

MAINDEC: -08-DIRXB-D-D

TITLE: -PX8/PX01 DATA RELIABILITY/EXERCISER PROGRAM

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MAINTAINER: -DIAGNOSTIC ENGINEERING

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1. ABSTRACT
//////////

THIS PROGRAM IS DESIGNED FOR THE COLLECTION OF STATISTICAL INFORMATION PERTAINING TO THE DATA RELIABILITY OF THE DISKETTE DRIVE(S) THAT ARE ASSOCIATED WITH THE RX01 DISKETTE MICROPROCESSOR CONTROLLER, AND RX8 INTERFACE.

THE CATEGORIES OF STATISTICAL INFORMATION ACCUMULATED ARE:

- (A) COMPLETED PASSES OF THE PROGRAM
- (B) PROGRAM RESTARTS (BOTH MANUAL AND PROGRAMMED AUTOMATIC)
- (C) INTERUM STATISTICAL REPORTS
- (D) RECOVERABLE AND NON-RECOVERABLE (PER DISKETTE) OF:
 - (1) WRITE ERROR
 - (2) READ ERROR
 - (3) CRC AND DATA ERROR
 - (4) NO CRC BUT DATA ERROR
 - (5) CRC BUT NO DATA ERROR
 - (6) SEEK ERROR
 - (7) PARITY ERROR
- (E) TOTAL WRITES/READS (PER DISKETTE)
- (F) TRACK ACCESS (ACTUATOR MOVEMENTS TO THAT TRACK)
- (G) SELF ACCESS (WITH NO ACTUATOR MOVEMENTS TO THAT TRACK)
- (H) ALL ERRORS (PER TRACK/PER DISKETTE) EXCLUDING "UNEXPECTED" CONTROL FAILURES WHICH RESTARTS THE PROGRAM:
 - (1) UNEXPECTED RX01 INTERRUPT REQUEST
 - (2) MISSING ERROR FLAG
 - (3) DEVICE TEST HUNG

REVISION D

THIS REVISION CONTAINS THE CODE FOR THE CONSOLE PACKAGE. THE CODE FOR SELECTING THE DEVICE CODES FOR THE CONTROLLER HAS BEEN CHANGED TO ALLOW DEVICE CODE SELECTION VIA SWITCH REGISTER SETTINGS. INTERFACES FOR THE APT-8 SYSTEM HAVE BEEN PROVIDED ALLOWING THIS DIAGNOSTIC TO RUN UNDER APT-8. THE REAL TIME CLOCK ROUTINE AND ANY DECIMAL ROUTINES HAVE BEEN DELETED TO CONSERVE SPACE.

2. REQUIREMENTS
//////////

2.1 EQUIPMENT
//////////

A PDP-8/E TYPE GENERATION COMPUTER WITH 4K OF CORE, CONSOLE SWITCHES, TELETYPE, AND AN RX01 DISKETTE SUBSYSTEM.

2.2 STORAGE
//////////

THIS PROGRAM OCCUPIES PROGRAM LOCATIONS 0 THRU 7577 AND MUST
RESIDE WITHIN FIELD 0. IF THE CONSOLE PACKAGE
IS ACTIVE THEN FIELD 1 LOCATIONS 200 TO 2000 ARE USED.

2.3 PRELIMINARY DIAGNOSTIC PROGRAMS
//////////

THIS PROGRAM ASSUMES THAT THE RX8/RX01 INTERFACE DIAGNOSTIC PROGRAM
HAS SOME TIME PREVIOUSLY EXECUTED SUCCESSFULLY.

3. LOADING PROCEDURE
//////////

THIS PROGRAM IS IN BINARY FORMAT. TO LOAD THIS PROGRAM INTO CORE,
FOLLOW THE INSTRUCTIONS PUBLISHED FOR THE PARTICULAR BINARY FORMAT
LOADER BEING USED.

4. STARTING PROCEDURE
//////////

4.1 STARTING ADDRESS LOCATIONS
//////////

THIS PROGRAM HAS 3 STARTING ADDRESS LOCATIONS:

200 * DATA RELIABILITY/EXERCISER *

STARTING THIS PROGRAM AT PROGRAM LOCATION 200, AND SUCCESSFULLY SUPPLYING
THE NECESSARY TEST PARAMETERS REQUESTED, DIRECTS THIS PROGRAM TO BEGIN
COLLECTING STATISTICAL INFORMATION PERTAINING TO THE DATA RELIABILITY OF
THE RX01 SUBSYSTEM. THIS WILL BE THE START LOCATION OF THE CONSOLE PACKAGE.

201 * RESTART OF DATA RELIABILITY/EXERCISER *

STARTING THIS PROGRAM AT PROGRAM LOCATION 201 DIRECTS THE PROGRAM TO
CONTINUE AMENDING ALL ADDITIONAL STATISTICAL INFORMATION TO THE STAT-
ISTICAL INFORMATION ALREADY COLLECTED.

STARTING THIS PROGRAM AT PROGRAM LOCATION 202 DIRECTS THIS PROGRAM TO
PRINT ON THE CONSOLE TELEPRINTER ALL THE STATISTICAL INFORMATION COLLECTED.
THE CONSOLE PACKAGE CAN PRINT THE STATISTICAL INFORMATION COLLECTED
BY TYPING CONTROL 0.

4.2 OPERATOR ACTION //////////

CONFIGURE THE ACCUMULATOR SWITCHES TO REPRESENT THE OCTAL PROGRAM STARTING
ADDRESS LOCATION DESIRED, PRESS " LOAD ADDRESS ", PRESS " CLEAR ", AND
FINALLY PRESS " CONT " INDE.
ON A ACTIVE CONSOLE PACKAGE THE SWITCH REGISTER QUESTION WILL BE
PRINTED. RESPONDING TO THIS QUESTION WILL START THE PROGRAM.

4.3 PROGRAM ACTION //////////

THE PROGRAM WILL PRINT ON THE TELEPRINTER THE PRESENT " MAINDEC "
REVISION, AND, "REMOVE THE DIAGNOSTIC DISKETTE" IF THE CONSOLE
PACKAGE IS ACTIVE. TO CONTINUE REMOVE THE DISKETTE AND
REPLACE WITH A SCRATCH DISKETTE THEN TYPE CONTROL E.

* 200 *

THE PROGRAM HAS PRINTED THE RX8 INTERFACE IOT DEVICE CODE AND WILL
NOW WAIT FOR INPUT FROM THE SWITCH REGISTER OR THE ANSWER TO THE SWITCH
REGISTER QUESTION. EITHER SET THE SWITCH REGISTER TO THE PROPER DEVICE CODE OR
TYPE IN THE PROPER DEVICE CODE, CONTINUING THE PROGRAM VIA THE CONT SWITCH
IF CONSOLE DEACTIVE. THE PROGRAM WILL DEFAULT TO DEVICE CODE 75
IF THE SWITCH REGISTER IS SET TO ZERO.

EXAMPLE DEVICE CODE IS 76

SET SWITCH REGISTER TO 0760

IF THE DEVICE CODE IS SET TO A EXISTING CONTROLLER THEN THE
SELECTED DEVICE CODE IS PRINTED. TO SELECT A DIFFERENT DEVICE
CODE FROM THE ONE ALREADY SELECTED AND VERIFIED BY THE MESSAGE
RX8 DEVICE CODE IS 6XX0, THE PROGRAM MUST BE RELOADED.

201

THE PROGRAM HAS RECONFIRMED PREVIOUS DISKETTE DRIVE AND TEST PARAMATER
SELECTIONS BY PRINTING APPROPRIATE MESSAGES ON THE TELEPRINTER, AND HAS
RESUMED THE FUNCTIONS OF AMENDING ALL ADDITIONAL STATISTICAL INFORMATION
TO THE STATISTICAL INFORMATION ALREADY COLLECTED.

* 202 *

THE PROGRAM HAS BEGUN PRINTING ON THE CONSOLE TELEPRINTER ALL THE STAT-
ISTICAL INFORMATION COLLECTED.

4.4 TEST PARAMETER SELECTIONS
////////////////////////////////

4.4.1 DISKETTE DRIVE
////////////////////////////////

AFTER STARTING THIS PROGRAM AT STARTING ADDRESS 200, THE PROGRAM
WILL PRINT: " SELECT DISKETTE DRIVES ", AND HALT OR PRINT
THE SWITCH REGISTER QUESTION IF THE CONSOLE PACKAGE IS ACTIVE.

THE OPERATOR WILL THEN CONFIGURE ACCUMULATOR SWITCHES 0, AND 1 TO
REPRESENT DRIVE SELECTION, AND THEN PRESS " CONT " INUE OR
IF ON A ACTIVE CONSOLE PACKAGE ANSWERING THE SWITCH REGISTER
QUESTION WILL CONTINUE THE DIAGNOSTIC.

ACCUMULATOR SWITCHES

0 1

U U

00 - THE OPERATOR DIRECTS THE PROGRAM TO AUTOMATICALLY SELECT ALL DISKETTE DRIVES THAT ARE " READY " (POWER APPLIED, DISKETTE INSERTED, AND DOOR CLOSED)

10 - SELECT ONLY DISKETTE DRIVE 0

01 - SELECT ONLY DISKETTE DRIVE 1

11 - SELECT BOTH DRIVES 0 AND 1

THE PROGRAM WILL PRINT A DISKETTE DRIVE SELECTION CONFIRMATION MESSAGE

IF THE PROGRAM WAS SUCCESSFUL AT ATTEMPTING TO SELECT AT LEAST ONE DRIVE AS DIRECTED BY THE OPERATORS UU SELECTION. THE DISKETTE DRIVES CONFIRMED AS SELECTABLE BY THE PROGRAM MAY DIFFER FROM THE OPERATORS UU SELECTION

IF THE PROGRAM DETECTED A DRIVE(S) TO BE " NOT READY ".

IF, HOWEVER, ALL DRIVES WERE FOUND TO BE " NOT READY " THEN THE PROGRAM WILL PRINT THE MESSAGE: " DRIVES NOT OK-BUT MAINDEC WILL RESTART ", AND AUTOMATICALLY RESTART ITSELF AT AN ATTEMPT TO SUCCESSFULLY SELECT AT LEAST ONE DISKETTE DRIVE.

THE PROGRAM WOULD MAKE 4 SUCH ATTEMPTS AT RESTARTING ITSELF. IF, AFTER 4 ATTEMPTS AT DRIVE SELECTION, THE PROGRAM HAS BEEN UNSUCCESSFUL AT SELECTING AT LEAST ONE DISKETTE DRIVE, THE PROGRAM WILL PRINT THE FOLLOWING MESSAGE AND HALT: THE CONSOLE PACKAGE WILL RESTART.

"DRIVES NOT OK-BUT MAINDEC WILL HALT"

OBVIOUSLY, THIS PROGRAM IS UNABLE TO ACCUMULATE STATISTICAL INFORMATION PERTAINING TO THE DATA RELIABILITY OF DISKETTE DRIVES IF ALL DRIVES ARE "NOT READY" FOR TESTING.

4.4.2 PATTERN, TEST AND SEQUENCE
 ///////////////////////////////////
 AFTER STARTING THIS PROGRAM AT ADDRESS 200, AND AFTER SUCCESSFULLY

SELECTING A " DISKETTE DRIVE ", THE PROGRAM WILL PRINT THE FOLLOWING
 MESSAGE AND HALT IF ON CONSOLE PACKAGE WILL PRINT WAITING.

" SELECT PARAMETERS "

THE OPERATOR WILL THEN CONFIGURE ACCUMULATOR SWITCHES 0, 1, AND 2 TO RE-
 PRESENT A PATTERN SELECTION, SWITCHES 3, 4, AND 5 TO REPRESENT A TEST SE-
 LECTION, SWITCHES 6, 7, AND 8 TO REPRESENT AN ACTUATOR SEQUENCE SELECTION,
 SWITCH 9 TO REPRESENT 8/12 BIT MODE, SWITCH 10 TO REPRESENT DELETED DATA
 MODE.

THE OPERATOR WILL THEN PRESS " CONT " INVE OR
 ANSWER THE SWITCH REGISTER QUESTION IF ON CONSOLE PACKAGE.

A	C	C	U	M	U	L	A	T	O	R
S	W	I	T	C	H	E	S			
0	1	2	3	4	5	6	7	8	9	10 11
P	P	P	T	T	T	S	S	S	M	D -

THE PROGRAM WILL PRINT A TEST PARAMATER SELECTION CONFIRMATION MESSAGE
 AND BEGIN ACCUMULATING STATISTICAL INFORMATION PERTAINING TO THE DATA
 RELIABILITY OF THE RX01 SUBSYSTEM.

THE SW= QUESTION WILL BE PRINTED NEXT IF THE CONSOLE PACKAGE IS
 ACTIVE. ENTER THE RUNNING SWITCHES BEFORE THE PROGRAM BEGINS
 EXECUTION. SET THE SWITCH REGISTER TO THE DESIRED SETTINGS FOUND BELOW.

IF THE CONSOLE PACKAGE IS NOT ACTIVE THEN PROGRAM EXECUTION WILL
 BEGIN AFTER THE CONFIRMATION MESSAGE IS PRINTED.

5. OPERATING PROCEDURE
 //////////////////////////////////

THE OPERATOR MAY CONTROL THE DYNAMIC ACTION OF THE PROGRAM BY APPROPRIATELY CONFIGURING THE ACCUMULATOR SWITCHES AS DESCRIBED BELOW.

- 0 = 1 - HALT AT DETECTION OF AN ERROR 4000
- 1 = 1 - HALT AT THE END OF A TEST PASS 2000
- 2 = 1 - (LONG) DATA COMPARISON ERROR PRINTOUT 1000
- 3 = 1 - INHIBIT ERROR PRINTOUTS 400
- 4 = 1 - INHIBIT ERROR RECOVERY ATTEMPTS 200
- 5 = 1 - INHIBIT RINGING OF (BELL) AT ERROR 100
- 6 = 1 - INHIBIT THE ISSUING OF (INIT) AT ERROR 40

DISPLAY WITHIN THE MQ (IF THE PDP HAS AN MQ) THE FOLLOWING RUNTIME DATA:

10 = X
 11 = Y

- YX - 00 - TARGET TRACK (BITS 0-7) / SECTOR (BITS 8-11)
- 01 - TEST PARAMETER SELECTION
- 10 - STATUS FROM XDR AT END OF FUNCTION
- 11 - COMMAND WORD TO RX01 CONTROL

THIS PROGRAM MAY, AT THE OPERATORS DISCRETION AND AT ANY TIME DURING THE OPERATION OF THIS PROGRAM, BE STOPPED AND STARTED OR RESTARTED WITHOUT CONSEQUENCE.

6. ERROR DETECTION

6.1 PROGRAM DEFINITIONS

THIS PROGRAM HAS DEFINED THE FOLLOWING AS ERRORS:

6.1.1 WRITE ERROR

////////////////////////////////

A WRITE ERROR IS A READ ERROR IF THE DATA BEING READ IS OF UNKNOWN QUALITY (THE DATA BEING READ IS BEING READ FOR THE FIRST TIME AFTER ITS WRITING) .

6.1.2 READ (CRC) ERROR - (TRANSFER REGISTER STATUS BIT 11 = 1)

////////////////////////////////

A READ ERROR IS A READ ERROR WHERE THE QUALITY OF THE DATA BEING READ IS KNOWN (THE DATA BEING READ HAD BEEN READ SUCCESSFULLY SOME TIME PREVIOUSLY) .

6.1.3 CRC AND DATA ERROR

////////////////////////////////

6.1.4 NO CRC BUT DATA ERROR

////////////////////////////////

6.1.5 CRC BUT NO DATA ERROR

////////////////////////////////

THESE DATA ERRORS ARE DETECTED WHEN THE PROGRAM IS VERIFYING THE DATA THAT " SHOULD HAVE BEEN READ " WITH THE DATA THAT " ACTUALLY WAS READ " BY COMPARING THE " BAD " COLUMN TO THE " GOOD " COLUMN.

WORD#	GOOD	BAD
1	(TRACK IDENTIFICATION BITS 5-11)	
2	(SECTOR IDENTIFICATION BITS 8-11)	
WORDS 3 THRU 62 (IF 12-BIT MODE), OR		
BYTES 3 THRU 126 (IF 8-BIT MODE) CONTAIN		
THE OPERATORS PPP SELECTION.		
63	(OR BYTE 127) - THE SUM OF ALL WORDS 1 THRU 62	
OR BYTES 1 THRU 127.		
64	OR (BYTE 128) - THE NEGATIVE OF 2 TIMES	
THE VALUE OF WORD # 63 OR BYTE # 127.		

6.1.5.1 SUMCHECK ERROR
 //////////////////////////////////

THE PROGRAM DETECTS A " SUM-CHECK " ERROR BY SUMMING ALL THE ACTUAL (BAD) DATA COLUMN AND COMPARING THAT SUM TO 0.

THE REASON FOR THE FIRST 2 WORDS/BYTES CONTAINING TRACK / SECTOR IDENTIFICATION CODES IS TO DETECT ADDRESSING ERRORS.

THE REASON FOR THE LAST 2 WORDS/BYTES CONTAINING CHECKSUM INFORMATION IS TO DISTINGUISH BETWEEN WHAT MIGHT RESEMBLE AN ADDRESSING ERROR

(IF THE PROGRAM DETECTED AN ERROR WHEN COMPARING THE FIRST 2 WORDS/BYTES) AND A CRC ERROR.

6.1.6 SEEK ERROR - (NO ALLOCATED TRANSFER REGISTER STATUS BIT)
 //////////////////////////////////

A SEEK ERROR HAS BEEN DEFINED AS " NOT A CRC ", AND " NOT A PARITY " ERROR.

6.1.7 PARITY ERROR - (TRANSFER REGISTER STATUS BIT 10 = 1)
 //////////////////////////////////

A PARITY ERROR IS AN ERROR WHICH RESULTS FROM AN INCORRECT TRANSFER OF THE COMMAND WORD FORM THE RX8 INTERFACE TO THE RX01 MICROPROCESSOR CONTROL.

THE FOLLOWING CHART REPRESENTS AN OVERVIEW OF WHICH ERRORS MAY BE DETECTED IN WHICH TEST:

ERRORS:

TEST:	WRITE	READ	DATA	SEEK	PARITY
0	X	X	X		
1	X	X	X	A	A
2	X	X	X	L	L
3		X	X		
4		X	X	L	L
5	X	X	X		
6	X	X	X		
7		X	X		

6.2 DEFINITIVE ERROR CODES
//////////

THE RX01 MICROCONTROLLER HAS DEFINED ERROR CODES AND MEANINGS WHICH ARE
AVAILABLE TO THE PROGRAM BY ISSUING COMMAND #7 TO " READ THE B-CODE ".
A DEFINITIVE ERROR CODE REPRESENTS [WHERE] WITHIN A MICRO-FUNCTION
THE ERROR WAS DETECTED.

THE FOLLOWING ARE THE DEFINITIVE ERROR CODES AND MEANINGS:

0	-	NO ERROR
10	-	DRIVE 0 FAILED TO SEE HOME FROM INITIALIZE
20	-	DRIVE 1 FAILED TO SEE HOME FROM INITIALIZAE
30	-	HOME FOUND WHEN STEPPING OUT 10 TRACKS FROM INIT
40	-	TRIED TO ACCESS A TRACK GREATER THAN 77(DECIMAL)
50	-	HOME WAS FOUND BEFORE DESIRED TRACK
60	-	SELF DIAGNOSTIC ERROR
70	-	DESIRED SECTOR NOT FOUND AFTER SAMPLING 52 HEADERS
100	-	WRITE PROTECT ERROR
110	-	MORE THAN 40US AND NO SEP CLOCK DETECTED
120	-	A PREAMBLE COULD NOT BE FOUND
130	-	PREAMBLE FOUND BUT NO ID MARD FOUND IN TIME
140	-	CRC ERROR ON SUPPOSIDLY GOOD HEADER
150	-	GOOD HEADER(NO CRC ERROR) BUT TRACK COMPARE ERROR
160	-	IDAM NOT FOUND IN TOME
170	-	DATA AM NOT FOUND IN TIME
200	-	DATA CRC ERROR
210	-	ALL PARITY ERRORS

6.3 UNEXPECTED OR MISSING ERROR CONDITIONS
//////////

6.3.1 MISSING DD MARK
//////////

THIS ERROR MAY OCCUR WHEN THE PROGRAM EXPECTED A DELETED DATA MARK BUT
NONE OCCURED.

6.3.2 UNEXPECTED DD MARK
//////////

THIS ERROR MAY OCCUR WHEN THE PROGRAM HAD NOT EXPECTED A DELETED DATA
MARK BUT ONE OCCURED.

6.3.3 MISSING ERROR FLAG ////////////////////////////////

THIS ERROR MAY OCCUR WHEN THE CONTENTS OF THE TRANSFER REGISTER AT DONE TIME ARE NOT 0, AND THE ERROR FLAG IS CLEARED.

6.3.4 UNEXPECTED RX01 IRQ ////////////////////////////////

THIS ERROR MAY OCCUR WHEN THE PROGRAM HAS NOT YET ENABLED THE RX8 INTERRUPT ENABLE FLIP-FLOP BUT AN INTERRUPT OCCURED.

6.3.5 DEVICE TEST HUNG ////////////////////////////////

THIS ERROR MAY OCCUR WHEN THE PROGRAM EXPECTS BUT FAILED TO RECIEVE A PROGRAM INTERRUPT REQUEST FROM THE RX01 SUBSYSTEM WITHIN AN ALLOTTED PERIOD OF TIME (APPROXIMATELY 4 SECONDS).

6.4 UNKNOWN IRQ ////////////////////////////////

THIS ERROR MAY OCCUR WHEN THE PROGRAM HAS FAILED TO IDENTIFY THE DEVICE ISSUING A PROGRAM INTERRUPT REQUEST.

7. ERROR REPORTING ////////////////////////////////

ALL ERRORS DETECTED WILL BE REPORTED IF AC SW 3 = 0. THE FOLLOWING INFORMATION IS PRINTED FOR ALL ERRORS DETECTED. THE HEADER LINE IS ONLY PRINTED FOR THE FIRST ERROR DETECTED WITHIN EACH TEST PASS.

CMND	XDR	CODE	RSTA	START	TARGET	TEST	PASS
CMND							
XDR							
CODE							
RSTA							
START							
TARGET							
TEST							
PASS							

- COMMAND TO THE RX01 MICROCONTROLLER
 - CONTENTS OF THE TRANSFER REGISTER AT ERROR/DONE
 - DEFINITIVE ERROR CODE (VIA COMMAND #7)
 - STATUS (VIA COMMAND #5)
 - STARTING TRACK/SECTOR ACTUATOR POSITION
 - TARGET TRACK/SECTOR ACTUATOR POSITION
 - TEST PARAMETERS SELECTED
 - PASS # AT ERROR (TO 16777215 DECIMAL)

7.1.1 EXAMPLES
//////////

7.1.1.1 KEY INITIALIZE ERROR

CMND	XDR	CODE	RSTA	START	TARGET	TEST(X)
KEY	0100	0120	0200	KEY	[HOME]	PASS

STARTING THE PROGRAM HAD PRODUCED A CONSOLE [KEY] INITIALIZE, AND

THE RX01 CONTROL WAS UNABLE TO FIND THE [HOME] POSITION ON DRIVE 0.

CMND - CONSOLE [KEY] INITIALIZE
XDR - DELETED DATA MARK HAPPENED TO BE PRESENT
CODE - A PREAMBLE COULD NOT BE FOUND
RSTA - DISKETTE DRIVE IS READY
START - ACTUATOR POSITION UNKNOWN
TARGET - [HOME] TRACK 1, SECTOR 1

7.1.1.2 SEEK ERROR

CMND	XDR	CODE	RSTA	START	TARGET	TEST(X)
0014	0100	0120	0300	[HOME]	1	1
INIT	0	0120	0200	[HOME]	[HOME]	

A SEEK ERROR OCCURED WHILE TRYING TO " WRITE DELETED DATA " (CMND #14)
ONTO TRACK 1 SECTOR 1.

COMD - WRITE DELETED DATA
XDR - DELETED DATA MARK
CODE - A PREAMBLE COULD NOT BE FOUND
RSTA - DRIVE READY + DELETED DATA
START - HOME POSITION
TARGET - TRACK 1, SECTOR 1

THEN THE PROGRAM ISSUED AN INITIALIZE AT AN ATTEMPT TO RECOVER FROM
THE " SEEK " ERROR.

CMND - MEANS IOT 67X7 WAS ISSUED (INITI)
XDR - 0
CODE - A PREAMBLE COULD NOT BE FOUND
RSTA - DRIVE READY
START - HOME POSITION
TARGET - HOME POSITION

7.1.1.3 WRITE-CRC AND DATA ERROR

CMND	XDR	CODE	RSTA	START	TARGET	TEST(X)
0026	0001	3200	0201	100,30	100,1	PASS

WRITE-CRC AND DATA ERROR
WORD GOOD BAD
4 5435 5473
5 6617 5437
6 6303 4606
SUMCHECK IS 1253
TOTAL BAD=60

WHILE READING SECTOR 7 OF TRACK 100 THE PROGRAM DETECTED A CRC ERROR.
THE PROGRAM EXPANDS THE STANDARD ERROR FORMAT TO INCLUDE DATA COM-
PARISON INFORMATION IF THE TEST IS A DATA COMPARISON TEST.

IF AC SWITCH 2 = 1 THEN A [LONG] DATA COMPARISON PRINTOUT WOULD
HAVE OCCURRED OF [ALL] THE WORDS/BYTES IN ERROR.

THE WORD " WRITE " WITHIN THE EXPANSION MEANS THAT THE DATA OF
SECTOR 7 HAD NEVER BEEN READ BEFORE, THEREFORE THE PROGRAM ASSUMED IT
WAS WRITTEN INCORRECTLY

7.1.1.4 READ-CRC AND DATA ERROR

CMND	XDR	CODE	RSTA	START	TARGET	TEST(X)	PASS
0026	0001	0200	0201	100,30	100,1		
READ-CRC AND DATA ERROR							
WORD	GOOD	BAD					
4	5435	5477					
5	6617	5437					
6	6303	5406					
SUM-CHECK IN 1257							
TOTAL BAD=60							

WHILE SEEKING SECTOR 1 OF TRACK 100 THE PROGRAM DETECTED A CRC ERROR.
THE PROGRAM EXPANDS THE STANDARD ERROR FORMAT TO INCLUDE DATA COMPARISON
INFORMATION IF THE TEST IS A DATA COMPARISON TEST.

IF AC SWITCH 2 = 1 THEN A [LONG] DATA COMPARISON ERROR PRINTOUT WOULD
HAVE OCCURRED OF [ALL] THE WORDS/BYTES IN ERROR.

THE WORD " READ " WITHIN THE EXPANSION MEANS THAT THE DATA OF
SECTOR 7 HAD BEEN READ SOME TIME PREVIOUSLY, THEREFORE THE PROGRAM
ASSUMES THAT THE DATA WAS WRITTEN CORRECTLY BUT READ INCORRECTLY.

7.1.1.5 WRITE-CRC BUT NO DATA ERROR

CMND	XDR	CODE	RSTA	START	TARGET	TEST(X)	PASS
0026	0001	0200	0201	100,30	100,1		
WRITE - CRC BUT NO DATA ERROR							

A CRC ERROR WAS DETECTED AFTER READING SECTOR 1 OF TRACK 100.

THE WORD " WRITE " WITHIN THE DATA EXPENSION MEANS THAT THE DATA OF SECTOR 1 TRACK 100 HAD NEVER BEEN READ BEFORE THEREFORE THE PROGRAM ASSUMED IT WAS WRITTEN INCORRECTLY, AND BECAUSE THE PROGRAM DID NOT DETECT A DATA COMPARISON ERROR, IT ASSUMED THAT THE 2 CRC CHARACTERS WERE WRITTEN INCORRECTLY.

7.1.2 ERROR RECOVERY
 //////////////////////////////////

THE PROGRAM WILL ATTEMPT TO RETRY ALL ERRORING FUNCTIONS 10 TIMES.
 A RECOVERABLE ERROR (SOFT) IS ONE WHICH DISAPPEARS WITHIN 10 PROGRAM RETRYs, AN UNRECOVERABLE ERROR (HARD) IS ONE WHICH REMAINS AFTER 10 PROGRAM RETRYs.

THE PROGRAM WILL ISSUE IOT 67X7 [UNIT] FOR ALL ERRORS BUT DEFINITIVE ERROR CODES 140, 200, AND 210.

140 - CRC ERROR ON SUPPOSIDELY GOOD HEADER
 200 - DATA CRC ERROR
 210 - PARITY ERROR

THESE ERRORS ARE [NOT] SEEK TYPE ACTUATOR RELATED ERRORS.

IF A HARD WRITE ERROR IS DETECTED THE PROGRAM ABORTS FURTHER TESTING THIS PASS OF THAT TRACK/SECTOR BUT CONTINUES TESTING TRACKS. ON THE REMAINING

A SYMPATHETIC HARD READ ERROR MAY OCCUR (PATTERN DEPENDENT) IF THE HARD WRITE ERROR HAD OCCURRED WITHIN A TEST WHICH WOULD EVENTUALLY READ THAT SECTOR AND A SYMPATHETIC HARD DATA COMPARISON ERROR MAY OCCUR IF THAT TEST WAS TO VERIFY THE DATA TO A KNOWN PATTERN.

7.1.3 FATAL ERROR RECOVERY
//////////

IF THE PROGRAM DETECTS ANY OF THE SUCCEEDING FATAL ERROR CONDITIONS,
THE PROGRAMS RECOVERY WILL BE THAT OF AN AUTOMATIC RESTART.

THE PROGRAM WILL AUTOMATICALLY DUMP ALL STATISTICAL INFORMATION
ACCUMULATED ISSUE AN [INIT] AND EFFECTIVELY RESTART ITSELF FROM

RESTART ADDRESS 201.

- (A) HARD PARITY ERROR
- (B) A SELECTED DRIVE BECOMING NOT READY
- (C) NO EXPECTED RX01 INTERRUPT REQUEST
- (D) MISSING ERROR FLAG
- (E) LOG OVERFLOW
- (F) DEVICE TEST HUNG.

8. MANUAL INTERVENTION
//////////

8.1 FIELD ENGINEERING TROUBLE SHOOTING AIDS
//////////

THIS PROGRAM, APART FROM THE COLLECTION OF STATISTICAL INFORMATION,
IS DESIGNED AS A FIELD ENGINEERING TOOL.

THE FIELD ENGINEER, BY ALTERING THE CONTENTS OF SPECIFIC PROGRAM
MAINTENANCE LOCATIONS, IS ABLE TO DIRECT THE PROGRAM TO PERFORM TESTING
UPON A PARTICULAR AREA [WINDOW] OF THE DISKETTE INSTEAD OF THE ENTIRE
SURFACE. THESE PROGRAM LOCATIONS ARE LABELED "OD" "ID", "FIRST, AND "LAST".

"OD" (OUTSIDE DIAMETER), PROGRAM LOCATION 30, IS THE INITIAL OUTER-
MOST TRACK THE PROGRAM WILL ACCESS.

"ID" (INSIDE DIAMETER), PROGRAM LOCATION 31, IS THE FINAL INNERMOST
INNERMOST TRACK THE PROGRAM WILL ACCESS.

"FIRST", PROGRAM LOCATION 32, IS THE FIRST SECTOR TO BE ACCESSED
OF A TRACK.

"LAST", PROGRAM LOCATION 33, IS THE LAST SECTOR TO BE ACCESSED
OF A TRACK.

THE STANDARD ASSEMBLED CONTENTS OF THESE FIELD ENGINEERING
MAINTENANCE LOCATIONS ARE:

	*30	
OD,	1	/INITIAL TRACK TO TEST
ID,	114	/FINAL TRACK TO TEST
FIRST,	1	/FIRST SECTOR OF A TRACK
LAST,	32	/LAST SECTOR OF A TRACK

THESE ARE THE ONLY FIELD ENGINEERING MAINTENANCE PROGRAM
LOCATIONS DESIGNED TO BE EXTERNALLY ALTERED.

THE PROGRAM WILL PRINT A MAINTENANCE VERIFICATION MESSAGE
IF THE CONTENTS OF THE MAINTENANCE LOCATIONS ARE NOT THE ASSEMBLED
STANDARD.

THE OCTAL CONTENTS OF THESE MAINTENANCE LOCATIONS MUST BE
WITHIN THE RESTRICTED LIMITS WHICH ARE:

```

0 <= OD <= ID
0 <= ID <= 114
1 <= FIRST <= LAST
1 <= LAST <= 32

```

THE PROGRAM VERIFIES THE CONTENTS OF EACH MAINTENANCE LOCATION. THE
PROGRAM WILL SET INTO THE MAINTENANCE LOCATION THE STANDARD VALUE IF THE
DESIRED CONTENTS WERE NOT WITHIN THE REQUIRED SPECIFIED LIMITS.

NOTE, THAT TRACK 0 IS NOT INCLUDED WITHIN THE STANDARD [WINDOW]
OF TESTABLE TRACKS. THE REASON FOR THIS IS NOT TO INADVERTENTLY DESTROY
THE FORMATTED CONTENTS OF TRACK 0.

TO EXPAND THE WINDOW OF TESTABLE TRACKS INCLUDING TRACK 0, THE CONTENTS
OF PROGRAM LOCATIONS " OD " MUST BE ZERO.

IN SUMMARY, IF THE CONTENTS OF PROGRAM LOCATIONS OD, ID, FIRST,
AND LAST WERE 30, 30, 1, 1, RESPECTIVELY, THE PROGRAM WOULD PERFORM
SELECTED TESTING ONLY UPON TRACK 30, SECTOR 1.

8.2 COMPATABILITY VERIFICATION

//////////

- A. SELECT A TEST THAT WILL WRITE-READ-AND VERIFY THE DATA THEREBY INSURING THE QUALITY OF DATA PRIOR TO THE DISKETTE SWAP.

SELECT TEST 0 OR TEST 2.

ANY SEQUENCE WILL ACHIEVE THE FIRST OBJECTIVE.

- B. CONFIGURE OPERATIONAL CONSOLE SWITCH 1 = 1 (TO HALT THE PDP AT THE COMPLETION OF 1 PASS). THIS IS TO INSURE THE DATA PATTERN IS NOT FRESHENED (APPLIED TO RANDOM DATA SELECTION).

- C. PHYSICALLY SWAP THE DISKETTE MEDIA RESIDING WITHIN DISKETTE DRIVE 0 WITH THE MEDIA WITHIN DISKETTE DRIVE 1.

- D. SELECT A TEST THAT WILL READ-AND VERIFY THE DATA (THIS IS THE COMPATABILITY TEST).

SELECT TEST 7 IF TEST 0 WAS SELECTED AT (A), OR
SELECT TEST 3 IF TEST 2 WAS SELECTED AT (A).

THE PATTERN SELECTION MUST BE EQUIVALENT TO THE PATTERN SELECTED AT (A), THE SEQUENCE MAY NOT.

9. PARAMETER DESCRIPTION

//////////

9.1 PATTERN (PPP) DESCRIPTIONS

9.1.1 RANDOM (PPP=0)

A FRESH RANDOM PATTERN WILL BE GENERATED AT THE END OF EACH PASS.

9.1.2 PATTERN 1 - ALL 1'S

//////////

9.1.3 PATTERN 2 - 00110011

//////////

9.1.4 PATTERN 3 - 11001100

//////////

9.1.5 PATTERN 4 - 10101010

//////////

9.1.6 PATTERN 5 - 01010101

//////////

9.1.7 PATTERN 6 -

//////////

9.1.8 PATTERN 7 - ALL 0'S

//////////

9.2 TEST (TT) DESCRIPTIONS
////////////////////////////////

ALL TESTS EXERCISE ONLY THAT SURFACE (WINDOW) OF THE DISKETTE SPECIFIED BY THE CONTENTS OF THE FIELD ENGINEERING MAINTENANCE PROGRAM LOCATIONS (REFER TO PARAGRAPH 8) " OD ", " ID ", " FIRST ", AND " LAST ", WITH A DATA PATTERN SPECIFIED BY THE PATTERN (PPP) SELECTION, (PARAGRAPH 9.1) AND WITH AN ACTUATOR MOVEMENT SPECIFIED BY THE SEQUENCE (SSS) SELECTION PARAGRAPH 9.3) .

9.2.1 ACCEPTANCE TEST (TT=0)
////////////////////////////////

THIS TEST HAS BEEN LABELED THE ACCEPTANCE TEST BECAUSE IT EXERCISES ALL THE DESIGN FEATURES OF THE RX8/RX01 SUBSYSTEM EXPEDIENTLY.
FIRSTLY, WITH DATA SPECIFIED BY THE PATTERN SELECTION (PARAGRAPH 9.1), AND WITH AN INCREMENTAL ACTUATOR MOVEMENT SEQUENCE, THIS TEST WILL WRITE-READ-AND PROGRAM VERIFY EACH SECTOR FROM " FIRST " TO " LAST " OF EACH TRACK FROM " OD " TO " ID " .

SECONDLY, WITH AN ACTUATOR MOVEMENT SPECIFIED BY THE SEQUENCE SELECTION (PARAGRAPH 9.3), THIS TEST WILL REPEAT THE TRACKS AND SECTORS PREVIOUSLY WRITTEN. THE DEFAULT PATTERN SELECTION IS RANDOM AND THE DEFAULT ACTUATOR MOVEMENT SEQUENCE SELECTION IS RANDOM.

TO EXPEDIENTLY TEST ALL THE DESIGN FEATURES OF THE RX8/RX01 SUBSYSTEM (8/12 BIT MODE, AND DELETED DATA), THIS TEST WILL ALTERNATELY EXERCISE EACH FEATURE, REGULATED BY THE VALUE OF THE " TARGET " TRACK POSITION.

IF THE VALUE OF THE TARGET TRACK IS " X " THEN THE DESIGN FEATURE UNDER TEST IS " Y " .

X	Y
-----	-----
--0	12-BIT MODE
--1	12-BIT MODE WITH DELETED DATA
--2	8-BIT MODE
--3	8-BIT MODE WITH DELETED DATA
--4	
--5	
--6	(ETC.)
--7	

9.2.2 TEST 1 - WRITE/READ
 //////////////////////////////////

9.2.3 TEST 2 - WRITE/READ/PROGRAM VERIFY DATA
 //////////////////////////////////

9.2.4 TEST 3 - READ/PROGRAM VERIFY DATA
 //////////////////////////////////

TEST 3 IS THE COMPATABILITY COUNTER PART TO TEST 2.

9.2.5 TEST 4 - READ ONLY
 //////////////////////////////////

9.2.6 TEST 5 - WRITE ONLY
 //////////////////////////////////

THE AFFORE MENTIONED TESTS WILL PERFORM THE DESCRIBED FUNCTIONS USING 8-
 OR 12-BIT MODE, (PARAGRAPH 9.4), WITH OR WITHOUT DELETED DATA, (PARAGRAPH 9.5).

9.2.7 TEST 6 - WRITE/READ/PROGRAM VERIFY DATA
 //////////////////////////////////

FIRSTLY, WITH AN INCREMENTAL ACTUATOR MOVEMENT SEQUENCE,

THIS TEST WILL WRITE, READ, AND PROGRAM VERIFY DATA IN 8 OR 12 BIT
 MODE AS SPECIFIED BY THE " M " SELECTION, (PARAGRAPH 9.4), WITH OR WITHOUT
 ELETED DATA AS SPECIFIED BY THE " D " SELECTION, (PARAGRAPH 9.5).

SECONDLY, WITH AN ACTUATOR MOVEMENT SPECIFIED BY THE SEQUENCE
 SELECTION, (PARAGRAPH 9.3), THIS PROGRAM WILL REREAD THE TRACKS AND
 SECTORS PREVIOUSLY WRITTEN.

9.2.8 TEST 7 - READ-PROGRAM VERIFY
 //////////////////////////////////

TEST 7 IS THE " COMPATABILITY COUNTERPART " OF TEST 0.

9.3 SEQUENCE (SSS) DESCRIPTION
 //////////////////////////////////

THE SEQUENCE GENERATOR SELECTS A TARGET TRACK WITHIN THE WINDOW
 SPECIFIED BY THE OUTSIDE DIAMETER (OD) AND INSIDE DIAMETER (ID) PARAMETERS.

9.3.1 RANDOM (SSS=0)

THE SEQUENCE GENERATOR WILL RANDOMLY SELECT A TARGET TRACK
 BETWEEN OD AND ID.

9.3.2 SEQUENCE 1 - INCREMENTAL
 //////////////////////////////////

THE SEQUENCE GENERATOR WILL SELECT A TARGET TRACK COMMENCING
 WITH "OD", IN INCREMENTS OF 1 TO "ID".

9.3.3 SEQUENCE 2 - DECREMENTAL
 //////////////////////////////////

THE SEQUENCE GENERATOR WILL SELECT A TARGET TRACK COMMENCING
 WITH "ID" IN DECREMENTS OF 1 TO "OD".

9.3.4 SEQUENCE 3 - INCREMENTAL/DECREMENTAL
 //////////////////////////////////

FIRST REFER TO PARAGRAPH 9.2.2, THEN REFER TO PARAGRAPH 9.2.3.

9.3.5 SEQUENCE 4 - BOUNCE ID TO OD
 //////////////////////////////////

THE SEQUENCE GENERATOR WILL SELECT A TARGET TRACK EQUIVALENT
 TO THE VALUE OF "ID" OR "OD" AND BOUNCE TO "ID" TO "OD".

9.3.6 SEQUENCE 5 - DECREMENTAL/INCREMENTAL BOUNCE.
 //////////////////////////////////

THE SEQUENCE GENERATOR WILL SELECT A TARGET TRACK EQUIVALENT
 TO THE VALUE OF "ID" OR "OD" AND BOUNCE TO "ID" THEN TO "OD".
 THEN THE SEQUENCE GENERATOR WILL SELECT A TARGET TRACK EQUIVALENT
 TO THE VALUE OF "ID-1" OR "OD+1" AND BOUNCE, ETC.

9.3.7 SEQUENCE 6 - STROBE
 //////////////////////////////////

THE SEQUENCE GENERATOR WILL SELECT A TARGET TRACK EQUIVALENT
 TO THE VALUE OF "ID" OR "OD", AND BOUNCE TO "ID" THEN TO "OD".
 THEN THE SEQUENCE GENERATOR WILL SELECT A TARGET TRACK EQUIVALENT
 TO "ID-1" OR "OD" AND STROBE ETC.

9.3.8 SEQUENCE 7 -
//////////

9.4 8/12 BIT MODE DESCRIPTION (M)
//////////

THE PATTERN GENERATOR WILL ASSEMBLE A PATTERN OF 64 TWELVE BIT WORDS
(IF M = 0), OR 128 EIGHT BIT BYTES (IF M = 1).

9.5 DELETED DATA DESCRIPTION (D)
//////////

THE SELECTED TEST WILL WRITE WITH DELETED DATA, OR READ EXPECTING

DELETED DATA (IF D=1).

10. CONSOLE PACKAGE

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10.1.

ABSTRACT

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 ERROR WILL BE PRINTED ON THE TERMINAL AND THE NUMBER OF PASSES WILL BE PRINTED. THERE WILL BE NO HALTS EXECUTIED .

2) CONSOLE PACKAGE NOT ACTIVE-THIS WILL RESULT IN THE USE OF HALTS FOR ERROR, HALTS AT END OF PASS IF SELECTED,USE OF THE HARDWARE SWITCH REGISTER ,NOT ASKING THE SWITCH QUESTION.

10.2.

REQUIREMENTS

10.2.1

STORAGE

THIS PACKAGE CAN RESIDE IN ANY PART OF CORE.

10.3.

RESTRICTIONS

1) RUNNING THE CONSOLE PACKAGE REQUIRES THAT THE PSEUDO SWITCH REGISTER BE USED.

2) 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.

10.4.

STANDARD OPERATION PROCEDURE

10.4.1

INITIALIZATION

FOR A ACTIVE CONSOLE PACKAGE

1.) LOAD ADDRESS 0021

2.) SET SR0=0 INDICATOR FOR USING THE PSEUDO SWITCH REGISTER

3.) LOAD ADDRESS 0022

4.) SET SR3=1 INDICATOR FOR USING A ACTIVE CONSOLE PACKAGE

5.) LOAD STARTING ADDRESS OF PROGRAM AND BEGIN

FOR A NON ACTIVE CONSOLE PACKAGE

- 1.) LOAD ADDRESS 0021
- 2.) SET SR0=1 TO INDICATE A HARDWARE SWITCH REGISTER
- 3.) LOAD ADDRESS 0022
- 4.) SET SR3=0 TO INDICATE A DEACTIVE CONSOLE PACKAGE
- 5.) LOAD STARTING ADDRESS OF PROGRAM AND BEGIN

10.4.2 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 WILL START THE LOADER THAT IS IN LOCATION 7600.

CONTROL R

THIS WILL RESTART THE PROGRAM AND REASK THE SWITCH REGISTER QUESTION AND THE REMAINNING SET UP QUESTIONS.

CONTROL E

THIS WILL CONTINUE THE PROGRAM FROM A ERROR IF ALLOWED BY THE DIAGNOSTIC OR FROM A WAITING STATEMENT.

CONTROL O

THIS CONTROL CHARACTER WILL TYPE OUT THE STATISTICAL REPORT

CONTROL S

THIS WILL INHIBIT PRINTING AND NOT DISPLAY THIS WILL NOT EFFECT THE PROGRAM BUT NO PRINTOUT WILL BE SEEN. TO GET PRINTS OUT TYPE CONTROL O

CONTROL 0

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

10.4.3 WAITING MESSAGE

THE WAITING MESSAGE IS USED TO ALLOW THE OPERATOR TIME TO MAKE A DECISION AS TO WHAT CONTROL CHARACTER TO TYPE. THIS MESSAGE MAY APPEAR AT THE END OF PASS MESSAGE IF THE HALT ON ERROR BIT IS SET. THE CONTROL CHARACTERS MAY NOW BE USED TO PERFORM THE NEEDED FUNCTION.

THE WAITING MESSAGE MAY BE PRINTED AFTER A ERROR MESSAGE IF THE HALT ON ERROR BIT IS SET. HERE AGAIN THE CONTROL CHARACTERS MAY BE USED.
THE WAITING MESSAGE MAY BE PRINTED IF OPERATOR INTERVENTION IS REQUIRED..

10.4.4

SWITCH REGISTER MESSAGE

THIS MESSAGE IS USED TO SETUP THE PSEUDO SWITCH REGISTER BEFORE PROGRAM EXECUTION TAKES PLACE. THE SWITCH REGISTER IS SETUP WHEN THE FOURTH CHARACTER IS ENTERED OR A CARRIAGE RETURN IS TYPED.

SR=0000 4000

UNDER SCORING INDICATES OPERATOR RESPONSE

10.4.5

END OF PASS

A INDICATION WILL BE GIVEN WHEN THE DIAGNOSTIC HAS MADE A SUCCESSFUL PASS. THE PRINT OUT WILL INDICATE THE DIAGNOSTIC MAINDEC NUMBER THE WORD PASS AND A FOUR DIGIT PASS NUMBER. A PASS WILL BE A TIME PERIOD RATHER THAN A PROGRAM PASS OF THE DIAGNOSTIC. THE TIME PERIOD WILL BE IN THE RANGE OF ONE (1) TO FIVE (5) MINUTES. IF THE DIAGNOSTIC MAKES A PROGRAM PASS IN THE 1 TO 5 MINUTE RANGE THEN THE PASS COUNT WILL BE THE SAME AS THE NUMBER OF PROGRAM PASSES. IF THE PROGRAM MAKES A PROGRAM PASS IN LESS THEN ONE MINUTE THEN THE PASS COUNT WILL NOT BE THE SAME AS THE PASS COUNTER THE PASS COUNTER WILL REFLECT MORE THEN ON PROGRAM PASS.
THE NUMBER OF PROGRAM PASSES REQUIRED FOR A PASS MESSAGE CAN BE FOUND IN LOCATION CALLED "CNTVAL".

IF HALT AT END OF PASS IS SET THEN THE PASS MESSAGE WILL BE PRINTED AND A WAITING STATEMENT WILL ALSO BE PRINTED.
A CONTROL CHARACTER IS NEEDED TO CONTINUE FROM THIS MESSAGE.

THE FORMAT OF THE END OF PASS MESSAGE IS

NAME PASS 0001(* OR A -)

10.5.

* INDICATES THAT NO ERRORS WERE DETECTED IN THE PASS
- INDICATES THAT A ERROR WAS DETECTED IN THE PASS

ERRORS

UPON DETECTION OF A ERROR THE DIAGNOSTIC WILL DO ONE OF
THE FOLLOWING OPERATIONS:
1.) PRINT OUT THE STANDARD CONSOLE PACKAGE ERROR MESSAGE
(SEE SECTION 5.2 FOR FORMAT.). THE PROGRAM WILL THEN CHECK THE
SWITCH SETTING AND IF HALT ON ERROR IS SET , THE MESSAGE
WAITING WILL BE PRINTED. THE OPERATOR MUST ENTER
A CONTROL CHARACTER TO CONTINUE ON . IF THE HALT ON ERROR
BIT IS NOT SET THEN THE PROGRAM WILL CONTINUE ON
AFTER THE ERROR MESSAGE IS PRINTED.
2.) PRINT THE ERROR MESSAGE FOR THE PARTICULAR ERROR CONDITION
AND NOT THE STANDARD ERROR MESSAGE. A CHECK OF THE SWITCH
REGISTER WILL BE MADE TO DETERMIND IF THE PROGRAM SHOULD
CONTINUE RUNNING AFTER THE ERROR MESSAGE OR PRINT WAITING.
REFER TO THE LISTING AT THE LOCATION PRINTED IN THE ERROR
PC FOR THE CAUSE OF THE ERROR.

10.5.1
ERROR HALTS

CONSOLE PACKAGE DEACTIVE WILL CAUSE NO ERROR MESSAGE
TO BE PRINTED. A HALT WILL REPLACE THE ERROR CALL IN THE
CODE AND THE DIAGNOSTIC WILL THEN GO TO THAT HALT.
REFER TO THE LISTING FOR THE CAUSE OF THE ERROR, THE ERROR
LOCATION WILL BE THE SAME IF THE CONSOLE PACKAGE WAS ACTIVE.

10.6
SWITCH REGISTER SETTINGS

THE FOLLOWING SWITCH REGISTER SETTINGS ARE USED BY THE CONSOLE
PACKAGE. THESE SWITCH REGISTER SETTINGS ARE VALID WHEN USING
THE HARDWARE SWITCH REGISTER AND THE PSEUDO SWITCH REGISTER.

10.6.1
OPERATING SWITCHES

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 0021

BIT	OCTAL VALUE	FUNCTION WHEN 0	FUNCTION WHEN 1
0	4000	USE PSEUDO SWITCHES	USE HARDWARE SWITCHES
1	2000	NO OPTION 1	HAS OPTION 1
2	1000	NO OPTION 2	HAS OPTION 2
3	400	NO 8A SIMULATOR	HAS 8A SIMULATOR
4	200	NO OPTION SIMULATOR	HAS OPTION SIMULATOR
5	100	NOT ON 8A XOR	ON 8A XOR
6	40	NOT PDP8-E TYPE CPU	PDP8-E TYPE CPU

7-11

8A MEMORY SIZE EX. 1K=00
2K=01
7K=06
32K=31

LOCATION 0022

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

10.6.2 ERROR RELATED SWITCHES

THESE ARE THE SWITCH REGISTER SETTING THAT THE CONSOLE PACKAGE
WILL RECOGNISE.

BIT	OCTAL VALUE	FUNCTION WHEN 0	FUNCTION WHEN 1
0	4000	CONTINUE AFTER ERROR	STOP ON ERROR
1	2000	CONTINUE AFTER TEST	STOP AT END OF TEST
2	1000	SHORT ERROR PRINT	LONG DATA COMPARISON ERROR PRINT OUT
3	400	PRINT ERRORS	NO ERROR PRINT OUTS
4	200	MAKE ERROR RECOVERY	NO ERROR RECOVERY ATTEMPTS
5	100	RING BELL AT ERROR	NO BELL RINGING ON ERRORS
6	40	ISSUE (INIT) AT ERROR	DO NOT ISSUS (INIT) AT ERROR
10-11	DISPLAY IN MQ IF PRESENT	00=TARGET TRACK BITS0-7 SECTOR BITS 8-11	

01=TEST PARAMETER SECTION
10=STATUS OF XDR AT END
OF FUNCTION
11=COMMANDWORD TO RX01
CONTROL

10.7. LOCATION CHANGES

THE FOLLOWING LOCATIONS CAN BE CHANGED TO MEET THE SPECIFIC
NEED FOR MODIFICATION OF THE DIAGNOSTIC.

CNTVAL IS THE LOCATION FOR THE VALUE OF THE
NUMBER OF PROGRAM PASSES NEED TO
PRINT THE END OF PASS MESSAGE.

FILLER IS THE LOCATION SET FOR THE NUMBER OF
FILLER CHARACTERS AFTER A CRLF SET TO FOUR (4)

10.8.

DIALOG FOR CONSOLE PACKAGE

THE DIALOG FOR THIS DIAGNOSTIC IS:

R DIRXB (CR)

MAINDEC-08-DIRXB-B

REMOVE THE DIAGNOSTIC DISKETTE

/PAUSE FOR ABOUT 5 SECONDS//

RX8 DEVICE CODE IS
SR=0750

6750

/THIS VERIFIES THAT THERE IS A
/RX8 WITH DEVICE CODE 75

SELECT DISKETTE DRIVES

SR=0750 0000

DRIVES SELECTED 0,1

SELECT TEST PARAMETERS:

SR=0000 0000

SR=0000 6000

TEST PARAMETERS: 0

/THE -B IS THE REVISION LEVEL

/TO CONTINUE WITH THE DIAGNOSTIC
/TYPE CONTROL E

/DEVICE CODE IS SET TO 75

/TEST BOTH DRIVES

/TELL WHICH DRIVES WERE READY

/SET SWITCH SETTINGS TO STOP ON ERROR
/AND AT END OF PASS
/THE DIAGNOSTIC IS NOW RUNNING

11. APT-8 INTERFACES

11.1 DESCRIPTION

TWO INTERFACES HAVE BEEN PROVIDED WHICH WILL ALLOW THIS DIAGNOSTIC TO RUN UNDER THE STANDARD APT-8 SYSTEM. THESE INTERFACES ARE:

1. TIMING INTERFACE
2. ERROR INTERFACE

EACH WILL BE EXPLAINED IN MORE DETAIL.

11.2 SETUP

IN ORDER TO RUN UNDER APT-8, ADDRESSES 20 AND 22 MUST BE ESTABLISHED PRIOR TO RUNNING THE PROGRAM UNDER APT-8 CONTROL. THE FOLLOWING INFORMATION MUST BE INDICATED:

1. DEVICE CODE OF RX01 CONTROLLER UNDER TEST.
2. SINGLE OR MULTIPLE DRIVE TESTING.
3. DRIVE OR DRIVES TO BE TESTED.
4. DIAGNOSTIC RUNNING UNDER THE APT-8 SYSTEM.

ADDRESS 20 (PSEUDO SWITCH REGISTER)

ADDRESS 20 IS USED TO INDICATE THE DEVICE CODE OF THE RX01 UNDER TEST. ENTER THE DEVICE CODE IN BIT POSITIONS 3-8.

EXAMPLE: 0750
DEVICE CODE 75 IS INDICATED BY THE PREVIOUS STATEMENT.

NOTE: IF MORE THAN ONE DEVICE CODE IS AVAILABLE ON THE SYSTEM THE DIAGNOSTIC WILL HAVE TO RELOADED AND THE PROPER DEVICE CODE SELECTED.

ADDRESS 22 (HARDWARE IDENTIFIER 2)

THIS ADDRESS IS USED TO INDICATE THAT THE PROGRAM IS RUNNING ON APT-8, THE NUMBER OF DRIVES TO BE DONE, AND IF SINGLE DRIVE TESTING.

BIT ZERO MUST BE A ONE (1) TO INDICATE THAT THE DIAGNOSTIC IS RUNNING ON APT-8.

IF SINGLE DRIVE TESTING BIT 5 MUST BE A ONE WITH BIT 11 INDICATING WHICH DRIVE TO DO. IF BIT 11 IS A ONE, DRIVE ONE WILL BE EXERCISED. IF BIT 11 IS A ZERO, DRIVE ZERO WILL BE EXERCISED. IF BOTH DRIVES ARE TO BE EXERCISED, BIT 5 SHOULD BE SET TO A ZERO AND BIT 11 SET TO A ONE. THIS WILL EXERCISE BOTH DRIVES. IF BIT 11 IS SET TO A ZERO, THE PROGRAM WILL AUTOMATICALLY DETERMINE THE NUMBER OF DRIVES TO BE DONE. IT IS RECOMMENDED THAT THE FORMER METHOD BE USED. THIS WILL ELIMINATE ANY POSSIBILITY THAT ONE OF THE DRIVES MAY NOT BE FUNCTIONING.

11.3 APT-8 INTERFACES.

11.3.1 TIMING

APT-8 IS NOTIFIED OF PROGRAM RUN BETWEEN .2 SECONDS AND 2.0 SECONDS. THIS WILL ALLOW THE DIAGNOSTIC TO RUN UNDER THE MUCH SLOWER MOS MEMORY WITHOUT CAUSING APT-8 TO GIVE A TIMEOUT ERROR.

11.3.2 ERRORS

ONLY THE ERROR PC IS REPORTED TO APT-8. THE TYPE OF ERROR CAN BE DETERMINED FROM THE CORRESPONDING ADDRESS IN THE PROGRAM LISTING. THERE IS A POSSIBILITY THAT A TIMEOUT ERROR MAY OCCUR. THIS IS CAUSED BY THE ERROR "HUNG DEVICE". THE PROGRAM WILL HAVE TO BE RERUN IN DUMP MODE IF THIS SHOULD HAPPEN.

11.4 LOADING PRECAUTIONS

THIS PROGRAM SHOULD BE LOADED IN SCRIPT MODE INDICATING TO APT-8 THAT CORE SUMCHECKS ARE TO BE IGNORED.

12. PROGRAM LISTING


```
1 /RX8 DATA RELIABILITY/EXERCISER -DIRXB-D
2 /CONSOL SRC-VIR3- CONSOL PACKAGE
3
4
5
6 /SET UP A LAS TO BE EQUAL TO THE CALL C8CKSW
7
8 /PROGRAM SHOULD CHECK FOR A CONTROL CHARACTER FROM THE CONSOL
9 /EVERY FIVE SECONDS OR LESS
10
11
12
13 /SETUP CNTVAL FOR A RANGE OF 1 TO 4 MINUTES FOR C8PASS TO PRINT PASS
14 /SETUP OF CNTVAL WILL BE FOUND IN C8PASS
15
16
17 /SET UP XDOSW AS THE VALUE NEEDED FOR A RETURN FOR CONTROL R
18 /RETURN TO ASK THE SWITCH REGISTER QUESTION,
19 0001 FIELD 1
20
21
22
23 6661 PSKF= 6661
24 6662 PCLF= 6662
25 6663 PSKE= 6663
26 6664 PSTB= 6664
27 6665 PSIE= 6665
28 6004 GTF= 6004
29 7501 NQA= 7501
30 6007 CAF= 6007
31 7421 MQL= 7421
32
33
34 0200 *200
35 /*****
36 /C8PASS
37 /THIS IS CALLED AT THE END OF EACH PROGRAM COMPLETION
38 /THE VALUE OF** CNTVAL** WILL BE DETERMINED BY THE TIME IT TAKES
39 /THE PROGRAM TO COMPLETE THIS MANY C8PASS TO BE IN THE 1 TO 4 MINUTE
40 /RANGE
41 / C8PASS=JMS XC8PAS
42 /EX. C8PASS HLT /HALT IF NON CONSOL PACKAGE
43 / JMT START1 /CONTINUE RUNNING THIS PROGRAM
44 /RETURN TO LOCATION CALL PLUS ONE WITH THE AC=0 IF NON CONSOL PACKAGE AND HLT
45 /IF CONTINUE TO RUN THEN RETURN TO CALL PLUS2 AC=0
46
47
48
49 0200 0000 XC8PAS, 0
50 0201 4777 JMS C8CK22 /CHECK LOCATION22
51 0202 5210 JMP DOPACK /IS CLASSIC
52 0203 4272 JMS XC8SW /CHECK SR SETTING
53 0204 0376 AND (400) /FOR HALT ON END OF C8PASS
54 0205 7640 SZA CLA /1= HALT 0 CONTINUE
55 0206 5236 JMP C8EXT1 /COMMON EXIT
```

```
56 0207 5235 JMP C8BY1 /CONTINUE ON RUNNING PROGRAM
57 0210 4240 DOPACK, JMS CKCOUT /CLASS CHECK C8PASS COUNT
58 0211 5235 JMP C8BY1 /C8PASS COUNT NOT DONE REDO PROGRAM
59 0212 2257 ISZ PASCNT /C8PASS COUNT DONE SET C8PASS COUNT
60 0213 4775 JMS XC8CRL /CRLF
61 0214 4322 JMS XC8PNT /C8PNT BUFFER
62 0215 0263 MESPAS /
63 0216 6201 CDF 0
64 0217 1660 TAD I XPASSES /GET NUMBER
65 0220 6211 CDF 10
66 0221 4774 JMS XC8OCT /PRINT OCTAL ONLY,
67 0222 6201 CDF 0
68 0223 1655 TAD I XMN /GET THE CHAR IN FLD 0
69 0224 6211 CDF 10
70 0225 3240 DCA CKCOUT
71 0226 4322 JMS XC8PNT
72 0227 0240 CKCOUT
73 0230 4775 JMS XC8CRL /DO A CARRIAGE RETURN
74 0231 4272 JMS XC8SW /CHECK A HALT AT END OF C8PASS
75 0232 0376 AND (400) /MASK BIT
76 0233 7640 SZA CLA /HALT =1 NO SKIP CONTINUE =0
77 0234 4773 JMS XC8ING /STOP PROGRAM EXECUTION-LOOK FOR INPUT
78 0235 2200 C8BY1, ISZ XC8PAS /BUMP RETURN
79 0236 6203 C8EXT1, CDF CIP 00
80 0237 5600 JMP I XC8PAS
81 0240 0000 CKCOUT, 0
82 0241 1261 TAD DOSET /CHECK IF SET UP NEEDED
83 0242 7640 SZA CLA /0=SET UP C8PASS COUNT VALUE
84 /1=C8PASS COUNT VALUE OK
85 0243 5250 JMP NOSET /C8PASS COUNT VALUE ON
86 0244 1262 TAD CNTVAL /GET COUNT VALUE FOR THIS PROG
87 0245 7040 CMA /SET TO NEGATIVE
88 0246 3256 DCA DOCNT /STORE IN HERE
89 0247 2261 ISZ DOSET /INDICATE VALUE SET UP
90 0250 2256 NOSET, ISZ DOCNT /COUNT THE NUMBER OF PASSES
91 0251 5235 JMP C8BY1 /EXIT FOR ANOTHER PASS
92 0252 3261 DCA DOSET /SET TO C8PNT C8PASS
93 0253 2240 ISZ CKCOUT /BUMP RETURN FOR
94 0254 5640 JMP I CKCOUT /C8PASS C8TYPE OUT
95 0255 2134 XMN, MX
96 0256 0000 DOCNT, 0
97 0257 0000 PASCNT, 0
98 0260 6350 XPASSES, /
99 0261 0000 DOSET, 0 /PRINT THE NUMBER IN FLD 0
100 0262 0000 CNTVAL, 0
101 0263 0411 MESPAS, TEXT "DIRXB-D PASS "
102 0264 2230
103 0265 0255
104 0266 0440
105 0267 2001
106 0270 2323
107 0271 4000
108 /*****
109 /C8CKSW
```

```

105 /ROUTINE THAT WILL CHECK WHERE TO READ THE
106 /C8 SWITCHES FROM IE, FROM PANEL OR PSEUDO C8SWIT REGISTER
107 / C8CKSW= JMS XC8SW
108 /EX C8CKSW /READ THE C8SWIT REGISTER
109 /RETURN WITH THE CONTENTS OF SWITCH REGISTER
110
111 /RETURN TO NEXT LOCATION FOLLOWING CALL WITH THE AC= TO VALUE OF C8SWIT SETTING
112
113
114 0272 0000 XC8SW, 0
115 0273 7200 CLA /CLEAR AC
116 0274 4772 JMS XC8CKP /CHECK FOR CONTROL CHARACTER1
117 0275 7000 NOP
118 0276 6201 CDF 00
119 0277 1771 TAD I (21
120 0300 6211 CDF 10
121 0301 7710 SPA CLA /CHECK IF FROM PANEL 4000
122 0302 7614 7=14 /DO LAB AND SKIPGET FROM PANEL WITH LAB
123 0303 5305 JMS C8GET1 /GET LOC 20 FLD 0
124 0304 5310 JMP C8EXT2 /LEAVE BY A COMMON ROUTINE
125 0305 6201 C8GET1, CDF 00
126 0306 1770 TAD I (20
127 0307 6211 CDF 10
128 0310 5672 C8EXT2, JMP I XC8SW
129
130
131 /*****
132
133 /C8TTY
134 /THIS ROUTINE WILL LOOK FOR A INPUT FROM THE CONSOL
135 / JMS XC8TTY= JMS XC8TTY
136 /EX, JMS XC8TTY /READ CHAR FROM THE CONSOL DEVICE
137 / /RETURN TO CALL PLUS ONE AC CONTAINS THE CHAR
138 /
139 /
140
141 0311 0000 XC8TTY, 0
142 0312 6031 KSF /LOOK FOR KEYBOARD FLAG
143 0313 5312 JMP ,=1
144 0314 6036 KPB /GET CHAR
145 0315 0367 AND (177 /MASK FOR 7 BITS
146 0316 1366 TAD (200 /ADD THE EIGHTH BIT
147 0317 3765 DCA C8CHAR /STORE IT
148 0320 1765 TAD C8CHAR
149 0321 5711 JMP I XC8TTY /EXIT
150
151 /*****
152
153 /C8PRNT
154 /THIS ROUTINE WILL TYPE THE CONTENTS OF THE C8 PRINT-BUFFER, THE LOCATION
155 /OF THE BUFFER WILL BE IN THE ADDR5 FOLLOWING THE CALL, C8 PRINTING OF THE BUFFER
156 /WILL STOP WHEN A 00 CHAR IS DETECTED, CHARACTERS ARE PACKED 2 PER WORD,
157 /
158 / JMS XC8PNT= JMS XC8PNT
159 /

```

```

160
161 /EX, JMS XC8PNT /C8PRNT THE CONTENTS OF THE FOLLOWING BUFFER
162 / MSG877 /LOCATION OF C8PNT BUFFER
163 /C8PNT WILL USE THE LOCATION FOLLOWING THE CALL AS THE POINTER FOR THE
164 /C8PNT ROUTINE, RETURN TO CALL PLUS TWO WITH AC= 0
165
166
167
168
169 0322 0000 XC8PNT, 0
170 0323 7300 CLA CLL
171 0324 1722 TAD I XC8PNT /GET C8PNT BUFFERS STARTING LOCATION
172 0325 3355 DCA PTSTOR /STORE IN PTSTOR
173 0326 2322 ISZ XC8PNT /BUMP RETURN
174 0327 1755 TAD I PTSTOR /GET DATA WORD
175 0330 0364 AND (7700 /MASK FOR LEFT BYTE
176 0331 7450 SNA /CHECK IF 00 TERMINATOR
177 0332 5722 JMP I XC8PNT /EXIT
178 0333 7500 SNA /IS AC MINUS
179 0334 7020 CML /MAKE CHAR A 100 AFTER ROTATE
180 0335 7001 IAC /MAKE CHAR A 200 AFTER ROTATE
181 0336 7012 RTR
182 0337 7012 RTR
183 0340 7012 RTR
184 0341 4763 JMS XC8TYP /C8PRNT IT ON CONSOLE
185 0342 1755 TAD I PTSTOR /GET DATA WORD
186 0343 0362 AND (0077 /MASK FOR RIGHT BYTE
187 0344 7450 SNA /CHECK IF 00 TERMINATOR
188 0345 5722 JMP I XC8PNT //EXIT
189 0346 1361 TAD (3740 /ADD FUDGE FACTOR TO DETERMINE IF 200
190 0347 7500 SNA /OR 100 IS TO BE ADD TO CHAR
191 0350 1350 TAD (100 /ADD 100
192 0351 1337 TAD (240 /ADD 200
193 0352 4763 JMS XC8TYP /ROTATE ONLY BITS 4-11
194 0353 2355 ISZ PTSTOR /BUMP POINTER FOR NEXT WORD
195 0354 5327 JMP C8PNT /DO AGAIN
196 0355 0000 PTSTOR, 0
197 0356 0000 C8PNT, 0
198 0357 0000
199 0358 0000
200 0359 0000
201 0360 0000
202 0361 0000
203 0362 0000
204 0363 1112
205 0364 7700
206 0365 1110
207 0366 0200
208 0367 0177
209 0370 0000
210 0371 0021
211 0372 1054
212 0373 0635
213 0374 1013
214 0375 1036
215 0376 0400
216 0377 1151

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```
215      0400      PAGE
216      /*****
217      /C8CNTR
218      /THIS ROUTINE WILL CHECK FOR THE PRESENCE OF CONTROL CHARACTERS
219      /IT WILL CHECK FOR THE FOLLOWING CHAR C-R-Q-O-L-S
220      /      JMS      XC8CNT= JMS XC8CNT
221
222      /EX.      JMS      XC8CNT      /CHECK FOR CONTROL CHARACTER
223      /      JMP      ANYTHING      /LOC FOLLOWING CALL IS FOR CONTINUING THE PROGRAM
224      /      JMP      ANYTHING      /LOC. IS FOR RETURN IF INMODE SET AND NOT CNTRL CHAR
225      /
226
227      /RETURN IS TO CALL PLUS ONE IF CONTINUE
228      /RETURN IS TO CALL PLUS TWO IF INMODE NOT SET AND NOT CONTROL CHAR
229      /
230
231      0400      0000      XC8CNT, 0
232      0401      3777'      DCA      ACSAV      /SAVE THE AC
233      0402      4776'      JMS      C8CK22      /CHECK LOC 22
234      0403      5206      JMP      ,+3      /ON ACTIVE CONSOLE
235      0404      1777'      TAD      ACSAV      /GET AC FOR RETURN
236      0405      5600      JMP I      XC8CNT      /EXIT NOT ON ACTIVE CONSOLE
237      0406      6004      GTF
238      0407      3775'      DCA      FLSAVE
239      0410      7501      MGA
240      0411      3774'      DCA      MQSAVE      /SAVE THE MQ
241      0412      3255      DCA      INDEXA      /SET DISPLACEMENT INTO TABLE B
242      0413      1257      TAD      XTABLA      /GET ADDR OF TABLE A
243      0414      3256      DCA      GETDAT      /CONTAINS POINTER TO CONTROL CHAR
244      0415      1656      REDOA, TAD I      GETDAT      /GET CONTROL CHAR FROM TABLE
245      0416      7450      SNA
246      0417      5226      JMP      DONEA      /CHECK FOR A 0 END OF TABLE
247      0420      1773'      TAD      C8CHAR      /END OF TABLE NO CONTROL CHAR
248      0421      7650      SNA CLA      /COMPARE CHAR TO CONTROL CHAR
249      0422      5243      JMP      GOITA      /IF MATCH
250      0423      2255      ISZ      INDEXA      /MATCH
251      0424      2256      ISZ      GETDAT      /NO MATCH NOT END OF TABLE REDO
252      0425      5215      JMP      REDOA      /BUMP INDEX FOR EXIT WHEN CONTROL FOUND
253      0426      1772'      DONEA, TAD      INMODE      /BUMP GETDAT FOR COMPARE OF NEXT CNTRL CHAR.
254      0427      7640      SZA CLA      /CHECK IF PROGRAM EXPECTS CHAR
255      0430      5240      JMP      EXITA      /1=CHAR EXPECTED 0= NO CHAR EXPECTED
256      0431      1773'      TAD      C8CHAR      /CHAR EXPECTED
257      0432      4771'      JMS      XC8TYP      /GET CHAR - NOT CONTROL + NOT EXPECTED
258      0433      1370      TAD      (277      /C8PRNT CHAR
259      0434      4771'      JMS      XC8TYP      /GET CODE FOR "?"
260      0435      4767'      JMS      XC8CRL
261      0436      2200      ISZ      XC8CNT      /UPDATE POINTER FOR +2 RETURN!
262      0437      5600      JMP I      XC8CNT      /EXIT AND CONTINUE PROGRAM
263      0440      2200      EXITA, ISZ      XC8CNT      /BUMP RETURN FOR MAIN PROGRAM CHECK OF CHAR
264      0441      1773'      TAD      C8CHAR      /PUT CHAR IN AC.
265      0442      5600      JMP I      XC8CNT      /EXIT
266      0443      1773'      GOITA, TAD      C8CHAR      /GET THE CONTENTS OF CHAR
267      0444      1366      TAD      (100      /ADD 100 TO FORM A GOOD ASCII CHARACTER
268      0445      3773'      DCA      C8CHAR      /RESTORE COFFECT CHAR
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269      0446      1260      TAD      XTABLB      /GET START OF TABLE B
270      0447      1255      TAD      INDEXA      /GET NOW FAR INTO TABLE
271      0450      3254      DCA      GOTOA      /STORE IT
272      0451      1654      TAD I      GOTOA      /GET THE ROUTINE STARTING ADDRESS
273      0452      3254      DCA      GOTOA      /STORE IT IN HERE
274      0453      5654      JMP I      GOTOA      /GOTO CONTROL CHAR ROUTINE
275      0454      0000      GOTOA, 0000      /ADD OF CNTRL ROUTINE TO EXECUTE
276      0455      0000      INDEXA, 0000      /DISPLACEMENT INTO CNTRL TABLE
277      0456      0000      GETDAT, 0000      /LOCATION OF ADDR OF CONTROL CHAR.
278      0457      0461      XTABLA, TABLA      /ADDRS OF TABLEA
279      0460      0471      XTABLB, TABLB      /ADDRS OF TABLEB
280      0461      7575      TABLA, 7575      /CNTRL C BACK TO MONITOR 203
281      0462      7557      7557      /CNTRL Q START DISPLAYING CHAR, AGAIN 221
282      0463      7556      7556      /CNTRL R BACK TO BEGINNING OF PROGRAM 222
283      0464      7555      7555      /CNTRL S STOP SENDING CHAR TO DISPLAY WAIT FOR CNTRL Q 223
284      0465      7573      7573      /CNTRL E CONTINUE WITH PROGRAM 205
285      0466      7574      7574      /CNTRL D CHANGE SWITCH REGISTER ON FLY
286      0467      7561      7561      /CONTROL O FOR PRINTING STSTICIS LOC 202
287      0470      0000      0000
288      0471      1006      TABLB, CNTRLQ      /CNTRLQ
289      0472      0500      CNTRLQ      /CNTRLQ
290      0473      0504      CNTRLR      /CNTRLR
291      0474      0514      CNTRLR      /CNTRLR
292      0475      0532      CNTRLR      /CNTRLR
293      0476      0600      CNTRLR      /CNTRLR
294      0477      0535      CNTRLR      /CNTRLR
295
296      /
297      /START SENDING CHAR. TO THE DISPLAY
298      /THIS WILL RETURN CONTROL TO CALL THAT WAS SET BY
299      /THE CALL FOR CONTROL S.
300      /
301      0500      3330      CNTRLQ, DCA      C8SETS      /CLEAR SOFT FLAG FOR CNTRL S
302      0501      3772'      DCA      INMODE      /CLEAR SOFTWARE FLAG!
303      0502      4765'      JMS      C8GET      /GET THE REGISTERS
304      0503      5731      JMP I      C8RETR      /GO TO CALL SAVED BY CNTRL S
305
306      /
307      /
308      /GO TO THE QUESTION C8SWIT
309      /
310      /
311      0504      4764'      CNTRLR, JMS      UPAROW      /C8PRNT A " AND THE CHAR
312      0505      3330      DCA      C8SETS      /CLEAR SOFT FLAG FOR CNTRL S
313      0506      3772'      DCA      INMODE
314      0507      4767'      JMS      XC8CRL
315      0510      3763'      C8BY4, DCA      C8SWST      /CLEAR REENTRY FLAG
316      0511      6203      CDF CIF 00
317      0512      5713      JMP I      XDOSH      /GO TO ADDR OF C8SWIT
318      0513      0200      XDOSH, C8STRT      /DOSW IS LABEL FOR C8SWIT QUESTION
319
320      /
321      /STOP SENDING CHAR. TO DISPLAY UNTIL A "Q IS RECEIVED
322      /
323      /
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324 0514 1330 CNTRL5, TAD C8SETS /IF1 DO NOT STORE IN C8RETR
325 0515 7640 SZA CLA
326 0516 5323 JMP C8D07 /DONT SET UP C8RETR
327 0517 7001 IAC
328 0520 1200 TAD XC8CNT /GET RETURN FOR THIS CALL
329 0521 3331 DCA C8RETR /STORE IT HERE FOR USE BE CNTRL 0
330 0522 2330 ISZ C8SETS /UPDATE REENTRY FLAG!
331 0523 4762* C8D07, JMS XC8TTY /LOOK FOR CONTROL CHAR,
332 0524 4765* JMS C8GET /REPLACE AC, MQ, AND LINK.
333 0525 4200 JMS XC8CNT /CHECK FOR CONTROL CHAR.
334 0526 7200 CLA
335 0527 5314 JMP CNTRL5
336 0530 0000 C8SETS, 0
337 0531 0000 C8RETR, 0
338 /
339 /
340 /
341 /CONTROL E
342 /CONTINUE RUNNING FROM A INQUIRE OR ERROR
343 /
344 /
345 0532 4764* CNTRL5, JMS UPAROW /PRINT THE CONTROL CHAR
346 0533 4765* JMS C8GET /GET THE REGISTERS
347 0534 5600 JMP I XC8CNT /RETURN TO CALL PLUS ONE
348 /
349 /
350 /CONTROL 0 TO RETURN TO FLD 0 LOC 202 FOR STATISTICAL INFO
351 0535 4764* CNTRL0, JMS UPAROW
352 0536 6203 CDF CIF 0 /SET UP TO FLD 0
353 0537 5761 JMP I (202) /START OF STATISTIC PROG
354 0561 0202
355 0562 0311
356 0563 0746
357 0564 0615
358 0565 0624
359 0566 0100
360 0567 1036
361 0570 0277
362 0571 1112
363 0572 1111
364 0573 1110
365 0574 1142
366 0575 1143
367 0576 1151
368 0577 1141
369 /
370 /
371 /
372 /CONTROL D
373 /CHANGE THE SWITCH REGISTER ANYTIME CNTRL D AND RETURN TO
374 /THE PROGRAM RUNNING.
375 /
376 /
377 0600 4215 CNTRLD, JMS UPAROW

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PAGE

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378 0601 1213 TAD C8SETD /CHECK IF THE RETURN ADDRS IS SAFE
379 0602 7640 SZA CLA
380 0603 5207 JMP C8D011 /DO NOT CHANGE THE RETURN ADDRS
381 0604 1777* TAD XC8CNT /GET THE RETURN ADDRS AND SAVE IT
382 0605 3214 DCA C8RETD /SAVE THE RETURN HERE
383 0606 2213 ISZ C8SETD /INDICATE RETURN SAVED DONT DESTROY
384 0607 4252 C8D011, JMS XC8PSW /GO CHANGE THE SWITCH REGISTER
385 0610 3213 DCA C8SETD /CLEAR THE FLAG
386 0611 4224 JMS C8GET /REPLACE AC, MQ, AND LINK.
387 0612 5614 JMP I C8RETD /RETURN TO THE PROGRAM
388 /
389 0613 0000 C8SETD, 0
390 0614 0000 C8RETD, 0
391 /
392 /
393 /
394 /
395 0615 0000 UPAROW, 0 /C8PRNT THE "*" AND THE CHAR C8TYPED IN
396 0616 1376 TAD (336) /CODE FOR "
397 0617 4775* JMS XC8TYP
398 0620 1774* TAD C8CHAR /C8TYPE THE CHAR
399 0621 4775* JMS XC8TYP
400 0622 4773* JMS XC8CRLF
401 0623 5615 JMP I UPAROW /EXIT
402 /
403 0624 0000 C8GET, 0
404 0625 7200 CLA
405 0626 1772* TAD MQSAVE /RESTORE MQ
406 0627 7421 MQL
407 0630 1771* TAD FLSAVE /RESTORE THE LINK
408 0631 7004 RAL
409 0632 7200 CLA
410 0633 1770* TAD ACSAV /RESTORE THE AC
411 0634 5624 JMP I C8GET /GET THE REGISTERS
412 /
413 /
414 /
415 /
416 /
417 /C8INQU
418 /C8INQU ROUTINE WILL PRINT A ASTERISK
419 /AND THE PROGRAM IS EXPECTING A CONTROL CHAR INPUT
420 /IF CONTINUE FROM CONTROL CHAR RETURN IS CALL PLUS ONE
421 /IF NO CONTROL CHAR ENTERED THEN ASTERISK IS REPRINTED
422 /AND PROGRAM WAITS FOR A CONTROL CHAR AGAIN
423 /
424 / JMS XC8INQ= JMS XC8ING
425 /
426 /EX JMS XC8ING /C8 WILL PRINT A * AND WAIT FOR INPUT
427 / DO ANYTHING /RETURN IS CALL PLUS ONE AC =0 CONTINUE
428 /
429 0635 0000 XC8ING, 0
430 0636 4767* JMS C8CK22 /CHECK FOR LOC 22 FLD 0
431 0637 7410 SKP
432 0640 5635 JMP I XC8ING /NOT CONSOLE LEAVE

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433 0641 4773* JMS XC8CRLF
434 0642 4766* JMS XC8PNT
435 0643 1144 WATMES /INQUIR WAITTING
436 0644 4773* JMS XC8CRLF
437 0645 4765* JMS XC8TTY /SAVE CHARACTER!
438 0646 4224 JMS C8GET /REPLACE AC, MO, AND LINK.
439 0647 4777* JMS XC8CNT /CHECK FOR CONTROL CHARACTER!
440 0650 5635 JMP I XC8INQ /EXIT AND CONTINUE
441 0651 5236 JMP XC8INQ+1 /REASK
442 /
443 /*****
444 /C8SWIT
445 /ROUTINE WILL CHECK IF CONSOL IS ACTIVE IF IT IS ACTIVE DISPLAY
446 /SW QUESTION, IN NOT ACTIVE IT WILL NOT PRINT THE SW QUESTIONBUT
447 /RETURN TO CALL PLUS ONE AC=0.
448 /C8SWIT WILL SET UP THE PSEUDO C8SWIT
449 /REGISTER WITH THE NEW DATA ENTERED
450 /THE TAG C8DOR AT THE START OF THE CALL IS FOR THE RETURN OF CONTROL R
451 /CHAR. THIS MAY BE CHANGED IF THIS IS NOT WHERE A GOOD RESTART
452 /OF PROGRAM IS.
453 /
454 / JMS XC8PSW= JMS XC8PSW
455 /
456 /EX. C8DOR, JMS XC8PSW /SET UP PSEUDO C8SWIT REGISTER IF
457 /ON THE CONSOL PACKAGE. RETURN IS CALL PLUS ONE AC = 0
458
459
460
461
462 0652 0000 XC8PSW, 0
463 0653 4767* JMS C8CK22
464 0654 7410 SKP
465 0655 5652 JMP I XC8PSW /RETURN WITHOUT ASKING PSEUDO SWITCH
466 0656 1346 TAD C8SWST
467 0657 7640 SZA CLA /SPECIAL D EXIT?
468 0660 5764* JMP C8BY4 /YES, PRINT SR.
469 0661 2346 ISZ C8SWST /NO, SET FLAG!
470 0662 4773* RED01, JMS XC8CRLF
471 0663 4766* JMS XC8PNT /C8PNT SR=XXX
472 0664 1004 MESA
473 0665 6201 CDF 00
474 0666 1763 TAD I (20
475 0667 6211 CDF 10
476 0670 4762* JMS XC8OCT /CONVERT IT TO ASCII
477 0671 1361 TAD (40 /GET SPACE
478 0672 4775* JMS XC8TYP
479 0673 2760* ISZ INMODE /SET FLAG FOR CHAR EXECTED
480 0674 4757* JMS XC8ECH /LOOK FOR INPUT
481 0675 4322 JMS TSTCHA /NOT CONTROL TEST IT IS LEGAL
482 0676 1774* TAD C8CHAR /STORE NEW CHAR IN SW REG
483 0677 6201 CDF 00
484 0700 3763 DCA I (20
485 0701 6211 CDF 10
486 0702 1356 TAD (-3 /GET A MINUS 3
487 0703 3347 DCA TMCNT /STORE IN TEMP COUNT
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488 0704 4757* GETCH1, JMS XC8ECH /GET NEXT CHAR
489 0705 4322 JMS TSTCHA /CHECK IF CR + GOOD CHAR
490 0706 6201 CDF 00
491 0707 1763 TAD I (20
492 0710 6211 CDF 10
493 0711 7106 RTL CLL /ROTATE IT LEFT 3 PLACES
494 0712 7004 RAL
495 0713 1774* TAD C8CHAR /GET CHAR + ADD IT TO PREVIOUS CONTENTS
496 0714 6201 CDF 00
497 0715 3763 DCA I (20
498 0716 6211 CDF 10
499 0717 2347 ISZ TMCNT /BUMP COUNT
500 0720 5304 JMP GETCH1 /JMP BACK + GET NEXT CHAR
501 0721 5343 JMP ENDIT /END 4 CHAR C8TYPED IN
502 0722 0000 TSTCHA, 0
503 0723 7041 CIA /CMPL CHAR IN AC
504 0724 1355 TAD (215 /TEST IF IT IS A CARRIAGE RETURN
505 0725 7650 SNA CLA /SKIP IN NOT CR.
506 0726 5343 JMP ENDIT /WAS CARRIAGE RETURN
507 0727 1774* TAD C8CHAR /NOT CR, GET CHAR
508 0730 1354 TAD (-260 /CHECK IF IT IS IN RANGE
509 0731 7710 SPA CLA /IF NOT POSITIVE C8ERR CHAR SMALLER THEN 260
510 0732 5753* JMP C8ERR1 /C8ERR - CHAR TOO SMALL
511 0733 1774* TAD C8CHAR /GET CHAR
512 0734 1352 TAD (-270 /GET A -270 + CHECK IF IT IS LARGER THEN 7
513 0735 7700 SNA CLA /SKIP IF LESS THEN 7
514 0736 5753* JMP C8ERR1 /C8ERR ON CHAR NOT IN RANGE
515 0737 1774* TAD C8CHAR /GET CHAR
516 0740 0351 AND (7 /MASK FOR RIGHT BYTE
517 0741 3774* DCA C8CHAR /STORE IN CHAR
518 /GET CHAR IN AC
519 0742 5722 JMP I TSTCHA /EXIT
520 0743 4773* ENDIT, JMS XC8CRLF /DO A CR LF
521 0744 3346 DCA C8SWST /CLEAR REENTRY FLAG!
522 0745 5652 JMP I XC8PSW /EXIT ROUTINE
523 /
524 0746 0000 C8SWST, 0
525 0747 0000 TMCNT, 0
526 /
527 0751 0007
528 0752 7510
529 0753 1000
530 0754 7520
531 0755 0215
532 0756 7775
533 0757 1076
534 0760 1111
535 0761 0040
536 0762 1013
537 0763 0020
538 0764 0510
539 0765 0311
540 0766 0322
541 0767 1151
542 0770 1141
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543 0771 1143
544 0772 1142
545 0773 1036
546 0774 1110
547 0775 1112
548 0776 0336
549 0777 0400
1000
PAGE
550
551 1000 1377 C8ERR1, TAD (277 /PRINT A ?
552 1001 4312 JMS XC8TYPE
553 1002 4236 JMS XC8CRLF
554 1003 5776 JMP REDO1
555 1004 2322 MESA, TEXT "SR="
1005 7500
556
557
558
559 1006 3337 /RETURN TO MONITOR
CNTRL, DCA TTYLPT /CLEAR EXIT FLAG.
560 1007 4775 JMS UPAROW /C8PRNT A" AND LETTER IN CHAR
561 1010 6203 CDF CIF /GO TO 0 FLD
562 1011 0007 CAF /CLEAR THE WORLD
563 1012 5774 JMP I (7600 /GO TO DIAGNOSTIC MONITOR
564
565
566
567
568
569
570
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572
573
574
575
576
577 1013 0000 XC8OCT, 0
578 1014 7106 CLL RTL
579 1015 7006 RTL /POSITION THE FIRST CHAR FOR PRINTING
580 1016 3234 DCA C8TMP1 /SAVE CORRECT POSITIONED WORD HERE
581 1017 1373 TAD (-4
582 1020 3235 DCA C8CKP /STORE COUNTER IN HERE
583 1021 1234 TAD C8TMP1 /GET FIRST NUMBER
584 1022 0372 AND (0007 /MASK
585 1023 1371 TAD (260 /ADD THE PRINT CONSTANT
586 1024 4312 JMS XC8TYP /TYPE THE NUMBER
587 1025 1234 TAD C8TMP1
588 1026 7006 RTL
589 1027 7004 RAL /PUT NEXT NUMBER IN POSITION
590 1030 3234 DCA C8TMP1 /STORE IT
591 1031 2235 ISZ C8CKP /DONE YET WITH FOUR NUMBERS
592 1032 5221 JMP C8D04 /NOT YET DO MORE
593 1033 5613 JMP I XC8OCT /DONE WITH FOUR
594 1034 0000 C8TMP1, 0
595 1035 0000 C8CKP, 0
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596
597
598
599
600
601
602
603
604
605
606 1036 0000 XC8CRL, 0
607 1037 7300 CLA CLL
608 1040 1370 TAD (215 /GET CODE FOR CR
609 1041 4312 JMS XC8TYP
610 1042 1252 TAD C8FILLER
611 1043 7040 CMA
612 1044 3253 DCA FILCNT /STORE FILLER IN HERE
613 1045 1367 TAD (212 /GET CODE FOR LF
614 1046 4312 C8D02, JMS XC8TYP
615 1047 2253 ISZ FILCNT /CHECK ON FILLER CHAR
616 1050 5246 JMP C8D02 /TYPE A NON PRINTING CHAR
617 1051 5636 JMP I XC8CRL /EXIT
618 1052 0004 C8FILLER, 0004 /FILLER SET FOR 4 CHAR
619 1053 0000 FILCNT, 0 /COUNTER FOR FILL
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640 1054 0000 XC8CKP, 0
641 1055 3341 DCA ACSAV /SAVE AC, HQ, AND LINK!
642 1056 6004 GTF /GET THE FLAGS
643 1057 3343 DCA FLSAVE
644 1060 7501 HQA
645 1061 3342 DCA HQSAVE /SAVE HQ.
646 1062 6031 KSF /CHECK THE CONSOL FLAG
647 1063 5274 JMP C8BY3 /NO FLAG UP!
648 1064 4351 JMS C8CK22 /CHECK LOC 22
649 1065 7410 SKP
650 1066 5274 JMP C8BY3 /NO!
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651 1067 4766* JMS XC8TTY /SAVE CHARACTER1
652 1070 4765* JMS C8GET /REPLACE AC, MQ, AND LINK1
653 1071 4764* JMS XC8CNT /CHECK IF IT WAS A CONTROL CHAR
654 1072 7000 NOP
655 1073 2254 ISZ XC8CKP /UPDATE FOR RETURN +2.
656 1074 4765* C8BY3, JMS C8GET /REPLACE FLAGS.
657 1075 5654 JMP I XC8CKP /EXIT
658 /
659 /
660 /*****
661 /
662 /C8ECHO
663 /THIS ROUTINE WILL LOOK FOR A CHAR FROM THE KEYBOARD. STORE IT IN LOCATION CHAR
664 /CHECK IF IT WAS A C8CNT CHARACTER - SET INMODE - C8PRNT CHARACTER
665 / JMS XC8ECH= JMS XC8ECH
666 /EX, JMS XC8ECH /LOOK FOR CONSOL CHAR C8PRNT IT
667 /RETURN CALL PLUS ONE AC = CHAR C8TYPED IN
668 /
669 /
670 /
671 1076 0000 XC8ECH, 0
672 1077 4766* JMS XC8TTY /WAIT FOR CHAR FROM KEYBOARD
673 1100 4765* JMS C8GET /GET THE REGISTERS
674 1101 2311 ISZ INMODE /SET INMODE IDENTIFYING THIS AS A EXPECTED CHAR
675 1102 4764* JMS XC8CNT /GO CHECK IF IT IS A CONTROL CHAR
676 1103 5676 JMP I XC8ECH /WAS A CONTROL CHAR - CONTINUE RUNNING
677 1104 4312 JMS XC8TYP /NOT A CONTROL CHAR C8PRNT IT
678 1105 3311 DCA INMODE /CLEAR FLAG THAT CHAR EXPECTED
679 1106 1310 TAD C8CHAR /GET CHAR IN AC
680 1107 5676 JMP I XC8ECH /EXIT
681 1110 0000 C8CHAR, 0
682 1111 0000 INMODE, 0
683 /
684 /*****
685 /
686 /C8TYP
687 /THIS ROUTINE WILL C8PRNT ON THE CONSOLE OR THE LPT WITH DEVICE CODE 66.
688 /
689 / JMS XC8TYP= JMS XC8TYP
690 /
691 /EX, JMS XC8TYP /C8PRNT THE CHAR IN THE AC.
692 / /RETURN CALL PLUS ONE AC =0000
693 / /DO NOT CLEAR THE LINK IN THIS ROUTINE NEEDED BYC8OCT
694 /
695 /
696 1112 0000 XC8TYP, 0
697 1113 3336 DCA PNTBUF /STORE CHAR
698 1114 1337 TAD TTYLPT /CHECK 0=TTY 7777=LPT
699 1115 7640 SZA CLA
700 1116 5325 JMP XDOLPT /DO OUT PUT ON LPT
701 1117 1336 TAD PNTBUF
702 1120 6040 TLS
703 1121 6041 TSF
704 1122 5321 JMP .-1
705 1123 6042 TCF
```

```
706 1124 5334 JMP C8BY5 /EXIT
707 1125 1336 XDOLPT, TAD PNTBUF /GET CHAR
708 1126 6666 PSTB PCLF /C8PRNT IT
709 1127 4254 JMS XC8CKP /CHECK FOR CONTROL C.
710 1130 7000 NOP
711 1131 6661 PSKF
712 1132 5327 JMP .-3 /WAIT UNTIL DONE
713 1133 6662 PCLF
714 1134 7200 C8BY5, CLA
715 1135 5712 JMP I XC8TYP /EXIT
716 1136 0000 PNTBUF, 0
717 1137 0000 TTYLPT, 0
718 /
719 /
720 1140 7777 PCSAVE, 7777
721 1141 7777 ACSAV, 7777
722 1142 7777 MQSAVE, 7777
723 1143 7777 FLSAVE, 7777
724 1144 2701 WAITMES, TEXT "WAITING "
725 /
726 /*****
727 /
728 /C8CK22 WILL CHECK LOCATION 22 FLD 0
729 /
730 1151 0000 C8CK22, 0
731 1152 6201 CDF 00
732 1153 7200 CLA
733 1154 1763 TAD I (22
734 1155 6211 CDF 10
735 1156 7650 SNA CLA
736 1157 2351 ISZ C8CK22 /RETURN FORACTIVE CONSOL IS +1
737 1160 5751 JMP I C8CK22
738 /
739 /
740 /
741 1163 0022
742 1164 0400
743 1165 0624
744 1166 0311
745 1167 0212
746 1170 0215
747 1171 0260
748 1172 0007
749 1173 7774
750 1174 7600
751 1175 0615
752 1176 0662
753 1177 0277
754 1200
755 /
```

```
756
757
758 /THIS IS THE FIELD 0 CALL FOR CHECKING THE CONTROL CHAR
759
760 1200 0000 XXC8CNTR, 0
761 1201 4777 JMS XC8CNTR /GO TO CONTROL CHAR ROUTINE
762 1202 7000 NOP
763 1203 6203 CDF CIF 00
764 1204 5600 JMP I XXC8CNTR /RETURN TO FIELD 0
765
766
767 /*****
768
769 1205 0000 XXCSING, 0
770 1206 4776 JMS XC8INQU /PRINT WAITING
771 1207 6203 CDF CIF 00
772 1210 5605 JMP I XXCSING /EXIT TO FLD 0
773
774 /*****
775
776 1211 0000 XXC8PSW, 0
777 1212 4775 JMS XC8PSW /FIELD 0 CALL FOR SWIT REG QUESTION
778 1213 6203 CDF CIF 00
779 1214 5611 JMP I XXC8PSW /EXIT TO FIELD 0
780
781
782 /*****
783
784
785 1215 0000 XXC8SW, 0
786 1216 4774 JMS XC8SW /FIELD 0 CALL FOR THIS CHECK OF SW SETTING
787 1217 6203 CDF CIF 00
788 1220 5615 JMP I XXC8SW /EXIT TO FIELD 0
789
790
791
792
793
794
795
796 /LOOK IS A CHECK OF TTY AND CONTROL CHAR
797
798 1221 0000 XC8LOOK, 0
799 1222 4773 JMS XC8TTY /GET THE CHAR
800 1223 4777 JMS XC8CNTR /GET THE CONTROL CHAR FUNCTION
801 1224 7410 SRP /IS A CONTINUE
802 1225 5230 JMP REASK1
803 1226 6203 EXTLOOK, CDF CIF 00
804 1227 5621 JMP I XC8LOOK
805 1230 4776 REASK1, JMS XC8INQU
806 1231 5226 JMP EXTLOOK
807
808
809
810 1373 0311
```

```
811 1374 0272
812 1375 0652
813 1376 0635
814 1377 0400
      0000 FIELD 0
```

0000

0100

0200 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111

0300 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111

0400 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111

0500 11111111 11111111 11111111 11111111 00000000 00000000 01111111 11111111

0600 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111

0700 11111111 11111111 11111111 11111111 11111111 01111111 11111111 11111111

1000 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111

1100 11111111 11111111 11111111 11111111 11111111 11111111 10011111 11111111

1200 11111111 11111111 11111111 11000000 00000000 00000000 00000000 00000000

1300 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00011111

1400

1500

1600

1700

2000

2100

2200

2300

2400

2500

2600

2700

3000

3100

3200

3300

3400

3500

3600

3700

4000

4100

4200

4300

4400

4500

4600

4700

5000

5100

5200

5300

5400

5500

5600

5700

6000

6100

6200

6300

6400

6500

6600

6700

7000

7100

7200

7300

7400

7500

7600

7700

```
815 / RXB DATA RELIABILITY/EXERCISER * MAINDEC-00-DIRXB-D
816 /
817 /THIS TABLF OF PROCESSOR HLT 'S IS DESIGNED TO PROVIDE TO THE OPERATOR IMPORTANT
818 /INFORMATION CONCERNING THAT HALT AND THE TYPE OF RECOVERY AVAILABLE
819 /
820 /THE CONTENTS OF THE AC AT THE TIME OF THE HALT REPRESENTS THE PSEUDO ADDRESS
821 /OF THE 7402 (HLT).
822 /
823 /ALL OCTAL TO DECIMAL CONVERSION ROUTINES HAVE BEEN REMOVED
824 /TO CONSERVE CORE. THE REAL TIME CLOCK HAS ALSO BEEN REMOVED
825 /AGAIN TO SAVE CORE.
826 /
827 /
828 /
829 1400 0243 / HLT1 / OK WAITING FOR OPERATOR TO SELECT DRIVES
830 /
831 /
832 /
833 1401 0412 / HLT2 / OK WAITING FOR OPERATOR TO SELECT TESTS
834 /
835 /
836 /
837 1402 2102 / HLT6 / OK PROCESSOR HALTED AT ERROR
838 /
839 /
840 /
841 1403 2131 / HLT10 / OK PROCESSOR HALTED AT END OF TEST
842 /
843 /
844 /
845 1404 4220 / HLT16 / OK PROCESSOR HALTED AT ERROR (AC SW 0 = 1)
846 /
847 /
848 /
849 1405 0204 / HLT20 / OK PROCESSOR HALTED AT END OF
850 / STATISTICAL INFORMATION DUMP (SA WAS 202)
851 /
852 /
853 /
854 1406 1474 / HLT7 / OK PROCESSOR HALTED AT ERROR (AC SW 0 = 1)
855 /
856 /
857 /
858 1407 2261 / HLT8 / FATAL AUTOMATIC PROGRAM RESTARTS EXCEEDED 4
859 /
860 /PATTERN OVERVIEW - AC SWITCHES 0-1-2
861 /
862 / 0 - RANDOM DATA 4 - 10101010
863 / 1 - ALL 1'S 5 - 01010101
864 / 2 - 00110011 6 -
865 / 3 - 11001100 7 - ALL 0'S
866 /
867 /TEST OVERVIEW - AC SWITCHES 3-4-5
868 /
869 / 0 - THE ACCEPTANCE TEST 4 -READ (CRC CHECK)/
```

```
870 / 1 - WRITE-READ 5 - WRITE ONLY
871 / (CRC CHECK)
872 / 2 - WRITE-READ-READ 6 - NOT THE ACCEPTANCE TEST
873 / CHECK (PROGRAM (BUT SIMILAR)
874 / VERIFY)
875 / 3 - THE COUNTER PART OF 7 - THE COUNTERPART OF TEST 0
876 / (TEST 2, READ-PROGRAM VERIFY) (READ-PROGRAM VERIFY)
877 /
878 /SEQUENCE OVERVIEW - AC SWITCHES 6-7-8
879 /
880 /TRACK ACCESS SEQUENCE IS SELECTED VIA AC SWITCHES 6,7,8 AT L/S 200
881 /
882 / 0 - RANDOM
883 / 1 - INCREMENTAL OD TO ID
884 / 2 - DECREMENTAL ID TO OD
885 / 3 - COMBINATION OF SEQ 0, AND SEQ 1 (INC/DEC)
886 / 4 - BOUNCE ID TO OD ONLY
887 / 5 - BOUNCE: (ID, OD ; ID-1, OD+1 ; ...ETC TO 47, 45)
888 / 6 - STROBE: (ID, OD ; ID-1, OD ; ...ETC TO 1, 0)
889 / 7 -
890 /PDP-8/E AUGMENTED INTRUCTIONS
891 /
892 /BSW DEFINED AT A LATER POINT ON PAGE 0
893 6001 ION=6001
894 6002 IOF=6002
895 4407 LAS=CKSWIT /CALL WILL CHECK THE HARDWARE SW OR LOC 20 DEPENDING
896 /ON THE STAET OF THE SWITCH REGISTER BIT IN LOCATION
897 /21
898 /
899 7501 MQA=7501 / "OR" (MQ) WITH (AC)
900 7421 MQL=7421 /MQ=AC (THEN CLEAR AC)
901 /ACCUMULATOR SWITCH REGISTER DEFINITIONS
902 /
903 4000 SW0=4000
904 2000 SW1=2000
905 1000 SW2=1000
906 0400 SW3=400
907 0200 SW4=200
908 0100 SW5=100
909 0040 SW6=40
910 0020 SW7=20
911 0010 SW8=10
912 0004 SW9=4
913 0002 SW10=2
914 0001 SW11=1
915 /INTERRUPT SERVICE POINTERS
916 /
917 0000 *0
918 0000 0304 /REVISION D
919 /
920 0001 *1
921 0001 5402 JMP I ,+1
922 0002 3400 PI
923 0003 0000 XA10, 0
924 /
```

```
925 /PROGRAM LOCATIONS XXX AND YYY ARE TEMPORARY STORAGE REGISTERS FOR DATA
926 /OR FOR ADDRESSES OF DATA WHICH ARE CALLED WITHIN SUBROUTINES WHICH
927 /DO NOT CALL SUBROUTINES WHICH CALL THESE STORAGE REGISTERS
928 /
929 /XXX AND YYY ARE CALLED WITHIN THE FOLLOWING SUBROUTINES
930 /
931 / XXX YYY
932 /
933 /RDORWR (2)
934 /DD/RX-ERROR (2)
935 /LOCK (2) (2)
936 /HUNGUP (4)
937 /S202 (4)
938 /
939 0004 0000 XXX, 0
940 0005 0000 YYY, 0
941 /
942 /*****
943 /CONSOLE
944 /*****
945 0006 4406 C8LOOK= JMS I . /LOOK FOR TTY INPUT AND CONTROL CHAR
946 1221 XC8LOOK
947
948 4407 CKSWIT= JMS I . /REPLACES LAS
949 0007 0744 XCKSWIT
950 /
951 /
952 0010 *10
953 /
954 /
955 /AUTO-INDEX REGISTER DEFINITIONS
956 /
957 0010 0000 A10, 0
958 0011 0000 A11, 0
959 0012 0000 A12, 0
960 0013 0000 A13, 0
961 0014 0400 K0400, 0400
962 0015 0200 K0200, 0200
963 /
964 0020 *20
965 /
966 /THE FOLLOWING PROGRAM LOCATIONS (20, 21, AND 22) ARE RESERVED FOR ACT9/A
967 /
968 0020 0750 0750 /PSEUDO SWITCH REGISTER SET TO DEVICE CODE 75
969 0021 4000 4000 /PSEUDO SWITCH REGISTER=0000
970 /USE HARDWARE SWITCH REGISTER=4000
971 0022 0000 0000 /400 FOR CONSOL PACKAGE ACTIVE
972 /0000 FOR NONACTIVE CONSOLE PACKAGE
973 /
974 0023 0000 0000 /RESERVED FOR FUTURE USE,
975 /*****
976 /CONSOLE
977 /*****
978 /
979 4424 CHECKC8=JMS I . /CHECK IF ON CONSOLE
```

```
980 0024 5420 XCHECK
981 /
982 /
983 4425 C8PASS=JMS I .
984 0025 0200 XC8PASS
985 /
986 4426 C8SWIT= JMS I . /ASK THE SWITCH REG QUESTION
987 0026 1211 XXC8PSW
988 /
989 4427 AERROR=JMS I .
990 0027 3351 XAERRO
991 /
992 4430 C8INQU= JMS I .
993 0030 1205 XXC8INQ /PRINT THE WAITING MES
994 4431 C8CNTL=JMS I .
995 0031 1200 XXC8CNTR
996 /
997 /
998 /
999 /
1000 /THE FOLLOWING PROGRAM LOCATIONS "OD", "ID", "FIRST", AND "LAST" MAY BE
1001 /CHANGED BY THE OPERATOR MANUALLY HOWEVER FOLLOWING THESE RESTRICTIONS.
1002 /
1003 / 1. THE CONTENTS OF "OD" (MIN VAL 0) MUST BE <= THE
1004 / CONTENTS OF "ID" (MAX VAL 114).
1005 /
1006 / 2. THE CONTENTS OF "FIRST" (MIN VAL 1) MUST BE <= THE
1007 / CONTENTS OF "LAST" (MAX VAL 32)
1008 /
1009 /THE PROGRAM WILL VERIFY THAT THESE PARAMETERS ARE WITHIN THE PERSCRIBED
1010 /LIMITS, IF THE PROGRAM VERIFICATION DETECTS AN IRREGULARITY - THEN THE
1011 /PARAMETER OUT OF BOUNDS WILL BE SET TO ITS PROPER VALUE AUTOMATICALLY
1012 /
1013 /THE PROGRAM WILL PRINT A CONFIRMATION MESSAGE IF THESE PARAMETERS ARE NON STANDARD
1014 /
1015 0032 0001 OD, 1 /OUTSIDE DIAMETER (MIN VALUE 0)
1016 0033 0114 ID, 114 /INSIDE DIAMETER (MAX VALUE 114)
1017 0034 0001 FIRST, 1 /FIRST SECTOR TO ACCESS (MIN VAL 1)
1018 0035 0032 LAST, 32 /LAST SECTOR TO ACCESS (MAX VAL 32)
1019 /
1020 /PDP-8/E AUGMENTED INSTRUCTIONS
1021 /
1022 4436 BSW=JMS I .
1023 0036 5144 XBSW /PROGRAMMED BYTE SWAP
1024 /
1025 /DISKETTE IOT SUBROUTINES
1026 /
1027 4437 LCD=JMS I .
1028 4226 XLCD
1029 4440 LCDA=JMS I .
1030 0040 4233 XLCDA
1031 4441 LCDB=JMS I .
1032 0041 4260 XLCDB
1033 4442 XDRIN=JMS I .
1034 0042 0522 XXDRIN
```

```
1035      4443  XDROUT=JMS I .
1036      0043 0525  XDRROUT
1037      4444  STR=JMS I .
1038      0044 0531  XSTR
1039      4445  SER=JMS I .
1040      0045 0536  XSER
1041      4446  SDN=JMS I .
1042      0046 0543  XSDN
1043      4447  INTR=JMS I .
1044      0047 4415  XINTR
1045      4450  INIT=JMS I .
1046      0050 4423  XINIT
1047      /OPERATING SYSTEM SUBROUTINES
1048      /
1049      4451  DELUNIT=JMS I .
1050      0051 2275  XDELUNIT      /DELETE FROM (UNITS) UNITX
1051      4452  DONE=JMS I .
1052      0052 4707  XDONE          /          FORM: "DONE; NO; YES"
1053      4453  GETASECTOR=JMS I .
1054      0053 3007  XGETASECTOR
1055      4454  GETATRACK=JMS I .
1056      0054 2425  XGETATRACK      /GET A TRACK FOR IOT LCD-B (TRACK #)
1057      4455  GETUNIT=JMS I .
1058      0055 2200  XGETUNIT        /SELECT A DISKETTE DRIVE
1059      4456  HLT=HALT
1060      4456  HALT=JMS I .
1061      0056 5126  XHALT
1062      4457  INITSECTORS=JMS I .
1063      0057 3000  XINITSECTORS
1064      4460  INITTRACKS=JMS I .
1065      0060 2413  XINITTRACKS
1066      /LOCK THE COUNTER THAT OVERFLOWED AT -1
1067      /
1068      /FORM: LOCK; LSB; MSB (OR IF NO MSB THEN K7777)
1069      /
1070      4461  LOCK=JMS I .
1071      0061 2400  XLOCK
1072      4462  LOG=JMS I .
1073      0062 3502  XLOG            /LOG ALL ERRORS (IF ANY), FORM: "LOG; (X)ERRORS"
1074      4463  PRINT=JMS I .
1075      0063 3227  XPRINT          /PRINT A MESSAGE; FORM: "PRINT; MESSAGE"
1076      4464  PRINTDRIVESELECTED=JMS I .
1077      0064 2331  XDRIVESELECTED
1078      4465  READ=JMS I .
1079      0065 1400  XREAD
1080      4466  READCOMPARE=JMS I .
1081      0066 1352  XREADCOMPARE
1082      4467  SETUP=JMS I .
1083      0067 2135  XSETUP
1084      4470  SPECIALTYPE=JMS I .
1085      0070 4517  XSPECIALTYPE
1086      4471  STOP=JMS I .
1087      0071 2104  XSTOP          /STOP TEST AT COMPLETION IF AC SW 1 = 1
1088      4472  TAB=JMS I .
1089      0072 3200  XTAB          /          FORM: " TAB; N "
```

```
1090      4473  TY4OCT=JMS I .
1091      0073 2676  XTY4OCT        /TYPE (4) OCTAL ; FORM: " TY4OCT; OCTAL "
1092      4474  TYPEIT=JMS I .
1093      0074 3272  XTYPEIT        /TYPE (1) 8 BIT ASCII; (AC) AT ENTRY = ASCII
1094      /*****
1095      /THESE ROUTINES HAVE BEEN REMOVED. ONLY OCTAL VALUES WILL BE PRINTED.
1096      /
1097      /TYSW9=JMS I .
1098      /      XTYSW9          /TYPE OCTAL (SW9 = 0) OR DECIMAL VALUES
1099      /TY4DEC=JMS I .
1100      /      XTY4DEC        /TYPE (4) DECIMAL; FORM: (AC=DECIMAL); TY4DEC
1101      /TY8DEC=JMS I .
1102      /      XOCTDEC        /TYPE (8) DECIMAL; FORM: "TY8DEC; LSB; MSB"
1103      /TY8DEX=JMS I .
1104      /      XTY8DEX        /TYPE (8) DECIMAL < 4096 MAGNITUDE; FORM: "TY8DEX; LSB"
1105      /*****
1106      /
1107      /
1108      4475  TY8OCT=JMS I .
1109      0075 4751  XTY8OCT        /TYPES 8 OCTAL DIGIT FROM DOUBLE
1110      /PRECISION LOG.
1111      4476  DRVSEL=JMS I .
1112      0076 4723  XDRVSEL        /DRIVE SELECT ROUTINE FOR APT-8
1113      4477  APT8=JMS I .
1114      0077 0343  XAPT8          /WILL TEST FOR APT SYSTEM
1115      4500  CHEK22=JMS I .
1116      0100 4714  CHK22
1117      4501  WRITE=JMS I .
1118      0101 1200  XWRITE
1119      4502  WAIT=JMS I .
1120      0102 2352  XWAIT
1121      /OPERATING SYSTEM ALLOCATED STORAGE REFERENCES
1122      /
1123      /A MAX OF 4 AUTOMATIC RESTARTS PERMITTED PRIOR TO U-HALT
1124      /
1125      0103 0000  ARESTARTS, 0      /MAXIMUM OF 4 AUTO RESTARTS PRIOR TO PDP HALT
1126      0104 0000  BUSY, 0          / = 1 = PROCESSING AN RX81 PROGRAM INTERRUPT
1127      0105 0000  COMMAND, 0      /DISKETTE COMMAND ; (AC) AT LCD
1128      0106 0000  COMPERROR, 0    /PROGRAM DATA COMPARE ERROR
1129      0107 7777  EPASS, 7777     / (7777) IS 1ST ERROR THIS PASS
1130      0110 7777  FIRSTERROR, 7777 / (7777) IF 1ST ERROR EVER FOR PROGRAM
1131      0111 7740  HANGER, -40     /COUNTER TO DETECT DEVICE TEST HUNG
1132      0112 0000  IDUMP, 0        / # OF AUTOMATIC INTERUM STATISTICAL REPORTS
1133      0113 7777  K7777, -1      / CONSTANT
1134      0114 7772  KM6, -6         / CONSTANT
1135      0115 7770  KM10, -10       / CONSTANT
1136      0116 7740  KM40, -40      / CONSTANT
1137      0117 7704  KM74, -74      / CONSTANT
1138      0120 0012  K12, 12        / CONSTANT
1139      0121 0016  K16, 16        / CONSTANT
1140      0122 0074  K74, 74        / CONSTANT
1141      0123 0750  K0750, 0750
1142      0124 7777  XCNT, -1
1143      0125 0377  K377, 377      / CONSTANT
1144      0126 7377  K7377, 7377
```

```
1145 0127 7000 K7000, 7000
1146 0130 6520 K6520, 6520 /USED FOR ERROR REPORTER FOR APT.
1147 0131 0007 K0007, 0007
1148 0132 0000 PASSINPROGRESS, 0 / = 1 IF A TEST PASS IS IN PROGRESS
1149 0133 0000 RDC, 0 / = 0 IF A RDC TEST, = 1 IF READ, 4000 IF WRITE
1150 0134 7765 KRETRY, -13 / 1 ORIGINAL TRY + 10 RETRYS
1151 0135 7746 SECTORS, -32 /NEGATIVE # OF SECTORS PER TRACK (1-32 OCTAL)
1152 0136 0000 SSTART, 0 /SECTOR LAST ACCESSED ( 0 = "HOME" )
1153 0137 0000 STARGET, 0 /TARGET SECTOR OF (UNITX)
1154 0140 0000 START, 0 /TRACK LAST ACCESSED
1155 0141 0000 ASTATUS, 0 /DISKETTE STATUS " A " AT INTERRUPT (ERROR OR DONE)
1156 0142 0000 BSTATUS, 0 /RX01 DEFINITIVE ERROR CODE REGISTER
1157 0143 0000 CSTATUS, 0 /STATUS FROM A "READ STATUS" COMMAND
1158 0144 0000 TARGET, 0 /TARGET TRACK OF (UNITX)
1159 0145 0000 TESTP, 0 /TEST PARAMETERS (SELECTED FROM AC SWITCHES)
1160 0146 0000 IF, 0 /INTERLEAVE FACTOR (1, 2, 3)
1161 0147 0000 BSWAC, 0
1162 0150 0000 BSWLINK, 0
1163 /
1164 /THE FOLLOWING K0007 RETRY COUNTERS MUST REMAIN IN THE ORDER DEFINED
1165 /
1166 /BECAUSE REFERENCES TO THESE LOCATIONS ARE FROM SUBROUTINE XLOG
1167 /
1168 0151 7765 R1RETRY, -13 /WERRORS /WRITE ERROR RECOVERY
1169 0152 7765 R2RETRY, -13 /RERRORS /READ ERROR RECOVERY
1170 0153 0000 DWSLOG, 0 /DATA ERROR WITH CRC STATUS ERROR
1171 0154 0000 DNSLOG, 0 /DNSERRORS /DATA ERROR BUT NO CRC STATUS ERROR
1172 0155 0000 SNDLOG, 0 /SNDERRORS /CRC STATUS ERROR BUT NO DATA ERROR
1173 0156 7765 SRETRY, -13 /SERRORS /SEEK ERROR RECOVERY
1174 0157 7765 PRETRY, -13 /PERRORS /PARITY ERROR RECOVERY
1175 /
1176 / (TRACKS) ARE SET TO THE NEGATIVE DIFFERENCE BETWEEN (OD), AND (ID)
1177 / IN THE SUBROUTINE "INITTRACKS "
1178 /
1179 0160 7663 TRACKS, -115 / -# OF TRACKS PER DISKETTE (-115 TO -1 DYNAMIC DECREMENT)
1180 0161 0115 TTRACKS, 115 / # OF TRACKS PER DISKETTE (115 TO 1 STATIC)
1181 /*****
1182 /
1183 /THE REAL TIME CLOCK NO LONGER AVAILABLE.
1184 /THIS WAS DONE TO CONSERVE SPACE AND RUN TIME.
1185 /XSUBCPS, -21 / THE CLOCK IS SET AT ONE TICK #10 MILL SECONDS
1186 / ***** THE RTC IS TO BE SET TO -21 FOR A 10 MSEC CLOCK
1187 /
1188 /SUBCPS, -21
1189 /CPS, -6
1190 /
1191 0162 0000 XTARGET, 0 / ; (AC) = TRACK+SECTOR AT IOT LCD-B ; DESTINATION
1192 /SECOND, -74 / 60 SECONDS PER MINUTE
1193 /MINUTE, -74 / 60 MINUTES PER HOUR
1194 /HOUR, 0
1195 / / HOURS TO 16777215
1196 /TICK, 0 / = 1 MEANS CLOCK IS TICKING
1197 /THE ABOVE CONSTANTS REMOVED. REAL TIME CLOCK NO LONGER AVAILABLE.
1198 /
1199 /TIME AT DETECTION OF AN ERROR
```

```
1200 /
1201 /ESECOND, 0 /
1202 /EMINUTE, 0 /
1203 /EHOUR, 0 /
1204 /
1205 /
1206 /*****
1207 0163 0000 ECOMMAND, 0 / COMMAND IN ERROR
1208 0164 0000 H1, 0 / STALL FOR DEVICE TEST HUNG
1209 0165 0000 GOBIT, 0 / = 1 MEANS PROGRAM EXPECT INTERRUPT REQUEST FROM RX01
1210 /
1211 / (SUMCHECK) IS A NUMBER GENERATED WITHIN SUBROUTINE " GETWORD "
1212 /EQUIVALENT TO SUMCHECK OF 62/126 [ 12/8 BIT MODE] DATA WORDS
1213 /
1214 0166 0000 SUMCHECK, 0
1215 /
1216 0167 0000 LSB, 0 /
1217 0170 0000 MSB, 0 /
1218 0171 0000 TTYBUSY, 0 / = 0 MEANS NOT BUSY, = 1 BUSY = 4000 MEANS <CTRL>S
1219 0172 0000 STESTEP, 0 /DYNAMIC SUBTEST DIRECTIVE
1220 /
1221 / (USTART) = 4000 MEANS [KEY], = 0 MEANS STARTING UNIT WAS 0
1222 / = 1 MEANS STARTING UNIT WAS 1
1223 /
1224 0173 4000 USTART, 4000
1225 0174 0000 GOOD, 0 / EXPECTED DATA PATTERN
1226 0175 0000 SUNITS, 0 /SAVE UNITS FOR S202 STATICAL REPORT
1227 0176 5364 XXKCC, XKCC
1228 0200 *200
1229 /*****
1230 /CONSOLE
1231 /*****
1232 0200 5207 C08STR, JMP BEGIN /STARTING ADDRESS 200
1233 0201 5206 JMP BEGIN-1 /RESTART 201
1234 /
1235 0202 3171 DCA TTYBUSY
1236 0203 4777 JMS S202
1237 0204 4456 HLT20, HLT
1238 0205 5203 JMP, -2
1239 /PRIME THE AUTOMATIC INTERUM STATISTICAL REPORT (IDUMP), AND
1240 /PRIME THE RETURN ADDRESS OF THE STATISTICAL (DUMP) SUBROUTINE
1241 /
1242 /WHEN (S202) NOT = 0, THEN THE STATISTICAL REPORT WAS MANUALLY INITIATED
1243 /BY THE OPERATOR IN CHARGE
1244 /
1245 /WHEN (S202) = 0, THEN THE STATISTICAL REPORT IS AN INTERUM DUMP
1246 /AUTOMATICALLY PRINTED BECAUSE A/OR ALL DISKETTE UNITS(S) HAVE
1247 /FOR SOME REASON BEEN DESELECTED FROM TESTING.
1248 /
1249 0206 1376 TAD (XNONE) /LS 201 (SAME AS AUTORESTART)
1250 0207 4477 BEGIN, APT8 /TEST FOR APT-8
1251 0210 3777 DCA S202
1252 0211 3775 DCA XLOCK
1253 0212 3171 DCA TTYBUSY
1254 0213 3104 DCA BUSY
```

```
1255 0214 3165 DCA G0BIT
1256 0215 1116 TAD KM40
1257 0216 3111 DCA HANGER
1258 0217 3136 DCA SSTART
1259 0220 3144 DCA TARGET
1260 0221 7240 STA
1261 0222 3110 DCA FIRSTERROR
1262 0223 7240 STA
1263 0224 3107 DCA EPASS
1264
1265 /*****
1266 /CONSOLE
1267 /*****
1268 0225 4774 JMS PNTID /PRINT THE ID AND REMOVE MESS
1269 /BEFORE PRINTING DO A CAP
1270 /WAIT FOR CONTROL E TO CONTINUE
1271
1272 0226 4502 WAIT /WAIT FOR SDN FLAG, TIME OUT IF YOU
1273 /DON'T GET IT.
1274
1275 0227 4446 SDNFIRST, SDN
1276 0230 4445 SER
1277 0231 7410 SKP
1278 0232 4773 JMS FORCE
1279 /IF (S202 NOT = 0, THEN L/S 201, IF (S202) = 0, THEN L/S 200
1280 /
1281 /PROGRAM NOTE:
1282 /
1283 /THE LABEL "XLS" MUST RESIDE HERE BECAUSE OF REFERENCES WITHIN THE ERROR SERVICE
1284 /
1285 0233 1777 XLS, TAD S202
1286 0234 7640 SZA CLA
1287 0235 5247 JMP AUTORESTART
1288 0236 3103 S200, DCA ARESTARTS
1289 0237 3112 DCA IDUMP
1290 0240 4500 /SEE IF ON APT
1291 0241 4476 DRVSEL /ON APT
1292 /*****
1293 /CONSOLE
1294 /*****
1295 0242 4772 JMS C0CKSELECT /SELECT DISKETTE AND WAIT FOR SW QUESTION
1296 /*****
1297 0243 4456 HLT1, HLT /SELECTION IS VIA ACCUMULATOR SWITCHES
1298 0244 4407 LAS /FOR DRIVE SELECTION (BIT 00 = DRIVE 0)
1299 0245 0371 AND (SW0+SW1) /BITS 0-1 (MAXIMUM 2 DISKETTE DRIVES)
1300 /THE OPERATOR FAILED TO SELECT AT LEAST (1) DISKETTE DRIVE, OR
1301 /MISTAKENLY SELECTED A DISKETTE DRIVE WITH NO POWER APPLIED, OR
1302 /SELECTED A DISKETTE DRIVE NOT UP TO SPEED
1303 /
1304 /THEREFORE THE PROGRAM WILL AUTOMATICALLY ATTEMPT TO SELECT ALL
1305 /DISKETTE DRIVES WHICH HAVE BEEN "POWERED UP".
1306 /
1307 /THE PROGRAM WILL ISSUE THE COMMAND "READ STATUS REGISTER"
1308 /SELECTING EACH DISKETTE UNIT
1309 /
```

```
1310 /THE PROGRAM WILL DO THIS BY SEQUENCING FROM DRIVE 0 THRU (MAX)
1311 /SAMPLING THE STATUS REGISTER FOR THE CONDITION "SEL DRV RDY"
1312 /
1313 /IF THE CONDITION "SEL DRV RDY" IS NOT FOUND, THAT (UNIT) IS NOT
1314 /SELECTABLE AND DELETED FROM THE MAXIMUM SYSTEM CONFIGURATION (UNITS).
1315 /
1316 0246 7450 SNA
1317 /
1318 /REFRESH PROGRAM LOCATIONS WUNITS, UNITS, AND BUSY FOR AN AUTORESTART (AND LS 201)
1319 /
1320 0247 1371 AUTORESTART, TAD (6000) /MAXIMUM SYSTEM CONFIGURATION 2 DISKETTE DRIVES
1321 0250 3770 DCA UNITS
1322 0251 3767 DCA WUNITS /REFRESH FOR FIRST ENTRY INTO "XGETUNIT"
1323 0252 3104 DCA BUSY
1324 0253 7330 STL CLA RAR
1325 0254 3766 DCA UNITZ / TO SET INTO USTART WITHIN XGETUNIT
1326 0255 1116 TAD KM40
1327 0256 3111 DCA HANGER
1328 0257 4455 AUTO, GETUNIT
1329 0260 1134 TAD KRETRY
1330 0261 3157 DCA PRETRY
1331 0262 1120 AUTOL, TAD K12
1332 0263 4440 LCDA
1333 /
1334 /RETURN TO HERE FROM AN RX01 INTERRUPT
1335 /
1336 /THE LABEL "JMPAUTOOK" MUST RESIDE HERE BECAUSE OF REFERENCES AT "PI"
1337 /
1338 0264 5277 JMPAUTOOK, JMP AUTOOK
1339 0265 5267 JMP AUTOERROR
1340 0266 5765 JMP XPI
1341 /
1342 /RETURN IS HERE TO AUTOERROR IF A PARITY ERROR ON THE COMMAND WORD
1343 /
1344 0267 2157 AUTOERROR, ISZ PRETRY
1345 0270 7410 SKP
1346 0271 5277 JMP AUTOOKNOTOK
1347 0272 4407 LAS
1348 0273 0015 AND K0200
1349 0274 7650 SNA CLA
1350 0275 5262 JMP AUTOL
1351 0276 3157 DCA PRETRY
1352 /
1353 /RETURN IS HERE TO AUTOOK IF NO ERROR OCCURED
1354 /
1355 /THEREFORE LOG A SOFT PARITY ERROR
1356 /
1357 / (OR TO LOG A HARD P ERROR)
1358 /
1359 0277 4462 AUTOOK, LOG
1360 0300 7315 PERRORS /LOG H OR S PARITY ERROR
1361 0301 1141 TAD ASTATUS
1362 0302 0015 AND K0200 /DRIVE SELECT READY ?
1363 0303 7650 SNA CLA
1364 0304 4451 DELUNIT / NO
```

```
1365 /
1366 /PROGRAMMING NOTE:
1367 /
1368 /THE LABEL " XAUTO " MUST RESIDE HERE BECAUSE OF REFERENCES WITHIN
1369 /SUBROUTINES " XGETUNIT" AND " XDELUNIT "
1370 /
1371 0305 4452 XAUTO, DONE
1372 0306 5257 JMP AUTO
1373 0307 4464 PRINTDRIVESELECTED
1374 /
1375 /IF ENTRY TO HERE WAS FROM OF AN AUTOMATIC DUMP ERROR LOGS
1376 /BECAUSE FOR SOME REASON ANY OR ALL THE UNITS BECAME DESELECTED
1377 /THEN THE TESTING WITH THE (TESTP) PREVIOUSLY SELECTED AT S/A 200
1378 /AUTOMATICALLY CONTINUES
1379 /
1380 / (AN AUTORESTART IS EQUIVALENT TO A L/S 201)
1381 /
1382 /THE LOGS ARE REFRESHED ONLY AT L/S 200, AND
1383 /AT AN AUTORESTART, AND
1384 /AT A LOG-OVERFLOW
1385 /
1386 /IF THE DRIVES SELECTED FOR THE RESTART ARE NOT THE ORIGINAL SELECTIONS
1387 /
1388 0310 1775" TAD XLOCK
1389 0311 7640 SZA CLA
1390 0312 5320 JMP XLOGREFRESH
1391 0313 1175 TAD SUNITS
1392 0314 7041 CIA
1393 0315 1770" TAD UNITS
1394 0316 7650 SNA CLA
1395 0317 5764" JMP XS201
1396 /
1397 / " DCA XLOCK " PREVENTS ILLEGAL LOG-REFRESH AT RESTART 201
1398 /
1398 0320 3775" XLOGREFRESH, DCA XLOCK
1399 0321 4463 PRINT
1400 0322 5577 MREFRESH
1401 0323 4463 PRINT
1402 0324 5624 MPASSES
1403 0325 4475 TYBOCT
1404 0326 6350 PASSES
1405 /CLEAR ALL LOGS
1406 /
1407 0327 1363 LOGREFRESH, TAD (LOGS-1)
1408 0330 3010 DCA A10 / C L E A R
1409 0331 3410 DCA I A10 /
1410 0332 1010 TAD A10 / A L L
1411 0333 1362 TAD (-XLOGS) /
1412 0334 7640 SZA CLA / L O G S
1413 0335 5331 JMP .-4
1414 0336 1777" TAD S202
1415 0337 1361 TAD (-XNONE)
1416 0340 7640 SZA CLA
1417 0341 5760" JMP NOTEST
1418 0342 5764" JMP XS201
1419 /
```

```
1420 /ROUTINE TO DETERMINE IF ON APT-8. IF APT-8 IS SELECTED
1421 /THEN CONSOLE AND TEST PARAMETER SELECTION FUNCTIONS ARE NOP.
1422 /IF NOT ROUTINE IS NOP.
1423 /
1424 0343 0000 XAPT8, 0
1425 0344 7300 CLA CLL
1426 0345 4500 CHEK22
1427 0346 7410 SKP /ON APT-8
1428 0347 5743 JMP I XAPT8
1429 0350 1022 TAD 22
1430 0351 0126 AND K7377 /NOP CONSOLE PACKAGE
1431 0352 3022 DCA 22 /RESTORE 22
1432 0353 5757" JMP DEVCDE /GET DEVICE CODE IN ADDRESS 20.
1433 0354 5743 JMP I XAPT8 /AND EXIT
1434 /USE RELIABILITY FUNCTION.
1435 0357 5345
1436 0360 0405
1437 0361 5533
1438 0362 0330
1439 0363 6347
1440 0364 0400
1441 0365 0676
1442 0366 2272
1443 0367 2271
1444 0370 2270
1445 0371 6000
1446 0372 0734
1447 0373 3605
1448 0374 0722
1449 0375 2400
1450 0376 2245
1451 0377 4434
1452 PAGE
1453 /THIS ROUTINE HAS BEEN MOVED FROM LOC 405 TO 400
1454 /SAVE ONE LOC BY MOVE
1455 0400 2777" XS201, ISZ RESTARTS
1456 0401 5220 JMP XS20X
1457 0402 4461 LOCK
1458 0403 6352 RESTARTS
1459 0404 0113 K7777
1460 /*****
1461 /*****
1462 / " SELECT OPERATING PARAMATERS " VIA AC SWITCHES
1463 /
1464 /
1465 / PPP. TTT. SSS. 8/12 DD (10)
1466 0405 4463 NOTEST, PRINT
1467 0406 5563 MTEST
1468 /*****
1469 /CONSOLE
1470 /*****
1471 0407 4424 CHECKC8
1472 0410 4426 CSWIT /ASK THE SWITCH REGISTER QUESTION
1473 0411 7410 SKP /SKIP OVER HLT IN CODE AFTER RETURNING
```

```
1474 /*****
1475 HLT2, HLT
1476 LAS
1477 DCA TESTP
1478 CHECKC8
1479 C8SWIT
1480 CLA /STOP IF ON CLASSIC TO SET UP THE RUNNING SWITCHES
1481
1482 /
1483 XS20X,CLA
1484 /
1485 /PRIME (SUNITS) = (UNITS) IF EVER A " JMS 5202 "
1486 /
1487 TAD UNITS
1488 DCA SUNITS
1489 /
1490 / 0 < (FIRST) <= 32
1491 /
1492 TAD FIRST
1493 SMA SZA CLA
1494 JMP ,+3
1495 CLL CLA IAC
1496 DCA FIRST
1497 TAD FIRST
1498 TAD (-32)
1499 SMA SZA CLA
1500 JMP ,+5
1501 / 0 < (LAST) => (FIRST)
1502 /
1503 TAD LAST
1504 SMA SZA CLA
1505 JMP ,+3
1506 TAD (32)
1507 DCA LAST
1508 TAD LAST
1509 CIA
1510 TAD FIRST
1511 SMA SZA CLA
1512 JMP ,+6
1513 / 0 <= ID <= 114
1514 /
1515 TAD ID
1516 SMA CLA
1517 JMP ,+3
1518 TAD (114)
1519 DCA ID
1520 TAD ID
1521 TAD (-114)
1522 SMA SZA CLA
1523 JMP ,+5
1524 / 0 <= OD <= ID
1525 /
1526 TAD OD
1527 SMA CLA
1528 JMP ,+3
```

```
1529 CLL CLA IAC
1530 DCA OD
1531 TAD ID
1532 CIA
1533 TAD OD
1534 SMA SZA CLA
1535 JMP ,+6
1536 /PRINT THE (TESTP) SELECTIONS AND CHECK FOR NON STANDARD OD, ID, FIRST, AND LAST
1537 /
1538 JMS CHECK
1539
1540 /BITS 0-3 OF TESTP CONTAIN THE TEST PARAMETER FOR EXECUTION
1541 /
1542 TAD (700)
1543 AND TESTP
1544 CLL RTR
1545 RTR
1546 RTR
1547 TAD (TESTS)
1548 DCA XTESTS
1549 / SET INTO STESTEP FROM TESTP THE 8/12 BIT MODE AND DD BITS
1550 /
1551 CLL CLA CML IAC
1552 RTL / 6
1553 AND TESTP
1554 CLL RAR
1555 DCA STESTEP / SUBTEST DIRECTIVE
1556 /
1557 TAD I XTESTS
1558 DCA XTESTS
1559 JMP I XTESTS
1560 XTESTS, THETEST
1561 /
1562 /TEST SELECTIONS
1563 /
1564 /
1565 TEST 0 - THE ACCEPTANCE TEST
1566 TEST 001 - WRITE - READ (CRC CHECK)
1567 TEST 010 - WRITE - READ - READ CHECK (PROGRAM VERIFY)
1568 TEST 011 - READ - PROGRAM VERIFY (COUNTER PART TO TEST 2)
1569 TEST 100 - READ (CRC CHECK)
1570 TEST 5 - WRITE ONLY
1571 TEST 110 - NOT THE ACCEPTANCE TEST (BUT SIMILAR)
1572 TEST 111 - READ - PROGRAM VERIFY (COUNTER PART TO TEST 0)
1573 /
1574 /
1575 TESTS, THETEST
1576 TEST1
1577 TEST2
1578 TEST3
1579 TEST7=TEST3
1580 /
1581 TEST4
1582 TEST5
1583 THETEST
```

```
1584 0521 0602 TEST7
1585
1586 /TRANSFER DATA REGISTER (FROM) THE RX01 CONTROL
1587 /
1588 0522 0522 XXDRIN, .
1589 0523 6752 K67X2A, 6752
1590 0524 5722 JMP I XXDRIN
1591 /TRANSFER DATA REGISTER (TO) THE RX01 CONTROL
1592 /
1593 0525 0525 XXDROUT, .
1594 0526 6752 K67X2B, 6752
1595 0527 7200 CLA
1596 0530 5725 JMP I XXDROUT
1597 /SKIP ON TRANSFER REQUEST
1598 /
1599 0531 0531 XSTR, .
1600 0532 6753 K67X3, 6753 /STR, SKIP ON TRANSFER
1601 /REQUEST FLAG,
1602 0533 5731 JMP I XSTR /DID NOT GET SKIP.
1603 0534 2331 ISZ XSTR /UPDATE RETURN.
1604 0535 5731 JMP I XSTR /EXIT.
1605 /SKIP ON RX01 ERROR FLAG
1606 /
1607 0536 0536 XSER, .
1608 0537 6754 K67X4, 6754 /SKIP ON ERROR FLAG.
1609 0540 5736 JMP I XSER /DID NOT GET SKIP.
1610 0541 2336 ISZ XSER
1611 0542 5736 JMP I XSER
1612 /SKIP ON RX01 DONE FLAG
1613 /
1614 0543 0543 XSDN, .
1615 0544 6705 K67X5, 6705 /SKIP ON DONE FLAG,
1616 0545 5743 JMP I XSDN /DID NOT GET SKIP.
1617 0546 2343 ISZ XSDN
1618 0547 5743 JMP I XSDN
1619 /IF THE PROGRAMMED INSTRUCTION IMMEDIATELY BEFORE " READ "
1620 /IS A " WRITE ", THEN THIS IS A WRITE DATA ERROR, IF NOT,
1621 /THEN THIS IS A READ DATA ERROR
1622 /
1623 /FORM: JMS RDORWR; (READ RETURN); (WRITE RETURN)
1624 /
1625 0550 0550 RDORWR, .
1626 0551 7344 CLL STA RAL
1627 0552 1766 TAD XREAD
1628 0553 3004 DCA XXX
1629 0554 1404 TAD I XXX
1630 0555 1365 TAD (-WRITE)
1631 0556 7650 SNA CLA
1632 0557 2350 ISZ RDORWR
1633 0560 5750 JMP I RDORWR
1634
1635 /*****
1636 /CONSOLE
1637 /*****
1638 /THIS ROUTINE IS USED FOR THE C0PASS RETURN TO REENTER THE PROGRAM
```

```
1639 0561 6001 C0RET1, ION
1640 0562 5764 JMP PASSRETURN
1641 0564 2123
1642 0565 3277
1643 0566 1400
1644 0567 0512
1645 0570 0700
1646 0571 3111
1647 0572 7664
1648 0573 0114
1649 0574 0032
1650 0575 7746
1651 0576 2270
1652 0577 6352
1653 0600 1377 PAGE
1654 0601 7410 TEST4, TAD (READ)
1655 0602 1376 SKP
1656 0603 3223 TEST3, TAD (READCOMPARE)
1657 0604 1127 DCA DOB
1658 0605 5215 TAD K7000
1659 0606 1376 JMP DCADOA
1660 0607 7410 TEST2, TAD (READCOMPARE)
1661 0610 1377 SKP
1662 0611 7410 TEST1, TAD (READ)
1663 0612 1127 SKP
1664 0613 3223 TEST5, TAD K7000
1665 0614 1375 DCA DOB
1666 0615 3222 TAD (WRITE)
1667 DCADOA, DCA DOA
1668 /
1669 / TESTS 1, 2, 3, 4, 5, OR 7
1670 /
1671 0616 4460 TEST, INITTRACKS
1672 0617 4455 GETUNIT
1673 0620 4454 TESTL, GETATRACK
1674 /
1675 /IF THIS IS TEST # 7 THEN " JMS ACCEPT " BECAUSE THIS IS THE READ-PROGRAM VERIFY
1676 /COUNTERPART TO THE ACCEPTANCE TEST # 0
1677 /
1678 0621 4261 JMS ACCEPT
1679 0622 4501 DOA, WRITE
1680 0623 4465 DOB, READ
1681 0624 2160 ISZ TRACKS
1682 0625 5220 JMP TESTL
1683 0626 4471 STOP
1684 0627 5216 JMP TEST
1685 0630 5216
1686 /
1687 /THIS IS THE ACCEPTANCE TEST (DEFAULT TEST SELECTION = 0)
1688 /
1689 /THIS TEST WILL SEQUENCE THROUGH ALL 0/12 BIT MODE AND DELETED DATA SELECTIONS
1690 /
1691 / (STESTP) IS THE DYNAMIC SUBTEST DIRECTIVE
1692 0631 4460 THETEST, INITTRACKS
```

```
1693 0632 4455 GETUNIT
1694
1695 /FORCE THE ACTUATOR SEQUENCE = 0 (INCREMENTAL 0-114)
1696 /
1697 /PROGRAMMING NOTE:
1698 /
1699 /THE CODE FROM LABEL " THEL " TO LABEL " XTHEL " IS EQUIVALENT TO " GETATRACK "
1700 /
1701 0633 1374 THEL, TAD (XTHEL)
1702 0634 3773 DCA XGETATRACK
1703 0635 1144 TAD TARGET
1704 0636 3140 DCA START
1705 0637 5772 JMP SEQINC
1706 0640 4261 XTHEL, JMS ACCEPT
1707 0641 4501 WRITE
1708 0642 4466 READCOMPARE
1709 0643 2160 ISZ TRACKS
1710 0644 5233 JMP THEL
1711 0645 4452 DONE
1712 0646 5231 JMP THETEST
1713
1714 /ACTUATOR MOVEMENT [NOW] IS THAT SELECTED AT START (BITS 6,7,8 OR TEST P)
1715 /
1716 0647 4460 XTHEL, INITTRACKS
1717 0650 4455 GETUNIT
1718 0651 4454 XYTHEL, GETATRACK
1719 0652 4261 JMS ACCEPT
1720 0653 4466 READCOMPARE
1721 0654 2160 ISZ TRACKS
1722 0655 5251 JMP XYTHEL
1723 0656 4471 STOP
1724 0657 5247 JMP XXTHEL
1725 0660 5231 JMP THETEST
1726
1727 /IF THIS IS THE ACCEPTANCE TEST # 0 THEN:
1728 /
1729 /IF THE TARGET TRACK = X, THE SUBTEST DIRECTIVE (STESTP) WILL = Y
1730 /
1731 /
1732 /
1733 /
1734 /
1735 /
1736 /
1737 /
1738 /
1739 /
1740 /
1741 /
1742 /
1743 /
1744 /
1745 /
1746 /
1747 /
```

TARGET TRACK	SUBTEST DIRECTIVE
0	0
1	1
2	2
3	3
4	0
5	1
6	2
7	3
.	.
114	0

```
1748 / " ACCEPT " IS A SUBROUTINE WHICH RESETS (STESTP) THEREBY REGULATING THE EXECUTION
1749 /OF 8/12 BIT MODE AND DELETED DATA
1750 /
1751 0661 0661 ACCEPT,
1752 0662 1145 TAD TESTP
1753 0663 0371 AND (700)
1754 0664 7450 SNA
1755 0665 5271 JMP T0T7
1756 0666 1370 TAD (-700)
1757 0667 7640 SZA CLA
1758 0670 5661 JMP I ACCEPT
1759 0671 7321 T0T7, CLL CML CLA IAC
1760 0672 7004 RAL
1761 0673 0144 AND TARGET
1762 0674 3172 DCA STESTP
1763 0675 5661 JMP I ACCEPT
1764
1765 /WAIT FOR A PROGRAM INTERRUPT REQUEST
1766 /
1767 /
1768 /BUT WHILE WAITING, DISPLAY IN THE MQ THE CODED INFORMATION
1769 /AS INDICATED BY ACCUMULATOR SWITCHES 9, 10, AND 11 AT RUN-TIME
1770 /
1771 /
1772 /
1773 /
1774 /
1775 0676 6001 XPI, ION
1776 0677 1116 TAD KM40
1777 0700 3111 DCA HANGER
1778 0701 4407 LAS
1779 0702 0367 AND (SW10+SW11)
1780 0703 1366 TAD (TAD I DISPLAY)
1781 0704 3305 DCA ,+1
1782 0705 1716 TAD I DISPLAY
1783 0706 7421 MQL
1784 0707 2164 ISZ H1
1785 0710 5301 JMP XPI+3
1786 0711 2111 ISZ HANGER
1787 0712 5301 JMP XPI+3
1788 0713 7200 CLA
1789 0714 1365 TAD (XPI)
1790 0715 5764 JMP HUNGUP
1791 0716 0162 DISPLAY, XTARGET
1792 0717 0145 TESTP
1793 0720 0141 ASTATUS
1794 0721 0105 COMMAND
1795
1796 /*****
1797 /CONSOLE
1798 /*****
1799
1800 0722 0000 PNTID, 0
1801 0723 6007 CAF
1802 0724 4463 PRINT
```

/CALLED FROM LOCATION 225
/PRINT ID AND REMOVE, WAIT FOR CONTROL E
/IF NO CLEAR BY FRONT PANEL THEN DO IT HERE

```
1803 0725 6336 MIDENTIFICATION /PRINT THE ID
1804 0726 4463 PRINT
1805 0727 5452 REMOVE /PRINT REMOVE DIAG DISK
1806 0730 4424 CHECKC8 /IS IT A ACTIVE CONSOLE PACKAGE
1807 0731 4406 C8LOOK /YES LOOK FOR CONTROL CHARACTERS
1808 0732 6001 ION
1809 0733 5722 JMP I PNTID /EXIT PNTID
1810
1811
1812
1813 0734 0000 C8CKSELECTION, 0 /CALL MADE FROM LOCATION 240
1814 0735 4463 PRINT /MAKE DRIVE SELECTION VIA SWIT QUESTION
1815 0736 5547 MSDRIVES /PRINT DRIVES SELECTED
1816 0737 4424 CHECKC8
1817 0740 4426 C8SWIT /ASK THE SWIT REG QUESTION FOR SETT
1818 0741 2334 ISZ C8CKSEL /BUMP RETURN IF ON CONSOLE
1819 0742 6001 ION
1820 0743 5734 JMP I C8CKSEL /EXIT C8CKSEFECTION OF DRIVES
1821
1822
1823
1824
1825 0744 0000 XCKSWIT, 0 /CHECK SWIT REG ROUTINE
1826 0745 7200 CLA
1827 0746 4500 CHEK22
1828 0747 5744 JMP I XCKSWIT /ON APT IGNORE SWITCH REGISTER,
1829 0750 1022 TAD 22 /TO USE HARD OF SOFTWARE SWITCH REG
1830 0751 0363 AND 1400 /MASK FOR BIT
1831 0752 7650 SNA CLA
1832 0753 7614 7614 /LAS AND SKIP WAS HARDWARE SWITCH REG
1833
1834 0754 1020 TAD 20 /THIS IS A NOP IF ON APT-8,
1835 0755 5744 JMP I XCKSWIT /WAS SOFT PSEUDO SWITCH REGISTER
1836
1837 0763 0400
1838 0764 5200
1839 0765 0676
1840 0766 1716
1841 0767 0003
1842 0770 7100
1843 0771 0700
1844 0772 2470
1845 0773 2425
1846 0774 0640
1847 0775 4501
1848 0776 4466
1849 0777 4465
1850 1000 PAGE
1851 /END OF PASS ROUTINE
1852 1000 4424 PASMES, CHECKC8 /CHECK IF ON ACTIVE CONSOLE
1853 1001 4425 C8PASS /IS ACTIVE
1854 1002 5777 JMP C8RETI /GO TO ANOTHER ROUTINE TO RETURN TO LOC2114
1855
1856
```

```
1857
1858
1859 1003 4463 RETUR2, PRINT /*****
1860 1004 5611 MCRLF
1861 1005 5776 JMP RETUR1 /CRLF ROUTINE FOR END OF PAS,
1862 NRETUR1, / PATTERN SAVE
1863 /
1864 /SAVE THE RANDOM " R " REGISTERS FOR A RANDOM PATTERN SELECTION (IF EVER)
1865 /
1866 /PREVENTING DIFFERENT RANDOM PATTERN FROM BEING GENERATED FOR EACH SECTOR
1867 /THEREBY ENABLING A " COMPATABILITY " TEST TO BE EXECUTED WITH RANDOM DATA
1868 /
1869 1006 1006 PATSAVE, .
1870 1007 1775 TAD R1
1871 1010 3214 DCA PATR1
1872 1011 1774 TAD R2
1873 1012 3215 DCA PATR2
1874 1013 5606 JMP I PATSAVE
1875 1014 1234 PATR1, 1234
1876 1015 0765 PATR2, 0765
1877 /
1878 /PATTERN SETUP
1879 /
1880 /SETUP FOR THE APPROPRIATE PATTERN AS SELECTED BY THE OPERATOR AT L/S 200
1881 /
1882 1016 1016 PATSETUP, .
1883 1017 1373 TAD (7000)
1884 1020 0145 AND TESTP
1885 1021 7106 CLL RTL
1886 1022 7006 RTL
1887 1023 1372 TAD (TAD PATTERNS)
1888 1024 3225 DCA +1
1889 1025 1312 TAD PATTERNS
1890 1026 3302 DCA XPATTERNS
1891 1027 3166 DCA SUMCHECK
1892 1030 7301 CLL CLA IAC
1893 1031 7004 RAL
1894 1032 0172 AND STSTP / 8/12 BIT MODE INTERROGATION
1895 1033 7640 SZA CLA
1896 1034 1371 TAD (-100)
1897 1035 1371 TAD (-100)
1898 1036 3011 DCA A11
1899 1037 1011 TAD A11
1900 1040 3012 DCA A12
1901 1041 1214 TAD PATR1
1902 1042 3775 DCA R1
1903 1043 1215 TAD PATR2
1904 1044 3774 DCA R2
1905 1045 5616 JMP I PATSETUP
1906 /
1907 / GET WORD
1908 /
1909 /GET A 12 BIT WORD OR AN 8 BIT BYTE FOR FILLING THE SECTOR BUFFER, OR
1910 /
1911 /TO COMPARE TO THE DATA EMPTIED FROM THE SECTOR BUFFER
```

```
1912 /
1913 / IF (A12) - (A11) = 0, THEN EXIT WITH (AC) = " TARGET " TRACK
1914 /
1915 / IF (A12) - (A11) = 1, THEN EXIT WITH (AC) = "STARGET " SECTOR
1916 /
1917 / IF (A11) = 7776, THEN EXIT WITH THE (AC) = " SUMCHECK "
1918 /
1919 / IF (A11) = 7777, THEN EXIT WITH THE (AC) = " -(2 X SUMCHECK) "
1920 /
1921 1046 1046 GETWORD, .
1922 1047 1012 TAD A12
1923 1050 7041 CIA
1924 1051 1011 TAD A11
1925 1052 7440 SZA
1926 1053 5256 JMP .+3
1927 1054 1144 TAD TARGET
1928 1055 5303 JMP DCAGOOD / " TARGET "
1929 1056 7110 CLL RAR
1930 1057 7640 SZA CLA
1931 1060 5263 JMP .+3
1932 1061 1137 TAD STARGET
1933 1062 5303 JMP DCAGOOD / " STARGET "
1934 1063 1011 TAD A11
1935 1064 7001 IAC
1936 1065 7440 SZA
1937 1066 5274 JMP .+6
1938 1067 1166 TAD SUMCHECK
1939 1070 7141 CLL CIA
1940 1071 7004 RAL
1941 1072 3174 DCA GOOD
1942 1073 5307 JMP ISZA11 / " -(2 TIMES SUMCHECK) "
1943 1074 7001 IAC
1944 1075 7640 SZA CLA
1945 1076 5302 JMP XPATTERNS
1946 1077 1166 TAD SUMCHECK
1947 1100 3174 DCA GOOD
1948 1101 5307 JMP ISZA11
1949 1102 4770 XPATTERNS, JMS RANGEN
1950 1103 3174 DCAGOOD, DCA GOOD
1951 1104 1166 TAD SUMCHECK
1952 1105 1174 TAD GOOD
1953 1106 3166 DCA SUMCHECK
1954 1107 2011 ISZA11, ISZ A11
1955 1110 7000 NOP
1956 1111 5646 JMP I GETWORD / EXIT SUBROUTINE
1957 /
1958 / THE FOLLOWING ARE THE ALLOCATED PATTERN POINTERS
1959 /
1960 1112 4770 PATTERN, JMS RANGEN
1961 1113 7240 STA / 1
1962 1114 1322 TAD PAT2
1963 1115 1323 TAD PAT3
1964 1116 1324 TAD PAT4
1965 1117 1325 TAD PAT5
1966 1120 1326 TAD PAT6
1967 1121 7200 CLA
```

```
1967 /
1968 / 12 BIT MODE 8 BIT MODE
1969 /
1970 1122 1463 PAT2, 1463 / 63 / 0011 00110011
1971 1123 6314 PAT3, 6314 / 314 / 1100 11001100
1972 1124 5252 PAT4, 5252 / 252 / 1010 10101010
1973 1125 2525 PAT5, 2525 / 125 / 0101 01010101
1974 1126 1126 PAT6, .
1975 /
1976 /
1977 /
1978 / THE TEST PARAMETERS ARE RESIDUAL FROM THE PREVIOUS TEST SELECTIONS
1979 /
1980 1127 4767 ERROR3, JMS KEYSWITCH
1981 1130 5766 JMP TAB60
1982 1131 4473 TY40CT
1983 1132 0145 TESTP
1984 / IF THIS IS TEST 0 "ACCEPTANCE TEST" ALSO PRINT (X) THE SUBTEST DIRECTIVE
1985 /
1986 / X = 0 - 12 BIT MODE
1987 / X = 1 - 12 BIT MODE WITH DELETED DATA
1988 / X = 2 - 8 BIT MODE
1989 / X = 3 - 8 BIT MODE WITH DELETED DATA
1990 /
1991 1133 1145 TAD TESTP
1992 1134 0365 AND (700)
1993 1135 7640 SZA CLA
1994 1136 5766 JMP TAB60
1995 1137 1172 TAD STESTP
1996 1140 1364 TAD (5060)
1997 1141 3345 DCA NDIRECTIVE
1998 1142 4463 PRINT
1999 1143 1145 NDIRECTIVE
2000 1144 5766 JMP TAB60
2001 1145 5040 NDIRECTIVE, TEXT "( )"
2002 1146 5100
2003 / IF (XSDN) = THE RETURN ADDRESS TO " SDNSECOND " THEN THE DEVICE TEST IS
2004 / HUNG FROM THE [KEY] INITIALIZE, THE STARTING TRACK IS [HOME], AND THE
2005 / TARGET TRACK IS [HOME]
2006 /
2007 1147 1147 INITSWITCH, .
2008 1150 1763 TAD XWAIT
2009 1151 1362 TAD (-SDNSECOND)
2010 1152 7640 SZA CLA
2011 1153 2347 ISZ INITSWITCH
2012 1154 5747 JMP I INITSWITCH
2013 1162 3352
2014 1163 2352
2015 1164 5060
2016 1165 0700
2017 1166 2525
2018 1167 5327
2019 1170 3333
2020 1171 7700
```

```
2021 1172 1312
2022 1173 7000
2023 1174 3350
2024 1175 3347
2025 1176 2000
2026 1177 0561
      1200
2027
2028
2029
2030
2031 1200 1200
2032 1201 7330
2033 1202 3133
2034 1203 4457
2035 1204 4453
2036 1205 7410
2037
2038
2039 1206 1377
2040 1207 3274
2041
2042
2043
2044
2045
2046
2047
2048
2049 1210 1134
2050 1211 3156
2051 1212 1134
2052 1213 3157
2053
2054
2055 1214 4776
2056 1215 4440
2057 1216 5236
2058 1217 5226
2059
2060
2061 1220 4775
2062 1221 4444
2063 1222 5221
2064 1223 1174
2065 1224 4443
2066 1225 5220
2067
2068
2069 1226 2157
2070 1227 7410
2071 1230 5236
2072 1231 4407
2073 1232 0015
2074 1233 7650
```

PAGE
/WRITE ONLY
/
/WRITE ALL SELECTED SECTORS OF THAT TRACK
/
XWRITE, .
STL CLA RAR
DCA RDC
INITSECTORS /THIS IS A WRITE (RDC = 4000)
WRITEL, GETASECTOR
SKP
/ENTRY TO HERE FROM READ SUBROUTINE IF A HARD READ AFTER WRITE ERROR HAS OCCURED
/
REWRITE, TAD (JMP WHICHREAD)
DCA JMPWHICHREAD
/THE PROGRAM WILL ISSUE AN INIT FOR ALL SEEK ERRORS
/
/NOTE:
/
/THE FUNCTION OF THE INIT IS TO SEEK TRACK 1 / SECTOR 1, AND TRANSFER INTO
/THE SECTOR BUFFER THE CONTENTS OF SECTOR 1, THEREFORE TO RECOVER FROM A
/SEEK ERROR, THE PROGRAM MUST RE-FILL THE SECTOR BUFFER THEN RE-SEEK
/
TAD KRETRY
DCA SRETRY
WRESEEK, TAD KRETRY
DCA PRETRY /PARITY RETRY COUNTER
/FILL RX01 SECTOR BUFFER
/
REFILL, JMS PATSETUP
LCDA
JMP FILLOK
JMP FILLERROR
/RETURN TO HERE IS FROM SUBROUTINE XLCDA
/
FILL, JMS GETWORD
STR
JMP .-1
TAD GOOD
XDROUT
JMP FILL
/AC SW (4) = 1 ; INHIBIT INTERFACE PARITY RECOVERY
/
FILLERROR, ISZ PRETRY
SKP
JMP FILLOKNOTOK
LAS
AND K0200
SNA CLA

```
2075 1234 5214
2076 1235 3157
2077
2078
2079
2080
2081
2082 1236 4462
2083 1237 7315
2084
2085
2086
2087 1240 1134
2088 1241 3157
2089 1242 7301
2090 1243 0172
2091 1244 7004
2092 1245 7001
2093 1246 7006
2094 1247 4441
2095 1250 5262
2096
2097
2098
2099
2100 1251 2156
2101 1252 7410
2102 1253 5272
2103 1254 4407
2104 1255 0015
2105 1256 7650
2106 1257 5212
2107 1260 3156
2108 1261 5272
2109
2110
2111
2112
2113
2114
2115
2116
2117
2118
2119 1262 1144
2120 1263 3140
2121 1264 1137
2122 1265 3136
2123
2124
2125 1266 1774
2126 1267 7104
2127 1270 1373
2128 1271 4772
2129 1272 4462
```

JMP REFILL
DCA PRETRY
/
/ 1.
/ 5.
/ 2. IF (RETRY) < -12 ; AN ERROR HAS JUST BEEN RECOVERED FROM
/ 3. IF (RETRY) = -12 ; THERE IS NO ERROR TO LOG
/
FILLOK, LOG
PERRORS /LOG H / S INTERFACE PARITY ERRORS (IF ANY)
/THE SECTOR BUFFER HAS SUCCESSFULLY BEEN FILLED AND CONTAINS THE
/PATTERN SELECTED - ALL SOFT PARITY ERRORS HAVE BEEN LOGGED
/
TAD KRETRY
DCA PRETRY
CLL CLA IAC / 1
AND STSTEP /TESTP FOR DELETED DATA SELECTION
RAL
IAC
RTL / 4 IF WRITE OR 14 IF WRITE DELETED DATA
LCDB
JMP WRITEOK
/RETURN TO HERE IS FROM A PI (IF AN RX01 ERROR FLAG)
/
/AC SW (4) = 1 ; INHIBIT WRITE RETRY
/
WRITEERROR, ISZ SRETRY
SKP
JMP WNOTOK /LOG HARD SEEK ERROR
LAS
AND K0200
SNA CLA
JMP WRESEEK
DCA SRETRY
JMP WNOTOK
/
/ 1. IF (RETRY) = 0 ; A NON RECOVERABLE ERROR EXISTS
/ 2. IF (RETRY) < -12 ; AN ERROR HAS JUST BEEN RECOVERED FROM
/ 3. IF (RETRY) = -12 ; THERE IS NO ERROR TO LOG
/ 5. IF THE AC SWITCH IS TO INHIBIT RETRY ; A HARD ERROR IS LOGGED
/
/NOTE: THE ONLY ERROR EXPECTED HERE EVER IS A "SEEK" ERROR
/
/RETURN TO HERE IS FROM A PI (IF ONLY AN RX01 DONE FLAG)
/
WRITEOK, TAD TARGET
DCA START
TAD STARGET
DCA SSTART
/LOG TOTAL WRITES (NO HARD SEEK ERROR) PER DRIVE
/
TAD UNITZ
CLL RAL
TAD (WRITES)
JMS LOGCOMMON
WNOTOK, LOG

```
2130 1273 7313 ERRORS
2131 1274 5300 JMPWHICHREAD, JMP WHICHREAD /CONTAINS 0 OR MODIFIED TO JMP WHICHREAD
2132 /
2133 1275 2135 ISZ SECTORS
2134 1276 5204 JMP WRITEL
2135 1277 5600 JMP I XWRITE
2136 /IF THIS IS A WRITE AFTER READ, "JMP READRETRY", BUT
2137 /
2138 /IF A HARD SEEK ERROR, "JMP NUREAD"
2139 /
2140 1300 1156 WHICHREAD, TAD SRETRY
2141 1301 7650 SNA CLA
2142 1302 5342 JMP NUREAD /HARD SEEK ERROR
2143 1303 5771 JMP READRETRY /SOFT
2144 /
2145 /CONTROLLER FAILURES
2146 /
2147 1304 1370 SDNUNEXPECTED, TAD (MSDNUNEXPECTED)
2148 1305 7410 SKP
2149 1306 1367 NOSER, TAD (MNOBER)
2150 1307 3316 DCA XMESSAGE
2151 1310 4407 LAS
2152 1311 0014 AND K0400
2153 1312 7640 SZA CLA
2154 1313 5317 JMP QUIET
2155 1314 4766 JMS FORCE
2156 1315 4463 PRINT
2157 1316 0000 XMESSAGE, 0
2158 1317 4407 QUIET, LAS
2159 1320 7710 SPA CLA
2160 1321 4456 HLT
2161 1322 5765 JMP RS
2162 /LOG ANY RECOVERABLE SEEK ERRORS WHICH MAY HAVE OCCURED
2163 /PRIOR TO THIS DNS, OR SMD
2164 /
2165 1323 4462 DNS, LOG
2166 1324 7313 ERRORS
2167 1325 1134 TAD KRETRY
2168 1326 3156 DCA SRETRY
2169 /LOG TOTAL READS (NO SEEK ERRORS) PER DRIVE
2170 /
2171 1327 1774 TAD UNITZ
2172 1330 7104 CLL RAL
2173 1331 1364 TAD (READS)
2174 1332 4772 JMS LOGCOMMON
2175 1333 2152 ISZ R2RETRY
2176 1334 7410 SKP
2177 1335 5345 JMP UREAD
2178 /AC SW (4) = 1 ; INHIBIT READ RETRY
2179 /
2180 1336 4407 LAS
2181 1337 0015 AND K0200
2182 1340 7650 SNA CLA
2183 1341 5763 JMP REREAD
2184 /A HARD FILL BUFFER PARITY ERROR OR A HARD PARITY ERROR ON THE COMMAND/
```

```
2185 /SECTOR/TRACK WORDS, OR
2186 /A HARD SEEK ERROR WHICH HAS BEEN LOGGED WITHIN THE WRITE SUBROUTINE, OR
2187 /A HARD CRC ERROR WHICH OCCURED WHILE WITHIN THE READ SUBROUTINE
2188 /
2189 1342 3151 NUREAD, DCA R1RETRY
2190 1343 3152 DCA R2RETRY
2191 1344 5762 JMP RNOTOK
2192 /IF THIS IS A READ AFTER WRITE THEN RE-WRITE THE SECTOR IN ERROR
2193 /
2194 /BECAUSE THIS IS A HARD PROGRAM COMPARE DATA ERROR
2195 /
2196 1345 4761 UREAD, JMS RDORWR
2197 1346 5342 JMP NUREAD
2198 1347 2151 ISZ R1RETRY
2199 1350 5206 JMP REWRITE
2200 1351 5762 JMP RNOTOK
2201 /READ VERIFY
2202 /
2203 1352 1352 XREADCOMPARE, .
2204 1353 1352 TAD XREADCOMPARE
2205 1354 3760 DCA XREAD
2206 1355 5757 JMP XRDC
2207 1357 1402
2208 1360 1400
2209 1361 0550
2210 1362 1522
2211 1363 1414
2212 1364 6357
2213 1365 2237
2214 1366 3605
2215 1367 6315
2216 1370 2532
2217 1371 1407
2218 1372 4400
2219 1373 6353
2220 1374 2272
2221 1375 1046
2222 1376 1016
2223 1377 5300
2224 1400 1400 PAGE
2225 /READ AND READ AFTER WRITE SUBROUTINE
2226 /
2227 /IF THIS IS A READ AFTER WRITE, THEN 1 PROGRAM LOCATION PRECEEDING
2228 /THE PROGRAM LOCATION CONTAINING THE "READ" WILL CONTAIN "WRITE"
2229 /
2230 /READ ALL SELECTED SECTORS OF THAT TRACK
2231 /
2232 / (RDC) = 0 IF RDC, = 1 IF READ, 4000 IF WRITE
2233 /
2234 /
2235 1400 1400 XREAD, .
2236 1401 7301 CLL CLA IAC
2237 1402 3133 XRDC, DCA RDC
2238 1403 4457 INITSECTORS
```

```
2239 1404 1134 READL, TAD KRETRY
2240 1405 3151 DCA RIRETRY
2241 1406 4453 GETASECTOR
2242 /ENTRY TO HERE FROM WRITE SUBROUTINE IF A HARD WRITE AFTER READ ERROR HAS OCCURED
2243 /
2244 1407 1134 READRETRY, TAD KRETRY
2245 1410 3152 DCA R2RETRY
2246 /REFRESH PROGRAM LOCATION SNDLOG BECAUSE THE CONTENTS MIGHT BE RESIDUAL
2247 /IF A PREVIOUS SND (STATUS NO DATA) ERROR EVER OCCURED
2248 /
2249 1411 3155 DCA SNDLOG
2250 1412 3153 DCA DWSLOG
2251 1413 3154 DCA DNSLOG
2252 1414 1134 REREAD, TAD KRETRY
2253 1415 3156 DCA SRETRY
2254 1416 1134 RESEEK, TAD KRETRY
2255 1417 3157 DCA PRETRY
2256 1420 7321 CLA CLL CML IAC
2257 1421 7006 RTL
2258 1422 4441 LCDB
2259 1423 5276 JMP READOK
2260 /RETURN TO HERE IS FROM A PI (IF AN RX01 ERROR FLAG)
2261 /
2262 /AN ERROR HAS BEEN DETECTED
2263 /
2264 /IF NOT A CRC ERROR THEN ASSUME A SEEK ERROR
2265 /
2266 1424 7301 READERERROR, CLL CLA IAC
2267 1425 0141 AND ASTATUS /CRC MASK
2268 1426 7640 SZA CLA
2269 1427 5243 JMP CRCERROR
2270 1430 2156 ISZ SRETRY
2271 1431 7410 SKP
2272 1432 5240 JMP USEEK
2273 1433 4407 LAS
2274 1434 0015 AND K0200
2275 1435 7650 SNA CLA
2276 1436 5216 JMP RESEEK
2277 1437 3156 DCA SRETRY
2278 /
2279 1440 4462 USEEK, LOG
2280 1441 7313 SERRORS
2281 1442 5364 JMP RLOGGED /LOG HARD SEEK ERRORS
2282 /PROGRAMMING NOTE:
2283 /
2284 /ANY RECOVERABLE SEEK ERRORS ARE LOGGED AT PROGRAM LOCATION " DNS "
2285 /
2286 /AN ERROR HAS OCCURED
2287 /
2288 1323 SND=DNS
2289 1323 DWS=SND
2290 /
2291 /THE SECTOR BUFFER CONTAINS THE DATA READ
2292 /
2293 /ANY PARITY ERRORS WOULD HAVE PREVIOUSLY BEEN DETECTED AND LOGGED
```

```
2294 /
2295 /THIS ERROR IS NOT A SEEK ERROR, THEREFORE IT IS ASSUMED TO BE A
2296 /
2297 /CRC ERROR
2298 /
2299 /COMPARE THE DATA WITHIN THE SECTOR BUFFER TO DETECT CRC STATUS
2300 /WITHOUT DATA ERRORS (SND)
2301 /
2302 /IF AT THE END OF THE COMPARE, STATUS NO DATA ERRORS HAVE BEEN DETECTED
2303 /THEN PRINT AN APPROPRIATE MESSAGE
2304 /
2305 1443 1133 CRCERROR, TAD RDC
2306 1444 7640 SZA CLA
2307 1445 5272 JMP XRCERROR
2308 1446 4777 JMS COMPARE
2309 1447 1106 TAD COMPERROR
2310 1450 7450 SNA
2311 1451 1776 TAD INSUMCHECK
2312 1452 7640 SZA CLA
2313 1453 5775 JMP DWS
2314 1454 2155 ISZ SNDLOG
2315 /
2316 /IF AC SW (3) = 1 THEN DO NOT PRINT THE ERROR INFORMATION
2317 /
2318 1455 4407 LAS
2319 1456 0014 AND K0400
2320 1457 7640 SZA CLA
2321 1460 5272 JMP XRCERROR
2322 1461 4774 JMS RDORWR
2323 1462 5266 JMP .+4
2324 1463 4463 PRINT
2325 1464 5741 MWRITE
2326 1465 5270 JMP .+3
2327 1466 4463 PRINT
2328 1467 5745 MREAD
2329 1470 4463 PRINT
2330 1471 6005 MSNDERROR
2331 1472 4407 XRCERROR, LAS
2332 1473 7710 SPA CLA
2333 1474 4456 HLT7, HLT
2334 1475 5775 JMP SND
2335 /
2336 /IF THIS IS A READ COMPARE TEST
2337 /
2338 /THEN " JMS COMPARE ", BUT...
2339 /
2340 /IF A STATUS ERROR WITH NO DATA ERROR HAS PREVIOUSLY BEEN DETECTED
2341 /
2342 /THEN DO NOT RE- " JMS COMPARE ", AND
2343 /
2344 /DO NOT RESET PROGRAM LOCATION " START " WITH " TARGET "
2345 /
2346 /PROGRAMMING NOTE:
2347 /
2348 /ANY RECOVERABLE SEEK ERRORS WHICH OCCURED PRIOR TO CRC OR DATA ERRORS
```

```
2349 /
2350 /ARE LOGGED AT PROGRAM LOCATION " DNS "
2351 /
2352 1476 1155 READOK, TAD SNDLOG
2353 1477 1133 TAD RDC
2354 1500 7640 SZA CLA
2355 1501 5310 JMP ROK
2356 1502 4777* JMS COMPARE
2357 /
2358 1503 1106 TAD COMPREERROR
2359 1504 7450 SNA
2360 1505 1776* TAD INSUNCHECK
2361 1506 7640 SZA CLA
2362 1507 5775* JMP DNS
2363 1510 1144 ROK, TAD TARGET
2364 1511 3140 DCA START
2365 1512 1137 TAD STARGET
2366 1513 3136 DCA SSTART
2367 /LOG TOTAL READS (NO HARD SEEK ERRORS) PER DRIVE
2368 /
2369 1514 1773* TAD UNITZ
2370 1515 7104 CLL RAL
2371 1516 1372 TAD (READS)
2372 1517 4771* JMS LOGCOMMON
2373 /LOG ANY RECOVERABLE SEEK ERRORS
2374 /
2375 /NOTE: NO DATA OR CRC ERRORS HAVE OCCURED
2376 /
2377 1520 4462 LOG
2378 1521 7313 ERRORS
2379 /LOG A WRITE ERROR IF THIS IS A READ AFTER A WRITE, OTHERWISE
2380 /
2381 /LOG A READ ERROR
2382 /
2383 1522 4774* RNOTOK, JMS RDORWR
2384 1523 5337 JMP WHATYPEREAD
2385 /THIS IS A READ AFTER A WRITE
2386 /
2387 /IF (R2RETRY) = -12 AND (R1RETRY) = -12, THEN NO ERRORS TO LOG
2388 /
2389 /IF 0 < (R2RETRY) <= -11 AND (R1RETRY) = -12, THEN RECOVERABLE READ
2390 / (IF PREVIOUSLY THERE WERE NO SEEK ERRORS)
2391 /
2392 /IF (R2RETRY) = -12 AND 0 < (R1RETRY) <= -11, THEN RECOVERABLE WRITE
2393 /
2394 /IF (R2RETRY) = 0 AND (R1RETRY) = 0 THEN UNRECOVERABLE WRITE
2395 /
2396 /
2397 /
2398 /NOTATION: R1RETRY - REWRITE LOG
2399 R2RETRY - REREAD LOG
2400 /
2401 /
2402 /
2403 1524 1134 TAD KRETRY
```

```
2404 1525 7041 CIA
2405 1526 1152 TAD R2RETRY
2406 1527 7450 SNA
2407 1530 5334 JMP .+4 / (R2RETRY) = (RETRY)
2408 /
2409 / (R2RETRY) NOT = (RETRY)
2410 /
2411 1531 1134 TAD KRETRY
2412 1532 7640 SZA CLA
2413 1533 5362 JMP LOGRERRORS /LOG A SOFT READ AFTER WRITE ERROR
2414 1534 4462 LOG
2415 1535 7301 WERRORS
2416 1536 5364 JMP RLOGGED /LOG A WRITE ERROR (IF ANY)
2417 /THIS IS A READ ONLY (NOT A READ AFTER WRITE)
2418 /
2419 /IF A COMPARE ERROR EXISTS THEN THIS IS A DATA ERROR
2420 /
2421 /AND IF THE CONTENTS OF BSTATUS = 0 THEN THIS IS A DATA NO STATUS ERROR
2422 /
2423 /OTHERWISE THIS IS JUST A READ ERROR
2424 /
2425 /BUT, IF THIS IS A RDC TEST, AND
2426 /
2427 /IF THE CONTENTS OF DNSLOG > 0 THEN LOG; DNSERRORS, AND
2428 /
2429 /IF THE CONTENTS OF DWSLOG > 0 THEN LOG; DATAERRORS
2430 /
2431 /THE DNS, AND DWS LOGS BECOME UNRECOVERABLE WHEN (R2RETRY) = 0
2432 /
2433 /READ ERRORS = X, OF WHICH THERE WERE X DNS ERRORS, AND X DWS ERRORS
2434 /
2435 1537 1133 WHATYPEREAD, TAD RDC
2436 1540 7640 SZA CLA
2437 1541 5362 JMP LOGRERRORS
2438 1542 1154 TAD DNSLOG
2439 1543 7650 SNA CLA
2440 1544 5770* JMP WHAT2
2441 1545 1152 TAD R2RETRY
2442 1546 3154 DCA DNSLOG
2443 1547 4462 LOG
2444 1550 7307 DNSERRORS
2445 1551 5770* JMP WHAT2
2446 1552 1155 WHAT3, TAD SNDLOG
2447 1553 7650 SNA CLA
2448 1554 5361 JMP .+5
2449 1555 1152 TAD R2RETRY
2450 1556 3155 DCA SNDLOG
2451 1557 4462 LOG
2452 1560 7311 SNDERERRORS
2453 /
2454 / TAD SUNLOG; SNA CLA; JMP .+5
2455 1561 5364 / TAD R2RETRY; DCA SUNLOG; LOG; SUMERRORS
2456 / JMP RLOGGED
2457 /
2458 1562 4462 LOGRERRORS, LOG
2459 1563 7303 RERRORS /HARD OR SOFT READ ONLY, OR SOFT READ AFTER WRITE
```

```
2459 1564 2135 RLOGGED, ISZ SECTORS
2460 1565 5204 JMP READL
2461 1566 5600 JMP I XREAD
2462 1570 3071
2463 1571 4400
2464 1572 6357
2465 1573 2272
2466 1574 0550
2467 1575 1323
2468 1576 1763
2469 1577 1601
      1600
      PAGE
2470 1600 5601 JMPICOMPARE, JMP I COMPARE
2471 /
2472 /THE FOLLOWING INFORMATION IS ALWAYS PRINTED IF A PROGRAM COMPARE DATA ERROR
2473 /
2474 /          DATA ERROR
2475 /          WORD GOOD BAD
2476 /
2477 /WHERE " WORD " IS THE WORD NUMBER (0-127),
2478 /AND " GOOD " IS THE DATA WORD WRITTEN,
2479 /AND " BAD " IS THE DATA WORD READ (IN ERROR)
2480 /
2481 /WORDS 0 AND 1 ARE HEADER WORDS (8 BIT BYTES)
2482 /
2483 / WORD 0 - TRACK # (BITS 5-11)
2484 / WORD 1 - SECTOR (BITS 7-11)
2485 /
2486 /
2487 /AC SW (4) = 1 ; INHIBIT READ DATA ERROR TYPEOUT
2488 /
2489 /
2490 1601 1601 COMPARE, .
2491 /
2492 /EMPTY BUFFER
2493 /
2494 /SAVE THE PREVIOUS READ'S A-STATUS REGISTER
2495 /
2496 1602 7301 CLL CLA IAC
2497 1603 0141 AND ASTATUS
2498 1604 3362 DCA XASTATUS / = 1 IF CRC ERROR
2499 1605 1134 TAD KRETRY
2500 1606 3157 DCA PRETRY
2501 1607 4777* EMPTYL, JMS PATSETUP
2502 1610 7301 CLL CLA IAC
2503 1611 7004 RAL
2504 1612 4440 LCDA
2505 1613 5776* JMP EMPTYOK
2506 1614 5775* JMP EMPTYERROR
2507 /RETURN TO HERE FROM SUBROUTINE XLCDA
2508 /
2509 1615 3106 DCA COMPRERROR
2510 1616 3363 DCA INSUMCHECK
2511 /AC SW (3) = 1 ; INHIBIT FURTHER READ DATA ERROR TYPEOUTS
2512 /
```

```
2513 /...BUT STAY IN THIS LOOP UNTIL THE RX01 SECTOR BUFFER IS EMPTIED
2514 /
2515 1617 4774* EMPTY, JMS GETWORD
2516 1620 4444 STR
2517 1621 5220 JMP , -1
2518 /
2519 /DISABLE THE RX01 INTERRUPT
2520 /
2521 1622 4447 INTR
2522 /
2523 /TRANSFER DATA FROM THE SECTOR BUFFER INTO THE ACCUMULATOR
2524 /
2525 1623 4442 XDRIN / "ACTUAL" (BAD) DATA
2526 1624 3003 DCA XA10
2527 /
2528 /ASSUME A 12 BIT SUMCHECK EVEN IF 8 BIT MODE FOR NOW
2529 /
2530 /NOTE: THE CONTENTS OF PROGRAM LOCATION " INSUMCHECK " SHOULD = 0
2531 / (AFTER ALL WORDS HAVE COME IN)
2532 /
2533 1625 1003 TAD XA10
2534 1626 1363 TAD INSUMCHECK
2535 1627 3363 DCA INSUMCHECK
2536 1630 7301 CLL CLA IAC / 2 (8/12 BIT MODE MASK)
2537 1631 7004 RAL
2538 1632 0172 AND STSTP
2539 1633 7112 CLL RTR
2540 1634 1174 TAD GOOD
2541 1635 7430 SZL / 0 = 12 BIT, 1 = 8 BIT
2542 1636 0125 AND K377
2543 1637 7041 CIA
2544 1640 1003 TAD XA10
2545 1641 7650 SNA CLA
2546 1642 5773* JMP ENDCOMPARE
2547 /
2548 /A PROGRAM COMPARE DATA ERROR HAS BEEN DETECTED
2549 /
2550 /NOTATION:
2551 /
2552 /THE CONTENTS OF PROGRAM LOCATION XASTATUS REFLECTS THE STATUS OF THE
2553 /RX01 AT THE COMPLETION OF THE PREVIOUS " READ SECTOR "
2554 /
2555 /IF A CRC ERROR EXISTS THEN THIS IS A DATA ERROR WITH STATUS ERROR
2556 /
2557 /IF A CRC ERROR DOESN'T EXIST THEN THIS IS A DATA ERROR WITH NO ERROR STATUS
2558 /
2559 1643 1362 TAD XASTATUS / A-STATUS OF PREVIOUS READ
2560 1644 7450 SNA
2561 1645 2154 ISZ DNSLOG /NO CRC STATUS
2562 1646 7640 SZA CLA
2563 1647 2153 ISZ DNSLOG /CRC STATUS
2564 /
2565 /AC SW (3) TO INHIBIT ERROR PRINTOUT
2566 /
2567 /IF THIS IS A READ ONLY TEST (NOT READ COMPARE) OR IF AC SW 3 = 1
```

```

2568      /THEN DO NOT PRINT ERROR INFORMATION
2569      /
2570      /BUT,
2571      /
2572      /IF THIS IS A READ COMPARE TEST AND AC SW 3 = 0
2573      /THEN PRINT ERROR INFORMATION
2574      /
2575      1650 4407      LAS
2576      1651 0014      AND K0400
2577      1652 1133      TAD RDC
2578      1653 7640      SZA CLA
2579      1654 5360      JMP ISZCOMPERROR
2580      /IF THIS IS THE FIRST COMPARE ERROR THEN PRINT HEADER INFORMATION
2581      /
2582      1655 1106      TAD COMPERROR
2583      1656 7640      SZA CLA
2584      1657 5320      JMP CNOTFIRST
2585      /
2586      /IF A DATA NO CRC STATUS ERROR (DNS) THEN PRINT ENTIRE ERROR INFORMATION
2587      /
2588      1660 1154      TAD DNSLOG
2589      1661 7640      SZA CLA
2590      1662 4772      JMS FORCE
2591      /IF THE PROGRAMMED INSTRUCTION IMMEDIATELY BEFORE " READ "
2592      /IS A " WRITE " , THEN THIS IS A WRITE DATA ERROR, IF NOT,
2593      /THEN THIS IS A READ DATA ERROR
2594      /
2595      /PROGRAMMING NOTE:
2596      /
2597      /THE LABEL " XCOMPARE " MUST RESIDE HERE BECAUSE OF REFERENCES MADE WITHIN " XERROR "
2598      /
2599      1663 4771      XCOMPARE, JMS RDORWR
2600      1664 5270      JMP ,+4
2601      1665 4463      PRINT
2602      1666 5741      MWRITE
2603      1667 5272      JMP ,+3
2604      1670 4463      PRINT
2605      1671 5745      MREAD
2606      /NOTATION:
2607      /
2608      /THE CONTENTS OF PROGRAM LOCATION XASTATUS REFLECTS THE STATUS OF THE
2609      /RX01 AT THE COMPLETION OF THE PREVIOUS " READ SECTOR "
2610      /
2611      /IF A CRC ERROR EXISTS THEN THIS IS A DATA ERROR WITH STATUS ERROR
2612      /
2613      /IF A CRC ERROR DOESN'T EXIST THEN THIS IS A DATA ERROR WITH NO ERROR STATUS
2614      /
2615      1672 1362      TAD XASTATUS
2616      1673 7640      SZA CLA
2617      1674 5300      JMP DWESERROR
2618      1675 4463      PRINT
2619      1676 5751      MDNSERROR
2620      1677 5302      JMP ,+3
2621      1700 4463      DWESERROR, PRINT

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2623      1701 5757      MDWESERROR
2624      1702 4463      PRINT
2625      1703 5763      MDATAERROR
2626      /PRINT " WORD " IF 12-BIT MODE, OR PRINT " BYTE " IF 8-BIT MODE
2627      /
2628      1704 1370      TAD (MWORD)
2629      1705 3315      DCA XFLENGTH
2630      / TEST 8/12-BIT MODE SELECTION
2631      /
2632      1706 7304      CLL CLA RAL
2633      1707 0172      AND STSTP
2634      1710 7650      SNA CLA
2635      1711 5314      JMP ,+3
2636      1712 1367      TAD (MBYTE)
2637      1713 3315      DCA XFLENGTH
2638      1714 4463      PRINT
2639      1715 5772      XFLENGTH, MWORD
2640      1716 4463      PRINT
2641      1717 6000      MGB
2642      / AC 2 = 0 - PRINT ONLY FIRST 3 COMPARE ERRORS
2643      / AC 2 = 1 - PRINT ALL COMPARE ERRORS
2644      /
2645      1720 4407      CNOTFIRST, LAS
2646      1721 0366      AND (SW2)
2647      1722 7640      SZA CLA
2648      1723 5330      JMP ,+5
2649      1724 7346      CLL STA RTL
2650      1725 1106      TAD COMPERROR
2651      1726 7700      SMA CLA
2652      1727 5360      JMP ISZCOMPERROR
2653      1730 4463      PRINT
2654      1731 5611      MCRLF
2655      1732 1012      TAD A12
2656      1733 7041      CIA
2657      1734 1011      TAD A11
2658      1735 3004      DCA XXX      /TEMP STORAGE FOR VALUE
2659      1736 4473      TY40CT
2660      1737 0004      XXX
2661      1740 4472      TAB
2662      1741 0005      5
2663      /IF 8-BIT MODE THEN MASK THE 12-BIT "GOOD" WORDS K377
2664      /
2665      1742 7301      CLL CLA IAC
2666      1743 7004      RAL
2667      1744 0172      AND STSTP
2668      1745 7112      CLL RTR
2669      1746 1174      TAD GOOD
2670      1747 7430      SZL
2671      1750 0125      AND K377
2672      1751 3167      DCA LSB
2673      1752 4473      TY40CT
2674      1753 0167      LSB
2675      1754 4472      TAB
2676      1755 0012      12
2677      1756 4473      TY40CT

```

```
2678 1757 0003      XA10
2679 1760 2106      ISZCOMPERROR, ISZ COMPERROR
2680 1761 5773      JMP ENDCOMPARE
2681
2682      /THE CONTENTS OF THE XASTATUS PROGRAM LOCATION REFLECTS THE STATUS AT THE
2683      /COMPLETION OF THE PREVIOUS READ FUNCTION
2684      /
2685      /THE PREVIOUS STATUS IS SAVED BECAUSE A SUCCEEDING ERROR
2686      / (PARITY ERROR ON THE COMMAND WORD) MAY OCCUR
2687      /
2688 1762 0000      XASTATUS, 0
2689
2690      /THE CONTENTS OF " INSUMCHECK " IS THE SUMCHECK DERIVED FROM THE SUM OF ALL
2691      /DATA WORDS COMING IN (THE SUM OF ALL " BAD " ), AND
2692      /SHOULD BE EQUIVALENT TO 0 AT THE END OF THE EMPTY BUFFER
2693      /
2694 1763 0000      INSUMCHECK, 0
2695      /*****
2696      /CONSOLE
2697      /*****
2698      /
2699 1766 1000
2700 1767 5775
2701 1770 5772
2702 1771 0550
2703 1772 3605
2704 1773 2007
2705 1774 1046
2706 1775 2012
2707 1776 2023
2708 1777 1016
2709      2000
2710      PAGE
2711      /
2712      RETUR1, PRINT
2713      MPASSES
2714      TY8OCT
2715      PASSES
2716      PRINT
2717
2718      MX
2719      JMP PASSRETURN
2720
2721      /*****
2722      /
2723      /RE-ENABLE THE RX01 INTERRUPT
2724      /
2725 2007 7301      ENDCOMPARE, CLL CLA IAC
2726 2010 4447      INTR
2727 2011 5777      JMP EMPTY
2728
2729      /THIS INTERFACE PARITY ERROR MUST BE ON THE COMMAND WORD TO "EMPTY BUFFER"
2730      /
2731      /NOTE: IT CAN'T BE ANY OTHER ERROR
2732      /
```

```
2732 2012 2157      EMPTYERROR, ISZ PRETRY
2733 2013 7410      SKP
2734 2014 5271      JMP XEMPTYOKNOTOK
2735 2015 4407      LAS
2736 2016 0015      AND K0200
2737 2017 7650      SNA CLA
2738 2020 5776      JMP EMPTYL
2739 2021 3157      DCA PRETRY
2740 2022 5271      JMP XEMPTYOKNOTOK
2741
2742      / 1. IF (RETRY) = 0 ; A NON RECOVERABLE ERROR EXISTS
2743      / 5. IF THE AC SWITCH IS TO INHIBIT RETRY ; A HARD ERROR IS LOGGED
2744      / 2. IF (RETRY) < -12 ; AN ERROR HAS JUST BEEN RECOVERED FROM
2745      / 3. IF (RETRY) = -12 ; THERE IS NO ERROR TO LOG
2746      /
2747      /IF AC SW (3) = 0
2748      /
2749      /PRINT A VALUE SYMBOLIC OF THE TOTAL # OF COMPARE ERRORS DETECTED
2750      /
2751      /IF 8-BIT MODE THEN THE "SUMCHECK" WILL OVERFLOW INTO BITS 0 TO 3
2752      /
2753      /THEREFORE MASK THE CONTENTS OF " INSUMCHECK "
2754      /
2755      /THE RESULT OF THE SUBTRACTION SHOULD = 0
2756      /
2757      /NO MASK IS NEEDED FOR 12-BIT MODE
2758      /
2759 2023 7301      EMPTYOK, CLL CLA IAC
2760 2024 7004      RAL
2761 2025 0172      AND STSTP
2762 2026 7112      CLL RTR
2763 2027 1775      TAD INSUMCHECK
2764 2030 7430      SZL
2765 2031 0125      AND K377
2766 2032 3775      DCA INSUMCHECK
2767 2033 4407      LAS
2768 2034 0014      AND K0400
2769 2035 7640      SZA CLA
2770 2036 5271      JMP XEMPTYOK
2771
2772      /IF A SUMCHECK ERROR EXISTS WITHOUT A "COMPERROR" THEN "FORCE" A TYPEOUT
2773      /
2774 2037 1106      TAD COMPERROR
2775 2040 7640      SZA CLA
2776 2041 5246      JMP .+5
2777 2042 1775      TAD INSUMCHECK
2778 2043 7650      SNA CLA
2779 2044 5271      JMP XEMPTYOK
2780 2045 4774      JMS FORCE
2781 2046 4463      PRINT
2782 2047 6020      MSUMCHECK
2783 2050 1775      TAD INSUMCHECK
2784 2051 7640      SZA CLA
2785 2052 5256      JMP .+4
2786 2053 4463      PRINT
2787 2054 6030      MOK
2788 2055 5261      JMP .+4
```

```
2787 2056 4473 TY4OCT
2788 2057 1763 INSUMCHECK
2789 2060 5264 JMP .+4
2790 2061 1106 TAD COMPERROR
2791 2062 7650 SNA CLA
2792 2063 5271 JMP XEMPTYOK
2793 2064 4463 PRINT
2794 2065 6032 MDESUMMARY
2795 2066 4473 TY4OCT
2796
2797 2067 0106 COMPERROR
2798 2070 5271 JMP XEMPTYOK
2799 2071 4462 XEMPTYOK, LOG
2800 2072 7315 PERRORS /LOG HARD AND SOFT PARITY ERRORS (IF ANY)
2801 /AC SW 0 = 1 ; HALT ON ERROR
2802 /
2803 2073 1106 TAD COMPERROR
2804 2074 7450 SNA
2805 2075 1775 TAD INSUMCHECK
2806 2076 7650 SNA CLA
2807 2077 5773 JMP JMPICOMPARE
2808 2100 4407 LAS
2809 2101 7710 SPA CLA
2810 2102 4456 HLT6, HLT
2811 2103 5773 JMP JMPICOMPARE
2812 /STOP THE PRESENT TEST AT COMPLETION IF AC SW 1 = 1
2813 /
2814 /...AND PRINT THE MESSAGE "END OF TEST @ RUNTIME"
2815 /
2816 2104 2104 XSTOP, .
2817 2105 4452 DONE
2818 2106 5704 JMP I XSTOP
2819 2107 2304 ISZ XSTOP
2820 /RESET (EPASS) = 7777 MEANS NEW PASS
2821 /
2822 2110 7240 STA
2823 2111 3107 DCA EPASS
2824 2112 1132 TAD PASSINPROGRESS
2825 2113 7700 SMA CLA
2826 2114 1372 TAD (7500)
2827 2115 1371 TAD (5500)
2828 2116 3334 DCA MX
2829 2117 3132 DCA PASSINPROGRESS
2830 2120 1370 TAD (PASSES)
2831 2121 4767 JMS LOGCOMMON
2832 /*****
2833 /CONSOLE
2834 /*****
2835
2836 2122 5766 JMP PASMES /GO TO LOCATION 753 TO DETERMIND
2837 /WHAT TO PRINT FOR A PASS
2838 2123 4407 PASSRETURN, LAS
2839 2124 0365 AND (SW1)
2840 2125 7650 SNA CLA
2841 2126 5332 JMP HLT10+1
```

```
2842 2127 4463 PRINT
2843 2130 5615 MEOT
2844 /RESET THE CONSTANTS OF "PATR1" AND "PATR2" TO GENERATE A NEW RANDOM
2845 /PATTERN (IF THE PATTERN SELECTION IS 0 THAT IS)
2846 /
2847 2131 4456 HLT10, HLT
2848 2132 4764 CSPASRETURN, JMS PATSAVE
2849 2133 5704 JMP I XSTOP
2850 /PRINT A " * " IF AN ERROR (FREE) PASS
2851 /PRINT A " - " IF AN ERROR (THIS) PASS
2852 /
2853 2134 5200 MX, TEXT "*"
2854 /
2855 /
2856 /
2857 2135 2135 XSETUP, .
2858 2136 1171 TAD TTYBUSY
2859 2137 7640 SZA CLA
2860 2140 5336 JMP .-2
2861 2141 1363 TAD (ANDRETURN)
2862 2142 3762 DCA XPRINT
2863 2143 1735 TAD I XSETUP
2864 2144 3357 DCA XANDRETURN
2865 2145 2335 ISZ XSETUP
2866 2146 5735 JMP I XSETUP
2867 /
2868 /AND RETURN TO HERE WAITING FOR ENTIRE NUMERICAL OUTPUT
2869 /
2870 2147 1171 ANDRETURN, TAD TTYBUSY
2871 2150 7640 SZA CLA
2872 2151 5347 JMP .-2
2873 /
2874 /THEN EXIT FROM HERE FOR MAIN LINE CODE
2875 /
2876 2152 1757 THENEXIT, TAD I XANDRETURN
2877 2153 3357 DCA XANDRETURN
2878 2154 3171 DCA TTYBUSY
2879 2155 6001 ION
2880 2156 5757 JMP I XANDRETURN
2881 2157 2157 XANDRETURN, .
2882 2162 3227
2883 2163 2147
2884 2164 1006
2885 2165 2000
2886 2166 1000
2887 2167 4400
2888 2170 6350
2889 2171 5500
2890 2172 7500
2891 2173 1600
2892 2174 3605
2893 2175 1763
2894 2176 1607
2895 2177 1617
2896 2200
```

```
2896 /SEQUENCE TO THE NEXT AVAILABLE DISKETTE
2897 /
2898 2200 2200 XGETUNIT,
2899 2201 1272 TAD UNITZ
2900 2202 3173 DCA USTART / STARTING UNIT
2901 2203 3272 DCA UNITZ /CLEAR FOR A NEW DISKETTE
2902 2204 1271 TAD WUNITS /WORKING UNIT COUNTER
2903 2205 7450 SNA
2904 2206 1270 TAD UNITS /EXHAUSTED ALL DISKETTES ; RESET
2905 2207 3271 DCA WUNITS
2906 2210 3267 DCA POLL /CLEAR POLLER
2907 2211 7120 STL /START
2908 2212 1267 NEXT, TAD POLL
2909 2213 7010 RAR /NEXT
2910 2214 3267 DCA POLL
2911 2215 1267 TAD POLL
2912 2216 7430 SZL /DISKETTE
2913 2217 5240 JMP JMS202 /NO UNITS AVAILABLE ; CATASTROPHIC
2914 2220 0271 AND WUNITS
2915 2221 7450 SNA
2916 2222 2272 ISZ UNITZ /ACTIVE DISKETTE
2917 2223 7450 SNA
2918 2224 5212 JMP NEXT /TRY AGAIN
2919 /
2920 2225 3273 /A DISKETTE IS AVAILABLE AND SELECTED FOR OPERATIONS
2921 2226 1273 DCA UNITX /A CODED VERSION OF UNIT
2922 2227 7040 CMA /...DELETE FROM
2923 2230 0271 AND WUNITS /...AVAILABLE UNIT LIST (WUNITS)
2924 2231 3271 DCA WUNITS /...AND CREATE NEW LIST
2925 2232 1272 TAD UNITZ
2926 2233 7106 CLL RTL
2927 2234 7006 RTL /BIT 7 OF COMMAND REGISTER
2928 2235 3274 DCA UNIT /FOR COMMAND REGISTER LOAD LATER
2929 2236 5600 JMP I XGETUNIT
2930 /
2931 /
2932 /ENTRY TO THIS POINT MAY BE FROM SUBROUTINE XDELETE, IF SO-
2933 /NO DRIVES REMANE SELECTABLE THEREFORE, IF ENTRY INTO XGETUNIT WAS
2934 /FROM SA-200, OR SA-201 (INITIALIZATION OF THE PROGRAM), THEN DO NOT
2935 /DUMP THE LOGS-BUT DO JMP AUTORESTART
2936 /
2937 /A MAXIMUM OF 4 AUTO RESTARTS ARE PERMITTED PRIOR TO AN UNRECOVERABLE
2938 /PROCESSOR HLT INSTRUCTION FORCING THE OPERATOR TO MANUALLY RESTART
2939 /
2940 /1 OR ALL SELECTED DISKETTE DRIVES MAY HAVE FOR SOME REASON BECOME DESELECTED,
2941 /THEREFORE THE PROGRAM WILL TRY TO RESTART USING THE TEST PARAMETERS
2942 /PREVIOUSLY SELECTED AT SA-200
2943 /
2944 /IN SUMMARY, RESTART IF ANY ONE OF THE FOLLOWING:
2945 /
2946 / (1) HARD PARITY ERROR
2947 / (2) A SELECTED DRIVE BECAME DESELECTED
2948 / (3) UNEXPECTED RX01 INTERRUPT REQUEST
2949 / (4) MISSING ERROR FLAG
2950 / (5) LOG-COUNTER OVERFLOW
```

```
2951 / (6) DEVICE TEST HUNG
2952 /
2953 2237 3275 RS, DCA XDELUNIT
2954 /
2955 /IF ENTRY TO HERE WAS FROM THE AUTOMATIC UNIT SCAN
2956 /THEN DO NOT PRINT THE STATISTICAL REPORT
2957 /
2958 2240 1377 JMS202, TAD (-XAUTO)
2959 2241 1275 TAD XDELUNIT
2960 2242 7650 SNA CLA
2961 2243 5246 JMP .+3
2962 2244 4776 JMS S202
2963 /
2964 /THE LABEL "XNONE" MUST RESIDE BECAUSE OF REFERENCES MADE FROM "XAUTO"
2965 /
2966 2245 5250 XNONE, JMP .+3
2967 /
2968 2246 4463 PRINT
2969 2247 5504 MNOTREADY
2970 2250 4463 PRINT
2971 2251 6336 MIDENTIFICATION
2972 2252 7340 CLL STA
2973 2253 7006 RTL
2974 2254 1103 TAD ARESTARTS
2975 2255 7750 SPA SNA CLA
2976 2256 5262 JMP .+4
2977 2257 4463 PRINT
2978 2260 5525 MNOGONOMORE
2979 2261 4456 HLTS, HLT
2980 2262 4463 PRINT
2981 2263 5516 MRS
2982 2264 2103 ISZ ARESTARTS
2983 2265 4450 INIT
2984 2266 5775 JMP AUTORESTART
2985 2267 0000 POLL, 0 /DISKETTE POLL
2986 2270 6000 UNITS, 6000 /AVAILABLE UNIT LIST (MAX SYS CONFIGURATION)
2987 2271 0000 WUNITS, 0 /CODED WORKING UNIT LIST (UNITS YET TO BE EXERCISED)
2988 /
2989 /UNITZ ; UNIT 1 LOOKS LIKE 0001
2990 /UNITX ; UNIT 1 LOOKS LIKE 2000
2991 /UNIT ; UNIT 1 LOOKS LIKE 0020 (RX01 COMMAND WORD BIT 7)
2992 /
2993 2272 0000 UNITZ, 0 /ACTIVE DISKETTE
2994 2273 0000 UNITX, 0 /ACTIVE DISKETTE IN CODED FORM
2995 2274 0000 UNIT, 0 /A CODED VERSION OF UNIT 2 (FOR COMMAND REGISTER LOAD)
2996 /
2997 /DELETE (UNITX) FROM (UNITS)
2998 /
2999 /...AND PRINT A MESSAGE TO THE OPERATOR INFORMING HIM OF THE MOST RECENT
3000 /DISKETTE DELETION...IF THE ENTRY INTO "XDELUNIT" WAS NOT FROM THE "AUTO"
3001 /DISKETTE SCAN (DISKETTE INITIALIZE AT BEGINNING OF PROGRAM)
3002 /
3003 /...AND SET (SECTORS), AND (TRACKS) = 7777
3004 /
3005 2275 2275 XDELUNIT, .
```

```
3006 2276 1273 TAD UNITX
3007 2277 7040 CMA
3008 2300 0270 AND UNITS
3009 2301 3270 DCA UNITS
3010
3011 /THIS UNIT IS DELETED ; INFORM THE OPERATOR, BUT
3012 /IF THIS UNIT HAS BEEN DELETED BECAUSE IS IS NOT SELECTABLE
3013 /DOOR CLOSED WITH DISKETTE INSERTED) AND THIS CONDITION WAS
3014 /DETECTED BY THE PROGRAM WHILE SCANNING THE BUS FOR ALL SELECTABLE
3015 /DISKETTE DRIVES TO PERFORM APPLICABLE TESTING, THEN DO NOT INFORM
3016 /THE OPERATOR BECAUSE THIS IS/MAY BE A LEGAL CONDITION
3017 /
3018 2302 1377 TAD (-XAUTO)
3019 2303 1275 TAD XDELUNIT /RETURN ADDRESS
3020 2304 7650 SNA CLA
3021 2305 5325 JMP NOINFORM /ENTRY WAS FROM THE AUTO DISKETTE SCAN
3022 /
3023 2306 4463 PRINT
3024 2307 6042 MUNIT
3025 2310 4473 TY4OCT /ONLY OCTAL VALUES WILL BE PRINTED
3026 /REPLACES TY8DEX.
3027 2311 2272 UNITZ
3028 2312 4463 PRINT
3029 2313 6054 MDELETE
3030 2314 1270 TAD UNITS
3031 2315 7650 SNA CLA
3032 2316 5240 JMP JMS202
3033 /ALSO PRINT THE DRIVES REMAINING SELECTED (IF ANY)
3034 /
3035 2317 4776 JMS S202
3036 2320 4464 PRINTDRIVESELECTED
3037 /AND SET (SECTORS) AND (TRACKS) = 7777 TO ABORT TEST ON THIS DRIVE
3038 /
3039 2321 7240 STA
3040 2322 3135 DCA SECTORS
3041 2323 7240 STA
3042 2324 3160 DCA TRACKS
3043 /IF ALL THE UNITS HAVE BEEN DESELECTED THEN DO NOT PRINT THE INTERUM REPORT
3044 /HERE. AN INTERUM REPORT WILL BE PRINTED WITHIN THE SUBROUTINE "XGETUNIT"
3045 /
3046 2325 1270 NOINFORM, TAD UNITS
3047 2326 7650 SNA CLA
3048 2327 5240 JMP JMS202
3049 2330 5675 JMP I XDELUNIT
3050 /
3051 /PRINT ON THE TELEPRINTER THE "DRIVES SELECTED" VIA 200, OR 201
3052 /
3053 2331 2331 XDRIVESELECTED, .
3054 2332 4463 PRINT
3055 2333 5470 MDISKETTE
3056 /IF THERE NO UNITS SELECTABLE, THEN PRINT (NONE)
3057 /
3058 2334 1270 TAD UNITS
3059 2335 7640 SZA CLA
3060 2336 5344 JMP MOREDRIVESELECTED
```

```
3061 2337 4463 PRINT
3062 2340 5446 MNONE
3063 2341 5731 JMP I XDRIVESELECTED
3064 2342 4463 XMOREDRIVESELECTED, PRINT
3065 2343 5502 MCOMMA
3066 2344 4455 MOREDRIVESELECTED, GETUNIT
3067 2345 4473 TY4OCT /ONLY OCTAL VALUES WILL BE PRINTED
3068 /REPLACES TY8DEX.
3069 2346 2272 UNITZ
3070 2347 4452 DONE
3071 2350 5342 JMP XMOREDRIVESELECTED
3072 2351 5731 JMP I XDRIVESELECTED
3073 /ROUTINE TO WAIT FOR SKIP ON AN IOT. IF SKIP DOES NOT OCCUR
3074 /THE ROUTINE WILL PRINT PC POINT IN ERROR AND GO BACK ABOUT ITS
3075 /BUSINESS.
3076 /
3077 2352 0000 XWAIT, 0
3078 2353 1752 TAD I XWAIT /GET IOT TO EXECUTE
3079 2354 3357 DCA IOTWAT
3080 2355 1116 TAD KM40 /WILL LOOP FOR ABOUT 180 MSEC.
3081 2356 3111 DCA HANGER
3082 2357 4456 IOTWAT, HLT /REPLACED WITH IOT TO EXECUTE.
3083 2360 7410 SKP /DID NOT GET A SKIP YET.
3084 2361 5370 JMP WATEX /GOT THE SKIP, UPDATE RETURN.
3085 2362 2164 ISZ H1
3086 2363 5357 JMP IOTWAT /DID NOT TIME OUT.
3087 2364 2111 ISZ HANGER
3088 2365 5357 JMP IOTWAT
3089 2366 1352 TAD XWAIT /GET ERROR PC
3090 2367 5774 JMP HUNGUP
3091 2370 2352 WATEX, ISZ XWAIT
3092 2371 5752 JMP I XWAIT
3093 /*****
3094 /*****
3095 2374 5200
3096 2375 0247
3097 2376 4434
3098 2377 7473
3099 2400
3100 PAGE
3101 /TEMPORARILY LOCK THE COUNTERS AT -1 FOR AN INTERUM DUMP
3102 /
3103 /THE ADDRESS PARAMATERS ARE PASSED VIA " I LOCK"
3104 /
3105 /FORM: LOCK; LSB; MSB (OR K7777 IF NO MSB)
3106 /
3107 XLOCK, .
3108 TAD I XLOCK
3109 ISZ XLOCK
3110 DCA XXX
3111 STA
3112 DCA I XXX
3113 TAD I XLOCK
3114 DCA YYY
3115 STA
3116 DCA I YYY
```

```
3115 2412 5777" JMP RS
3116 /INITIALIZE THE NUMBER OF TRACKS ACCESSED VIA THE DIFFERENCE BETWEEN
3117 /THE CONTENTS OF PROGRAM LOCATIONS " OD " AND " ID ".
3118 /
3119 2413 2413 XINITTRACKS, .
3120 2414 2132 ISZ PASSINPROGRESS
3121 2415 1033 TAD ID
3122 2416 7040 CMA
3123 2417 1032 TAD OD
3124 2420 3160 DCA TRACKS
3125 2421 1160 TAD TRACKS
3126 2422 7041 CIA
3127 2423 3161 DCA TTRACKS
3128 2424 5613 JMP I XINITTRACKS
3129 / OD (OUTSIDE DIAMETER) ACTUATOR POSITION INITIALIZED TO (0)
3130 /
3131 / ID (INSIDE DIAMETER) ACTUATOR POSITION INITIALIZED TO 114 (76 DECIMAL)
3132 /
3133 / " XGETATRACK " WILL GET A TRACK VALUE BETWEEN THE LIMITS OF THE CONTENTS OF
3134 /PROGRAM LOCATION OD (MIN 0), AND THE CONTENTS OF ID (MAX 114).
3135 /
3136 /GET A DISKETTE TRACK TO BE (AC) WITHIN IOT LCD-B
3137 /
3138 / IF THIS IS THE " FIRSTMOVE ", (START) IS NOT APPLICABLE HERE, BUT
3139 / WILL BECOME APPLICABLE WITHIN SUBROUTINE " XGETASECTOR ".
3140 /
3141 2425 2425 XGETATRACK, .
3142 2426 1144 TAD TARGET /PRESENT ACTUATOR POSITION (FROM PREVIOUS LCD-B)
3143 2427 3140 DCA START /BECOMES STARTING ACTUATOR POSITION
3144 2430 1376 TAD (70)
3145 2431 0145 AND TESTP
3146 2432 7110 CLL RAR
3147 2433 7012 RTR
3148 2434 1375 TAD (TAD SEQ)
3149 2435 3236 DCA ,+1
3150 2436 1242 TAD SEQ
3151 2437 3241 DCA ,+2
3152 2440 5641 RESEQUENCE, JMP I ,+1
3153 2441 2452 SEQRANDOM
3154 /TRACK ACCESS SEQUENCE IS SELECTED VIA AC SWITCHES 6,7,8 AT L/S 200
3155 /
3156 / 0 - RANDOM
3157 / 1 - INCREMENTAL OD TO ID
3158 / 2 - DECREMENTAL ID TO OD
3159 / 3 - COMBINATION OF SEQ 0, AND SEQ 1 (INC/DEC)
3160 / 4 - BOUNCE ID TO OD ONLY
3161 / 5 - BOUNCE: (ID, OD ; ID-1, OD+1 ; ...ETC TO 47, 45)
3162 / 6 - STROBE: (ID, OD ; ID-1, OD ; ...ETC TO 1, 0)
3163 / 7 -
3164 /
3165 2442 2452 SEQ, SEQRANDOM
3166 2443 2470 SEQINC
3167 2444 2501 SEQDEC
3168 2445 2632 SEQID
3169 2446 2654 SEQABOUNCE
```

```
3170 2447 2545 SEQBBOUNCE
3171 2450 2600 SEQSTROBE
3172 2451 0405 NOTEST
3173 /RANDOM ACTUATOR ACCESS
3174 /
3175 2452 1266 SEQRANDOM, TAD SEQR1
3176 2453 3774" DCA R1
3177 2454 1267 TAD SEQR2
3178 2455 3773" DCA R2
3179 2456 4772" JMS RANGEN
3180 2457 0371 AND (177)
3181 2460 3144 DCA TARGET
3182 2461 1774" TAD R1
3183 2462 3266 DCA SEQR1
3184 2463 1773" TAD R2
3185 2464 3267 DCA SEQR2
3186 2465 5312 JMP XSEQ
3187 2466 1234 SEQR1, 1234
3188 2467 0765 SEQR2, 0765
3189 /
3190 /INCREMENTAL ACTUATOR ACCESS (OD INCREMENTALLY TO ID)
3191 /
3192 2470 1161 SEQINC, TAD TTRACKS
3193 2471 1160 TAD TRACKS
3194 2472 7640 SZA CLA
3195 2473 5276 JMP ,+3
3196 2474 1032 TAD OD
3197 2475 5311 JMP DCATARGET
3198 2476 1144 TAD TARGET
3199 2477 7001 IAC
3200 2500 5311 JMP DCATARGET
3201 /DECREMENTAL ACTUATOR ACCESS (ID TO OD)
3202 /
3203 2501 1161 SEQDEC, TAD TTRACKS
3204 2502 1160 TAD TRACKS
3205 2503 7640 SZA CLA
3206 2504 5307 JMP ,+3
3207 2505 1033 TAD ID
3208 2506 5311 JMP DCATARGET
3209 2507 1144 TAD TARGET
3210 2510 1113 TAD K7777
3211 2511 3144 DCATARGET, DCA TARGET
3212 /
3213 /PREVIOUSLY AT L/S THE FOLLOWING CONDITION WAS TRUE
3214 /
3215 / 0 <= (OD) <= (ID) <= 32
3216 /
3217 /THEREFORE TEST FOR THE CONDITION
3218 /
3219 / (TARGET) <= (ID)
3220 /
3221 2512 1033 XSEQ, TAD ID
3222 2513 7041 CIA
3223 2514 1144 TAD TARGET
3224 2515 7740 SMA SZA CLA
```

```
3225      2516 5240      JMP RESEQUENCE
3226      /AND TEST FOR THE CONDITION
3227      /
3228      /      (OD) <= (TARGET)
3229      /
3230      2517 1144      TAD TARGET
3231      2520 7041      CIA
3232      2521 1032      TAD OD
3233      2522 7740      SMA SZA CLA
3234      2523 5240      JMP RESEQUENCE
3235      /
3236      /      (TARGET) >= (OD)
3237      /
3238      / 2ND TEST ; (TARGET) MUST NOT = THE "VIRGIN " TRACK # 46 (38 DECIMAL)
3239      /
3240      / ; RESET TO 0
3241      /
3242      /      TAD (-46); TAD TARGET; SNA CLA; DCA TARGET
3243      /
3244      2524 5625      JMP I XGETATRACK
3245      2525 4472      TAB60, TAB
3246      2526 0002      2
3247      2527 4475      TYROCT
3248      2530 6350      PASSES
3249      /      PASSES+1      /NOT USED
3250
3251      2531 5770      JMP NOTICK
3252
3253      2532 3725      MSDNUNEXPECTED, TEXT "_UNEXPECTED RX01 IRQ"
3254      2533 1605
3255      2534 3020
3256      2535 0503
3257      2536 2405
3258      2537 0440
3259      2540 2230
3260      2541 6061
3261      2542 4011
3262      2543 2221
3263      2544 0000
3264
3265      /BOUNCE ; ID TO OD
3266      /
3267      /THEREFORE 76 (NOT 77) TRACKS ARE TESTED
3268      /
3269      2545 1161      SEQBBOUNCE,TAD TTRACKS
3270      2546 1160      TAD TRACKS
3271      2547 7640      SZA CLA
3272      2550 5355      JMP Q40D
3273
3274      /FIRST ENTRY INTO SEQUENCE # 4
3275      /
3276      /IF (TRACKS) = [ (ID)-(OD) ] IS A NEGATIVE ODD THEN INCREMENT (TRACKS)
3277      /
3278      2551 7201      CLA IAC
3279      2552 0160      AND TRACKS
3280      2553 7640      SZA CLA
3281      2554 2160      ISZ TRACKS
```

```
3270      /IF (TRACKS) = -ODD ; BOUNCE TO OUTSIDE DIAMETER, BUT
3271      /
3272      /IF (TRACKS) = -EVEN ; BOUNCE TO INSIDE DIAMETER
3273      /
3274      2555 7201      Q40D, CLA IAC
3275      2556 0160      AND TRACKS
3276      2557 7650      SNA CLA
3277      2560 5767      JMP Q46ID
3278      2561 7240      STA
3279      2562 1161      TAD TTRACKS
3280      2563 1160      TAD TRACKS
3281      2564 7110      CLL RAR
3282      2565 5766      JMP Q460D
3283      /
3284      2566 2627
3285      2567 2621
3286      2570 4526
3287      2571 0177
3288      2572 3333
3289      2573 3350
3290      2574 3347
3291      2575 1242
3292      2576 0070
3293      2577 2237
3294      2600
3295      PAGE
3296      /
3297      // (TRACKS) = -EVEN ; THEREFORE THE BOUNCE IS TO THE INSIDE DIAMETER
3298      /
3299      /Q4ID, TAD TTRACKS; TAD TRACKS; CLL RAR; CIA; TAD ID; DCA TARGET; JMP XSEQ
3300      /STROBE ID, OD ; ID-1, OD ; ID-2, OD ; ...ETC...
3301      /
3302      2600 1161      SEQSTROBE, TAD TTRACKS
3303      2601 1160      TAD TRACKS
3304      2602 7640      SZA CLA
3305      2603 5214      JMP Q60D
3306      /FIRST ENTRY INTO SEQUENCE # 6
3307      /
3308      2604 1160      TAD TRACKS
3309      2605 7101      CLL IAC
3310      2606 7004      RAL
3311      2607 3160      DCA TRACKS
3312      2610 1160      TAD TRACKS
3313      2611 7041      CIA
3314      2612 3161      DCA TTRACKS
3315      2613 5221      JMP Q46ID
3316      /
3317      / IF (TARGET) = (0D), THEN STROBE TO INSIDE DIAMETER
3318      /
3319      2614 1144      Q60D, TAD TARGET
3320      2615 7041      CIA
3321      2616 1032      TAD OD
3322      2617 7640      SZA CLA
3323      2620 5227      JMP Q460D
3324      /
3325      /
```

```
3324 /
3325 2621 1161 Q46ID, TAD TTRACKS
3326 2622 1160 TAD TRACKS
3327 2623 7110 CLI RAP
3328 2624 7041 CIA
3329 2625 1033 TAD ID
3330 2626 7410 SKP
3331 2627 1032 Q46OD, TAD OD
3332 2630 3144 DCA TARGET
3333 2631 5777* JMP XSEQ
3334 / ***** THE RTC IS REQUESTING SERVICE *****
3335 /
3336 / OD+1 INCREMENTALLY TO ID; ID-1 DECREMENTALLY TO OD
3337 /
3338 2632 1161 SEQID, TAD TTRACKS
3339 2633 1160 TAD TRACKS
3340 2634 7640 SZA CLA
3341 2635 5245 JMP XSEQ2
3342 2636 1160 TAD TRACKS
3343 2637 7104 CLL RAL
3344 2640 1376 TAD (2)
3345 2641 3160 DCA TRACKS / (TRACKS X 2)-2 = 152(MAX VAL)
3346 2642 1160 TAD TRACKS
3347 2643 7041 CIA
3348 2644 3161 DCA TTRACKS
3349 /INCREMENT IF (TRACKS) < [ (ID)-(OD) ]
3350 /DECREMENT IF (TRACKS) => [ (ID)-(OD) ]
3351 2645 1032 XSEQ2, TAD OD
3352 2646 7041 CIA
3353 2647 1033 TAD ID
3354 2650 1160 TAD TRACKS
3355 2651 7700 SNA CLA
3356 2652 5775* JMP SEQDEC / ID TO OD
3357 2653 5774* JMP SEQINC / OD TO ID
3358 /
3359 /BOUNCE; ID,OD ONLY
3360 /
3361 2654 1161 SEQABOUNCE, TAD TTRACKS
3362 2655 1160 TAD TRACKS
3363 2656 7640 SZA CLA
3364 2657 5265 JMP XSEQ3
3365 2660 7344 CLL STA RAL
3366 2661 3160 DCA TRACKS
3367 2662 1160 TAD TRACKS
3368 2663 7041 CIA
3369 2664 3161 DCA TTRACKS
3370 2665 1144 XSEQ3, TAD TARGET
3371 2666 7041 CIA
3372 2667 1032 TAD OD
3373 2670 7650 SNA CLA
3374 2671 1033 TAD ID
3375 2672 7450 SNA
3376 2673 1032 TAD OD
3377 2674 3144 DCA TARGET
3378 2675 5777* JMP XSEQ
```

```
3379 /*****
3380 /
3381 /TYPE 4 OCTAL
3382 /
3383 2676 2676 XTY4OCT, .
3384 2677 7410 SKP
3385 2700 3171 DCA TTYBUSY /INITIALIZE TTYBUSY INDICAOR,
3386 2701 4467 SETUP
3387 2702 2676 XTY4OCT
3388 2703 1676 TAD I XTY4OCT
3389 2704 2276 ISZ XTY4OCT
3390 2705 3360 DCA XOCTAL /FOR " OCTAL " ADDRESS
3391 2706 1760 TAD I XOCTAL
3392 2707 3360 DCA XOCTAL /OCTAL
3393 2710 7346 CLL STA RTL / -3
3394 2711 1113 TAD K7777 / -1
3395 2712 3361 DCA DIGITS
3396 2713 7346 CLL STA RTL / -3
3397 2714 3363 DCA SHIFTS
3398 2715 1360 TAD XOCTAL
3399 2716 7100 XSHIFT, CLL
3400 2717 7510 SPA
3401 2720 7020 CML
3402 2721 7004 RAL
3403 2722 2363 ISZ SHIFTS
3404 2723 5316 JMP XSHIFT
3405 2724 3360 DCA XOCTAL /NEW
3406 2725 1360 TAD XOCTAL
3407 2726 0131 AND K0007
3408 2727 7450 SNA /OCTAL MASK
3409 2730 5340 JMPDIG, JMP ISZDIG /DO NOT PRINT LEADING ZEROS.
3410 2731 3362 DCA XXDMP /STORE NUMBER TO BE PRINTED
3411 2732 1127 TAD K7000
3412 2733 3330 DCA .-3 /NOP JMP ISZDIG. LEADING ZEROS WILL NOT BE PRINTED
3413 2734 1362 TAD XXDMP /RETURN VALUE TO BE PRINTED,
3414 2735 1373 TAD (260) /FOR ASCII COMPONENT
3415 2736 4474 TYPEIT
3416 2737 2364 ISZ CCNT /INDICATES A CHARACTER HAS BEEN PRINTED
3417 2740 2361 ISZDIG, ISZ DIGITS /INDEX DIGIT COUNT
3418 2741 5313 JMP SHIFT
3419 2742 2124 ISZ XCNT /TY8OCT?
3420 2743 5300 JMP XTY4OCT+2 /YES
3421 2744 1364 TAD CCNT
3422 2745 7650 SNA CLA /PRINT ONLY A ZERO??
3423 2746 5355 JMP ZERO /YES
3424 2747 7340 CLL CLA CMA
3425 2750 3124 DCA XCNT /INIT COUNTER
3426 2751 3364 DCA CCNT
3427 2752 1372 TAD (JMP ISZDIG) /ESTABLISH FIRST TIME SWITCH,
3428 2753 3330 DCA JMPDIG
3429 2754 5771* JMP THENEXIT
3430 2755 1373 ZERO, TAD (260)
3431 2756 4474 TYPEIT
3432 2757 5347 JMP .-10
3433 2760 0000 XOCTAL, 0 / " OCTAL " FOR TYPEOUT
```

```
3434 2761 7775 DIGITS, -3
3435 2762 0000 XXDMP, 0
3436 2763 7775 SHIFTS, -3
3437 2764 0000 CCNT, 0
3438 /*****
3439 2771 2152
3440 2772 5340
3441 2773 0260
3442 2774 2470
3443 2775 2501
3444 2776 0002
3445 2777 2512
3446 3000
PAGE
3446 /
3447 /INITIALIZE THE NUMBER OF SECTORS AVAILABLE TO ACCESS (PER TRACK) VIA THE
3448 /DIFFERENCE BETWEEN THE CONTENTS OF PROGRAM LOCATIONS " FIRST " AND " LAST ".
3449 /
3450 3000 3000 XINITSECTORS, .
3451 3001 1035 TAD LAST
3452 3002 7040 CIA
3453 3003 1034 TAD FIRST
3454 3004 3135 DCA SECTORS
3455 3005 3270 DCA XSTARGET
3456 3006 5600 JMP I XINITSECTORS
3457 /
3458 /GET A SECTOR
3459 /
3460 /SECTOR ACCESS 1-32 (OCTAL)
3461 /
3462 3007 3007 XGETASECTOR, .
3463 /
3464 /SET (SSTART)
3465 /
3466 3010 7301 XXGETASECTOR, CLL CLA IAC
3467 3011 3146 DCA IF
3468 3012 1133 TAD RDC / (RDC) = 0 IF READ VERIFY, 4000 IF WRITE, 1 IF READ
3469 3013 7450 SNA
3470 3014 2146 ISZ IF / + 1 READ AND PROGRAM VERIFY
3471 3015 7710 SPA CLA
3472 3016 2146 ISZ IF / +1 WRITE
3473 3017 7301 CLL CLA IAC
3474 3020 7004 RAL
3475 3021 0172 AND STSTP
3476 3022 7650 SNA CLA
3477 3023 5226 JMP .+3
3478 3024 2146 ISZ IF / +1 FOR 8 BIT MODE
3479 3025 2146 ISZ IF / +1 FOR 8 BIT MODE
3480 /
3481 /THE INTERLEAVE FACTOR (IF) IS:
3482 /
3483 / 1 +1 IF READ (CRC CHECK)
3484 / 2 +1 IF WRITE
3485 / 3 +1 IF WRITE 8-BIT MODE
3486 / 2 +1 IF READ AND PROGRAM VERIFY
3487 / 4 +1 IF READ AND PROGRAM VERIFY 8-BIT MODE
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3488 / 2 +1 IF READ 8-BIT MODE
3489 /
3490 3026 1270 NEXTSECTOR, TAD XSTARGET
3491 3027 7440 SZA
3492 3030 1146 TAD IF / 1,2, OR 3, OR 4
3493 3031 7001 IAC / +1
3494 3032 3270 DCA XSTARGET
3495 3033 1270 TAD XSTARGET
3496 3034 1377 TAD (-33)
3497 3035 7510 SPA
3498 3036 5244 JMP OKSTARGET / < 33
3499 3037 7640 SZA CLA /SKIP IF = 33
3500 3040 7240 STA / > 33
3501 3041 1376 TAD (-31)
3502 3042 1270 TAD XSTARGET
3503 3043 3270 DCA XSTARGET
3504 3044 7200 OKSTARGET, CLA
3505 3045 1270 TAD XSTARGET
3506 3046 3137 DCA STARGET / "TARGET SECTOR"
3507 /
3508 /PREVIOUSLY AT L/S THE FOLLOWING CONDITION WAS TRUE
3509 /
3510 / 0 < (FIRST) <= (LAST)
3511 /
3512 /THEREFORE TEST FOR THE CONDITION
3513 /
3514 / (STARGET) <= (LAST)
3515 /
3516 3047 1035 TAD LAST
3517 3050 7041 CIA
3518 3051 1137 TAD STARGET
3519 3052 7740 SMA SZA CLA
3520 3053 5226 JMP NEXTSECTOR
3521 /
3522 /
3523 /AND FOR THE CONDITION
3524 /
3525 / (FIRST) <= (STARGET)
3526 /
3527 3054 1137 PAGE1, TAD STARGET
3528 3055 7041 CIA
3529 3056 1034 TAD FIRST
3530 3057 7740 SMA SZA CLA
3531 3060 5226 JMP NEXTSECTOR
3532 /FORMAT (XTARGET) BITS 0-6 TRACK ; AND BITS 7-11 SECTOR
3533 /
3534 3061 1144 TAD TARGET
3535 3062 7104 CLL RAL
3536 3063 7006 RTL
3537 3064 7006 RTL
3538 3065 1137 TAD STARGET
3539 3066 3162 DCA XTARGET
3540 3067 5607 JMP I XGETASECTOR
3541 /
3542 3070 0000 XSTARGET, 0 / 1 TO 32
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3543 /
3544 3071 1153 WHAT2, TAD DWSLOG
3545 3072 7650 SNA CLA
3546 3073 5775* JMP WHAT3
3547 3074 1152 TAD R2RETRY
3548 3075 3153 DCA DWSLOG
3549 3076 4162 LOG
3550 3077 7305 DATAERRORS
3551 3100 5775* JMP WHAT3
3552 /
3553 3101 2516 MMUNRECOVERABLE,TEXT "UNRECOVERABLE "
3102 2205
3103 0317
3104 2605
3105 2201
3106 0214
3107 0540
3110 0000

3554 /THIS SUBROUTINE IS ENTERED FROM ALL 3 STARTING ADDRESSES
3555 /
3556 /THIS SUBROUTINE CHECKS FOR OD, ID, FIRST, AND LAST TO BE STANDARD
3557 /
3558 /AND REPORTS A NON-STANDARD MESSAGE IF OTHERWISE
3559 /
3560 /THE STANDARD SELECTIONS ARE: OD = 1, ID = 114, FIRST = 1, LAST = 32
3561 /
3562 3111 3111 CHECK, .
3563 3112 4463 PRINT
3564 3113 6124 MTESTP
3565 3114 4473 TY4OCT
3566 3115 0145 TESTP
3567 3116 4463 PRINT
3568 3117 5611 MCRLF
3569 3120 7240 STA
3570 3121 1032 TAD OD
3571 3122 7640 SZA CLA
3572 3123 5340 JMP NSTANDARD
3573 3124 1033 TAD ID
3574 3125 1374 TAD (-114)
3575 3126 7640 SZA CLA
3576 3127 5340 JMP NSTANDARD
3577 3130 7240 STA
3578 3131 1034 TAD FIRST
3579 3132 7640 SZA CLA
3580 3133 5340 JMP NSTANDARD
3581 3134 1035 TAD LAST
3582 3135 1373 TAD (-32)
3583 3136 7650 SNA CLA
3584 3137 5711 JMP I CHECK
3585 3140 4463 NSTANDARD, PRINT
3586 3141 5717 MOD
3587 3142 4473 TY4OCT
3588 3143 0032 OD
3589 3144 4463 PRINT
3590 3145 5723 MID
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3591 3146 4473 TY4OCT
3592 3147 0033 ID
3593 3150 4463 PRINT
3594 3151 5727 MFIRST
3595 3152 4473 TY4OCT
3596 3153 0034 FIRST
3597 3154 4463 PRINT
3598 3155 5734 MLAST
3599 3156 4473 TY4OCT
3600 3157 0035 LAST
3601 3160 5711 JMP I CHECK
3602
3603 /*****
3604 /CONSOLE
3605 /*****
3606
3607 /THIS ROUTINE IS FOR XKCC LOCATION 5511 IT WILL STORE THE CORRECTED
3608 /8 BIT CHARACTER FROM THE TTY IN LOC CHAR IN FLD 1 FOR THE C8CNTR ROUTINE
3609
3610
3611 3161 0000 C8TST2, 0
3612 3162 1372 TAD (200) /ADD THE 8 TH BIT
3613 3163 6211 CDF 10
3614 3164 3770 DCA I XC8CHAR /STORE IT IN CHAR FLD 1
3615 3165 1770 TAD I XC8CHAR /GET THE CHAR
3616 3166 6201 CDF 0 /RETURN TO CORRECT FIELD
3617 3167 5761 JMP I C8TST2 /EXIT C8TST2
3618 3170 1110 XC8CHAR, C8CHAR
3619 /
3620 3172 0200
3621 3173 7746
3622 3174 7664
3623 3175 1552
3624 3176 7747
3625 3177 7745
3200
3626 PAGE
3627 /
3628 /SUBROUTINE ; TAB
3629 /ENTRY ; TAB; +N
3630 /COMMENT ; PRINT " N " SPACES WHERE N IS VIA INDEXED XTAB
3631 /
3632 3200 3200 XTAB, .
3633 3201 4467 SETUP
3634 3202 3200 XTAB
3635 3203 3226 DCA XTAB /FOR COUNT
3636 3204 7200 XTABL, CLA
3637 3205 1226 TAD XTAB
3638 3206 1600 TAD I XTAB /FOR " N "
3639 3207 3226 DCA XTAB
3640 3210 1305 TAD CHARLINE / # OF CHARACTERS ALREADY TYPED ON THIS LINE
3641 3211 1377 TAD (110) / 72 CHARACTER LINE STANDARD
3642 3212 7041 CIA
3643 3213 1226 TAD XTAB
3644 3214 7550 SPA SNA
3645 3215 5204 JMP XTABL
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3645 3216 7041 CIA
3646 3217 3226 DCA XXTAB
3647 3220 2200 ISZ XTAB
3648 3221 1376 TAD (240)
3649 3222 4474 TYPEIT
3650 3223 2226 ISZ XXTAB
3651 3224 5221 JMP -3
3652 3225 5775 JMP THENEXIT
3653 3226 0000 XXTAB, 0
3654 /
3655 /SUBROUTINE ; PRINT
3656 /ENTRY ;
3657 /COMMENT ; PRINT A " MESSAGE ", AND A <CR><LF> AT EACH _
3658 /
3659 / CALL SYNTAX FOR PRINT
3660 /
3661 / 1. PRINT; MTEXT
3662 /
3663 3227 3227 XPRINT, .
3664 3230 4500 CHEK22 /TEST FOR APT-8
3665 3231 5322 JMP PNTTEXT /ON APT. NOP PRINT
3666 3232 1171 TAD TTYBUSY
3667 3233 7640 SZA CLA
3668 3234 5232 JMP -2
3669 /
3670 3235 1627 TAD I XPRINT / " TEXT"
3671 3236 2227 ISZ XPRINT
3672 3237 3247 DCA MESSAGE /ADDRESS
3673 3240 1647 NUWORD, TAD I MESSAGE
3674 3241 4250 OUTPUT /LEFT BYTE
3675 3242 1647 TAD I MESSAGE
3676 3243 2247 ISZ MESSAGE
3677 3244 4436 BSW
3678 3245 4250 OUTPUT /RIGHT BYTE
3679 3246 5240 JMP NUWORD
3680 3247 0000 MESSAGE,0
3681 3250 4250 OUTPUT=JMS .
3682 3251 0374 XOUTPUT, .
3683 3252 7440 AND (-100) /MASK MS BITS 0-5
3684 3253 5256 SZA
3685 3254 3171 JMP +3
3686 3255 5773 DCA TTYBUSY
3687 3256 1372 JMP PIEXIT
3688 3257 7450 TAD (4100)
3689 3258 5267 SNA
3690 3259 1371 JMP NULINE /
3691 3260 7500 TAD (-4100+2) /CODE 200
3692 3261 7801 SMA
3693 3262 4436 IAC /CODE 300
3694 3263 4474 BSW
3695 3264 5650 TYPEIT
3696 3265 1250 JMP I XOUTPUT
3697 3266 3272 NULINE, TAD XOUTPUT
3698 3267 5276 DCA XTYPEIT
3699 3268 5276 JMP XNULINE

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3700 3272 3272 XTYPEIT, .
3701 3273 4306 JMS TYIASC
3702 3274 2305 ISZ CHARLINE
3703 3275 5672 JMP I XTYPEIT
3704 3276 1370 XNULINE, TAD (215) / <CR>
3705 3277 4306 JMS TYIASC / <LF>
3706 3278 1367 TAD (212)
3707 3279 4306 JMS TYIASC
3708 3280 1366 TAD (-110)
3709 3281 3305 DCA CHARLINE / 72 CHARACTER LINE (NEGATIVE NOTATION)
3710 3282 5672 JMP I XTYPEIT
3711 3283 7670 CHARLINE, -110 / # CHARACTERS PER LINE ARE COUNTED HERE
3712 /
3713 /
3714 3306 3306 TYIASC, .
3715 3307 3013 DCA A13
3716 3308 4500 CHEK22
3717 3309 5322 JMP PNTTEXT /ON APT. EXIT AND CONTINUE.
3718 3310 1013 TAD A13
3719 3311 6046 TLS
3720 3312 7200 CLA
3721 3313 1171 TAD TTYBUSY
3722 3314 7640 SZA CLA
3723 3315 5773 JMP PIEXIT
3724 3316 2171 ISZ TTYBUSY
3725 3317 7410 SKP
3726 3318 2227 PNTTEXT, ISZ XPRINT /UPDATE FOR RETURN
3727 3319 6001 ION
3728 3320 5627 JMP I XPRINT
3729 /IF THE CONTENTS OF A13 = 207 (BELL) THEN EXIT VIA A JMP I XTYPEIT
3730 /SO NOT TO INC CHARLINE FOR THE NONPRINTING BELL CHARACTER
3731 /
3732 3325 6042 XTCF, TCF
3733 3326 1013 TAD A13
3734 3327 1365 TAD (-207)
3735 3328 7650 SNA CLA
3736 3329 5672 JMP I XTYPEIT
3737 3330 5706 JMP I TYIASC
3738 /
3739 /RANDOM NUMBER GENERATOR
3740 / (EXIT IS WITH THE RANDOM # IN THE ACCUMULATOR)
3741 3333 3333 RANGEN, .
3742 3334 7301 CLL CLA IAC
3743 3335 1347 TAD R1
3744 3336 1350 TAD R2
3745 3337 7106 CLL RTL
3746 3338 3347 DCA R1
3747 3339 1350 TAD R2
3748 3340 7012 RTR
3749 3341 1347 TAD R1
3750 3342 3350 DCA R2
3751 3343 1350 TAD R2
3752 3344 5733 JMP I RANGEN
3753 3345 1234 R1, 1234
3754 3346 0765 R2, 0765

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```
3755 /
3756 /ERROR REPORTER FOR APT. INDICATES THE PC AT THE TIME OF THE ERROR.
3757 /
3758 3351 0000 XAERRO, 0
3759 3352 3004 DCA XXX /SAVE ERROR PC
3760 3353 4500 CHEK22
3761 3354 7410 SKP
3762 3355 5751 JMP I XAERRO
3763 3356 6002 IOF
3764 3357 1004 TAD XXX /GET BACK ERROR PC
3765 3360 6201 CDF 00
3766 3361 6272 CIF 70
3767 3362 5530 JMP I K6520
3768 3363 5363 JMP
3769 /SOMETHING WENT WRONG ON
3770 /ON REPORTING ERROR TO APT
3771 /
3772 3365 7571
3773 3366 7670
3774 3367 0212
3775 3370 0215
3776 3371 3702
3777 3372 4100
3778 3373 3473
3779 3374 7700
3780 3375 2152
3781 3376 0240
3782 3377 0110
3783 3400
3784 PAGE
3785 /ENTRY TO THIS POINT WAS CAUSED BY A PROGRAM INTERRUPT REQUEST
3786 /
3787 3400 3300 PI, DCA XAC
3788 3401 7010 RAR
3789 3402 3301 DCA XLINK /SAVE (AC) AND (LINK)
3790 3403 6031 KSF
3791 3404 7410 SKP
3792 3405 5576 JMP I XXXCC /IGNORE KEYBOARD IRQ
3793 3406 6041 TSF
3794 3407 5215 JMP PICLSK
3795 /IF THIS TELEPRINTER FLAG IS EXPECTED (TTYBUSY) = 1
3796 /THEN "JMP XTCF"
3797 /IF NOT THEN "JMP PIEXIT"
3798 /
3799 3410 1171 TAD TTYBUSY
3800 3411 7740 SMA SZA CLA
3801 3412 5777 JMP XTCF
3802 3413 6042 TCF
3803 3414 5273 JMP PIEXIT
3804 /IF (BUSY) = 1, THEN AN RX01 PI IS ALREADY BEING PROCESSED
3805 /
3806 /IF (GOBIT) = 0, THEN THIS DISKETTE IRQ IS UNEXPECTED
3807 /
3808 /DISABLE RX01 INTERRUPT
3809 /
3810 /READ RX01 STATUS REGISTER
3811 /
3812 /
3813 /
3814 /
3815 /
3816 /
3817 /
3818 /
3819 /
3820 /
3821 /
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3862 /
3863 /
```

```
3809 3415 1104 PICLSK, TAD BUSY
3810 3416 7640 SZA CLA
3811 3417 5273 JMP PIEXIT
3812 3420 2104 ISZ BUSY
3813 /REFRESH PROGRAM LOCATION " FORCE " BECAUSE THIS IS (NOT) A FORCED TYPEOUT
3814 /
3815 /IT MAY HOWEVER BE AN RX-ERROR TYPEOUT
3816 /
3817 3421 3776* DCA FORCE
3818 /
3819 3422 6001 ION
3820 /
3821 /SPECIAL PROGRAMMING NOTE:
3822 /
3823 /THE FOLLOWING INSTRUCTION IMMEDIATELY AFTER THE PREVIOUS " ION "
3824 /MUST BE THE IOT TO SKIP ON THE RX DONE FLAG (67X5)
3825 /AND NOT THE PSEUDO INSTRUCTION " SDN " WHICH "JMS XSDN"
3826 /BECAUSE THE PROGRAM WILL (HANG)
3827 /
3828 3423 6755 K67X5B, 6755
3829 3424 5266 JMP UNKNOWN
3830 3425 1165 TAD GOBIT
3831 3426 7650 SNA CLA
3832 3427 5775* JMP SDNUNEXPECTED
3833 3430 4447 INTR /CLEAR RX01 INTERRUPT ENABLE
3834 /
3835 3431 4442 XDRIN
3836 3432 0125 AND K377
3837 3433 3141 DCA ASTATUS
3838 /IF THE RETURN IS TO "AUTOOK" THEN THIS PI IS FROM THE AUTOSCAN AFTER
3839 /([KEY] INIT - THEREFORE DELETED DATA MAY BE SET (OK FOR NOW)
3840 /
3841 3434 1774* TAD RETURN
3842 3435 1373 TAD (-JMPAUTOOK)
3843 3436 7650 SNA CLA
3844 3437 5256 JMP DDIGNORE
3845 /
3846 /THE COMMANDS FILL BUFFER AND EMPTY BUFFER SHOULD NOT ATTRACT DELETED DATA
3847 /
3848 3440 1121 TAD K16
3849 3441 0105 AND COMMAND
3850 3442 7440 SZA /SKIP IF FILL BUFFER (0)
3851 3443 7112 CLL RTR
3852 3444 7640 SZA CLA /SKIP IF EMPTY BUFFER (2)
3853 3445 7301 CLL CLA IAC / 1
3854 3446 0172 AND STSTP
3855 3447 7010 RAR /PUT TO LINK
3856 3450 1372 TAD (100)
3857 3451 0141 AND ASTATUS / A STATUS D,D, MARK
3858 /
3859 /IF (L) = 0 AND (AC) = 0, O.K. - NO D,D, MARK
3860 /
3861 /IF (L) = 0 AND (AC) > 0 (=100), UNEXPECTED D,D,
3862 /
3863 /IF (L) = 1 AND (AC) = 0, D,D, MARK EXPECTED DIDN'T OCCUR
```

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3864      /
3865      /IF (L) = 1 AND (AC) > 0 (=100), O.K. - D.D. MARK OCCURED
3866      /
3867      3452 7430      SZL
3868      3453 7640      SZA CLA      / (L) = 1
3869      3454 7440      SZA      / (L) = 0, OR (L) = 1 AND (AC) > 0
3870      3455 5771*     JMP DDERROR / (L) = 0 AND (AC) > 0 (=100), OR (L) = 1 AND (AC) = 0
3871      3456 4445     DDIGNORE, SER
3872      3457 5261     JMP VERIFY      /RX01 OK - RETURN TO INLINE CODE
3873      3460 5770*     JMP RXERROR
3874      /
3875      /VERIFY THAT THE CONTENTS OF THE A-STATUS REGISTER = 0
3876      /
3877      /WHEN NO RX01 ERROR FLAG EXISTS
3878      /
3879      /NOTE:
3880      /
3881      /THE A-STATUS MAY = 200 (IF ENTRY TO HERE IS FROM THE AUTO SCAN AT "AUTO")
3882      /
3883      /MASK OUT BITS 4 (DRIVE READY); AND 5 (DELETED DATA), AND 9 (INIT DONE)
3884      /
3885      3461 1141     VERIFY, TAD ASTATUS
3886      3462 0367     AND (73)
3887      3463 7640     SZA CLA
3888      3464 5766*     JMP NOSER
3889      3465 5765*     JMP OKRETURN
3890      /
3891      /AN UNKNOWN PROGRAM INTERRUPT OCCURED
3892      /
3893      3466 1364     UNKNOWN, TAD (UNKNOWN)      /ERROR PC.
3894      3467 4427     AERROR      /REPORT ERROR TO APT IF REQUIRED.
3895      3470 4463     PRINT
3896      3471 6327     MUNKNOWN
3897      3472 3104     DCA BUSY
3898      3473 1301     PIEXIT, TAD XLINK
3899      3474 7104     CLL RAL
3900      3475 1300     TAD XAC
3901      3476 6001     ION
3902      3477 5400     JMP I 0
3903      3500 0000     XAC, 0
3904      3501 0000     XLINK, 0
3905      / " LOG ERRORS " (IF ANY)
3906      /
3907      /FORM: LOG; XERROR
3908      /
3909      /WHERE XERROR=
3910      /
3911      /WERRORS      (R1RETRY)
3912      /RERRORS      (R2RETRY)
3913      /DATAERRORS
3914      /DNSERRORS
3915      /SNDEERRORS
3916      /SERRORS      (SRETRY)
3917      /PERRORS      (PRETRY)
3918      /

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3919      /IF (RETRY) = 0      ; LOG "UNRECOVERABLE" (HARD) ERROR
3920      /IF (RETRY) < -12     ; LOG "RECOVERABLE" (SOFT) ERROR
3921      /IF (RETRY) = -12     ; NO ERROR TO LOG
3922      /
3923      /
3924      /PROGRAMMING NOTE: ANY "XERROR" IS RESTRICTED TO A MAGNITUDE OF 4095 DECIMAL
3925      /
3926      /
3927      3502 3502     XLOG, .
3928      3503 1702     TAD I XLOG      /ADDRESS OF LOG
3929      3504 1363     TAD (-WERRORS) /
3930      3505 7110     CLL RAR      /RIGHT JUSTIFIED 1 PLACE
3931      3506 1362     TAD (R1RETRY) /
3932      3507 3327     DCA LSBX1     /CONTAINS ADDRESS OF X-RETRY COUNTER
3933      3510 1727     TAD I LSBX1   /AC CONTAINS CONTENTS OF THAT X-RETRY COUNTER
3934      3511 7450     SNA
3935      3512 5320     JMP UNRECOVERABLE /UNRECOVERABLE ERROR EXISTS
3936      3513 7041     CIA
3937      3514 1134     TAD KRETRY
3938      3515 7450     SNA
3939      3516 5354     JMP LOGGED      /NO ERROR EXISTS OR PREVIOUSLY EXISTED
3940      / DCA TTRETRY      / # OF RETRY RECOVERED AT
3941      3517 7610     CLA SKP
3942      3520 1121     UNRECOVERABLE, TAD K16 / UNRECOVERABLE OFFSET
3943      3521 1702     TAD I XLOG      / TO OBTAIN " XERROR "
3944      3522 1761*     TAD UNITZ      /UNIT OFFSET
3945      3523 3327     DCA LSBX1     /TO WORK FOR INDEX
3946      3524 2727     ISZ I LSBX1
3947      3525 5331     JMP .+4
3948      3526 4461     LOCK
3949      3527 0000     LSBX1, 0
3950      3530 0113     K7777
3951      /
3952      /AN ERROR HAS OCCURED THIS PASS
3953      /
3954      3531 7330     STL CLA RAR
3955      3532 3132     DCA PASSINPROGRESS
3956      3533 1302     TAD XLOG      /POINTS TO TYPE OF ERROR.
3957      3534 4427     AERROR
3958      /LOG TRACK ACCESS FREQUENCY ERROR (ANY ERROR) PER DRIVE PER TRACK
3959      /
3960      /IF A "PARITY ERROR" DO NOT LOG TAFE
3961      /
3962      TAD I XLOG; TAD (-PERRORS); SNA CLA; JMP LOGGED
3963      /LOG TRACK ACCESS FREQUENCY ERROR (ANY ERROR) PER DRIVE PER TRACK
3964      /
3965      TAD UNITZ
3966      /
3967      / DCA LSBX2
3968      TAD (TAFE1-TAFE0) /FOR DISKETTE UNIT OFFSET
3969      / ISZ LSBX2
3970      / JMP .-2
3971      3535 1761*     TAD UNITZ      / 0 OR 1
3972      3536 7640     SZA CLA
3973      3537 1360     TAD (TAFE1-TAFE0)

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3974 3540 1360 TAD (TAFE1-TAFEX)
3975 3541 1144 TAD TARGET
3976 3542 1357 TAD (TAFEX-TAFE1+TAFE)
3977 3543 3347 DCA LSHX2
3978 3544 2747 ISZ I LSHX2
3979 3545 5351 JMP HARDP
3980 3546 4461 LOCK
3981 3547 0000 LSHX2, 0
3982 3550 0113 K7777
3983 /
3984 /IF THIS IS A HARD PARITY ERROR THEN RESTART THE PROGRAM
3985 /
3986 /HARDP, TAD I XLOG; TAD (-PERROS); SZA CLA; JMP LOGGED
3987 3551 1157 HARDP, TAD PRETRY
3988 3552 7650 SNA CLA
3989 3553 5756 JMP RS
3990 3554 2302 LOGGED, ISZ XLOG
3991 3555 5702 JMP I XLOG
3992 3556 2237
3993 3557 6732
3994 3560 0115
3995 3561 2272
3996 3562 0151
3997 3563 0477
3998 3564 3466
3999 3565 3602
4000 3566 1306
4001 3567 0073
4002 3570 3642
4003 3571 3616
4004 3572 0100
4005 3573 7514
4006 3574 3600
4007 3575 1304
4008 3576 3605
4009 3577 3325
4010 3600
4011 /PAGE
4012 /THE CONTENTS OF RETURN ARE SETUP WITHIN THE SUBROUTINES "LCD-A" AND "LCD-B"
4013 /
4014 /TO REPRESENT THE RETURN ADDRESS OF THE INLINE TESTING
4015 /
4016 /
4017 3600 0000 RETURN, 0
4018 3601 2200 ERETURN, ISZ RETURN /INCREMENT FOR ERROR RETURN ADDRESS
4019 /
4020 /ENTRY TO HERE FROM PI SERVICE
4021 /
4022 /NO RX01 ERROR FLAG EXISTS
4023 /
4024 3602 3104 OKRETURN, DCA BUSY
4025 3603 4777 JMS XTICK /NOTIFY APT IF NEED BE.
4026 3604 5600 JMP I RETURN
4027 /ENTRY TO HERE MAY HAVE BEEN FROM:
4028 /
```

```
4028 / (1) XLS - LOAD ADDRESSES 200, OR 201
4029 /
4030 / (2) NOSER - UNEXPECTED DONE FLAG / NO ERROR FLAG
4031 / - THEN RS (RESTART)
4032 /
4033 / (3) COMPARE - DATA NO STATUS ERROR
4034 /
4035 / (4) EMPTYOK - SUMCHECK ERROR W/O DATA COMPARE ERROR OR CRC ERROR
4036 /
4037 / (5) INIT
4038 /
4039 / (6) HUNGUP - DEVICE TEST IS HUNG AT PC;
4040 /
4041 3605 0000 FORCE, 0
4042 3606 2104 ISZ BUSY
4043 3607 5242 JMP RXERROR
4044 3610 7240 XFORCE, STA
4045 3611 1104 TAD BUSY
4046 3612 3104 DCA BUSY
4047 3613 5605 JMP I FORCE
4048 3614 6272 DTYPE, MEDDDIDNOT
4049 3615 6303 MUDDID
4050 /
4051 /A DISKETTE DELETED DATA MALFUNCTION HAS BEEN DETECTED.
4052 /
4053 /*****
4054 /
4055 / IF (AC) = 0 - EXPECTED D.D. DIDN'T OCCUR
4056 /
4057 / IF (AC) = 100 - UNEXPECTED D.D. OCCURED
4058 /
4059 3616 7640 DDERROR, SZA CLA
4060 3617 7001 IAC
4061 3620 3776 DCA DMTYPE
4062 3621 1776 TAD DMTYPE
4063 3622 7640 SZA CLA
4064 3623 1375 TAD (UDCODES-DCODES)
4065 3624 1774 TAD UNITZ
4066 3625 1373 TAD (DCODES)
4067 3626 3232 DCA DDCODE
4068 3627 2632 ISZ I DDCODE
4069 3630 5234 JMP ,+4
4070 3631 4461 LOCK
4071 3632 0000 DDCODE, 0
4072 3633 0113 K7777
4073 3634 1776 TAD DMTYPE
4074 3635 1372 TAD (DTYPE)
4075 3636 3004 DCA XXX
4076 /PROGRAMMING NOTE: "SER" TO CLEAR ACCOMPANYING ERROR FLAG (IF ANY)
4077 /
4078 3637 4445 SER
4079 3640 7000 NOP
4080 3641 1404 TAD I XXX
4081 /
4082 /A DISKETTE ERROR HAS BEEN DETECTED
```

```
4083 /
4084 / (DMTYPE) NOT = 0 IF A D.D. ERROR EXISTS
4085 / (DMTYPE) = 0 IF NO D.D. ERROR EXISTS
4086 /
4087 3642 3776' RXERROR, DCA DMTYPE
4088 3643 1105 TAD COMMAND
4089 3644 3163 DCA ECOMMAND
4090 /FORMAT ERRORS (STATUS B WORD):
4091 /
4092 / 40, 50, (60), 70, 100, 110, 120, 130, (140), 150, 160, 170, (200), (210)
4093 /
4094 /TECHNICAL NOTE:
4095 /
4096 /IF A PARITY ERROR OCCURS WHILE ATTEMPTING TO READ THE B-CODES, OR WHILE
4097 /ATTEMPTING TO READ THE STATUS (COMMANDS #7, #5), THEN THE ORIGINAL ERROR
4098 /WHICH BROUGHT THE PROGRAM TO THIS ERROR SERVICE ROUTINE WILL BE LOST
4099 /
4100 /SPECIAL PROGRAMMING NOTE:
4101 /
4102 /IF THIS IS A FORCED TYPEOUT FROM HUNGUP BECAUSE THE DEVICE TEST IS HUNG
4103 /THEN THIS PROGRAM DOES NOT EVEN READ THE B- AND C- STATUS
4104 /BECAUSE THE PROGRAM COULD GET HUNG WITHIN AN INFINITE LOOP
4105 /BECAUSE A " JMS FORCE " IS ISSUED WITHIN HUNGUP WHICH WAS ENTERED IF
4106 /THE IOT'S SDN OR SER OR STR FAILED TO SKIP WITHIN AN ALLOTTED PERIOD OF TIME
4107 /
4108 /ALSO, AN ERROR MESSAGE IS FORCED EVEN IF SW 3 = 1
4109 /
4110 3645 1205 SAVEBSTATUS, TAD FORCE
4111 3646 1371 TAD (-XHUNG)
4112 3647 7650 SNA CLA
4113 3650 5352 JMP ERROR
4114 /...ALSO, IF ENTRY TO HERE IS FROM (3) / COMPARE / THEN DON'T READ THE
4115 / B-, OR C- STATUS BECAUSE THE FUNCTION EMPTY BUFFER HAS NOT YET COMPLETED
4116 /
4117 3651 1205 TAD FORCE
4118 3652 1370 TAD (-XCOMPARE)
4119 3653 7650 SNA CLA
4120 3654 5352 JMP ERROR
4121 3655 1121 TAD K16
4122 3656 4437 LCD
4123 3657 4502 WAIT
4124 3660 4446 SDN
4125 3661 4445 SER
4126 3662 7000 NOP
4127 3663 4442 XDRIN
4128 3664 0125 AND K377
4129 3665 3142 DCA BSTATUS
4130 3666 1767' SAVECSTATUS, TAD UNIT
4131 3667 1120 TAD K12
4132 3670 4437 LCD
4133 3671 4502 WAIT
4134 3672 4446 SDN
4135 3673 4445 SER
4136 3674 7000 NOP
4137 3675 4442 XDRIN
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4138 3676 0125 AND K377
4139 3677 3143 DCA CSTATUS
4140 /LOG A AND B STATUS REGISTERS PER UNIT
4141 /
4142 / DCODES, EXPECTED D.D. DIDN'T OCCUR
4143 / UNEXPECTED D.D. OCCURED
4144 /
4145 / ACODES, A0
4146 / ACRC
4147 / APAR
4148 / BCODES, B0
4149 / B10
4150 / B20
4151 / B30
4152 / B40
4153 / B50
4154 / B60
4155 / B70
4156 / B100
4157 / B110
4158 / B120
4159 / B130
4160 / B140
4161 / B150
4162 / B160
4163 / B170
4164 / B200
4165 / DCODES+25, B210
4166 /
4167 /THE BSTATUS SHOULD NEVER BE ANY OF THE FOLLOWING CODES
4168 /
4169 / 220
4170 / 230
4171 / 240
4172 / 250
4173 / 260
4174 / 270
4175 / 300
4176 / 310
4177 / 320
4178 / 330
4179 / 340
4180 / 350
4181 / 360
4182 / DCODES+43, 370
4183 3700 7321 LOGCODES, CLL CML CLA IAC / 3
4184 3701 7004 RAL
4185 3702 0141 AND ASTATUS
4186 3703 7440 SZA
4187 3704 5311 JMP ANOTS
4188 /
4189 /IF ANY D.D. ERRORS HAVE BEEN PREVIOUSLY LOGGED
4190 /
4191 /THEN DON'T GOTO "ANOTS"
4192 /
```

```
4193 3705 1776* TAD DMTYPE
4194 3706 7640 SZA CLA
4195 3707 5326 JMP LOGBSTATUS
4196 3710 5316 JMP A0 /A STATUS AT ERROR = 0
4197 3711 7040 ANOT0, CMA
4198 3712 3324 DCA ACODE
4199 3713 1375 TAD (ACRC-ACODES)
4200 3714 2324 ISZ ACODE
4201 3715 5313 JMP .-2
4202 3716 1774* A0, TAD UNITZ
4203 3717 1366 TAD (ACODES)
4204 3720 3324 DCA ACODE
4205 3721 2724 ISZ 1 ACODE
4206 3722 5326 JMP LOGBSTATUS
4207 3723 4461 LOCK
4208 3724 0000 ACODE, 0
4209 3725 0113 K7777
4210
4211 /LOG B CODES
4212 /
4213 3726 1142 LOGBSTATUS, TAD BSTATUS
4214 3727 7110 CLL RAR
4215 3730 7012 RTR
4216 3731 7040 CMA
4217 3732 3344 DCA BCODE
4218 3733 1375 TAD (B10-BCODES)
4219 3734 2344 ISZ BCODE
4220 3735 5333 JMP .-2
4221 3736 1774* TAD UNITZ
4222 3737 1365 TAD (BCODES-B10+BCODES)
4223 3740 3344 DCA BCODE
4224 3741 2744 ISZ 1 BCODE
4225 3742 5346 JMP .+4
4226 3743 4461 LOCK
4227 3744 0000 BCODE, 0
4228 3745 0113 K7777
4229
4230 /PRINT AN ERROR MESSAGE IF AC SW 3 = 0
4231 /
4232 3746 4407 LASSW3, LAS
4233 3747 0014 AND K0400
4234 3750 7640 SZA CLA
4235 3751 5764* JMP NOPRINT
4236
4237 /SAVE THE TIME AT THE DETECTION OF THE ERROR
4238 /
4239 3752 5763* ERROR, JMP ERROR2
4240
4241 3763 4000
4242 3764 4535
4243 3765 7347
4244 3766 7341
4245 3767 2774
4246 3770 6115
4247 3771 2502
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4248 3772 3614
4249 3773 7335
4250 3774 2272
4251 3775 0002
4252 3776 4533
4253 3777 5400
4254 4000 1777* ERROR2, PAGE FORCE /GET ERROR PC.
4255 4001 7440 SZA /IGNORE FIRST TIME ERROR FOR APT.
4256 4002 4427 AERROR /REPORT IT TO APT IF NEED BE.
4257 4003 1110 TAD FIRSTERROR
4258 4004 7650 SNA CLA
4259 4005 5211 JMP NOHEADER
4260
4261 /THE FOLLOWING INFORMATION IS PRINTED FOR ALL ERRORS DETECTED
4262 /
4263 /THE ERROR HEADER TEXT IS INHIBITED IF THE ERROR IS NOT THE FIRST ERROR EVER
4264 /
4265 / CMND XDR CODE RST U:7 START TARGET PARAMETERS PASS
4266
4266 4006 4463 PRINT
4267 4007 5652 MEHEADER
4268 4010 5225 JMP ONECRLF
4269
4270 /IF THIS IS -NOT- A FORCED TYPEOUT, AND IF THERE ARE NO DATA COMPARE
4271 /ERRORS (COMPRERROR=0), THEN PRINT ONLY 1-CRLF
4272 /BECAUSE
4273 /
4274 /THIS ERROR MUST BE AN ERROR AT THE END OF THE EMPTY BUFFER DONE FLAG
4275 /WHICH WOULD BE ASSOCIATED TO ANY PREVIOUS FORCED TYPEOUT OF DATA ERRORS
4276
4276 4011 1777* NOHEADER, TAD FORCE
4277 4012 7650 SNA CLA
4278 4013 5223 JMP TWOCRLF
4279 4014 1106 TAD COMPRERROR
4280 4015 7640 SZA CLA
4281 4016 5225 JMP ONECRLF
4282
4283 /IF THIS IS A FORCED TYPEOUT FROM " XXINIT " THEN PRINT ONLY 1 CRLF
4284 /
4284 4017 1777* TAD FORCE
4285 4020 1376 TAD (-XXINIT)
4286 4021 7650 SNA CLA
4287 4022 5225 JMP ONECRLF
4288 4023 4463 TWOCRLF, PRINT
4289 4024 5611 MCRLF
4290 4025 4463 ONECRLF, PRINT
4291 4026 5611 MCRLF
4292 4027 4775* JMS INITSWITCH
4293 4030 5235 JMP .+5
4294
4295 /IF AN ERROR FROM THE RECAL, THEN PRINT [INIT] FOR THE COMMAND
4296 /
4296 4031 1777* TAD FORCE
4297 4032 1376 TAD (-XXINIT)
4298 4033 7640 SZA CLA
4299 4034 5240 JMP .+4
4300 4035 4463 PRINT
4301 4036 5712 MINIT
```

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4302 4037 5244 JMP TAB5
4303 4040 4774 JMS KEYSWITCH
4304 4041 5244 JMP .+3
4305 4042 4473 TY4OCT
4306 4043 0163 ECOMMAND
4307 4044 4472 TAB5, TAB
4308 4045 0005 5
4309 /IF THE DEVICE TEST IS HUNG,
4310 /THEN THE A- B- AND C- STATUS ARE NOT APPLICABLE
4311 /
4312 4046 1777 TAD FORCE
4313 4047 1373 TAD (-XHUNG)
4314 4050 7650 SNA CLA
4315 4051 5263 JMP DASHALL
4316 4052 4473 TY4OCT
4317 4053 0141 ASTATUS
4318 4054 4472 TAB
4319 4055 0013 13
4320 /IF THIS IS A FORCED TYPEOUT FROM "COMPARE" THEN THE B-, AND C- STATUS
4321 /ARE RESIDUAL FROM A PREVIOUS COMMAND IN ERROR AND ARE N/A HERE
4322 /BECAUSE A DATA NO STATUS ERROR HAS BEEN DETECTED PRIOR TO THE COMPLETION
4323 /OF THE FUNCTION "EMPTY BUFFER"
4324 /
4325 4056 1777 TAD FORCE
4326 4057 1372 TAD (-XCOMPARE)
4327 4060 7640 SZA CLA
4328 4061 5276 JMP TYBSTATUS
4329 4062 5267 JMP DASHBC
4330 4063 4463 DASHALL, PRINT
4331 4064 6234 MDASH
4332 4065 4472 TAB
4333 4066 0013 13
4334 4067 4463 DASHBC, PRINT
4335 4070 6234 MDASH
4336 4071 4472 TAB
4337 4072 0021 21
4338 4073 4463 PRINT
4339 4074 6234 MDASH
4340 4075 5304 JMP TAB27
4341 4076 4473 TYBSTATUS, TY4OCT
4342 4077 0142 BSTATUS
4343 4100 4472 TAB
4344 4101 0021 21
4345 4102 4473 TY4OCT
4346 4103 0143 CSTATUS
4347 4104 4472 TAB27, TAB
4348 4105 0027 27
4349 4106 4775 JMS INITSWITCH
4350 4107 5315 JMP .+6
4351 4110 4774 JMS KEYSWITCH
4352 4111 5326 JMP TAB41
4353 /IF (SSTART) = 0 THEN PRINT "HOME" BECAUSE A RECAL HAS TAKEN PLACE
4354 /THEREFORE THE ACTUATOR IS AT (SHOULD BE) TRACK 1 [HOME]
4355 /
4356 4112 1136 TAD SSTART
```

```
4357 4113 7640 SZA CLA
4358 4114 5320 JMP .+4
4359 4115 4463 PRINT
4360 4116 5706 MHOME
4361 4117 5326 JMP TAB41
4362 4120 4473 TY4OCT
4363 4121 0140 START
4364 4122 4472 TAB
4365 4123 0034 34
4366 4124 4473 TY4OCT
4367 4125 0136 SSTART
4368 4126 4472 TAB41, TAB
4369 4127 0041 41
4370 4130 4775 JMS INITSWITCH
4371 4131 5346 JMP PHONE
4372 /IF (FORCE) = THE ADDRESS "XXINIT" THEN ALSO PRINT [HOME] BECAUSE AN ERROR
4373 /HAS OCCURED FROM THE RECAL WHEN THE TARGET WAS [HOME]
4374 /
4375 4132 1777 TAD FORCE
4376 4133 1376 TAD (-XXINIT)
4377 4134 7650 SNA CLA
4378 4135 5342 JMP .+5
4379 /IF (XSDN) = THE RETURN ADDRESS TO "SDNFIRST" THEN THE DEVICE TEST IS
4380 /HUNG, THE STARTING TRACK IS [KEY] AND THE TARGET TRACK IS [HOME]
4381 /
4382 4136 1771 TAD XWAIT
4383 4137 1370 TAD (-SDNFIRST)
4384 4140 7650 SNA CLA
4385 4141 5346 JMP .+5
4386 /IF (FORCE) = THE RETURN ADDRESS TO "XLS" THEN THE TARGET TRACK
4387 /IS [HOME] FROM A [KEY] INITIALIZE
4388 /
4389 4142 1777 TAD FORCE
4390 4143 1367 TAD (-XLS)
4391 4144 7640 SZA CLA
4392 4145 5351 JMP .+4
4393 4146 4463 PHONE, PRINT
4394 4147 5706 MHOME
4395 4150 5357 JMP TAB53
4396 4151 4473 TY4OCT
4397 4152 0144 TARGET
4398 4153 4472 TAB
4399 4154 0046 46
4400 4155 4473 TY4OCT
4401 4156 0137 STARGET
4402 4157 4472 TAB53, TAB
4403 4160 0053 53
4404 /IF THIS IS A FORCED TYPEOUT FROM "XLS" THEN THE TEST PARAMETERS HAVEN'T
4405 /BEEN SELECTED FOR THIS SA200 YET AND THE TEST PARAMETERS ARE RESIDUAL
4406 /FROM THE PREVIOUS PASS (IF ANY) THEREFORE THE PROGRAM PRINTS [KEY]
4407 /
4408 /ONLY PRINT: " TEST PASS TIME " IF THIS ERROR IS THE FIRST ERROR THIS PASS
4409 /
4410 / (EPASS) = 7777 MEANS FIRST ERROR THIS PASS
4411 /
```

```
4412 4161 2107 1SZ EPASS
4413 4162 5766* JMP NOTICK
4414 4163 5765* JMP ERROR3
4415 4165 1127
4416 4166 4526
4417 4167 7545
4418 4170 7551
4419 4171 2352
4420 4172 6115
4421 4173 2502
4422 4174 5327
4423 4175 1147
4424 4176 3346
4425 4177 3605
4426 4200
4427
4428
4429
4430
4431
4432
4433
4434
4435
4436 4200 4407
4437 4201 0377
4438 4202 7640
4439 4203 5216
4440 4204 1142
4441 4205 1376
4442 4206 7450
4443 4207 5216
4444 4210 1116
4445 4211 7450
4446 4212 5216
4447 4213 1115
4448 4214 7640
4449 4215 4450
4450 4216 4407
4451 4217 7710
4452 4220 4456
4453
4454
4455
4456
4457
4458
4459 4221 1143
4460 4222 0375
4461 4223 7650
4462 4224 5774*
4463 4225 5773*
4464 4226 4226
4465 4227 3105

PAGE
/PROGRAM NOTE:
/
/ENTRY TO THIS FAR IS IF [NOT] A FORCED TYPEOUT
/
/RECAL IF DEFINITIVE ERROR CODE IS A SEEK ERROR
/
/ (NOT CODES 140, 200, OR 210)
/
/AC SW 6 = 1 TO INHIBIT [INIT] AT ERROR
/
RECALIF, LAS
AND (SW6)
SZA CLA
JMP LASSW0
TAD BSTATUS
TAD (-140)
SNA
JMP LASSW0
TAD KM40
SNA
JMP LASSW0
TAD KM10
SZA CLA
INIT
LASSW0, LAS
SPA CLA
HLT16, HLT /AC SW 0 = 1 (HALT ON ERROR)
/IF THE DRIVE IS NOT READY THEN THIS IS A CONTROLLER FAILURE
/
/BECAUSE THIS DRIVE WAS READY AT ONE TIME
/
/THEREFORE RESTART THE PROGRAM
/
TAD CSTATUS
AND (200)
SNA CLA
JMP RS
JMP ERETURN
XLCD,
DCA COMMAND
```

```
4466 4230 1105 TAD COMMAND
4467 4231 6751 K67X1, 6751
4468 4232 5626 JMP I XLCD
4469
4470 /LOAD THE COMMAND FOR: FILL BUFFER, AND EMPTY BUFFER
4471 /WITH THE RX01 INTERRUPT ENABLED
4472 /
4473 /FORM: (AC) IS COMMAND; LCDA; NORMAL RETURN; ERROR RETURN
4474 /
4475 /PROGRAMMING NOTE:
4476 /
4477 /THE UNIT BIT IS NOT REQUIRED FOR FILLING OR EMPTYING THE BUFFER
4478 /
4479 /IT IS REQUIRED BY THE PROGRAM FOR AN ERROR TYPEOUT (IF ANY)
4480 /
4481 4233 4233 XLCD,
4482 4234 4247 JMS GETLCD
4483 4235 1105 TAD COMMAND
4484 4236 4437 LCD
4485 4237 1233 TAD XLCD
4486 4240 3772* DCA RETURN
4487 4241 2233 1SZ XLCD
4488 4242 2233 1SZ XLCD
4489 4243 7201 CLA IAC
4490 4244 4447 INTR
4491 4245 6001 ION
4492 4246 5633 JMP I XLCD
4493
4494
4495 4247 4247 GETLCD,
4496 4250 1771* TAD UNIT / 0 OR 20
4497 4251 3105 DCA COMMAND /TEMPORARY STORAGE
4498
4499 /WHEN THE CONTENTS OF "GOBIT" ARE = 0 ; NO PROGRAM IRQ IS EXPECTED FROM THE DISK
4500 /
4501 4252 7301 CLL CLA IAC / 2
4502 4253 7004 RAL
4503 4254 0172 AND STSTP /TESTP FOR 8/12 BIT MODE SELECTION
4504 4255 7640 SZA CLA
4505 4256 1370 TAD (100) / 100 FOR 8 BIT MODE SELECTION
4506 4257 5647 JMP I GETLCD
4507
4508
4509
4510 /LOAD THE COMMAND AND THE TRACK AND SECTOR ADDRESSES AND GO WITH INTERRUPT ENABLE :
4511 /
4512 /FORM: (AC) IS COMMAND; LCDB; NORMAL RETURN; ERROR
4513 /
4514 4260 4260 XLCD,
4515 4261 4247 JMS GETLCD
4516 4262 1105 LCDBL, TAD COMMAND
4517 4263 4437 LCD
4518
4519 /LOAD THE TRACK AND SECTOR ADDRESSES FOR THE COMMANDS:
4520 /
```

```
4521      /WRITE, OR WRITE DELETED DATA, OR READ SECTOR
4522      /
4523      4264 1367      TAD (LCDBRETURN)
4524      4265 3772"      DCA RETURN
4525      4266 1127      TAD K7000
4526      4267 3304      DCA XLCDBRETURN
4527      4270 7201      CLA IAC
4528      4271 4447      INTR                      /ENABLE RX01 INTERRUPT
4529      4272 4444      STR
4530      4273 5272      JMP .-1                      /SKIP ON TRANSFER REQUEST FLAG
4531      4274 1137      TAD STARGET
4532      4275 4443      XDROUT                      / SECTOR
4533      4276 4444      STR
4534      4277 5276      JMP .-1                      /SKIP ON TRANSFER REQUEST FLAG
4535      4300 1144      TAD TARGET
4536      4301 4443      XDROUT                      / TRACK
4537      4302 5766"      JMP XPI
4538
4539      /RETURN TO HERE IF ANY ERROR OCCURS (OF IF "DONE" FLAG OCCURS)
4540      /
4541      /IF A PARITY ERROR OCCURS THEN RETRY TO LOAD THE COMMAND
4542      /
4543      /IF NOT A PARITY ERROR THEN THIS MUST BE THAT "DONE" FLAG I MENTIONED
4544      /
4545      4303 5322      LCDBRETURN, JMP OTHERERRORS          / "JMP OTHERERRORS" IF RETURN IS OK
4546      4304 7000      XLCDBRETURN, NOP
4547      4305 7301      CLL CLA IAC
4548      4306 7004      RAL
4549      4307 0141      AND ASTATUS
4550      4310 7650      SNA CLA
4551      4311 5322      JMP OTHERERRORS
4552      /PARITY ERROR - RETRY
4553      /
4554      4312 2157      ISZ PRETRY
4555      4313 7410      SKP
4556      4314 5322      JMP OTHERERRORS          / HARD PARITY ERROR
4557      4315 4407      LAS
4558      4316 0015      AND K0200
4559      4317 7650      SNA CLA
4560      4320 5262      JMP LCDBL
4561      4321 3157      DCA PRETRY
4562
4563      /THESE ARE ALL OTHER ERRORS WHICH MAY OCCUR
4564      /
4565      4322 4462      OTHERERRORS, LOG
4566      4323 7315      PERRORS          /LOG HARD/SOFT P ERRORS (IF ANY)
4567      4324 1365      TAD (JMP OTHERERRORS)
4568      4325 3304      DCA XLCDBRETURN
4569      4326 1367      TAD (LCDBRETURN)
4570      4327 7041      CIA
4571      4330 1772"      TAD RETURN
4572      4331 1260      TAD XLCDB
4573      4332 3260      DCA XLCDB
4574
4575      /LOG TRACK ACCESS FREQUENCY (TAF) OR
```

```
4576      /
4577      /LOG " SAME " TRACK ACCESS FREQUENCY
4578      /
4579      /IF (SSTART) NOT = 0 WHICH INDICATES A " HOME " ACTUATOR POSITION
4580      /
4581      /CAUSED BY AN INITIALIZE (MANUAL AT L/S OR A PROGRAM AUTOMATIC INIT)
4582      /
4583      /LOG " SAME " TRACK ACCESS LOG IF (TARGET) = (START)
4584      /
4585      4333 1144      TAD TARGET
4586      4334 7041      CIA
4587      4335 1140      TAD START
4588      4336 7640      SZA CLA
4589      4337 5343      JMP LOGTAF
4590      4340 1136      TAD SSTART
4591      4341 7640      SZA CLA
4592      4342 5347      JMP LOGSAME
4593      4343 1144      LOGTAF, TAD TARGET
4594      4344 7104      CLL RAL
4595      4345 1364      TAD (TAF)
4596      4346 5352      JMP XLOGCOMMON
4597      4347 1144      LOGSAME, TAD TARGET
4598      4350 7104      CLL RAL
4599      4351 1363      TAD (SAME)
4600      4352 4762"      XLOGCOMMON, JMS LOGCOMMON
4601      4353 5660      JMP I XLCDB
4602      4362 4400
4603      4363 6615
4604      4364 6363
4605      4365 5322
4606      4366 0676
4607      4367 4303
4608      4370 0100
4609      4371 2274
4610      4372 3600
4611      4373 3601
4612      4374 2237
4613      4375 0200
4614      4376 7640
4615      4377 0040
4616      4400
4617
4618      /LOGCOMMON IS A DOUBLE PRECISION LOGGER
4619      /
4620      4400 4400      LOGCOMMON, .
4621      4401 3212      DCA LOGLSB
4622      4402 2612      ISZ I LOGLSB
4623      4403 5600      JMP I LOGCOMMON
4624      4404 7301      CLL CLA IAC
4625      4405 1212      TAD LOGLSB
4626      4406 3213      DCA LOGMSB
4627      4407 2613      ISZ I LOGMSB
4628      4410 5600      JMP I LOGCOMMON
4629      4411 4461      LOCK
4630      4412 0000      LOGLSB, 0
4631      4413 0000      LOGMSB, 0
```

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4630      4414 5600      JMP I LOGCOMMON
4631      /
4632      /ENABLE / DISABLE RX01 INTERRUPT ENABLE
4633      /
4634      / AC = 1 AT ENTPTY TO ENABLE INTEPRUPT
4635      /
4636      /FORM: (AC = 0, 0R 1); INTR
4637      /
4638      / (GOBIT) = 0, NO RX01 PI IS EXPECTED
4639      /
4640      / (GOBIT) = 1, AN RX01 PI IS EXPECTED
4641      /
4642      4415 4415      XINTR, .
4643      4416 3165      DCA GOBIT
4644      4417 1165      TAD GOBIT
4645      4420 6756      K67X6, 6756
4646      4421 7200      CLA
4647      4422 5615      JMP I XINTR
4648      /
4649      /INITIALIZE (POWER CLEAR) THE RX01 SUBSYSTEM
4650      /
4651      4423 4423      XINIT, .
4652      4424 6757      K67X7, 6757
4653      /THE LABEL " SDNSECOND " MUST RESIDE HERE BECAUSE OF REFERENCES WITHIN ERROR
4654      /
4655      4425 4502      WAIT
4656      4426 4446      SDNSECOND, SDN
4657      4427 4445      SER
4658      4430 5232      JMP XXINIT
4659      /IF AN ERROR HAS OCCURED FROM THE [INIT] THEN [HOME] WAS THE TARGET
4660      /
4661      /THE LABEL "XXINIT" MUST RESIDE HERE BECAUSE OF REFERENCES WITHIN RX-ERROR
4662      /
4663      4431 4777      JMS FORCE
4664      /
4665      4432 3136      XXINIT, DCA SSTART
4666      4433 5623      JMP I XINIT
4667      /STARTING ADDRESS 202
4668      /
4669      /THIS IS AN IMAGE DUMP OF ALL STATISTICAL INFORMATION ACCUMULATED BY ALL LOGS
4670      /
4671      /THE FOLLOWING INFORMATION IS PRINTED ON THE TELEPRINTER
4672      /
4673      /
4674      /          MAINDEC-8/E-
4675      /
4676      /          STATISTICAL REPORT
4677      /
4678      /          <IF A LOG-OVERFLOW THIS LINE IS TYPED>
4679      /
4680      /          <IF AN AUTOMATIC DUMP THIS LINE IS PRINTED>
4681      /
4682      /          <IF A PASS INCOMPLETE THIS LINE IS TYPED>
4683      /
4684      /          DRIVES SELECTED:
```

```
4685      /
4686      /          TEST PARAMATER SELECTIONS:
4687      /
4688      /          OD ID FIRST LAST <VALUES PRINTED IF NON STANDARD>
4689      /
4690      /          RUN-TIME HOURS:MINUTES:SECONDS ( X COMPLETED PASSES)
4691      /          X RESTARTS (OF WHICH X WERE AUTOMATIC RESTARTS)
4692      /          X INTERUM STATISTICAL REPORTS
4693      /
4694      /          RECOVERABLE:
4695      /
4696      /          WRITE ERRORS
4697      /          READ ERRORS
4698      /          DATA ERRORS
4699      /          DNS ERRORS
4700      /          SND ERRORS
4701      /          SEEK ERRORS
4702      /          PARITY ERRORS
4703      /
4704      /          NONRECOVERABLE:
4705      /
4706      /          WRITE ERRORS
4707      /          READ ERRORS
4708      /          DATA ERRORS
4709      /          DATA NO STATUS ERRORS
4710      /          CRC STATUS NO DATA ERRORS
4711      /          SEEK ERRORS
4712      /          PARITY ERRORS
4713      /
4714      /          SECTOR WRITES / READS
4715      /
4716      /          TOTAL A, B, D CODES
4717      /
4718      /          TRACK ACCESS SELF ALL-ERRORS (TOT PER DISK)
4719      /          MAINDEC-08-
4720      /
4721      /          STATISTICAL REPORT
4722      /
4723      /          <IF A LOG-OVERFLOW THIS LINE IS TYPED>
4724      /
4725      /          <IF AN AUTOMATIC DUMP THIS LINE IS PRINTED>
4726      /
4727      /          <IF A PASS INCOMPLETE THIS LINE IS TYPED>
4728      /
4729      /          DRIVES SELECTED:
4730      /
4731      /          TEST PARAMATER SELECTIONS:
4732      /
4733      /          OD ID FIRST LAST <VALUES PRINTED IF NON STANDARD>
4734      /
4735      /          RUN-TIME HOURS:MINUTES:SECONDS ( X COMPLETED PASSES)
4736      /          X RESTARTS (OF WHICH X WERE AUTOMATIC RESTARTS)
4737      /          X INTERUM STATISTICAL REPORTS
4738      /
4739      /
```

```
4740 /
4741 /
4742 /PROGRAMMING NOTE:
4743 /
4744 /THIS SUBROUTINE MUST NOT USE TEMPORARY STORAGE LOCATIONS XXX OR YYY
4745 /BECAUSE THEY ARE REFERENCED WITHIN SUBROUTINE " XLOCK "
4746 /WHICH CALLS THIS SUBROUTINE
4747 /
4748 /
4749 /
4750 /THESE LOGS ARE DUMPED AT EACH START 202 OR
4751 /
4752 /
4753 /AT A DISKETTE UNIT DELETION (IF THAT DELETION WAS NOT FROM THE
4754 /PROGRAM AUTOMATIC DISKETTE SCAN AT THE PROGRAMS START), OR
4755 /
4756 /AT A STATISTICAL LOG COUNTER MAGNITUDE OVERFLOW
4757 /
4758 /
4759 /
4760 4434 4434 S202, .
4761 4435 4463 PRINT
4762 4436 6336 MIDENTIFICATION
4763 4437 4463 PRINT
4764 4440 6066 MDUMP
4765 4441 1776 TAD XLOCK
4766 4442 7650 SNA CLA
4767 4443 5246 JMP .+3
4768 4444 4463 PRINT
4769 4445 6077 MLOGOVERFLOW
4770 /IF THE RETURN ADDRESS VIA S202 IS TO PROGRAM LOCATION HLT20
4771 /THEN THIS DUMP WAS MANUALLY INITIALIZED AND IS NOT AN INTERUM DUMP
4772 /
4773 4446 1234 TAD S202
4774 4447 1375 TAD (-HLT20)
4775 4450 7650 SNA CLA
4776 4451 5255 JMP .+4
4777 4452 2112 ISZ IDUMP
4778 4453 4463 PRINT
4779 4454 6104 MINTERUM
4780 4455 1132 TAD PASSINPROGRESS
4781 4456 7650 SNA CLA
4782 4457 5262 JMP .+3
4783 4460 4463 PRINT
4784 4461 6115 MINCOMPLETE
4785 4462 1175 TAD SUNITS
4786 4463 3774 DCA UNITS
4787 4464 3773 DCA WUNITS
4788 4465 4464 PRINTDRIVESELECTED
4789 4466 1774 TAD UNITS
4790 4467 7650 SNA CLA
4791 4470 5316 JMP S202RETURN
4792 4471 4772 JMS CHECK
4793 /
4794 / TAD RESTARTS; SNA CLA; JMP .+7
```

```
4795 4472 4463 PRINT
4796 4473 5611 MCRLF
4797 4474 6032 MDESUMMARY
4798 4475 4473 TY4OCT /ONLY OCTAL VALUES WILL BE PRINTED
4799 /REPLACES TY8DEX.
4800 4476 6352 RESTARTS
4801 4477 4463 PRINT
4802 4500 6145 MRESTARTS
4803 / TAD ARESTARTS; SNA CLA; JMP .+7
4804 4501 4463 PRINT
4805 4502 6152 MLEFTPAREN
4806 4503 4473 TY4OCT /ONLY OCTAL VALUES WILL BE PRINTED
4807 /REPLACES TY8DEX.
4808 4504 0103 ARESTARTS
4809 4505 4463 PRINT
4810 4506 6155 MARESTARTS
4811 / TAD IDUMP; SNA CLA; JMP .+7
4812 4507 4463 PRINT
4813 4510 5611 MCRLF
4814 4511 4473 TY4OCT /ONLY OCTAL VALUES WILL BE PRINTED
4815 /REPLACES TY8DEX.
4816 4512 0112 IDUMP
4817 4513 4463 PRINT
4818 4514 6163 MIDUMP
4819 / PRINT; MTREVLUTION; TY8DEC; TOTALR; TOTALR+1
4820 /
4821 4515 5771 JMP XS202
4822 /
4823 4516 5634 S202RETURN, JMP I S202
4824 /
4825 /
4826 /
4827 4517 4517 XSPECIALTYPEIT, .
4828 4520 4467 SETUP
4829 4521 4517 XSPECIALTYPEIT
4830 4522 1717 TAD I XSPECIALTYPEIT
4831 4523 2317 ISZ XSPECIALTYPEIT
4832 4524 4474 TYPEIT
4833 4525 5770 JMP THENEXIT
4834 /
4835 /
4836 /
4837 /
4838 /CLEAR " EPASS " TO PREVENT PREVIOUS " ISZ EPASS " FROM EVER OVERFLOWING
4839 /
4840 4526 3107 NOTICE, DCA EPASS
4841 4527 1333 TAD DMTYPE
4842 4530 7650 SNA CLA
4843 4531 5334 JMP .+3
4844 4532 4463 PRINT
4845 4533 0000 DMTYPE, 0
4846 4534 3110 DCA FIRSTERROR
4847 /
4848 /AC SW 5 = 1 TO INHIBIT THE RINGING OF THE BELL AT ERROR
4849 /
```

```
4850 4535 4107 NOPRINT, LAS
4851 4536 0367 AND (SW5)
4852 4537 7640 SZA CLA
4853 4540 5343 JMP .+3
4854 4541 4470 SPECIALTYPEIT
4855 4542 0207 207
4856
4857 /IF ENTRY WAS FROM A "JMS FORCE" THEN EXIT BY A "JMP I FORCE"
4858
4859 4543 1777 TAD FORCE
4860 4544 7640 SZA CLA
4861 4545 5766 JMP XFORCE
4862 4546 5765 JMP RECALIF
4863 /*****
4864 /CONSOLE
4865 /*****
4866 4547 4424 CBTEST, CHECKC8 /ACTIVE CONSOLE??
4867 4550 4431 CBCNTL /ROUTINE TO EXECUTE IF CONSOLE ACTIVE
4868 4551 7000 NOP
4869 4552 7200 CLA
4870 4553 3171 DCA TTYBUSY /CLEAR THE FLAG
4871 4554 5764 JMP PIEXIT /LEAVE
4872
4873 /*****
4874 /ROUTINE TO ALLOW FOR THE PRINTING OF 8 OCTAL DIGITS.
4875 /
4876 4555 0000 PNTNOP, 0
4877 4556 1127 TAD K7000
4878 4557 3761 DCA I XISZDIG
4879 4560 5755 JMP I PNTNOP
4880
4881 4561 2731 XISZDIG, 1SZDIG-7
4882 4564 3473
4883 4565 4200
4884 4566 3610
4885 4567 0100
4886 4570 2152
4887 4571 4600
4888 4572 3111
4889 4573 2271
4890 4574 2270
4891 4575 7574
4892 4576 2400
4893 4577 3605
4894 4600
4895 / PAGE
4896 /
4897 / RECOVERABLE:
4898 /
4899 / WRITE ERRORS
4900 / READ ERRORS
4901 / DATA ERRORS
4902 / DNS ERRORS
4903 / SMD ERRORS
4904 / SEEK ERRORS
4905 / PARITY ERRORS
```

```
4904 /
4905 /
4906 / NONRECOVERABLE:
4907 /
4908 / WRITE ERRORS
4909 / READ ERRORS
4910 / DATA ERRORS
4911 / DATA NO STATUS ERRORS
4912 / CRC STATUS NO DATA ERRORS
4913 / SEEK ERRORS
4914 / PARITY ERRORS
4915 /
4916 / SECTOR WRITES / READS
4917 /
4918 4600 4463 XS202, PRINT
4919 4601 5611 MCRLF
4920 / (14 DECIMAL CATAGORIES OF ERROR INFORMATION)
4921 /
4922 4602 1377 XL0, TAD (-16)
4923 4603 3012 DCA A12
4924 4604 4155 GETUNIT
4925 4605 1776 TAD UNITZ
4926 4606 1375 TAD (WERRORS-2)
4927 4607 3010 DCA A10
4928 /PROGRAMMING NOTE:
4929 /
4930 / "TYPEIT" INSTEAD OF "TYDEX" BECAUSE "TYDEX" USES "LSB"
4931 /
4932 4610 4463 PRINT
4933 4611 6042 MUNIT
4934 4612 1776 TAD UNITZ
4935 4613 1374 TAD (260)
4936 4614 3216 DCA .+2
4937 4615 4470 SPECIALTYPEIT
4938 4616 0260 260
4939 4617 4463 PRINT
4940 4620 5612 MCRLFS
4941 4621 2010 XL, ISZ A10
4942 4622 1410 TAD I A10
4943 4623 7450 SNA
4944 4624 5254 JMP X1DUMP
4945 4625 3004 DCA XXX /TEMP STORAGE ONLY
4946 4626 4473 TY4OCT
4947 4627 0004 XXX
4948 4630 4472 TAB
4949 4631 0005 5
4950 4632 1131 TAD K0007
4951 4633 1012 TAD A12
4952 4634 7710 SPA CLA
4953 4635 5241 JMP .+4
4954 4636 4463 PRINT
4955 4637 3101 MMUNRECOVERABLE
4956 4640 7410 SKP
4957 4641 1131 TAD K0007
4958 4642 1131 TAD K0007
4959 4643 1012 TAD A12
```

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4959 4644 1373 TAD (TAD EPROHMESSAGES)
4960 4645 3246 DCA .+1
4961 4646 1300 TAD EPROHMESSAGES
4962 4647 3251 DCA .+2
4963 4650 4463 PRINT
4964 4651 0000 0
4965 4652 4463 PRINT
4966 4653 6265 MMERRORS
4967 4654 2012 X1DUMP, ISZ A12
4968 4655 5221 JMP XL
4969 4656 1776 TAD UNITZ
4970 4657 7104 CLL RAL
4971 4660 1372 TAD (WRITES)
4972 4661 3270 DCA W0
4973 4662 1371 TAD (HEADS-WRITES)
4974 4663 1270 TAD W0
4975 4664 3274 DCA R0
4976 4665 4463 PRINT
4977 4666 6215 MWRSRDS
4978 4667 4475 TY8OCT /PRINT OCTAL ONLY
4979 /REPLACES TY8DEC
4980 4670 6353 W0, WRITES
4981
4982 4671 4463 PRINT
4983 4672 6232 MSLASH
4984
4985 4673 4475 TY8OCT /REPLACES TY8DEC
4986 /PRINT OCTAL ONLY
4987 /REPLACES TY8DEC
4988 W0, READS
4989 DONE
4990 JMP XL0
4991 JMP X3DUMP
4992 ERRORMESSAGES, MMWRITE
4993 MMREAD
4994 MMDATA
4995 MMDNS
4996 MSNDERROR
4997 MMSEEK
4998 MMParITY
4999 /
5000 /IF (WUNITS) = 0 ; ALL SELECTED DISKETTE DRIVES HAVE SEQUENCED
5001 /
5002 4707 4707 XDONE,
5003 TAD WUNITS
5004 SNA CLA
5005 ISZ XDONE / DONE ; (WUNITS) = 0
5006 JMP I XDONE
5007 /
5008 /LOG A AND B STATUS REGISTERS PER UNIT
5009 /
5010 DCODES, EXPECTED D.D. DIDN'T OCCUR
5011 UNEXPECTED D.D. OCCURED
5012 ACODES, A0
5013 ACRC
5014 APAR

```

```

5014 / BCODES, 00
5015 / B10
5016 / B20
5017 / B30
5018 / B40
5019 / B50
5020 / B60
5021 / B70
5022 / B100
5023 / B110
5024 / B120
5025 / B130
5026 / B140
5027 / B150
5028 / B160
5029 / B170
5030 DCODES+25, B200
5031 /
5032 /THE BSTATUS SHOULD NEVER BE ANY OF THE FOLLOWING CODES
5033 /
5034 / 210
5035 / 220
5036 / 230
5037 / 240
5038 / 250
5039 / 260
5040 / 270
5041 / 300
5042 / 310
5043 / 320
5044 / 330
5045 / 340
5046 / 350
5047 / 360
5048 DCODES+44, 370
5049 /
5050 /ROUTINE TO DETERMINE IF ON APT
5051 /
5052 4714 0000 CHK22, 0
5053 4715 1022 TAD 22
5054 4716 0322 AND K4000
5055 4717 7650 SNA CLA
5056 4720 2314 ISZ CHK22
5057 4721 5714 JMP I CHK22
5058 4722 4000 K4000, 4000
5059 /
5060 /ROUTINE TO DETERMINE IF SINGLE DRIVE OR MULTIPLE DRIVE TESTING.
5061 /IF SINGLE DRIVE TESTING, IT WILL DETERMINE WHICH DRIVE TO DO.
5062 /
5063 4723 0000 XDRVSL, 0
5064 4724 1022 TAD 22
5065 4725 0347 AND K0003
5066 4726 3004 DCA XXX
5067 4727 1022 TAD 22
5068 4730 0350 AND K0100

```

/DRIVE ISOLATED.

```
5069 4731 7750 SNA CLA CLL /SINGLE DRIVE TFSTING
5070 4732 5766 JMP AUTORESTART /NO. DO MAX IN SYSTEM.
5071 4733 1004 TAD XXX
5072 4734 7010 RAR
5073 4735 7430 S2L /DRIVE 1 TO BE DONE
5074 4736 7130 STL RAR /NO. SET UP FOR DRIVE 0
5075 4737 7010 RAR
5076 4740 3004 DCA XXX
5077 4741 7121 CLL CLL CML IAC /+3 COSTANT
5078 4742 7004 RAL
5079 4743 1323 TAD XDRVSL /UPDATE FOR RETURN
5080 4744 3323 DCA XDRVSL
5081 4745 1004 TAD XXX /RETURN WILL VALUE IN AC
5082 4746 5723 JMP I XDRVSL
5083 /
5084 4747 0003 K0003, 0003
5085 4750 0100 K0100, 0100
5086 /
5087 /ROUTINE TO TYPE 8 OCTAL DIGITS.
5088 /FORMAT TY8OCT; MSB(STARTING ADDRESS OF DOUBLE LOG TO BE PRINTED).
5089 /
5090 4751 0000 XTY8OCT, 0
5091 4752 1751 TAD I XTY8OCT /GET STARTING ADDRESS
5092 4753 3363 DCA ,+10
5093 4754 1751 TAD I XTY8OCT
5094 4755 7001 IAC /SECOND ADDRESS
5095 4756 3362 DCA ,+4
5096 4757 7344 CLL CLA CMA RAL /-2
5097 4760 3124 DCA XCNT
5098 4761 4473 TY4OCT
5099 4762 7000 NOP /REPLACED WITH POINTER TO BE
5100 4763 7000 NOP /PRINTED
5101 4764 2351 ISZ XTY8OCT /UPDATE RETURN
5102 4765 5751 JMP I XTY8OCT /EXIT
5103 /
5104 /
5105 4766 0247
5106 4767 2271
5107 4770 5000
5108 4771 0004
5109 4772 6353
5110 4773 1300
5111 4774 0260
5112 4775 7277
5113 4776 2272
5114 4777 7762
5115 5030
5116 /
5117 /
5118 /
5119 5000 4463 X3DUMP, PRINT
5120 5001 6174 MDUMPHEDER
5121 5002 1377 TAD (TAF-1)
5122 5003 3010 DCA A10
```

PAGE

TOTAL A, B, D CODES

TRACK ACCESS SELF ALL-ERRORS (TOT PER DISK)

```
5123 5004 1010 TAD A10
5124 5005 3011 DCA A11
5125 5006 1376 TAD (-115)
5126 5007 3367 DCA YDUMP / 0-114 TRACKS
5127 5010 1410 XDUMP, TAD I A10
5128 5011 7450 SNA
5129 5012 1410 TAD I A10
5130 5013 7650 SNA CLA
5131 5014 5317 JMP XDUMPIX
5132 5015 4463 PRINT
5133 5016 5611 MCRLF
5134 5017 1375 TAD (115)
5135 5020 1367 TAD YDUMP
5136 5021 3167 DCA LSB
5137 5022 4473 TY4OCT
5138 5023 0167 LSB
5139 5024 4472 TAB
5140 5025 0006 6
5141 5026 1411 TAD I A11
5142 5027 3167 DCA LSB
5143 5030 1411 TAD I A11
5144 5031 3170 DCA MSB
5145 5032 4475 TY8OCT /PRINT OCTAL ONLY
5146 /REPLACES TY8DEC
5147 5033 0167 LSB
5148 5034 1374 TAD (SAME-TAF-2)
5149 5035 1011 TAD A11
5150 5036 3010 DCA A10
5151 5037 1010 TAD A10
5152 5040 3012 DCA A12
5153 5041 1410 TAD I A10
5154 5042 7450 SNA
5155 5043 1410 TAD I A10
5156 5044 7650 SNA CLA
5157 5045 5256 JMP XXDUMPERRORS
5158 5046 4472 TAB
5159 5047 0017 17
5160 5050 1412 TAD I A12
5161 5051 3167 DCA LSB
5162 5052 1412 TAD I A12
5163 5053 3170 DCA MSB
5164 5054 4475 TY8OCT /PRINT OCTAL ONLY
5165 /REPLACES TY8DEC
5166 5055 0167 LSB
5167 5056 1373 XXDUMPERRORS, TAD (TAFE0-116)
5168 5057 1367 TAD YDUMP
5169 5060 1375 TAD (115)
5170 5061 3003 DCA XA10
5171 5062 4455 XDUMLOOP, GETUNIT
5172 5063 1772 TAD UNIT2
5173 5064 7640 S2A CLA
5174 5065 1375 TAD (TAFE1-TAFE0)
5175 5066 1375 TAD (TAFE1-TAFE0)
5176 5067 1003 TAD XA10
5177 5070 3012 DCA A12
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5178 5071 1012 TAD A12
5179 5072 3010 DCA A10
5180 5073 1410 TAD I A10
5181 5074 7650 SNA CLA
5182 5075 5312 JMP XNOERRORS
5183 5076 4472 TAB
5184 5077 0030 30
5185 5100 4473 TY40CT /ONLY OCTAL VALUES WILL BE PRINTED
5186 /REPLACES TY8DEX.
5187 5101 2272 UNITZ
5188 5102 4463 PRINT
5189 5103 6234 MDASH
5190 5104 1412 TAD I A12
5191 5105 3004 DCA XXX /TEMP STORAGE ONLY
5192 5106 4473 TY40CT
5193 5107 0004 XXX
5194 5110 4463 PRINT
5195 5111 5614 MSPACE
5196 5112 4452 XNOERRORS, DONE
5197 5113 5262 JMP XDUMLOOP
5198 5114 1011 TAD A11
5199 5115 3010 DCA A10
5200 5116 5321 JMP .+3
5201 5117 1010 XDUMPX, TAD A10
5202 5120 3011 DCA A11
5203 5121 2367 ISZ YDUMP
5204 5122 5210 JMP XDUMP
5205 5123 4463 PRINT
5206 5124 5612 MCRLFS
5207 5125 5771 JMP S202RETURN
5208 5126 5126 XHALT, .
5209 5127 1171 TAD TTYBUSY
5210 5130 7640 SZA CLA
5211 5131 5327 JMP .-2
5212 /THE CONTENTS OF THE AC AT THE HLT CONTAIN THE CALLING ADDRESS
5213 /
5214 5132 4500 CHEK22 /TEST FOR APT.
5215 5133 5726 JMP I XHALT /IGNORE HALT.
5216 5134 7240 STA
5217 5135 1326 TAD XHALT
5218 /*****
5219 /CONSOLE
5220 /*****
5221
5222 5136 4424 CHECKC8
5223 5137 4430 C8INQU /PRINT WAITING AND LOOK FOR CNTR CHAR
5224 5140 7410 SKP /SKIP IF THE CONSOLE IS ACTIVE
5225 5141 7402 7402
5226 5142 7200 CLA
5227 5143 5726 JMP I XHALT
5228 /
5229 /PROGRAMMED SUBROUTINE TO BYTE SWAP THE CONTENTS OF THE AC
5230 /
5231 /THIS SUBROUTINE MAY ONLY BE CALLED FROM WITHIN SUBROUTINE " XPRINT "
5232 /

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5233 /OTHERWISE STRANGE AND UNFORGIVEABLE THINGS WILL OCCUR TO BLOW YOUR MIND
5234 /
5235 5144 5144 XBSW, .
5236 5145 3147 DCA BSWAC
5237 5146 7010 RAR
5238 5147 3150 DCA BSWLINK
5239 5150 1114 TAD KM6
5240 5151 3366 DCA BSWRAL
5241 5152 1147 TAD BSWAC
5242 5153 7100 CLL
5243 5154 7510 SPA
5244 5155 7120 STL
5245 5156 7004 RAL
5246 5157 2366 ISZ BSWRAL
5247 5160 5353 JMP .-5
5248 5161 3147 DCA BSWAC
5249 5162 1150 TAD BSWLINK
5250 5163 7104 CLL RAL
5251 5164 1147 TAD BSWAC
5252 5165 5744 JMP I XBSW
5253 5166 7772 BSWRAL, -6
5254 5167 0000 YDUMP, 0
5255 /
5256 /
5257 /
5258 /
5259 /
5260 5171 4516
5261 5172 2272
5262 5173 6731
5263 5174 0230
5264 5175 0115
5265 5176 7663
5266 5177 6362
5267 PAGE
5268 /
5269 /ENTRY TO HERE FROM SUBROUTINES XSER, OR XSDN, OR XPI
5270 5200 2104 HUNGUP, ISZ BUSY
5271 5201 3303 DCA HUNGUPC
5272 5202 1116 TAD KM40
5273 5203 3111 DCA HANGER
5274 /
5275 /IF THE PROGRAM IS HUNG BECAUSE IOT SDN FAILED TO SKIP FROM [KEY] INIT
5276 /AT THE START OF THIS PROGRAM, THEN MAYBE THE STANDARD OPERATING DEVICE
5277 /CODE 670- SELECTED BY THIS PROGRAM IS NOT THE DEVICE CODE OF THE UNIT UNDER
5278 /TEST, THEREFORE THE PROGRAM WILL AUTOMATICALLY SELECT A DEVICE CODE
5279 /
5280 /THE DONE FLAG SHOULD BE SET BY NOW FROM [KEY] INITIALIZE
5281 5204 1777 TAD XWAIT /RETURN ADDRESS FROM SUBROUTINE XSDN
5282 5205 1376 TAD (-SDNFIRST) /ADDRESS FROM FIRST "SDN" EVER
5283 5206 7640 SZA CLA
5284 5207 5272 JMP TCTRLS /DEVICE CODE ALREADY SELECTED
5285 /
5286 /A DEVICE CODE HAS NOT YET BEEN SELECTED

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5287 /
5288 /THE DONE FLAG SHOULD BE SET BY NOW
5289 /
5290 /THIS ROUTINE WILL ASK FOR DEVICE CODES IF NOT SELECTED
5291 /
5292 /*****
5293 /CODE CHANGE FOR GETTING DEVICE CODES
5294 /
5295 /
5296 /ENTER THE DEVICE CODE IN THE SIX MIDDLE BITS OF THE SWITCH REG.
5297 /
5298 /
5299 5210 4463 DOACTIVE, PRINT
5300 5211 5534 MDEVICE /PRINT THE DEVICE CODE MESSAGE IS
5301 5212 4424 CHECKC8 /ON ACTIVE CONSOLE
5302 5213 4426 C8SWIT /ON ACTIVE CONSOLE DEVICE
5303 5214 5217 JMP CKDEVICE /RETURN FROM SWITCH REG
5304 5215 4456 HLT
5305 5216 4407 LAS /GET DEVICE CODE,
5306 5217 0375 CKDEVICE, AND (0770) /MASK FOR THESE BITS ONLY
5307 5220 7450 SNA
5308 5221 1374 TAD (750) /75 DEVICE CODE
5309 5222 1373 TAD (6005) /ADD THE IOT INSTRUCTION
5310 5223 3224 DCA ACTIVE /STORE IT
5311 5224 6755 ACTIVE, 6755
5312 5225 7410 SKP /NOT A DEVICE WITH THIS DEVICE CODE
5313 5226 5230 JMP SDNOK /DEVICE IS THERE
5314 5227 5210 JMP DOACTIVE /REASK DEVICE
5315 /
5316 /THE PROGRAM FOUND AN ACTIVE DEVICE CODE AND WILL
5317 /
5318 /SET THAT DEVICE CODE INTO ALL APPLICABLE IOT PROGRAM LOCATIONS
5319 /
5320 5230 1224 SDNOK, TAD ACTIVE
5321 5231 0372 AND (-7)
5322 5232 3010 DCA A10
5323 5233 1371 TAD (XDEVIC-1)
5324 5234 3011 DCA A11
5325 5235 1411 TAD I A11
5326 5236 7150 SNA
5327 5237 5245 JMP ,+6
5328 5240 3004 DCA XXX
5329 5241 1010 TAD A10
5330 5242 3404 DCA I XXX
5331 5243 2010 ISZ A10
5332 5244 5235 JMP ,+7
5333 5245 1663 TAD I XK67X2A
5334 5246 3770 DCA K67X2B
5335 5247 1666 TAD I K67X5A
5336 5250 3767 DCA K67X5B
5337 5251 1662 TAD I XK67X1
5338 5252 0115 AND KM10
5339 5253 3167 DCA LSB
5340 5254 4473 TY4OCT
5341 5255 0167 LSB
```

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5342 5256 7301 CLL CLA IAC
5343 5257 1777 TAD XWAIT
5344 5260 3004 DCA XXX
5345 5261 5404 JMP I XXX
5346 /
5347 /RX-DEVICE CODE TABLE
5348 /
5349 5262 XDEVICE=
5350 5262 4231 XK67X1, K67X1
5351 5263 0523 XK67X2A, K67X2A
5352 5264 0532 K67X3
5353 5265 0537 K67X4
5354 5266 0544 K67X5A, K67X5
5355 5267 4420 K67X6
5356 5270 4424 K67X7
5357 5271 0000 0
5358 /
5359 /IF THE PROGRAM IS HUNG BECAUSE THE OPERATOR TYPED A <CTRL>Q
5360 /THEN THAT'S OK - NO SPECIAL REMINDER WILL BE PRINTED
5361 /
5362 5272 1171 TCTRLS, TAD TTYBUSY
5363 5273 7710 SPA CLA
5364 5274 5766 JMP PIEXIT /OK
5365 5275 4765 JMSFORCE, JMS FORCE
5366 /
5367 /THE LABEL "XHUNG" MUST RESIDE HERE BECAUSE OF REFERENCES MADE WITHIN "FORCE"
5368 /
5369 5276 4463 XHUNG, PRINT
5370 5277 5635 MHUNGPC
5371 5300 4473 TY4OCT
5372 5301 5303 HUNGPC
5373 5302 5764 JMP RS
5374 5303 0000 HUNGPC, 0
5375 /IF THE TELETYPE IS "BUSY" (TTYBUSY = X), AND IF A KEYBOARD FLAG,
5376 /THEN STOP THE TELETYPE OUTPUTS IF THE KRB BUFFER STATUS IS A <CTRL>S
5377 /RESUME TELETYPE OUTPUTS IF THE KRB BUFFER STATIC IS A <CTRL>Q
5378 / (AND IF THE PROGRAM IS ALREADY STOPPED FROM A PREVIOUS <CTRL>S )
5379 /
5380 5304 6036 XKCC, KRB
5381 5305 0363 AND (177
5382 5306 4762 JMS C8TST2 /SET UP CHAR IN FLD 1 AND MAKE IT 8 BITS
5383 5307 0363 AND (177)
5384 5310 1361 TAD (-21) / <CTRL>Q
5385 5311 7440 SZA
5386 5312 5321 JMP NOTQ
5387 /
5388 /THE KRB BUFFER STATIC IS A <CTRL>Q
5389 /THEREFORE, RESUME TTY OUTPUTS IF A PREVIOUS <CTRL>S HAD OCCURED
5390 /
5391 5313 1171 TAD TTYBUSY
5392 5314 7700 SMA CLA
5393 5315 5766 JMP PIEXIT /NO PREVIOUS <CTRL>S
5394 5316 7301 CLL CLA IAC
5395 5317 3171 DCA TTYBUSY
5396 5320 5760 JMP XTCF /RESUME TELETYPE OUTPUTS
5397 5321 1357 NOTQ, TAD (-2)
```

```
5397 5322 7640 SZA CLA
5398 /*****
5399 /CONSOLE
5400 /*****
5401
5402 5323 5756 JMP C8TEST /TEST THE REST OF THE CHARACTERS
5403
5404 /*****
5405 5324 7330 STL CLA RAR
5406 5325 3171 DCA TTYBUSY
5407 5326 5766 JMP PIEKIT
5408 /IF (FORCE) = THE ADDRESS OF "XLS" THEN THIS ERROR IS FROM [KEY]
5409 /INITIALIZE - THE STARTING TRACK WAS X [KEY], AND THE TARGET WAS [HOME]
5410 /
5411 5327 5327 KEYSWITCH, .
5412 5330 1765 TAD FORCE
5413 5331 1355 TAD (-XLS)
5414 5332 7650 SNA CLA
5415 5333 5340 JMP ,+5
5416 /OR IF THIS FORCE WAS FROM "SDNFIRST" THEN THE DEVICE TEST IS HUNG
5417 /AND THE START WAS [KEY] AND THE TARGET WAS [HOME]
5418 /
5419 5334 1777 TAD XWAIT
5420 5335 1376 TAD (-SDNFIRST)
5421 5336 7640 SZA CLA
5422 5337 5343 JMP ,+4
5423 5340 4463 PRINT
5424 5341 5715 MKEY
5425 5342 7410 SKP
5426 5343 2327 ISZ KEYSWITCH
5427 5344 5727 JMP I KEYSWITCH
5428 /ROUTINE TO GET DEVICE CODE TO BE USED WITH APT.
5429 /
5430 5345 1127 DEVCDE, TAD K7000
5431 5346 3753 DCA I SWTNOP /NOP TEST PARAM.
5432 5347 1754 TAD XAPT8 /GET RETURN ADDRESS
5433 5350 3777 DCA XWAIT /STORE FOR RETURN TO PROPER PLACE.
5434
5435 5351 1020 TAD 20 /GET DEVICE CODE TO USE
5436 5352 5217 JMP CKDEVICE /ESTABLISH DEVICE CODES.
5437 5353 0412 SWTNOP, HLT2
5438 5354 0343
5439 5355 7545
5440 5356 4547
5441 5357 7776
5442 5360 3325
5443 5361 7757
5444 5362 3161
5445 5363 0177
5446 5364 2237
5447 5365 3605
5448 5366 3473
5449 5367 3423
5450 5370 0526
5451 5371 5261
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5452 5372 7771
5453 5373 6005
5454 5374 0750
5455 5375 0770
5456 5376 7551
5457 5377 2352
5458 5400
5459 /
5460 /ROUTINE TO NOTIFY OF OF RUNNING IF NEED BE DONE
5461 /
5462 5400 0000 XTICK, 0
5463 5401 4500 CHEK22
5464 5402 7410 SKP /ON APT.
5465 5403 5600 JMP I XTICK
5466 5404 2216 ISZ CLKCNT
5467 5405 5600 JMP I XTICK
5468 5406 1217 TAD COUNT
5469 5407 3216 DCA CLKCNT /INIT CLOCK COUNTER
5470 5410 6002 IOF
5471 5411 6201 CDF 00
5472 5412 6272 CIF 70
5473 5413 4615 JMS I K6500 /NOTIFY APT-8
5474 5414 5600 JMP I XTICK /EXIT.
5475 /
5476 5415 6500 K6500, 6500
5477 5416 7700 CLKCNT, -100
5478 5417 7700 COUNT, -100
5479 /
5480 /*****
5481 /CONSOLE
5482 /*****
5483
5484 /ROUTINE FOR CHECKING THE STATUS OF THE CONSOLE PACKAGE
5485 /IF ACTIVE DO CALL PLUS ONE
5486 /NOT ACTIVE DO CALL PLUS3
5487
5488 5420 0000 XCHECKC8, 0
5489 5421 7200 CLA
5490 5422 1022 TAD 22
5491 5423 0245 AND XK400 /IS CONSOLE PACKAGE ACTIVE
5492 5424 7650 SNA CLA
5493 5425 5243 JMP NOTCL8 /NOT ACTIVE
5494 5426 1620 TAD I XCHECKC8 /GET CALL TO FIELD 1
5495 5427 3235 DCA PACKDO /STORE IT
5496 5430 1171 TAD TTYBUSY
5497 5431 7640 SZA CLA /IS TTY STILL BUSY
5498 5432 5230 JMP ,+2 /LOOP UNTIL DONE
5499 5433 0002 IOF
5500 5434 6213 CDF CIF 10 /GO TO FLD 1
5501 5435 0000 PACKDO, 0000 /CONSOLE CALL IN HERE
5502 5436 7000 NOP
5503 5437 6001 ION
5504 5440 2220 EXITCK, ISZ XCHECKC8
5505 5441 7200 CLA
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5506 5442 5620 JMP I XCHECKC8 /EXIT XCHECKC8
5507 5443 2220 NOTCL8, ISZ XCHECKC8
5508 5444 5240 JMP EXITCK
5509 5445 0400 XK400, 400
5510 /
5511 /
5512 5446 5016 MNONE, TEXT "(NONE)"
5447 1716
5450 0551
5451 0000
5513 5452 3722 REMOVE, TEXT "_REMOVE DIAGNOSTIC DISKETTE"
5453 0515
5454 1726
5455 0540
5456 0411
5457 0107
5460 1617
5461 2324
5462 1103
5463 4004
5464 1123
5465 1305
5466 2424
5467 0500
5514 5470 3704 MDISKETTE, TEXT "_DRIVES SELECTED: "
5471 2211
5472 2605
5473 2340
5474 2305
5475 1405
5476 0324
5477 0504
5500 7240
5501 0000
5515 5502 5440 MCOMMA, TEXT ", "
5503 0000
5516 5504 3737 MNOTREADY, TEXT "_DRIVES NOT OK-BUT"
5505 0422
5506 1126
5507 0523
5510 4016
5511 1724
5512 4017
5513 1355
5514 0225
5515 2400
5517 5516 4027 MRS, TEXT " WILL RESTART"
5517 1114
5520 1440
5521 2205
5522 2324
5523 0122
5524 2400
5518 5525 4027 MNOGONOMORE, TEXT " WILL HALT_"
5526 1114
```

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5527 1440
5530 1001
5531 1424
5532 3737
5533 0000
5519 5534 3722 MDEVICE, TEXT "_RX8 DEVICE CODE IS "
5535 3070
5536 4004
5537 0526
5540 1103
5541 0540
5542 0317
5543 0405
5544 4011
5545 2340
5546 0000
5520 5547 3723 MSDRIVES, TEXT "_SELECT DISKETTE DRIVES"
5550 0514
5551 0503
5552 2440
5553 0411
5554 2313
5555 0524
5556 2405
5557 4004
5560 2211
5561 2605
5562 2300
5521 5563 3723 MSTESTS, TEXT "_SELECT TEST PARAMETERS"
5564 0514
5565 0503
5566 2440
5567 2405
5570 2324
5571 4020
5572 0122
5573 0115
5574 0124
5575 0522
5576 2300
5522 5577 3714 MREFRESH, TEXT "_LOGS REFRESHED AT "
5600 1707
5601 2340
5602 2205
5603 0622
5604 0523
5605 1005
5606 0440
5607 0124
5610 4000
5523 5611 3700 MCRLF, TEXT "_"
5524 5612 3737 MCRLFS, TEXT "_"
5613 0000
5525 5614 4000 MSPACE, TEXT " "
5526 5615 3705 MEOT, TEXT "_END OF TEST "
```

	5616	1604		
	5617	4017		
	5620	0640		
	5621	2405		
	5622	2324		
	5623	4000		
5527	5624	0411	MPASSES,	TEXT "DIRXB-D PASS "
	5625	2230		
	5626	0255		
	5627	0440		
	5630	2001		
	5631	2323		
	5632	4000		
5528	5633	4016	MNO,	TEXT " NO"
	5634	1700		
5529	5635	3704	MHUNGPC,	TEXT "_DEVICE TEST HUNG AT PC "
	5636	0526		
	5637	1103		
	5640	0540		
	5641	2405		
	5642	2324		
	5643	4010		
	5644	2516		
	5645	0740		
	5646	0124		
	5647	4020		
	5650	0340		
5530	5651	0000	MEHEADER,	TEXT "___CMND XDR CODE RSTA START TARGET TEST PASS"
	5652	3737		
	5653	0315		
	5654	1604		
	5655	4030		
	5656	0422		
	5657	4040		
	5660	4003		
	5661	1704		
	5662	0540		
	5663	4022		
	5664	2324		
	5665	0140		
	5666	4023		
	5667	2401		
	5670	2224		
	5671	4040		
	5672	4040		
	5673	4024		
	5674	0122		
	5675	0705		
	5676	2440		
	5677	4040		
	5700	4024		
	5701	0523		
	5702	2440		
	5703	2001		
	5704	2323		

	5705	0000		
5531	5706	3310	MHOME,	TEXT "[HOME]"
	5707	1715		
	5710	0535		
	5711	0000		
5532	5712	1116	MINIT,	TEXT "INIT"
	5713	1124		
	5714	0000		
5533	5715	1305	MKEY,	TEXT "KEY"
	5716	3100		
5534	5717	3737	MOD,	TEXT "___OD = "
	5720	1704		
	5721	4075		
	5722	4000		
5535	5723	4011	MID,	TEXT " ID = "
	5724	0440		
	5725	7540		
	5726	0000		
5536	5727	4006	MFIRST,	TEXT " FIRST = "
	5730	1122		
	5731	2324		
	5732	4075		
	5733	4000		
5537	5734	4014	MLAST,	TEXT " LAST = "
	5735	0123		
	5736	2440		
	5737	7540		
	5740	0000		
5538	5741	3727	MWRITE,	TEXT " _WRITE-"
	5742	2211		
	5743	2405		
	5744	5500		
5539	5745	3722	MREAD,	TEXT " _READ-"
	5746	0501		
	5747	0455		
	5750	0000		
5540	5751	1617	MDNSERROR,	TEXT "NO CRC BUT"
	5752	4003		
	5753	2203		
	5754	4002		
	5755	2524		
	5756	0000		
5541	5757	0322	MDWESERROR,	TEXT "CRC AND"
	5760	0340		
	5761	0116		
	5762	0400		
5542	5763	4004	MDATAERROR,	TEXT " DATA ERROR_"
	5764	0124		
	5765	0140		
	5766	0522		
	5767	2217		
	5770	2237		
	5771	0000		
5543	5772	2717	MWORD,	TEXT "WORD"
	5773	2204		

5544	5774 0000		
	5775 0231	MBYTE,	TEXT "BYTE"
	5776 2405		
	5777 0000		
5545	6000 4007	MGB,	TEXT " GOOD BAD"
	6001 1717		
	6002 0440		
	6003 0201		
	6004 0400		
5546	6005 0322	MSNDERROR,	TEXT "CRC BUT NO DATA ERROR"
	6006 0340		
	6007 0225		
	6010 2440		
	6011 1617		
	6012 4004		
	6013 0121		
	6014 0140		
	6015 0522		
	6016 2217		
	6017 2200		
5547	6020 3723	MSUMCHECK,	TEXT "_SUM-CHECK IS "
	6021 2515		
	6022 5503		
	6023 1005		
	6024 0313		
	6025 4011		
	6026 2340		
	6027 0000		
5548	6030 1713	MOK,	TEXT "OK"
	6031 0000		
5549	6032 3724	MDESUMMARY,	TEXT "_TOTAL BAD = "
	6033 1724		
	6034 0114		
	6035 4002		
	6036 0104		
	6037 4075		
	6040 4000		
5550	6041 7200	MCOLON,	TEXT ":
5551	6042 3737	MUNIT,	TEXT "__DISKETTE DRIVE: "
	6043 0411		
	6044 2313		
	6045 0524		
	6046 2405		
	6047 4004		
	6050 2211		
	6051 2605		
	6052 7240		
	6053 0000		
5552	6054 4004	MDELETE,	TEXT " DROPPED FROM TEST"
	6055 2217		
	6056 2020		
	6057 0504		
	6060 4006		
	6061 2217		
	6062 1540		

	6063 2405		
	6064 2324		
	6065 0000		
5553	6066 3737	MDUMP,	TEXT "__STATISTICAL LOG"
	6067 2324		
	6070 0124		
	6071 1123		
	6072 2411		
	6073 0301		
	6074 1440		
	6075 1417		
	6076 0700		
5554	6077 4017	MLOGOVERFLOW,	TEXT " OVERFLOW"
	6100 2605		
	6101 2206		
	6102 1417		
	6103 2700		
5555	6104 4050	MINTERUM,	TEXT " (AUTOMATIC DUMP)"
	6105 0125		
	6106 2417		
	6107 1501		
	6110 2411		
	6111 0340		
	6112 0425		
	6113 1520		
	6114 5100		
5556	6115 4020	MINCOMPLETE,	TEXT " PASS ABORTED"
	6116 0123		
	6117 2340		
	6120 0102		
	6121 1722		
	6122 2405		
	6123 0400		
5557	6124 3737	MTESTP,	TEXT "__TEST PARAMATERS: "
	6125 2405		
	6126 2324		
	6127 4020		
	6130 0122		
	6131 0115		
	6132 0124		
	6133 0522		
	6134 2372		
	6135 4000		
5558	6136 3737	MRUNTIME,	TEXT "__RUN-TIME = "
	6137 2225		
	6140 1655		
	6141 2411		
	6142 1505		
	6143 4075		
	6144 4000		
5559	6145 4022	MRESTARTS,	TEXT " RESTARTS"
	6146 0523		
	6147 2401		
	6150 2224		
	6151 2300		

5560	6152 4440	MLEFTPAREN,	TEXT " ("
	6153 5040		
	6154 0000		
5561	6155 4001	HARESTARTS,	TEXT " AUTOMATIC)"
	6156 2524		
	6157 1715		
	6160 0124		
	6161 1103		
	6162 5100		
5562	6163 4011	MIDUMP,	TEXT " INTERUM REPORTS"
	6164 1624		
	6165 0522		
	6166 2515		
	6167 4022		
	6170 0520		
	6171 1722		
	6172 2423		
	6173 0000		
5563	6174 3737	MDUMPHEADER,	TEXT "___TRACK ACCESS SELF ERRORS"
	6175 2422		
	6176 0103		
	6177 1340		
	6200 0103		
	6201 0305		
	6202 2323		
	6203 4040		
	6204 4023		
	6205 0514		
	6206 0640		
	6207 4040		
	6210 4040		
	6211 0522		
	6212 2217		
	6213 2223		
	6214 0000		
5564	6215 2305	MWRSRDS,	TEXT "SECTOR WRITES / READS = "
	6216 0324		
	6217 1722		
	6220 4027		
	6221 2211		
	6222 2405		
	6223 2340		
	6224 5740		
	6225 2205		
	6226 0104		
	6227 2340		
	6230 7540		
	6231 0000		
5565	6232 4457	MSLASH,	TEXT " / "
	6233 4000		
5566	6234 5500	MDASH,	TEXT "-"
5567	6235 2722	MMWRITE,	TEXT "WRITE"
	6236 1124		
	6237 0500		
5568	6240 2205	MMREAD,	TEXT "READ"

	6241 0104		
	6242 0000		
5569	6243 0401	MMDATA,	TEXT "DATA"
	6244 2401		
	6245 0000		
5570	6246 1617	MMDNS,	TEXT "NO CRC BUT DATA"
	6247 4003		
	6250 2203		
	6251 4002		
	6252 2524		
	6253 4004		
	6254 0124		
	6255 0100		
5571	6256 2305	MMSEEK,	TEXT "SEEK"
	6257 0513		
	6260 0000		
5572	6261 2J01	MMPARITY,	TEXT "PARITY"
	6262 2211		
	6263 2431		
	6264 0000		
5573	6265 4005	MMERRORS,	TEXT " ERRORS_"
	6266 2222		
	6267 1722		
	6270 2337		
	6271 0000		
5574	6272 3715	MEDDDIDNOT,	TEXT "___MISSING DD MARK"
	6273 1123		
	6274 2311		
	6275 1607		
	6276 4004		
	6277 0440		
	6300 1501		
	6301 2213		
	6302 0000		
5575	6303 3725	MUDDDID,	TEXT "___UNEXPECTED DD MARK"
	6304 1605		
	6305 3020		
	6306 0503		
	6307 2405		
	6310 0440		
	6311 0404		
	6312 4015		
	6313 0122		
	6314 1300		
5576	6315 3715	MNOSER,	TEXT "___MISSING ERROR FLAG"
	6316 1123		
	6317 2311		
	6320 1607		
	6321 4005		
	6322 2222		
	6323 1722		
	6324 4006		
	6325 1401		
	6326 0700		
5577	6327 3737	MUNKOWN,	TEXT "___UNKNOWN IRQ"

```
0330 2516
0331 1316
0332 1727
0333 1644
0334 1122
0335 2100
5578 0336 3715 MIDENTIFICATION, TEXT "_MAINDEC-00-DirXB-D"
0337 0111
0340 1004
0341 0503
0342 5500
0343 7055
0344 0411
0345 2230
0346 0255
0347 0400

5579 /FOR THOSE OF YOU WHO LOVE TO CALCULATE
5580 /
5581 /
5582 / TOTAL BYTES = (128) X (ACCESS)
5583 /
5584 /
5585 / TOTAL BITS = (128) X (ACCESS) X (8)
5586 /
5587 /
5588 /THIS LOG IS CLEARED EACH L-S 200 ... BE CAREFUL ...
5589 /
5590 /
5591 6350 LOGS=.
5592 /
5593 /TOTAL COMPLETED PASSES
5594 /
5595 6350 PASSES=.
5596 6350 0000 0
5597 6351 0000 0
5598 /
5599 /TOTAL RESTARTS
5600 /
5601 6352 RESTARTS=PASSES+2
5602 /
5603 /TOTAL WRITES
5604 /
5605 6353 WRITES=RESTARTS+1
5606 /
5607 /TOTAL READS
5608 /
5609 6357 READS=WRITES+4
5610 /
5611 /THE FOLLOWING LOGS ACCUMULATE STATISTICAL INFORMATION
5612 /PERTAINING TO THE FOLLOWING FUNCTIONS:
5613 /
5614 /TRACK ACCESS FREQUENCY (TAF)
5615 /
5616 / (THE NUMBER OF TIMES A TRACK HAS BEEN ACCESSED)
5617 /
```

```
5618 /DOUBLE PRECISION LOG
5619 /
5620 6363 TAF=READS+4
5621 /
5622 /SAME ACCESS
5623 /
5624 /THE NUMBER OF TIMES A TRACK HAS BEEN ACCESSED FROM THAT SAME TRACK
5625 / (WITH NO LATERAL ACTUATOR MOVEMENT OCCURING)
5626 /
5627 /DOUBLE PRECISION LOG
5628 /
5629 6615 SAME=TAF+232
5630 /
5631 /TRACK ACCESS FREQUENCY ERROR RATE (TAFE) PER DRIVE-PER TRACK
5632 /
5633 / (THE NUMBER OF TIMES A TRACK WAS ACCESSED AND SOME TYPE
5634 / OF ERROR RESULTED ; I.E. , WRITE, READ, PROGRAM VERIFY)
5635 /
5636 /SINGLE PRECISION LOG
5637 /
5638 7047 TAFE=SAME+232
5639 7047 TAFE0=TAFE
5640 7164 TAFE1=TAFE0+115
5641 /
5642 /TOTAL WRITE ERRORS PER DISKETTE
5643 /
5644 7301 WERRORS=TAFE1+115
5645 /
5646 /TOTAL READ ERRORS PER DISKETTE
5647 /
5648 7303 ERRORS=WERRORS+2
5649 /
5650 /TOTAL PROGRAM READ COMPARE (DATA) ERRORS PER DISKETTE
5651 /
5652 7305 DATAERRORS=ERRORS+2
5653 /
5654 /TOTAL DATA ERROR WITH NO CRC ERROR STATUS
5655 /
5656 7307 DNSERRORS=DATAERRORS+2
5657 /
5658 /TOTAL DATA NO CRC STATUS ERROR
5659 /
5660 7311 SNDERRS=DNSERRORS+2
5661 /
5662 /TOTAL (SEEK) ERRORS PER DISKETTE
5663 /
5664 7313 SERRORS=SNDERRS+2
5665 /
5666 /TOTAL PARITY ERRORS PER DISKETTE
5667 /
5668 7315 PERRS=SERRORS+2
5669 /
5670 /THE NEXT 14 DECIMAL LOCATIONS ARE RESERVED FOR (PER DRIVE):
5671 /
5672 /UNRECOVERABLE WRITE ERRORS
```

```
5673      /UNRECOVERABLE READ ERRORS
5674      /UNRECOVERABLE PROGRAM READ COMPARE (DATA) ERRORS
5675      /UNRECOVERABLE DATA NO ERROR STATUS ERRORS
5676      /UNRECOVERABLE STATUS NO DATA ERRORS
5677      /UNRECOVERABLE (SEEK) ERRORS
5678      /UNRECOVERABLE PARITY ERRORS
5679      /
5680      /B-CODES LOG
5681      /
5682      7335 DCODES=PERROES+2+16
5683      7337 UDCODES=DCODES+2
5684      7341 ACODES=UDCODES+2
5685      7343 ACRC=ACODES+2
5686      7345 APAR=ACRC+2
5687      7347 A3=APAR+2
5688      7351 BCODES=A3+2
5689      /
5690      7353 B10=BCODES+2
5691      /
5692      7450 XLOGS=BCODES+40+40-1
5693      /
5694      /THE FOLLOWING IS THE WRITE BUFFER ALLOCATED STORAGE
5695      /
5696      7451      *XLOGS+1
5697      /
5698
5699
5700      0200      *200      /START FOR SELF STARTING BINARY LOADER
5701
5702
5703      000
```

```
0000 11111111 11111100 11111111 11111111 11111111 11111111 11111111 11111111
0100 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111110
0200 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
0300 11111111 11111111 11111111 11111111 11111111 11111001 11111111 11111111
0400 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
0500 11111111 11111111 11111111 11111111 11111111 11111111 11101111 11111111
0600 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
0700 11111111 11111111 11111111 11111111 11111111 11111100 00011111 11111111

1000 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
1100 11111111 11111111 11111111 11111111 11111111 11111000 00111111 11111111

1200 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
1300 11111111 11111111 11111111 11111111 11111111 11111101 11111111 11111111

1400 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
1500 11111111 11111111 11111111 11111111 11111111 11111111 11111110 11111111

1600 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
1700 11111111 11111111 11111111 11111111 11111111 11111111 11110011 11111111

2000 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
2100 11111111 11111111 11111111 11111111 11111111 11111111 00111111 11111111

2200 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
2300 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11001111

2400 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
2500 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111

2600 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
2700 11111111 11111111 11111111 11111111 11111111 11111111 11111000 01111111

3000 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
3100 11111111 11111111 11111111 11111111 11111111 11111111 11111111 10111111

3200 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
3300 11111111 11111111 11111111 11111111 11111111 11111111 11110111 11111111

3400 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
3500 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111

3600 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
3700 11111111 11111111 11111111 11111111 11111111 11100000 00011111 11111111
```

```
4000 1111111 1111111 1111111 1111111 1111111 1111111 1111111 1111111
4100 1111111 1111111 1111111 1111111 1111111 1111111 1111011 1111111

4200 1111111 1111111 1111111 1111111 1111111 1111111 1111111 1111111
4300 1111111 1111111 1111111 1111111 1111111 1111000 0011111 1111111

4400 1111111 1111111 1111111 1111111 1111111 1111111 1111111 1111111
4500 1111111 1111111 1111111 1111111 1111111 1111111 1100111 1111111

4600 1111111 1111111 1111111 1111111 1111111 1111111 1111111 1111111
4700 1111111 1111111 1111111 1111111 1111111 1111111 1111111 1111111

5000 1111111 1111111 1111111 1111111 1111111 1111111 1111111 1111111
5100 1111111 1111111 1111111 1111111 1111111 1111111 1111111 0111111

5200 1111111 1111111 1111111 1111111 1111111 1111111 1111111 1111111
5300 1111111 1111111 1111111 1111111 1111111 1111111 1111111 1111111

5400 1111111 1111111 1111111 1111111 1111111 1111111 1111111 1111111
5500 1111111 1111111 1111111 1111111 1111111 1111111 1111111 1111111

5600 1111111 1111111 1111111 1111111 1111111 1111111 1111111 1111111
5700 1111111 1111111 1111111 1111111 1111111 1111111 1111111 1111111

6000 1111111 1111111 1111111 1111111 1111111 1111111 1111111 1111111
6100 1111111 1111111 1111111 1111111 1111111 1111111 1111111 1111111

6200 1111111 1111111 1111111 1111111 1111111 1111111 1111111 1111111
6300 1111111 1111111 1111111 1111111 1111111 1100000 0000000 0000000

6400
6500

6600
6700

7000
7100

7200
7300

7400
7500

7600
7700
```

```
A0 3716 C8GET 0624 DDIGNO 3456 GETWOR 1046
A10 0010 C8GET1 0305 DELUNI 4451 GOBIT 0165
A11 0011 C8INQU 4430 DEVCDE 5345 GOITA 0443
A12 0012 C8LOOK 4406 DIGITS 2761 GOOD 0174
A13 0013 C8PASS 2132 DISPLA 0716 GOTOA 0454
A3 7347 C8PASS 4425 DMTYPE 4533 GTF 6004
ACCEPT 0661 C8RET1 0561 DNS 1323 H1 0164
ACODE 3724 C8RETD 0614 DNSERR 7307 HALT 4456
ACODES 7341 C8RETR 0531 DNSLOG 0154 HANGER 0111
ACRC 7343 C8SETD 0613 DOA 0622 HARDP 3551
ACSAV 1141 C8SETS 0530 DOACTI 5210 HLT 4456
ACTIVE 5224 C8STRT 0200 DOB 0623 HLT1 0243
AERROR 4427 C8SWIT 4426 DOCNT 0256 HLT10 2131
ANDRET 2147 C8SWST 0746 DONE 4452 HLT16 4220
ANOT0 3711 C8TEST 4547 DONEA 0426 HLT2 0412
APAR 7345 C8TMP1 1034 DOPACK 0210 HLT20 0204
APT0 4477 C8TST2 3161 DOSET 0261 HLT6 2102
ARESTA 0103 CAF 6007 DRVSEL 4476 HLT7 1474
ASTATU 0141 CCNT 2764 DTYPE 3614 HLT8 2261
AUTO 0257 CHARLI 3305 DWESER 1700 HUNGPC 5303
AUTOER 0267 CHECK 3111 DWS 1323 HUNGUP 5200
AUTOL 0262 CHECKC 4424 DWSLOG 0153 ID 0033
AUTOOK 0277 CHEK22 4500 ECOMMA 0163 IDUMP 0112
AUTORF 0247 CHK22 4714 EMPTY 1617 IF 0146
A10 7353 CKCOUT 0240 EMPTYE 2012 INDEXA 0455
BCODE 3744 CKDEVI 5217 EMPTYL 1607 INIT 4450
BCODES 7351 CKSWIT 4407 EMPTYO 2023 INITSE 4457
BEGIN 0207 CLKCNT 5416 ENDCOM 2007 INITSW 1147
BSTATU 0142 CNOTFI 1720 ENDIT 0743 INITTR 4460
BSW 4436 CNTRL 1006 EPASS 0107 INMODE 1111
BSWAC 0147 CNTRLD 0600 ERETUR 3601 INSUMC 1763
BSWJIN 0150 CNTRLE 0532 ERROR 3752 INTR 4447
BSWRAL 5166 CNTRLO 0515 ERROR2 4000 IOF 6002
BUSY 0104 CNTRLQ 0500 ERROR3 1127 ION 6001
C8BY1 0235 CNTRLR 0504 ERRORM 4700 IOTWAT 2357
C8BY3 1074 CNTRLRS 0514 EXITA 0440 ISZA11 1107
C8BY4 0510 CNTRVAL 0262 EXITCK 5440 ISZCOM 1760
C8BY5 1134 COMMAN 0105 EXTLOO 1226 ISZDIG 2740
C8CHAR 1110 COMPAR 1601 FILCNT 1053 JMPAUT 0264
C8CK22 1151 COMPRE 0106 FILL 1220 JMPDIG 2730
C8CKP 1035 COUNT 5417 FILLER 1226 JMPICO 1600
C8CKSE 0734 CRCERR 1443 FILLK 1236 JMPWHI 1274
C8CNTL 4431 CSTATU 0143 FIRST 0034 JMS202 2240
C8D01 0327 DASHAL 0063 FIRSTE 0110 JMSFOR 5275
C8D011 0607 DASHBC 4067 FLSAVE 1143 K0003 4747
C8D02 1046 DATAER 7305 FORCE 3605 K0007 0131
C8D04 1021 DCADOA 0615 GETASE 4453 K0100 4750
C8D07 0523 DCAGOO 1103 GETATR 4454 K0200 0015
C8ERR1 1000 DCATAR 2511 GETCH1 0704 K0400 0014
C8EXT1 0236 DCODES 7335 GETDAT 0456 K0750 0123
C8EXT2 0310 DDCODE 3632 GETLCD 4247 K12 0120
C8FILL 1052 DDERRO 3616 GETUNI 4455 K16 0121
```

K377	0125	MCOMMA	5502	MGL	7421	PAT2	1122
K4000	4722	MCRLF	5611	MUSAVE	1142	PAT3	1123
K6500	5415	MCRLFS	5612	MREAD	5745	PAT4	1124
K6520	0130	MDASH	6234	MPEFRE	5577	PAT5	1125
K67X1	4231	MDATAE	5763	MRESTA	6145	PAT6	1126
K67X2A	0523	MDELET	6054	MRS	5516	PATR1	1014
K67X2B	0526	MDESUM	6032	MRUNTI	6136	PATR2	1015
K67X3	0532	MDEVIC	5534	MSB	0170	PATSAV	1006
K67X4	0537	MDIREC	1145	MSDNUN	2532	PATSET	1016
K67X5	0544	MDISKE	5470	MSDFIV	5547	PATTER	1112
K67X5A	5266	MDHGER	5751	MSLASH	6232	PCLF	6662
K67X5B	3423	MDUMP	6066	MSNDER	6005	PCSAVE	1140
K67X6	4420	MDUMPH	6174	MSPACE	5614	PERROR	7315
K67X7	4424	MDWESE	5757	MSTEST	5563	PHOME	4146
K7000	0127	MEDDDI	6272	MSUMCH	6020	PI	3400
K7377	0126	MEHEAD	5652	MTESTP	6124	PICLSK	3415
K74	0122	MEQT	5615	MUDDDI	6303	PIEXIT	3473
K7777	0113	MESA	1004	MUNIT	6042	PNTBUF	1136
KEYSWI	5327	MESPAS	0263	MUNKNO	6327	PNTTEXT	3322
KM10	0115	MESSAG	3247	MWORD	5772	PNTID	0722
KM40	0116	MFIRST	5727	MWRITE	5741	PNTNOP	4555
KM6	0114	MGB	6000	MWRSRD	6215	POLL	2267
KM74	0117	MHOME	5706	MX	2134	PRETRY	0157
KRETRY	0134	MHUNGP	5635	NEXT	2212	PRINT	4463
LAS	4407	MID	5723	NEXTSE	3026	PRINTD	4464
LASSW0	4216	MIDENT	6336	NOHEAD	4011	PSIE	6665
LASSW3	3746	MIDUMP	6163	NOINFO	2325	PSKE	6663
LAST	0035	MINCOM	6115	NOPRIN	4535	PSKF	6661
LCD	4437	MINIT	5712	NOSE	1306	PSB	6664
LCD4	4440	MINTER	6104	NOSET	0250	PTSTOR	0355
Lcdb	4441	MKEY	5715	NOTCL8	5443	Q46ID	2621
LcdbL	4262	MLAST	5734	NOTEST	0405	Q460D	2627
LcdbRE	4303	MLEFTP	6152	NOTICK	4526	Q40D	2555
LOCK	4461	MLOGOV	6077	NOTQ	5321	Q60D	2614
LOG	4462	MMDATA	6243	NRETUR	1006	QUIET	1317
LOGBST	3726	MMDNS	6246	NSTAND	3140	R0	4674
LOGCOD	3700	MMERRO	6265	NULINE	3267	R1	3347
LOGCOM	4400	MMPARI	6261	NUREAD	1342	R1RETR	0151
LOGGED	3554	MMREAD	6240	NUWORD	3240	R2	3350
LOGLSB	4412	MMSEEK	6256	OD	0032	R2RETR	0152
LOGMSB	4413	MMUNRE	3101	OKRETI	3602	RANGEN	3333
LOGREF	0327	MMWRIT	6235	OKSTAR	3044	RDC	0133
LOGRER	1562	MNO	5633	ONECRL	4025	RDORWR	0550
LOGS	6350	MNOGON	5525	OTHERR	4322	READ	4465
LOGSAM	4347	MNONE	5446	OUTPUT	4250	READCO	4466
LOGTAF	4343	MNOSER	6315	PACKDO	5435	READER	1424
LSB	0167	MNOTRE	5504	PAGE1	3054	READL	1404
LSBX1	3527	MOD	5717	PASCNT	0257	READOK	1476
LSBX2	3547	MOK	6030	PASHES	1000	READRE	1407
MAREST	6155	MOREDR	2344	PASSES	6350	READS	6357
MBYTE	5775	MPASSE	5624	PASSIN	0132	REASK1	1230
MCOLON	6041	MQA	7501	PASSRE	2123	RECALI	4200

REDO1	0662	START	0140	TTYBUS	0171	XC8ING	0635
REDOA	0415	STESTP	0172	TYLPT	1137	XC8LOO	1221
REILL	1214	STOP	4471	TWOCRL	4023	XC8OCT	1013
REMOVE	5452	STOPNT	0356	TY1ASC	3306	XC8PAS	0200
REKED	1414	STR	4444	TY4OCT	4473	XC8PNT	0322
RERROR	7303	SUNCHE	0166	TY8OCT	4475	XC8PSW	0652
RESFEK	1416	SUNITS	0175	TYBSTA	4076	XC8SW	0272
RESEQU	2440	SW0	4000	TYPEIT	4474	XC8TTY	0311
RESTAR	6352	SW1	2000	UDCODE	7337	XC8TYP	1112
RETURN1	2000	SW10	0002	UNIT	2274	XCHECK	5420
RETURN2	1003	SW11	0001	UNIT5	2270	XCXSWI	0744
RETURN	3600	SW2	1000	UNITX	2273	XCNT	0124
REWRIT	1206	SW3	0400	UNITZ	2272	XCOMP	1663
RLOGGE	1564	SW4	0200	UNKNOWN	3466	XCRER	1472
RNOTOK	1522	SW5	0100	UNRECO	3520	XDELUN	2275
ROK	1510	SW6	0040	UPAROW	0615	XDEVIC	5262
RS	2237	SW7	0020	UREAD	1345	XDOLPT	1125
RXERRO	3642	SW8	0010	USEEK	1440	XDONE	4707
S200	0236	SW9	0004	USTART	0173	XDOSW	0513
S202	4434	SWNOP	5353	VERIFY	3461	XDRIN	4442
S202RE	4516	T0T7	0671	W0	4670	XDRIVE	2331
SAME	6615	TAB	4472	WAIT	4502	XDROUT	4443
SAVEBS	3645	TAB27	4104	WATEX	2370	XDRVSL	4723
SAVECS	3666	TAB41	4126	WATNES	1144	XDUMP	5010
SDN	4446	TAB5	4044	WERPOR	7301	XDUMPL	5062
SDNFIR	0227	TAB53	4157	WHAT2	3071	XDUMPX	5117
SDNOK	5230	TAB60	2525	WHAT3	1552	XEMPTY	2071
SDNSEC	4426	TABLA	0461	WHATYP	1537	XFLENG	1715
SDNUNE	1304	TABLB	0471	WHICHR	1300	XFORCE	3610
SECTOR	0135	TAF	6363	WNOTOK	1272	XGETAS	3007
SEQ	2442	TAFE	7047	WRESEE	1212	XGETAT	2425
SEQABO	2654	TAFE0	7047	WRITE	4501	XGETUN	2200
SEQBBO	2545	TAFE1	7164	WRITEL	1204	XHALT	5126
SEQDEC	2501	TARGET	0144	WRITEO	1262	XHUNG	5276
SEQID	2632	TCTRLS	5272	WRITER	1251	XINIT	4423
SEQINC	2470	TEST	0616	WRITES	6353	XINIT5	3000
SEQR1	2466	TEST1	0610	WUNITS	2271	XINITT	2413
SEQR2	2467	TEST2	0606	XIDUMP	4654	XINTR	4415
SEGRAN	2452	TEST3	0602	X3DUMP	5000	XISZDI	4561
SEQSTR	2600	TEST4	0600	XA10	0003	XK400	5445
SER	4445	TEST5	0612	XAC	3500	XK67X1	5262
SERROR	7313	TEST7	0602	XAERRO	3351	XK67X2	5263
SETUP	4467	TESTL	0620	XANDRE	2157	XKCC	5304
SHIFT	2713	TESTP	0145	XAPT8	0343	XL	4621
SHIFTS	2763	TESTS	0512	XASTAT	1762	XL0	4602
SND	1323	THEL	0633	XAUTO	0305	XLCD	4226
SNDERR	7311	THENEX	2152	XBSW	5144	XLCD4	4233
SNDLOG	0155	THETES	0631	XC8CHA	3170	XLCD8	4260
SPECIA	4470	TMPCNT	0747	XC8CKP	1054	XLCD8R	4304
SRETRY	0156	TRACKS	0160	XC8CNT	0400	XLINK	3501
SSTART	0136	TSTCHA	0722	XC8CRL	1036	XLOCK	2400
STARGE	0137	TTRACK	0161	XC8ECH	1076	XLOG	3502

XLOGCO	4352	XXDRIN	0522
XLOGRE	0320	XXDROU	0525
XLOGS	7450	XXDUMP	5056
XLS	0233	XXGETA	3010
XMESSA	1316	XXINIT	4432
XMORED	2342	XXKCC	0176
XMX	0255	XXTAB	3226
XNOERR	5112	XXTHEL	0647
XNOHE	2245	XXX	0004
XNULIN	3276	XYTHEL	0651
XOCTAL	2760	YDUMP	5167
XOUTPU	3250	YYY	0005
XPASSE	0260	ZERO	2753
XPATTE	1102		
XPI	0676		
XPRINT	3227		
XRDC	1402		
XREAD	1400		
XREADC	1352		
XS201	0400		
XS202	4600		
XS20X	0420		
XSDN	0543		
XSEQ	2512		
XSEQ2	2645		
XSEQ3	2665		
XSER	0536		
XSETUP	2135		
XSHIFT	2716		
XSPECI	4517		
XSTARG	3070		
XSTOP	2104		
XSTR	0531		
XTAB	3200		
XTABL	3204		
XTABLA	0457		
XTABLB	0460		
XTARGE	0162		
XTCF	3325		
XTESTS	0511		
XTHEL	0640		
XTICK	5400		
XY40C	2676		
XY80C	4751		
XYYPEI	3272		
XWAIT	2352		
XWRITE	1200		
XXC0CN	1200		
XXC0IN	1205		
XXC0PS	1211		
XXC0SW	1215		
XXDMP	2762		

ERRORS DETECTED: 0
LINKS GENERATED: 279
RUN-TIME: 31 SECONDS
4K CORE USED

A0	4196	4202#																	
A1W	957#	1408	1409	1410	4926	4940	4941	5122	5123	5127	5129	5150	5151	5153					
	5155	5179	5180	5199	5201	5322	5329	5331											
A11	958#	1898	1899	1924	1934	1954	2657	5124	5141	5143	5149	5198	5202	5324					
	5125																		
A12	959#	1900	1922	2655	4922	4950	4958	4967	5152	5160	5162	5177	5178	5190					
A13	960#	3715	3718	3733															
A3	5687#	5688																	
ACCEPT	1677	1706	1718	1751#	1758	1763													
ACODE	4198	4200	4204	4205	4208#														
ACODES	4199	4203	5684#	5685															
ACRC	4199	5685#	5686																
ACSAV	232	235	410	641	721#														
ACTIVE	5310	5311#	5320																
AERROR	989#	3994	3957	4256															
ANDRET	2861	2870#																	
ANOT0	4107	4197#																	
APAR	5686#	5687																	
APT8	1113#	1250																	
ARESTA	1125#	1288	2974	2982	4808														
ASTATU	1155#	1361	1793	2267	2497	3837	3857	3885	4185	4317	4549								
AUTO	1328#	1372																	
AUTOER	1339	1344#																	
AUTOL	1331#	1350																	
AUTOOK	1338	1346	1359#																
AUTORE	1287	1320#	2984	5070															
B1W	4218	4222	5690#																
BCODE	4217	4219	4223	4224	4227#														
BCODES	4218	4222	5688#	5690	5692														
BEGIN	1232	1233	1250#																
BSTATU	1156#	4129	4213	4342	4440														
BSW	1022#	3677	3694																
BSWAC	1161#	5236	5241	5248	5251														
BSWLIN	1162#	5238	5249																
BSWRAL	5240	5246	5253#																
BUSY	1126#	1254	1323	3809	3812	3897	4023	4042	4045	4046	5270								
C8BY1	56	58	78#	91															

[illegible]

[illegible]

GETUNT	1057#	1328	1671	1693	1716	3066	4923	5171								
GFTWOR	1921#	1956	2061	2515												
GOBIT	1209#	1255	3830	4643	4644											
GOKITA	249	266#														
GOOD	1225#	1941	1947	1950	1952	2064	2540	2669								
GOIOA	271	272	273	274	275#											
GTF	28#	237	642													
H1	1208#	1784	3085													
HALT	1059	1060#														
HANGER	1131#	1257	1327	1777	1786	3081	3087	5273								
HARDP	3979	3987#														
HLT	1059#	1237	1297	1475	2160	2333	2810	2847	2979	3082	4452	5304				
HLI1	829	1297#														
HLTI0	141	2841	2847#													
HLTI6	845	4452#														
HLF2	833	1475#	5437													
HLT20	849	1237#	4774													
HLT6	837	2810#														
HLT7	854	2333#														
HLT8	850	2979#														
HUNGPC	5271	5371	5373#													
HUNGUP	1790	3090	5270#													
ID	1010#	1515	1519	1520	1531	3121	3207	3221	3329	3353	3374	3573	3592			
IDUMP	1132#	1289	4777	4816												
IF	1160#	3467	3470	3472	3478	3479	3492									
INDEXA	241	250	270	276#												
INIT	1045#	2983	4449													
INITSE	1062#	2034	2238													
INITSW	2006#	2010	2011	4292	4349	4370										
INITTR	1064#	1670	1692	1715												
INMODE	253	302	313	479	674	678	682#									
INSUMC	2311	2369	2510	2534	2535	2694#	2762	2765	2775	2781	2788	2805				
INTR	1043#	2521	2726	3833	4489	4528										
IOF	894#	3763	5469	5499												
ION	893#	1639	1775	1808	1819	2079	3727	3819	3901	4490	5503					
TOTWAT	3079	3082#	3086	3088												
ISZA11	1942	1948	1954#													
ISZCOM	2579	2652	2679#													
ISZDIG	3409	3417#	3427	4881												
JMPAUT	1338#	3842														
JMPD1G	3409#	3428														
JMPCO	2470#	2807	2811													

MQSAVE	240	405	645	722#
MREAD	2328	2606	5539#	
MREFRE	1400	5522#		
MRESTA	4802	5559#		
MRS	2981	5517#		
MRUNTI	5558#			
MSB	1217#	5144	5163	
MSDNUN	2147	3253#		
MSDRIV	1815	5520#		
MSLASH	4983	5565#		
MSNDER	2330	4995	5546#	
MSPACE	5195	5525#		
MSTEST	1467	5521#		
MSUMCH	2780	5547#		
MTFSTP	3564	5557#		
MUDDDI	4049	5575#		
MUNIT	3024	4932	5551#	
MUNKNO	3896	5577#		
MWORD	2628	2639	5543#	
MWRITE	2325	2603	5538#	
MWRSRD	4977	5564#		
MX	95	2716	2828	2853#
NEXT	2908#	2918		
NEXTSE	3490#	3520	3531	
NOHEAD	4259	4276#		
NOINFO	3021	3046#		
NOPRIN	4235	4850#		
NOSE	2149#	3888		
NOSET	85	90#		
NOTCL8	5493	5507#		
NOTEST	1417	1466#	3172	
NOTICK	3251	4413	4840#	
NOTQ	5385	5396#		
NRETUR	1862#			
NSTAND	3572	3576	3580	3585#
NULINE	3690	3697#		
NUREAD	2142	2189#	2197	
NUWORD	3673#	3679		
OD	1015#	1526	1530	1533 3123 3196 3232 3319 3331 3351 3372 3376 3570 3588
OKRETI	3889	4023#		
OKSTAR	3498	3504#		
ONECRL	4268	4281	4287	4290#
OTHERR	4545	4551	4556	4565# 4567
OUTPUT	3674	3678	3681#	
PACKDO	5495	5501#		
PAGE1	3527#			
PASCNT	59	97#		
PASMES	1852#	2836		
PASSES	98	1404	2713	2830 3248 5595# 5601
PASSIN	1148#	2824	2829	3120 3955 4780
PASSRE	1640	2717	2838#	
PAT2	1961	1970#		
PAT3	1962	1971#		

SEQ 0163

PAT4	1963	1972#		
PAT5	1964	1973#		
PAT6	1965	1974#		
PAIR1	1871	1875#	1901	
PATR2	1873	1876#	1903	
PATSAV	1869#	1874	2848	
PATSET	1882#	1905	2055	2501
PATTER	1887	1889	1959#	
PCLF	24#	708	713	
PCSAVE	720#			
PERROR	1360	2083	2800	4566 5668# 5682
PHOME	4371	4393#		
PI	922	3784#		
PICLSK	3791	3809#		
PIEXIT	3687	3723	3800	3811 3898# 4870 5363 5392 5407
PHTBUF	697	701	707	716#
PHTEXT	3665	3717	3726#	
PNTID	1268	1800#	1809	
PNTINOP	4876#	4879		
POLL	2906	2908	2910	2911 2985#
PRETRY	1174#	1330	1344	1351 2052 2069 2076 2088 2255 2500 2732 2739 3987 4554
PRINT	4561			
	1074#	1399	1401	1466 1802 1804 1814 1859 1998 2156 2324 2327 2329 2602
	2605	2619	2622	2624 2638 2640 2653 2710 2714 2779 2784 2793 2842 2968
	2970	2977	2980	3023 3028 3054 3061 3064 3563 3567 3585 3589 3593 3597
	3895	4266	4288	4290 4300 4330 4334 4338 4359 4393 4761 4763 4768 4778
	4783	4795	4801	4804 4809 4812 4817 4844 4917 4931 4938 4953 4963 4965
	4976	4982	5119	5132 5180 5194 5205 5299 5368 5423
PRINTD	1076#	1373	3036	4788
PSIE	279			
PSKE	25#			
PSKF	23#	711		
PSTB	26#	708		
PTSTOR	172	174	185	194 196#
Q46ID	3277	3313	3325#	
Q46OD	3282	3321	3331#	
Q40D	3261	3274#		
Q60D	3303	3317#		
QUIET	2154	2158#		
R0	4975	4987#		
R1	1870	1902	3176	3182 3743 3746 3749 3753#
R1REIR	1168#	2189	2198	2240 3931
R2	1872	1904	3178	3184 3744 3747 3750 3751 3754#
R2RETR	1169#	2175	2190	2245 2405 2441 2449 3547
RANGEN	1949	1959	3179	3741# 3752
RDC	1149#	2033	2237	2305 2353 2435 2577 3468
RDORWR	1625#	1632	1633	2196 2322 2383 2600
READ	1078#	1653	1661	1679
READCO	1080#	1655	1659	1708 1719
READER	2266#			
READL	2239#	2460		
READOK	2259	2352#		
READRE	2143	2244#		

SEQ 0164

READS	2173	2371	4973	4987	5609#	5620			
REASK1	802	805#							
RECALI	4436#	4861							
RED01	470#	554							
RED0A	244#	252							
REFILL	2055#	2075							
REMOVE	1005	5513#							
REREAD	2183	2252#							
RERROR	2458	5648#	5652						
RESEEK	2254#	2276							
RESEQU	3152#	3225	3234						
RESTAR	1455	1458	4800	5601#	5605				
RETUR1	1861	2710#							
RETUR2	1859#								
RETURN	3041	4015#	4017	4025	4485	4524	4571		
REWRIT	2039#	2199							
RLOGGE	2281	2416	2455	2459#					
RNOTOK	2191	2200	2383#						
ROK	2355	2363#							
RS	2161	2953#	3115	3989	4462	5372			
RXERRO	3073	4043	4087#						
S200	1288#								
S202	1236	1251	1285	1414	2962	3035	4760#	4773	4823
S202RE	4791	4823#	5207						
SAME	4599	5140	5629#	5638					
SAVEBS	4110#								
SAVECS	1130#								
SDN	1041#	1275	4124	4134	4656				
SDNFIR	1275#	4383	5202	5420					
SDNOK	5313	5320#							
SDNSEC	2008	4656#							
SDNUNE	2147#	3032							
SECTOR	1151#	2133	2459	3040	3454				
SEQ	3148	3150	3165#						
SEQABO	3169	3361#							
SEQBBO	3170	3258#							
SEQDEC	3167	3203#	3356						
SEQID	3168	3338#							
SEQINC	1705	3166	3192#	3357					
SEQR1	3175	3183	3187#						
SEQR2	3177	3185	3188#						
SEQRAN	3153	3165	3175#						
SEQSTP	3171	3300#							
SEP	1039#	1276	3871	4078	4125	4135	4657		
SERROR	2130	2160	2280	2378	5664#	5668			
SETUP	1082#	3386	3632	4828					
SHIFT	3396#	3418							
SHIFTS	3397	3403	3436#						
SND	2288#	2280	2334						
SNDERR	2452	5660#	5664						
SNDLOG	1172#	2249	2314	2352	2446	2450			
SPECIA	1084#	4854	4936						
SRETRY	1173#	2050	2100	2107	2140	2160	2253	2270	2277

SSTART	1152#	1258	2122	2366	4356	4367	4590	4665											
STARGE	1153#	1932	2121	2365	3506	3518	3527	3538											
STAR1	1154#	1704	2120	2364	3143	4363	4587		4401	4531									
STESTP	1219#	1555	1762	1894	1995	2090	2538	2633	2667	2760	3475	3854	4503						
STOP	1086#	1682	1722																
STOPNT	197#																		
STR	1037#	2062	2516	4529	4533														
SUMCHE	1214#	1891	1938	1946	1951	1953													
SUNITS	1226#	1391	1488	4785															
SW0	903#	1299																	
SW1	904#	1299	2039																
SW10	913#	1779																	
SW11	914#	1779																	
SW2	905#	2646																	
SW3	906#																		
SW4	907#																		
SW5	908#	4851																	
SW6	909#	4437																	
SW7	910#																		
SW8	911#																		
SW9	912#																		
SWTNOP	5431	5437#																	
T0T7	1755	1759#																	
TAB	1088#	2661	2675	3245	4307	4310	4332	4336	4343	4347	4364	4368	4398	4402					
	4947	5139	5158	5183															
TAB27	4340	4347#																	
TAB41	4352	4361	4368#																
TAB5	4302	4307#																	
TAB53	4395	4402#																	
TAB60	1981	1994	2000	3245#															
TABLA	278	280#																	
TABLB	279	288#																	
TAF	4595	5121	5140	5620#	5629														
TAFE	3976	5638#	5639																
TAFEO	3973	3974	3976	5167	5174	5175	5639#	5640											
TAFE1	3973	3974	3976	5174	5175	5640#	5644												
TARGET	1158#	1259	1703	1761	1927	2119	2363	3142	3181	3198	3209	3211	3223	3230					
	3317	3332	3370	3377	3534	3975	4397	4535	4585	459									

SEQ 0167

SEQ 0168

[illegible][illegible]

.L0752	512	528#							
.L0753	510	514	529#						
.L0754	508	530#							
.L0755	504	531#							
.L0756	486	532#							
.L0757	480	488	533#						
.L0760	479	534#							
.L0761	477	535#							
.L0762	476	536#							
.L0763	474	484	491	497	537#	1830	1837#		
.L0764	468	538#	1790	1838#					
.L0765	437	539#	1789	1839#					
.L0766	434	471	540#	1780	1840#				
.L0767	430	463	541#	1779	1841#				
.L0770	410	542#	1756	1842#					
.L0771	407	543#	1753	1843#					
.L0772	405	544#	1705	1844#					
.L0773	400	433	436	470	520	545#	1702	1845#	
.L0774	398	482	495	507	511	515	517	546#	1701
.L0775	397	399	478	547#	1665	1847#			1846#
.L0776	396	548#	1655	1659	1848#				
.L0777	381	439	549#	1653	1661	1849#			
.L1162	2008	2013#							
.L1163	733	741#	2007	2014#					
.L1164	653	675	742#	1996	2015#				
.L1165	652	656	673	743#	1992	2016#			
.L1166	651	672	744#	1981	1994	2000	2017#		
.L1167	613	745#	1980	2018#					
.L1170	608	746#	1949	1959	2019#				
.L1171	585	747#	1896	1897	2020#				
.L1172	584	748#	1887	2021#					
.L1173	581	749#	1883	2022#					
.L1174	563	750#	1872	1904	2023#				
.L1175	560	751#	1870	1902	2024#				
.L1176	554	752#	1861	2025#					
.L1177	551	753#	1854	2026#					
.L1357	2206	2207#							
.L1360	2205	2208#							
.L1361	2196	2209#							
.L1362	2191	2200	2210#						
.L1363	2183	2211#							
.L1364	2173	2212#							
.L1365	2161	2213#							
.L1366	2155	2214#							
.L1367	2149	2215#							
.L1370	2147	2216#							
.L1371	2143	2217#							
.L1372	2128	2174	2218#						
.L1373	799	810#	2127	2219#					
.L1374	787	811#	2125	2171	2220#				
.L1375	777	812#	2061	2221#					
.L1376	770	805	813#	2055	2222#				
.L1377	761	800	814#	2039	2223#				

.L1570	2440	2445	2462#						
.L1571	2372	2463#							
.L1572	2371	2464#							
.L1573	2369	2465#							
.L1574	2322	2383	2466#						
.L1575	2313	2334	2362	2467#					
.L1576	2311	2360	2468#						
.L1577	2308	2356	2469#						
.L1766	2646	2699#							
.L1767	2636	2700#							
.L1770	2628	2701#							
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[illegible][illegible]

SEQ 0177

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SEQ 0178

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