

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 ACCOMMODATE 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

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 BE 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 COMPLETION 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 EXT D ADL. 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 EXT D 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 S₁ 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 EXT D 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				
ADDRESS	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								
	177	0	0	0	0								

EMA2L USED IF AN 8K MEMORY

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THE ABOVE REPRESENTS ONE MEMORY PLANE.

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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 RESTRICTIGNS

- 1) WHEN RUNNING THE CONSOLE PACKAGE SOME SUBTESTS MAY NOT BE EXECUTED.
- 2) THE CONSOLE PACKAGE WILL USE EITHER THE HARDWARE OR PSEUDOSWITCH REGISTER DEPENDING 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 CHARACTERS

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 CHANGE THE VALUE OF THE PSEUDO SWITCHES OR TYPE A TERMINATING CHARACTER. IN ANY EVENT ONLY THE PSEUDO SWITCH REGISTER IS CHANGED. 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 FROM WHERE IT LEFT OFF.

<LF> LINEFEED: THIS CAUSES THE PROGRAM TO RESTART THE TESTING FROM THE BEGINNING.

SR=0000 4000<CR> CARRIAGE RETURN
PROGRAM RESUMES TESTING 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

<u>BIT</u>	<u>OCTAL VALUE</u>	<u>FUNCTION WHEN 0</u>	<u>FUNCTION WHEN 1</u>
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

<u>BIT</u>	<u>OCTAL VALUE</u>	<u>FUNCTION WHEN 0</u>	<u>FUNCTION WHEN 1</u>
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 WILL 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 SRO 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 ADDRESS 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 COVER 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 C. E 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 UP TO 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 CONSISTS 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.

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/PDP-8E EXTENDED MEMORY DATA AND CHECKERBOARD TEST
/MAINDEC-88-D-WMA-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
/
/W-CRD
/
/DEFINE NPAGE
/KN JMP I (.+20087800)
/
/PDP-8E IOT COMMANDS & MICRO INSTRUCTIONS
/
/EXPANDED MODE COMMANDS USED IN THIS TEST
6204 CUF=6204
6274 SLF=6274
0001 K78A=1
8200 LAM= 8200 /LOAD EXPANDED MODE REGISTER.
8230 REZ= 8230
8280 LLSR= 8280
8240 LRR= 8240
8250 RRR= 8250
8203 CD1=8203 /CHANGE TO DF & IF 0
8107 SPO=8107 /SKIP ON PARITY OPTION
8101 SKP=8101 /SKIP IF NO PARITY ERROR
8104 CYP=8104 /CLEAR PARITY ERROR FLAG
8004 GTF=8004 /GET INTERRUPT FLAGS
8005 RTF=8005 /RESTORE INTERRUPT FLAGS
7701 ACL=7701 /LOAD MQ INTO AC
7002 BSX=7002 /SWAP BYTES IN AC
7421 UQL=7421 /LOAD MQ FROM AC THEN CLR AC
7521 SXP=7521 /SWAP AC AND MQ
8000 SKON=8000 /SKIP IF INTERRUPT ON, & TURN OFF
8007 CAF=8007 /CLEAR ALL FLAGS
0000 *0

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0000 0304 *D /INTERRUPT ADDRESS
0001 3574 DCA SAC /SAVE AC
0002 7701 ACL /SAVE MQ
0003 3075 DCA SWQ
0004 8777 JSP INTRCJ
0005 5600 IAPTR, APTER /APT/
0006 4E52 IAPTCK, APTOK /APT/
0020 *20
0020 0007 PSR, 7 /APT/
0021 4000 MC#1, 4000 /APT/
0022 0000 MC#2, 0 /APT/
0023 0000 INMODE, 0
/PAGE 0 CONSTANTS AND POINTERS
0024 0000 BANK, 0
0025 0000 ENVFLG, 0
0026 4000 SR00, 4000 /HALT AFTER ERROR
0027 2000 SR01, 2000 /INHIBIT ERROR TYPEOUT
0030 1000 SR02, 1000 /BELL ON ERROR
0031 4000 SR03, 4000 /INHIBIT PROGRAM RELOCATION
0032 2000 SR04, 2000 /CHANGE FIELD LIMITS
0033 1000 SR05, 1000 /HALT AFTER CURRENT TEST
0034 7070 SR08, 70 /STARTING FIELD (0-7)
0035 0037 SR911, 7 /ENDING FIELD (0-7)
0038 0000 CS, 0 /COMPLEMENT STATUS
/0000-0C (NO COMPLEMENT)
/0001-0B (ONE COMPLEMENT)
/0010-1F (TWO COMPLEMENTS)
/TEST STATUS
/0000-0D TEST
/BIT 0=ALL ZEROS TEST
/BIT 1=ALL ONES TEST
/BIT 2 = 0050-7777 MCP TEST
/BIT 3 = 7777-0100 MCP TEST
/BIT 4 = 2525-5252 MCP TEST
/BIT 5 = 5252-2525 MCP TEST
/BIT 6 = MARCH PATTERN
/FIELD STATUS BANK 0
/FIELD STATUS BANK 1
/FIELD STATUS BANK 2
/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 BANK 1

```

111 0046 0000 RS2, 0
112 0047 0000 RS3, 0
113
114
115
116
117
118 0050 0000 CRELO, 0
119 0051 0000 PROFLO, 0
120 0052 0000 TSTFLD 0
121 0053 0000 COUNT, 0
122 0054 0000 MOVE, 0
123 0055 0000 HEAD1, 0
124 0056 0000 TEXP, 0
125 0057 0000 TSTAD, 0
126 0060 0000 FCNT, 0
127 0061 0000 RELCNT, 0
128 0062 0000 STARTF, 0
129 0063 0000 ENDF, 0
130 0064 0000 INSAME, 0
131 0065 0000 LEGALD, 0
132 0066 0000 A, 0
133 0067 0000 B, 0
134 0070 0000 P2, 0
135 0071 0000 W4, 0
136 0072 0000 CDATA, 0
137 0073 0000 BDATA, 0
138 0074 0000 SAC, 0
139 0075 0000 SMO, 0
140 0076 0000 NOTTY, 0
141 0077 0000 NUMFLD, 0
142 0100 0000 FIVE, 0
143 0101 6570 MINS, 6570
144
145
146
147
148
149 0102 4502 ENDHLT=JMS I
150 0341 RENDHL
151 0103 5400 PRINT=JMS I
152 4504 XPRINT
153 0104 4747 GETSR=JMS I
154 4505 AGETSR
155 0105 4723 CBAL=JMS I
156 4506 KCBCAL
157 0106 0522 SETFS=JMS I
158 4507 XSETFS
159 0107 0532 SETRS=JMS I
160 4510 XSETRS
161 0110 5117 RACA=JMS I
162 4511 XRACA
163 0111 5142 RACB=JMS I
164 5142 XRACB
165 0200 *200

```

```

/RELOCATION STATUS BANK 2
/RELOCATION STATUS BANK 3
/BITS 0-7 COINCIDE WITH FIELDS
/G-7, FS IS XFERRED INTO RS.
/EACH FIELD THAT FAILS SETS THE
/EQUIVALENT BIT SO THAT PROGRAM
/WILL NOT RELOCATE TO A FAILING FIELD.
/0 = INHIBIT PROGRAM RELOCATION
/PROGRAM IN FIELD 00X0
/TESTING FIELD 00X0
/MOVE ERROR COUNTER
/MOVE ADDRESS COUNTER
/7777 MEANS TYPEOUT ERROR HEADING
/TEMP STORAGE LOCATION
/TEST ADDRESS COUNTER
/COUNT # OF FIELDS PRESENT
/END OF PASS COUNTER.
/STARTING FIELD 00X0
/ENDING FIELD 00X0
/PROGRAM IN SELECTED FIELD
/LEGAL FIELD SELECTION CONTROL
/A REG TO WRITE/READ
/B REG TO WRITE/READ
/CONTROLS 2 PAGES
/CONTROLS 4 WORDS
/GOOD DATA = DATA WRITTEN
/BAD DATA = DATA READ
/SAVE AC (INT)
/SAVE MO (INT)
/PROGRAM FLAG FOR NO TELETYPE TO ABORT PRINTOUTS
/NUMBER OF FIELDS BEING TESTED.
/THIS IS NOW 15 MINUTE COUNTER

```

/END OF TEST LAS

```

166
167
168 0200 5325 JMP START+1
169 0201 5324 JMP START
170
171 0202 4251 JMS DFEIF
172 0203 7410 SKP
173
174 0204 4777 PATA, JMS TITLE
175 0205 6002 IOF
176 0206 1376 TAD (7200
177 0207 6200 LXM
178 0210 7200 CLA
179 0211 6230 REM
180 0212 7710 SPA CLA
181 0213 7340 CLL CLA CMA
182 0214 3025 DCA EXMFLG
183 0215 4775 JMS PNTOPT
184 0216 4774 JMS SETSW
185 0217 3036 DCA CS
186 0220 3037 DCA TS
187 0221 3040 DCA FS
188 0222 3044 DCA RS
189 0223 7240 STA
190 0224 3050 DCA CRELO
191 0225 3057 DCA TSTAD
192 0226 1101 TAD MINS
193 0227 3100 DCA FIVE
194 0230 7240 STA
195 0231 3055 DCA HEAD1
196 0232 4773 JMS FSSET
197 0233 4772 JMS ARTFL
198 0234 7240 STA
199 0235 1000 TAD FCNT
200 0236 3050 DCA FCNT
201 0237 4771 JMS LEGAL
202 0240 1077 TAD NUMFLD
203 0241 7041 CIA
204 0242 3061 DCA RELCNT
205 0243 1050 TAD CRELO
206 0244 7650 SNA CLA
207 0245 5261 JMP PATM
208 0246 4770 JMS CSR03
209 0247 5301 JMP PAT0
210 0250 5270 JMP PATN
211
212
213
214
215
216 0251 0000 DFEIF, 0
217 0252 6002 IOF
218 0253 7300 CLA CLL
219 0254 6224 RIF
220 0255 1176 TAD [6201

```

```

/APT/200 = START ADDRESS.
/STARTING ADDRESS IF NO TTY AVAILABLE
/202 = RESTART ADDRESS
/TYPOUT PROG TITLE
/LOAD EXPANDED MODE REGISTER
/MAKE SURE AC CLEAR
/SKIP IF KDBA NOT ENABLED
/SET KDBA ACTIV
/SETUP SR
/CLEAR INH RELO
/CLEAR TEST ADDRESS COUNTER
/SET UP COUNTER
/RESET ERROR HEADING
/SET FIELD STATUS & TYPE SELECTION
/AC=-:
/-1 TO FIELDS IN SYSTEM
/CHECK FOR LEGAL FIELD SELECTION
/SET UP PASS COUNTER
/NEGATE IT
/SAVE IT.
/NO RELOCATE & TEST ONLY 1 FIELD
/RELOCATION PROGRAM
/INHIBIT PROGRAM RELOCATION

```

```

221 0256 3257          DCA    .+1
222 0257 6201          CDF    0
223 0260 8851          JMP I  CFEIF
224
225
226
227
228
229
230 0261 6224          /PATM, RIF
231 0262 3051          DCA    PROFLD
232
233 0263 4767'         JMS    PDRREL
234 0264 4766'         PATMO, JMS    PDRREL
235
236 0265 4502          ENDMLT
237 0266 5205          JMP    PATA
238
239 0267 9264          JMP    PATMO
240
241
242
243
244
245 0270 6224          /PATN, RIF
246 0271 3051          DCA    PROFLD
247
248 0272 4767'         JMS    PDRREL
249 0273 4766'         PATNO, JMS    PDRREL
250
251 0274 4502          ENDMLT
252 0275 5205          JMP    PATA
253
254 0276 4770'         JMS    CSRO3
255 0277 5301          JMP    PATO
256 0300 5273          JMP    PATNO
257
258
259
260
261
262 0301 6224          /PATO, RIF
263 0302 3051          DCA    PROFLD
264 0303 1040          TAD    FS
265 0304 3044          DCA    RS
266 0305 1041          TAD    FS1
267 0306 3045          DCA    RS1
268 0307 1042          TAD    FS2
269 0310 1046          DCA    RS2
270 0311 1043          TAD    FS3
271 0312 3047          DCA    RS3
272
273 0313 4765'         JMS    PREL
274 0314 4766'         PATOO, JMS  TEST
275

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```

276 0315 4502          ENDMLT
277 0316 5205          JMP    PATA
278
279 0317 4770'         JMS    CSRO3
280 0320 7410          SKP
281 0321 5270          JMP    PATN
282 0322 4764'         JMS    SETREL
283 0323 5314          JMP    PATOO
284
285
286 0324 5334          START, JMP    .+10
287 0325 3076          DCA    NOTTY
288 0326 4763'         JMS    APTIZ
289 0327 1076          TAD    NOTTY
290 0330 7650          SNA    CLA
291 0331 5204          JMP    PATA-1
292 0332 6002          IOF
293 0333 5205          JMP    PATA
294 0334 1022          TAD    MCW2
295 0335 0362          AND    (7377)
296 0336 3022          DCA    MCW2
297 0337 7240          CLA    CMA
298 0340 5325          JMP    START+1
299
300
301
302
303
304
305
306 0341 0000          XENDML, 0
307 0342 4504          GETSR
308 0343 0033          AND    SR05
309 0344 7650          SNA    CLA
310 0345 9350          JMP    .+3
311 0346 4505          CBCAL
312 0347 7402          MLT
313 0350 4504          GETSR
314 0351 0032          AND    SR04
315 0352 7230          SNA    CLA
316 0353 2341          ISZ
317 0354 5741          JMP I  XENDML
318
319 0362 7377
320 0363 5822
321 0364 0400
322 0365 4154
323 0366 0600
324 0367 4:15
325 0370 1607
326 0371 1470
327 0372 5704
328 0373 1615
329 0374 4071
330 0375 1726

```

```

331 0376 7200
332 0377 4043
      0400
      PAGE
      /DETERMINE WHICH RELOCATION ROUTINE TO USE.
333
334
335 0400 0000
336 0401 1025
337 0402 7110
338 0403 1034
      SETREL, 0
      TAD EXWFLD
      SZA CLA /SKIP IF EXPANDED MODE NOT ENABLED
      JMP KTBREL
339
340
341
342 /SETUP TO RELOCATE THE PROGRAM
343
344 /THIS ROUTINE IS USED ONLY IF KYBE OR KXBA FUNCTIONS ARE TO BE TESTED
345
346 0404 7200
347 0405 6224
348 0406 3151
349 0407 1051
350 0410 7112
351 0411 7010
352 0412 3777
353 0413 7240
354 0414 1777
355 0415 0035
356 0416 3777
357 0417 1777
358 0420 1376
      KYBREL, CLA /MAKE SURE AC IS CLEAR
      RIF /GET INSTRUCTION FIELD OF PROGRAM
      DCA PROFLD /SAVE THE VALUE
      TAD PROFLD
      CLL RTR
      RAR /MOVE INTO PROPER POSITION
      DCA FLOCNT
      STA
      TAD FLOCNT
      AND SR911
      DCA FLOCNT
      TAD FLOCNT
      TAD (TRSTAB /ESTABLISH POINTER OF STATUS
      /ROUTINE
      DCA TEMP /SAVE THE POINTER
      TAD I TEMP /GET ROUTINE TO EXECUTE
      DCA TRS /AND SAVE I
      JMS I TRS /GO TEST STATUS
      JMP KXBREL+7
      TAD FLOCNT /SET UP FIELD TO DO
      AND SR911 /ISOLATE BITS 0-11
      CLL RTR
      RAL /SET UP FOR INSTRUCTION
      JMP CSAME /GO TEST FOR SAME FIELD
359
360 0421 3056
361 0422 1456
362 0423 3272
363 0424 4672
364 0425 5213
365 0426 1777
366 0427 0035
367 0430 7106
368 0431 7004
369 0432 5263
      DCA TEMP
      TAD I TEMP
      DCA TRS
      JMS I TRS
      JMP KXBREL+7
      TAD FLOCNT
      AND SR911
      CLL RTR
      RAL
      JMP CSAME
370
371 0433 5213
      JMP KXBREL+7
372
373
374 /THIS ROUTINE WILL TEST THE KXBA FUNCTIONS.
375
376 0434 7200
377 0435 6224
378 0436 3051
379 0437 1051
380 0440 4510
381 0441 3777
382 0442 7240
383 0443 1777
384 0444 0375
      KXBREL, CLA /MAKE SURE AC IS CLEAR
      RIF /GET PROGRAM FIELD
      TAD PROFLD /AND SAVE I
      TAD PROFLD
      RACA
      DCA FLOCNT /SAVE THE BINARY COUNT VALUE OF FIELD
      STA
      TAD FLOCNT
      AND (37
  
```

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385 0445 3777
386 0446 1777
387 0447 0035
388 0450 1376
389 0451 3056
390 0452 1456
391 0453 3272
392 0454 4672
393 0455 5242
394 0456 1777
395 0457 0375
396 0460 4511
397 0461 5263
398 0462 5242
      DCA FLOCNT
      TAD FLOCNT /ADD IN OFFSET
      AND SR911
      TAD (TRSTAB /GET STARTING ADDRESS OF ROUTINE POINTER
      DCA TEMP /SAVE THE POINTER ADDRESS
      TAD I TEMP /GET ACTUAL ROUTINE ADDRESS
      DCA TRS /SAVE THE ROUTINE ADDRESS
      JMS I TRS /GO TEST FOR PROPER FIELD SELECTION
      JMP KXOREL+6
      TAD FLOCNT /DECREMENT FIELD VALUE
      AND (37 /ISOLATE 5 BITS
      RACB /REARRANGE INTO PROPER FORMAT
      JMP CSAME /GO TEST FOR VALID FIELD SELECTION
      JMP KXOREL+6
399
400 0463 3052
401 0464 4774
402 0465 5800
403 0466 4773
404 0467 6224
405 0470 3051
406 0471 5600
      CSAME, DCA TSTFLD /SAVE FIELD VALUE TO TEST
      JMS SAME /PRCFLD=TSTFLD
      JMP I SETREL /YES
      JMS RELO /GO RELOCATE PROGRAM
      RIF /GET PROGRAM LOCATION
      DCA PROFLD
      JMP I SETREL /EXIT RELOCATION ROUTINE
407
408 0472 0000
409 0473 3703
410 0474 3712
411 0475 3722
412 0476 3732
413 0477 3743
414 0500 3754
415 0501 3705
416 0502 4000
      TRS, 0
      TRSTAB, TRS0
      TRS1
      TRS2
      TRS3
      TRS4
      TRS5
      TRS6
      TRS7
417
418
419 /TEST COMPLEMENT STATUS
420 /RETURN IF NC, RETURN+1 IF IC, RETURN+2 IF 2C
421
422 0503 0000
423 0504 7200
424 0505 1030
425 0506 7450
426 0507 5703
427 0510 2203
428 0511 7106
429 0512 7430
430 0513 5703
431 0514 2203
432 0515 7710
433 0516 1103
434 0517 7000
      TCS, 0
      CLA
      TAD CS
      SNA
      JMP I TCS /NC
      ISZ TCS
      CLL RTR
      SZL
      JMP I TCS /1C
      ISZ TCS
      SPA CLA
      JMP I TCS /2C
      APTEOB, NCP /APT/
435
436 0520 7402
437 0521 5320
      HLT
      JPP -1 /ERROR:EGUS STATUS BITS SET
438
439 /SET UP PROPER FIELD STATUS BITS
  
```

```

440
441 0522 0000 /
442 0523 1777' /ASETFS, 0
443 0524 7112 TAD FLODNT /GET FIELD 10 CO
444 0525 7010 CLL RTR
445 0526 0372 RAR /MOVE BANK SELECT INTO POSITION
446 0527 1371 AND 13
447 0530 3056 TAD LFS /ESTABLISH POINTER TO ADDRESS OF STATUS
448 0531 5722 DCA TEMP /AND SAVE THE POINTER
449 JMP I /AND EXIT
450
451 /ESTABLISH RELOCATION STATUS POINTER
452 0532 0000 /
453 0533 1777' /ASETFS, 0
454 0534 7112 TAD FLODNT /GET FIELD 11 CO
455 0535 7010 CLL RTR
456 0536 0372 RAR
457 0537 1371 AND 13
458 0540 3056 TAD LFS /SAVE THE POINTER
459 0541 5732 DCA TEMP
460 JMP I /ASETFS
461
462 0571 0040 /
463 0572 0003 /
464 0573 4200 /
465 0574 1600 /
466 0575 0037 /
467 0576 0073 /
468 0577 : -6 /
469 CL00 PAGE
470
471 /
472 /TEST PATTERN CONTROL
473 /
474 0600 0000 TEST, 0
475 0601 4777' JMS PAR
476 0602 7200 CLA
477 0603 3066 DCA A
478 0604 3067 DCA B
479 0605 4776' JMS STS0 /ALL ZEROS TEST
480 0606 4253 JMS TEST0
481 0607 7240 STA
482 0610 3066 DCA A
483 0611 7240 STA
484 0612 3067 DCA B
485 0613 4775' JMS STS1 /ALL ONES TEST
486 0614 4253 JMS TEST0
487 0615 7240 STA
488 0616 3067 DCA B
489 0617 3066 DCA A
490 0620 4774' JMS STS2 /0000-7777 MCP TEST
491 0621 4253 JMS TEST0
492 0622 7240 STA
493 0623 3066 DCA A

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494 0624 3067 DCA B
495 0625 4773' JMS STS3 /7777-0000 MCP TEST
496 0626 4253 JMS TEST0
497 0627 7200 CLA
498 0630 1175 TAD [2525
499 0631 3066 DCA A
500 0632 1174 TAD [5252
501 0633 3067 DCA B
502 0634 : 72' JMS STS4 /2525-5252 MCP TEST
503 0635 4253 JMS TEST0
504 0636 7200 CLA
505 0637 1174 TAD [5252
506 0640 3066 DCA A
507 0641 1173 TAD [4525
508 0642 3067 DCA B
509 0643 4771' JMS STS5 /5252-2525 MCP TEST
510 0644 4253 JMS TEST0
511 0645 7200 CLA
512 0646 3037 DCA TS /CLEAR TEST STATUS
513 0647 6002 IOF
514 0650 4770' JMS M0STST /GO PERFORM MARCH PATTERN
515 0651 5600 JMP I TEST
516
517 /
518 /TEST ALL FIELDS SELECTED FOR TEST
519 /
520 0652 5653 MTEST, JMP I TEST0
521 0653 0000 TEST0, 0
522 0654 3767' DCA FLODNT /CLEAR FIELD INDICATOR
523 0655 3024 DCA BANK /CLEAR BANK VALUE
524 0656 4307 JMS M0FLD /GO TEST FOR VALID SELECTION
525 0657 5261 JMP T0UPD /NO A VALID FIELD, UPDATE AND TRY AGAIN
526 0660 4766' JMS M0FLD /GO WRITE SELECTED FIELD
527 0661 1767' T0UPD, TAD FLODNT
528 0662 7041 CIA
529 0663 :060 TAD FCNT /COMPLEMENT CURRENT VALUE
530 0664 7550 SNA CLA /SEE IF AT MAXIMUM FOUND
531 0665 5270 JMP TEST1 /SKIP IF NOT AT MAX AVAILABLE
532 0666 2767' ISZ FLODNT /UPDATE FIELD TO DD
533 0667 5256 JMP TEST0+3 /GO BACK AND TRY NEXT FIELD
534
535 /
536 /
537 /
538 0670 3767' TEST1, DCA FLODNT /CLEAR FIELD INDICATOR
539 0671 3024 DCA BANK /CLEAR BANK INDICATOR
540 0672 4307 JMS M0FLD
541 0673 5300 JMP T0UPD
542 0674 4765' JMS M0FLD /READ PATTERN WRITTEN
543 0675 1053 TAD COUNT /TEST FOR ANY READ ERRORS
544 0676 7540 SNA CLA
545 0677 4764' JMS SETERR /GO SET UP PROPER ERROR ROUTINE
546 0700 1767' T0UPD, TAD FLODNT /SET UP TO TEST FOR MAX FIELDS
547 0701 7041 CIA
548 0702 1060 TAD FCNT /GET NUMBER OF FIELDS FOUND

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549 0703 7650          SNA CLA          /SKIP IF NOT AT MAX
550 0704 5763'        JMP TEST8          /GO ON TO NEXT TEST
551 0705 2767'        ISZ FLDGNT
552 0706 5272          JMP TEST1+2        /GO BACK AND DO NEXT VALUE
553
554
555
556
557
558
559
560
561
562
563 0707 0000          NUFLD, 0
564 0710 1767'        TAD FLDGNT          /GET FIELD "0" TEST
565 0711 0035          AND SR911          /ISOLATE FIELD
566 0712 1262          TAD (TFSTAB)        /GET TO POINTER OF FIELD STATUS
567 0713 3337          DCA TFS            /SAVE THE VALUE
568 0714 1737          TAD I TFS          /GET ROUTINE TO EXECUTE
569 0715 3337          DCA TFS            /AND SAVE IT
570 0716 4737          JMP I TFS          /GO TEST FOR VALID FIELD SELECTION
571 0717 5767          JMP I NUFLD        /NOT A VALID FIELD
572 0720 1025          TAD ENXFLG
573 0721 7650          SNA CLA          /SKIP IF EXPANDED MODE ENABLED
574 0722 5232          JMP NCEMM
575 0723 1767'        TAD FLDGNT
576 0724 4811          RACB
577 0725 3052          SETFLD, DCA TSTFLD /REARRANGE AC INTO PROPER FORMAT
578 0726 4761'        JMS SANE          /PROFLD=TSTFLD
579 0727 7410          SKP
580 0730 2307          ISZ NUFLD
581 0731 5767          JMP I NUFLD        /GOT A VALID FIELD
582
583 0732 1767'        NCEMM, TAD FLDGNT /ISOLATE FIELD TO DO
584 0733 0035          AND SR911
585 0734 7106          CLL RTL
586 0735 7004          RAL
587 0736 5325          JMP SETFLD        /MOVE INTO BITS 8-9
588
589 0737 0000          TFS, 0
590
591 0740 3600          TFSTAB, TFS0
592 0741 3607          TFS1
593 0742 3617          TFS2
594 0743 3627          TFS3
595 0744 3640          TFS4
596 0745 3651          TFS5
597 0746 3662          TFS6
598 0747 3672          TFS7
599
600
601 0761 1600
602 0762 0743
603 0763 1000

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604 0764 4510
605 0765 1200
606 0766 1005
607 0767 2346
608 0770 5200
609 0771 3262
610 0772 3255
611 0773 3250
612 0774 3243
613 0775 3237
614 0776 3233
615 0777 4267
616
617
618 1000 4504          PAGE
619 1001 0032          TESTB, GETSR
620 1002 7640          AND SR04          /CHANGE FIELD LIMITS?
621 1003 5777'        SZA CLA          /YES
622
623 1004 5778'        JMP PATA
624
625
626
627
628
629 1005 0000          WRFLD, 0
630 1006 1173          TAD [-40
631 1007 1170          DCA P2            /WRITE 2 PAGES
632 1010 -241          JMS WRA           /WRITE 4 WORDS FROM A REG
633 1011 4263          JMS WRB           /WRITE 4 WORDS FROM B REG
634 1012 2070          ISZ P2
635 1013 5210          JMP .-3
636 1014 1173          TAD [-40
637 1015 3070          DCA P2
638 1016 4263          JMS WRB
639 1017 4241          JMS WRA
640 1020 2070          ISZ P2
641 1021 5216          JMP .-3
642 1022 1157          TAD TSTAD
643 1023 7640          SZA CLA
644 1024 5206          JMP WRFLD+1
645
646 1025 2100          ISZ FIVE
647 1026 5605          JMP I WRFLD        /SEE IF READY TO PRINT 15 YET
648 1027 1076          TAD NOTTY
649 1030 7710          SPA CLA          /GET THE TELETYPE FLAG
650 1031 5605          JMP I WRFLD        /IS THERE ONE AVAILABLE
651 1032 1101          TAD MINS
652 1033 3100          DCA FIVE          /NO-ABORT THE FIVE MINUTE TYPEOUT
653
654 1034 4775'        JMS MES
655 1035 4543
656 1036 6165
657 1037 0000          /TYPE A 15

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658 1040 5605      JMP I WRFLD
659 1041 0600      WRA, 0          /END OF MEMORY REACHED
660 1042 1172      TAD [-4
661 1043 3071      DCA W4          //WRITE 4 WORDS FROM A REG
662 1044 1052      TAD TSTFLD
663 1045 1178      TAD [6201
664 1046 3247      DCA .+1
665 1047 8711      CDF 0          /TEST DF
666 1050 1138      WRA1, TAD A
667 1051 3457      DCA I TSTAD
668 1052 2057      ISZ TSTAD
669 1053 7000      NOP
670 1054 2671      ISZ W4
671 1055 5250      JMP WRA1
672 1056 1051      TAD PRCFLO
673 1057 1176      TAD [6201      /4 WORDS ARE WRITTEN
674 1060 3261      DCA .-1
675 1061 6201      CDF 0          /PROGRAM DF
676 1062 5641      JMP I WRA
677 1063 0.00      WRB, 0
678 1064 1172      TAD [-4
679 1065 3071      DCA W4          /WRITE 4 WORDS FROM B REG
680 1066 1052      TAD TSTFLD
681 1067 1176      TAD [6201
682 1070 3271      DCA .+1
683 1071 6201      CDF 0          /TEST DF
684 1072 1087      WRB1, TAD B
685 1073 3457      DCA I TSTAD
686 1074 2057      ISZ TSTAD
687 1075 7000      NOP
688 1076 2071      ISZ W4
689 1077 5272      JMP WRB1
690 1100 1051      TAD PRCFLO
691 1101 1176      TAD [6201      /4 WORDS ARE WRITTEN
692 1102 3303      DCA .+1
693 1103 6201      CDF 0          /PROGRAM DF
694 1104 5883      JMP I WRB
695
696
697 /TYPEOUT FIELDS SELECTED FOR TESTING
698
699 1105 0000      TOSEL, 0
700 1108 7346      CLL CLA CMA RTL /AC=-3
701 1107 3024      DCA BANK       /SAVE BANK VALUE
702 1110 1024      TAD BANK
703 1111 7041      CIA           /MAKE BANK VALUE POSITIVE
704 1112 7186      CLL RTL
705 1113 7004      RAL           /SHIFT OVER FOR OTHER ROUTINES
706 1114 3774      DCA FLD CNT
707 1116 1024      TAD BANK
708 1116 7041      CIA
709 1117 1171      TAD [FS
710 1120 3056      DCA TEMP      /ESTABLISH STATUS CONTROL WORD
711 1121 1456      TAD I TEMP    /GET ADDRESS OF CONTROL WORD
712 1122 1170      TAD [-7760    /SEE IF THERE IS AFIELD TO DO

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713 1123 7650      SNA CLA
714 1124 5336      JMP TOSEL1    /IS THIS BANK TO BE TESTED
715 1125 1024      TAD BANK     /UPDATE BANK SELECT VALUE
716 1126 7041      CIA
717 1127 1167      TAD [260
718 1130 4773      JMS TYPE    /MAKE ASCII VALUE FOR BANK NUMBER
719 1131 1372      TAD [++
720 1132 4773      JMS TYPE    /TYPE IT
721 1133 4771      JMS FLOSEL  /PRINT A*
722 1134 1370      TAD [240
723 1135 4773      JMS TYPE
724 1136 2024      TOSEL, ISZ BANK /UPDATE BANK VALUE
725 1137 7000      NOP
726 1140 1024      TAD BANK
727 1141 7740      SMA SZA CLA /SKIP IF LAST BANK NOT DONE
728 1142 5705      JMP I TOSEL  /EXIT ROUTINE
729 1143 5310      JMP TOSEL+3  /GO BACK AND TRY AGAIN
730
731 1170 0240
732 1171 2102
733 1172 0272
734 1173 5025
735 1174 2346
736 1175 2240
737 1176 0652
738 1177 0205
739 1200
740
741 /READ & TEST A & B REG PATTERN FROM SELECTED FIELD
742
743 1200 0000      RDFLD, 0
744
745 1201 4408      JMS I IAPTOK /APT/
746
747 1202 7200      CLA
748 1203 1052      TAD TSTFLD
749 1204 1176      TAD [6201
750 1205 3210      DCA RDA2
751 1206 1210      TAD RDA2
752 1207 3263      DCA RDB2
753 1210 6201      RDA2, CDF 0 /TEST DF
754 1211 1166      TAD [-100
755 1212 3070      DCA P2
756 1213 1172      RDFLDA, TAD [-4 /READ & TEST 2 PAGES
757 1214 3071      DCA W4
758 1215 3036      RDAC, DCA CS /READ & TEST 4 WORDS
759 1216 4777      JMS READ    /NO COMPLEMENT
760 1217 41
761 1220 1066      TAD A
762 1221 7440      SZA
763
764 1222 4777      JMS ERRA
765 1223 4327      JMS READ    /A REG ERROR - NC
766 1224 7040      CMA

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767 1225 3457      DCA I  TSTAD
768 1226 4778      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  ERR11
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 1166      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  RDAC  /COMPLETE 4 WORDS
789 1251 2070      ISZ  P2
790 1252 5266      JMP  RDFLDB /COMPLETE CURRENT 2 PAGES
791 1253 1061      TAD  PROFLO
792 1254 1176      TAD  [6201
793 1255 3256      DCA  -1
794 1256 6111      CDF  3  /PROGRAM OF
795 1257 107      TAD  TSTAD
796 1260 1040      SZA CLA
797 1261 5210      JMP  P2A2  /READ ANOTHER 2 PAGES
798 1262 5600      JMP I  RDFLO /END OF MEMORY REACHED
799
800 1263 6201      RDB2. CCF  0  /TEST DF
801 1264 1166      TAD  [-100
802 1265 3070      DCA  P2  /READ & TEST 2 PAGES
803 1266 1172      RDFLOB, TAD  [-4
804 1267 3071      DCA  W4  /READ & TEST 4 WORDS
805 1270 3036      RDB2. 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  ERRA  /B REG ERROR - NC
812 1276 4327      JMS  READ
813 1277 7040      CMA
814 1300 3457      DCA I  TSTAD
815 1301 4778      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  ERRA1 /B REG ERROR - 1C

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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 7110      SZA
830
831 1317 4773      JMS  ERRA  /B REG ERROR - 2C
832 1320 2057      ISZ  TSTAD
833 1321 7000      NOP
834 1322 2071      ISZ  W4
835 1323 5270      JMP  RDB2  /COMPLETE 4 WORDS
836 1324 2070      ISZ  P2
837 1325 5213      JMP  RFLDA /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 7000      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 7000      SZA  CLA  /IS THERE A TELETYPE AVAILABLE
865 1351 5134      JMP  -3  /YES GO PRINT THE ERROR
866 1352 7002      TAD  NOT  /NO, NOT INTERRUPTED FROM THE KEY BOARD
867 1353 5164      JMP  KBINTC /GO CLEAR FLAG AND CONTINUE
868 1354 4771      JMS  YES
869 1355 4543      TEXT  "%INT FROM KB"
870 1356 1116
871 1357 2440
872 1358 0002
873 1359 1115
874 1362 4013
875 1363 0003
876 1364 6232      KBINTC. ACC

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871 1365 7240 STA
872 1366 3088 DCA -EAD1
873 1367 5748 JMP I KEPLT
874
875 1371 2240
876 1372 1437
877 1373 1425
878 1374 3272
879 1375 1411
880 1376 3266
881 1377 1400
      PAGE
882
883 1403 0000 ERRA, 0
884 1401 7041 CIA
885 1402 1066 TAD A
886 1403 3073 DCA SDATA /DATA READ
887 1404 1066 TAC A
888 1405 4254 JMS GERRC /GO TO ERRC SETUP ROUTINE
889 1406 1066 TAD 1
890 1407 3457 DCA I TSTAD /RE-WRITE BAD LOCATION
891 1408 5200 JMP I ERRA
892 1411 0000 ERRA1, 0
893 1412 3056 DCA TEMP
894 1413 1066 TAD A
895 1414 7040 CMA
896 1415 1066 TAD TEMP
897 1416 3073 DCA SDATA /DATA READ
898 1417 1066 TAD A
899
900 1420 7040 CMA
901 1421 4254 JMS GERRC /GO TO ERRC SETUP ROUTINE
902 1422 1066 TAD B
903 1423 7040 CMA
904 1424 3457 DCA I TSTAD /RE-WRITE BAD LOCATION
905 1425 5200 JMP I ERRA1
906 1426 0000 ERRA1, 0
907 1427 7041 CIA
908 1428 1067 TAD B
909 1429 3073 DCA SDATA /DATA READ
910 1430 1067 TAD B
911 1431 4254 JMS GERRC /GO TO ERRC SETUP ROUTINE
912 1432 1067 TAD B
913 1433 3457 DCA I TSTAD /RE-WRITE BAD LOCATION
914 1434 5200 JMP I ERRA1
915 1435 0000 ERRA1, 0
916 1436 3056 DCA TEMP
917 1437 1067 TAD B
918 1438 7040 CMA
919 1439 1067 TAD TEMP
920 1440 3073 DCA SDATA /DATA READ
921 1441 1067 TAD B
922 1442 4254 JMS GERRC /GO TO ERRC SETUP ROUTINE
923 1443 1067 TAD L
924 1444 7040 CMA

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925 1452 3457 DCA I TSTAD
926 1453 5237 JMP I ERRA1
927 1454 0000 GERRC, 0 /GO TO ERRC
928 1455 3072 DCA SDATA /DATA WRITTEN
929 1456 1051 TAD PRCFLD
930 1457 1176 TAD PRCFLD
931 1458 3261 DCA {6201
932 1459 6201 CCF 0
933 1460 4777 JMS ERRC /PROGRAM DF
934 1461 1052 TAD TSTFLD /DATA OR CMPBD ERROR
935 1462 1176 TAD {6201
936 1463 3268 DCA -1
937 1464 5201 CCF 0 /TEST DF
938 1465 5684 JMP I GERRC
939
940
941 /CHECK FOR LEGAL FIELD SELECTION
942
943 1470 0000 LEGAL, 0
944 1471 7230 CLA CLL
945 1472 3064 DCA INSNM /SAVE FIELD CONTROL
946 1473 7344 CLL CLA CMA RAL /AC=-2
947 1474 3058 DCA LEGALO /LEGAL SELECTION CONTROL
948 1475 3052 DCA TSTFLD
949 1476 1025 TAD INFLG /GET ATBA INDICATOR
950 1477 7650 SZA CLA /SKIP IF ACTIVE
951 1500 5023 JMP ACMB
952 1501 3076 DCA FLDONT /START WITH FIELD 0
953 1502 101 JMS TSTFLD
954 1503 1040 JMS LEGALO /VALID FIELD SELECTION
955 1504 2075 ISZ FLDONT /UPDATE PATTERN
956 1505 1778 TAD FLDONT
957 1506 4811 FOCB /REARRANGE INTO PROPER CONFIGURATION
958 1507 3082 DCA TSTFLD /AND THE NEW VALUE
959 1508 1776 TAD FLDONT
960 1509 0375 AND 137 /ISOLATE FIELD
961 1510 7440 SZA CLA /SKIP IF RETURNED TO ZERO
962 1511 5200 JMP -1 /GO BACK AND TRY AGAIN
963 1512 2085 LEGALO
964 1513 5741 JMS NOFLD /NO FIELD SELECTION
965 1514 1064 TAD INSNM
966 1515 7240 SZA CLA
967 1516 5773 JMP B1F /PRG IN SELECTED FIELD
968 1517 3050 DCA CPELD /ONLY 1 FIELD SELECTED
969 1518 5270 JMP I LEGAL
970
971 /KMS FUNCTIONS
972
973 1522 3076 ACMB, DCA FLDONT /START WITH FIELD ZERO
974 1523 4351 JMS NOFLD /GO TEST FOR VALID SELECTION
975 1524 4342 JMS LEGALO
976 1525 2075 ISZ FLDONT /UPDATE FIELD NUMBER
977 1526 1778 TAD FLDONT /GET BACK FIELD SELECTION
978 1527 0035 AND SRA 1 /ISOLATE FIELD
979 1528 7106 CLL RFL

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980 1532 7004      PA_          /MOVE INTO POSITION
981 1532 3052      CCA          /SAVE NEW VALUE
982 1534 1052      TAD          /TSTFLD
983 1535 7640      SZA CLA      /DONE BACK TO ZERO?
984 1536 5024      JMP          /GO BACK AND TRY AGAIN
985 1537 5314      JMP          /INVALID SELECTIONS OR NOT ENOUGH
986
987
988
989
990
991 1540 0000      LEGALA, 0
992 1541 2065      ISZ          LEGALO      /FIELD SELECTED
993 1542 7410      SKP
994 1543 5670      JMP I        LEGAL       /AT LEAST 2 FIELDS SELECTED
995 1544 6224      RIF
996 1545 3251      CCA          PROFLD
997 1546 4772      JMS          SAME        /PROGRAM IN SELECTED FIELD?
998 1547 2064      ISZ          INSAME     /YES
999 1550 5.40      JMP I        LEGALA
1000
1001
1002
1003
1004 1551 0000      /SET UP FOR TESTING FIELD STATUS FOR LEGAL SELECTION
1005 1552 7200      LG.FLD, C
1006 1553 1776      CLA          /MAKE SURE JC IS CLEAR
1007 1554 2035      TAD          FLD CNT     /GET FIELD TO TEST
1008 1555 1071      AND          SRO3:1     /ISOLATE FIELDS
1009 1556 3050      TAD          TSTAB
1010 1557 1456      DCA          TEMP       /SAVE ROUTINE POINTER
1011 1560 3056      TAD I       TEMP       /GET POINTER
1012 1561 4456      CCA          TEMP
1013 1562 2351      JMS I       TEMP       /EXECUTE FS ROUTINE
1014 1563 5751      ISZ          LGLFLD     /INVALID FIELD
1015
1016
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1020
1021 1577 2600      PAGE
1022
1023
1024
1025
1026
1027
1028 1600 0000      /RETURN IF PROGRAM IN SELECTED FIELD
1029 1601 1051      /RETURN +1 IF PROGRAM NOT IN SELECTED FIELD
1030 1602 7041      SAME, 0
1031 1603 1052      TAD          PROFLD
1032 1604 7640      CIA
1033 1605 2200      TAD          TSTFLD
1034 1606 5600      SZA CLA
1035 1607 0000      ISZ          SAVE      /PRG NOT IN SEL FIELD
1036
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1034 1606 5600      JMP I        SAVE
1035
1036
1037
1038 1607 0000      /RETURN IF SRO3=0, RETURN +1 IF SRO3=1
1039 1610 4504      CSRO3, 0
1040 1611 0031      GETSR
1041 1612 7640      AND          SRO3
1042 1613 2207      SZA CLA
1043 1614 5607      ISZ          CSRO3     /INHIBIT PROGRAM RELOCATION
1044
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1089 1661 1176 TAD [6201
1090 1662 3263 DCA [-1 /ESTABLISH DATA FIELD
1091 1663 7402 HLT
1092 1664 4774 JVS CFP /CHANGED TO DATA FIELD TO TEST
1093 1665 4314 JVS SFLO /GO TEST FIELD FOR PRESENCE
1094 1666 2775 ISZ FLOCNT /SET APPROPRIATE BIT
1095 1667 1775 TAD FLOCNT /UPDATE PATTERN
1096 1670 0377 AND [37 /GO BACK TO ZERO YET
1097 1671 7640 SZA CLA /SKIP IF BACK TO FIELD ZERO
1098 1672 5257 JWP [-13
1099 1673 5307 JWP FSELD
1100 1674 1373 BANKO, TAD [7760
1101 1675 3641 DCA FS1
1102 1676 1373 TAD [7760
1103 1677 3642 DCA FS2
1104 1678 3642 TAD [7760
1105 1701 3643 DCA FS3
1106 1702 7200 BANKOA, CLA
1107 1703 6240 LRR /CLEAR RELOCATION
1108 1704 6256 RRR
1109 1705 3775 DCA FLOCNT
1110 1706 4772 JVS FSSBK /TEST BANK ZERO
1111
1112 1707 1076 FSEND, TAD NOTTY /GET TTY FLAG
1113 1710 7710 SPA CLA /IS TTY AVAILABLE
1114 1711 5615 JWP : FSSET /NO, ABORT TTY MESSAGE AND RETURN
1115 1712 4771 JVS PNTFLD
1116 1713 5P15 JWP I FSSET
1117
1118 /SET UP ROUTINE TO SET STATUS BIT
1119
1120 1714 0000 SPFLD, 0
1121 1715 1775 TAD FLOCNT
1122 1716 0035 AND S&R11 /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 JVS I TEMP /GO PERFORM SET FUNCTION
1128 1724 7C30 NOP
1129 1725 5714 JWP I SPFLD
1130
1131 /
1132
1133 /PRINT SELECTED OPTION FOR TESTING WHETHER KMS OR KTB
1134
1135 1726 0000 PNTOPT, 0
1136 1727 1076 TAD NOTTY /TEST FOR NOTTY TO USE
1137 1730 7640 SZA CLA
1138 1731 5726 JWP I PNTOPT /NO TTY AVAILABLE
1139 1732 1025 TAD EMPLFLG
1140 1733 7640 SZA CLA /SKIP IF KT NOT ENABLED
1141 1734 1367 TAD [7
1142 1735 1366 TAD [1315
1143 1736 3341 DCA OPT /SAVE OPTION VALUE

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1144 1737 4755 JVS MES
1145 1740 4543 4543 /CRLF
1146 1741 0000 OPT, 0000
1147 1742 7040 TEXT *8 SELECTED FOR TESTING *
1743 2305
1744 1405
1745 0324
1746 0114
1747 1108
1750 1722
1751 4624
1752 3823
1753 2411
1754 1807
1755 4000
1148 1756 5726 JWP I PNTOPT /EXIT ROUTINE
1149
1150 1765 3240
1151 1766 1115
1152 1767 0607
1153 1770 3252
1154 1771 4654
1155 1772 2314
1156 1773 7760
1157 1774 2500
1158 1775 2346
1159 1776 5000
1160 1777 3037 2000
1161 PAGE
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 CFPD
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 JWP +3
1176 2012 0201 CFPD, CFP 0 /PROGRAM DF
1177 2013 5600 JWP I CFP
1178 2014 2060 ISZ PCNT /FIELD IS PRESENT
1179 2015 4214 RDF /STARTP = ENDF
1180 2016 3301 DCA CFPDUP /SAVE TEST FIELD
1181 2017 1025 TAD EMPLFLG
1182 2020 7650 SZA CLA /SKIP IF EXPANDED MODE ACTIVE
1183 2021 5228 JWP +5
1184 2022 1301 TAD CFPDUP /GET BACK SELECTED FIELD
1185 2023 4510 RACA /CHANGE INT. BINARY COUNT
1186 2024 3301 DCA CFPDUP /RESTORE IT FOR TESTING

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1187 2025 5052 LMP L45
1188 2025 1301 TAD CFP1MP /GET BACK FIELD VALUE
1189 2027 7012 CLL RTR
1190 2031 7012 RST
1191 2031 5301 SPA CFP1MP /CHANGE TO BINARY COUNT NUMBER
1192 2032 4503 TAD /SAVE NUMBER FOR TESTING
1193 2035 7041 CIA
1194 2034 1062 TAD STARTF
1195 2035 7040 SCL
1196 2036 5246 LMP CFP2
1197 2037 1301 TAD CFP1MP /GET BACK NUMBER
1198 2040 7041 CIA
1199 2041 1062 TAD STARTF
1200 2042 7050 SNA CLA
1201 2043 2200 CFP1, ISZ CFP /FIELD IS PRESENT & SELECTED
1202 2044 2077 ISZ NUMFLD /FIELD PRESENT AND SELECTED
1203 2045 5212 JMP CFPD
1204 2046 7710 CFP2, SPA CLA
1205 2047 5267 LMP CFP4 /STARTF < ENDF
1206 2050 1301 TAD CFP1MP
1207 2051 7041 CIA
1208 2052 1062 TAD STARTF
1209 2053 7050 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 CFP1MP /DF < STARTF ***
1214 2050 7041 CIA
1215 2061 1063 TAD ENDF
1216 2062 7450 SNA
1217 2063 5243 JMP CFP1 /DF = ENDF (SELECTED)
1218 2064 7710 SPA CLA
1219 2065 5212 JMP CFPD /DF > ENDF (NOT SELECTED)
1220 2066 5243 JMP CFP1 /DF < ENDF (SELECTED)
1221 2067 1301 CFP4, TAD CFP1MP /STARTF < ENDF
1222 2070 7041 CIA
1223 2071 1062 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 CFPD /DF < STARTF (NOT SELECTED)
1229 2077 2100 CHECK, CHECKD
1230 2100 0000 CHECKD, 0
1231 2101 0000 CFP1MP, 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

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1242 2106 4776 JMS TYPE /FIELD 7
1243 2107 4775 JMS TFS6
1244 2110 5313 JMP .-3
1245 2111 1163 TAD [268
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 1157 TAD [260
1270 2142 . 76 JMS TYPE /FIELD 0
1271 2143 5702 JMP I FLDSEL
1272
1273 /
1274 2167 3000
1275 2170 3007
1276 2171 3017
1277 2172 3027
1278 2173 3040
1279 2174 3051
1280 2175 3062
1281 2176 5025
1282 2177 3572
1283 PAGE
1284
1285 /
1286 /CONVERT OCTAL NUMBERS FOR TYPEOUT
1287 /
1288 2200 0000 SIXTY, 0
1289 2201 7000 CLA CL-
1290 2202 1000 TAD 1 SIXTY /ADDRESS OF OPERAND
1291 2203 3025 DCA 0
1292 2204 2000 ISZ SIXTY
1293 2205 1000 TAD I SIXTY /STORAGE ADDRESS
1294 2206 3036 DCA 51
1295 2207 2200 ISZ SIXTY

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1296 2210 1155 TAD [77
1297 2211 7340 CVA
1298 2212 0635 AND I 50 /AC-7700
1299 2213 7340 BSA /FIRST 2 DIGITS OF OPERAND
1300 2214 4222 JMS CNV /CONVERT DIGITS FOR TYPEOUT
1301 2215 2276 ISZ S1 /INC STORAGE ADDRESS
1302 2216 1155 TAD [77
1303 2217 0735 AND I 52 /SECOND 2 DIGITS OF OPERAND
1304 2220 . 22 JMS CNV
1305 2221 1600 JMP I SIXTY /DCNE
1306 2222 0000 CNV, 0
1307 2223 3237 DCA 52
1308 2224 1237 TAD 52
1309 2225 7106 CLL RTL
1310 2226 7004 RAL
1311 2227 0154 AND [707 /LEFT DIGIT
1312 2230 1237 TAD 52
1313 2231 0154 AND [707 /RIGHT DIGIT
1314 2232 1153 TAD [6060
1315 2233 3636 DCA I 51 /STORE CONVERTED DIGITS
1316 2234 5622 JMP I CNV
1317 2235 0000 SO, 0
1318 2236 0000 S1, 0
1319 2237 0000 S2, 0
1320
1321 /
1322 /TELETYPE OUTPUT WITH BELL
1323 /
1324 2240 0000 MES, 0
1325 2241 7240 STA /SET PRINTER ACTIVE INDICATOR /+CB/
1326 2242 3023 DCA INMODE
1327 2243 7240 STA
1328 2244 1240 TAD MES /FIRST WORD -1
1329 2245 3010 DCA 10
1330
1331 2246 1410 TAD I 10
1332 2247 3313 DCA M0
1333 2250 1313 TAD M0
1334 2251 7002 BSW
1335 2252 4256 JMS TYPCH /TYPEOUT FIRST CHARACTER
1336 2253 1313 TAD M0
1337 2254 4256 JMS TYPCH /TYPEOUT SECOND CHARACTER
1338 2255 5248 JMP MES+6 /CONTINUE
1339
1340 2256 0000 TYPCH, 0
1341 2257 0155 AND [77
1342 2260 7440 SZA
1343 2261 5264 JMP /+3
1344 2262 3023 DCA INMODE /CLEAR MESSAGE ACTIVE INDICATOR /+CB/
1345 2263 5410 JMP I 10 /END OF MESSAGE RETURN
1346 2264 1152 TAD 1-34
1347 2265 7440 SZA
1348 2266 5271 JMP /+3
1349 2267 1151 TAD [207 /CODE IS BELL
1350 2270 5311 JMP MTP
1351 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 NO, 0
1369
1370 /
1371 /TEST THE SELECTED BANK FOR FIELDS AVAILABLE
1372 /
1373 2314 0000 TESBNA, 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 520 CDF 00
1396 2343 4776 JMS CFP
1397 2344 4766 JMS SFS0
1398 2345 5114 JMP I TES2NA
1399 2346 70 FLOUNT, 0
1400
1401 /
1402 /MARCH TEST IN ERROR
1403 2347 0000 TVAR, 0
1404 2350 4240 JMS SLS
1405 2351 1501 TEXT *MARCH -

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2352 2203
2353 1042
2354 5540
2355 0000
2356 5747      JMP : TWAR
1406
1407
1408
1409 2366 3277
1410 2367 3317
1411 2370 3340
1412 2371 3412
1413 2372 3432
1414 2373 3452
1415 2374 3472
1416 2375 3512
1417 2376 2000
1418 2377 5025
1419 2400
1420
1421 2400 0000      PAGE
1422 2401 4777      /TYPEOUT CHARACTER IN AC AND A SPACE
1423 2402 1142      TYPSP, 0
1424 2403 4777      JMS TYPE
1425 2404 5600      JMS TYPE
1426
1427
1428
1429
1430
1431 2405 0000      RETURN, 0 /PROGRAM RETURN ADDRESS
1432 2406 4405      CDEERR, JMS I 1AFTER
1433 2407 4504      GETSR
1434 2410 0030      AND SMO2 /BELL ON ERROR?
1435 2411 7650      SNA CLA
1436 2412 5221      JMP --7
1437 2413 1076      TAD NOTTY /GET TTY FLAG
1438 2414 7710      SPA CLA
1439 2415 5605      JMP I RETURN /NO TELETYPE AVAILABLE DO NOT RING BELL
1440 2416 1151      TAD 1207
1441 2417 4777      JMS TYPE /RING BELL
1442 2420 5605      JMP I RETURN
1443 2421 4504      GETSR
1444 2422 0027      AND SMO1
1445 2423 7640      SZA CLA
1446 2424 5287      JMP STOP /INHIBIT TYPEOUT
1447 2425 1025      TAD ENWFLG /TEST FOR K7BA
1448 2426 7650      SNA CLA
1449 2427 5134      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 [45-3
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 5656      JMP I ADDR /NO. DO HALT ON ERRORS INSTEAD-INFO IN AC
1472 2456 4775      JMS YES
1473 2457 4543      4543
1474 2460 0700      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 5656      JVP I --1 /TYPEOUT ERROR
1480 2466 0500      ADDR, 0 /ADDRESS OF ERROR TYPEOUT
1481 2467 4504      STOP, GETSR
1482 2470 0026      AND SMO0 /HALT AFTER ERROR?
1483 2471 7650      SNA CLA
1484 2472 5276      JMP LIVIT /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 SMO4 /CHANGE FIELD LIMITS?
1491 2500 7640      SZA CLA
1492 2501 5774      JND DATA /YES
1493 2502 5605      JMP : 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      SXP
1503 2506 5304      JMP --2
1504 2507 7200      CLA
1505 2510 1303      TAD EPRM /RETURN ADDRESS
1506 2511 3505      DCA RETURN
1507 2512 1373      TAD (ERRM
1508 2513 3266      DCA ADDR /ERROR TYPEOUT ADDRESS
1509 2514 5206      JMP CDEERR
1510 2515 4772      PERRM, JMS FLDAT /SET UP FIELD VALUE TO PRINT

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1511 2516 2536 Z10
1512 2517 4776 JMS SIXTY /WHERE TO PUT IT
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 ERRND /NO-HALT ON ERRORS INSTED-INFO IN AC
1518 2525 4775 JMS MES
1519 2526 2205 MES
      2527 1417 TEXT *RELO ERR AT *
      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
1531 //RELOCATION ERROR ROUTINE ON A SYSTEM WITHOUT A TELETYPE
1532
1533 2545 7240 ERRND, CLA CMA
1534 2546 1205 TAD RETURN /
1535 2547 7402 MLI /AC=PROGRAM LOCATION OF ERROR JMS
1536 2550 7200 CLA /AC=FIELD BEING TESTED IN BITS 7-11
1537 2551 1771 TAD FLD CNT /GET TEST FIELD
1538 2552 0370 AND /MASK TO FIELD BITS
1539 2553 7402 MLI (37)
1540 2554 7200 CLA /AC=FIELD BEING TESTED IN BITS 7-11
1541 2555 1054 TAD MOVE
1542 2556 7402 MLI /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 2110
1553 2576 1100
1554 2577 5025
      2600
PAGE
1555
1556 /
1557 /DATA OR CHECKERBOARD ERROR OCCURRED
1558

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1559 2600 0000 / ERRC. 0
1560
1561 2601 2053 ISZ COUNT /ERROR OCCURED
1562 2602 7410 SKP
1563 2603 5201 CLA -2
1564 2604 7200 TAD ERRC
1565 2605 1200 DCA RETURN /RETURN ADDRESS
1566 2606 3777 TAD IERRC
1567 2607 1376 DCA ADDR /ERROR TYPEOUT ADDRESS
1568 2610 3775 GETSR
1569 2611 4504 AND SR02 /BELL ON ERROR
1570 2612 0030 SZA CLA
1571 2613 7640 JMP RBELL /RING BELL
1572 2614 5774 GETSR
1573 2615 4504 AND SR01
1574 2616 0027 SZA CLA
1575 2617 7640 JMP STOP /INHIBIT TYPEOUT
1576 2620 5773 ISZ HEAD1
1577 2621 205E SKP
1578 2622 7410 JMS ERRND /TYPEOUT ERROR HEADING
1579 2623 4772 JMP CODERR
1580 2624 5771
1581
1582
1583 2625 4770 PERRC, JMS FLODAT /SET UP FIELD INFORMATION
1584 2626 2044 Z1 /LOCATION TO PUT IT IN
1585 2627 4767 JMS SIXTY
1586 2630 0047 TAD
1587 2631 1145 Z2
1588 2632 4767 JMS SIXTY
1589 2633 0072 COATA
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 /FAIL ADR
1601 2647 4040 4040
1602 2650 4040 4040
1603 2651 0000 Z3. 0
1604 2652 0000 /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 4335 JMS TN /NONE
1613 2661 5773 JMP STOP

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1614 2662 4766 JMS TO /ALL 0
1615 2662 5277 JMP BPRCO
1616 2664 4766 JMS /ALL 1
1617 2665 5277 JMP BPRCO
1618 2666 4766 JMS /0000 - 7777 ACP
1619 2667 5277 JMP BPRCO
1620 2670 4766 JMS /7777 - 0000 ACP
1621 2671 5277 JMP BPRCO
1622 2672 4766 JMS /0000 - 5252 ACP
1623 2673 5277 JMP BPRCO
1624 2674 4766 JMS /5252 - 0000 ACP
1625 2675 7240 SNA
1626 2676 4766 JMS /MARCH PATTERN FAILURE
1627 2677 4766 PERRCO JMS TPAR
1628 2678 4766 JMS TCS
1629 2701 4766 TAD /AC
1630 2702 4766 TAD /AC
1631 2703 4766 JMS TYPE
1632 2704 4766 TAD /AC
1633 2705 4766 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 ERRCO CLA CMA
1640 2710 7277 TAD RETURN /GET JMS ERROR ADDRESS
1641 2711 7277 HALT /AC=PROGRAM LOCATION OF ERROR JMS
1642 2712 7277 CLA
1643 2713 7277 TAD FLDONT /GET FIELD BEING TESTED
1644 2714 0352 AND (37) /MASK OUT FIELD BITS
1645 2715 7277 HALT /AC=FIELD BEING TESTED BITS 9-11
1646 2716 7277 CLA
1647 2717 1057 TAD TSTAD /AC=FAILING ADDRESS IN FIELD BEING TESTED
1648 2720 7277 HALT
1649 2721 7277 CLA
1650 2722 1072 TAD GDATA /GET THE GOOD DATA
1651 2723 7277 HALT /AC=THE GOOD DATA
1652 2724 7277 CLA
1653 2725 1073 TAD BDATA /GET THE DATA READ
1654 2726 7277 HALT /AC=THE BAD DATA
1655 2727 7277 CLA
1656 2730 4766 JMS TTS /GET THE PATTERN BEING TESTED
1657 2731 1751 PATERR TAD TSNUM /GET THE PATTERN
1658 2732 7277 HALT /AC=PATTERN NUMBER
1659 2733 7277 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

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1669 2737 1617 TEXT "NO PATTERN"
1670 2740 4000
1671 2741 0124
1672 2742 2405
1673 2743 2216
1674 2744 0100
1675 2745 5735 JMP I TN
1676
1677 2751 0555
1678 2752 0037
1679 2753 2346
1680 2754 5025
1681 2755 0503
1682 2756 2347
1683 2757 3064
1684 2758 3550
1685 2759 3501
1686 2760 3501
1687 2761 3501
1688 2762 3501
1689 2763 3501
1690 2764 3501
1691 2765 3501
1692 2766 3501
1693 2767 3501
1694 2768 3501
1695 2769 3501
1696 2770 3501
1697 2771 3501
1698 2772 3501
1699 2773 3501
1700 2774 3501
1701 2775 3501
1702 2776 3501
1703 2777 3501
1704 2778 3501
1705 2779 3501
1706 2780 3501
1707 2781 3501
1708 2782 3501
1709 2783 3501
1710 2784 3501
1711 2785 3501
1712 2786 3501
1713 2787 3501
1714 2788 3501
1715 2789 3501
1716 2790 3501
1717 2791 3501
1718 2792 3501
1719 2793 3501
1720 2794 3501
1721 2795 3501
1722 2796 3501
1723 2797 3501
1724 2798 3501
1725 2799 3501
1726 2800 3501
1727 2801 3501
1728 2802 3501
1729 2803 3501
1730 2804 3501
1731 2805 3501
1732 2806 3501
1733 2807 3501
1734 2808 3501
1735 2809 3501
1736 2810 3501
1737 2811 3501
1738 2812 3501
1739 2813 3501
1740 2814 3501
1741 2815 3501
1742 2816 3501
1743 2817 3501
1744 2818 3501
1745 2819 3501
1746 2820 3501
1747 2821 3501
1748 2822 3501
1749 2823 3501
1750 2824 3501
1751 2825 3501
1752 2826 3501
1753 2827 3501
1754 2828 3501
1755 2829 3501
1756 2830 3501
1757 2831 3501
1758 2832 3501
1759 2833 3501
1760 2834 3501
1761 2835 3501
1762 2836 3501
1763 2837 3501
1764 2838 3501
1765 2839 3501
1766 2840 3501
1767 2841 3501
1768 2842 3501
1769 2843 3501
1770 2844 3501
1771 2845 3501
1772 2846 3501
1773 2847 3501
1774 2848 3501
1775 2849 3501
1776 2850 3501
1777 2851 3501
1778 2852 3501
1779 2853 3501
1780 2854 3501
1781 2855 3501
1782 2856 3501
1783 2857 3501
1784 2858 3501
1785 2859 3501
1786 2860 3501
1787 2861 3501
1788 2862 3501
1789 2863 3501
1790 2864 3501
1791 2865 3501
1792 2866 3501
1793 2867 3501
1794 2868 3501
1795 2869 3501
1796 2870 3501
1797 2871 3501
1798 2872 3501
1799 2873 3501
1800 2874 3501

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1710 3022 6129 TEXT *0000-7777 MCP - *
      3023 2252
      3024 5587
      3025 6787
      3026 6740
      3027 7703
      3030 2640
      3031 5540
      3032 0000
1711 3033 5620 JMP I T07
1712 3034 0000 T70. 0
1713 3035 4777 JMS MES
1714 3036 6767 TEXT *7777-0000 MCP - *
      3037 6767
      3040 5660
      3041 6060
      3042 6040
      3043 2703
      3044 2040
      3045 5540
      3046 0000
1715 3047 5634 JMP I T70
1716
1717 3050 0000 T25. 0
1718 3051 4777 JMS MES
1719 3052 6265 TEXT *2525-5252 MCP - *
      3053 6265
      3054 5445
      3055 145
      3056 1240
      3057 2703
      3060 2040
      3061 5540
      3062 0000
1720 3063 5650 JMP I T25
1721
1722 3064 0000 T52. 0
1723 3065 4777 JMS MES
1724 3066 6562 TEXT *5252-2525 MCP - *
      3067 6132
      3070 5562
      3071 6562
      3072 6540
      3073 2703
      3074 2040
      3075 5540
      3076 0000
1725 3077 5664 JMP I T52
1726
1727
1728 /
1729 /PARITY ERROR
1730 /
1731 3100 7200 PARINT. CLA
1732 3101 1376 TAD (INTR
    
```

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1733 3102 3775 JCA RETURN
1734 3103 4774 JMS SIXTY
1735 3104 0000 0
1736 3105 3131 Z20
1737 3106 4774 JMS SIXTY
1738 3107 6057 TSTAD
1739 3110 3145 Z21
1740 3111 116 TAD NOTTY /GET TTY FLAG
1741 3112 110 SPA CLA /IS THERE A TELETYPE AVAILABLE
1742 3113 5354 JMP PARERR /NO. GO HALT WITH ERROR INFO IN AC
1743 3114 4777 JMS MES /PRINT HEADER
1744 3115 4543 TEXT *%PARITY ERR, LDC 0*
      3116 2001
      3117 2211
      3120 2431
      3121 4005
      3122 2222
      3123 5440
      3124 1117
      3125 6340
      3126 6075
      3127 0000
1745 3130 4777 JMS YES
1746 3131 0000 Z20. 0
1747 3132 0300 0 /CONTENT OF LDC 0
1748 3133 4040 4040
1749 3134 2423 2423
1750 3135 2401 2401
1751 3136 0475 0475 /TSTAD=
1752 3137 0000 0000
1753 3140 6004 GTF
1754 3141 2136 AND I7
1755 3142 1167 TAD I260
1756 3143 4773 JMS TYPE /TYPE DATA FIELD
1757 3144 4777 JMS MES
1758 3145 0000 Z21. 0
1759 3146 0000 0 /CONTENT OF TSTAD
1760 3147 0000 0000
1761 3150 6100 MSP
1762 3151 7040 ST1
1763 3152 3055 JCA HEAD1
1764 3153 5772 JDP HEADRC /TYPE PRESENT TEST
1765
1766
1767 /PARITY ERROR ON A NON TTY SYSTEM- ERROR INFO IN THE AC FOR EACH HALT
1768
1769 3154 1000 PARERR. TAD 0
1770 3155 7402 MLI /GET THE INTERRUPTED PAC
1771 3156 7402 CLA /AC=INTERRUPTED PC (LOCATION 0)
1772 3157 6034 GFF /GET THE FLAGS
1773 3160 0371 AND I7 /MASK TO DATA FIELD
1774 3161 7402 MLI /AC=DATA FIELD AT TIME OF PARITY ERROR
1775 3162 7402 CLA
1776 3163 1057 TAD TSTAD
1777 3164 7402 MLI /AC=ADDRESS IN FIELD BEING TESTED
    
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1778 3165 7200      CLA
1779 3166 6104      CMP
1780 3167 5772'     JMP      PARCRC      /CLEAR MEMORY PARITY ERROR BIT
1781                                     /GO GET PATTERN BEING TESTED
1782 3171 0007
1783 3172 2657
1784 3173 5025
1785 3174 2200
1786 3175 2405
1787 3176 4256
1788 3177 2240
1789                                     PAGE
1790
1791 /
1792 /UNWANTED INTERRUPT OCCURRED
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      SNA      CLA      /IS THERE A TELETYPE ON THE SYSTEM
1797 3204 5207      JMP      -+3      /YES GO PRINT THE MESSAGE
1798 3205 7402      HLT
1799 3206 5227      JMP      BINTC      /UNWANTED INTERRUPT OCCURED
1800 3207 4776'     JMS      MES      /GO CLEAR THE WORD AND CONTINUE
1801 3210 4543      TEXT      *XUNWANTED INTERRUPT OCCURRED*
3211 2516
3212 2701
3213 1624
3214 0504
3215 4011
3216 1624
3217 0522
3218 2225
3219 2624
3220 4017
3221 0303
3222 2522
3223 2205
3224 0400
1802 3227 6007      BINTC, CAF
1803 3230 7240      STA
1804 3231 3055      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 7^10     CLA STL RAR
1811 3235 1:37     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)

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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 5656     JMP I    SCS1
1843 3272 0000      SCS2, 0      /SET CS2 (2 COMPLEMENTS)
1844 3273 7332     CLA STL RTR
1845 3274 7^10     RAR
1846 3275 1:36     DCA      CS
1847 3276 1672     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
1854 3302 1456     TAD I    T_MP      /SETUP BANK POINTER
1855 3303 7004     RAL
1856 3304 7130     STL RAR
1857 3305 3436     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
1862 3312 1456     TAD I    TEMP      /SETUP BANK POINTER
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
1870 3322 1456     TAD I    TEMP      /SETUP BANK POINTER
1871 3323 7006     RTL
1872 3324 7132     STL RTR

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/PDP-8E EXTENDED MEMORY DATA AND CHECKERBOARD TEST

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SEQ 0056

1873	3325	3456		DCA I	TEMP	
1874	3326	5717		JMP I	SFS1	/SAVE NEW WORD
1875	3327	0000	SRS1.	0		
1876	3330	7200		CLA		/SET RS1 (DON'T RELO TO FIELD 1)
1877	3331	4507		SETRS		
1878	3332	1456		TAD I	TEMP	/SETUP BANK POINTER
1879	3333	1044		TAD	RS	
1880	3334	7176		RTL		
1881	3335	132		STL RTR		
1882	3336	3456		DCA I	TEMP	
1883	3337	5727		JMP I	SRS1	/SAVE NEW WORD
1884	3340	0000	SFS2.	0		
1885	3341	7200		CLA		/SET FS2 (DON'T TEST FIELD 2)
1886	3342	4506		SETFS		
1887	3343	1456		TAD I	TEMP	/SETUP BANK POINTER
1888	3344	7006		RTL		
1889	3345	7500		SMA		
1890	3346	1135		TAD	[4000	
1891	3347	7112		RTR		
1892	3350	3456		DCA I	TEMP	
1893	3351	5740		JMP I	SFS2	/SAVE NEW WORD
1894			/			
1895	3352	3277	SFTAB.	SFS3		
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	3200				
		3400	PAGE			
1906	3400	0000	SRS2.	0		/SET RS2 (DON'T RELO TO FIELD 2)
1907	3401	7200		CLA		
1908	3402	4507		SETRS		
1909	3403	1456		TAD I	TEMP	/SETUP BANK POINTER
1910	3404	7006		RTL		
1911	3405	7500		SMA		
1912	3406	1135		TAD	[4000	
1913	3407	7012		RTR		
1914	3410	3456		DCA I	TEMP	
1915	3411	5600		JMP I	SRS2	/SAVE NEW WORD
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)

/PDP-8E EXTENDED MEMORY DATA AND CHECKERBOARD TEST

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SEQ 0057

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	[7500	
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	0300	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	[7650	
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	[7650	
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	0128		AND	[7720	
1974	3477	1171		TAD	[40	
1975	3500	36		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 SRS5
1985 3512 0000 SFS7, 0 /SET FS7 (DCN'T TEST FIELD 7)
1986 3513 7200 CLA /SETUP BANK POINTER
1987 3514 4506 SETFS
1988 3515 1456 TAD I TEMP
1989 3516 0173 AND [7740
1990 3517 1170 TAD [20
1991 3520 3455 DCA I TEMP /SAVE NEW WORD
1992 3521 5712 JMP I SFS7
1993 3522 0000 SRS7, 0 /SET RS7 (DCN'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 T0
2016 3536 0125 AND [7770
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 TYSO, CLL RAL
2023 3545 7421 MQL
2024 3546 7430 S2L /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 S4P
2030 3554 5344 JMP TYSO /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 PAGE
2042 3600
2043
2044
2045 /TEST FIELD STATUS
2046 /RETURN IF FIELD STATUS BIT SET (DCN'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 SVA CLA /FIELD 0
2054 3605 2332 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 SVA CLA /FIELD 1
2063 3615 2332 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 SVA CLA /FIELD 2
2072 3625 2332 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 7008 RTL
2080 3634 7004 RAL
2081 3635 7700 SVA CLA /FIELD 3
2082 3636 2332 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

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2091 3646 7700          SMA CLA          /FIELD 4
2092 3647 2200          ISZ
2093 3650 5800          JMP I   TFS4
2094 3651 0000          TFS5, 0
2095 3652 7000          CLA
2096 3653 4506          SETFS          /SETUP BANK POINTER
2097 3654 1456          TAD I   TEMP
2098 3655 7002          BSM
2099 3656 7010          RAR
2100 3657 7620          SMA CLA          /FIELD 5
2101 3660 2251          ISZ
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          BSM
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          BSM
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 7700          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 7005          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          /CB- / 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 7702          BSM
2183 3761 7010          RAR
2184 3762 7520          SMA 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 7702          BSM
2193 3772 7700          SMA CLA          /FIELD 6
2194 3773 2365          ISZ   TRS6
2195 3774 5765          JMP I   TRS6
2196
2197          /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 5700          JMP I   TRS7
2209
2210
2211
2212
2213
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 DAD PATTERN*'
      4017 2022
      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
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 MESSAGE
2230 4047 4777          JMS   MES
2231 4050 4543          TEXT  '*PDP-0E 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
4068 0204
4067 4300
2232 4070 5643          JMP I   TITLE
2233
2234
2235
2236
2237 4071 0000          SETSM, 0
2238 4072 1076          TAD   NOTTY          /GET TTY FLAG
2239 4073 7710          SPA   CLA          /IS THERE A TTY AVAILABE
2240 4074 5671          JMP I SETSM
2241 4075 4777          JMS   MES
2242 4076 4543          TEXT  '*SELECT FIELD PARAMETERS*'
      4077 2305
      4100 1405
      4101 0324
      4102 4006
      1103 1105
      4104 1404
      4105 4020
      4106 0122
      4107 0115
      4110 0524
      4111 0522
      4112 2345
      4113 4300
2243 4114 5671          JMP I   SETSM
2244
2245
2246
2247
2248
2249
2250 4115 0000          PNDREL, 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 PNDREL          /NO. GO RUN TEST
2254 4121 4777          JMS   MES
2255 4122 4543          TEXT  '*NO RELOCATION, PROC IN FIELD *'
      4123 1217
      4124 1122
      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
2257 4143 7106
2258 4144 7004
2259 4145 1124
2260 4146 3350
2261 4147 4777
2262 4150 0000
2263 4151 7240
2264 4152 3055
2265 4153 5715
2266
2267
2268
2269
2270 4154 0000
2271 4155 1076
2272 4156 7710
2273 4157 5754
2274 4160 4777
2275 4161 4543
4162 2732
4163 07
4164 4027
4165 1114
4166 1440
4167 2205
4170 1417
4171 0301
4172 2405
4173 0500
2276 4174 7240
2277 4175 3055
2278 4176 5.54
2279
2280
2281
2282
2283 4177 2240
4200
2284
2285
2286
2287
2288
2289
2290
2291
2292

```

```

RIF
CLL RTL
RAL
TAD [6000
DCA ZB
JMS MES
ZB. 0
STA
DCA HEAD1
JMP I PNOREL

/TYPEOUT 'RELOCATION'
PREL. 0
TAD NDTTY /GET TELETYPE FLAG
SPA CLA /PRINT MESSAGE ?
JMP I PREL /NO TTY - DO NOT PRINT
JMS MES
TEXT *%PRCG WILL RELOCATE*

STA
DCA HEAD1
JMP I PREL

/
PAGE
/
/
/RELOCATE THE PROGRAM
/

```

```

2293 4200 0000
2294 4201 7200
2295 4202 3053
2296 4203 3054
2297 4204 2061
2298 4205 5212
2299 4206 1077
2300 4207 7711
2301 4210 0001
2302 4211 4777
2303 4212 1176
2304 4213 1051
2305 4214 3225
2306 4215 1176
2307 4216 1052
2308 4217 3227
2309 4220 1225
2310 4221 3232
2311 4222 7705
2312 4223 1227
2313 4224 3244
2314 4225 8201
2315 4226 1454
2316 4227 8201
2317 4230 3454
2318 4231 1454
2319 4232 8201
2320 4233 7041
2321 4234 1454
2322 4235 7640
2323 4236 4776
2324 4237 2054
2325 4240 5225
2326 4241 1053
2327 4242 7640
2328 4243 5600
2329 4244 8203
2330 4245 5600
2331
2332
2333
2334
2335 4246 4300
2336 4247 6107
2337 4250 5253
2338 4251 8101
2339 4252 5775
2340 4253 6031
2341 4254 5774
2342 4255 4773
2343 4256 4772
2344 4257 7200
2345 4260 1075
2346 4261 7421
2347 4262 6004

```

```

RELO. 0
CLA
DCA COUNT /CLEAR ERROR COUNTER
DCA MOVE /CLEAR MOVE COUNTER
ISZ RELCNT /SEE IF ALL FIELDS DONE
JMP .+5
TAD NUMFLD
CXA
DCA RELCNT
JMS ENDPAS
TAD [6201
TAD PROFLD
DCA RELO2
TAD [6201
TAD [57FLD
DCA RELO3
TAD RELO2
DCA RELO4
CLL CLA IAC RAL /AC*2
TAD RELO3
DCA RELO5
RELO2. CDF 0 /MOVE FROM DF
TAD I MOVE
RELO3. CDF 0 /MOVE TO DF
DCA I MOVE
TAD I MOVE
RELO4. CDF 0 /MOVE FROM DF
CIA
TAD I MOVE
SZA CLA
JMS ERRM /MOVE ERROR
ISZ MOVE
JMP RELO2
TAD CCUNT
SZA CLA
JMP I RELO /SKIP IF MOVE ERROR
RELO5. CDI 0 /NEW PROGRAM FIELD
JMP I RELO

/INTERRUPT ROUTINE
INTR0. JMS SAVINT
SPO
JMP .-3 /SKIP IF PARITY OPTION
SWP
JMP PARINT /PARITY ERROR
KSF
JMP EADINT /UNWANTED INTERRUPT
JMS KBINT /KEYBOARD INTERRUPT
INTR. JMS RESINT
CLA
TAD SWO
MOL
GTF /RESTORE MO

```

```

2348 4263 6005      RTF
2349 4264 7200      CLA
2350 4265 1074     TAD      SAC      /RESTORE AC
2351 4266 5400     JMP I    C
2352
2353
2354
2355
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 5657     JMP I    PAR
2362 4274 6224     RIF
2363 4275 7850     SNA      CLA      /SKIP IF NOT FIELD 0
2364 4276 6001     IDN
2365 4277 5287     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 1787     TAD      30
2373 4307 3337     DCA      A3
2374 4310 1766     TAD      51
2375 4311 3343     DCA      A4
2376 4312 1765     TAD      52
2377 4313 3341     DCA      A5
2378 4314 1764     TAD      YES
2379 4315 3342     DCA      A6
2380 4316 1783     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      ERRD90
2391 4331 3350     DCA      A12
2392 4332 1755     TAD      ERRD1
2393 4333 3351     DCA      A13
2394
2395 4334 5754     JMP      C80000    /CB/
2396
2397 4335 0000     A1.      0          /CB/
2398 4336 0000     A2.      0          /CB/
2399 4337 0000     A3.      0          /CB/
2400 4340 0000     A4.      0          /CB/
2401 4341 0000     A5.      0          /CB/
2402 4342 0000     A6.      0          /CB/

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2403 4343 0000     A7.      0          /CB/
2404 4344 0000     A8.      0          /CB/
2405 4345 0000     A9.      0          /CB/
2406 4346 0000     A10.     0          /CB/
2407 4347 0000     A11.     0          /CB/
2408 4350 0000     A12.     0          /CB/
2409 4351 0000     A13.     0          /CB/
2410
2411 4354 2400
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 2130
2426 4373 1546
2427 4374 3200
2428 4375 3100
2429 4376 2503
2430 4377 5726
2431
2432
2433
2434
2435 4400 1777     TAD      ERRD1+1
2436 4401 3315     DCA      A14
2437 4402 1778     TAD      BORDER
2438 4403 3316     DCA      A15
2439 4404 1775     TAD      TA
2440 4405 3317     DCA      A16
2441 4406 1774     TAD      TC
2442 4407 3320     DCA      A17
2443 4410 1773     TAD      T
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      T06
2456 4425 3327     DCA      A24

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2457					
2458	442E	1734'	TAD	SAVINT	/CB/
2459	4427	3231	DCA	CBCCD1	/CB/
2460	4430	5831	JMP :	CBCCD1	/CB/
2461					
2462	4431	0000	CB0001,	0	/CB/
2463					
2464					
2465					
2466					
2467	4432	0000	RESINT,	0	
2468	4433	7200	CLA		
2469	4434	1783'	TAD		
2470	4435	3782'	DCA	SIXTY	
2471	4436	1761'	TAD	A2	
2472	4437	3780'	DCA	CMV	
2473	4440	1757'	TAD	A3	
2474	4441	3756'	DCA	SC	
2475	4442	1755'	TAD	A4	
2476	4443	3754'	DCA	S1	
2477	4444	1753'	TAD	A5	
2478	4445	3752'	DCA	S2	
2479	4446	1751'	TAD	A6	
2480	4447	3750'	DCA	YES	
2481	4450	1747'	TAD	A7	
2482	4451	3746'	DCA	TYPCM	
2483	4452	1745'	TAD	A8	
2484	4453	3744'	DCA	WC	
2485	4454	1743'	TAD	A9	
2486	4455	3742'	DCA	TYPE	
2487	4456	1741'	TAD	A10	
2488	4457	3740'	DCA	TYFSP	
2489	4460	1737'	TAD	A11	
2490	4461	3736'	DCA	RETURN	
2491	4462	1735'	TAD	A12	
2492	4463	3734'	DCA	ERRORD	
2493	4464	1733'	TAD	A13	
2494	4465	3732'	DCA	ERROR1	
2495	4466	1318	T/D	A14	
2496	4467	3777'	DCA	ERROR1+1	
2497	4470	1316	TAD	A15	
2498	4471	3776'	DCA	ADDER	
2499	4472	1317	TAD	A18	
2500	4473	3775'	DCA	TN	
2501	4474	1323	TAD	A17	
2502	4475	3774'	DCA	T0	
2503	4476	1321	TAD	A18	
2504	4477	3773'	DCA	T1	
2505	4500	1322	TAD	A19	
2506	4501	3772'	DCA	T07	
2507	4502	1323	TAD	A20	
2508	4503	3771'	DCA	T70	
2509	4504	1324	TAD	A21	
2510	4505	3770'	DCA	T25	
2511	4506	1325	TAD	A22	

2512	4507	3767'	DCA	T52	
2513	4510	1326	TAD	A23	
2514	4511	3766'	DCA	T65	
2515	4512	1327	TAD	A24	
2516	4513	3765'	DCA	TTS	
2517	4514	5832	JMP 1	RESINT	
2518					
2519	4515	0000	A14,	0	/CB/
2520	4516	0000	A15,	0	/CB/
2521	4517	0000	A16,	0	/CB/
2522	4520	0000	A17,	0	/CB/
2523	4521	0000	A18,	0	/CB/
2524	4522	0000	A19,	0	/CB/
2525	4523	0000	A20,	0	/CB/
2526	4524	0000	A21,	0	/CB/
2527	4525	0000	A22,	0	/CB/
2528	4526	0000	A23,	0	/CB/
2529	4527	0000	A24,	0	/CB/
2530					
2531					
2532	4532	2461			
2533	4533	4351			
2534	4534	2460			
2535	4535	4350			
2536	4536	2465			
2537	4537	4347			
2538	4540	2460			
2539	4541	4346			
2540	4542	8025			
2541	4543	4345			
2542	4544	2313			
2543	4545	4344			
2544	4548	2256			
2545	4547	4343			
2546	4550	2240			
2547	4551	4342			
2548	4552	2237			
2549	4553	4341			
2550	4554	2236			
2551	4555	4340			
2552	4556	2235			
2553	4557	4337			
2554	4560	2232			
2555	4561	4336			
2556	4562	2230			
2557	4563	4335			
2558	4564	2230			
2559	4565	4332			
2560	4566	223			
2561	4567	4328			
2562	4570	2235			
2563	4571	4334			
2564	4572	2233			
2565	4573	4330			
2566	4574	2230			

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2507 4575 2735
2508 4576 2466
2509 4577 2462
      4600
2570 /
2571 /TYPEOUT 'NONE' FOR NO LEGAL FIELD SELECTION
2572 /
2573 4600 1076 NOFLD, TAD NOTTY /GET THE TT FLAG
2574 4601 7710 SPA CLA /WAS IT SET
2575 4602 5777' JMP PATA /YES NO TELETYPE DO NOT PRINT
2576 4603 4776' JMS MES
2577 4604 1617 TEXT "NONE"
      4605
      4606 0000
2578 4807 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 FLD CNT
2586 4613 0035 AND SR011
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 4F53 JMS I SRS /GO EXECUTE ROUTINE
2592 4621 1.50 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 4543 TEXT "%DISCONNECTED"
      0411
      2303
      1716
      1095
      0324
      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

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```

2612 4653 0000 /
2613 SRS, 0
2614 /
2615 /
2616 4654 0000 PNTFLD, 0
2617 4655 4776' JMS MES
2618 4656 4543
2619 4657 1.0 0
2620 4660 1060 TAD FCNT
2621 4661 0034 AND SR68 /ISOLATE BANK INFORMATION
2622 4662 7112 GLL RTR
2623 4663 7010 RAR /MOVE INTO POSITION
2624 4664 1167 TAD [-60
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"
      0514
      0423
      4011
      1640
      2410
      1123
      4023
      3123
      3405
      1500
2632 4706 4776' JMS MES
2633 4707 4543 TEXT "%FIELDS SEL'D ARE "
      0611
      0514
      0423
      4023
      0514
      4704
      4001
      2205
      4000
2634 4721 4771' JMS T0SEL
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

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2648 4726 0345 AND K400 /TEST FOR BIT 3=1 CONSOLE ACTIVE
2649 4727 7640 SZA CLA /SKIP IF CONSOLE NOT ACTIVE
2650 4730 5333 JMP .+3 /CONSOLE IS ACTIVE.
2651 4731 1348 TAD CHRTMP /GET BACK THE CHARACTER
2652 4732 5723 JMP I XCBAL /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 1348 TAD CHRTMP /RESTORE AC
2659 4741 4744 JMS I CBLOC /GO TO CONSOLE PACKAGE
2660 4742 2323 ISZ XCBAL /INCREMENT RETURN ADDRESS
2661 4743 5723 JMP I XCBAL /RETURN CALL + 2 CONSOLE WAS ACTIVE
2662
2663 4744 7222 CBLOC. CGENTR /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 /GOING 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 2400
2682 4773 5025
2683 4774 4643
2684 4775 2346
2685 4776 2240
2686 4777 0205
2687 5000
2688 /PAGE
2689 /PRINT *SELECT TEST PARAMETERS*
2690
2691 5000 0000 SETPAR, 0
2692 5001 7200 CLA
2693 5002 1076 TAD NOTTY
2694 5003 7710 SPA CLA /SKIP IF TTY AVAILABLE
2695 5004 5770 JMP I SETPAR
2696 5005 7771 JMS MES
2697 5006 3345 TEXT *#XSELECT TEST PARAMETERS#X*
2698 5007 2305
2699 5010 1405
2700 5011 0324
2701 5012 4924
2702 5013 0523

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```

5014 2440
5015 2001
5016 2201
5017 1505
5020 2405
5021 2223
5022 4345
5023 0000
5024 5600
2697 JMP I SETPAR
2698
2699 /
2700 /TYPEOUT CHARACTER IN AC
2701 /
2702 TYPE, 0
2703 DCA TEMP /SAVE THE CHARACTER
2704 TAD 22 /GET HCW2
2705 SPA CLA /SKIP APT NOT ACTIVE
2706 JMP I TYPE /EXIT IF APT ACTIVE
2707 TAD TEMP /GET BACK CHARACTER
2708 SKON
2709 JMP TYPCFF
2710 PRINT
2711 ICN
2712 CLA
2713 JMP I TYPE
2714 TYPCFF, PRINT
2715 CLA
2716 JMP I TYPE
2717 /
2718 /TYPEOUT 'PROGRAM IN SELECTED FIELD'
2719 /
2720
2721 PINF, TAD NOTTY /GET THE TELETYPE PROGRAM FLAG
2722 SPA CLA /IS THERE A TELETYPE AVAILABLE
2723 JMP PATA /NO TTY- GO NOT PRINT
2724 JMS MES /GO PRINT MESSAGE
2725 TEXT *%PROGRAM IN SELECTED FIELD*
5051 2022
5052 1707
5053 2201
5054 1540
5055 1116
5056 4023
5057 0514
5058 0503
5059 2405
5060 3440
5061 0611
5062 0514
5063 0400
5064 5776
2726 JMP PATA /GO SETUP SWITCHES AGAIN
2727
2728 /SET UP THE FIELD IN ERROR FOR TYPECU
2729 /LOCATION FOLLOWING CALL IS WHERE TO STORE INFORMATION
2730 /

```

```

2731 5067 0000 FLDAT. 0
2732 5070 1667 TAD I FLDAT /GET LOCATION TO STORE IT IN
2733 5071 3216 DCA DATYPO /SAVE IT
2734 5072 2267 ISZ FLDAT /UPDATE RETURN
2735 5073 1225 TAD EWBFLD
2736 5074 7650 SNA CLA /SKIP IF KTB ACTIVE
2737 5075 5202 JSP -5
2738 5076 1112 TAD TSTFLD /GET FIELD BEING DONE
2739 5077 1110 RACA /BINARY NUMBER
2740 5100 3056 OCA TEMP /SAVE IT
2741 5101 5326 JSP -5 /PROCESS IT
2742 5102 1052 TAD TSTFLD
2743 5103 7112 CLL RTR
2744 5104 7010 RAR
2745 5105 3056 OCA TEMP /SAVE IT
2746 5106 4775 JMS STATY
2747 5107 0656 TEMP /LOCATION TO DO
2748 5110 5114 OQ /WHERE TO PUT IT
2749 5111 1115 TAD YY /GET DECODED VALUE
2750 5112 3716 DCA I DATYMP
2751 5113 5067 JMP I FLDAT /AND EXIT
2752
2753 /
2754 5114 0000 DCA 0
2755 5115 0000 YY 0
2756 5116 0000 DATYMP. 0
2757
2758 /
2759 /MAKE A BINARY NUMBER OUT OF A FIELD CHANGE
2760
2761 /
2762 5117 0000 XRACA. 0
2763 5120 3360 DCA RTEMP
2764 5121 1260 TAD RTEMP
2765 5122 0365 AND K104
2766 5123 3361 DCA RTEMP1 /SAVE BANK VALUE
2767 5124 1361 TAD RTEMP1
2768 5125 7002 BSM /S 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 130 /ISOLATE BANK
2774 5133 3361 OCA RTEMP1
2775 5134 1360 TAD RTEMP
2776 5135 0373 AND 170 /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 13
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 17 /ISOLATE FIELD
2794 5154 7106 CLL RTL
2795 5155 7004 RAL /NOW 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. 9
2802 5163 0004 4
2803 5164 0100 K104. 100
2804 5165 0104 K104. 104
2805
2806 5170 0007 /
2807 5171 5132 /
2808 5172 0003 /
2809 5173 0070 /
2810 5174 0030 /
2811 5175 0700 /
2812 5176 0005 /
2813 5177 0040 /
2814 PAGE
2815 /
2816 /
2817 /
2818 /THE FOLLOWING TEST IS A MARCH PATTERN DEVELOPED FOR TESTING
2819 /THE MSB-C MS MEMORY.
2820 /
2821 /
2822 /THE TEST SELECTED FOR THE MS MEMORY TESTING IS A TYPICAL MARCH
2823 /PATTERN. THE TEST BEGINS BY LOADING THE ENTIRE MEMORY WITH
2824 /A 252E PATTERN. THEN STARTING AT ADDRESS ZERO OF LOWEST POSSIBLE
2825 /FIELD THE TEST READS THE CONTENTS, COMPARES IT, AND THEN WRITES BACK
2826 /THE COMPLEMENT VALUE. THE PROCESS IS REPEATED THROUGHOUT THE ENTIRE
2827 /MEMORY.
2828 /
2829 /NEXT THE PROCESS REPEATS FROM MAXIMUM TO MINIMUM, COMPLEMENTING
2830 /AS IT IS BEING DONE.
2831 /
2832 /THE ENTIRE SEQUENCE IS THEN REPEATED USING A BACKGROUND OF
2833 /B2E2. THIS INSURES THAT A ONE AND A ZERO CAN BE WRITTEN INTO
2834 /EACH MEMORY CELL.
2835 /
2836 /
2837 /
2838 /
2839 /
2840 5200 0000 VCSTST. 0
2841 5201 7344 CLL CLA OVA RAL /AC*-2

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```

2840 5202 3364 DCA PATCNT
2841 5203 7343 CLL CLA CVA RAL /AC--2
2842 5204 3362 DCA TSTCNT
2843 5205 7336 CLL CLA
2844 5206 3777 DCA FLOCNT
2845 5207 3024 DCA BANK /CLEAR INDICATORS
2846 5210 7301 CLL CLA IAC
2847 5211 3380 DCA ADDINC
2848 5212 7301 CLL CLA IAC
2849 5213 3361 DCA FLOINC
2850 5214 4778 MWSL00. JMS MWSFLD /TEST FOR VALID FIELD SELECTION
2851 5215 5232 JVP MWSUPD /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 MWSFLD /SAVE FOR RETURN
2855 5221 1052 TAD TSTFLD
2856 5222 1176 TAD [6201 /MAKE TEST FIELD A CDF
2857 5223 3225 DCA .-1
2858 5224 1385 MEMLOP. TAD PAT1 /FILL MEMORY WITH BACKGROUND
2859 5225 6201 CDF /CHANGED TO LOAD FIELD
2860 5226 3457 DCA I TSTAD
2861 5227 6201 MWSFLD. CDF /MAKE DF=PROFLD
2862 5230 3057 ISZ TSTAD /SEE IF ALL DONE
2863 5231 5224 JMP MEMLOD /GO BACK AND TRY IT AGAIN
2864
2865 /UPDATE TEST FIELD VALUE AND TEST AGAIN
2866
2866 5232 7200 MWSUPD. CLA
2867 5233 1177 TAD FLOCNT
2868 5234 1141 CIA
2869 5235 1060 TAD FCNT /TEST FOR MAX VALUE
2870 5236 7850 SNA CLA /SKIP IF NOT AT MAX
2871 5237 5242 JMP .-3 /AT MAX START READING
2872 5240 2777 ISZ FLOCNT /UPDATE FIELD TO DO
2873 5241 5214 JMP MWSL00. /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 IAPTOX /NOTIFY APT IF REQUIRED.
2878 5243 3777 DCA FLOCNT
2879 5244 3024 DCA BANK /CLEAR INDICATORS AGAIN FOR READ CYCLE
2880 5245 4778 MWSRED. JMS MWSFLD
2881 5246 5300 JVP MWSUPD /NOT A VALID SELECTION.
2882 5247 1365 TAD PAT1 /SET UP COMPARISON
2883 5250 3072 DCA GOATA
2884 5251 1051 TAD PROFLD /GET CURRENT FIELD 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 REDLUR. CDF /CHANGE TO TEST FIELD CDF
2891 5260 1457 TAD I TSTAD /GET VALUE IN SELECTED FIELD
2892 5261 3073 DCA GOATA /SAVE IT FOR COMPARISON
2893 5262 1366 TAD PAT2 /NOW WRITE BACK COMPLIMENT VALUE
2894 5263 3457 DCA I TSTAD /BACK INTO SELECTED FIELD

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2895 5264 6201 REDFLD. CDF /CHANGED TO CURRENT CDF
2896 5265 1072 TAD GOATA
2897 5266 7041 CIA
2898 5267 1073 TAD GOATA /SET UP COMPARISON
2899 5270 7040 SZA CLA /SKIP IF EQUAL
2900 5271 4775 JMS MWSERR /GO REPORT ERROR
2901 5272 1057 TAD TSTAD
2902 5273 1176 TAD ADDINC /ADD IN ADDRESS OFFSET.
2903 5274 1197 DCA TSTAD /AND RESTORE NEW VALUE
2904 5275 1057 TAD TSTAD
2905 5276 7040 SZA CLA
2906 5277 5257 JVP REDLUR /GO BACK AND DO THE NEXT
2907 5300 1361 MWSUPD. TAD FLOINC
2908 5301 7710 SPA CLA /SKIP IF READING LOW TO HIGH
2909 5302 5305 JVP .+3 /BY PASS COMPARISON
2910 5303 1060 TAD FCNT
2911 5304 7041 CIA
2912 5305 1777 TAD FLOCNT
2913 5306 7150 SNA CLA /SKIP IF NOT AT MAX
2914 5307 5314 JVP .+5
2915 5310 1361 TAD FLOINC /ADD IN FIELD OFF SET VALUE
2916 5311 1777 TAD FLOCNT /TO THE CURRENT FIELD POSITION
2917 5312 3777 DCA FLOCNT
2918 5313 5245 JVP MWSRED /GO BACK AND READ NEXT FIELD
2919
2920 /NOW UPDATE PATTERN TO LOAD AND READ BACK VALUE
2921
2922 5314 1361 TAD FLOINC
2923 5315 7041 CIA /NEGATE CURRENT FIELD INCREMENT VALUE
2924 5316 3261 DCA FLOINC /AND RESTORE IT
2925 5317 1360 TAD ADDINC /NOW DO SAME FOR THE ADDRESS OFFSET
2926 5320 7041 CIA
2927 5321 5360 DCA ADDINC
2928 5322 1360 TAD ADDINC
2929 5323 7100 SNA CLA /SKIP IF READING HIGH TO LOW
2930 5324 3231 JVP .-5
2931 5325 7240 STA /AC TO -1
2932 5326 3257 DCA TSTAD /START AT ADDRESS 7777 OF HIGH FIELD
2933 5327 1560 TAD FCNT /START AT HIGHEST FIELD
2934 5330 3777 DCA FLOCNT
2935 5331 1265 TAD PAT1 /COMPLIMENT PATTERN
2936 5332 7040 DCA
2937 5333 3233 DCA PAT1
2938 5334 1366 TAD PAT2
2939 5335 7040 DCA
2940 5336 1266 DCA PAT2
2941 5337 4408 JMS I IAPTOX
2942 5340 2362 ISZ TSTCNT /ALL DONE ?
2943 5341 7210 SZA
2944 5342 5248 JVP .+4
2945 5343 7330 CLL CLA CVA RTR /SET BIT ONE OF CS WORD
2946 5344 3236 DCA CS /ONES COMPLIMENT
2947 5345 5249 JVP MWSRED
2948 5346 3236 DCA CS
2949 5347 1365 TAD PAT1

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2950 5350 7040 CMA
2951 5351 3355 DCA PAT1
2952 5352 1356 TAD PAT2
2953 5353 7040 CMA
2954 5354 3356 DCA PAT2
2955 5355 2364 ISZ PATCNT /SEE IF ALL PATTERNS DONE
2956 5356 5203 JMR 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 2346
        PAGE
2970 5400
        /
2971 5400 0000 XPRINT, 0
2972 5401 6040 TLS
2973 5402 6041 T5#
2974 5403 5202 JMP -1
2975 5404 6042 TCF
2976 5405 7200 CLA
2977 5406 6031 MSF /IS KEY BOARD VIATING
2978 5407 5600 JMP I XPRINT
2979 5410 6036 MRS /GET CHARACTER
2980 5411 4505 CBCAL /TEST FOR ACTIVE CONSOLE
2981 5412 7200 CLA /NOT ACTIVE JUST IGNORE CHARACTER
2982 5413 6032 MCC /CLEAR FLAG
2983 5414 5600 JMP I XPRINT
2984
2985
2986
2987
2988
2989
2990 5415 0000 MOSERR, 0
2991 5416 2053 ISZ COUNT /UPDATE ERROR COUNT
2992 5417 1377 TAD (40
2993 5420 1037 DCA IS /SAVE TEST STATUS FOR PRINTOUT
2994 5421 3036 DCA CS
2995 5422 1072 TAD GDATA /DATA WRITTEN
2996 5423 4776 JMS GERRC
2997 5424 3053 DCA COUNT
2998 5425 1015 JMP I MOSERR
2999
3000
3001
3002
3003 /PRINT END OF PASS MESSAGE

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3004
3005 5426 0000 /
        ENDPAS, 0
3006 5427 7200 CLA
3007 5430 1076 TAD NOTTY
3008 5431 7710 SPA CLA /SKIP IF IT IS 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 "#XEND OF PASS "
        /
3016 5441 0516
3017 5442 0440
3018 5443 1706
3019 5444 4020
3020 5445 0123
3021 5446 2340
3022 5447 0000
3023 5450 4774 JMS MES
3024 5451 0000 ENDMES, 0
3025 5452 0000 0
3026 5453 0000 0
3027 5454 5626 JMP I ENDPAS
3028
3029 /
        PASSES, 0
3030 5455 0000 0
3031 5456 0000
3032
3033 5474 1040
3034 5475 1200
3035 5476 1454
3036 5477 0040
        PAGE
3037
3038 /
        /APT/ ROUTINE TO HANDLE ERRORS UNDER CONTROL OF APT
3039
3040 APTER, 0
3041 IOF /APT/
3042 DCA APTIZ /APT/
3043 TAD 22 /SAVE ANYTHING IN THE AC
3044 SMA CLA /GET MCW2
3045 JMP I APTER /SKIP IF APT ALIVE
3046 RIF /APT/
3047 TAD [6203 /APT/CREATE A CDF INST.
3048 DCA I APTER1 /APT CDF IN PROM CODE
3049 TAD I APTER1
3050 DCA .+4
3051 APTIZ /APT/MODIFY NEXT CDF INST.
3052 SNA /SEE IF ANYTHING WAS IN AC
3053 TAD ADDER /SKIP IF THERE WAS
3054 ADDER /APT/AC=ERRCR PC.
3055 CDF /APT/(MODIFIED CDF) OF-IF.
3056 NOP
3057 JMP 6520 /APT/CALL APT - 'ERRCR'.
3058
3059 /
        APTER1, 6523

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3051 /
3052 /APT/ THIS ROUTINE INITIALIZES PROGRAM FOR APT
3053 /
3054 5622 0000 APTIZ, 0
3055 5623 6002 IOP /MAKE SURE INTERRUPT IS OFF
3056 5624 1022 TAD HCN2 /GET APT CONTROL WORD
3057 5625 7700 SMA CLA /SKIP IF APT ENABLED.
3058 5626 B774 JNP NOTAPT
3059 5627 140 STA /AC=1
3060 5630 5076 DCA NOTTY /NOP CONSOLE TERMINAL
3061 5631 1375 TAD 137 /SET UP FOR AUTO SIZE
3062 5632 3020 DCA PSR
3063 5633 5251 JNP 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 /-12
3067 5637 1021 TAD MLC1 /GET CONFIGURATION WORD 1
3068 5640 7710 SPA CLA /SKIP IF SOFTWARE SWITCHES TO BE USED
3069 5641 5047 JMP 6 /+6
3070 5642 1020 TAD PSR /GET PSEUDO SWITCH REGISTER
3071 5643 7840 SZA CLA /SKIP IF NO VALUE IN PSEUDO SWITCHES
3072 5644 5247 JNP 3 /-3
3073 5645 1375 TAD 137 /SETUP DEFAULT FOR AUTO SIZING
3074 5646 3020 DCA PSR
3075 5647 7610 SKP CLA /BYPASS SAVING OS/B MONITOR
3076 5650 4774 JMS CBSM /SAVE OSB 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 THE PROGRAM IS RUNNING OK.
3084 /
3085 5652 0000 APTOK, 0 /APT/
3086 5653 7200 CLA /APT/
3087 5654 1022 TAD HCN2 /APT/UNDER APT CONTROL?
3088 5655 7700 SMA CLA /APT/SKP IF YES.
3089 5656 5274 JMP APTOK
3090 5657 6002 IOP /APT/
3091 5660 6224 RIF /APT/AC=IF.
3092 5661 1123 TAD [6203 /APT/CREATE A CDF INST.
3093 5662 3673 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 - 'PRG CK'.
3099 5670 5652 JMP I APTOK /APT/RTN FROM APT - RTN TO CALL+.
3100 APTCT: 0
3101 APTCTY, 0
3102 APTOK1, 6505 /LOCATION TO OVERLAY FOR PROPER FIELD
3103 /
3104 /SEE IF KEY BOARD WAITING
3105 /

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3106 5674 0000 APTOK, 0
3107 5675 6031 NSF
3108 5676 5652 JMP I APTOK
3109 5677 6036 HKB
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 HCN2 /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. FROM 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 SMA CLA
3145 5731 5704 JMP I APTFL /ALL MEMORY CONTIGUOUS
3146 5732 1040 TAD FS /GET ESOCK FIELD STATUS
3147 5733 0072 AND 17740 /MASK OUT 7
3148 5734 1371 TAD 120 /NOP 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 240 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 020 /REPORT THE ERROR
3160 /

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3161 /
3162 /
3163 /THE FOLLOWING LOCATIONS FROM 6000 TO 7777 ARE USED AS THE COMMUNICATIONS
3164 /INTERFACES FOR APT SHOULD APT BE AVAILABLE.
3165 /
3166 5771 0000
3167 5772 7740
3168 5773 6500
3169 5774 4000
3170 5775 0000
3171 5776 0000
3172 5777 0000
+6000 /CB/
3173
3174 6000 4777 LCOPIA. JMS SAVDF /GET THE TELETYPE FLAG
3175 6001 1076 TAD NGTTY /IS THERE CH ON THE SYSTEM
3176 6002 7710 SPA CLA /NO ABORT MESSAGE AND GALT
3177 6003 6223 JMP LCOPIA-1
3178 6004 4770 JMS MES
3179 6005 4542 TEXT *%LOOP ON ADDRESS SET IN SR*
6006 1417
6007 1720
6008 4017
6009 1640
6010 0104
6011 0422
6012 0104
6013 0422
6014 0104
6015 0422
6016 0104
6017 0422
6018 0104
6019 0422
6020 0104
6021 0422
6022 0104
3180 6023 4775 LCOPIA. JMS KLSDF
3181 6024 4504 LCOPIA. GETSR
3182 6025 3035 DCA SR
3183 6026 1435 TAD I SR
3184 6027 7040 CMA
3185 6030 3635 DCA I SR
3186 6031 1435 TAD I SR
3187 6032 7040 CMA
3188 6033 3635 DCA I SR
3189 6034 5224 JMP LCOPIA
3190 6035 0000 SR. 0
3191 /CB/ ROUTINE TO SAVE PAGE 37 OF FIELD 1
3192
3193
3194 6036 0000 CBSM. 0
3195 6037 7200 CLA
3196 6040 6224 RIF /READ THE INSTRUCTION FIELD
3197 6041 1374 TAD (6201 /ADD CDF 0 TO IT
3198 6042 3251 DCA CBSM /MODIFY THE CDF INSTR AT LOC CBSM0
3199 6043 1373 TAO (7577 /SET UP PAGE 37 POINTER -1
3200 6044 3013 DCA 10 /SAVE IN AUTO INDEX 10
3201 6045 1372 TAD (CBSA-1 /GET ADDRESS -1 OF STORAGE AREA
    
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3202 6046 3011 DCA 11 /SAVE IN AUTO INDEX 11
3203 6047 6211 CBSM1. CDF 10 /CHANGE DATA FIELD TO 1
3204 6050 1410 TAD I 10 /GET THE WORD
3205 6051 6201 CBSM0. CDF /CHANGE DATA FIELD TO PRG FIELD
3206 6052 2411 DCA I 11 /SAVE IN STORE AREA
3207 6053 1010 TAD 10 /CHECK TO SEE IF PAGE DONE
3208 6054 7040 CMA
3209 6055 7 0 SZA CLA /DONE SAVING PAGE
3210 6056 1447 JMP CBSM1 /NO-DO NEXT WORD
3211 6057 5636 JMP I CBSM /YES-RETURN TO CALL+1
3212
3213
3214
3215 /CB/ ROUTINE TO RESTORE PAGES 37 OF FIELD 0 AND 1
3216
3217 6060 7200 CBSM. CLA
3218 6061 6224 RIF /GET THE PRESENT DATA FIELD
3219 6062 1374 TAD (6201 /GET THE CDF INSTRUCTION
3220 6063 2 37 DCA CBSM0 /SAVE THE NEW CDF INSTRUCTION
3221 6064 1207 TAD CBSM0
3222 6065 3276 DCA CBSM0-1
3223 6066 1373 TAD (7577 /SET UP AUTO INDEX FOR RESTORE OF 0
3224 6067 3010 DCA 10 /SAVE IN AUTO INDEX 10
3225 6070 1372 TAD (CBSA-1 /SETUP STORAGE POINTER
3226 6071 3011 DCA 11 /SAVE IN AUTO INDEX 11
3227 6072 1473 TAD (7577 /SETUP AUTO INDEX OF RESTORE OF FIELD 1
3228 6073 3012 DCA 12 /SAVE IN AUTO INDEX 12
3229 6074 1373 TAD (7577 /SETUP NEXT POINTER
3230 6075 3013 DCA 13 /SAVE IN AUTO INDEX 13
3231 6076 5201 CBSM01. CDF
3232 6077 1013 TAD 13
3233 6100 7040 CMA
3234 6101 7050 SNA CLA /ALL DONE
3235 6102 5307 JMP CBSM0
3236 6103 2411 TAD I 11 /GET DATA TO RESTORE
3237 6104 6211 CDF 10 /CHANGE DATA FIELD TO 1
3238 6105 1410 DCA I 10 /PUT IT IN FIELD 1
3239 6106 5207 JMP CBSM0-1 /GO DO NEXT WORD
3240 6107 6201 CBSM0. CDF /MODIFIED CDF INSTRUCTION TO PRG FIELD
3241 6110 1010 TAD 10 /RESTORATION DONE
3242 6111 7040 CMA
3243 6112 7050 SNA CLA /SKIP IF NO
3244 6113 7040 JMP CBSM1 /DONE-GO TO MONITOR AT 7000
3245 6114 1410 TAD I 10 /GET DATA FROM PROGRAM FIELD
3246 6115 0000 CDF 00 /RESTORE 0
3247 6116 0412 DCA I 12
3248 6117 5007 JMP CBSM0
3249 6120 6203 CBSM1. CDF /CHANGE DATA AND INSTR FIELD TO 0
3250 6121 5222 JMP I CBSM1
3251 6122 7000 TAD
3252
3253 6172 6777
3254 6173 7577
3255 6174 6201
3256 6175 5070
    
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3257 6176 2240
3258 6177 6664
3259 6178 6200 *E100 /CB/
3260 6200 4777' LOOP2, JMS SAYDF
3261 6201 1076 TAD NCTTY /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 0422
6220 0523
6221 2305
6222 2340
6223 1116
6224 2025
3225 4440
6226 0622
6227 1715
6230 4024
6231 1005
6232 4023
6233 2260
3236 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 NCTTY /GET TELETYPE FLAG
3277 6247 7710 SPA CLA /IS THERE ONE ON THE SYSTEM
3278 6248 5274 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 2275
6254 1440
6255 1322
6256 4024
6257 1740
6260 0611
6261 2223
6262 2440

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6263 0104
6264 0422
6265 0523
6266 2340
6267 4640
6270 0317
6271 1824
6272 0000
3281 6273 4505 IN12A, CICAL
3282 6274 7002 HLT
3283 6275 5004 GETSR
3284 6276 3331 DCA FIRST
3285 6277 1076 TAD NCTTY /GET FLAG STATUS AGAIN
3286 6278 7710 SPA CLA /TELETYPE AVAILABLE?
3287 6300 5225 JMP FIRST-4 /NO-ABORT MESSAGE AND HALT FOR INFO
3288 6302 4776' JMS MES
3289 6303 4543 TEXT "%SET SR TO SECOND ADDRESS & CONT"
6304 2225
6305 2440
6306 2322
6307 4024
6310 1740
6311 2005
6312 0317
6313 1604
6314 4001
6315 0174
6316 1405
6317 1323
6320 4046
6321 4003
6322 1716
6323 2400
3291 6324 4505 CICAL
3292 6325 7002 HLT
3293 6326 5004 GETSR
3294 6327 3732 DCA SECOND
3295 6330 3005 JMP I IN12
3296 6331 0000 FIRST, 0
3297 6332 0000 SECOND, 0
6333 0076
6334 2240
6335 6364
6336 6400 *E400 /CB/
3302 6400 4777' LOOP3, JMS SAYDF
3303 6401 1076 TAD NCTTY /GET THE TELETYPE STATUS
3304 6402 7710 SPA CLA /IS THERE A TELETYPE AVAILABLE?
3305 6403 5234 JMP LOOP3A-6 /NO-ABORT MESSAGE AND HALT FOR INFO
3306 6404 4776' JMS MES
3307 6405 4543 TEXT "%LOOP FROM FIRST ADDRESS THRU SECOND ADDRESS"
6406 1417

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6407	1720				
6410	4008				
6411	2217				
6412	1540				
6413	6611				
6414	2223				
6415	2440				
6416	0 14				
6417	6422				
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	OCA	SRL1	
3313	6437	1773'	TAD	SECOND	
3314	6440	2264	OCA	SRL2	
3315	6441	4772'	JMS	RESDF	
3316	6442	1263	LOOP3A,	TAD	SRL1
3317	6443	3262	OCA	SRL	
3318	6444	1662	LOOP3B,	TAD I	SRL
3319	6445	7040	CMA		
3320	6446	3662	OCA I	SRL	
3321	6447	1662	TAD I	SRL	
3322	6450	7040	CMA		
3323	6451	3662	OCA 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		/CB/
3338					
3339	8500	4777'	LOOPS,	JMS	SAVDF
3340	8501	1076	TAD	NOTTY	/GET TTY FLAG
3341	8502	7710	SPA	CLA	/IS THERE A TELETYPE AVAILABLE
3342	8503	5336	JMP	LOOP5A-6	/NO-ABORT MESSAGE AND HALT FOR INFO
3343	8504	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	1C05			
	6516	4023			
	6517	2240			
	6520	2410			
	6521	2225			
	6522	4024			
	6523	1005			
	6524	4C01			
	6525	0404			
	6526	2205			
	6527	2323			
	6530	4023			
	6531	0514			
	6532	0503			
	6533	2411			
	6534	1716			
	6535	0000			
3345	6536	4775'	JMS	IN:2	
3346	6537	1774'	TAD	FIRST	
3347	6540	3364	OCA	SR5A	
3348	6541	1773'	TAD	SECOND	
3349	6542	3365	OCA	SR5B	
3350	6543	4772'	JMS	RESDF	
3351	6544	1264	LOOP5A,	TAD	SR5A
3352	6545	3365	OCA	SR5C	
3353	6546	4504	LOOP5B,	GETSR	
3354	6547	3766	OCA I	SR5C	
3355	6550	1766	TAD I	SR5C	
3356	6551	3766	OCA I	SR5C	
3357	6552	1366	TAD	SR5C	
3358	6553	7041	CIA		
3359	6554	1366	TAD	SR5B	
3360	6555	7650	SNA CLA		
3361	6556	9344	JMP	LOOP5A	/START AGAIN WITH FIRST ADDRESS
3362	6557	2366	ISZ	SR5C	
3363	6560	9346	JMP	LOOP5B	/DO NEXT ADDRESS
3364					
3365	6561	4505	CBCAL		
3366	6562	7402	HLT		/HALT RESULT'ED FROM ILLEGAL LIMITS
3367	6563	5700	JMP	LOOPS	
3368	6564	7 30	SR5A,	0	/FIRST ADDRESS OF GROUP
3369	6565	6000	SR5B,	0	/LAST ADDRESS OF GROUP
3370	6566	0000	SR5C,	0	/ADDRESS COUNTER
3371					
3372	6572	6676			
3373	6573	6332			
3374	6574	6331			

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3375 6575 6245
3376 6576 2240
3377 6577 8664
          6600 *6600 /CB/
3378
3379 3600 4264 LQDP4, JMS SAVDF
3380 6601 1076 TAD NOTTY
3381 6602 7710 CLA /GET TTY STATUS
3382 6603 5253 JMP LQDP4A-4 /IS THERE CME ON THE SYSTEM
3383 6604 4777 JMS MES /NO-ABORT MESSAGE AND HALT FOR INFO
3384 6605 4543 TEXT *X=LOOP DATA IN THE SR ON THE INPUT ADDRESS*
          6606 1417
          6607 1720
          6610 4003
          6611 0124
          6612 0140
          6613 1116
          6614 4024
          6615 1005
          6616 4023
          6617 2240
          6620 1718
          6621 4024
          6622 1005
          6623 4011
          6624 1620
          6625 2524
          6626 4771
          6627 014
          6630 1205
          6631 2323
          6632 0000
3385 6633 4777 JMS MES
3386 6634 4543 TEXT *X=SET SR TO ADDRESS & CONT*
          6635 2305
          6636 2440
          6637 2322
          6640 4024
          6641 1740
          6642 0104
          6643 0422
          6644 0523
          6645 2340
          6646 4040
          6647 0317
          6650 1624
          6651 0000
3387
3388 6652 4505 CBCAL
3389 6653 7402 HLT
3390 6654 4904 GETSR
3391 6655 3263 DCA SR4
3392 6656 4276 JMS RESDF
3393 6657 4504 LQDP4A, GETSR /RESTORE DATA FIELD TO NEW
3394 6660 3663 DCA I SR4
    
```

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3395 6661 1663 TAD I SR4
3396 6662 5257 JMP LQDP4A
3397 6663 0000 SR4, 0
3398 6664 0000 SAVDF, 0
3399 6665 7200 CLA
3400 6666 6214 RCF
3401 6667 3275 DCA SAVE
3402 6670 6774 RIF
3403 6671 176 TAD [6201
3404 6672 3273 DCA .+1
3405 6673 6201 CDF 00 /PROGRAM OF
3406 6674 5664 JMP I SAVDF
3407 6675 0000 SAVE, 0
3408
3409 6676 0000 RESDF, 0
3410 6677 1275 TAD SAVE
3411 6700 176 TAD [6201
3412 6701 3302 DCA .+1
3413 6702 6701 CDF 00 /LOOP OF
3414 6703 5676 JMP I RESDF
3415 /
3416 6777 2240 PACE
          7000 C65A=
          7000
3417
3418
3419 /
3420 /
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 C6TEMP, 0 /TEMPORARY WORK AREA
3439 7201 6203 C6CDI, CIF CDF /USED TO CREATE CDI TO PROGRAM FIELD
3440 7202 6201 C6CDF, CDF /USED TO CREATE CDF TO CONSOLE FIELD
3441 7203 0000 C6SWR, 0 /SWITCH REGISTER SAVE AREA
3442 7204 0000 C6WDE, 0 /PRINT MODE SWITCH
3443 7205 0000 C6CNT, 0 /USED AS COUNTER
    
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3444	7206	7775	CBM3.	-3		/CONSTANT
3445	7207	7774	CBM3.	-4		/CONSTANT
3446	7210	7773	CBM5.	-8		/CONSTANT
3447	7211	7770	CS+10.	-10		/CONSTANT
3448	7212	7520	CBM250.	-250		/CONSTANT
3449	7213	0007	CBA7.	0007		/CONSTANT
3450	7214	0240	CBK240.	0240		/CONSTANT
3451	7215	0260	CBK260.	0260		/CONSTANT
3452	7218	0275	CBK275.	0275		/CONSTANT
3453	7217	0277	CBK277.	0277		/CONSTANT
3454	7220	0302	CBK302.	0302		/CONSTANT
3455	7221	0323	CBK323.	0323		/CONSTANT
3456			/			
3457			/			
3458	7222	0000	CBENR.	0		
3459	7223	3200	DCA	CBTEMP		/SAVE AC
3460	7224	0214	RDF			/READ PROGRAM FIELD
3461	7225	1201	TAD	CBCCI		/ADD CCI INSTRUCTION
3462	7226	3205	DCA	CBENR		/SAVE CCI TO PROGRAM FIELD TEMPORARILY
3463	7227	0224	RIF			/READ CONSOLE FIELD
3464	7230	1202	TAD	CBCCF		/ADD CCF INSTRUCTION

3465	7231	3241	DCA	CBFLD		/SAVE CDF TO CONSOLE FIELD
3466	7232	1777	TAD	I	121	/GET NCM1 FROM PROGRAM FIELD
3467	7233	7710	SFA	CLA		/SKIP IF USING PSEUDO SWR
3468	7234	7614	LAS	SNP		/GET HARDWARE SWR AND SKIP
3469	7235	1776	TAD	I	100	/GET PSEUDO SWR
3470	7236	3203	DCA	CB SAR		/SAVE SWITCH REGISTER
3471	7237	1775	TAD	I	(1)CODE	/GET MESSAGE ACTIVE FLAG
3472	7240	3204	DCA	CBMCDE		/SAVE MESSAGE ACTIVE FLAG
3473	7241	7402	CBFLD.	MLT		/MODIFIED CDF TO CONSOLE DATA FIELD
3474	7242	1222	TAD	CBENR		/GET RETURN ADDRESS
3475	7243	3774	DCA	CBRTN		/SAVE FOR EXIT
3476	7244	1205	TAD	CBENR		/GET CCI TO PROGRAM FIELD
3477	7245	3773	DCA	CBPFLD		/SAVE CCI TO PROGRAM FIELD FOR EXIT
3478	7246	1200	TAD	CBTEMP		/GET AC UPON ENTRY
3479	7247	7440	SZA			/SKIP IF IT WAS ZERO
3480	7250	3772	JMP	CBCTRL		/AC NOT ZERO, GO CHECK CTRL CHAR
3481			/			
3482			/PRINT OUT SW+XXXX WHERE XXXX IS THE CURRENT CONTENTS			
3483			/OF THE SWITCH REGISTER BEING USED (EITHER PSEUDO OR HARDWARE)			
3484			/			
3485	7251	4771	CBPSW.	JMS	CBORLF	/DD A <CR> AND <LF>
3486	7252	1221	TAD	CBK323		/GET ASCII CODE FOR 'S'
3487	7253	4770	JMS	CBTP		/PRINT 'S'
3488	7254	1220	TAD	CBK322		/GET ASCII CODE FOR 'R'
3489	7255	4770	JMS	CBTP		/PRINT 'R'
3490	7256	1216	TAD	CBK276		/GET ASCII CODE FOR 'A'
3491	7257	4770	JMS	CBTP		/PRINT 'A'
3492	7260	1227	TAD	CBV		/AC=3
3493	7261	1205	DCA	CBENR		/SET UP OCTAL DIGIT COUNTER
3494	7262	1203	TAD	CB SAR		/GET SWITCH REGISTER
3495	7263	7204	RAL			/EXTRA ROTATE FOR LINK
3496	7264	7204	CBLOPA.	RAL		
3497	7265	7006	RTL			/ROTATE OCTAL DIGITS FOR PRINTING
3498	7266	3203	DCA	CB SAR		/SAVE ROTATED SWR

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3499 7267 1263 TAD CBRAR /GET ROTATED SWR
3500 7272 0213 AND CBK7 /MASK OFF DIGIT TO PRINT
3501 7271 1215 TAD CBR260 /ADD ASCII BASE CODE
3502 7272 4770 JMS CBTP /PRINT AN OCTAL DIGIT
3503 7273 1263 TAD CBRAR /GET SWR
3504 7274 2265 ISZ CBRCTR /INCREMENT LOOP COUNTER
3505 7275 5264 JMP CBRCPA /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 CBR75 /AC=5
3516 7278 3208 DCA CBRCTR /SET UP TO ACCEPT 5 CHARACTERS
3517 7301 3767 DCA CBRBLD /CLEAR SWITCH REG, BUILD AREA
3518 7302 3767 DCA CBRFLG /CLEAR SWR CHANGE SWITCH
3519 7303 1214 TAD CBR240 /GET ASCII CODE FOR SPACE
3520 7304 4770 JMS CBTP /SPACE OVER ONE POSITION
3521 7305 4765 CBRQLP, JMS CBTP /GO WAIT FOR KEYBOARD INPUT
3522 7306 3200 DCA CBTEMP /SAVE INPUT CHARACTER
3523 7307 1200 TAD CBTEMP /GET CHARACTER
3524 7310 1564 TAD I-203
3525 7311 7450 SNA /SKIP IF NOT CTRL/C
3526 7312 5763 JMP CBRCTL /GO TO CTRL/C ROUTINE
3527 7313 1207 TAD CBR4 /AC=4
3528 7314 7450 SNA /SKIP IF NOT CTRL/G
3529 7315 5762 JMP CBRTLG /GO TO CTRL/G ROUTINE
3530 7316 1206 TAD CBR3 /SUBTRACT 3
3531 7317 7450 SNA /SKIP IF NOT LINE FEED
3532 7320 5761 JMP CBRXT1 /GO TO LINE FEED EXIT
3533 7321 1206 TAD CBR3 /SUBTRACT 3
3534 7322 7650 SNA CLA /SKIP IF NOT CARRIAGE RETURN
3535 7323 5760 JMP CBRXT2 /GO TO CARRIAGE RETURN EXIT
3536 7324 1200 TAD CBTEMP /GET CHARACTER
3537 7325 4770 JMS CBTP /GET CHARACTER
3538 7326 1200 TAD CBTEMP /ECHO IT
3539 7327 1212 TAD CBR260 /GET CHARACTER
3540 7330 7510 SPA /SKIP IF >= TO ASCII CODE FOR ZERO
3541 7331 5351 JMP CBERR /INVALID CHARACTER NOT OCTAL DIGIT
3542 7332 1211 TAD CBR10
3543 7333 7700 SNA CLA /SKIP IF <= ASCII CODE FOR SEVEN
3544 7334 5351 JMP CBERR /INVALID CHARACTER NOT OCTAL DIGIT
3545 7335 7240 STA /AC=7777

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3546 7336 3766 DCA CBRFLG /SET SWR CHANGE FLAG
3547 7337 1200 TAD CBTEMP /GET CHARACTER
3548 7340 0213 AND CBK7 /MASK TO 3 BITS
3549 7341 3200 DCA CBTEMP /SAVE OCTAL DIGIT
3550 7342 1767 TAD CBRBLD /GET SWR BUILD AREA CONTENTS
3551 7343 7108 CLL RTL
3552 7344 7004 RAL /ROTATE TO BUILD SWR
3553 7345 1200 TAD CBTEMP /ADD NEXT OCTAL DIGIT
3554 7346 3767 DCA CBRBLD /SAVE NEW SWR
3555 7347 2265 ISZ CBRCTR /INCREMENT OCTAL DIGIT COUNTER
3556 7350 5305 JMP CBRSLP /CONTINUE ACCEPTING OCTAL DIGITS
3557
3558 7351 7300 CBERR, CLA CLL
3559 7352 1217 TAD CBR277 /GET ASCII CODE FOR "?"
3560 7353 4770 JMS CBTP /PRINT "?"
3561 7354 4771 JMS CBRRLF /DO A <CR> AND <LF>
3562 7355 5261 JMP CBRPW /GO START OVER
3563
3564
3565 7360 7536
3566 7361 7525
3567 7362 7457
3568 7363 7465
3569 7364 7375
3570 7365 7510
3571 7366 7403
3572 7367 7400
3573 7370 7476
3574 7371 7517
3575 7372 7420
3576 7373 7537
3577 7374 7402
3578 7375 0203
3579 7376 0220
3580 7377 0221
3581 7400 PAGE
3582 7400 0000 CBRBLD, 0 /SWITCH REGISTER BUILD AREA
3583 7401 0205 CBRSTR, RSTART /ADDRESS OF START OF PROGRAM
3584 7402 0000 CBRTR, 2 /STORAGE FOR RETURN ADDRESS
3585 7403 0000 CBRG, 0 /SWR CHANGE SWITCH
3586 7404 0000 CBRFLG, 0 /CTRL'S ACTIVE FLAG
3587 7405 0177 CBR177, 0177 /CONSTANT
3588 7406 0200 CBR200, 0200 /CONSTANT
3589 7407 0277 CBR277, 0277 /CONSTANT
3590 7408 7440 CBR40, 7440 /CONSTANT
3591 7409 0100 CBR100, 0100 /CONSTANT
3592 7410 0115 CBR115, 0115 /CONSTANT
3593 7411 12 CBR12, 12 /CONSTANT
3594 7412 0003 CBR003, 0003 /CONSTANT
3595 7413 0007 CBR007, 0007 /CONSTANT
3596 7414 0338 CBR338, 0338 /CONSTANT
3597 7415 7800 CBR7800, 7800 /CONSTANT
3598
3599 / CONTROL CHARACTER

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3600 //
3601 // DECODE ROUTINE
3602 //
3603 7420 1377 CBCTRL, TAD (-203
3604 7421 7450 SNA /SKIP IF NOT CTRL/C
3605 7422 5265 JMP CBCTLC /CTRL,C TYPED EXIT TO MONITOR
3606 7423 1376 TAD (-4
3607 7424 7450 SNA /SKIP IF NOT CTRL/G
3608 7425 5257 JMP CBCTLG /CTRL,G TYPED GO PRINT "G"
3609 7426 1375 TAD (-12
3610 7427 7450 SNA /SKIP IF NOT CTRL/O
3611 7430 5255 JMP CBCTLO /CTRL,O TYPED
3612 7431 1374 TAD (-2
3613 7432 7450 SNA /SKIP IF NOT CTRL/S
3614 7433 5237 JMP CBCTLS /CTRL,S TYPED
3615 7434 3773 DCA /SET MESSAGE ACTIVE FLAG
3616 7435 2204 ISZ /TEST CTRL/S ACTIVE FLAG
3617 7436 5273 JMP CBECHO /GO ECHO CHARACTER AND RETURN TO PROGRAM
3618 //
3619 //CTRL/S HANDLER
3620 //
3621 7437 7240 CBCTLS, STA /AC=7777
3622 7440 3204 DCA /SET CTRL/S ACTIVE FLAG
3623 7441 1773 TAD /GET MESSAGE ACTIVE FLAG
3624 7442 7850 SNA CLA /SKIP IF CTRL/S TYPED WHILE MESSAGE ACTIVE
3625 7443 5337 JMP CBPFLO /RETURN TO PROGRAM
3626 //
3627 7444 7740 CBWAIT, STA /SET CONTROL S ACTIVE INDICATOR
3628 7445 7744 DCA /WAIT FOR KEYBOARD INPUT
3629 7446 4310 JMS CBTTY
3630 7447 1377 TAD (-203
3631 7450 7450 SNA /SKIP IF NOT CTRL/C
3632 7451 5265 JMP CBCTLC /CTRL,C TYPED EXIT TO MONITOR
3633 7452 1372 TAD (-16
3634 7453 7640 SZA /SKIP IF CTRL/O
3635 7454 5244 JMP CBWAIT /NOT CTRL/C OR CTRL/O CONTINUE WAITING
3636 7455 3204 CBCTLO, DCA /CLEAR CTRL/S ACTIVE FLAG
3637 7456 5337 JMP CBPFLO /RETURN TO MAIN PROGRAM
3638 //
3639 //CONTROL G HANDLER
3640 //
3641 7457 4317 CBCTLG, JMS CBCTRF /DO A <CR> AND <LF>
3642 7460 1216 TAD /GET ASCII CODE FOR UP ARROW
3643 7461 4276 JMS CBTTY /PRINT UP ARROW
3644 7462 1215 TAD /GET ASCII CODE FOR "G"
3645 7463 4276 JMS CBTTY /PRINT "G"
3646 7464 5771 JMP CBPSW /GO TO "SR=XXXX" ROUTINE
3647 //
3648 //CONTROL C HANDLER
3649 //
3650 7465 3204 CBCTLC, DCA /SET CTRL/S ACTIVE FLAG
3651 7466 1216 TAD /GET ASCII CODE FOR UP ARROW
3652 7467 4276 JMS CBTTY /PRINT UP ARROW
3653 7470 1214 TAD /GET ASCII CODE FOR "C"
3654 7471 4276 JMS CBTTY /PRINT "C"

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3655 7472 5770 JMP CBRM /RESTORE MONITOR AND EXIT
3656 //
3657 7473 1767 CBECHO, TAD /GET CHARACTER
3658 7474 4276 JMS CBTTY /ECHO IT
3659 7475 5337 JMP CBPFLO /RETURN TO PROGRAM
3660 //
3661 //
3662 //
3663 //
3664 //PRINT ONE CHARACTER
3665 //
3666 7476 0000 CBTTY, 0 /TEST CTRL/S ACTIVE FLAG
3667 7477 2204 ISZ /SKIP IF CTRL/S NOT ACTIVE
3668 7500 7410 SKP /GO WAIT FOR CTRL/O OR CTRL/C
3669 7501 5244 JMP CBWAIT /TRANSMIT CHARACTER
3670 7502 8046 TLA /TEST TTY FLAG
3671 7503 6241 ISF /WAIT FOR TTY FLAG
3672 7504 5303 JMP -1 /CLEAR TTY FLAG
3673 7505 6042 TCF /CLEAR AC DO NOT CLEAR LINK
3674 7506 7200 CLA /RETURN
3675 //
3676 7507 5676 JMP I CBTTY
3677 //
3678 //WAIT FOR KEYBOARD INPUT THEN EXIT WITH ASCII CODE IN AC
3679 //
3680 7510 0000 CBTTY, 0 /SKIP IF KEYBOARD FLAG SET
3681 7511 6031 MSF /WAIT FOR KEYBOARD INPUT
3682 7512 5311 JMP -1 /READ KEYBOARD BUFFER CLEAR FLAG
3683 7513 6036 MRB /MASK TO 7 BITS
3684 7514 0205 AND /SET BIT 4
3685 7515 1206 TAD /RETURN
3686 7516 5710 JMP I CBTTY
3687 //
3688 //EXECUTE A CARRIAGE RETURN AND LINE FEED
3689 //
3690 7517 0000 CBCTRF, 0 /GET ASCII CODE FOR CARRIAGE RETURN
3691 7520 1212 TAD /GO EXECUTE THE CARRIAGE RETURN
3692 7521 4276 JMS /GET ASCII CODE FOR LINE FEED
3693 7522 1213 TAD /GO EXECUTE THE LINE FEED
3694 7523 4276 JMS /RETURN
3695 7524 5717 JMP I CBCTRF
3696 //
3697 //CONSOLE PACKAGE EXIT IF TERMINATED WITH LINE FEED
3698 //
3699 7525 4317 CBEXIT, JMS /DO A <CR> AND <LF>
3700 7526 1037 TAD /GET MODIFIED CBI TO PROGRAM FIELD
3701 7527 3230 DCA /SAVE FOR EXECUTION
3702 7530 7402 HLT /MODIFIED CBI TO PROGRAM FIELD
3703 7531 2203 ISZ /TEST SWR CHANGE FLAG
3704 7532 5601 JMP I CBSTR /RESTART PROGRAM WITHOUT CHANGE OF SWR

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3705 7533 1200 TAD CSELD /GET NEW SWITCH REGISTER
3706 7534 3766 DCA I 120 /SAVE IT IN PROGRAM FIELD
3707 7535 5601 JMP I CBSTRY /RESTART PROGRAM WITH NEW PSEUDO SAR
3708
3709 /EXIT FROM CONSOLE PROMPT IF TERMINATED WITH CARRIAGE RETURN
3710
3711 7536 4317 COEXT2 JYS C9CRUF /ADD A 4096 PAD KEYS
3712 7537 7402 COFFLD. MLT /MODIFIED G11 TO PROGRAM FIELD
3713 7540 7300 CLA CLL /CLEAR AC AND LINK FOR RETURN
3714 7541 2203 ISZ I C9FLG /TEST SAR CHANGE FLAG
3715 7542 5602 JMP I C9RTN /RETURN TO PROGRAM WITHOUT CHANGE OF SWR
3716 7543 1200 TAD CSELD /GET NEW SWITCH REGISTER
3717 7544 3766 DCA I 120 /SAVE IT IN PROGRAM FIELD
3718 7545 5602 JMP I C9RTN /RETURN TO PROGRAM
3719
3720 //
3721 //
3722 7566 0029
3723 7567 7200
3724 7579 6180
3725 7571 7251
3726 7572 7762
3727 7573 7204
3728 7574 7776
3729 7575 7766
3730 7576 7774
3731 7577 7575
3732 7600
3733
3734 0123 6203
3735 0124 6000
3736 0125 7770
3737 0126 7720
3738 0127 0100
3739 0130 7653
3740 0131 6200
3741 0132 7580
3742 0133 0200
3743 0134 736C
3744 0135 4000
3745 0136 0007
3746 0137 0323
3747 0140 0035
3748 0141 4513
3749 0142 0240
3750 0143 0245
3751 0144 0209
3752 0145 0076
3753 0146 0212
3754 0147 7775
3755 0150 0340
3756 0151 0207
3757 0152 7744
3758 0153 6060

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3759 0154 0707
3760 0155 0077
3761 0156 0261
3762 0157 0262
3763 0160 0263
3764 0161 0164
3765 0162 0265
3766 0163 0266
3767 0164 0267
3768 0165 7777
3769 0166 7700
3770 0167 0250
3771 0170 0020
3772 0171 0040
3773 0172 7774
3774 0173 7740
3775 0174 5252
3776 0175 2525
3777 0176 6201
3778 0177 4246

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A	0066	C8220	443	C85A	7000	FCNT	0080
A1	4335	C8220	747	C85FLD	7404	FIRST	8331
A10	4348	C89LD	7460	C85M	8036	FIVE	9180
A11	4347	C8CAL	4505	C85M0	8051	FLOCNT	2348
A12	4350	C8C3F	7262	C85M1	8047	FLODAT	8687
A13	4351	C8C3I	7261	C85ALP	7301	FLOINC	5361
A14	4355	C8C3L	7430	C85VRT	7401	FLOSEL	2102
A15	4316	C8C3T	7295	C85W	7200	FS	0040
A16	4317	C8C3L	7517	C85W2	7200	FS1	0041
A17	4320	C8C3L	7465	C85TY	7510	FS2	0042
A18	4321	C8C3L	7457	C85TP	7476	FS3	0043
A19	4322	C8C3L	7455	C85AIT	7444	FSEND	1707
A2	4336	C8C3L	7437	CAF	6007	FSSET	1615
A20	4323	C8ECHO	7473	CD	6200	GDATA	0372
A21	4324	C8EXTR	7253	CFP	2000	GERRC	1454
A22	4325	C8ERR	7251	CFP0	2012	GETSR	4504
A23	4326	C8EXT1	7525	CFP1	204J	GTF	6004
A24	4327	C8EXT2	7538	CFP2	2040	HCM1	0021
A3	4337	C8FLD	7241	CFP3	2057	HCM2	0022
A4	4340	C8FLG	7403	CFP4	2067	HEAD1	0055
A5	4341	C8K100	7411	CFPTMP	2100	IAPTER	0005
A6	4342	C8K177	7405	CHECK	2077	IAPYOK	0006
A7	4343	C8K200	7406	CHECK0	2100	LEGAL	1514
A8	4344	C8K212	7413	CMRTAP	4700	IM12	8245
A9	4345	C8K215	7412	CMP	6104	IM12A	8274
ACL	7701	C8K240	7214	CMV	2222	INCODE	0623
ADDCNT	5163	C8K250	7215	COQERR	2436	INSAME	0584
ADDR	7736	C8K275	7216	COMT	0053	INTR	4256
ADDINC	1160	C8K277	7217	CRELQ	0030	INTROU	4246
APCTFX	5871	C8K303	7414	CS	0036	K104	5185
APCTY	5872	C8K307	7415	CSAME	0022	K400	4745
APTEOB	5817	C8K322	7220	CSRO3	1607	KBINT	1346
APTER	5800	C8K323	7221	CUF	6254	KBINTC	1384
APTER1	5821	C8K336	7416	DATMP	5116	MNBREL	0404
APTEX	5851	C8K7	7213	DFEIF	0057	KTBA	0001
APTF	5704	C8K77	7207	ENWFLG	0025	KTREL	0434
APTI2	5822	C8LCC	4744	ENDF	0063	KTEST	0552
APTLUP	5712	C8LOPA	7264	ENDHLT	4502	LEGAL	1470
APTMOV	5737	C8M10	7211	ENDNES	5457	LEGAL0	0685
APTOX	5652	C8M250	7212	ENDPAS	5420	LEGALA	1540
APTOX0	5674	C8M3	7208	ERRA	1400	LGLFLO	1551
APTOX1	5673	C8M4	7207	ERRA1	1417	LIMIT	2476
B	0087	C8M40	7410	ERRB	1420	LOOP1	6000
BADINT	3200	C8M5	7210	ERRB1	1437	LOOP1A	6024
BANK	0024	C8M5DE	7204	ERRC	2800	LOOP2	6200
BANK0	1674	C8FFLD	7537	ERRCC	2707	LOOP2A	6236
BANK0A	1702	C8PSM	7251	ERRD	4017	LOOP3	6400
BANKR	5162	C8PM	6060	ERRM	2503	LOOP3A	6442
BDATA	0073	C8RVD	6107	ERRM7	2545	LOOP3B	6444
BINTC	3227	C8RMD1	6076	ERRR0	2488	LOOP4	8600
B5W	7002	C8RM1	6120	ERRR1	2461	LOOP4A	8657
C80000	4400	C8RTN	7402	ERRT9	4844	LOOP5	8500

LOOP5A	8544	PNTOPT	1728	SETPAR	5000	ST55	3282
LOOP5B	8546	PREL	4194	SETREL	0400	SUF	8274
LRR	8240	PRINT	4503	SETR5	4507	SWP	7521
LUSR	8280	PROFLD	0051	SETSW	4077	T0	3000
LXM	8200	PSR	0020	SFSC	3277	T07	3020
NO	2313	Q0	9114	SFS1	3317	TOUPD	0681
NOJPD	5232	RACA	4510	SFS2	3340	T1	3010
NOJPD	5730	RACE	4511	SFS3	3412	T1UPD	0700
MEMLOD	5124	RBELL	2413	SFS4	3432	T25	3050
MES	2240	RD42	1210	SFS5	3452	T82	3064
MINS	0101	RD4C	1215	SFS6	3472	T70	3034
MOSERR	5419	RDB2	1263	SFS7	3512	TCS	0503
MOFLD	5227	RD8C	1270	SFSTAB	3252	TEMP	0956
MOSLOD	5214	RDFLD	1200	SIATY	2230	TES9NK	2314
MOSRED	5248	RDFLDA	1213	SKCN	8030	TEST	0600
MOSTST	5200	RDFLDB	1258	SR	6100	TEST0	0653
MOWE	0054	RE43	1327	SR0	6076	TEST1	0670
MOWFAL	5740	RDFLD	5264	SPFLD	1714	TEST8	1000
KOL	7721	REOLUP	5257	SPO	6107	TFS	0737
MTP	2311	RELCNT	0061	SR	6035	TFS0	3600
NDEWB	1523	REL3	4230	SR00	0020	TFS1	3607
NCEM1	0732	REL02	4225	SR01	0027	TFS2	3617
NDFLC	4600	REL03	4227	SR02	0030	TFS3	3627
NDTFT	5634	REL04	4232	SR03	0037	TFS4	3640
NDITY	0376	REL05	4244	SR04	0030	TFS5	3651
NUFLD	0707	REX	6239	SR05	0030	TFS6	3682
NUWFLD	0077	RESCF	6376	SR4	6663	TFS7	3672
OFFSET	0000	RESINT	4422	SR5A	6564	TFSTAB	0740
OPT	1741	RETURN	2405	SR5B	6660	TITLE	4043
P2	0070	RRR	6250	SR5C	6566	TWAR	2347
PAR	4207	RS	0044	SR5D	0034	TN	2738
PARERR	3154	RS1	0045	SR911	0035	TCSEL	1106
PARINT	3100	RS2	0046	SRL	5482	TOSEL1	1136
PASORC	2657	RS3	0047	SRL1	6483	TR5	0472
PASSES	5458	RSTART	0020	SRL2	6484	TR90	3703
PAT1	5265	RTENP	5163	SR5	4953	TR91	3712
PAT2	5268	RTEMP1	5161	SR50	3307	TR92	3722
PATA	0205	RTF	2125	SR51	3227	TR93	3732
PATCNT	5264	SO	2235	SFS2	3400	TR94	3743
PATERR	2731	S1	2225	SR53	3422	TR95	3754
PATM	0081	S2	2237	SR54	3442	TR96	3765
PATW0	0264	SAC	0074	SR55	3462	TR97	4000
PATN	0270	SAVE	1803	SR56	3500	TRSTAB	0473
PATN0	0273	SAVE0F	8654	SR57	3522	TS	0037
PATJ	0301	SAVE1	8075	START	0024	TSNMJ	3155
PATD	0314	SAVE1T	4220	STARTF	0028	TSTAD	0057
PERIC	2625	SC5	3233	STCP	2487	TSTCNT	8382
FERRC0	2677	SC52	3272	STSC	3233	TSTFLD	0052
FERR1	2616	SECCND	6332	ST51	3237	TTS	3532
PINF	5044	SETERR	4010	ST52	3243	TT50	3544
PNOREL	4115	SETFLD	0023	ST53	3250	TTYCHK	3358
PNTFLD	4654	SETFS	4806	ST54	3255	TYPCH	2256

TYPE 5025
 TYPOFF 5041
 TYPSP 2400
 W4 0071
 WRA 1041
 WRA1 1050
 WRB 1063
 WRB1 1072
 WRFLD 1005
 XCDCAL 4723
 XENDHL 0341
 XGETSR 4747
 XPRINT 5400
 XRACA 5117
 XRACB 5142
 XSETFS 0522
 XSETRS 0532
 YY 5115
 Z1 2644
 Z10 2538
 Z11 2537
 Z2 2845
 Z20 3131
 Z21 3145
 Z3 2651
 Z4 2654
 Z8 4150

ERRORS DETECTED: 0

LINKS GENERATED: 349

RUN-TIME: 8 SECONDS

3K CORE USED

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A13	2393	2409#	2493												
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A16	2440	2499	2521#												
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A18	2444	2503	2522#												
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A3	2373	2399#	2473												
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A5	2377	2401#	2477												
A6	2379	2402#	2479												
A7	2381	2403#	2481												
A8	2383	2404#	2483												
A9	2385	2405#	2485												
ACL	47#	58													
ADDGNT	2962#														
ADDR	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	288	3034	3043	3054#	3077										
APTLUP	3125#	3137													
APTMOV	3124	3129	3128	3129	3132	3138	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	
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	908	919	1592	1853	2092	2090						
BINTC	1799	1802#													
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SEQ 0114

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SEQ 0115

EQF1DHWHADSEQ

00010000

783425

DDP10 472