST FOR VALID SELECTION
0657  5261              JMP     TOUPD           /NO A VALID FIELD. UPDATE AND TRY AGAIN
0660  4766'             JMS     WRFLD           /GO WRITE SELECTED FIELD
0661  1767'   TOUPD,  TAD     FLDCNT
0662  7041              CIA                     /COMPLEMENT CURRENT VAALUE
0663  1060              TAD     FCNT            /SEE IF AT MAXIMUM FOUND
0664  7650              SNA CLA                 /SKIP IF NOT AT MAX AVAILABLE
0665  5270              JMP     TEST1
0666  2767'             ISZ     FLDCNT          /UPDATE FIELD TO DO
0667  5256              JMP     TEST0+3         /GO BACK AND TRY NEXT FIELD
                        /
                        /
                        /
0670  3767'   TEST1,  DCA     FLDCNT          /CLEAR FIELD INDICATOR
0671  3024              DCA     BANK            /CLEAR BANK INDICATOR
0672  4307              JMS     NUFLD
0673  5300              JMP     T1UPD
0674  4765'             JMS     RDFLD           /READ PATTERN WRITTEN
0675  1053              TAD     COUNT           /TEST FOR ANY READ ERRORS
0676  7640              SZA CLA
0677  4764'             JMS     SETERR          /GO SET UP PROPER ERROR ROUTINE
0700  1767'   T1UPD,  TAD     FLDCNT          /SET UP TO TEST FOR MAX FIELDS
0701  7041              CIA
0702  1060              TAD     FCNT            /GET NUMBER OF FIELDS FOUND
```

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                7650            SNA CLA                 /SKIP IF NOT AT MAX
                5763'           JMP     TEST8           /GO ONTO NEXT TEST
                2767'           ISZ     FLDCNT
                5272            JMP     TEST1+2         /GO BACK AND DO NEXT VALUE
                                /
                                /
                                /
                                /
                                /
                                /
                                /THIS ROUTINE DETERMINES IF A VALID FIELD IS SELECTED.
                                /A VALID SELECTION RETURNS+2
                                /NON-VALID SELECTION RETURNS +1
                                /
0707  0000      NUFLD,  0
0710  1767'             TAD     FLDCNT          /GET FIELD TO TEST
0711  0035              AND     SR911           /ISOALTE FIELD
0712  1362              TAD     (TFSTA3         /GET TO POINTER OF FIELD STATUS
0713  3337              DCA     TFS             /SAVE THE VALUE
0714  1737              TAD I   TFS             /GET ROUTINE TO EXECUTE
0715  3337              DCA     TFS             /AND SAVE IT
0716  4737              JMS I   TFS             /GO TEST FOR VALID FIELD SELECTION
0717  5707              JMP I   NUFLD           /NOT A VALID FIELD
0720  1025              TAD     EMMFLG
0721  7650              SNA CLA                 /SKIP IF EXPANDED MODE ENABLED
0722  5732              JMP     NOEMM
0723  1767'             TAD     FLDCNT
0724  4811              RACB                    /REARANGE AC INTO PROPER FORMAT
0725  3052      SETFLD, DCA     TSTFLD
0726  4761'             JMS     SAME            /PROFLD=TSTFLD
0727  7410              SKP
0730  2307              ISZ     NUFLD
0731  5707              JMP I   NUFLD           /GOT A VALID FIELD
                        /
0732  1767'     NOEMM,  TAD     FLDCNT
0733  0035              AND     SR911           /ISOLATE FIELD TO DO
0734  7106              CLL RTL
0735  7004              RAL                     /MOVE INTO BITS 6-8
0736  5325              JMP     SETFLD          /GO TEST FOR FIELD SELECTION
                        /
0737  0000      TFS,    0
                        /
0740  3600      TFSTAB, TFS0
0741  3607              TFS1
0742  3617              TFS2
0743  3627              TFS3
0744  3640              TFS4
0745  3651              TFS5
0746  3662              TFS6
0747  3672              TFS7
                        /
                        /
0760  1600
0761  0740
0762  1000
```



```
0763  4610
0764  1200
0765  1005
0766  2346
0767  5200
0770  3262
0771  3255
0772  3250
0773  3243
0774  3237
0775  3233
0776  4267
                1000    PAGE
                        /
                        /
1000  4504      TEST8,  GETSR
1001  0032              AND     SR04            /CHANGE FIELD LIMITS?
1002  7640              SZA CLA
1003  5777'             JMP     PAT4            /YES
1004  5776'             JMP     KTEST
                        /
                        /WRITE A & B REG PATTERN INTO SELECTED FIELD
                        /
1005  0000      WRFLD,  0
1006  1173              TAD     [-40
1007  3270              DCA     P2              /WRITE 2 PAGES
1010  4241              JMS     WRA             /WRITE 4 WORDS FROM A REG
1011  4263              JMS     WRB             /WRITE 4 WORDS FROM B REG
1012  2070              ISZ     P2
1013  5210              JMP     .-3
1014  1173              TAD     [-40
1015  3070              DCA     P2
1016  4263              JMS     WRB
1017  4241              JMS     WRA
1020  2070              ISZ     P2
1021  5216              JMP     .-3
1022  1257              TAD     TSTAD
1023  7640              SZA CLA
1024  5206              JMP     WRFLD+1
                        /
1025  2100              ISZ     FIVE                    /SEE IF READY TO PRINT 15 YET
1026  5805              JMP I   WRFLD
1027  1076              TAD     NOTTY           /GET THE TELETYPE FLAG
1030  7710              SPA     CLA             /IS THERE ONE AVAILABLE
1031  5805              JMP  I  WRFLD           /NO-ABORT THE FIVE MINUTE TYPEOUT
1032  1101              TAD     MIN5            /RESET FIFTEEN MINUTE COUNTER
1033  3100              DCA     FIVE
                        /
1034  4775'             JMS     MES
1035  4543              4543
1036  6165              6165                    /TYPE A 15
1037  0000              0000
```

```
        1040  5605           JMP I   WRFLD          /END OF MEMORY REACHED
        1041  0000  WRA,     0
        1042  1172           TAD     [-4
        1043  3071           DCA     W4             //WRITE 4 WORDS FROM A REG
        1044  1052           TAD     TSTFLD
        1045  1176           TAD     [6201
        1046  3247           DCA     .+1
        1047  6201           CDF     0              /TEST DF
        1050  1066  WRA1,    TAD     A
        1051  3457           DCA I   TSTAD
        1052  2057           ISZ     TSTAD
        1053  7000           NOP
        1054  2071           ISZ     W4
        1055  5250           JMP     WRA1
        1056  1051           TAD     PROFLD         /4 WORDS ARE WRITTEN
        1057  1176           TAD     [6201
        1060  3261           DCA     .+1
        1061  6201           CDF     0              /PROGRAM DF
        1062  5641           JMP I   WRA
        1063  0000  WRB,     0
        1064  1172           TAD     [-4
        1065  3071           DCA     W4             /WRITE 4 WORDS FROM B REG
        1066  1052           TAD     TSTFLD
        1067  1176           TAD     [6201
        1070  3271           DCA     .+1
        1071  6201           CDF     0              /TEST DF
        1072  1067  WRB1,    TAD     B
        1073  3457           DCA I   TSTAD
        1074  2057           ISZ     TSTAD
        1075  7000           NOP
        1076  2071           ISZ     W4
        1077  5272           JMP     WRB1
        1100  1051           TAD     PROFLD         /4 WORDS ARE WRITTEN
        1101  1176           TAD     [6201
        1102  3303           DCA     .+1
        1103  6201           CDF     0              /PROGRAM DF
        1104  5663           JMP I   WRB

                    /
                    /TYPEOUT FIELDS SELECTED FOR TESTING
                    /
        1105  0000  TOSEL,   0
        1106  7346           CLL CLA CMA RTL        /AC=-3
        1107  3024           DCA     BANK           /SAVE BANK VALUE
        1110  1024           TAD     BANK
        1111  7041           CIA                    /MAKE BANK VALUE POSITIVE
        1112  7106           CLL RTL
        1113  7004           RAL                    /SHIFT OVER FOR OTHER ROUTINES
        1114  3774'          DCA     FLDCNT
        1115  1024           TAD     BANK
        1116  7041           CIA
        1117  1171           TAD     [FS            /ESTABLISH STATUS CONTROL WORD
        1120  3056           DCA     TEMP
        1121  1456           TAD I   TEMP           /GET ADDRESS OF CONTROL WORD
        1122  1170           TAD     [-7760         /SEE IF THERE IS AFIELD TO DO
```



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        1123  7650           SNA CLA                /IS THIS BANK TO BE TESTED
        1124  5336           JMP     TOSEL1         /UPDATE BANK SELECT VALUE
        1125  1024           TAD     BANK
        1126  7041           CIA
        1127  1167           TAD     [260           /MAKE ASCII VALUE FOR BANK NUMBER
        1130  4773'          JMS     TYPE           /TYPE IT
        1131  1372           TAD     (":
        1132  4773'          JMS     TYPE           /PRINT A":"
        1133  4771'          JMS     FLDSEL
        1134  1370           TAD     (240
        1135  4773'          JMS     TYPE
        1136  2024  TOSEL1,  ISZ     BANK           /UPDATE BANK VALUE
        1137  7000           NOP
        1140  1024           TAD     BANK
        1141  7740           SMA SZA CLA            /SKIP IF LAST BANK NOT DONE
        1142  5705           JMP I   TOSEL          /EXIT ROUTINE
        1143  5310           JMP     TOSEL+3        /GO BACK AND TRY AGAIN
                    /
        1170  0240
        1171  2102
        1172  0272
        1173  5025
        1174  2346
        1175  2240
        1176  0652
        1177  0205
              1200           PAGE

                    /
                    /READ & TEST A & B REG PATTERN FROM SELECTED FIELD
                    /
        1200  0000  RDFLD,   0

        1201  4406           JMS I   IAPTOK         /APT/

        1202  7200           CLA
        1203  1052           TAD     TSTFLD
        1204  1176           TAD     [6201
        1205  3210           DCA     RDA2
        1206  1210           TAD     RDA2
        1207  3263           DCA     RDB2
        1210  6201  RDA2,    CDF     0              /TEST DF
        1211  1166           TAD     [-100
        1212  3070           DCA     P2             /READ & TEST 2 PAGES
        1213  1172  RDFLDA,  TAD     [-4
        1214  3071           DCA     W4             /READ & TEST 4 WORDS
        1215  3030  RDAC,    DCA     CS             /NO COMPLEMENT
        1216  4327           JMS     READ
        1217  7041           CIA
        1220  1066           TAD     A
        1221  7440           SZA

        1222  4777'          JMS     ERRA           /A REG ERROR - NC
        1223  4327           JMS     READ
        1224  7040           CMA
```

```
 767  1225  3457          DCA I   TSTAD
 768  1226  4776'         JMS     SCS1            /1 COMPLEMENT
 769  1227  4327          JMS     READ
 770  1230  7001          IAC
 771  1231  1066          TAD     A
 772  1232  7440          SZA
 773
 774  1233  4775'         JMS     ERRA1
 775  1234  4327          JMS     READ
 776  1235  7040          CMA
 777  1236  3457          DCA I   TSTAD
 778  1237  4774'         JMS     SCS2            /2 COMPLEMENTS
 779  1240  4327          JMS     READ
 780  1241  7041          CIA
 781  1242  1066          TAD     A
 782  1243  7440          SZA
 783
 784  1244  4777'         JMS     ERRA            /A REG ERROR - 2C
 785  1245  2057          ISZ     TSTAD
 786  1246  7000          NOP
 787  1247  2071          ISZ     W4
 788  1250  5215          JMP     RDA2            /COMPLETE 4 WORDS
 789  1251  2070          ISZ     P2
 790  1252  5266          JMP     RDFLDB          /COMPLETE CURRENT 2 PAGES
 791  1253  1051          TAD     PROFLD
 792  1254  1176          TAD     [6201
 793  1255  3256          DCA     .+1
 794  1256  6201          CDF     0               /PROGRAM DF
 795  1257  1057          TAD     TSTAD
 796  1260  7640          SZA CLA
 797  1261  5210          JMP     RDA2            /READ ANOTHER 2 PAGES
 798  1262  5600          JMP I   RDFLD           /END OF MEMORY REACHED
 799
 800  1263  6201  RDB2,   CDF     0               /TEST DF
 801  1264  1166          TAD     [-100
 802  1265  3070          DCA     P2              /READ & TEST 2 PAGES
 803  1266  1172  RDFLDB, TAD     [-4
 804  1267  3071          DCA     W4              /READ & TEST 4 WORDS
 805  1270  3036  RDBC,   DCA     CS              /NO COMPLEMENT
 806  1271  4327          JMS     READ
 807  1272  7041          CIA
 808  1273  1067          TAD     B
 809  1274  7440          SZA
 810
 811  1275  4773'         JMS     ERRB            /B REG ERROR - NC
 812  1276  4327          JMS     READ
 813  1277  7040          CMA
 814  1300  3457          DCA I   TSTAD
 815  1301  4776'         JMS     SCS1            /1 COMPLEMENT
 816  1302  4327          JMS     READ
 817  1303  7001          IAC
 818  1304  1067          TAD     B
 819  1305  7440          SZA
 820
 821  1306  4772'         JMS     ERRB1           /B REG ERROR - 1C
```



```
 822  1307  4327          JMS     READ
 823  1310  7040          CMA
 824  1311  3457          DCA I   TSTAD
 825  1312  4774'         JMS     SCS2            /2 COMPLEMENTS
 826  1313  4327          JMS     READ
 827  1314  7041          CIA
 828  1315  1067          TAD     B
 829  1316  7440          SZA
 830
 831  1317  4773'         JMS     ERRB            /B REG ERROR - 2C
 832  1320  2057          ISZ     TSTAD
 833  1321  7000          NOP
 834  1322  2071          ISZ     W4
 835  1323  5270          JMP     RDBC            /COMPLETE 4 WORDS
 836  1324  2070          ISZ     P2
 837  1325  5213          JMP     RDFLDA          /COMPLETE CURRENT 2 PAGES
 838  1326  5263          JMP     RDB2
 839                /
 840                /READ TEST ADDRESS SUBROUTINE
 841                /
 842  1327  0000  READ,   0
 843  1330  1457          TAD I   TSTAD
 844  1331  1457          TAD I   TSTAD
 845  1332  1457          TAD I   TSTAD
 846  1333  1457          TAD I   TSTAD
 847  1334  1457          TAD I   TSTAD
 848  1335  1457          TAD I   TSTAD
 849  1336  1457          TAD I   TSTAD
 850  1337  1457          TAD I   TSTAD
 851  1340  1457          TAD I   TSTAD
 852  1341  1457          TAD I   TSTAD
 853  1342  1457          TAD I   TSTAD
 854  1343  7200          CLA
 855  1344  1457          TAD I   TSTAD
 856  1345  5727          JMP I   READ
 857
 858                /
 859                /
 860                /KEYBOARD INTERRUPT OCCURRED
 861                /
 862  1346  0000  KBINT,  0
 863  1347  1076          TAD     NOTTY           /GET THE TELETYPE FLAG
 864  1350  7700          SMA     CLA             /IS THERE A TELTYPE AVAILABLE
 865  1351  5354          JMP     .+3             /YES GO PRINT THE ERROR
 866  1352  7402          HLT                     /NO, HALT- INTTERUPTED FROM THE KEY BOARD
 867  1353  5746          JMP     KBINTC          /GO CLEAR FLAG AND CONTINUE
 868  1354  4771'         JMS     YES
 869  1355  4543          TEXT            "%-INT FROM KB"
       1356  1116
       1357  2440
       1360  0000
       1361  1715
       1362  4013
       1363  0000
 870  1364  6032  KBINTC, KCC
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1365  7240              STA
1366  3055              DCA     HEAD1
1367  5745              JMP I   KEINT

1371  2240
1372  1437
1373  1425
1374  3272
1375  1411
1376  3266
1377  1400
      1400              PAGE

1400  0000    ERRA,     0
1401  7041              CIA
1402  1066              TAD     A
1403  3073              DCA     BDATA             /DATA READ
1404  1066              TAD     A
1405  4254              JMS     GERRC             /GO TO ERRC SETUP ROUTINE
1406  1066              TAD     A
1407  3457              DCA I   TSTAD             /RE-WRITE BAD LOCATION
1410  5600              JMP I   ERRA
1411  0000    ERRA1,    0
1412  3056              DCA     TEMP
1413  1066              TAD     A
1414  7040              CMA
1415  1056              TAD     TEMP
1416  3073              DCA     BDATA             /DATA READ
1417  1066              TAD     A
1420  7040              CMA
1421  4254              JMS     GERRC             /GO TO ERRC SETUP ROUTINE
1422  1066              TAD     A
1423  7040              CMA
1424  3457              DCA I   TSTAD             /RE-WRITE BAD LOCATION
1425  5611              JMP I   ERRA1
1426  0000    ERRB,     0
1427  7041              CIA
1430  1067              TAD     B
1431  3073              DCA     BDATA             /DATA READ
1432  1067              TAD     B
1433  4254              JMS     GERRC             /GO TO ERRC SETUP ROUTINE
1434  1067              TAD     B
1435  3457              DCA I   TSTAD             /RE-WRITE BAD LOCATION
1436  5626              JMP I   ERRB
1437  0000    ERRB1,    0
1440  3056              DCA     TEMP
1441  1067              TAD     B
1442  7040              CMA
1443    56              TAD     TEMP
1444  3073              DCA     BDATA             /DATA READ
1445  1067              TAD     B
1446  7040              CMA
1447  4254              JMS     GERRC             /GO TO ERRC SETUP ROUTINE
1450  1067              TAD     L
1451  7040              CMA
```



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1452  3457              DCA I   TSTAD
1453  5637              JMP I   ERRB1
1454  0000    GERRC,    0                         /GO TO ERRC
1455  3072              DCA     GDATA             /DATA WRITTEN
1456  1051              TAD     PROFLD
1457  1176              TAD     [6201
1460  3261              DCA     .+1
1461  6201              CDF     0                 /PROGRAM DF
1462  4777'             JMS     ERRC              /DATA OR CHKBD ERROR
1463  1052              TAD     TSTFLD
1464  1176              TAD     [6201
1465  3266              DCA     .+1
1466  6201              CDF     0                 /TEST DF
1467  5654              JMP I   GERRC

                        /
                        /CHECK FOR LEGAL FIELD SELECTION
                        /
1470  0000    LEGAL,    0
1471  7300              CLA CLL
1472  3064              DCA     INSAVE            /SAVE FIELD CONTROL
1473  7344              CLL CLA CMA RAL           /AC=-2
1474  3065              DCA     LEGALO            /LEGAL SELECTION CONTROL
1475  3052              DCA     TSTFLD
1476  1025              TAD     EMMFLG            /GET KT8A INDICATOR
1477  7650              SNA CLA                   /SKIP IF ACTIVE
1500  5323              JMP     NOEMB
1501  3776'             DCA     FLDCNT            /START WITH FIELD 0
1502  4351              JMS     LOLFLD
1503  4340              JMS     LEGALA            /VALID FIELD SELECTION
1504  2776'             ISZ     FLDCNT            /UPDATE PATTERN
1505  1776'             TAD     FLDCNT
1506  4511              FAC3                      /REARRANGE INTO PROPER CONFIGURATION
1507  3052              DCA     TSTFLD            /AND THE THE NEW VALUE
1510  1776'             TAD     FLDCNT
1511  0375              AND     137               /ISOLATE FIELD
1512  7440              SZA CLA         /SKIP IF RETURNED TO ZERO
1513  5302              JMP     .-11              /GO BACKA NO TRY AGAIN
1514  2065    ILEGAL,   ISZ     LEGALO
1515  5774'             JMP     NOFLD             /NO FIELD SELECTION
1516  1064              TAD     INSAVE
1517  7640              SZA CLA
1520  5773'             JMP     PINF              /PROG IN SELECTED FIELD
1521  3050              DCA     OPFLD             /ONLY 1 FIELD SELECTED
1522  5670              JMP I   LEGAL
                        /
                        /KM8 FUNCTIONS
                        /
1523  3776'   NOEMB,    DCA     FLDCNT            /START WITH FIELD ZERO
1524  4351              JMS     LOLFLD            /GO TEST FOR VALID SELECTION
1525  4340              JMS     LEGALA
1526  2776'             ISZ     FLDCNT            /UPDATE FIELD NUMBER
1527  1776'             TAD     FLDCNT            /GET BACK FIELD SELECTION
1530  0035              AND     S0011             /ISOLATE FIELD
1531  7106              CLL RTL
```

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 980   1532  7004            RAL                     /MOVE INTO POSITION
 981   1533  3052            DCA     TSTFLD          /SAVE NEW VALUE
 982   1534  1052            TAD     TSTFLD
 983   1535  7640            SZA CLA                 /GONE BACK TO ZERO?
 984   1536  5324            JMP     NDEMB+1         /GO BACK AND TRY AGAIN
 985   1537  5314            JMP     ILEGAL          /INVALID SELECTIONS OR NOT ENOUGH
 986                 /
 987                 /
 988                 /
 989                 /LEGAL FIELD SELECTION SUBROUTINE
 990                 /
 991   1540  0000    LEGALA, 0
 992   1541  2065            ISZ     LEGALO          /FIELD SELECTED
 993   1542  7419            SKP
 994   1543  5679            JMP I   LEGAL           /AT LEAST 2 FIELDS SELECTED
 995   1544  6224            RIF
 996   1545  3051            DCA     PROFLD
 997   1546  4772'           JMS     SAME            /PROGRAM IN SELECTED FIELD?
 998   1547  2064            ISZ     INSAME          /YES
 999   1550  5740            JMP I   LEGALA
1000                 /SET UP FOR TESTING FIELD STATUS FOR LEGAL SELECTION
1001                 /
1002   1551  0000    LG.FLD, 0
1003   1552  7200            CLA                     /MAKE SURE AC IS CLEAR
1004   1553  1776'           TAD     FLDCNT          /GET FIELD TO TEST
1005   1554  0035            AND     SF911           /ISOLATE FIELDS
1006   1555  1371            TAD     IOFSTAB
1007   1556  3056            DCA     TEMP            /SAVE ROUTINE POINTER
1008   1557  1456            TAD I   TEMP            /GET POINTER
1009   1560  3056            DCA     TEMP
1010   1561  4456            JMS I   TEMP            /EXECUTE FS ROUTINE
1011   1562  2351            ISZ     LGLFLD          /INVALID FIELD
1012   1563  5751            JMP I   LGLFLD
1013                 /
1014                 /
1015   1571  0740
1016   1572  1600
1017   1573  5044
1018   1574  4600
1019   1575  0037
1020   1576  2546
1021   1577  2600
              1600              PAGE
1022
1023
1024                 /
1025                 /RETURN IF PROGRAM IN SELECTED FIELD
1026                 /RETURN +1 IF PROGRAM NOT IN SELECTED FIELD
1027                 /
1028   1600  0000    SAME,   0
1029   1601  1051            TAD     PROFLD
1030   1602  7041            CIA
1031   1603  1052            TAD     TSTFLD
1032   1604  7640            SZA CLA
1033   1605  2200            ISZ     SAME            /PROG NOT IN SEL FIELD
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1034   1606  5600            JMP I   SAME
1035                 /
1036                 /RETURN IF SR03=0, RETURN +1 IF SR03=1
1037                 /
1038   1607  0000    CSR03,  0
1039   1610  4504            GETSR
1040   1611  0031            AND     SR03
1041   1612  7640            SZA CLA
1042   1613  2207            ISZ     CSR03           /INHIBIT PROGRAM RELOCATION
1043   1614  5607            JMP I   CSR03
1044                 /
1045                 /SETUP FIELD STATUS (FS)
1046                 /INC FIELDS NOT PRESENT OR NOT SELECTED
1047                 /STORE NUMBER OF FIELDS PRESENT IN FCNT
1048                 /
1049   1615  0000    FSSET,  0
1050   1616  7200            CLA
1051   1617  3060            DCA     FCNT            /CLEAR FIELD COUNT
1052   1620  3077            DCA     NUMFLD
1053   1621  1076            TAD     NOTTY
1054   1622  7700            SMA CLA                 /SKIP IF NO TTY AVAILABLE
1055   1623  5233            JMP     .+10
1056   1624  1021            TAD     21
1057   1625  7710            SPA CLA                 /SKIP IF NO HARDWARE SWITCHES
1058   1626  5233            JMP     .+5
1059   1627  1020            TAD     PSR             /GET PSEUDO SWITCH REGISTER
1060   1630  0377            AND     (37
1061   1631  3063            DCA     ENDF            /SET UP LAST FIELD TO DO
1062   1632  5247            JMP     .+15            /BYPASS SETUP
1063   1633  4605            CBCAL
1064   1634  7402            HLT
1065   1635  4504            GETSR                   /GET NEW SWITCH VALUE
1066   1636  0377            AND     (37             /ISOLATE FIELD BITS
1067   1637  3063            DCA     ENDF            /SAVE THE STARTING FIELD
1068   1640  4504            GETSR                   /GET NEW SWITCH VALUE
1069   1641  7002            BSW
1070   1642  0377            AND     (37
1071   1643  3062            DCA     STARTF          /SAVE END FIELD LIMIT
1072   1644  4776'           JMS     SETPAR          /PRINT "SELECT TES PARAMETER"
1073   1645  4605            CBCAL
1074   1646  7402            HLT
1075                 /
1076                 /NOW DETERMINE WHICH FIELDS TO TEST
1077                 /
1078   1647  3040            DCA     FS
1079   1650  3041            DCA     FS1
1080   1651  3042            DCA     FS2
1081   1652  3043            DCA     FS3
1082   1653    25            TAD     EXMFLG
1083   1654  7650            SNA CLA                 /TEST TO SEE IF EXPANDED MODE FEATURES
1084                                                 /ARE AVAILABLE TO BE USED.
1085   1655  5274            JMP     BANK3           /NOT ENABLED. TEST AS THOUGH A KM8E/A
1086   1656  3775'           DCA     FLDCNT
1087   1657  1775'           TAD     FLDCNT          /GET BACK VALUE TO DO
1088   1660  4611            RACB                    /REARANGE INTO PROPER FORMAT
```

```
1089  1661  1176          TAD     [6201           /ESTABLISH DATA FIELD
1090  1662  3263          DCA     .+1
1091  1663  7402          HLT                     /CHANGED TO DATA FIELD TO TEST
1092  1664  4774'         JMS     CFP             /GO TEST FIELD FOR PRESENCE
1093  1665  4314          JMS     SPFLD           /SET APPROPRIATE BIT
1094  1666  2775'         ISZ     FLDCNT          /UPDATE PATTERN
1095  1667  1775'         TAD     FLDCNT
1096  1670  0377          AND     (37             /GONE BACK TO ZERO YET
1097  1671  7640          SZA CLA         /SKIP IF BACK TO FIELD ZERO
1098  1672  5257          JMP     .-13
1099  1673  5307          JMP     FSEND
1100  1674  1373  BANK0,  TAD     (7760
1101  1675  3041          DCA     FS1
1102  1676  1373          TAD     (7760
1103  1677  3042          DCA     FS2
1104  1700  1373          TAD     (7760
1105  1701  3043          DCA     FS3
1106  1702  7200  BANK0A, CLA
1107  1703  6240          LRR                     /CLEAR RELOCATION
1108  1704  6250          ARR
1109  1705  3775'         DCA     FLDCNT
1110  1706  4772'         JMS     TESBNK          /TEST BANK ZERO
1111
1112  1707  1076  FSEND,  TAD     NOTTY           /GET TTY FLAG
1113  1710  7710          SPA     CLA             /IS TTY AVAILABLE
1114  1711  5615          JMP     I   FSSET     /NO, ABORT TTY MESAGE AND RETURN
1115  1712  4771'         JMS     PNTFLD
1116  1713  5715          JMP I   FSSET
1117
1118                /SET UP ROUTINE TO SET STATUS BIT
1119                /
1120  1714  0000  SPFLD,  0
1121  1715  1775'         TAD     FLDCNT
1122  1716  0035          AND     SA911           /ISOLATE FIELD
1123  1717  1370          TAD     (SFSTAB
1124  1720  3056          DCA     TEMP            /SAVE POINTER
1125  1721  1456          TAD I   TEMP
1126  1722  3056          DCA     TEMP            /SAVE THE POINTER
1127  1723  4456          JMS I   TEMP            /GO PERFORM SET FUNCTION
1128  1724  7000          NOP
1129  1725  5714          JMP I   SPFLD
1130                /
1131
1132                /
1133                /PRINT SELECTED OPTION FOR TESTING WHETHER KM8 OR KT8
1134                /
1135  1726  0000  PNTOPT, 0
1136  1727  1076          TAD     NOTTY           /TEST FOR NOTTY TO USE
1137  1730  7640          SZA CLA
1138  1731  5726          JMP I   PNTOPT          /NO TTY AVAILABLE
1139  1732  1025          TAD     EMMFLG
1140  1733  7640          SZA CLA                 /SKIP IF KT NOT ENABLED
1141  1734  1367          TAD     (7
1142  1735  1368          TAD     (1315
1143  1736  3341          DCA     OPT             /SAVE OPTION VALUE
```



```
1144  1737  4755'         JMS     MES
1145  1740  4543          4543                    /CRLF
1146  1741  0000  OPT,    0000
1147  1742  7040          TEXT "8 SELECTED FOR TESTING "
      1743  2205
      1744  1405
      1745  0324
      1746  0514
      1747  4408
      1750  1722
      1751  4024
      1752  3523
      1753  2411
      1754  1607
      1755  4000
1148  1756  5726          JMP I   PNTOPT          /EXIT ROUTINE
1149                /
1150  1757  2240
1151  1760  1715
1152  1761  0007
1153  1762  3352
1154  1763  4654
1155  1764  2314
1156  1765  7760
1157  1766  2500
1158  1767  2446
1159  1770  5000
1160  1771  3037
      2000          PAGE
1161
1162
1163                /
1164                /RETURN+1 IF FIELD PRESENT IN SYSTEM & IS SELECTED
1165                /
1166  2000  0000  CFP,    0
1167  2001  7300          CLA CLL
1168  2002  6224          RIF
1169  2003  1176          TAD     [6201
1170  2004  3212          DCA     CFPO
1171  2005  1165          TAD     [-1
1172  2006  3677          DCA I   CHECK
1173  2007  1677          TAD I   CHECK
1174  2010  7640          SZA CLA                 /SKIP IF NO" PRESENT
1175  2011  5214          JMP     .+3
1176  2012  6201  CFPO,   CDF     0               /PROGRAM DF
1177  2013  5600          JMP I   CFP
1178  2014  2060          ISZ     FSNT            /FIELD IS PRESENT
1179  2015  6214          RDF                     /STARTF + ENDF
1180  2016  3301          DCA     CFPTMP          /SAVE TEST FIELD
1181  2017  1025          TAD     EMMFLG
1182  2020  7650          SNA CLA                 /SKIP IF EXPANDED MODE ACTIVE
1183  2021  5228          JMP     .+5
1184  2022  1301          TAD     CFPTMP          /GET BACK SELECTED FIELD
1185  2023  4510          RACA                    /CHANGE INTO BINARY COUNT
1186  2024  3301          DCA     CFPTMP          /RESTORE IT FOR TESTING
```

```
1187    2025  5626            JMP     .+5
1188    2026  1301            TAD     CFPTMP          /GET BACK FIELD VALUE
1189    2027  7112            CLL RTR
1190    2030  7010            RAR                     /CHANGE TO BINARY COUNT NUMBER
1191    2031  3301            DCA     CFPTMP          /SAVE NUMBER FOR TESTING
1192    2032  1263            TAD     ENDF
1193    2033  7041            CIA
1194    2034  1262            TAD     STARTF
1195    2035  7040            SZA
1196    2036  5246            JMP     CFP2
1197    2037  1301            TAD     CFPTMP          /GET BACK NUMBER
1198    2040  7041            CIA
1199    2041  1262            TAD     STARTF
1200    2042  7650            SNA CLA
1201    2043  2200    CFP1,   ISZ     CFP             /FIELD IS PRESENT & SELECTED
1202    2044  2277            ISZ     NUMFLD          /FIELD PRESENT AND SELECTED
1203    2045  5212            JMP     CFP0
1204    2046  7710    CFP2,   SPA CLA
1205    2047  5267            JMP     CFP4            /STARTF < ENDF
1206    2050  1301            TAD     CFPTMP
1207    2051  7041            CIA
1208    2052  1262            TAD     STARTF
1209    2053  7450            SNA
1210    2054  5243            JMP     CFP1            /DF = STARTF (SELECTED)
1211    2055  7710            SPA CLA
1212    2056  5243            JMP     CFP1            /DF > STARTF (SELECTED)
1213    2057  1301    CFP3,   TAD     CFPTMP                  /DF < STARTF ***
1214    2060  7041            CIA
1215    2061  1263            TAD     ENDF
1216    2062  7450            SNA
1217    2063  5243            JMP     CFP1            /DF = ENDF (SELECTED)
1218    2064  7710            SPA CLA
1219    2065  5212            JMP     CFP0            /DF > ENDF (NOT SELECTED)
1220    2066  5243            JMP     CFP1            /DF < ENDF (SELECTED)
1221    2067  1301    CFP4,   TAD     CFPTMP                  /STARTF < ENDF
1222    2070  7041            CIA
1223    2071  1262            TAD     STARTF
1224    2072  7450            SNA
1225    2073  5243            JMP     CFP1            /DF = STARTF (SELECTED)
1226    2074  7710            SPA CLA
1227    2075  5257            JMP     CFP3            /DF > STARTF THIS TIME ***
1228    2076  5212            JMP     CFP0            /DF < STARTF (NOT SELECTED)
1229    2077  2100    CHECK,  CHECK0
1230    2100  0000    CHECK0, 0
1231    2101  0000    CFPTMP, 0
1232
1233
1234                    /
1235                    /
1236                    /FIND OUT WHICH FIELDS HAVE BEEN SELECTED FOR TESTING
1237                    /
1238    2102  0000    FLDSEL, 0
1239    2103  4777'           JMS     TFS7
1240    2104  5307            JMP     .3
1241    2105  1164            TAD     [267
```



```
1242    2106  4776'           JMS     TYPE            /FIELD 7
1243    2107  4775'           JMS     TFS6
1244    2110  5313            JMP     .+3
1245    2111  1163            TAD     [266
1246    2112  4776'           JMS     TYPE            /FIELD 6
1247    2113  4774'           JMS     TFS5
1248    2114  5317            JMP     .+3
1249    2115  1162            TAD     [265
1250    2116  4776'           JMS     TYPE            /FIELD 5
1251    2117  4773'           JMS     TFS4
1252    2120  5323            JMP     .+3
1253    2121  1161            TAD     [264
1254    2122  4776'           JMS     TYPE            /FIELD 4
1255    2123  4772'           JMS     TFS3
1256    2124  5327            JMP     .+3
1257    2125  1160            TAD     [263
1258    2126  4776'           JMS     TYPE            /FIELD 3
1259    2127  4771'           JMS     TFS2
1260    2130  5333            JMP     .+3
1261    2131  1157            TAD     [262
1262    2132  4776'           JMS     TYPE            /FIELD 2
1263    2133  4770'           JMS     TFS1
1264    2134  5337            JMP     .+3
1265    2135  1156            TAD     [261
1266    2136  4776'           JMS     TYPE            /FIELD 1
1267    2137  4767'           JMS     TFS0
1268    2140  5343            JMP     .+3
1269    2141  1155            TAD     [260
1270    2142  4776'           JMS     TYPE            /FIELD 0
1271    2143  5702            JMP I   FLDSEL
1272
1273                    /
1274    2167  3600
1275    2170  3607
1276    2171  3617
1277    2172  3627
1278    2173  3640
1279    2174  3691
1280    2175  3662
1281    2176  5125
1282    2177  3572
              2200              PAGE
1283
1284
1285                    /
1286                    /CONVERT OCTAL NUMBERS FOR TYPEOUT
1287                    /
1288    2200  0000    SIXTY,  0
1289    2201  7300            CLA CLL
1290    2202  1600            TAD I   SIXTY           /ADDRESS OF OPERAND
1291    2203  3235            DCA     S0
1292    2204  2200            ISZ     SIXTY
1293    2205  1600            TAD I   SIXTY           /STORAGE ADDRESS
1294    2206  3236            DCA     S1
1295    2207  2200            ISZ     SIXTY
```

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1296  2210  1155          TAD     [77
1297  2211  7340          CMA                     /AC=7700
1298  2212  0635          AND I   S0              /FIRST 2 DIGITS OF OPERAND
1299  2213  7002          BSW
1300  2214  4222          JMS     CNV             /CONVERT DIGITS FOR TYPEOUT
1301  2215  2236          ISZ     S1              /INC STORAGE ADDRESS
1302  2216  1155          TAD     [77
1303  2217  0635          AND I   S2              /SECOND 2 DIGITS OF OPERAND
1304  2220  4222          JMS     CNV
1305  2221  5600          JMP I   SIXTY           /DONE
1306  2222  0000  CNV,     0
1307  2223  3237          DCA     S2
1308  2224  1237          TAD     S2
1309  2225  7106          CLL RTL
1310  2226  7004          RAL
1311  2227  0154          AND     [707            /LEFT DIGIT
1312  2230  1237          TAD     S2
1313  2231  0154          AND     [707            /RIGHT DIGIT
1314  2232  1153          TAD     [6060
1315  2233  3636          DCA I   S1              /STORE CONVERTED DIGITS
1316  2234  5622          JMP I   CNV
1317  2235  0000  S0,     0
1318  2236  0000  S1,     0
1319  2237  0000  S2,     0
1320                      /
1321                      /TELETYPE OUTPUT WITH BELL
1322                      /
1323  2240  0000  MES,     0
1324  2241  7240          STA
1325  2242  3023          DCA     INMODE          /SET PRINTER ACTIVE INDICATOR /*C8*/
1326  2243  7240          STA
1327  2244  1240          TAD     MES             /FIRST WORD -1
1328  2245  3010          DCA     10
1329
1330  2246  1410          TAD I   10
1331  2247  3313          DCA     M0
1332  2250  1313          TAD     M0
1333  2251  7002          BSW
1334  2252  4256          JMS     TYPCH           /TYPEOUT FIRST CHARACTER
1335  2253  1313          TAD     M0
1336  2254  4256          JMS     TYPCH           /TYPEOUT SECOND CHARACTER
1337  2255  5246          JMP     MES+6           /CONTINUE
1338
1339  2256  0000  TYPCH,  0
1340  2257  0155          AND     [77
1341  2260  7440          SZA
1342  2261  5264          JMP     .+3
1343  2262  3023          DCA     INMODE          /CLEAR MESSAGE ACTIVE INDICATOR /*C8*/
1344  2263  5410          JMP I   10              /END OF MESSAGE RETURN
1345  2264  1152          TAD     [-34
1346  2265  7440          SZA
1347  2266  5271          JMP     .+3
1348  2267  1151          TAD     [207            /CODE IS BELL
1349  2270  5311          JMP     MTP
1350  2271  1172          TAD     [-4
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1351  2272  7500          SMA                     /CODE LESS THAN 40?
1352  2273  5276          JMP     .+3             /NO
1353  2274  1150          TAD     [340            /YES, ADD 300. CODE IS ALPHA
1354  2275  5311          JMP     MTP
1355  2276  1147          TAD     [-3
1356  2277  7440          SZA
1357  2300  5303          JMP     .+3
1358  2301  1146          TAD     [212            /CODE IS LINE FEED
1359  2302  5311          JMP     MTP
1360  2303  1145          TAD     [-2
1361  2304  7440          SZA
1362  2305  5310          JMP     .+3
1363  2306  1144          TAD     [215            /CODE IS CR
1364  2307  7410          SKP
1365  2310  1143          TAD     [245            /ADD 200 TO OTHERS > 40
1366  2311  4777'  MTP,    JMS     TYPE
1367  2312  5656          JMP I   TYPCH
1368  2313  0000  M0,      0
1369                      /
1370                      /
1371                      /TEST THE SELECTED BANK FOR FIELDS AVAILABLE
1372                      /
1373  2314  0000  TESBNK, 0
1374  2315  6271          CDF     70
1375  2316  4776'         JMS     CFP             /CHECK FIELD PRESENT
1376  2317  4775'         JMS     SFS7            /SET FIELD STATUS BIT 7
1377  2320  6261          CDF     60
1378  2321  4776'         JMS     CFP
1379  2322  4774'         JMS     SFS6
1380  2323  6251          CDF     50
1381  2324  4776'         JMS     CFP
1382  2325  4773'         JMS     SFS5
1383  2326  6241          CDF     40
1384  2327  4776'         JMS     CFP
1385  2330  4772'         JMS     SFS4
1386  2331  6231          CDF     30
1387  2332  4776'         JMS     CFP
1388  2333  4771'         JMS     SFS3
1389  2334  6221          CDF     20
1390  2335  4776'         JMS     CFP
1391  2336  4770'         JMS     SFS2
1392  2337  6211          CDF     10
1393  2340  4776'         JMS     CFP
1394  2341  4767'         JMS     SFS1
1395  2342  6201          CDF     00
1396  2343  4776'         JMS     CFP
1397  2344  4766'         JMS     SFS0
1398  2345  5714          JMP I   TESBNK
1399  2346  7 00  FLDCNT,  0
1400                      /
1401                      /MARCH TEST IN ERROR
1402                      /
1403  2347  0000  TVAR,    0
1404  2350  4240          JMS     .ES
1405  2351  1501          TEXT    "MARCH - "
```

```
                2352  2203
                2353  1049
                2354  5540
                2355  0000
1406            2356  5747            JMP I   TMAR
1407                                  /
1408            2366  3277
1409            2367  3317
1410            2370  3340
1411            2371  3412
1412            2372  3432
1413            2373  3452
1414            2374  3472
1415            2375  3512
1416            2376  3200
1417            2377  5025
                2400                  PAGE
1418                                  /
1419                                  /TYPEOUT CHARACTER IN AC AND A SPACE
1420                                  /
1421            2400  0000    TYPSP,  0
1422            2401  4777'           JMS     TYPE
1423            2402  1142            TAD     [240
1424            2403  4777'           JMS     TYPE
1425            2404  5600            JMP I   TYPSP
1426
1427
1428                                  /
1429                                  /ERROR ROUTINE (BELL ON ERROR HAS PRIORITY)
1430                                  /
1431            2405  0000    RETURN, 0                       /PROGRAM RETURN ADDRESS
1432            2406  4405    CODERR, JMS I   [AFTER
1433            2407  4504            GETSR
1434            2410  0030            AND     SW02            /BELL ON ERROR?
1435            2411  7650            SNA CLA
1436            2412  5221            JMP     .+7
1437            2413  1076    RBELL,  TAD     NOTTY           /GET TTY FLAG
1438            2414  7710            SPA     CLA
1439            2415  5605            JMP I   RETURN          /NO TELETYPE AVILABLE DO NOT RING BELL
1440            2416  1151            TAD     [207
1441            2417  4777'           JMS     TYPE            /RING BELL
1442            2420  5605            JMP I   RETURN
1443            2421  4504            GETSR
1444            2422  0027            AND     SR01
1445            2423  7640            SZA CLA
1446            2424  5267            JMP     STOP            /INHIBIT TYPEOUT
1447            2425  1025            TAD     ENMFLG          /TEST FOR K"BA
1448            2426  7650            SNA CLA
1449            2427  5234            JMP     .+5
1450            2430  6224            RIF                     /GET PROGRAM FIELD
1451            2431  4510            RACA                    /BINARY COUNT NUMBER
1452            2432  3056            DCA     TEMP
1453            2433  5240            JMP     .+5
1454            2434  6224            RIF
1455            2435  7112            CLL RTR
```



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1456            2436  7010            RAR                     /MAKE A BINARY NUMBER
1457            2437  3056            DCA     TEMP            /SAVE CHARACTER
1458            2440  4776'           JMS     SIXTY
1459            2441  0056            TEMP
1460            2442  2457            ERROR0-1
1461            2443  1141            TAD     [4543
1462            2444  3257            DCA     ERROR0-1
1463            2445  1175            TAD     RETURN
1464            2446  1165            TAD     [-1
1465            2447  3056            DCA     TEMP
1466            2450  4776'           JMS     SIXTY
1467            2451  0056            TEMP
1468            2452  2461            ERROR1
1469            2453  1076            TAD     NOTTY           /GET TTY FLAG
1470            2454  7710            SPA     CLA             /IS THERE A TTY ON SYSTEM
1471            2455  5666            JMP I   ADDER            /NO. GO HALT ON ERRORS INSTEAD-INFO IN AC
1472            2456  4775'           JMS     YES
1473            2457  4543            4543
1474            2460  0000    ERROR0, 0                       /FIELD
1475            2461  0000    ERROR1, 0
1476            2462  0000            0                       /PROGRAM LOCATION OF ERROR JMS
1477            2463  4040            4040
1478            2464  0000            0
1479            2465  5666            JMP I   .+1             /TYPEOUT ERROR
1480            2466  0000    ADDER,  0                       /ADDRESS OF ERROR TYPEOUT
1481            2467  4504    STOP,   GETSR
1482            2470  0026            AND     SR00            /HALT AFTER ERROR?
1483            2471  7650            SNA CLA
1484            2472  5276            JMP     LIMIT           /INHIBIT ERROR HALT
1485            2473  1205            TAD     RETURN
1486            2474  1165            TAD     [-1
1487
1488            2475  7402            HLT                     /HALT WITH AC = ERROR JMS
1489            2476  4504    LIMIT,  GETSR
1490            2477  0032            AND     SR04            /CHANGE FIELD LIMITS?
1491            2500  7640            SZA CLA
1492            2501  5774'           JMP     PATA            /YES
1493            2502  5605            JMP I   RETURN          /NO
1494
1495
1496                                  /
1497                                  /RELOCATION MOVE ERROR
1498                                  /
1499            2503  0000    ERRM,   0
1500
1501            2504  2053            ISZ     COUNT           /MOVE ERROR OCCURRED
1502            2505  7410            SKP
1503            2506  5304            JMP     .-2
1504            2507  7200            CLA
1505            2510  1303            TAD     ERRM
1506            2511  3205            DCA     RETURN          /RETURN ADDRESS
1507            2512  1373            TAD     [PERRM
1508            2513  3266            DCA     ADDER           /ERROR TYPEOUT ADDRESS
1509            2514  5206            JMP     CODERR
1510            2515  4772'   PERRM,  JMS     FLOAT           /SET UP FIELD VALUE TO PRINT
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1511    2516  2536          Z10                     /WHERE TO PUT IT
1512    2517  4776'         JMS     SIXTY
1513    2520  0054          MOVE
1514    2521  2537          Z11
1515    2522  1076          TAD     NOTTY           /GET TTY FLAG
1516    2523  7710          SPA     CLA             /IS THERE A TELETYPE AVAILABLE?
1517    2524  5345          JMP     ERRMM           /NO-HALT ON ERRORS INSTED-INFO IN AC
1518    2525  4775'         JMS     MES
1519    2526  2205          TEXT            "RELO ERR AT "
        2527  1417
        2530  4005
        2531  2222
        2532  4001
        2533  2440
        2534  0000
1520    2535  4775'         JMS     MES
1521    2536  0000    Z10,  0
1522    2537  0000    Z11,  0
1523    2540  0000          0
1524    2541  0000          0
1525    2542  7240          STA
1526    2543  3055          DCA     HEAD1
1527    2544  5267          JMP     STOP
1528
1529
1530                  //RELOCATION ERROR ROUTINE ON A SYSTEM WITHOUT A TELETYPE
1531
1532
1533    2545  7240    ERRMM,  CLA     CMA
1534    2546  1205          TAD     RETURN          /
1535    2547  7402          HLT                     /AC=PROGRAM LOCATION OF ERROR JMS
1536    2550  7200          CLA
1537    2551  1771'         TAD     FLDCNT          /GET TEST FIELD
1538    2552  0070          AND     (37             /MASK TO FIELD BITS
1539    2553  7402          HLT                     /AC=FIELD BEING TESTED IN BITS 7-11
1540    2554  7200          CLA
1541    2555  1054          TAD     MOVE
1542    2556  7402          HLT                     /AC=ADDRESS OF LOCATION IN ERROR
1543    2557  7240          CLA     CMA
1544    2560  3055          DCA     HEAD1
1545    2561  5267          JMP     STOP            /GO CHECK FOR HALT AFTER ERROR SWITCH
1546
1547    2570  0037
1548    2571  2346
1549    2572  5067
1550    2573  2515
1551    2574  0205
1552    2575  2210
1553    2576  1400
1554    2577  5025
              2600          PAGE
1555
1556
1557                  /
1558                  /DATA OR CHECKERBOARD ERROR OCCURRED
```



```
1559                  /
1560    2600  0000    ERRC,   0
1561
1562    2601  2053          ISZ     COUNT           /ERROR OCCURRED
1563    2602  7410          SKP
1564    2603  5201          JMP     .-2
1565    2604  7200          CLA
1566    2605  1200          TAD     ERRC
1567    2606  3777'         DCA     RETURN  /RETURN ADDRESS
1568    2607  1376          TAD     (PERRC
1569    2610  3775'         DCA     ADDER   /ERROR TYPEOUT ADDRESS
1570    2611  4504          GETSR
1571    2612  0030          AND     SR02    /BELL ON ERROR
1572    2613  7640          SZA CLA
1573    2614  5774'         JMP     RBELL   /RING BELL
1574    2615  4504          GETSR
1575    2616  0027          AND     SR01
1576    2617  7640          SZA CLA
1577    2620  5773'         JMP     STOP    /INHIBIT TYPEOUT
1578    2621  205E          ISZ     HEAD1
1579    2622  7410          SKP
1580    2623  4772'         JMS     ERRHD   /TYPEOUT ERROR HEADING
1581    2624  5771'         JMP     CODERR
1582
1583    2625  4770'   PERRC,  JMS     FLDDAT          /SET UP FIELD INFORMATION
1584    2626  2644          Z1                      /LOCATION TO PUT IT IN
1585    2627  4767'         JMS     SIXTY
1586    2630  0047          TSTAD
1587    2631  1645          Z2
1588    2632  4767'         JMS     SIXTY
1589    2633  0072          GDATA
1590    2634  2651          Z3
1591    2635  4767'         JMS     SIXTY
1592    2636  0073          BDATA
1593    2637  2654          Z4
1594    2640  1076          TAD     NOTTY           /GET TTY FLAG
1595    2641  7710          SPA     CLA             /IS THERE A TELETYPE AVAILABLE
1596    2642  5307          JMP     ERRCC           /NO GO HALT ON ERRORS INSTEAD
1597    2643  4766'         JMS     MES
1598    2644  0000    Z1,   0
1599    2645  0000    Z2,   0
1600    2646  0000          0               /FAIL ADR
1601    2647  4040          4040
1602    2650  4040          4040
1603    2651  0000    Z3.   0
1604    2652  0000          0               /GOOD
1605
1606
1607    2653  4040          4040
1608    2654  0000    Z4,   0
1609    2655  0000          0               /BAD
1610    2656  4000          4000
1611    2657  4765'   PARORC, JMS     TTS
1612    2660  4135          JMS     TN      /NONE
1613    2661  5773'         JMP     STOP
```

```
1614    2662  4764'           JMS     TC      /ALL 0
1615    2663  5277            JMP     PERRCD
1616    2664  4763'           JMS     TC      /ALL 1
1617    2665  5277            JMP     PERRCD
1618    2666  4762'           JMS     TCT     /0000 - 7777 aCP
1619    2667  5277            JMS     PERRCD
1620    2670  4761'           JMS     T70     /7777 - 0000 aCP
1621    2671  5277            JMP     .+6
1622    2672  4760'           JMS     T25     /2525 - 5252 aCP
1623    2673  5277            JMP     .+4
1624    2674  4757'           JMS     T52     /5252 - 2525 aCP
1625    2675  7410            SKP
1626    2676  4756'           JMS     TMAR    /MARCH PATTERN FAILURE
1627    2677  4755'  PERRCD,   JMS     TCS
1628    2700  1140            TAD     I135    /NC
1629    2701  1165            TAD     I11     /10
1630    2702  1157            TAD     I232    /20
1631    2703  4754            JMS     TYPE
1632    2704  1137            TAD     I303
1633    2705  4754'           JMS     TYPE
1634    2706  5773'           JMP     STOP
1635
1636
1637                  /DATA OR CHECKERBOARD ERROR ON A NON TTY SYSTEM- ERROR INFO IN AC FOR HALTS
1638
1639    2707  7240    ERRCD,  CLA     CMA
1640    2710  1777'           TAD     @RETURN         /GET JMS ERROR ADDRESS
1641    2711  7432            MLT                     /AC=PROGRAM LOCATION OF ERROR JMS
1642    2712  7200            CLA
1643    2713  1753'           TAD     FLDCNT          /GET FIELD BEING TESTED
1644    2714  0352            AND     I37             /MASK OUT FIELD BITS
1645    2715  7402            MLT                     /AC=FIELD BEING TESTED BITS 9-11
1646    2716  7200            CLA
1647    2717  1057            TAD     TSTAD
1648    2720  7402            MLT                     /AC=FAILING ADDRESS IN FIELD BEING TESTED
1649    2721  7200            CLA
1650    2722  1072            TAD     GDATA           /GET THE GOOD DATA
1651    2723  7402            MLT                     /AC=THE GOOD DATA
1652    2724  7200            CLA
1653    2725  1073            TAD     BDATA           /GET THE DATA READ
1654    2726  7402            MLT                     /AC=THE BAD DATA
1655    2727  7200            CLA
1656    2730  4765'           JMS     TTS             /GET THE PATTERN BEING TESTED
1657    2731  1751'  PATERR,  TAD     TSNUM           /GET THE PATTERN
1658    2732  7402            MLT                     /AC=PATTERN NUMBER
1659    2733  7200            CLA
1660    2734  5773'           JMP     STOP            /GO CHECK FOR HALT AFTER ERROR
1661
1662
1663
1664                  /
1665                  /TYPEOUT TEST BEING EXECUTED
1666                  /
1667    2735  0000    TN,     0
1668    2736  4766'           JMS     YES
```



```
1669    2737  1617            TEXT            "NO PATTERN"
        2740  4020
        2741  0124
        2742  2405
        2743  2216
        2744  0100
1670    2745  5735            JMP I   TN
1671
1672
1673    2751  2555
1674    2752  0037
1675    2753  2346
1676    2754  5025
1677    2755  0503
1678    2756  2547
1679    2757  3064
1680    2760  3250
1681    2761  3104
1682    2762  3120
1683    2763  3015
1684    2764  3236
1685    2765  3532
1686    2766  2240
1687    2767  4200
1688    2770  5067
1689    2771  2406
1690    2772  4011
1691    2773  2467
1692    2774  2415
1693    2775  2466
1694    2776  2625
1695    2777  2405
              0000            PAGE
1696
1697
1698    3000  0000    TO,     0
1699    3001  4777'           JMS     YES
1700    3002  0114            TEXT            "ALL 0 = "
        3003  1540
        3004  2040
        3005  2540
        3006  0100
1701    3007  5800            JMP I   TO
1702
1703    3010  0000    T1,     0
1704    3011  4777'           JMS     YES
1705    3012  0114            TEXT            "ALL 1 = "
        3013  1540
        3014  2040
        3015  2540
        3016  0100
1706    3017  5810            JMP I   T1
1707
1708    3020  0000    TCT,    0
1709    3021  4777'           JMS     YES
```

```
3022  6060            TEXT           "0000-7777 WCP - "
3023  6060
3024  5567
3025  6767
3026  6740
3027  2703
3030  2040
3031  5540
3032  0000
3033  5620            JMP I   T07
3034  0000   T70,     0
3035  4777'           JMS     MES
3036  6767            TEXT           "7777-0000 WCP - "
3037  6767
3040  5560
3041  6060
3042  6040
3043  2703
3044  2040
3045  5540
3046  0000
3047  5634            JMP I   T70

3050  0000   T25,     0
3051  4777'           JMS     MES
3052  6265            TEXT           "2525-5252 WCP - "
3053  6265
3054  5545
3055  6 65
3056  6240
3057  2703
3060  2040
3061  5540
3062  0000
3063  5650            JMP I   T25

3064  0000   T52,     0
3065  4777'           JMS     MES
3066  6562            TEXT           "5252-2525 WCP - "
3067  6562
3070  5562
3071  6562
3072  6540
3073  2703
3074  2040
3075  5540
3076  0000
3077  5664            JMP I   T52



                      /
                      /PARITY ERROR
                      /
3100  7200   PARINT,  CLA
3101  1376            TAD     (INTR
```



```
3102  3775'           DCA     RETURN
3103  4774'           JMS     SIXTY
3104  0000            0
3105  3131            Z20
3106  4774'           JMS     SIXTY
3107  0057            TSTAD
3110  3145            Z21
3111  1''6            TAD     NOTTY          /GET TTY FLAG
3112  ..10            SPA     CLA            /IS THERE A TELETYPE AVAILABLE
3113  5354            JMP     PARERR         /NO, GO HALT WITH ERROR INFO IN AC
3114  4777'           JMS     MES            /PRINT HEADER
3115  4543            TEXT    "%#PARITY ERR, LOC 0="
3116  2001
3117  2211
3120  2431
3121  4005
3122  2222
3123  5440
3124  1'17
3125  0340
3126  6075
3127  0000
3130  4777'           JMS     MES
3131  0000   Z20,     0
3132  0000            0                      /CONTENT OF LOC 0
3133  4040            4040
3134  2423            2423
3135  2401            2401
3136  0475            0475                   /TSTAD=
3137  0000            0000
3140  6234            GTF
3141  0'36            AND     [7
3142  1:67            TAD     [260
3143  4773'           JMS     TYPE           /TYPE DATA FIELD
3144  4777'           JMS     MES
3145  0000   Z21,     0
3146  0000            0                      /CONTENT OF TSTAD
3147  4000            4000
3150  6'04            CMP
3151  7240            STA
3152  3055            DCA     HEAD1
3153  5772'           JMP     PARDRC         /TYPE PRESENT TEST


                      /PARITY ERROR ON A NON TTY SYSTEM- ERROR INFO IN THE AC FOR EACH HALT

3154  1000   PARERR,  TAD     0              /GET THE INTERRUPTED PAC
3155  7402            HLT                    /AC=INTERRUPTED PC (LOCATION 0)
3156  7200            CLA
3157  6234            GTF                    /GET THE FLAGS
3160  0371            AND     (7             /MASK TO DATA FIELD
3161  7402            HLT                    /AC=DATA FIELD AT TIME OF PARITY ERROR
3162  7200            CLA
3163  1057            TAD     TSTAD
3164  7402            HLT                    /AC=ADDRESS IN FIELD BEING TESTED
```

```
1778  3165  7200          CLA
1779  3166  6104          CMP                     /CLEAR MEMORY PARITY ERROR BIT
1780  3167  5772'         JMP     PARCRC          /GO GET PATTERN BEING TESTED
1781
1782  3171  0007
1783  3172  2657
1784  3173  5025
1785  3174  2200
1786  3175  2405
1787  3176  4256
1788  3177  2240
            3200          PAGE
1789
1790                /
1791                /UNWANTED INTERRUPT OCCURRED
1792                /
1793  3200  1377    BADINT, TAD     (BADINT
1794  3201  4405          JMS I   IAPTER          /GO TO APT IF NEED BE
1795  3202  1076          TAD     NOTTY           /GET THE TELETYPE FLAG
1796  3203  7700          SMA     CLA             /IS THERE A TELETYPE ON THE SYSTEM
1797  3204  5207          JMP     .+3             /YES GO PRINT THE MESSAGE
1798  3205  7402          HLT                     /UNWANTED INTERRUPT OCCURED
1799  3206  5227          JMP     BINTC           /GO CLEAR THE WORLD AND CONTINUE
1800  3207  4776'         JMS     MES
1801  3210  4543          TEXT    "%%UNWANTED INTERRUPT OCCURRED"
      3211  2516
      3212  2701
      3213  1624
      3214  0504
      3215  4011
      3216  1624
      3217  0522
      3220  2225
      3221  2024
      3222  4017
      3223  0303
      3224  2522
      3225  2205
      3226  0400
1802  3227  6007    BINTC,  CAF
1803  3230  7240          STA
1804  3231  3056          DCA     HEAD1
1805  3232  5775'         JMP     INTR
1806                /
1807                /SET ONLY STATUS BIT SPECIFIED
1808                /
1809  3233  0000    STS0,   0                       /SET TS0 (ALL 0 TEST)
1810  3234  7010          CLA STL RAR
1811  3235  3037          DCA     TS
1812  3236  5633          JMP I   STS0
1813  3237  0000    STS1,   0                       /SET TS1 (ALL 1 TEST)
1814  3240  7332          CLA STL RTR
1815  3241  3037          DCA     TS
1816  3242  5637          JMP I   STS1
1817  3243  0000    STS2,   0                       /SET TS2 (0000 - 7777 WCP TEST)
```



```
1818  3244  7332          CLA STL RTR
1819  3245  7010          RAR
1820  3246  3037          DCA     TS
1821  3247  5643          JMP I   STS2
1822
1823
1824  3250  0000    STS3,   0                       /SET TS3 (7777 - 0000 WCP TEST
1825  3251  7332          CLA STL RTR
1826  3252  7012          RTR
1827  3253  3037          DCA     TS
1828  3254  5650          JMP I   STS3
1829  3255  0000    STS4,   0                       /SET TS4 (2525 - 5252 WCP TEST)
1830  3256  7203          CLA IAC BSW
1831  3257  7104          CLL RAL
1832  3260  3037          DCA     TS
1833  3261  5655          JMP I   STS4
1834  3262  0000    STS5,   0                       /SET TS5 (5252 - 2525 WCP TEST)
1835  3263  7203          CLA IAC BSW
1836  3264  3037          DCA     TS
1837  3265  5662          JMP I   STS5
1838
1839  3266  0000    SCS1,   0                       /SET CS1 (1 COMPLEMENT)
1840  3267  7332          CLA STL RTR
1841  3270  3036          DCA     CS
1842  3271  5666          JMP I   SCS1
1843  3272  0000    SCS2,   0                       /SET CS2 (2 COMPLEMENTS)
1844  3273  7332          CLA STL RTR
1845  3274  7010          RAR
1846  3275  3036          DCA     CS
1847  3276  5672          JMP I   SCS2
1848                /
1849                /SET ALSO STATUS BIT SPECIFIED
1850                /
1851  3277  0000    SFS0,   0                       /SET FS0 (DON'T TEST FIELD 0)
1852  3300  7200          CLA
1853  3301  4506          SETFS                   /SETUP BANK POINTER
1854  3302  1456          TAD I   TEMP
1855  3303  7004          RAL
1856  3304  7130          STL RAR
1857  3305  3456          DCA I   TEMP            /SAVE STATUS WORD
1858  3306  5677          JMP I   SFS0
1859  3307  0000    SRS0,   0                       /SET RS0 (DON'T RELO TO FIELD 0)
1860  3310  7200          CLA
1861  3311  4507          SETRS                   /SETUP BANK POINTER
1862  3312  1456          TAD I   TEMP
1863  3313  7004          RAL
1864  3314  7130          STL RAR
1865  3315  3456          DCA I   TEMP            /SAVE NEW WORD
1866  3316  5707          JMP I   SRS0
1867  3317  0000    SFS1,   0                       /SET FS1 (DON'T TEST FIELD 1)
1868  3320  7200          CLA
1869  3321  4506          SETFS                   /SETUP BANK POINTER
1870  3322  1456          TAD I   TEMP
1871  3323  7006          RTL
1872  3324  7132          STL RTR
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1873  3325  3456          DCA I   TEMP            /SAVE NEW WORD
1874  3326  5717          JMP I   SFS1
1875  3327  0000  SRS1,   0                       /SET RS1 (DON'T RELO TO FIELD 1)
1876  3330  7200          CLA
1877  3331  4507          SETRS                   /SETUP BANK POINTER
1878  3332  1456          TAD I   TEMP
1879  3333  1044          TAD     RS
1880  3334  7006          RTL
1881  3335  7132          STL RTR
1882  3336  3456          DCA I   TEMP            /SAVE NEW WORD
1883  3337  5727          JMP I   SRS1
1884  3340  0000  SFS2,   0                       /SET FS2 (DON'T TEST FIELD 2)
1885  3341  7200          CLA
1886  3342  4506          SETFS                   /SETUP BANK POINTER
1887  3343  1456          TAD I   TEMP
1888  3344  7006          RTL
1889  3345  7500          SMA
1890  3346  1135          TAD     [4000
1891  3347  7012          RTR
1892  3350  3456          DCA I   TEMP            /SAVE NEW WORD
1893  3351  5749          JMP I   SFS2
1894                      /
1895  3352  3277  SFSTAB, SFS0
1896  3353  3317          SFS1
1897  3354  3340          SFS2
1898  3355  3412          SFS3
1899  3356  3432          SFS4
1900  3357  3452          SFS5
1901  3360  3472          SFS6
1902  3361  3512          SFS7
1903  3375  4256
1904  3376  2240
1905  3377  3203
            3400  PAGE
1906  3400  0000  SRS2,   0                       /SET RS2 (DON'T RELO TO FIELD 2)
1907  3401  7200          CLA
1908  3402  4507          SETRS                   /SETUP BANK POINTER
1909  3403  1456          TAD I   TEMP
1910  3404  7006          RTL
1911  3405  7500          SMA
1912  3406  1135          TAD     [4000
1913  3407  7012          RTR
1914  3410  3456          DCA I   TEMP            /SAVE NEW WORD
1915  3411  5690          JMP I   SRS2
1916                      /
1917                      /
1918  3412  0000  SFS3,   0                       /SET FS3 (DON'T TEST FIELD 3)
1919  3413  7200          CLA
1920  3414  4506          SETFS                   /SETUP BANK POINTER
1921  3415  1456          TAD I   TEMP
1922  3416  0134          AND     [7360
1923  3417  1133          TAD     [400
1924  3420  3456          DCA I   TEMP            /SAVE NEW WORD
1925  3421  5612          JMP I   SFS3
1926  3422  0000  SRS3,   0                       /SET RS3 (DON'T RELO TO FIELD 3)
```



```
1927  3423  7200          CLA
1928  3424  4507          SETRS                   /SETUP BANK POINTER
1929  3425  1456          TAD I   TEMP
1930  3426  0134          AND     [7360
1931  3427  1133          TAD     [400
1932  3430  3456          DCA I   TEMP            /SAVE NEW WORD
1933  3431  5622          JMP I   SRS3
1934  3432  0000  SFS4,   0                       /SET FS4 (DON'T TEST FIELD 4)
1935  3433  7200          CLA
1936  3434  4506          SETFS                   /SETUP BANK POINTER
1937  3435  1456          TAD I   TEMP
1938  3436  0132          AND     [7560
1939  3437  1131          TAD     [200
1940  3440  3456          DCA I   TEMP            /SAVE NEW WORD
1941  3441  5632          JMP I   SFS4
1942
1943
1944
1945  3442  0000  SRS4,   0                       /SET RS4 (DON'T RELO TO FIELD 4)
1946  3443  7200          CLA
1947  3444  4507          SETRS                   /SETUP BANK POINTER
1948  3445  1456          TAD I   TEMP
1949  3446  0132          AND     [7560
1950  3447  1131          TAD     [200
1951  3450  3456          DCA I   TEMP            /SAVE NEW WORD
1952  3451  5642          JMP I   SRS4
1953  3452  0000  SFS5,   0                       /SET FS5 (DON'T TEST FIELD 5)
1954  3453  7200          CLA
1955  3454  4506          SETFS                   /SETUP BANK POINTER
1956  3455  1456          TAD I   TEMP
1957  3456  0130          AND     [7660
1958  3457  1127          TAD     [100
1959  3460  3456          DCA I   TEMP            /SAVE NEW WORD
1960  3461  5652          JMP I   SFS5
1961  3462  0000  SRS5,   0                       /SET RS5 (DON'T RELO TO FIELD 5)
1962  3463  7200          CLA
1963  3464  4507          SETRS                   /SETUP BANK POINTER
1964  3465  1456          TAD I   TEMP
1965  3466  0130          AND     [7660
1966  3467  1127          TAD     [100
1967  3470  3456          DCA I   TEMP            /SAVE NEW WORD
1968  3471  5662          JMP I   SRS5
1969  3472  0000  SFS6,   0                       /SET FS6 (DON'T TEST FIELD 6)
1970  3473  7200          CLA
1971  3474  4506          SETFS                   /SETUP BANK POINTER
1972  3475  1456          TAD I   TEMP
1973  3476  0126          AND     [7720
1974  3477  1171          TAD     [40
1975  3500  3456          DCA I   TEMP            /SAVE NEW WORD
1976  3501  5672          JMP I   SFS6
1977  3502  0000  SRS6,   0                       /SET RS6 (DON'T RELO TO FIELD 6)
1978  3503  7200          CLA
1979  3504  4507          SETRS                   /SETUP BANK POINTER
1980  3505  1456          TAD I   TEMP
1981  3506  0126          AND     [7720
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1982  3507  1171          TAD     [40
1983  3510  3456          DCA I   TEMP            /SAVE NEW WORD
1984  3511  5732          JMP I   SRS6
1985  3512  0000  SFS7,   0                       /SET FS7 (DON'T TEST FIELD 7)
1986  3513  7200          CLA
1987  3514  4506          SETFS                   /SETUP BANK POINTER
1988  3515  1456          TAD I   TEMP
1989  3516  0173          AND     [7740
1990  3517  1170          TAD     [20
1991  3520  3456          DCA I   TEMP            /SAVE NEW WORD
1992  3521  5712          JMP I   SFS7
1993  3522  0000  SRS7,   0                       /SET RS7 (DON'T RELO TO FIELD 7)
1994  3523  7200          CLA
1995  3524  4507          SETRS                   /SETUP BANK POINTER
1996  3525  1456          TAD I   TEMP
1997  3526  0173          AND     [7740
1998  3527  1170          TAD     [20
1999  3530  3456          DCA I   TEMP            /SAVE NEW WORD
2000  3531  5722          JMP I   SRS7
2001                      /
2002                      /TEST TEST STATUS
2003                      /RETURN IF NO TEST
2004                      /RETURN +2 IF ALL 0 TEST
2005                      /RETURN +4 IF ALL 1 TEST
2006                      /RETURN +6 IF 0000 - 7777 WCP
2007                      /RETURN +8 IF 7777 - 0000 WCP
2008                      /RETURN +10 IF 2525 - 5252 WCP
2009                      /RETURN +12 IF 5252 - 2525 WCP
2010                      /RETURN +14 IF MARCH PATTERN
2011                      /
2012  3532  0000  TTS,    0
2013  3533  7200          CLA
2014  3534  3355          DCA     TSNUM           /CLEAR PATTERN NUM FOR NON TTY SYSTEMS
2015  3535  1037          TAD     Ta
2016  3536  0125          AND     [7779
2017  3537  7450          SNA
2018  3540  5356          JMP     TTYCHK          /NO TEST
2019  3541  2355          ISZ     TSNUM
2020  3542  2332          ISZ     TTS
2021  3543  2332          ISZ     TTS
2022  3544  7104  TTS0,   CLL RAL
2023  3545  7421          MQL
2024  3546  7430          SZL                     /CHECK THIS TEST BIT
2025  3547  5356          JMP     TTYCHK
2026  3550  2355          ISZ     TSNUM
2027  3551  2332          ISZ     TTS
2028  3552  2332          ISZ     TTS
2029  3553  7521          SMP
2030  3554  5344          JMP     TTS0            /CHECK NEXT TEST BIT
2031
2032
2033  3555  0000  TSNUM,  0
2034
2035  3556  7200  TTYCHK, CLA
2036  3557  1076          TAD     NOTTY           /GET PROGRAM FLAG
```



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2037  3560  7710          SPA     CLA             /WAS THERE A TELETYPE AVAILABLE
2038  3561  5777'         JMP     PATERR          /NO, GO HALT ON ERROR
2039  3562  5732          JMP  I  TTS             /RETURN TO ERROR PRINTOUT
2040
2041  3577  2731
            3600          PAGE
2042
2043
2044                      /
2045                      /TEST FIELD STATUS
2046                      /RETURN IF FIELD STATUS BIT SET (DON'T TEST FIELD)
2047                      /RETURN +1 IF FIELD STATUS BIT RESET (TEST THIS FIELD)
2048                      /
2049  3600  0000  TFS0,   0
2050  3601  7200          CLA
2051  3602  4506          SETFS                   /SETUP BANK POINTER
2052  3603  1456          TAD I   TEMP
2053  3604  7700          SMA CLA                 /FIELD 0
2054  3605  2600          ISZ     TFS0
2055  3606  5600          JMP I   TFS0
2056
2057  3607  0000  TFS1,   0
2058  3610  7200          CLA
2059  3611  4506          SETFS                   /SETUP BANK POINTER
2060  3612  1456          TAD I   TEMP
2061  3613  7004          RAL
2062  3614  7700          SMA CLA         /FIELD 1
2063  3615  2207          ISZ     TFS1
2064  3616  5607          JMP I   TFS1
2065
2066  3617  0000  TFS2,   0
2067  3620  7200          CLA
2068  3621  4506          SETFS                   /SETUP BANK POINTER
2069  3622  1456          TAD I   TEMP
2070  3623  7006          RTL
2071  3624  7700          SMA CLA                 /FIELD 2
2072  3625  2217          ISZ     TFS2
2073  3626  5617          JMP I   TFS2
2074
2075  3627  0000  TFS3,   0
2076  3630  7200          CLA
2077  3631  4506          SETFS                   /SETUP BANK POINTER
2078  3632  1456          TAD I   TEMP
2079  3633  7006          RTL
2080  3634  7004          RAL
2081  3635  7700          SMA CLA                 /FIELD 3
2082  3636  2227          ISZ     TFS3
2083  3637  5627          JMP I   TFS3
2084
2085  3640  0000  TFS4,   0
2086  3641  7200          CLA
2087  3642  4506          SETFS                   /SETUP BANK POINTER
2088  3643  1456          TAD I   TEMP
2089  3644  7006          RTL
2090  3645  7006          RTL
```

```
2091  3646  7700          SMA CLA                 /FIELD 4
2092  3647  2249          ISZ     TFS4
2093  3650  5649          JMP I   TFS4
2094  3651  0000    TFS5, 0
2095  3652  7200          CLA
2096  3653  4506          SETFS                   /SETUP BANK POINTER
2097  3654  1456          TAD I   TEMP
2098  3655  7002          BSW
2099  3656  7010          RAR
2100  3657  7620          SNL CLA                 /FIELD 5
2101  3660  2251          ISZ     TFS5
2102  3661  5651          JMP I   TFS5
2103
2104  3662  0000    TFS6, 0
2105  3663  7200          CLA
2106  3664  4506          SETFS                   /SETUP BANK POINTER
2107  3665  1456          TAD I   TEMP
2108  3666  7002          BSW
2109  3667  7700          SMA CLA                 /FIELD 6
2110  3670  2262          ISZ     TFS6
2111  3671  5662          JMP I   TFS6
2112
2113
2114  3672  0000    TFS7, 0
2115  3673  7200          CLA
2116  3674  4506          SETFS                   /SETUP BANK POINTER
2117  3675  1456          TAD I   TEMP
2118  3676  7002          BSW
2119  3677  7004          RAL
2120  3700  7700          SMA CLA                 /FIELD 7
2121  3701  2272          ISZ     TFS7
2122  3702  5672          JMP I   TFS7
2123
2124                /
2125                /TEST RELOCATION STATUS
2126                /RETURN IF RELO STATUS BIT SET (DON'T RELO TO FIELD)
2127                /RETURN+1 IF RELO STATUS BIT RESET (RELO TO THIS FIELD)
2128                /
2129  3703  0000    TRS0, 0
2130  3704  7200          CLA
2131  3705  4507          SETRS                   /SETUP BANK POINTER
2132  3706  1456          TAD I   TEMP
2133  3707  7700          SMA CLA                 /FIELD 0
2134  3710  2303          ISZ     TRS0
2135  3711  5703          JMP I   TRS0
2136
2137  3712  0000    TRS1, 0
2138  3713  7200          CLA
2139  3714  4507          SETRS                   /SETUP BANK POINTER
2140  3715  1456          TAD I   TEMP
2141  3716  7004          RAL
2142  3717  7700          SMA CLA                 /FIELD 1
2143  3720  2312          ISZ     TRS1
2144  3721  5712          JMP I   TRS1
2145
```



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2146  3722  0000    TRS2, 0
2147  3723  7200          CLA
2148  3724  4507          SETRS                   /SETUP BANK POINTER
2149  3725  1456          TAD I   TEMP
2150  3726  7006          RTL
2151  3727  7700          SMA CLA                 /FIELD 2
2152  3730  2322          ISZ     TRS2
2153  3731  5722          JMP I   TRS2
2154
2155  3732  0000    TRS3, 0
2156  3733  7200          CLA
2157  3734  4507          SETRS                   /SETUP BANK POINTER
2158  3735  1456          TAD I   TEMP
2159  3736  7004          RAL
2160  3737  7006          RTL
2161  3740  7700          SMA CLA                 /FIELD 3
2162  3741  2332          ISZ     TRS3
2163  3742  5732          JMP I   TRS3
2164
2165  3743  0000    TRS4, 0
2166  3744  7200          CLA
2167  3745  4507          SETRS                   /SETUP BANK POINTER
2168  3746  1456          TAD I   TEMP
2169  3747  7006          RTL
2170  3750  7006          RTL
2171  3751  7700          SMA CLA                 /FIELD 4
2172  3752  2343          ISZ     TRS4
2173  3753  5743          JMP I   TRS4
2174
2175                /+C8+/  PAGE
2176
2177
2178  3754  0000    TRS5, 0
2179  3755  7200          CLA
2180  3756  4507          SETRS                   /SETUP BANK POINTER
2181  3757  1456          TAD I   TEMP
2182  3760  7002          BSW
2183  3761  7010          RAR
2184  3762  7620          SNL CLA                 /FIELD 5
2185  3763  2354          ISZ     TRS5
2186  3764  5754          JMP I   TRS5
2187
2188  3765  0000    TRS6, 0
2189  3766  7200          CLA
2190  3767  4507          SETRS                   /SETUP BANK POINTER
2191  3770  1456          TAD I   TEMP
2192  3771  7002          BSW
2193  3772  7700          SMA CLA                 /FIELD 6
2194  3773  2365          ISZ     TRS6
2195  3774  5765          JMP I   TRS6
2196                /
2197        4000    PAGE
2198                /
2199
2200  4000  0000    TRS7, 0
```

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2201  4001  7200          CLA
2202  4002  4507          SETRS                   /SETUP BANK POINTER
2203  4003  1456          TAD I   TEMP
2204  4004  7002          BSW
2205  4005  7004          RAL
2206  4006  7700          SMA CLA                 /FIELD 7
2207  4007  2200          ISZ     TRS7
2208  4010  5F00          JMP I   TRS7
2209
2210
2211
2212                      /
2213                      /TYPEOUT ERROR HEADING
2214                      /
2215  4011  0000    ERRHD,  0
2216  4012  1076          TAD     NOTTY           /GET TTY FLAG
2217  4013  7710          SPA     CLA
2218  4014  5611          JMP  I  ERRHD           /NO TELETYPE AVAILABLE DON'T PRINT
2219  4015  4777'         JMS     MES
2220  4016  4543          TEXT    "%#PR LOC  FAIL ADR  GOOD  BAD  PATTERN"
      4017  2622
      4020  4014
      4021  1703
      4022  4040
      4023  0601
      4024  1114
      4025  4001
      4026  0422
      4027  4040
      4030  0717
      4031  1704
      4032  4040
      4033  0201
      4034  0440
      4035  4020
      4036  0124
      4037  2405
      4040  2216
      4041  0000
2221  4042  5611          JMP I   ERRHD
2222
2223                      /
2224                      /TYPEOUT PROGRAM TITLE
2225                      /
2226  4043  0000    TITLE,  0
2227  4044  1076          TAD     NOTTY           /GET TTY FLAG
2228  4045  7710          SPA     CLA             /TTY AVAILABLE ?
2229  4046  5643          JMP  I  TITLE           /NO, ABORT MESAGE
2230  4047  4777'         JMS     MES
2231  4050  4543          TEXT    "%##PDP-8E EXT MEM DATA & CHKBD#"
      4051  4320
      4052  0420
      4053  5570
      4054  0540
      4055  0530
```



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      4056  2440
      4057  1505
      4060  1540
      4061  0401
      4062  2401
      4063  4046
      4064  4003
      4065  1013
      4066  0204
      4067  4300
2232  4070  5643          JMP I   TITLE
2233
2234                      /
2235                      /TYPEOUT TO SET SWITCHES
2236                      /
2237  4071  0000    SETSW,  0
2238  4072  1076          TAD     NOTTY           /GET TTY FLAG
2239  4073  7710          SPA     CLA             /IS THERE A TTY AVAILABE
2240  4074  5671          JMP I   SETSW
2241  4075  4777'         JMS     MES
2242  4076  4543          TEXT    "%#SELECT FIELD PARAMETERS%#"
      4077  2305
      4100  1405
      4101  0324
      4102  4006
      4103  1105
      4104  1404
      4105  4020
      4106  0122
      4107  0115
      4110  0524
      4111  0522
      4112  2345
      4113  4300
2243  4114  5671          JMP I   SETSW
2244
2245
2246
2247                      /
2248                      /TYPEOUT "NO RELOCATION"
2249                      /
2250  4115  0000    PNOREL, 0
2251  4116  1076          TAD     NOTTY           /GET TTY FLAG
2252  4117  7710          SPA     CLA             /IS THERE A TTY ON SYSTEM
2253  4120  5715          JMP  I  PNOREL          /NO, GO RUN TEST
2254  4121  4777'         JMS     MES
2255  4122  4543          TEXT    "%#NO RELOCATION, PROG IN FIELD "
      4123  1617
      4124  2022
      4125  0514
      4126  1703
      4127  0124
      4130  1117
      4131  1654
      4132  4020
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                4133  2217
                4134  0740
                4135  1118
                4136  4008
                4137  1105
                4140  1404
                4141  4000
2256            4142  6224            RIF
2257            4143  7106            CLL RTL
2258            4144  7004            RAL
2259            4145  1124            TAD     [6000
2260            4146  3350            DCA     ZB
2261            4147  4777'           JMS     MES
2262            4150  0000    ZB,     0
2263            4151  7240            STA
2264            4152  3055            DCA     HEAD1
2265            4153  5715            JMP I   PNOREL
2266
2267                          /
2268                          /TYPEOUT 'RELOCATION'
2269                          /
2270            4154  0000    PREL,   0
2271            4155  1076            TAD     NOTTY           /GET TELETYPE FLAG
2272            4156  7710            SPA     CLA             /PRINT MESAGE ?
2273            4157  5754            JMP  I  PREL            /NO TTY - DO NOT PRINT
2274            4160  4777'           JMS     MES
2275            4161  4543            TEXT    "E#PROG WILL RELOCATE"
                4162  2[32
                4163    37
                4164  4027
                4165  1114
                4166  1440
                4167  2205
                4170  1417
                4171  0301
                4172  2405
                4173  0[00
2276            4174  7240            STA
2277            4175  3055            DCA     HEAD1
2278            4176  5.54            JMP I   PREL
2279
2280
2281
2282                          /
2283            4177  2240
                4200    200   PAGE
2284                          /
2285
2286                          /
2287
2288
2289
2290                          /
2291                          /RELOCATE THE PROGRAM
2292                          /
```



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2293            4200  0000    RELO,   0
2294            4201  7200            CLA
2295            4202  3053            DCA     CCUNT           /CLEAR ERROR COUNTER
2296            4203  3054            DCA     MOVE            /CLEAR MOVE COUNTER
2297            4204  2061            ISZ     RELCNT          /SEE IF ALL FIELDS DONE
2298            4205  5212            JMP     .+5
2299            4206  1077            TAD     NUMFLD
2300            4207  7[11            CIA
2301            4210  [061            DCA     RELCNT
2302            4211  4777'           JMS     ENDPAS
2303            4212  1176            TAD     [6201
2304            4213  1051            TAD     PROFLD
2305            4214  3225            DCA     RELO2
2306            4215  1176            TAD     [6201
2307            4216  1052            TAD     TSTFLD
2308            4217  3227            DCA     RELO3
2309            4220  1[25            TAD     RELO2
2310            4221  3232            DCA     RELO4
2311            4222  7[05            CLL CLA IAC RAL         /AC=2
2312            4223  1227            TAD     RELO3
2313            4224  3244            DCA     RELO5
2314            4225  6201    RELO2,  CDF     0               /MOVE FROM DF
2315            4226  1454            TAD I   MOVE
2316            4227  6201    RELO3,  CDF     0               /MOVE TO DF
2317            4230  3454            DCA I   MOVE
2318            4231  1454            TAD I   MOVE
2319            4232  6201    RELO4,  CDF     0               /MOVE FROM DF
2320            4233  7041            CIA
2321            4234  1454            TAD I   MOVE
2322            4235  7640            SZA CLA
2323            4236  4776'           JMS     ERRM            /MOVE ERROR
2324            4237  2054            ISZ     MOVE
2325            4240  5225            JMP     RELO2
2326            4241  1053            TAD     CCUNT
2327            4242  7640            SZA CLA                 /SKIP IF MOVE ERROR
2328            4243  5600            JMP I   RELO
2329            4244  6203    RELO5,  CDI     0               /NEW PROGRAM FIELD
2330            4245  5600            JMP I   RELO
2331
2332                          /
2333                          /INTERRUPT ROUTINE
2334                          /
2335            4246  4300    INTROU, JMS     SAVINT
2336            4247  6107            SPD                     /SKIP IF PARITY OPTION
2337            4250  5253            JMP     .+3
2338            4251  6101            SMP
2339            4252  5775'           JMP     PARINT          /PARITY ERROR
2340            4253  6031            KSF
2341            4254  5774'           JMP     EADINT          /UNWANTED INTERRUPT
2342            4255  4773'           JMS     KBINT           /KEYBOARD INTERRUPT
2343            4256  4772'   INTR,   JMS     RESINT
2344            4257  7200            CLA
2345            4260  1075            TAD     SMQ
2346            4261  7421            MQL                     /RESTORE MQ
2347            4262  6004            GTF
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2348  4263  6005          RTF
2349  4264  7200          CLA
2350  4265  1974          TAD     SAC             /RESTORE AC
2351  4266  5400          JMP I   0
2352
2353
2354                      /
2355                      /TURN INTERRUPT ON IF FIELD 0 AND PARITY OPTION INSTALLED
2356                      /
2357  4267  0000  PAR,     0
2358  4270  7300          CLA CLL
2359  4271  6007          CAF
2360  4272  6107          SPD                     /SKIP ON PARITY OPTION
2361  4273  5667          JMP I   PAR
2362  4274  6224          RIF
2363  4275  7650          SNA CLA                 /SKIP IF NOT FIELD 0
2364  4276  6001          ION
2365  4277  5667          JMP I   PAR
2366  4300  0000  SAVINT,  0
2367  4301  7200          CLA
2368  4302  1771'         TAD     SIXTY
2369  4303  3335          DCA     A1
2370  4304  1770'         TAD     CNV
2371  4305  3336          DCA     A2
2372  4306  1767'         TAD     S0
2373  4307  3337          DCA     A3
2374  4310  1766'         TAD     S1
2375  4311  3340          DCA     A4
2376  4312  1765'         TAD     S2
2377  4313  3341          DCA     A5
2378  4314  1764'         TAD     YES
2379  4315  3342          DCA     A6
2380  4316  1763'         TAD     TYPCH
2381  4317  3343          DCA     A7
2382  4320  1762'         TAD     NO
2383  4321  3344          DCA     A8
2384  4322  1761'         TAD     TYPE
2385  4323  3345          DCA     A9
2386  4324  1760'         TAD     TYPSP
2387  4325  3346          DCA     A10
2388  4326  1757'         TAD     RETURN
2389  4327  3347          DCA     A11
2390  4330  1756'         TAD     ERR090
2391  4331  3350          DCA     A12
2392  4332  1755'         TAD     ERROR1
2393  4333  3351          DCA     A13
2394
2395  4334  5764'         JMP     C80000          /C8/
2396
2397  4335  0000  A1,      0                       /C8/
2398  4336  0000  A2,      0                       /C8/
2399  4337  0000  A3,      0                       /C8/
2400  4340  0000  A4,      0                       /C8/
2401  4341  0000  A5,      0                       /C8/
2402  4342  0000  A6,      0                       /C8/
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2403  4343  0000  A7,      0                       /C8/
2404  4344  0000  A8,      0                       /C8/
2405  4345  0000  A9,      0                       /C8/
2406  4346  0000  A10,     0                       /C8/
2407  4347  0000  A11,     0                       /C8/
2408  4350  0000  A12,     0                       /C8/
2409  4351  0000  A13,     0                       /C8/
2410
2411  4354  4400
2412  4355  2461
2413  4356  2460
2414  4357  2405
2415  4360  2400
2416  4361  5025
2417  4362  2313
2418  4363  2256
2419  4364  2240
2420  4365  2237
2421  4366  2236
2422  4367  2235
2423  4370  2222
2424  4371  2200
2425  4372  4430
2426  4373  1346
2427  4374  3200
2428  4375  3100
2429  4376  2503
2430  4377  5426
            .-30  PAGE                            /C8/
2431
2432                      C80000,                 /C8/
2433
2434
2435  4400  1777'         TAD     ERR091+1
2436  4401  3315          DCA     A14
2437  4402  1778'         TAD     ADDER
2438  4403  3316          DCA     A15
2439  4404  1775'         TAD     TN
2440  4405  3317          DCA     A16
2441  4406  1774'         TAD     T0
2442  4407  3320          DCA     A17
2443  4410  1773'         TAD     T1
2444  4411  3321          DCA     A18
2445  4412  1772'         TAD     T07
2446  4413  3322          DCA     A19
2447  4414  1771'         TAD     T70
2448  4415  3323          DCA     A20
2449  4416  1770'         TAD     T25
2450  4417  3324          DCA     A21
2451  4420  1767'         TAD     T52
2452  4421  3325          DCA     A22
2453  4422  1766'         TAD     T05
2454  4423  3326          DCA     A23
2455  4424  1765'         TAD     T75
2456  4425  3327          DCA     A24
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4426 1754'           TAD     SAVINT          /C8/
4427 3231            DCA     C80001          /C8/
4430 5631            JMP I   C80001          /C8/

4431 0000   C80001, 0                        /C8/




4432 0000   RESINT, 0
4433 7200            CLA
4434 1763'           TAD     A1
4435 3762'           DCA     SIXTY
4436 1761'           TAD     A2
4437 3760'           DCA     CNV
4440 1757'           TAD     A3
4441 3756'           DCA     S0
4442 1755'           TAD     A4
4443 3754'           DCA     S1
4444 1753'           TAD     A5
4445 3752'           DCA     S2
4446 1751'           TAD     A6
4447 3750'           DCA     VES
4450 1747'           TAD     A7
4451 3746'           DCA     TYPCH
4452 1745'           TAD     A8
4453 3744'           DCA     VC
4454 1743'           TAD     A9
4455 3742'           DCA     TYPE
4456 1741'           TAD     A10
4457 3740'           DCA     TYPSP
4460 1737'           TAD     A11
4461 3736'           DCA     RETURN
4462 1735'           TAD     A12
4463 3734'           DCA     ERROR0
4464 1733'           TAD     A13
4465 3732'           DCA     ERROR1
4466 1315            TAD     A14
4467 3777'           DCA     ERROR1+1
4470 1316            TAD     A15
4471 3776'           DCA     ADDER
4472 1317            TAD     A16
4473 3775'           DCA     TN
4474 1320            TAD     A17
4475 3774'           DCA     T0
4476 1321            TAD     A18
4477 3773'           DCA     T1
4500 1322            TAD     A19
4501 3772'           DCA     T07
4502 1323            TAD     A20
4503 3771'           DCA     T70
4504 1324            TAD     A21
4505 3770'           DCA     T25
4506 1325            TAD     A22
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4507 3767'           DCA     T52
4510 1326            TAD     A23
4511 3766'           DCA     TCS
4512 1327            TAD     A24
4513 3765'           DCA     TTS
4514 5632            JMP I   RESINT

4515 0000   A14,     0               /C8/
4516 0000   A15,     0               /C8/
4517 0000   A16,     0               /C8/
4520 0000   A17,     0               /C8/
4521 0000   A18,     0               /C8/
4522 0000   A19,     0               /C8/
4523 0000   A20,     0               /C8/
4524 0000   A21,     0               /C8/
4525 0000   A22,     0               /C8/
4526 0000   A23,     0               /C8/
4527 0000   A24,     0               /C8/

            /
4532 2461
4533 4351
4534 2460
4535 4350
4536 2405
4537 4347
4540 2400
4541 4346
4542 2025
4543 4345
4544 2313
4545 4344
4546 2256
4547 4343
4550 2240
4551 4342
4552 2237
4553 4341
4554 2236
4555 4340
4556 2235
4557 4337
4560 2222
4561 4336
4562 2200
4563 4335
4564 4330
4565 2432
4566 [illegible]13
4567 2064
4570 3050
4571 3034
4572 3020
4573 3010
4574 3000
```

```
2567    4575  2735
2568    4576  2466
2569    4577  2462
              4600    PAGE
2570                  /
2571                  /TYPEOUT 'NONE' FOR NO LEGAL FIELD SELECTION
2572                  /
2573    4600  1076    NOFLD,  TAD     NOTTY           /GET THE TTY FLAG
2574    4601  7710            SPA     CLA             /WAS IT SET
2575    4602  5777'           JMP     PATA            /YES NO TELETYPE SO NOT PRINT
2576    4603  4776'           JMS     MES
2577    4604  1617            TEXT    "NONE"
        4605  1605
        4606  0000
2578    4607  5777'           JMP     PATA            /SETUP SWITCHES AGAIN
2579                  /
2580                  /THIS ROUTINE ESTABLISHES THE PROPER ERROR ROUTINE TO GO TO
2581                  /
2582                  /
2583    4610  0000    SETERR, 0
2584    4611  7200            CLA
2585    4612  1775'           TAD     FLDCNT
2586    4613  0035            AND     SR911
2587    4614  1374            TAD     (ERRTAB         /GET TO ERROR ROUTINE TO EXECUTE
2588    4615  3253            DCA     SRS
2589    4616  1653            TAD I   SRS             /GET ROUTINE TO EXECUTE
2590    4617  3253            DCA     SRS             /SAVE IT
2591    4620  4653            JMS I   SRS             /GO EXECUTE ROUTINE
2592    4621  7300            STA                     /AC=-1
2593    4622  1060            TAD     FCNT            /-1 TO NUMBER OF FIELDS TO DO
2594    4623  3060            DCA     FCNT            /SAVE NEW VALUE
2595    4624  1060            TAD     FCNT
2596    4625  7640            SZA CLA                 /ANY FIELDS LEFT TO DO
2597    4626  5610            JMP I   SETERR          /YES CONTINUE TESTING
2598    4627  4776'           JMS     MES
2599    4630  4643            TEXT    "%#DISCONNECTED"
        4631  0411
        4632  2303
        4633  1716
        4634  1605
        4635  0324
        4636  0504
        4637  0000
2600    4640  7402            HLT
2601    4641  5240            JMP     .-1             /DON'T CONTINUE
2602    4642  5610            JMP I   SETERR
2603                  /
2604    4643  3307    ERRTAB, SR50
2605    4644  3327            SR51
2606    4645  3400            SR52
2607    4646  3422            SR53
2608    4647  3442            SR54
2609    4650  3462            SR55
2610    4651  3502            SR56
2611    4652  3522            SR57
```



```
2612                  /
2613    4653  0000    SRS,    0
2614                  /
2615
2616    4654  0000    PNTFLD, 0
2617    4655  4776'           JMS     MES
2618    4656  4543            4543
2619    4657  0000            0
2620    4660  1060            TAD     FCNT
2621    4661  0034            AND     SR68            /ISOLATE BANK INFORMATION
2622    4662  7112            CLL RTR
2623    4663  7010            RAR                     /MOVE INTO POSITION
2624    4664  1167            TAD     [260
2625    4665  4773'           JMS     TYPE            /TYPE BANK SELECTION
2626    4666  1060            TAD     FCNT            /GET FLD CNT
2627    4667  0035            AND     SP911
2628    4670  1167            TAD     [260            /SET UP ASCII FOR FIELDS
2629    4671  4772'           JMS     TYPSP           /TYPEOUT # OF FIELDS IN THIS SYSTEM
2630    4672  4776'           JMS     MES
2631    4673  0611            TEXT            "FIELDS IN THIS SYSTEM"
        4674  0514
        4675  0423
        4676  4011
        4677  1640
        4700  2310
        4701  1123
        4702  4023
        4703  3123
        4704  2405
        4705  1500
2632    4706  4776'           JMS     MES
2633    4707  4543            TEXT            "%#FIELDS SEL'D ARE "
        4710  0611
        4711  0514
        4712  0423
        4713  4023
        4714  0514
        4715  4704
        4716  4001
        4717  2205
        4720  4000
2634    4721  4771'           JMS     TQSEL
2635    4722  5654            JMP I   PNTFLD
2636                  /
2637                  /
2638                  /ROUTINE TO CHECK FOR CONSOLE PACKAGE ACTIVE
2639                  /
2640                  /IF CONSOLE PACKAGE ACTIVE, GO TO CONSOLE PACKAGE
2641                  /RETURN CALL + 2
2642                  /
2643                  /IF CONSOLE PACKAGE NOT ACTIVE, RETURN CALL + 1
2644                  /
2645    4723  0000    XCBCAL, 0
2646    4724  3346            DCA     CHRTMP          /SAVE AC
2647    4725  1022            TAD     22              /GET MCW2
```

```
2648  4726  0345          AND     K400            /TEST FOR SIT 3=1 CONSOLE ACTIVE
2649  4727  7640          SZA CLA                 /SKIP IF CONSOLE NOT ACTIVE
2650  4730  5333          JMP     .+3             /CONSOLE IS ACTIVE.
2651  4731  1346          TAD     CHRTMP          /GET BACK THE CHARACTER
2652  4732  5723          JMP I   XCBCAL          /AND EXIT.
2653  4733  6224          RIF                     /READ INSTRUCTION FIELD
2654  4734  1370          TAD     (OFFSET         /ADD CONSOLE PACKAGE FIELD OFFSET
2655  4735  1367          TAD     (CIF            /ADD CIF INSTRUCTION CODE
2656  4736  3337          DCA     .+1             /SAVE MODIFIED CIF FOR EXECUTION
2657  4737  7402          HLT                     /MODIFIED CIF TO CONSOLE PACKAGE FIELD
2658  4740  1346          TAD     CHRTMP          /RESTORE AC
2659  4741  4744          JMS I   CBLOC           /GO TO CONSOLE PACKAGE
2660  4742  2323          ISZ     XCBCAL          /INCREMENT RETURN ADDRESS
2661  4743  5723          JMP I   XCBCAL          /RETURN CALL + 2  CONSOLE WAS ACTIVE
2662                      /
2663  4744  7222    CBLOC,  CBENTR                /POINTER TO CONSOLE PACKAGE ENTRY
2664  4745  0400    K400,   0400                  /CONSTANT
2665  4746  0000    CHRTMP, 0                     /TEMPORARY AC SAVE AREA
2666                      /
2667                      /THIS ROUTINE REPLACES THE LAS INSTRUCTION. IF CONSOLE ACTIVE
2668                      /THE PSEUDO SWITCH REGISTER WILL BE READ  INSTEAD OF
2669                      /DOING A LAS
2670                      /
2671  4747  0000    XGETSR, 0
2672  4750  7300          CLL CLA
2673  4751  1021          TAD     21
2674  4752  7710          SPA CLA                 /SKIP IF PSEUDO SWITCH REGISTER TO BE USED
2675  4753  7614          CLA OSR SKP             /GET SWITCHES AND SKIP
2676  4754  1020          TAD     20              /THIS WILL BE ZERO IF CONSOLE NOT ACTIVE
2677  4755  5747          JMP I   XGETSR          /EXIT WITH VALUE IN THE AC
2678  4767  6202
2679  4770  0000
2680  4771  1105
2681  4772  2480
2682  4773  5025
2683  4774  4643
2684  4775  2346
2685  4776  2240
2686  4777  0205
              5000    PAGE
2687                      /
2688                      /PRINT "SELECT TEST PARAMETERS"
2689                      /
2690  5000  0000    SETPAR, 0
2691  5001  7200          CLA
2692  5002  1076          TAD     NOTTY
2693  5003  7710          SPA CLA                 /SKIP IF TTY AVAILABLE
2694  5004  5000          JMP I   SETPAR
2695  5005  4777'         JMS     MES
2696  5006  4345          TEXT    "#%SELECT TEST PARAMETERS#%"
      5007  2305
      5010  1405
      5011  0324
      5012  4024
      5013  0523
```



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      5014  2440
      5015  2001
      5016  2201
      5017  1505
      5020  2405
      5021  2223
      5022  4345
      5023  0000
2697  5024  5E00          JMP I   SETPAR
2698                      /
2699                      /
2700                      /TYPEOUT CHARACTER IN AC
2701                      /
2702  5025  0000    TYPE,   0
2703  5026  3056          DCA     TEMP            /SAVE THE CHARACTER
2704  5027  1022          TAD     22              /GET HCW2
2705  5030  7710          SPA CLA                 /SKIP APT NOT ACTIVE
2706  5031  5625          JMP I   TYPE            /EXIT IF APT ACTIVE
2707  5032  1056          TAD     TEMP            /GET BACK CHARACTER
2708  5033  6000          SKON
2709  5034  5241          JMP     TYPOFF
2710  5035  4503          PPINT
2711  5036  6001          ION
2712  5037  7200          CLA
2713  5040  5625          JMP I   TYPE
2714  5041  4503    TYPOFF, PRINT
2715  5042  7200          CLA
2716  5043  5625          JMP I   TYPE
2717                      /
2718                      /TYPEOUT 'PROGRAM IN SELECTED FIELD'
2719                      /
2720
2721  5044  1076    PINF,   TAD     NOTTY           /GET THE TELETYPE PROGRAM FLAG
2722  5045  7710          SPA     CLA             /IS THERE A TELETYPE AVAILABLE
2723  5046  5776'         JMP     PATA            /NO TTY- DO NOT PRINT
2724  5047  4777'         JMS     MES             /GO PRINT MESSAGE
2725  5050  4643          TEXT    "A#PROGRAM IN SELECTED FIELD"
      5051  2022
      5052  1707
      5053  2201
      5054  1540
      5055  1116
      5056  4023
      5057  0514
      5060  0503
      5061  2405
      5062  0440
      5063  0611
      5064  0514
      5065  0400
2726  5066  5776'         JMP     PATA            /GO SETUP SWITCHES AGAIN
2727
2728                      /SET UP THE FIELD IN ERROR FOR TYPECUT
2729                      /LOCATION FOLLOWING CALL IS WHERE TO STORE INFORMATION
2730                      /
```

```
 2731   5067  0000  FLDDAT, 0
 2732   5070  1667          TAD I   FLDDAT          /GET LOCATION TO STORE IT IN
 2733   5071  3216          DCA     DATTYP          /SAVE IT
 2734   5072  2267          ISZ     FLDDAT          /UPDATE RETURN
 2735   5073  1225          TAD     EWMFLG
 2736   5074  7650          SNA CLA         /SKIP IF KT8 ACTIVE
 2737   5075  5302          JMP     .+5
 2738   5076  1 12          TAD     TSTFLD          /GET FIELD BEING DONE
 2739   5077  ++10          RACA                    /BINARY NUMBER
 2740   5100  3056          DCA     TEMP            /SAVE IT
 2741   5101  5316          JMP     .+5             /PROCESS IT
 2742   5102  1052          TAD     TSTFLD
 2743   5103  7112          CLL RTR
 2744   5104  7010          RAR
 2745   5105  3056          DCA     TEMP            /SAVE IT
 2746   5106  4775          JMS     SIXTY
 2747   5107  0056          TEMP                    /LOCATION TO DO
 2748   5110  5114          DO                      /WHERE TO PUT IT
 2749   5111  1115          TAD     YY              /GET DECODED VALUE
 2750   5112  3216          DCA I   DATTMP
 2751   5113  5667          JMP I   FLDDAT          /AND EXIT
 2752                 /
 2753                 /
 2754   5114  0000  DO.     0
 2755   5115  0000  YY,     0
 2756   5116  0000  DATTMP, 0
 2757                 /
 2758
 2759                 /
 2760                 /MAKE A BINARY NUMBER OUT OF A FIELD CHANGE
 2761                 /
 2762   5117  0000  XRACA,  0
 2763   5120  3360          DCA     RTEMP
 2764   5121  1360          TAD     RTEMP
 2765   5122  0365          AND     K104
 2766   5123  3361          DCA     RTEMP1          /SAVE BANK VALUE
 2767   5124  1361          TAD     RTEMP1
 2768   5125  7002          BSW                     /5 INTO 11
 2769   5126  7106          CLL RTL                 /MOVE INTO 9
 2770   5127  7004          RAL                     /NOW 8
 2771   5130  1361          TAD     RTEMP1
 2772   5131  7004          RAL
 2773   5132  0374          AND     (30             /ISOLATE BANK
 2774   5133  3361          DCA     RTEMP1
 2775   5134  1360          TAD     RTEMP
 2776   5135  0373          AND     (70             /ISOLATE FIELD
 2777   5136  7112          CLL RTR
 2778   5137  7010          RAR                     /INTO BIT 9-11
 2779   5140  1361          TAD     RTEMP1
 2780   5141  5717          JMP I   XRACA           /EXIT WITH BINARY NUMBER IN THE AC
 2781                 /
 2782                 /MAKE A FIELD CHANGE OUT OF A BINARY NUMBER
 2783                 /
 2784   5142  0000  XRACB,  0
 2785   5143  3360          DCA     RTEMP
```



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 2786   5144  1360          TAD     RTEMP
 2787   5145  7112          CLL RTR
 2788   5146  7010          RAR                     /BANK IN 10-11
 2789   5147  0372          AND     (3
 2790   5150  1371          TAD     (BANKR          /MAKE A POINTER
 2791   5151  3217          DCA     XRACA           /SAVE THE POINTER
 2792   5152  1360          TAD     RTEMP
 2793   5153  0370          AND     (7              /ISOLATE FIELD
 2794   5154  7106          CLL RTL
 2795   5155  7004          RAL                     /MOVE INTO POSITION
 2796   5156  1717          TAD I   XRACA
 2797   5157  5742          JMP I   XRACB
 2798                 /
 2799   5160  0000  RTEMP,  0
 2800   5161  0000  RTEMP1, 0
 2801   5162  0000  BANKR,  0
 2802   5163  0004          4
 2803   5164  0100          100
 2804   5165  0104  K104,   104
 2805                 /
 2806   5170  0007
 2807   5171  5132
 2808   5172  0003
 2809   5173  0270
 2810   5174  0030
 2811   5175  0700
 2812   5176  0205
 2813   5177  2240
               0200  PAGE
 2814                 /
 2815                 /
 2816                 /
 2817                 /
 2818                 /THE FOLLOWING TEST IS A MARCH PATTERN DEVELOPED FOR TESTING
 2819                 /THE MS8-C MOS MEMORY.
 2820                 /
 2821                 /       THE TEST SELECTED FOR THE MOS MEMORY TESTING IS A TYPICAL MARCH
 2822                 /       PATTERN. THE TEST BEGINS BY LOADING THE ENTIRE MEMORY WITH
 2823                 /       A 2525 PATTERN. THEN STARTING AT ADDRESS ZERO OF LOWEST POSSIBLE
 2824                 /       FIELD THE TEST READS THE CONTENTS, COMPARES IT, AND THEN WRITES BACK
 2825                 /       THE COMPLIMENT VALUE. THE PROCESS IS REPEATED THROUGHOUT THE ENTIRE
 2826                 /       MEMORY.
 2827                 /
 2828                 /       NEXT THE PROCESS REPEATS FROM MAXIMUM TO MINIMUM, COMPLIMENTING
 2829                 /       AS IT IS BEING DONE.
 2830                 /
 2831                 /       THE ENTIRE SEQUENCE IS THEN REPEATED USING A BACKGROUND OF
 2832                 /       5252. THIS INSURES THAT A ONE AND A ZERO CAN BE WRITEN INTO
 2833                 /       EACH MEMORY CELL.
 2834                 /
 2835                 /
 2836                 /
 2837
 2838   5200  0000  MOSTST, 0
 2839   5201  7344          CLL CLA CMA RAL         /AC=-2
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2840  5202 3364          DCA     PATCNT
2841  5203 7344          CLL CLA CMA RAL         /AC=-2
2842  5204 3362          DCA     TSTCNT
2843  5205 7350          CLL CLA
2844  5206 3777'         DCA     FLDCNT
2845  5207 3024          DCA     BANK            /CLEAR INDICATORS
2846  5210 7301          CLL CLA IAC
2847  5211 3360          DCA     ADDINC
2848  5212 7301          CLL CLA IAC
2849  5213 3361          DCA     FLDINC
2850  5214 4776'  MOSLOO, JMS     NUFLD           /TEST FOR VALID FIELD SELECTION
2851  5215 5232          JMP     MOUPD           /GO UPDATE FIELD VALUE
2852  5216 1051          TAD     PROFLD          /GET CURRENT FIELD
2853  5217 1176          TAD     [6201           /MAKE IT A CDF
2854  5220 3227          DCA     MOSFLD          /SAVE FOR RETURN
2855  5221 1052          TAD     TSTFLD
2856  5222 1176          TAD     [6201           /MAKE TEST FIELD A CDF
2857  5223 3225          DCA     .+2
2858  5224 1365  MEMLOP, TAD     PAT1            /FILL MEMORY WITH BACKGROUND
2859  5225 6201          CDF                 /CHANGED TO LOAD FIELD
2860  5226 3457          DCA I   TSTAD
2861  5227 6201  MOSFLD, CDF                 /MAKE DF=PROFLD
2862  5230 2057          ISZ     TSTAD           /SEE IF ALL DONE
2863  5231 5224          JMP     MEMLOP          /GO BACK AND TRY IT AGAIN
2864                 /UPDATE TEST FIELD VALUE AND TEST AGAIN
2865                 /
2866  5232 7200  MOUPD,  CLA
2867  5233 1777'         TAD     FLDCNT
2868  5234 7041          CIA
2869  5235 1060          TAD     FCNT            /TEST FOR MAX VALUE
2870  5236 7650          SNA CLA                 /SKIP IF NOT AT MAX
2871  5237 5242          JMP     .+3             /AT MAX START READING
2872  5240 2777'         ISZ     FLDCNT          /UPDATE FIELD TO DO
2873  5241 5214          JMP     MOSLOO          /GO BACK AND TEST THIS FIELD VALUE
2874                 /
2875                 /AT THIS POINT ALL MEMORY IS FILLED WITH BACKGROUND 2525
2876                 /
2877  5242 4406          JMS I   IAPTOK          /NOTIFY APT IF REQUIRED.
2878  5243 3777'         DCA     FLDCNT
2879  5244 3024          DCA     BANK            /CLEAR INDICATORS AGAIN FOR READ CYCLE
2880  5245 4776'  MOSRED, JMS     NUFLD
2881  5246 5300          JMP     MIUPD           /NOT A VALID SELECTION.
2882  5247 1365          TAD     PAT1            /SET UP COMPARISON
2883  5250 3072          DCA     GDATA
2884  5251 1051          TAD     PROFLD          /GET CURRENT FELD LOCATION
2885  5252 1176          TAD     [6201           /MAKE IT A CDF
2886  5253 3264          DCA     REDFLD          /SET UP RETURN
2887  5254 1052          TAD     TSTFLD          /GET FIELD TO READ
2888  5255 1176          TAD     [6201           /MAKE IT A CDF
2889  5256 3257          DCA     .+1             /AND SAVE IT FOR USE
2890  5257 6201  REDLUP, CDF                 /CHANGE TO TEST FIELD CDF
2891  5260 1457          TAD I   TSTAD           /GET VALUE IN SELECTED FIELD
2892  5261 3073          DCA     BDATA           /SAVE IT FOR COMPARISON
2893  5262 1366          TAD     PAT2            /NOW WRITE BACK COMPLIMENT VALUE
2894  5263 3457          DCA I   TSTAD           /BACK INTO SELECTED FIELD
```



```
2895  5264 6201  REDFLD, CDF                 /CHANGED TO CURRENT CDF
2896  5265 1072          TAD     GDATA
2897  5266 7041          CIA
2898  5267 1073          TAD     BDATA           /SET UP COMPARISON
2899  5270 7640          SZA CLA                 /SKIP IF EQUAL
2900  5271 4775'         JMS     MOSERR          /GO REPORT ERROR
2901  5272 1057          TAD     TSTAD
2902  5273 1760          TAD     ADDINC          /ADD IN ADDRESS OFFSET.
2903  5274 3057          DCA     TSTAD           /AND RESTORE NEW VALUE
2904  5275 1057          TAD     TSTAD
2905  5276 7640          SZA CLA
2906  5277 5257          JMP     REDLUP          /GO BACK AND DO THE NEXT
2907  5300 1361  MIUPD,  TAD     FLDINC
2908  5301 7710          SPA CLA                 /SKIP IF READING LOW TO HIGH
2909  5302 5305          JMP     .+3             /BY PASS COMPARISON
2910  5303 1060          TAD     FCNT
2911  5304 7041          CIA
2912  5305 1777'         TAD     FLDCNT
2913  5306 7650          SNA CLA                 /SKIP IF NOT AT MAX
2914  5307 5314          JMP     .+5
2915  5310 1361          TAD     FLDINC          /ADD IN FIELD OFF SET VALUE
2916  5311 1777'         TAD     FLDCNT          /TO THE CURRENT FIELD POSITION
2917  5312 3777'         DCA     FLDCNT
2918  5313 5245          JMP     MOSRED          /GO BACK AND READ NEXT FIELD
2919                 /
2920                 /NOW UPDATE PATTERN TO LOAD AND READ BACK VALUE
2921                 /
2922  5314 1361          TAD     FLDINC
2923  5315 7041          CIA                     /NEGATE CURRENT FIELD INCREMENT VALUE
2924  5316 3361          DCA     FLDINC          /AND RESTORE IT
2925  5317 1360          TAD     ADDINC          /NOW DO SAME FOR THE ADDRESS OFFSET
2926  5320 7041          CIA
2927  5321 3360          DCA     ADDINC
2928  5322 1360          TAD     ADDINC
2929  5323 7700          SMA CLA                 /SKIP IF READING HIGH TO LOW
2930  5324 5321          JMP     .-3
2931  5325 7240          STA                     /AC TO -1
2932  5326 3057          DCA     TSTAD           /START AT ADDRESS 7777 OF HIGH FIELD
2933  5327 1060          TAD     FCNT            /START AT HIGHEST FIELD
2934  5330 3777'         DCA     FLDCNT
2935  5331 1365          TAD     PAT1
2936  5332 7040          CMA                     /COMPLIMENT PATTERN
2937  5333 3365          DCA     PAT1
2938  5334 1366          TAD     PAT2
2939  5335 7040          CMA
2940  5336 3366          DCA     PAT2
2941  5337 4406          JMS I   IAPTOK
2942  5340 2362          ISZ     TSTCNT          /ALL DONE ?
2943  5341 7410          SKP
2944  5342 5248          JMP     .+6
2945  5343 7332          CLL CLA CML RTR         /SET BIT ONE OF CS WORD
2946  5344 3026          DCA     CS              /ONES COMPLIMENT
2947  5345 5245          JMP     MOSRED
2948  5346 3026          DCA     CS
2949  5347 1365          TAD     PAT1
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2950  5350  7040          CMA
2951  5351  3385          DCA     PAT1
2952  5352  1386          TAD     PAT2
2953  5353  7040          CMA
2954  5354  3386          DCA     PAT2
2955  5355  2364          ISZ     PATCNT          /SEE IF ALL PATTERNS DONE
2956  5356  5203          JMP     MOSTST+3
2957  5357  5600          JMP I   MOSTST
2958                /
2959  5360  0000    ADDINC, 0
2960  5361  0000    FLDINC, 0
2961  5362  0000    TSTCNT, 0
2962  5363  0000    ADDCNT, 0
2963  5364  0000    PATCNT, 0
2964  5365  2525    PAT1,   2525
2965  5366  5252    PAT2,   5252
2966                /
2967  5375  5415
2968  5376  0707
2969  5377  2348
              5400  PAGE
2970                /
2971  5400  0000    XPRINT, 0
2972  5401  6046          TLS
2973  5402  6041          TSF
2974  5403  5202          JMP     .-1
2975  5404  6042          TCF
2976  5405  7200          CLA
2977  5406  6031          KSF                     /IS KEY BOARD WIATING
2978  5407  5600          JMP I   XPRINT
2979  5410  6036          KRB             /GET CHARACTER
2980  5411  4505          CDCAL                   /TEST FOR ACTIVE CONSOLE
2981  5412  7200          CLA                     /NOT ACTIVE JUST IGNORE CHARACTER
2982  5413  6032          KCC                     /CLEAR FLAG
2983  5414  5600          JMP I   XPRINT
2984
2985
2986                /
2987                /
2988
2989  5415  0000    MOSERR, 0
2990  5416  2053          ISZ     COUNT           /UPDATE ERROR COUNT
2991  5417  1377          TAD     (40
2992  5420  3037          DCA     TS              /SAVE TEST STATUS FOR PRINTOUT
2993  5421  3038          DCA     CS
2994  5422  1072          TAD     GDATA           /DATA WRITTEN
2995  5423  4776'         JMS     GERRC
2996  5424  3053          DCA     COUNT
2997  5425  5615          JMP I   MOSERR
2998
2999
3000
3001                /
3002                /
3003                /PRINT END OF PASS MESSAGE
```



```
3004                /
3005  5426  0000    ENDPAS, 0
3006  5427  7200          CLA
3007  5430  1076          TAD     NOTTY
3008  5431  7710          SPA CLA                 /SKIP IF TTY AVAILABLE
3009  5432  5626          JMP I   ENDPAS
3010  5433  2255          ISZ     PASSES
3011  5434  4775'         JMS     SIXTY
3012  5435  5455          PASSES
3013  5436  5451          ENDMES
3014  5437  4774'         JMS     MES
3015  5440  4345          TEXT "#%END OF PASS "
      5441  0516
      5442  0440
      5443  1706
      5444  4020
      5445  0123
      5446  2340
      5447  0000
3016  5450  4774          JMS     MES
3017  5451  0000    ENDMES, 0
3018  5452  0000          0
3019  5453  0000          0
3020  5454  5626          JMP I   ENDPAS
3021                /
3022  5455  0000    PASSES, 0
3023  5456  0000          0
3024                /
3025  5574  1.40
3026  5575  1200
3027  5576  1454
3028  5577  0040
              5600  PAGE
3029                /
3030                /APT/   ROUTINE TO HANDLE ERRORS UNDER CONTROL OF APT
3031                /
3032  5600  0000    APTER,  0                       /APT/
3033  5601  6002          IOF                     /APT/
3034  5602  3222          DCA     APTIZ           /SAVE ANYTHING IN THE AC
3035  5603  1.22          TAD     22              /GET MCW2
3036  5604  7700          SMA CLA                 /SKIP IF APT ALIVE
3037  5605  5600          JMP I   APTER
3038  5606  6224          RIF                     /APT/
3039  5607  1123          TAD     [6203           /APT/CREATE A CDF INST.
3040  5610  3021          DCA I   APTER1          /APT CDF IN PROM CODE
3041  5611  1621          TAD I   APTER1
3042  5612  3216          DCA     .+4             /APT/MODIFY NEXT CDF INST.
3043  5613  1222          TAD     APTIZ           /SEE IF ANYTHING WAS IN AC
3044  5614  7450          SNA                     /SKIP IF THERE WAS
3045  5615  1777'         TAD     ADDER           /APT/AC=ERROR PC.
3046  5616  6201          CDF                     /APT/(MODIFIED CDF) DF=IF.
3047  5617  7000          NOP
3048  5620  5776'         JMP     6520            /APT/CALL APT - 'ERROR'.
3049                /
3050  5621  6523    APTER1, 6523
```

```
3051                    /
3052                    /APT/   THIS ROUTINE INITIALIZES PROGRAM FOR APT
3053                    /
3054    5622  0000      APTIZ,  0
3055    5623  6002              IOF                     /MAKE SURE INTERRUPT IS OFF
3056    5624  1022              TAD     HCW2            /GET APT CONTROL WORD
3057    5625  7700              SMA CLA                 /SKIP IF APT ENABLED.
3058    5626  5[74              JMP     NOTAPT
3059    5627  7[40              STA                     /AC=-1
3060    5630  3076              DCA     NOTTY           /NOT CONSOLE TERMINAL
3061    5631  1375              TAD     I37             /SET UP FOR AUTO SIZE
3062    5632  3020              DCA     PSR
3063    5633  5251              JMP     APTEX           /APT ENABLED
3064    5634  1076    NOTAPT, TAD     NOTTY
3065    5635  7700              SMA CLA                 /SKIP IF NO TTY ON SYSTEM
3066    5636  5250              JMP     .+12
3067    5637  1021              TAD     HCW1            /GET CONFIGURATION WORD 1
3068    5640  7710              SPA CLA                 /SKIP IF SOFTWARE SWITCHES TO BE USED
3069    5641  5[47              JMP     .+6
3070    5642  1020              TAD     PSR             /GET PSEUDO SWITCH REGISTER
3071    5643  7640              SZA CLA                 /SKIP IF NO VALUE IN PSEUDO SWITCHES
3072    5644  5247              JMP     .+3
3073    5645  1375              TAD     I37             /SETUP DEFAULT FOR AUTO SIZING
3074    5646  3020              DCA     PSR
3075    5647  7610              SKP CLA                 /BYPASS SAVING OS/8 MONITOR
3076    5650  4774'             JMS     CBSM            /SAVE OS8 MONITOR IN FIELD 1
3077    5651  5622    APTEX,  JMP I   APTIZ           /AND EXIT
3078                    /
3079                    /
3080                    /
3081                    /
3082                    /
3083                    /APT/   ROUTINE TO 'NOTIFY' APT THAT .ME PROGRAM IS RUNNING OK.
3084
3085    5652  0000      APTOK,  0                       /APT/
3086    5653  7200              CLA                     /APT/
3087    5654  1022              TAD     HCW2            /APT/UNDER APT CONTROL?
3088    5655  7700              SMA CLA                 /APT/SKP IF YES.
3089    5656  5274              JMP     APTOK0
3090    5657  6002              IOF                     /APT/
3091    5660  6224              RIF                     /APT/AC=IF.
3092    5661  1123              TAD     [6203           /APT/CREATE A CDF INST.
3093    5662  3873              DCA I   APTOK1          /SET UP APT CODE CDF
3094    5663  1673              TAD I   APTOK1
3095    5664  3265              DCA     .+1             /APT/MODIFY NEXT LOC.
3096    5665  6201              CDF                     /APT/(MODIFIED CDF) DF=CURRENT IF.
3097    5666  7000              NOP
3098    5667  4773'             JMS     6500            /APT/CALL APT - 'PROG OK'.
3099    5670  5652              JMP I   APTOK           /APT/RTN FROM APT - RTN TO CALL+1.
3100    5671  0000    APTCTR, 0
3101    5672  0000    APTCTY, 0
3102    5673  6505    APTOK1, 6505                    /LOCATION TO OVERLAY FOR PROPER FIELD
3103                    /
3104                    /SEE IF KEY BOARD WAITING
3105                    /
```



```
3106    5674  0000      APTOK0, 0
3107    5675  6031              KSF
3108    5676  5652              JMP I   APTOK
3109    5677  6036              KRB
3110    5700  4505              CBCAL                   /TEST FOR CONSOLE
3111    5701  7200              CLA                     /IGNORE CHARACTER
3112    5702  6032              KCC
3113    5703  5652              JMP I   APTOK                   /EXIT
3114                    /
3115                    /
3116                    /THIS ROUTINE DETERMINES IF MEMORY IS CONTIGUOUS IS LOWER 32K
3117                    /OF MEMORY. IF NOT FIELD 7 IS NOT TESTED.
3118                    /
3119    5704  0000      APTFL,  0                       /APT/
3120    5705  1022              TAD     HCW2            /GET APT CONTROL WORD
3121    5706  7700              SMA CLA                 /SKIP IF APT ENABLED
3122    5707  5704              JMP I   APTFL           /EXIT IF NOT
3123    5710  7333              CLL CLA CML IAC RTR     /AC=6000
3124    5711  3337              DCA     APTMOV          /SET UP STARTING ADDRESS
3125    5712  6271    APTLUP, CDF     70              /POINTER TO PROM CODE
3126    5713  1737              TAD I   APTMOV          /GET AN ADDRESS
3127    5714  6201              CDF                     /FIELD ZERO
3128    5715  3737              DCA I   APTMOV          /SAVE THE VALUE
3129    5716  1737              TAD I   APTMOV          /GET BACK VALUE JUST MOVED
3130    5717  7041              CIA
3131    5720  6271              CDF     70              /BACK TO FIELD 7 FOR COMPARE
3132    5721  1737              TAD I   APTMOV          /GET BACK ORIGINAL VALUE
3133    5722  6201              CDF                     /BACK TO FIELD ZERO
3134    5723  7640              SZA CLA                 /SKIP IF EQUAL
3135    5724  4340              JMS     MOVFAL          /MOVE FAILURE. SOME BAD STUFF
3136    5725  2337              ISZ     APTMOV          /UP DATE ADDRESS POINTER
3137    5726  5312              JMP     APTLUP          /GO BACK AND TRY AGAIN
3138                    /
3139                    /AT THIS POINT THE APT PROM CODE IS SITTING IN THE PROGRAM
3140                    /FIELD. FORM THIS POINT OUT ALL APT PROCESSING WILL BE DONE
3141                    /IN THE FIELD BEING EXERCISED.
3142                    /
3143    5727  1040              TAD     FS              /TEST TO SEE IF LOWER 32K CONTIGUOUS
3144    5730  7650              SNA CLA
3145    5731  5704              JMP I   APTFL           /ALL MEMORY CONTIGUOUS
3146    5732  1040              TAD     FS              /GET ESCK FIELD STATUS
3147    5733  0272              AND     (7740           /MASK OUT 7
3148    5734  1371              TAD     (20             /NOW FIELD 7 TESTING
3149    5735  3040              DCA     FS              /AND RESTORE FIELD STATUS WORD
3150    5736  5704              JMP I   APTFL           /AND EXIT.
3151                    /
3152    5737  0000    APTMOV, 0
3153                    /
3154    5740    30      MOVFAL, 0
3155    5741  7240              STA
3156    5742  1340              TAD     MOVFAL          /ERROR PC
3157    5743  6201              CDF                     /ERROR FIELD
3158    5744  6272              CIF     70              /TO PROM CODE
3159    5745  5776'             JMP     6520            /REPORT THE ERROR
3160
```

```
                        /
                        /
                        /THE FOLLOWING LOCATIONS FROM 6000 TO 7777 ARE USED AS THE COMUNICATIONS
                        /INTERFACES FOR APT SHOULD APT BE AVAILABLE.
                        /
        5771  0020
        5772  7740
        5773  6500
        5774  6036
        5775  6037
        5776  0520
        5777  2466
              6000      *6000                  /C6/

        6000  4777'     LOOP1,  JMS     SAVDF
        6001  1076              TAD     NOTTY           /GET THE TELETYPE FLAG
        6002  7710              SPA     CLA             /IS THERE ON ON THE SYSTEM
        6003  5223              JMP     LOOP1A-1        /NO ABORT MESSAGE AND GALT
        6004  4776'             JMS     MES
        6005  4542              TEXT    "%#LOOP ON ADDRESS SET IN SR"
        6006  1417
        6007  1720
        6010  4017
        6011  1640
        6012  0104
        6013  0422
        6014  0523
        6015  2740
        6016  [illegible]
        6017  2440
        6020  1116
        6021  4023
        6022  2200
        6023  4775'             JMS     RLSDF
        6024  4504      LOOP1A, GETSR
        6025  3235              DCA     SR
        6026  1635              TAD I   SR
        6027  7040              CMA
        6030  3635              DCA I   SR
        6031  1635              TAD I   SR
        6032  7040              CMA
        6033  3635              DCA I   SR
        6034  5224              JMP     LOOP1A
        6035  0000      SR,     0
                        /
                        /C8/    ROUTINE  TO SAVE PAGE 37 OF FIELD 1

        6036  0000      CBSM,   0
        6037  7200              CLA
        6040  6224              RIF                     /READ THE INSTRUCTION FIELD
        6041  1374              TAD     (6201           /ADD CDF 0 TO IT
        6042  3251              DCA     CBSM0           /MODIFY THE CDF INSTR AT LOC CBSM0
        6043  1373              TAD     (7577           /SET UP PAGE 37 POINTER -1
        6044  3010              DCA     10              /SAVE IN AUTO INDEX 10
        6045  1372              TAD     (CBSA-1         /GET ADDRESS -1 OF STORAGE AREA
```



```
        6046  3011              DCA     11              /SAVE IN AUTO INDEX 11
        6047  6211      CBSM1,  CDF     10              /CHANGE DATA FIELD TO 1
        6050  1410              TAD  I  10              /GET THE WORD
        6051  6201      CBSM0,  CDF                     /CHANGE DATA FIELD TO PRG FIELD
        6052  3411              DCA  I  11              /SAVE IN STORE AREA
        6053  1010              TAD     10              /CHECK TO SEE IF PAGE DONE
        6054  7040              CMA
        6055  7 0               SZA     CLA             /DONE SAVING PAGE
        6056  5247              JMP     CBSM1           /NO-DO NEXT WORD
        6057  5636              JMP  I  CBSM            /YES-RETURN TO CALL+1
                        
                        
                        
                        /C8/    ROUTINE TO RESTORE PAGES 37 OF FIELD 0 AND 1

        6060  7200      CBRM,   CLA
        6061  6224              RIF                     /GET THE PRESENT DATA  FIELD
        6062  1374              TAD     (6201           /GET THE CDF INSTRUCTION
        6063  3 07              DCA     CBRM0           /SAVE THE NEW CDF INSTRUCTION
        6064  1307              TAD     CBRM0
        6065  3276              DCA     CBRM01
        6066  1373              TAD     (7577           /SET UP AUTO INDEX FOR RESTORE OF 0
        6067  3010              DCA     10              /SAVE IN AUTO INDEX 10
        6070  1372              TAD     (CBSA-1         /SETUP STORAGE  POINTER
        6071  3011              DCA     11              /SAVE IN AUTO INDEX 11
        6072  1373              TAD     (7577           /SEUP AUTO INDEX OF RESTORE OF FILD 1
        6073  3012              DCA     12              /SAVE IN AUTO INDEX 12
        6074  1373              TAD     (7577           /SETUP NEXT POINTER
        6075  3013              DCA     13              /SAVE IN AUTO INDEX 13
        6076  6201      CBRM01, CDF
        6077  1013              TAD     13
        6100  7040              CMA
        6101  7650              SNA CLA                 /ALL DONE
        6102  5307              JMP     CBRM0
        6103  1411              TAD I   11              /GET DATA TO RESTORE
        6104  6211              CDF     10              /CHANGE DATA FIELD TO 1
        6105  3413              DCA  I  13              /PUT IT IN FIELD 1
        6106  5276              JMP     CBRM01          /GO DO NEXT WORD
        6107  6201      CBRM0,  CDF                     /MODIFIED CDF INSTRUCTION TO PRG FIELD
        6110  1010              TAD     10              /RESTORATION DONE
        6111  7040              CMA
        6112  7650              SNA CLA                 /SKIP IF NO
        6113  5320              JMP     CBRM1           /DONE-GO TO MONITOR AT 7600
        6114  1410              TAD  I  10              /GET DATA FROM PROGRAM FIELD
        6115  6201              CDF     00
        6116  3412              DCA I   12              /RESTORE 0
        6117  5307              JMP     CBRM0
        6120  6203      CBRM1,  CDF     CIF             /CHANGE DATA AND INSTR FIELD TO 0
        6121  5722              JMP I   .+1
        6122  7600              7600
                        /
        6172  6777
        6173  7577
        6174  6201
        6175  6670
```

```
3257  6176  2240
3258  6177  6664
            6200  *6200                    /C9/
3259
3260  6200  4777'  LOOP2,  JMS     SAVDF
3261  6201  1076          TAD     NOTTY           /GET TELETYPE STATUS
3262  6202  7710          SPA     CLA             /IS THERE ONE ON THE SYSTEM
3263  6203  5234          JMP     LOOP2A-2        /NO ABORT MESSAGE AND HALT FOR INFO
3264  6204  4776'         JMS     MES
3265  6205  4543          TEXT    "%*LOOP ONLY THE 2 ADDRESSES INPUT FROM THE SR*
      6206  1417
      6207  1720
      6210  4017
      6211  1614
      6212  3140
      6213  2410
      6214  0540
      6215  6240
      6216  0164
      6217  3422
      6220  0523
      6221  2305
      6222  2340
      6223  1116
      6224  2025
      3225  2440
      6226  0622
      6227  1715
      6230  4024
      6231  1035
      6232  4023
      6233  2200
3266  6234  4245          JMS     IN12
3267  6235  4775'         JMS     RESDF
3268  6236  1731  LOOP2A, TAD I   FIRST
3269  6237  7040          CMA
3270  6240  3731          DCA I   FIRST
3271  6241  1732          TAD I   SECOND
3272  6242  7040          CMA
3273  6243  3732          DCA I   SECOND
3274  6244  5236          JMP     LOOP2A
3275  6245  0000  IN12,   0
3276  6246  1076          TAD     NOTTY           /GET TELETYPE FLAG
3277  6247  7710          SPA     CLA             /IS THERE ONE ON THE SYSTEM
3278  6250  6274          JMP     IN12A           /NO-ABORT MESSAGE AND HALT FOR INFO
3279  6251  4776'         JMS     MES
3280  6252  4543          TEXT    "%*SET SR TO FIRST ADDRESS & CONT*
      6253  2215
      6254  2440
      6255  2322
      6256  4024
      6257  1740
      6260  0611
      6261  2223
      6262  2440
```



```
      6263  0104
      6264  0422
      6265  0523
      6266  2340
      6267  4640
      6270  0317
      6271  1624
      6272  0000
3281
3282  6273  4505          CBCAL
3283  6274  7402  IN12A,   HLT
3284  6275  4504          GETSR
3285  6276  3331          DCA     FIRST
3286  6277  1076          TAD     NOTTY           /GET FLAG STATUS AGAIN
3287  6300  7710          SPA     CLA             /TELETYPE AVAILABLE?
3288  6301  5325          JMP     FIRST-6         /NO-ABORT MESSAGE AND HALT FOR INFO
3289  6302  4776'         JMS     MES
3290  6303  4543          TEXT    "%*SET SR TO SECOND ADDRESS & CONT*
      6304  2223
      6305  2440
      6306  2322
      6307  4024
      6310  1740
      6311  2005
      6312  0317
      6313  1604
      6314  4001
      6315  0116
      6316  1105
      6317  2323
      6320  4046
      6321  4003
      6322  1716
      6323  2400
3291
3292  6324  4505          CBCAL
3293  6325  7402          HLT
3294  6326  4504          GETSR
3295  6327  3332          DCA     SECOND
3296  6330  5645          JMP I   IN12
3297  6331  0000  FIRST,  0
3298  6332  0000  SECOND, 0
3299  6375  6676
3300  6376  2240
3301  6377  6664
            6400  *6400                    /C9/
3302
3303                /*C8-/-6400
3304  6400  4777'  LOOP3,  JMS     SAVDF
3305  6401  1076          TAD     NOTTY           /GET THE TELETYPE STATUS
3306  6402  7710          SPA     CLA             /IS THERE A TELETYPE AVAILABLE?
3307  6403  5234          JMP     LOOP3A-6        /NO-ABORT MESSAGE AND HALT FOR INFO
3308  6404  4776'         JMS     MES
3309  6405  4543          TEXT    "%*LOOP FROM FIRST ADDRESS THRU SECOND ADDRESS*
      6406  1417
```

```
                6407  1720
                6410  4008
                6411  2217
                6412  1540
                6413  0611
                6414  2223
                6415  2440
                6416  0 14
                6417  L422
                6420  0523
                6421  2340
                6422  2410
                6423  2225
                6424  4023
                6425  0503
                6426  1716
                6427  0440
                6430  0104
                6431  0122
                6432  0523
                6433  2300
 3310           6434  4775'           JMS     IN12
 3311           6435  1774'           TAD     FIRST
 3312           6436  3263            DCA     SRL1
 3313           6437  1773'           TAD     SECOND
 3314           6440  3264            DCA     SRL2
 3315           6441  4772'           JMS     RESDF
 3316           6442  1263    LOOP3A, TAD     SRL1
 3317           6443  3262            DCA     SRL
 3318           6444  1662    LOOP3B, TAD I   SRL
 3319           6445  7040            CMA
 3320           6446  3662            DCA I   SRL
 3321           6447  1662            TAD I   SRL
 3322           6450  7040            CMA
 3323           6451  3662            DCA I   SRL
 3324           6452  1262            TAD     SRL
 3325           6453  7041            CIA
 3326           6454  1264            TAD     SRL2
 3327           6455  7650            SNA CLA
 3328           6456  5242            JMP     LOOP3A
 3329           6457  2262            ISZ     SRL
 3330           6460  5244            JMP     LOOP3B
 3331
 3332
 3333           6461  5200            JMP     LOOP3
 3334           6462  0000    SRL,    0
 3335           6463  0000    SRL1,   0
 3336           6464  0000    SRL2,   0
 3337                 6500    *6500                   /C8/
 3338
 3339           6500  4777'   LOOP5,  JMS     SAVDF
 3340           6501  1076            TAD     NOTTY           /GET TTY FLAG
 3341           6502  7710            SPA     CLA             /IS THERE A TELETYPE AVAILABLE
 3342           6503  5336            JMP     LOOP5A-6        /NO-ABORT MESSAGE AND HALT FOR INFO
 3343           6504  4776'           JMS     MES
```



```
 3344           6505  4543            TEXT    "%#LOOP DATA IN THE SR THRU THE ADDRESS SELECTION"
                6506  1417
                6507  1720
                6510  4004
                6511  0124
                6512  0140
                6513  1116
                6514  4024
                6515  1005
                6516  4023
                6517  2240
                6520  2410
                6521  2225
                6522  4024
                6523  1005
                6524  4001
                6525  0404
                6526  2205
                6527  2323
                6530  4023
                6531  0514
                6532  0503
                6533  2411
                6534  1716
                6535  0000
 3345           6536  4775'           JMS     IN12
 3346           6537  1774'           TAD     FIRST
 3347           6540  3364            DCA     SR5A
 3348           6541  1773'           TAD     SECOND
 3349           6542  3365            DCA     SR5B
 3350           6543  4772'           JMS     RESDF
 3351           6544  1364    LOOP5A, TAD     SR5A
 3352           6545  3365            DCA     SR5C
 3353           6546  4504    LOOP5B, GETSR
 3354           6547  3766            DCA I   SR5C
 3355           6550  1766            TAD I   SR5C
 3356           6551  3766            DCA I   SR5C
 3357           6552  1366            TAD     SR5C
 3358           6553  7041            CIA
 3359           6554  1365            TAD     SR5B
 3360           6555  7650            SNA CLA
 3361           6556  5344            JMP     LOOP5A          /START AGAIN WITH FIRST ADDRESS
 3362           6557  2366            ISZ     SR5C
 3363           6560  5346            JMP     LOOP5B          /DO NEXT ADDRESS
 3364
 3365           6561  4505            CBCAL
 3366           6562  7402            HLT                     /HALT RESULTED FROM ILLEGAL LIMITS
 3367           6563  5700            JMP     LOOP5
 3368           6564  0000    SR5A,   0                       /FIRST ADDRESS OF GROUP
 3369           6565  0000    SR5B,   0                       /LAST ADDRESS OF GROUP
 3370           6566  0000    SR5C,   0                       /ADDRESS COUNTER
 3371
 3372           6572  6676
 3373           6573  6332
 3374           6574  6331
```

```
3375  6575  6245
3376  6576  2240
3377  6577  6664
            6600    *6600                   /CB/
3378
3379  6600  4264    LOOP4,  JMS     SAVDF
3380  6601  1076            TAD     NOTTY           /GET TTY STATUS
3381  6602  7710            SPA     CLA             /IS THERE ONE ON THE SYSTEM
3382  6603  5253            JMP     LOOP4A-4        /NO-ABORT MESSAGE AND HALT FOR INFO
3383  6604  4777'           JMS     MES
3384  6605  4543            TEXT    "%^LOOP DATA IN THE SR ON THE INPUT ADDRESS"
      6606  1417
      6607  1720
      6610  4004
      6611  0124
      6612  0140
      6613  1116
      6614  4024
      6615  1005
      6616  4023
      6617  2240
      6620  1716
      6621  4024
      6622  1005
      6623  4011
      6624  1620
      6625  2524
      6626  4001
      6627  ( 34
      6630  1209
      6631  2323
      6632  0000
3385  6633  4777'           JMS     MES
3386  6634  4543            TEXT    "^^SET SR TO ADDRESS & CONT'
      6635  2305
      6636  2440
      6637  2322
      6640  4024
      6641  1740
      6642  0.04
      6643  0422
      6644  0523
      6645  2340
      6646  4640
      6647  0317
      6650  1624
      6651  0000
3387
3388  6652  4505            CBCAL
3389  6653  7402            HLT
3390  6654  4504            GETSR
3391  6655  3263            DCA     SR4
3392  6656  4278            JMS     RESDF           /RESTORE DATA FIELD TO NEW
3393  6657  4504    LOOP4A, GETSR
3394  6660  3663            DCA I   SR4
```



```
3395  6661  1663            TAD I   SR4
3396  6662  5257            JMP     LOOP4A
3397  6663  0000    SR4,    0
3398  6664  0000    SAVDF,  0
3399  6665  7200            CLA
3400  6666  6214            RDF
3401  6667  3275            DCA     SAVE
3402  6670  6...            RIF
3403  6671  ..76            TAD     [6201
3404  6672  3273            DCA     .+1
3405  6673  6201            CDF     00              /PROGRAM DF
3406  6674  5664            JMP I   SAVDF
3407  6675  0000    SAVE,   0
3408
3409  6676  0000    RESDF,  0
3410  6677  1275            TAD     SAVE
3411  6700  ..76            TAD     [6201
3412  6701  3302            DCA     .+1
3413  6702  6201            CDF     00              /LOOP DF
3414  6703  5676            JMP I   RESDF
3415                  /
3416  6777  2240
            7000    PAGE
3417        7000    CBSA=.
3418
3419                  /
3420                  /       C O N S O L E   P A C K A G E
3421                  /
3422                  /
3423                  /IF ENTERED WITH AC=0000 THE SWITCH REGISTER
3424                  /MODIFICATION ROUTINE IS ENTERED AUTOMATICALLY.
3425                  /IF ENTERED WITH AC NOT EQUAL TO 0000, THE
3426                  /KEYBOARD INPUT DECODER IS ENTERED AND IT IS ASSUMED
3427                  /THAT THE AC CONTAINS THE ASCII CODE TO BE
3428                  /CHECKED FOR A VALID CONTROL CHARACTER.
3429                  /
3430                  /
3431                  /
3432        0205      RSTART=PATA
3433        0000      OFFSET=0
3434                  /
3435                  /
3436        7200      *7200
3437                  /
3438  7200  0000    CBTEMP, 0               /TEMPORARY WORK AREA
3439  7201  6203    CBCDI,  CIF CDF         /USED TO CREATE CDI TO PROGRAM FIELD
3440  7202  6201    CBCDF,  CDF             /USED TO CREATE CDF TO CONSOLE FIELD
3441  7203  0000    CBSWR,  0               /SWITCH REGISTER SAVE AREA
3442  7204  0000    CBMODE, 0               /PRINT MODE SWITCH
3443  7205  0000    CBCNT:  0               /USED AS COUNTER
```

```
3444  7206  7775  C8M3,   -3              /CONSTANT
3445  7207  7774  C6M4,   -4              /CONSTANT
3446  7210  7773  C2M5,   -5              /CONSTANT
3447  7211  7770  C5M10,  -10             /CONSTANT
3448  7212  7520  C8M250, -250            /CONSTANT
3449  7213  0007  C8A7,    0007           /CONSTANT
3450  7214  0240  C8A240,  0240           /CONSTANT
3451  7215  0260  C8A260,  0260           /CONSTANT
3452  7216  0275  C6A275,  0275           /CONSTANT
3453  7217  0277  C6A277,  0277           /CONSTANT
3454  7220  0322  C8A322,  0322           /CONSTANT
3455  7221  0323  C6A323,  0323           /CONSTANT
3456                /
3457                /
3458  7222  0000  C8ENTR,  0
3459  7223  3200          DCA     C8TEMP          /SAVE AC
3460  7224  6214          RDF                     /READ PROGRAM FIELD
3461  7225  1201          TAD     C8CDI           /ADD CDI INSTRUCTION
3462  7226  3205          DCA     C8CNTR          /SAVE CDI TO PROGRAM FIELD TEMPORARILY
3463  7227  6224          RIF                     /READ CONSOLE FIELD
3464  7230  1202          TAD     C3CDF           /ADD CDF INSTRUCTION
```



```
3465  7231  3241          DCA     C8FLD           /SAVE CDF TO CONSOLE FIELD
3466  7232  1777          TAD I   121             /GET MQA1 FROM PROGRAM FIELD
3467  7233  7710          SPA CLA                 /SKIP IF USING PSEUDO SWR
3468  7234  7614          LAS     SNP             /GET HARDWARE SWR AND SKIP
3469  7235  1776          TAD I   120             /GET PSEUDO SWR
3470  7236  3203          DCA     C8SWR           /SAVE SWITCH REGISTER
3471  7237  1775          TAD I   11MMODE         /GET MESSAGE ACTIVE FLAG
3472  7240  3204          DCA     C8MODE          /SAVE MESSAGE ACTIVE FLAG
3473  7241  7402  C8FLD,  HLT                     /MODIFIED CDF TO CONSOLE DATA FIELD
3474  7242  1222          TAD     C8ENTR          /GET RETURN ADDRESS
3475  7243  3774'         DCA     C8RTN           /SAVE FOR EXIT
3476  7244  1205          TAD     C8CNTR          /GET CDI TO PROGRAM FIELD
3477  7245  3773'         DCA     C8PFLD          /SAVE CDI TO PROGRAM FIELD FOR EXIT
3478  7246  1200          TAD     C8TEMP          /GET AC UPON ENTRY
3479  7247  7440          SZA                     /SKIP IF IT WAS ZERO
3480  7250  5772'         JMP     C8CNTL          /AC NOT ZERO, GO CHECK CTRL CHAR
3481                /
3482                /PRINT OUT SR=XXXX WHERE XXXX IS THE CURRENT CONTENTS
3483                /OF THE SWITCH REGISTER BEING USED (EITHER PSEUDO OR HARDWARE)
3484                /
3485  7251  4771'  C8PSW,  JMS     C8CRLF          /DO A <CR> AND <LF>
3486  7252  1221          TAD     C8A323          /GET ASCII CODE FOR "S"
3487  7253  4770'         JMS     C8TYP           /PRINT "S"
3488  7254  1220          TAD     C8A322          /GET ASCII CODE FOR "R"
3489  7255  4770'         JMS     C8TYP           /PRINT "R"
3490  7256  1216          TAD     C8A275          /GET ASCII CODE FOR "="
3491  7257  4770'         JMS     C8TYP           /PRINT "="
3492  7260  1207          TAD     C8M4            /AC=-4
3493  7261  3205          DCA     C8CNTR          /SET UP OCTAL DIGIT COUNTER
3494  7262  1203          TAD     C8SWR           /GET SWITCH REGISTER
3495  7263  7004          RAL                     /EXTRA ROTATE FOR LINK
3496  7264  7004  C8LOOP, RAL
3497  7265  7006          RTL                     /ROTATE OCTAL DIGITS FOR PRINTING
3498  7266  3203          DCA     C8SWR           /SAVE ROTATED SWR
```

```
3499  7267  1203          TAD     C8SWR           /GET ROTATED SWR
3500  7270  0213          AND     C8K7            /MASK OFF DIGIT TO PRINT
3501  7271  1215          TAD     C8K260          /ADD ASCII BASE CODE
3502  7272  4770'         JMS     C8TYP           /PRINT AN OCTAL DIGIT
3503  7273  1203          TAD     C8SWR           /GET SWR
3504  7274  2205          ISZ     C8CNTR          /INCREMENT LOOP COUNTER
3505  7275  5264          JMP     C8LOPA          /GO PRINT NEXT DIGIT
3506                      /
3507                      /ACCEPT KEYBOARD INPUT OF OCTAL DIGITS, <CR>, <LF>
3508                      /CTRL/C OR CTRL/G.  ALL OTHER CHARACTERS ARE INVALID
3509                      /AND WILL BE ECHOED, FOLLOWED BY A "?".
3510                      /A CARRIAGE RETURN, LINE FEED, AND A RESTART OF
3511                      /THE SR=XXXX ROUTINE
3512                      /
3513
3514  7276  7300          CLA CLL
3515  7277  1210          TAD     C8K5            /AC=-5
3516  7300  3205          DCA     C8CNTR          /SET UP TO ACCEPT 5 CHARACTERS
3517  7301  3767'         DCA     C8BLD           /CLEAR SWITCH REG. BUILD AREA
3518  7302  3.66'         DCA     C8FLG           /CLEAR SWR CHANGE SWITCH
3519  7303  1214          TAD     C8K240          /GET ASCII CODE FOR SPACE
3520  7304  4770'         JMS     C8TYP           /SPACE OVER ONE POSITION
3521  7305  4765\ C8CRLP, JMS     C8TTY           /GO WAIT FOR KEYBOARD INPUT
3522  7306  3200          DCA     C8TEMP          /SAVE INPUT CHARACTER
3523  7307  1200          TAD     C8TEMP          /GET CHARACTER
3524  7310  1564          TAD     (-203
3525  7311  7490          SNA                     /SKIP IF NOT CTRL/C
3526  7312  5763'         JMP     C8CTLC          /GO TO CTRL/C ROUTINE
3527  7313  1207          TAD     C8M4            /AC=-4
3528  7314  7450          SNA                     /SKIP IF NOT CTRL/G
3529  7315  5762'         JMP     C8CTLG          /GO TO CTRL/G ROUTINE
3530  7316  1206          TAD     C8M3            /SUBTRACT 3
3531  7317  7450          SNA                     /SKIP IF NOT LINE FEED
3532  7320  5761'         JMP     C8EXT1          /GO TO LINE FEED EXIT
3533  7321  1206          TAD     C8M3            /SUBTRACT 3
3534  7322  7650          SNA CLA                 /SKIP IF NOT CARRIAGE RETURN
3535  7323  5760'         JMP     C8EXT2          /GO TO CARRIAGE RETURN EXIT
3536  7324  1200          TAD     C8TEMP          /GET CHARACTER
3537  7325  4770'         JMS     C8TYP           /ECHO IT
3538  7326  1200          TAD     C8TEMP          /GET CHARACTER
3539  7327  1212          TAD     C8K260          
3540  7330  7510          SPA                     /SKIP IF >= TO ASCII CODE FOR ZERO
3541  7331  5351          JMP     C8ERR           /INVALID CHARACTER  NOT OCTAL DIGIT
3542  7332  1211          TAD     C8K10           
3543  7333  7700          SMA CLA                 /SKIP IF <= ASCII CODE FOR SEVEN
3544  7334  5351          JMP     C8ERR           /INVALID CHARACTER  NOT OCTAL DIGIT
3545  7335  7240          STA                     /AC=7777
```



```
3546  7336  3766'         DCA     C8FLG           /SET SWR CHANGE FLAG
3547  7337  1200          TAD     C8TEMP          /GET CHARACTER
3548  7340  0213          AND     C8K7            /MASK TO 3 BITS
3549  7341  3200          DCA     C8TEMP          /SAVE OCTAL DIGIT
3550  7342  1767'         TAD     C8BLD           /GET SWR BUILD AREA CONTENTS
3551  7343  7108          CLL RTL
3552  7344  7004          RAL                     /ROTATE TO BUILD SWR
3553  7345  1200          TAD     C8TEMP          /ADD NEXT OCTAL DIGIT
3554  7346  3767'         DCA     C8BLD           /SAVE NEW SWR
3555  7347  2205          ISZ     C8CNTR          /INCREMENT OCTAL DIGIT COUNTER
3556  7350  5305          JMP     C8SRLP          /CONTINUE ACCEPTING OCTAL DIGITS
3557                      /
3558  7351  7300 C8ERR,  CLA CLL
3559  7352  1217          TAD     C8K277          /GET ASCII CODE FOR "?"
3560  7353  4770'         JMS     C8TYP           /PRINT "?"
3561  7354  4771'         JMS     C8CRLF          /DO A <CR> AND <LF>
3562  7355  5281          JMP     C8PSW           /GO START OVER
3563                      /
3564                      /
3565  7360  7536
3566  7361  7525
3567  7362  7457
3568  7363  7485
3569  7364  7575
3570  7365  7510
3571  7366  7703
3572  7367  7480
3573  7370  7476
3574  7371  7517
3575  7372  7420
3576  7373  7537
3577  7374  7402
3578  7375  0023
3579  7376  0020
3580  7377  0121
                  7400  PAGE
3581                      /
3582  7400  0000 C8BLD,  0                       /SWITCH REGISTER BUILD AREA
3583  7401  0205 C8STRT, RSTART                 /ADDRESS OF START OF PROGRAM
3584  7402  0000 C8RTN,  0                       /STORAGE FOR RETURN ADDRESS
3585  7403  0000 C8FLG,  0                       /SWR CHANGE SWITCH
3586  7404  0000 C8SFLG, 0                       /CTRL/S ACTIVE FLAG
3587  7405  0177 C8K177, 0177                    /CONSTANT
3588  7406  0200 C8K200, 0200                    /CONSTANT
3589  7407  0377 C8K377, 0377                    /CONSTANT
3590  7410  7740 C8M40,  -40                     /CONSTANT
3591  7411  0100 C8K100, 0100                    /CONSTANT
3592  7412  0215 C8K215, 0215                    /CONSTANT
3593  7413    12 C8K212, 0212                    /CONSTANT
3594  7414  0203 C8K203, 0203                    /CONSTANT
3595  7415  0207 C8K207, 0207                    /CONSTANT
3596  7416  0338 C8K338, 0338                    /CONSTANT
3597  7417  7600 C8K600, 7600
3598                      /
3599                      /       C O N T R O L   C H A R A C T E R
```

```
                        /
                        /       D E C O D E   R O U T I N E
                        /
7420  1377  C8CNTL, TAD     (-203
7421  7450          SNA                     /SKIP IF NOT CTRL/C
7422  5265          JMP     C8CTLC          /CTRL/C TYPED  EXIT TO MONITOR
7423  1376          TAD     (-4
7424  7450          SNA                     /SKIP IF NOT CTRL/G
7425  5257          JMP     C8CTLG          /CTRL/G TYPED  GO PRINT "*G"
7426  1375          TAD     (-12
7427  7450          SNA                     /SKIP IF NOT CTRL/Q
7430  5255          JMP     C8CTLQ          /CTRL/Q TYPED
7431  1374          TAD     (-2
7432  7450          SNA                     /SKIP IF NOT CTRL/S
7433  5237          JMP     C8CTLS          /CTRL/S TYPED
7434  3773'         DCA     C8MODE          /SET MESSAGE ACTIVE FLAG
7435  2204          ISZ     C8SFLG          /TEST CTRL/S ACTIVE FLAG
7436  5273          JMP     C8ECHO          /GO ECHO CHARACTER AND RETURN TO PROGRAM
                        /
                        /CTRL/S HANDLER
                        /
7437  7240  C8CTLS, STA                     /AC=7777
7440  3204          DCA     C8SFLG          /SET CTRL/S ACTIVE FLAG
7441  1773'         TAD     C8MODE          /GET MESSAGE ACTIVE FLAG
7442  7650          SNA CLA                 /SKIP IF CTRL/S TYPED WHILE MESSAGE ACTIVE
7443  5337          JMP     C8PFLD          /RETURN TO PROGRAM
                        /
7444  7240  C8WAIT, STA
7445  3204          DCA     C8SFLG          /SET CONTROL S ACTIVE INDICATOR
7446  4310          JMS     C8TTY           /WAIT FOR KEYBOARD INPUT
7447  1377          TAD     (-203
7450  7450          SNA                     /SKIP IF NOT CTRL/C
7451  5265          JMP     C8CTLC          /CTRL/C TYPED  EXIT TO MONITOR
7452  1372          TAD     (-16
7453  7640          SZA CLA                 /SKIP IF CTRL/Q
7454  5244          JMP     C8WAIT          /NOT CTRL/C OR CTRL/Q  CONTINUE WAITING
7455  3204  C8CTLQ, DCA     C8SFLG          /CLEAR CTRL/S ACTIVE FLAG
7456  5337          JMP     C8PFLD          /RETURN TO MAIN PROGRAM
                        /
                        /CONTROL G HANDLER
                        /
7457  4317  C8CTLG, JMS     C8CRLF          /DO A <CR> AND <LF>
7460  1216          TAD     C8K336          /GET ASCII CODE FOR UP ARROW
7461  4276          JMS     C8TYP           /PRINT UP ARROW
7462  1215          TAD     C8K307          /GET ASCII CODE FOR "G"
7463  4276          JMS     C8TYP           /PRINT "G"
7464  5771'         JMP     C8PSW           /GO TO "SR=XXXX" ROUTINE
                        /
                        /CONTROL C HANDLER
                        /
7465  3204  C8CTLC, DCA     C8SFLG
7466  1216          TAD     C8K336          /GET ASCII CODE FOR UP ARROW
7467  4276          JMS     C8TYP           /PRINT UP ARROW
7470  1214          TAD     C8K303          /GET ASCII CODE FOR "C"
7471  4276          JMS     C8TYP           /PRINT "C"
```



```
7472  5770'         JMP     C8RM            /RESTORE MONITOR AND EXIT
                        /
7473  1767'  C8ECHO, TAD     C8TEMP          /GET CHARACTER
7474  4276          JMS     C8TYP           /ECHO IT
7475  5337          JMP     C8PFLD          /RETURN TO PROGRAM
                        /
                        /
                        /
                        /
                        /PRINT ONE CHARACTER
                        /
0000  C8TYP,  0
7477  2204          ISZ     C8SFLG          /TEST CTRL/S ACTIVE FLAG
7500  7410          SKP                     /SKIP IF CTRL/S NOT ACTIVE
7501  5244          JMP     C8WAIT          /GO WAIT FOR CTRL/Q OR CTRL/C
7502  6046          TLS                     /TRANSMIT CHARACTER
7503  6041          TSF                     /TEST TTY FLAG
7504  5303          JMP     .-1             /WAIT FOR TTY FLAG
7505  6042          TCF                     /CLEAR TTY FLAG
7506  7200          CLA                     /CLEAR AC DO NOT CLEAR LINK
                        /
7507  5676          JMP I   C8TYP           /RETURN
                        /
                        /WAIT FOR KEYBOARD INPUT THEN EXIT WITH ASCII CODE IN AC
                        /
0000  C8TTY,  0
7511  6031          KSF                     /SKIP IF KEYBOARD FLAG SET
7512  5311          JMP     .-1             /WAIT FOR KEYBOARD INPUT
7513  6036          KRB                     /READ KEYBOARD BUFFER  CLEAR FLAG
7514  0205          AND     C8K177          /MASK TO 7 BITS
7515  1206          TAD     C8K200          /SET BIT 4
7516  5710          JMP I   C8TTY           /RETURN
                        /
                        /EXECUTE A CARRIAGE RETURN AND LINE FEED
                        /
0000  C8CRLF, 0
7520  1212          TAD     C8K215          /GET ASCII CODE FOR CARRIAGE RETURN
7521  4276          JMS     C8TYP           /GO EXECUTE THE CARRIAGE RETURN
7522  1213          TAD     C8K212          /GET ASCII CODE FOR LINE FEED
7523  4276          JMS     C8TYP           /GO EXECUTE THE LINE FEED
7524  5717          JMP I   C8CRLF          /RETURN
                        /
                        /CONSOLE PACKAGE EXIT IF TERMINATED WITH LINE FEED
                        /
7525  4317  C8EXT1, JMS     C8CRLF          /DO A <CR> AND <LF>
7526  1037          TAD     C8PFLD          /GET MODIFIED CDI TO PROGRAM FIELD
7527  3330          DCA     .+1             /SAVE FOR EXECUTION
7530  7402          HLT                     /MODIFIED CDI TO PROGRAM FIELD
7531  2203          ISZ     C8FLG           /TEST SWR CHANGE FLAG
7532  5601          JMP I   C8STRT          /RESTART PROGRAM WITHOUT CHANGE OF SWR
```

```
3705   7533  1200          TAD     C8ELD           /GET NEW SWITCH REGISTER
3706   7534  3766          DCA I   I20             /SAVE IT IN PROGRAM FIELD
3707   7535  5601          JMP I   C8STRT          /RESTART PROGRAM WITH NEW PSEUDO SWR
3708                 /
3709                 /EXIT FROM CONSOLE PACKAGE IF TERMINATED WITH CARRIAGE RETURN
3710                 /
3711   7536  4017  C8EXT2, JMS     C8CRLF          /DO A <CR> AND <LF>
3712   7537  7402  C8PFLD, HLT                     /MODIFIED CIF TO PROGRAM FIELD
3713   7540  7300          CLA CLL                 /CLEAR AC AND LINK FOR RETURN
3714   7541  2203          ISZ     C8FLG           /TEST SWR CHANGE FLAG
3715   7542  5602          JMP I   C8RTN           /RETURN TO PROGRAM WITHOUT CHANGE OF SWR
3716   7543  1200          TAD     C8ELD           /GET NEW SWITCH REGISTER
3717   7544  3766          DCA I   I20             /SAVE IT IN PROGRAM FIELD
3718   7545  5602          JMP I   C8RTN           /RETURN TO PROGRAM
3719                 /
3720                 /
3721                 /
3722   7546  0020
3723   7547  7200
3724   7550  6080
3725   7551  7251
3726   7552  7762
3727   7553  7204
3728   7554  7776
3729   7555  7766
3730   7556  7774
3731   7557  7575
             7600          PAGE
3732                 /
3733                 $$$
3734   0123  6203
3735   0124  6000
3736   0125  7770
3737   0126  7720
3738   0127  0100
3739   0130  7650
3740   0131  0200
3741   0132  7560
3742   0133  0400
3743   0134  7360
3744   0135  4000
3745   0136  0007
3746   0137  0123
3747   0140  0035
3748   0141  4513
3749   0142  0240
3750   0143  0245
3751   0144  0175
3752   0145  1176
3753   0146  0212
3754   0147  7775
3755   0150  0340
3756   0151  0207
3757   0152  7744
3758   0153  6060
```



```
3759   0154  0707
3760   0155  0077
3761   0156  0261
3762   0157  0262
3763   0160  0263
3764   0161  0264
3765   0162  0265
3766   0163  0266
3767   0164  0267
3768   0165  7777
3769   0166  7700
3770   0167  0260
3771   0170  0020
3772   0171  0040
3773   0172  7774
3774   0173  7740
3775   0174  5252
3776   0175  2525
3777   0176  6201
3778   0177  4246
```

```
0000  11111110  00000000  11111111  11111111  11111111  11111111  11111111  11111111
0100  11111111  11000000  00011111  11111111  11111111  11111111  11111111  11111111

0200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0300  11111111  11111111  11111111  11111111  11111111  11111000  00111111  11111111

0400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0500  11111111  11111111  11111111  11111111  11000000  00000000  00000000  01111111

0600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0700  11111111  11111111  11111111  11111111  11111111  00000000  01111111  11111111

1000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1100  11111111  11111111  11111111  11111111  11110000  00000000  00000000  11111111

1200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1300  11111111  11111111  11111111  11111111  11111111  11111111  11111111  01111111

1400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1500  11111111  11111111  11111111  11111111  11111111  11111111  11110000  01111111

1600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1700  11111111  11111111  11111111  11111111  11111111  11111110  00000111  11111111

2000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2100  11111111  11111111  11111111  11111111  11110000  00000000  00000001  11111111

2200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2300  11111111  11111111  11111111  11111111  11111111  11111110  00000011  11111111

2400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2500  11111111  11111111  11111111  11111111  11111111  11111111  11000000  11111111

2600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2700  11111111  11111111  11111111  11111111  11111100  01111111  11111111  11111111

3000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
3100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  01111111

3200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
3300  11111111  11111111  11111111  11111111  11111111  11111111  11000000  00000111

3400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
3500  11111111  11111111  111 111  11111111  11111111  11111111  11100000  00000001

3600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
3700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111000
```



```
4000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

4200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4300  11111111  11111111  11111111  11111111  11111111  11101111  11111111  11111111

4400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4500  11111111  11111111  11111111  00111111  11111111  11111111  11111111  11111111

4600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4700  11111111  11111111  11111111  11111111  11111111  11111100  00000001  11111111

5000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
5100  11111111  11111111  11111111  11111111  11111111  11111111  11111100  11111111

5200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
5300  11111111  11111111  11111111  11111111  11111111  11111111  11111110  00000111

5400  11111111  11111111  11111111  11111111  11111111  11111110  00000000  00000000
5500  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00001111

5600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
5700  11111111  11111111  11111111  11111111  11111100  00000000  00000000  01111111

6000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
6100  11111111  11111111  11100000  00000000  00000000  00000000  00000000  00111111

6200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
6300  11111111  11111111  11111111  11100000  00000000  00000000  00000000  00000111

6400  11111111  11111111  11111111  11111111  11111111  11111111  11111000  00000000
6500  11111111  11111111  11111111  11111111  11111111  11111111  11111110  00111111

6600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
6700  11110000  0000 00  00000000  00000000  00000000  00000000  00000000  00000001

7000
7100

7200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
7300  11111111  11111111  11111111  11111111  11111111  11111100  11111111  11111111

7400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
7500  11111111  11111111  11111111  11111111  11111100  00000000  00000011  11111111

7600
7700
```

A	0065	C8[illegible]	4431	C8SA	7001	FCNT	0060
A1	4335	C8TSTP	7417	C8SFLG	7404	FIRST	6331
A10	4346	C8WLD	7460	C8SM	6036	FIVE	9100
A11	4347	C8CAL	4505	C8SM0	6051	FLDCNT	2346
A12	4350	C8CDF	7202	C8SM1	6047	FLDDAT	9067
A13	4351	C8CDI	7201	C8SRLP	7305	FLDINC	5361
A14	4515	C8CNTL	7420	C8STAT	7401	FLDSEL	2102
A15	4516	C8CNTR	7235	C8SWR	7203	FS	0040
A16	4517	C8CRLF	7517	C8TEMP	7230	FS1	0041
A17	4520	C8CTLC	7465	C8TTY	7515	FS2	0042
A18	4521	C8CTLG	7457	C8TYP	7476	FS3	0043
A19	4522	C8CTLO	7455	C8WAIT	7444	FSEND	1707
A2	4336	C8CTLS	7437	CAF	6007	FSSET	1615
A20	4523	C8ECHO	7473	CDI	6201	GDATA	0072
A21	4524	C8ENTR	7232	CFP	2050	GERRC	1454
A22	4525	C8ERR	7251	CFP0	2012	GETSR	4504
A23	4526	C8EXT1	7525	CFP1	2043	GTF	6004
A24	4527	C8EXT2	7536	CFP2	2046	HCW1	0021
A3	4337	C8FLD	7241	CFP3	2057	HCW2	0022
A4	4340	C8FLG	7403	CFP4	2067	HEAD1	0055
A5	4341	C8K100	7411	CFPTMP	2101	IAPTER	0005
A6	4342	C8K177	7405	CHECK	2077	IAPTOK	0006
A7	4343	C8K200	7406	CHECKO	2100	ILEGAL	1514
A8	4344	C8K212	7413	CMRTMP	4756	IN12	6245
A9	4345	C8K215	7412	CMP	6104	IN12A	6274
ACL	7701	C8K240	7214	CNV	2222	INVODE	0023
ADDCNT	5363	C8K250	7215	CODERR	2436	INSAME	0564
ADDER	2756	C8K275	7216	COUNT	0053	INTR	4256
ADDINC	5160	C8K277	7217	CRELQ	0030	INTROU	4246
APTCTX	5671	C8K300	7414	CS	0036	K104	5165
APTCTY	5672	C8K307	7415	CSAME	0463	K400	4745
APTEOB	5517	C8K322	7220	CSR03	1607	KBINT	1346
APTER	5600	C8K323	7221	CUF	6254	KBINTC	1364
APTERI	5621	C8K336	7416	DATTMP	5116	KMBREL	0404
APTEX	5651	C8K7	7213	DFEIF	0057	KT8A	0001
APTFL	5704	C8K77	7407	EMMFLG	0026	KT8REL	0434
APTIZ	5622	C8LCC	4744	ENDF	0063	KTEST	0552
APTLUP	5712	C8LOPA	7264	ENDNLT	4502	LEGAL	1470
APTMOV	5737	C8M10	7211	ENDWES	5451	LEGAL0	0065
APTOK	5652	C8M250	7212	ENDPAS	5420	LEGALA	1540
APTOK0	5674	C8M3	7208	ERRA	1400	LGLFLD	1551
APTOK1	5673	C8M4	7207	ERRA1	1411	LIMIT	2476
B	0067	C8M40	7410	ERRB	1426	LOOP1	6000
BADINT	3200	C8M5	7210	ERRB1	1437	LOOP1A	6024
BANK	0024	C8MODE	7204	ERRC	1600	LOOP2	6200
BANK0	1674	C8FFLG	7537	ERRCC	1707	LOOP2A	6236
BANK0A	1702	C8PSW	7201	ERRHD	1411	LOOP3	6400
BANKR	5162	C8FM	6060	ERRM	2503	LOOP3A	6442
BDATA	0073	C8RM0	6107	ERRMM	2645	LOOP3B	6444
BINTC	3227	C8RM01	6076	ERROR0	2468	LOOP4	6600
BSW	7002	C8RM1	6120	ERROR1	2461	LOOP4A	6657
C80000	4400	C8RTN	7402	ERRTAB	4843	LOOP5	6500

LOOP5A	6544	PNTOPT	1726	SETPAR	5000	ST55	3262
LOOP5B	6546	PREL	4194	SETREL	0400	SUF	6274
LRR	6240	PRINT	4503	SETRS	4537	SWP	7521
LUSR	6260	PROFLD	0051	SETSW	4071	T0	3000
LXM	6200	PSR	0020	SFSC	3277	T07	3020
M0	2313	QQ	5114	SFS1	3317	T0UPD	0661
M0UPD	5232	RACA	4510	SFS2	3346	T1	3010
M1UPD	5210	RACB	4511	SFS3	3412	T1UPD	0700
MEMLOD	5124	RBELL	2413	SFS4	3432	T25	3050
MES	2240	RDA2	1219	SFS5	3452	T52	3064
MINS	0101	RDAC	1215	SFS6	3472	T70	3034
MOSERR	5415	RDB2	1263	SFS7	3512	TCS	0503
MOSFLD	5227	RDBC	1270	SFSTAB	3352	TEMP	0056
MOSLCD	5214	RDFLD	1200	SIXTY	2230	TESBNK	2314
MOSRED	5245	RDFLDA	1213	SKON	6030	TEST	0600
MOSTST	5200	RDFLDB	1768	SMP	6101	TESTO	0653
MOVE	0054	READ	1327	SMQ	0076	TEST1	0670
MOVFAL	5740	RESFLD	5264	SPFLD	1714	TEST8	1000
MQL	7521	RESLUP	5257	SPO	6107	TFS	0737
MTP	2311	RELCNT	0061	SR	6035	TFS0	3600
NOEMB	1523	RELO	4230	SRC0	0026	TFS1	3607
NOEMM	0732	RELO2	4225	SRC1	0027	TFS2	3617
NOFLD	4600	RELO3	4227	SRC2	0030	TFS3	3627
NOTAFT	5634	RELO4	4232	SRC3	0031	TFS4	3640
NOTTY	0376	RELOS	4244	SRC4	0032	TFS5	3651
NUFLD	0707	REM	6239	SRC5	0033	TFS6	3662
NUMFLD	0077	RESDF	6576	SR4	6663	TFS7	3672
OFFSET	0000	RESINT	4552	SR5A	6564	TFSTAB	0740
OPT	1741	RETURN	2405	SR5B	6565	TITLE	4043
P2	0070	RRR	6250	SR5C	6566	TMAR	2347
PAR	4207	RS	0044	SR6B	0034	TN	2735
PARERR	3154	RS1	0045	SR911	0035	TOSEL	1105
PARINT	3100	RS2	0046	SRL	6462	TOSEL1	1136
PARQRC	2657	RS3	0047	SRL1	6463	TRS	0472
PASSES	5455	RSTART	0200	SRL2	6464	TRS0	3703
PAT1	5365	RTEYP	5163	SRS	4653	TRS1	3712
PAT2	5366	RTEYP1	5161	SRS0	3307	TRS2	3722
PATA	0209	RTF	5205	SRS1	3327	TRS3	3732
PATCNT	5364	S0	2235	SRS2	3400	TRS4	3743
PATERR	3731	S1	2236	SRS3	3422	TRS5	3754
PATM	0261	S2	2237	SRS4	3442	TRS6	3765
PATMO	0264	SAC	0074	SRS5	3462	TRS7	4000
PATN	0270	SAVE	1800	SRS6	3502	TRSTAB	0473
PATNO	0273	SAVDF	6654	SRS7	3522	TS	0037
PATO	0301	SAVE	6075	START	0324	TSNUM	3155
PATOO	0314	SAVINT	4200	STARTF	0060	TSTAD	0057
PERIC	2625	SCS1	3233	STCP	2467	TSTCNT	5362
PERRCO	2677	SCS2	3272	STSC	3233	TSTFLD	0052
PERRM	2615	SECOND	6232	STS1	3234	TTS	3532
PINF	5644	SETERR	4610	STS2	3244	TTSO	3544
PNOREL	4115	SETFLD	5729	STS3	3250	TTYCHK	3558
PNTFLD	4654	SETFS	4606	STS4	3256	TYPCH	2256

```
TYPE    5025
TYPOFF  5041
TYPSP   2400
W4      0071
WRA     1041
WRA1    1059
WRB     1063
WRB1    1072
WRFLD   1005
XCOCAL  4723
XENDML  0341
XGETSR  4747
XPRINT  5400
XRACA   5117
XRACB   5142
XSETFS  0522
XSETRS  0532
YY      5115
Z1      2644
Z10     2536
Z11     2537
Z2      2645
Z20     3131
Z21     3145
Z3      2651
Z4      2654
Z8      4150
```

ERRORS DETECTED: 0

LINKS GENERATED: 349

RUN-TIME: 8 SECONDS

3K CORE USED


```
A        132#   477    482    489    493    499    506    668    761    771    781    885    887    889
          894    898    901
A1      2389   2397#  2469
A10     2387   2406#  2487
A11     2389   2407#  2489
A12     2391   2408#  2491
A13     2393   2409#  2493
A14     2436   2495   2519#
A15     2438   2497   2520#
A16     2440   2499   2521#
A17     2442   2501   2522#
A18     2444   2503   2523#
A19     2446   2505   2524#
A2      2371   2398#  2471
A20     2448   2507   2525#
A21     2450   2509   2526#
A22     2452   2511   2527#
A23     2454   2513   2528#
A24     2456   2515   2529#
A3      2373   2399#  2473
A4      2375   2400#  2475
A5      2377   2401#  2477
A6      2379   2402#  2479
A7      2381   2403#  2481
A8      2383   2404#  2483
A9      2385   2405#  2485
ACL       47#    58
ADDCNT  2962#
ADDER   1471   1480#  1508   1560   2437   2498   3045
ADDINC  2847   2902   2925   2927   2928   2959#
APTCTX  3100#
APTCTY  3101#
APTEOB   434#
APTER     63   3032#  3037
APTER1  3040   3041   3050#
APTEX   3063   3077#
APTFL    197   3119#  3122   3145   3150
APTIZ    289   3034   3043   3054#  3077
APTLUP  3125#  3137
APTMOV  3124   3126   3128   3129   3132   3136   3152#
APTOK     64   3085#  3099   3108   3113
APTOKO  3089   3106#
APTOKI  3093   3094   3102#
B        133#   478    484    488    494    501    508    684    808    818    828    907    909    911
          916    920    923
BADINT  1793#  1793   2341
BANK      78#   523    539    701    702    707    715    724    726   2845   2879
BANKO   1085   1100#
BANKOA  1106#
BANKR   2790   2801#
BDATA    137#   886    897    906    919   1592   1853   2092   2098
BINTC   1799   1802#
BSW       48#  1069   1299   1333   1833   1835   2098   2108   2118   2182   2192   2204   2768
```

```
C80000  2395  2432#
C80001  2459  24 .  2462#
C87800  3597#
C89LD   3517  3550  3554  3582#  3705  3716
C8CAL    154#   311  1063  1073  2380  3110  3282  3292  3365  3388
C8CDF   3430#  3464
C8CDI   3439#  3461
C8CNTL  3480  3603#
C8CNTR  3443#  3462  3476  3493  3504  3518  3555
C8CRLF  3485  3561  3641  3620#  3695  3699  3711
C8CTLC  3526  3605  3632  3650#
C8CTLG  3529  3608  3641#
C8CTLO  3611  3636#
C8CTLS  3614  3621#
C8ECHO  3617  3657#
C8ENTR  2663  3458#  3474
C8ERR   3541  3544  3558#
C8EXT1  3532  3699#
C8EXT2  3535  3711#
C8FLD   3465  3473#
C8FLG   3518  3546  3585#  3703  3714
C8K100  3591#
C8K177  3587#  3684
C8K200  3560#  3685
C8K212  3593#  3693
C8K215  3592#  3691
C8K240  3450#  3519
C8K260  3451#  3501
C8K275  3452#  3490
C8K277  3453#  3559
C8K303  3594#  3653
C8K307  3595#  3644
C8K322  3454#  3488
C8K323  3455#  3466
C8K336  3596#  3642  3651
C8K7    3449#  3500  3548
C8K77   3589#
C8LOC   2659  2663#
C8LOPA  3496#  3505
C8M10   3447#  3542
C8M260  3448#  3539
C8M3    3444#  3530  3533
C8M4    3445#  3492  3527
C8M40   3590#
C8MS    3446#  3515
C8MODE  3442#  3472  3615  3623
C8PFLD  3477  3625  3637  3659  3700  3712#
C8PSW   3485#  3562  3646
C8RM    3217#  3655
C8RM0   3220  3221  3235  3240#  3248
C8RM01  3222  3231#  3239
C8RM1   3244  3249#
C8RTN   3475  3584#  3715  3718
```



```
C8SA    3201  3225  3417#
C8SFLG  3586#  3616  3622  3628  3636  3650  3667
C8SM    3076  3194#  3211
C8SM0   3198  3205#
C8SM1   3203#  3210
C8SRLP  3521#  3556
C8STRT  3583#  3704  3707
C8SWR   3441#  3470  3494  3498  3499  3503
C8TEMP  3438#  3459  3478  3522  3523  3536  3538  3547  3549  3553  3657
C8TTY   3521  3629  3680#  3686
C8TYP   3487  3489  3491  3502  3520  3537  3560  3643  3645  3652  3654  3658  3666#  3676
        3692  3694
C8WAIT  3627#  3635  3669
CAF       52#  1802  2359
CDI       41#  2329
CFP     1092  1166#  1177  1201  1375  1378  1381  1384  1387  1390  1393  1396
CFP0    1170  1176#  1203  1219  1228
CFP1    1201#  1210  1212  1217  1220  1225
CFP2    1196  1204#
CFP3    1213#  1227
CFP4    1205  1221#
CFPTMP  1180  1184  1186  1188  1191  1197  1206  1213  1221  1231#
CHECK   1172  1173  1229#
CHECK0  1229  1230#
CHRTMP  2646  2651  2658  2665#
CMP       44#  1761  1779
CNV     1300  1304  1306#  1316  2370  2472
CODERR  1432#  1509  1581
COUNT    121#   543  1501  1562  2255  2328  2990  2996
CRELO    118#   190   205   968
CS        88#   185   424   758   805  1841  1846  2946  2948  2993
CSAME    365   397   406#
CSR03    238   254   279  1038#  1042  1043
CUF       33#
DATTMP  2733  2750  2756#
DFEIF    171   216#   223
ENDFLG    79#   182   335   572   949  1082  1139  1181  1447  2735
ENDF     129#  1061  1067  1192  1215
ENDHLT   148#   235   251   276
ENDMES  3013  3017#
ENDPAS  2302  3005#  3009  3020
ERRA     764   7 1   883#   891
ERRA1    774   852#   904
ERRB     811   831   905#   913
ERRB1    821   914#   926
ERRC     933  1560#  1586
ERRCC   1596  1639#
ERRHD   1580  2215#  2218  2221
ERRM    1499#  1505  2323
ERRMM   1517  1533#
ERROR0  1460  1462  1474#  2390  2492
ERROR1  1468  1475#  2392  2435  2494  2496
ERRTAB  2587  2604#
```

```
PATO      209     255     262#
PATCO     274#    283
PERRC     1568    1563#
PERRCO    1615    1617    1619    1627#
PERRM     1507    1510#
PINF      967     2721#
PNOREL    232     248     2250#   2253    2265
PNTFLD    1115    2616#   2625
PNTOPT    183     1135#   1139    1148
PREL      273     2270#   2273    2278
PRINT     150#    2710    2714
PROFLD    119#    230     246     263     348     349     378     379     405     672     690     791     929     996
          1029    2304    2852    2884
PSR       70#     1059    3062    3070    3074
QQ        2748    2754#
RACA      160#    380     1165    1451    2739
RACB      162#    395     576     957     1088
RBELL     1437#   1573
RDA2      750     751     753#    797
RDAC      758#    788
RDB2      752     800#    838
RDBC      805#    835
RDFLD     542     743#    798
RDFLDA    756#    837
RDFLDB    790     803#
READ      759     765     769     775     779     806     812     816     822     826     842#    856
REDFLD    2886    2895#
REDLUP    2890#   2906
RELCNT    127#    204     2297    2301
RELO      403     2293#   2328    2330
RELO2     2305    2309    2314#   2325
RELO3     2308    2312    2317#
RELO4     2310    2319#
RELO5     2313    2329#
REM       37#     179
RESDF     3160    3267    3315    3350    3392    3409#   3414
RESINT    2343    2467#   2517
RETURN    1431#   1439    1442    1463    1485    1493    1506    1534    1567    1640    1733    2388    2490
RRR       40#     1108
RS        109#    188     265     1879
RS1       110#    267
RS2       111#    271
RS3       112#    271
RSTART    3432#   3583
RTEMP     2763    2764    2775    2785    2786    2792    2799#
RTEMP1    2766    2767    2771    2774    2779    2800#
RTF       46#     2348
S0        1291    1298    1303    1317#   2372    2474
S1        1294    1301    1315    1318#   2374    2476
S2        1307    1308    1312    1319#   2376    2478
SAC       57      138#    2350
SAME      401     578     997     1028#   1033    1034
SAVDF     3174    3280    3304    3339    3379    3398#   3406
```



```
SAVE      3401    3407#   3410
SAVINT    2325    2366#   2458
SCS1      768     815     1839#   1842
SCS2      778     825     1843#   1847
SECOND    3271    3273    3295    3288#   3313    3348
SETERR    545     2583#   2597    2602
SETFLD    577#    587
SETFS     156#    1853    1869    1886    1920    1938    1955    1971    1987    2051    2059    2068    2077    2087
          2098    2106    2116
SETPAR    1072    2650#   2694    2697
SETREL    282     335#    402     406
SETRS     158#    1861    1877    1908    1928    1947    1963    1979    1995    2131    2139    2148    2157    2167
          2183    2190    2202,
SETSW     184     2237#   2240    2243
SFS0      1397    1851#   1858    1895
SFS1      1394    1827#   1874    1896
SFS2      1391    1884#   1893    1897
SFS3      1388    1898    1918#   1925
SFS4      1385    1899    1934#   1941
SFS5      1382    1900    1953#   1950
SFS6      1379    1901    1969#   1978
SFS7      1376    19..    1985#   1992
SFSTAB    1123    1895#
SIXTY     1288#   1292    1292    1293    1295    1305    1458    1466    1512    1585    1588    1591    1734    1737
          2368    2470    2746    3011
SKON      51#     2708
SKP       43#     2338
SPO       59      139#    2345
SPFLD     1093    1120#   1129
SPO       42#     2336    2350
SR        3182    3183    3185    3185    3188    3195#
SR00      80#     1482
SR01      81#     1444    1575
SR02      82#     1434    1571
SR03      93#     1040
SR04      84#     314     619     1430
SR05      85#     308
SR4       3391    3394    3398    3387#
SR5A      3347    3351    3358#
SR5B      3349    3355    3359#
SR5C      3352    3354    3355    3356    3357    3362    3370#
SR6B      88#     2621
SR911     87#     355     366     387     565     584     978     1005    1122    2586    2627
SRL       3317    3318    3320    3321    3323    3324    3329    3334#
SRL1      3312    3316    3335#
SRL2      3314    3326    3336#
SRS       2535    2588    2590    2591    2613#
SRS0      1859#   1868    2604
SRS1      1875#   1883    2605
SRS2      1906#   1915    2606
SRS3      1926#   1933    2607
SRS4      1945#   1952    2608
SRS5      1961#   1968    2609
```

```
SRS6     1977' 1984  2610
SRS7     1993# 20.?  2611
START     160   169   286#  298
STARTF    128#  1671  1194  1199  1208  1223
STOP     1446  1481#  1527  1545  1577  1613  1634  1660
STS0      479  1809#  1812
STS1      485  1813#  1816
STS2      490  1817#  1821
STS3      495  1824#  1828
STS4      502  1829#  1833
STS5      509  1834#  1837
SUF        34#
SWP        50#  2029
T0       1614  1698#  1701  2441  2502
T07      1618  1708#  1711  2445  2506
TOUPD     525   527#
T1       1616  1703#  1706  2443  2504
T1UPD     541   546#
T25      1622  1717#  1720  2449  2510
T52      1624  1722#  1725  2451  2512
T70      1620  1712#  1715  2447  2508
TCS       422#  426   427   430   431   433  1627  2451  2514
TEMP      124#  360   361   389   390   447   458   710   711   893   896   915   918  1007
          1008  1009  1010  1124  1125  1126  1127  1452  1457  1459  1465  1467  1854  1857
          1862  1865  1870  1873  1878  1882  1887  1892  1909  1914  1921  1924  1929  1932
          1937  1940  1948  1951  1955  1959  1964  1967  1972  1975  1980  1983  1988  1991
          1996  1999  2052  2060  2069  2078  2088  2097  2107  2117  2132  2140  2149  2158
          2168  2181  2191  2203  2703  2707  2740  2745  2747
TESBNK    1110  1373#  1398
TEST       233   249   274   474#  515
TEST0      480   486   491   496   503   510   520   521#  533
TEST1      531   538#  552
TEST8      550   618#
TFS        567   568   569   570   589#
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