

IDENTIFICATION

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1.0 GENERAL INFORMATION

1.1 PROGRAM ABSTRACT

1.1.1 STRUCTURE OF PROGRAM

THIS DIAGNOSTIC IS COMPATIBLE WITH BOTH XXDP+ AND ACT. IT CAN BE RUN STANDALONE UNDER XXDP+, AND CAN BE CHAINED UNDER XXDP+, ACT AND APT IN ACT MODE (SEE 2.2 'CHAIN MODE OPERATION' FOR DETAILS OF CHAINING PROCEDURE). IT IS A SINGLE PROGRAM FROM THE STANDPOINT OF THE DIAGNOSTIC USER, WHICH AT RUN TIME IS APPENDED TO A COMMON FRONT-END PIECE OF SUPERVISOR SOFTWARE THROUGH WHICH THE DIAGNOSTIC PROGRAM INTERFACES TO THE ENVIRONMENT AS IT EXECUTES.

WHEN THIS DIAGNOSTIC IS STARTED, CONTROL GOES FIRST TO THE SUPERVISOR PORTION, WHICH WILL ASK CERTAIN 'HARD CORE' QUESTIONS ABOUT THE ENVIRONMENT. THEN IT WILL ENTER COMMAND MODE, INDICATED BY A PROMPT CHARACTER (DR>). AT COMMAND MODE THE OPERATOR MAY ENTER ANY OF SEVERAL COMMANDS AS DESCRIBED IN 2.0 'OPERATING INSTRUCTIONS'.

THE DIAGNOSTIC PROGRAM IS LOADED IN THE LOWER 8K OF MEMORY. THE DIAGNOSTIC SUPERVISOR CODING OCCUPIES 6.25K OF THE UPPER PART OF MEMORY JUST BELOW THE XXDP+ MONITOR WHICH RESIDES IN THE UPPERMOST 1.5K OF MEMORY SPACE.

1.1.2 DIAGNOSTIC INFORMATION

THE RL11/RLV11 CONTROLLER TEST (PART 2) IS A PDP-11 (LSI-11) BASED PROGRAM THAT WILL TEST THE CONTROLLER. IT COMPLEMENTS PART 1 BY EXTENDING THE TEST COVERAGE TO INCLUDE WRITE DATA, READ DATA, WRITE CHECK AND READ DATA WITHOUT HEADER COMPARE. IT IS AIMED AT FULLY TESTING THE CONTROLLER IN THESE AREAS, BUT BY DEFAULT ALSO EXERCISES THE DRIVE.

1.2 SYSTEM REQUIREMENTS

1.2.1 HARDWARE REQUIREMENTS

- * PDP-11/LSI-11 PROCESSOR WITH 16K OR MORE OF MEMORY
- * CONSOLE DEVICE (LA30, LA36, VT50, ETC.)
- * 1 OR 2 RL11/RLV11 CONTROLLER(S) WITH:
 - 1 - 8 RL01 DRIVES WITH RL01K CARTRIDGES CONTAINING A 'BAD SECTOR FILE'
 - 1 - 8 RL02 DRIVES WITH RL02K CARTRIDGES CONTAINING A 'BAD SECTOR FILE'
- * KW11P OR KW11L CLOCK (REQUIRED TO PERFORM TEST 7)
- * LINE PRINTER (OPTIONAL)

1.2.2 SOFTWARE REQUIREMENTS

CZRLHA RL11/RLV11 CTI.R TEST 2
(FORMERLY CZRLBB)

1.3 RELATED DOCUMENTS AND STANDARDS

RL01 DISK SUBSYSTEM USER'S GUIDE (EK-RL01-UG-002)
XXDP+/SUPERVISOR USER'S MANUAL

1.4 DIAGNOSTIC HIERARCHY PREREQUISITES

THE RL01/02 SUBSYSTEM SHOULD HAVE SUCCESSFULLY RUN THE FOLLOWING PROGRAMS:

CVRLAB0	RLV11 RL01 DISKLESS TEST (RLV11 ONLY)
CZRLGBO	RL11/RLV11 RL01/02 CONTROLLER TEST (PART 1)

1.5 ASSUMPTIONS

THE HARDWARE OTHER THAN THE RL01/02 SUBSYSTEM IS ASSUMED TO WORK PROPERLY. FALSE ERRORS MAY BE REPORTED IF THE PROCESSOR, ETC., DO NOT FUNCTION PROPERLY.

2.0 OPERATING INSTRUCTIONS

2.1 HOW TO RUN THIS DIAGNOSTIC

2.1.1 THE FIVE STEPS OF EXECUTION

THIS DIAGNOSTIC PROGRAM SHOULD BE LOADED AND STARTED USING NORMAL XXDP+ PROCEDURES. START THE EXECUTION OF THE XXDP+ MONITOR BY USING THE APPROPRIATE BOOTSTRAP PROGRAM. THE MONITOR WILL PRINT A MESSAGE IDENTIFYING ITSELF AND REQUESTING THAT THE CURRENT DATE BE ENTERED. AN EXAMPLE OF THIS MESSAGE IS GIVEN BELOW FOR THE XXDP+ MONITOR:

CHMOKAO XXDP+ DK MONITOR NNK
BOOTTED VIA UNIT 0
ENTER DATE (DD-MMM-YY):

AFTER THE DATE HAS BEEN ACCEPTED BY THE MONITOR THE RESTART ADDRESS OF THE MONITOR IS PRINTED. THEN THE FOLLOWING TWO QUESTIONS ARE ASKED:

50 HZ ? N
LSI ? N

THE DEFAULTS ARE BOTH 'NO'. TYPE 'R' AND THE PROGRAM NAME TO RUN THE PROGRAM. DO NOT TYPE THE EXTENSION.

WHEN THIS DIAGNOSTIC IS STARTED THE FOLLOWING 5 STEPS WILL OCCUR:

★ STEP 1 ★

THE DIAGNOSTIC WILL ISSUE THE PROMPT 'DR>'. FROM THIS POINT UNTIL THE TIME WHEN YOU RESTART XXDP+, YOU WILL BE TALKING TO THE DIAGNOSTIC, NOT XXDP+. WE WILL REFER TO THE PRESENCE OF THIS PROMPT AS BEING IN DIAGNOSTIC COMMAND MODE, AS OPPOSED TO XXDP+ COMMAND MODE.

AT THIS POINT YOU WILL ENTER A 'START' COMMAND. THIS IS NOT THE SAME AS THE XXDP+ 'START' COMMAND, WHICH YOU ALREADY ISSUED IN RESPONSE TO THE XXDP DOT PROMPT. THIS 'START' COMMAND CAN TAKE A NUMBER OF SWITCHES AND FLAGS (ALL OPTIONAL) AND THE DETAILS OF THESE ARE SET FORTH IN 2.3 'DETAILS OF COMMANDS AND SYNTAX'. HOWEVER, IN ORDER TO USE THE PROGRAM, ALL YOU NEED TO SAY IS SOMETHING LIKE THIS:

STA/PASS:1/FLAGS:HOE

THINGS TO NOTE HERE:

1. ONLY THE FIRST THREE CHARACTERS OF THIS OR ANY COMMAND AT THE 'DR>' LEVEL NEED TO BE TYPED.
2. THE 'PASS' SWITCH SPECIFIES HOW MANY PASSES YOU DESIRE. A PASS CONSISTS OF RUNNING THE FULL DIAGNOSTIC AGAINST ALL UNITS BEING TESTED (THIS WILL BE EXPLAINED SHORTLY). ONE PASS IS SPECIFIED IN THE ABOVE EXAMPLE.
3. THE 'FLAGS' SWITCH MAY SPECIFY ANY OF A NUMBER OF FLAGS, BUT THE MAIN USEFUL ONES ARE:

PNT	PRINT NUMBER OF TEST BEING EXECUTED
LOE	LOOP ON ERROR
HOE	HALT ON ERROR
IER	INHIBIT ERROR PRINTOUT

THE HOE FLAG IS SPECIFIED IN THE ABOVE EXAMPLE (WE'LL SEE WHY SHORTLY).

* STEP 2 *

WHEN YOU HAVE TYPED IN A 'START' COMMAND, THE DIAGNOSTIC WILL COME BACK WITH THE QUESTION '% UNITS?' TO WHICH YOU SHOULD RESPOND BY TYPING IN THE NUMBER OF DEVICES YOU WISH TO TEST.

A WORD OF WARNING HERE: THE NUMBER OF UNITS DEPENDS ON THE TARGET DEVICE OF THE DIAGNOSTIC. FOR EXAMPLE, IF THE DIAGNOSTIC IS DIRECTED AT A DISK DRIVE, THEN THE NUMBER OF UNITS WOULD BE THE NUMBER OF DRIVES TO BE TESTED. WHEREAS IF THE DIAGNOSTIC WAS DIRECTED AT THE DISK CONTROLLER, THEN THE NUMBER OF UNITS WOULD BE THE NUMBER OF CONTROLLERS. THE TARGET DEVICE OF A DIAGNOSTIC CAN ALWAYS BE DETERMINED BY INSPECTING THE 'HEADER' STATEMENT NEAR THE BEGINNING OF THE SOURCE CODE. ONE OF THE OPERANDS OF THIS 'HEADER' STATEMENT SHOULD BE THE DEVICE TYPE OF THE DIAGNOSTIC.

* STEP 3 *

WHEN YOU HAVE TYPED IN THE NUMBER OF UNITS TO BE TESTED, THE DIAGNOSTIC WILL ASK YOU THE 'HARDWARE QUESTIONS'. THE ANSWERS TO THESE QUESTIONS ARE USED TO BUILD TABLES IN CORE, CALLED 'HARDWARE P-TABLES'. ONE HARDWARE P-TABLE WILL BE BUILT FOR EACH UNIT TO BE TESTED.

THERE ARE SEVERAL HARDWARE QUESTIONS AND THE ENTIRE SERIES WILL BE POSED N TIMES, WHERE N IS THE NUMBER OF UNITS.

THIS REPRESENTS A NEW PHILOSOPHY IN DIAGNOSTIC ENGINEERING. DIAGNOSTICS IN THE FUTURE WILL NOT BE WRITTEN TO AUTOSIZE OR ASSUME STANDARD ADDRESSES: INSTEAD, THEY WILL ASK THE OPERATOR FOR ALL THE INFORMATION THEY NEED TO TEST THE DEVICE.

* STEP 4 *

AFTER YOU HAVE ANSWERED ALL THE HARDWARE QUESTIONS (SEC 2.5) FOR ALL THE UNITS, YOU WILL BE ASKED "CHANGE SW?" IF YOU WANT TO BE ASKED THE SOFTWARE QUESTIONS THAT DETERMINE THE BEHAVIOR OF THIS PROGRAM, TYPE 'Y'. IF YOU WANT TO TAKE ALL THE DEFAULTS TO THESE QUESTIONS, TYPE 'N'. IF YOU TYPE 'Y' YOU WILL BE ASKED THE SOFTWARE QUESTIONS (SEC 2.6), AND THE ANSWERS WILL BE PUT INTO THE SOFTWARE P-TABLE IN THE PROGRAM. THE SERIES OF QUESTIONS WILL BE ASKED JUST ONCE, REGARDLESS OF THE NUMBER OF UNITS TO BE TESTED.

* STEP 5 *

AFTER YOU HAVE ANSWERED THE SOFTWARE QUESTIONS, THE DIAGNOSTIC WILL BEGIN TO EXECUTE THE HARDWARE TEST CODE. THERE ARE SEVERAL THINGS THAT CAN HAPPEN NEXT, DEPENDING ON WHETHER A HARDWARE ERROR IS ENCOUNTERED AND ALSO ON WHAT SWITCH VALUES YOU SELECTED ON THE START COMMAND. CONSIDER THE POSSIBILITIES:

1. IF NO ERROR IS ENCOUNTERED, THEN THE DIAGNOSTIC WILL SIMPLY EXECUTE THE DESIRED NUMBER OF PASSES AND RETURN TO COMMAND MODE (PROMPT DR>).
2. IF AN ERROR IS ENCOUNTERED, THEN ONE OF THREE THINGS HAPPENS, DEPENDING ON THE SETTINGS OF THE HOE AND LOE FLAGS.

HOE SET: THE ERROR WILL BE REPORTED ON THE CONSOLE AND THE DIAGNOSTIC WILL RETURN TO COMMAND MODE.

LOE SET: THE DIAGNOSTIC WILL LOOP ENDLESSLY ON THE BLOCK OF CODE THAT DETECTED THE ERROR.

NEITHER HOE NOR LOE SET: THE ERROR WILL BE REPORTED ON THE CONSOLE AND NORMAL EXECUTION WILL RESUME AS IF NO ERROR HAD OCCURRED.

2.1.2 SAMPLE RUN-THROUGH

LET'S SEE HOW ALL THIS WORKS IN A REAL SITUATION. RECALL THAT WE ENTERED THE COMMAND 'STA/PASS:1/FLAGS:HOE'. THIS WOULD BE A VERY TYPICAL WAY TO RUN THE DIAGNOSTIC. IF NO ERRORS ARE ENCOUNTERED, THE SINGLE REQUESTED PASS WILL BE EXECUTED AND THE PROMPT WILL BE RE-ISSUED.

IF AN ERROR IS ENCOUNTERED, THE ERROR WILL BE REPORTED AND THE PROMPT WILL BE REISSUED (BECAUSE THE HOE FLAG IS SET). AT THIS POINT THERE ARE FOUR DIFFERENT WAYS YOU CAN GET THE PROGRAM GOING AGAIN:

1. ISSUE ANOTHER 'START' COMMAND (THUS GOING THRU ALL OF STEPS 1, 2, 3, 4, AND 5 AGAIN).
2. ISSUE A 'RESTART' COMMAND (SAME AS START COMMAND EXCEPT THAT THE HARDWARE QUESTIONS ARE NOT ASKED).
3. ISSUE A 'CONTINUE' COMMAND (EXECUTION WILL RESUME AT THE BEGINNING OF THE PARTICULAR HARDWARE TEST (MOST DIAGNOSTICS CONSIST OF A NUMBER OF THESE) THAT IT WAS IN WHEN THE ERROR HALT OCCURRED. NO QUESTIONS ASKED).
4. ISSUE A 'PROCEED' COMMAND: EXECUTION WILL RESUME AT THE INSTRUCTION FOLLOWING THE ERROR REPORT (THIS IS A SPECIAL COMMAND AND CAN BE ISSUED ONLY AT A HALT ON ERROR).

THE MOST TYPICAL THING TO DO HERE IS TO ISSUE THE PROCEED, BUT WITH DIFFERENT FLAG SETTINGS. PROBABLY YOU WOULD WANT TO SAY:

PRO/FLAGS:IER:LOE:HOE=0

THIS WILL DO THE FOLLOWING:

1. TURN ON THE IER (INHIBIT ERROR PRINTOUT) FLAG
2. TURN ON THE LOE FLAG
3. TURN OFF THE HOE FLAG
4. RESUME EXECUTION AT INSTRUCTION AFTER ERROR REPORT

THE DIAGNOSTIC WILL NOW LOOP ON THE BLOCK OF CODE THAT DETECTED AND REPORTED THE ERROR, BUT NO ERROR PRINTOUT WILL OCCUR. THUS YOU CAN STUDY THE ERROR OR SCOPE IT OR WHATEVER.

WHEN YOU'VE SEEN ENOUGH, YOU MAY HIT CONTROL/C. THIS WILL TAKE YOU OUT OF THE LOOP AND PUT YOU BACK INTO COMMAND MODE. YOU NOW HAVE THREE CHOICES:

1. START
2. RESTART
3. CONTINUE

LET'S SAY YOU'VE REPAIRED THE DEFECT FOUND ABOVE AND WANT TO FINISH RUNNING THE DIAGNOSTIC. YOU WOULD TYPE

CON/FLAGS:HOE:IER=0:LOE=0

THIS WILL RESTORE THE FLAGS TO THEIR ORIGINAL VALUES AND RESUME EXECUTION AT THE BEGINNING OF THE HARDWARE TEST YOU WERE IN. IF THE ERROR DOES NOT RECUR, THE EXECUTION WILL FLOW RIGHT ON THRU TO THE NEXT ERROR OR TO END OF PASS.

IF AT END OF PASS YOU WANT TO RUN THE DIAGNOSTIC AGAIN, YOU HAVE TWO CHOICES:

1. START
2. RESTART

YOU WOULD CHOOSE ONE, DEPENDING ON WHETHER YOU WANTED TO ANSWER THE HARDWARE QUESTIONS AGAIN.

THE FULL PRINT-OUT FROM THE ABOVE DIALOGUE MIGHT LOOK LIKE THIS
(O=OPERATOR, D=DIAGNOSTIC):

BY WHOM ENTERED: -----	
.R CZRLH ^B	O
DRS LOADED	D
DIAG. RUN-TIME SERVICES REV. D APR-79	D
CZRLH-B-0	D
CZRLH TESTS WRITE DATA, READ DATA, AND WRITE CHECK OPERATIONS	D
UNIT IS RL01, RL02	D
DR>STA/PASS:1/FLAGS:HOE	D,O
CHANGE HW (L) ? Y	D,O
# UNITS (D) ? 2	D,O
UNIT 0	D
BUS ADDRESS (O) 174400 ?	D,O
VECTOR (O) 160 ?	D,O
DRIVE TYPE = RL01 (L) Y ?	D,O
BR LEVEL (O) 5 ?	D,O
DRIVE (O) 0 ?	D,O
UNIT 1	D
RL11 (L) Y ?	D,O
BUS ADDRESS (O) 174400 ?	D,O
VECTOR (O) 160 ?	D,O
DRIVE TYPE = RL01 (L) ? N	D,O (N=RL02)
BR LEVEL (O) 5 ?	D,O
DRIVE (O) 0 ?	D,O
DROP ON ERROR LIMIT (L) N ?	
COMPARE DATA ON DCK (L) N ?	
CZRLH HRD ERR 00004 TST 003 SUB 002 PC:004130	
ERR HLT	
DR>PRO/FLAGS:IER:LOE:HOE=0	D,O

AT THIS POINT THE DIAGNOSTIC IS LOOPING ON THE
ERROR WITHOUT PRINTING ANYTHING. YOU CAN SCOPE
THE ERROR UNTIL YOU HAVE LOCATED IT, THEN ^C OUT

^C	O
DR>CON/FLAGS:HOE:IER:LOE=0	D,O
CHANGE SW (L) ? N	D,O
CZRLH EOP 1	D
^C	
DR>RESTART/PASS:1	D,O
CHANGE SW (L) ? N	D,O

2.2 CHAIN MODE OPERATION

CHAIN MODE OPERATION CONSISTS OF THE SEQUENTIAL EXECUTION OF PROGRAMS WITHOUT OPERATOR INTERVENTION. ONLY PROGRAMS THAT HAVE BEEN MODIFIED TO RUN IN CHAIN MODE CAN BE CHAINED. CHAINABLE PROGRAMS ARE IDENTIFIED IN THE DIRECTORY BY A BIC EXTENSION.

TO RUN CHAIN MODE, THE XXDP+ MONITOR USES AN ASCII FILE (KNOWN AS A CHAIN FILE) LISTING THE PROGRAMS TO BE RUN AND THE NUMBER OF PASSES EACH PROGRAM SHOULD RUN. THIS FILE MUST BE ON THE SYSTEM DEVICE.

A CHAIN FILE MAY BE GENERATED BY USE OF THE XTECO TEXT EDITOR. THIS FILE MUST HAVE A CCC EXTENSION. THE CHAIN FILE MAY CONTAIN ANY OF THE COMMANDS SUPPORTED BY THE XXDP+ MONITOR. THE COMMANDS IN THE ASCII FILE ARE EXECUTED IN THE ORDER IN WHICH THEY ARE ENCOUNTERED.

TO EXECUTE A CHAIN FILE THE USER TYPES:

C FILNAM <CR> OR
C FILNAM/QV <CR>

IN THE FIRST CASE THE PASS COUNT SPECIFIED IN THE CHAIN FILE IS USED BY THE XXDP+ MONITOR TO DETERMINE THE NUMBER OF PASSES TO EXECUTE EACH PROGRAM. IN THE SECOND CASE THE PASS COUNT IS NOT USED AND EACH PROGRAM IS EXECUTED ONLY ONCE. THE /QV SWITCH PROVIDES A SINGLE EXECUTION MODE OF OPERATION OF QUICK VERIFY.

WHEN PROGRAMS ARE RUN IN CHAIN MODE, THE SOFTWARE SWITCH REGISTER SHOULD BE SET TO 000000. THE XXDP+ MONITOR PRINTS EACH COMMAND TAKEN FROM THE CHAIN FILE AND THEN EXECUTES THE COMMAND. WHEN THE LAST COMMAND OTHER THAN ANOTHER C COMMAND HAS BEEN EXECUTED THE XXDP+ MONITOR TERMINATES CHAIN MODE AND TYPES A PROMPT (.). IT IS READY TO ACCEPT ANOTHER COMMAND FROM THE CONSOLE. IF THE LAST COMMAND IS ANOTHER C COMMAND, THE CHAIN MODE WILL CONTINUE AND THE CHAIN FILE SPECIFIED BY THIS NEW C COMMAND WILL BE USED.

IF THE USER WISHES TO TERMINATE CHAIN MODE BEFORE ITS NORMAL TERMINATION HE MAY DO SO BY TYPING A CONTROL/C. HOWEVER, THE MONITOR WILL NOT ABORT THE CHAIN MODE UNTIL IT RECEIVES PROGRAM CONTROL FROM THE PROGRAM CURRENTLY RUNNING.

2.3 DETAILS OF COMMANDS AND SYNTAX

2.3.1 TABLE OF COMMAND VALIDITY

THERE ARE FOUR WAYS OF ENTERING DIAGNOSTIC COMMAND MODE, AND DIFFERENT SUBSETS OF THE DIAG COMMAND SET ARE AVAILABLE WITH EACH:

HOW ENTERED	LEGAL COMMANDS
1. OPERATOR ENTERED 'RUN DIAG'	START PRINT DISPLAY FLAGS ZFLAGS EXIT
2. DIAGNOSTIC HAS FINISHED ALL ITS REQUESTED PASSES	START RESTART PRINT DISPLAY FLAGS ZFLAGS EXIT
3. OPERATOR INTERRUPTED THE DIAGNOSTIC WITH CTRL/C	START RESTART CONTINUE PRINT DISPLAY FLAGS ZFLAGS EXIT
4. AN ERROR WAS ENCOUNTERED WITH THE HME FLAG SET SET	START RESTART CONTINUE PROCEED PRINT DISPLAY FLAGS ZFLAGS EXIT

2.3.2 COMMAND SYNTAX

STA(RT)/TESTS:TEST-LIST/PASS:PASS-CNT/FLAGS:FLAG-LIST/EOP:EOP-INCR

THE DIAGNOSTIC IN CORE IS EXECUTED IN ACCORDANCE WITH THE SWITCHES SPECIFIED. THE MESSAGE "'# UNITS?'" IS PRINTED. THE START COMMAND MAY BE ISSUED WHEN DIAGNOSTIC COMMAND MODE HAS BEEN ENTERED VIA ONE OF THE FOLLOWING: A) OPERATOR TYPED 'RUN DIAGNOSTIC' B) DIAGNOSTIC FINISHED EXECUTING C) ERROR WAS ENCOUNTERED WITH HOE FLAG SET D) OPERATOR ENTERED CONTROL/C. AFTER THE OPERATOR RESPONDS TO "'# UNITS?", THE HARDWARE DIALOGUE IS INITIATED. WHEN IT IS COMPLETED, THE QUESTIONS "'CHANGE SW?' IS ISSUED, AND THE ANSWERS, IF GIVEN, BECOME THE NEW DEFAULTS. THEREFORE IT IS NECESSARY TO RELOAD THE PROGRAM IN ORDER TO RETURN TO THE LOAD DEFAULTS.

THE SWITCH ARGUMENTS ARE AS FOLLOWS:

'TEST-LIST' IS A SEQUENCE OF DECIMAL NUMBERS (1:2 ETC.) OR RANGES OF DECIMAL NUMBERS (1-5:8-10 ETC.) THAT SPECIFY THE TESTS TO BE EXECUTED. THE NUMBERS ARE SEPARATED BY COLONS. THE NUMBERS RANGE FROM 1 TO THE LARGEST TEST NUMBER IN THE DIAGNOSTIC. THEY MAY BE SPECIFIED IN ANY ORDER. TESTS WILL BE EXECUTED IN NUMERICAL ORDER REGARDLESS OF THE ORDER OF SPECIFICATION. THE DEFAULT IS TO EXECUTE ALL TESTS.

'PASS-CNT' IS A DECIMAL NUMBER INDICATING THE DESIRED NUMBER OF PASSES. A PASS IS DEFINED AS THE EXECUTION OF THE FULL DIAGNOSTIC (ALL SELECTED TESTS) AGAINST ALL UNITS SUBMITTED. THE DEFAULT IS NON-ENDING TEST EXECUTION. 'FLAG-LIST' IS A SEQUENCE OF ELEMENTS OF THE FORM <FLAG>, <FLAG=1>, OR <FLAG=0>, SEPARATED BY COLONS, WHERE <FLAG> HAS ONE OF THE FOLLOWING VALUES:

HOE HALT ON ERROR, CAUSING COMMAND MODE TO BE ENTERED WHEN AN ERROR IS ENCOUNTERED

LOE LOOP ON ERROR, CAUSING THE DIAGNOSTIC TO LOOP CONTINUOUSLY WITHIN THE SMALLEST DEFINED BLOCK OF CODING (SEGMENT, SUBTEST, OR TEST) CONTAINING THE ERROR

IER INHIBIT ERROR REPORTING

IBE INHIBIT BASIC ERROR REPORTS

IXE INHIBIT EXTENDED ERROR REPORTS

PRI DIRECT ALL MESSAGES TO A LINE PRINTER

PNT PRINT NUMBER OF TEST BEING EXECUTED

BOE BELL ON ERROR

UAM RUN IN UNATTENDED MODE, BYPASSING MANUAL INTERVENTION TESTS

ISR INHIBIT STATISTICAL REPORTS

IDU INHIBIT DROPPING OF UNITS BY DIAGNOSTIC

ADR EXECUTE AUTODROP CODE

LOT LOOP ON TEST

EVL EVALUATE

THE FLAGS NAMED OR EQUATED TO 1 ARE SET, THOSE EQUATED TO 0 ARE CLEARED. A FLAG NOT SPECIFIED IS CLEARED. IF THE FLAGS SWITCH IS NOT GIVEN ALL FLAGS ARE CLEARED.

'EOP-INCR' IS A DECIMAL NUMBER INDICATING HOW OFTEN (IN TERMS OF PASSES) IT IS DESIRED THAT THE END OF PASS MESSAGE BE PRINTED. THE DEFAULT IS AT THE END OF EVERY PASS.

RES(TART)/TEST:TEST-LIST/PASS:PASS-CNT/FLAGS:FLAG-LIST/EOP:EOP-INCR/UNITS:UNIT-LIST

THE DIAGNOSTIC IN CORE IS EXECUTED IN ACCORDANCE WITH THE SWITCHES SPECIFIED. HOWEVER, NEW 'P-TABLES' ARE NOT BUILT. INSTEAD, THE ONES IN CORE ARE USED.

THE QUESTION 'CHANGE SW?' IS ASKED AND THE ANSWERS GIVEN BECOME THE NEW DEFAULTS. THE COMMAND MAY BE ISSUED WHEN COMMAND MODE HAS BEEN ENTERED VIA A) DIAGNOSTIC IS FINISHED B) HALT ON ERROR C) CONTROL/C.

THE SWITCH ARGUMENTS ARE AS IN THE START COMMAND EXCEPT:

1. 'UNIT-LIST' IS A SEQUENCE OF LOGICAL UNIT NUMBERS RANGING FROM 1 THRU N (N = NUMBER OF UNITS BEING TESTED) SPECIFYING WHICH UNITS ARE TO BE TESTED. THE LOGICAL UNIT NUMBER DESIGNATES THE POSITION OF THE P-TABLE IN CORE, ACCORDING TO THE ORDER IN WHICH THEY WERE BUILT. THE UNITS SPECIFIED MUST NOT HAVE BEEN DROPPED BY THE OPERATOR DROP COMMAND. THE UNIT-LIST DEFAULTS TO 'ALL THAT HAVE NOT BEEN DROPPED BY OPERATOR COMMAND'. THE EFFECT OF THE UNIT-LIST LASTS UNTIL THE NEXT START (WHERE IT IS AUTOMATICALLY RESET TO 'ALL') OR THE NEXT RESTART.
2. ALL UNSPECIFIED FLAG SETTINGS ARE UNCHANGED.

CON(TINUE)/PASS:<PASS-CNT/FLAGS:<FLAG-LIST>

COMMAND MODE MUST HAVE BEEN ENTERED DUE TO A HALT ON ERROR OR A CONTROL/C. THE EFFECT OF THE COMMAND IS TO GO TO THE BEGINNING OF THE TEST THAT WAS BEING EXECUTED WHEN THE HALT OR CONTROL/C TOOK PLACE. SOFTWARE DIALOGUE MAY OPTIONALY BE RE-EXECUTED. HARDWARE PARAMETERS MAY NOT BE CHANGED.

THE SWITCH ARGUMENTS ARE AS IN THE START COMMAND EXCEPT:

1. DEFAULT FOR PASS-CNT IS THE UNSATISFIED PASS-CNT FROM THE PREVIOUS START OR RESTART
2. UNSPECIFIED FLAG SETTINGS ARE UNCHANGED

PRO(CEED)/FLAGS:<FLAG-LIST>

COMMAND MODE MUST HAVE BEEN ENTERED VIA A HALT ON ERROR. THE EFFECT OF THE COMMAND IS TO BEGIN EXECUTION AT THE LOCATION FOLLOWING THE ERROR CALL. NEITHER HARDWARE NOR SOFTWARE PARAMETERS MAY BE ALTERED.

THE SWITCH ARGUMENTS ARE THE SAME AS THE START COMMAND EXCEPT:

1. UNSPECIFIED FLAG SETTINGS ARE UNCHANGED

EXIT

RETURN TO XXDP+ PROMPT MODE.

DRO(P)/UNITS:UNIT-LIST

THE UNITS SPECIFIED ARE DROPPED FROM TESTING UNTIL THEY ARE ADDED BACK OR UNTIL A START COMMAND IS GIVEN. A DROP CANNOT BE FOLLOWED BY A PROCEED.

THERE IS ALSO A 'DROP' MACRO INTERNAL TO THE DIAGNOSTIC, WHICH GIVES THE FACILITY OF AUTO-DROPPING. THE DURATION OF A PROGRAM DROP, HOWEVER, IS ONLY UNTIL THE NEXT START OR RESTART.

ADD/UNITS:UNIT-LIST

THE UNITS SPECIFIED ARE ADDED BACK (THEY MUST HAVE BEEN PREVIOUSLY DROPPED BY THE DROP COMMAND) TO THE TEST SEQUENCE. AN ADD CANNOT BE FOLLOWED BY A PROCEED.

PRI(NT)

ALL STATISTICS TABLES ACCUMULATED BY THE DIAGNOSTIC ARE PRINTED. THE ISR (INHIBIT STATISTICAL REPORTING) FLAG IS CLEARED.

DIS(PLAY)/UNITS:<UNIT-LIST>

THE HARDWARE P-TABLES FOR ALL UNITS UNDER TEST ARE PRINTED OUT IN THE FORMAT IN WHICH THEY WERE ENTERED. ANY UNITS THAT WERE DROPPED BY THE OPERATOR 'DROP' COMMAND ARE SO DESIGNATED.

FLA(GS)

THE CURRENT SETTINGS OF ALL FLAGS ARE PRINTED.

ZFL(AGS)

ALL FLAGS ARE CLEARED.

2.4 EXTENDED P-TABLE DIALOGUE

THE FULL CAPABILITY OF THE HARDWARE DIALOGUE IS REVEALED BY THE FOLLOWING DISCUSSION OF WHAT HAPPENS INTERNALLY.

AS SOON AS THE QUESTION "'# UNITS?' IS ANSWERED (WITH THE NUMBER N), SPACE IN CORE IS ALLOCATED FOR 'N' P-TABLES. ALL OF THE P-TABLES ARE OF THE SAME FORMAT, AND THERE IS A ONE-TO-ONE CORRESPONDENCE BETWEEN THE HARDWARE PARAMETER QUESTIONS AND THE SLOTS IN THE P-TABLE FORMAT.

IN GIVING A STRING OF VALUES, COMMAS WITHOUT INTERVENING VALUES MAY BE USED TO INDICATE A REPETITION OF THE LAST NAMED VALUE.

A STRING OF VALUES MAY BE GIVEN AS A RANGE (6-10 FOR EXAMPLE). IF THE VALUES REPRESENT PURE NUMERICAL DATA, THIS SAMPLE RANGE TRANSLATES TO THE STRING 6,7,8,9,10 (AN INCREMENT OF 1). IF THE VALUES ARE ADDRESSES, THE SAMPLE RANGE TRANSLATES TO THE STRING 6,8,10 (AN INCREMENT OF 2).

NOW LET US SEE HOW WE COULD USE THESE CAPABILITIES TO CONSTRUCT A SET OF P-TABLES. ASSUME THAT WE HAVE 8 RL UNITS, AND THAT THERE ARE FIVE (5) HARDWARE PARAMETERS FOR EACH (5 SLOTS IN THE P-TABLE, 5 HARDWARE QUESTIONS IN THE DIALOGUE).

FOLLOWING IS THE DIALOGUE FOR THIS 8 RLOX DRIVE SYSTEM. THIS SYSTEM HAS TWO (2) RL11 TYPE CONTROLLERS ALL TO BE SET AT 'BR LEVEL' 5. THE FIRST 4 DRIVES ARE RL01'S AND THE LAST 4 DRIVES ARE RL02'S (ON THE SECOND CONTROLLER):

UNITS (D) ? 8

UNIT 0

RL11 (L) Y ?
BUS ADDRESS (0) 174400 ?
VECTOR (0) 160 ?
DRIVE TYPE = RL01 (L) Y ?
BR LEVEL (0) 5 ?
DRIVE (0) 0 ? 0-3

UNIT 4

RL11 (L) Y ?
BUS ADDRESS (0) 174400 ? 175400
VECTOR (0) 160 ? 164
DRIVE TYPE = RL01 (L) Y ? N
BR LEVEL (0) 5 ?
DRIVE (0) 0 ? 0-3

THE FIRST TIME THRU THE P-TABLE QUESTIONS THE DEFAULT VALUES ARE USED FOR THE CONTROLLER TYPE (QUESTION #1), CSR ADDRESS OF THE CONTROLLER (QUESTION #2), THE CONTROLLER VECTOR ASSIGNMENT (QUESTION #3), THE DRIVE TYPE (QUESTION #4), AND THE 'BR LEVEL' (QUESTION #5). THE ACTUAL UNIT NUMBERS OF THE RL01'S FOR QUESTION #6 WERE ASSIGNED 0 THRU 3 FOR THE FIRST 4 P-TABLE SLOTS.

THE SECOND TIME THRU THE P-TABLE QUESTIONS (FOR THE RL02 ASSIGNMENT ON THE SECOND CONTROLLER), THE FIRST QUESTION DEFAULTED TO 'RL11' TYPE CONTROLLER. THE SECOND QUESTION WAS ANSWERED TO REFLECT THE CHANGE IN CSR ADDRESS FOR THE RL02 CONTROLLER (175400). THE SECOND CONTROLLER'S VECTOR WAS ALSO CHANGED TO 164 IN QUESTION #3. THE RL02 TEST UNIT NUMBERS WERE ASSIGNED VALUES 0 TO 3 IN QUESTION #4 AND THE DRIVE TYPE WAS SET FOR RL02'S FOR THE REMAINING 4 UNITS IN QUESTION #4. QUESTION #5 WAS DEFAULTED USING THE 'BR LEVEL' FROM THE FIRST PASS.

2.5 HARDWARE PARAMETERS

THE FOLLOWING QUESTIONS WILL BE ASKED ON A START COMMAND. THE VALUE LOCATED TO THE LEFT OF THE QUESTION MARK IS THE DEFAULT VALUE THAT WILL BE TAKEN ON A CARRIAGE RETURN RESPONSE.

RL11 (L) Y?

ANSWER YES(Y) IF YOU HAVE AN RL11 CONTROLLER, NO(N) IF YOU HAVE AN RLV11 CONTROLLER.

BUS ADDRESS (0) 174400?

ANSWER WITH THE BUS ADDRESS OF THE CONTROLLER.

VECTOR (0) 160?

ANSWER WITH THE INTERRUPT VECTOR OF THE CONTROLLER.

DRIVE TYPE = RL01 (L) ?

ANSWER NO (N) IF DRIVE IS AN RL02

BR LEVEL (0) 5?

ANSWER WITH THE INTERRUPT PRIORITY OF THE CONTROLLER.

DRIVE (0) 0?

ANSWER WITH THE DRIVE(S) CONNECTED TO THE CONTROLLER.

2.6 SOFTWARE PARAMETERS

THE FOLLOWING QUESTIONS ARE ASKED IF REQUESTED ON A START, RESTART, OR CONTINUE. THEY ALLOW FLEXIBILITY IN THE WAY THE PROGRAM BEHAVES. THE SOFTWARE PARAMETERS GIVE THE PROGRAM FLEXIBILITY IN THE WAY IT RUNS. THE PARAMETERS CAN BE MODIFIED ON A START, RESTART, OR CONTINUE BY ANSWERING (Y)ES TO THE FOLLOWING QUESTION:

"CHANGE S.W. ?"

A YES ANSWER WILL ASK THE FOLLOWING SOFTWARE PARAMETER QUESTIONS, WITH THE PRESENT DEFAULT VALUE PRINTED TO THE LEFT OF THE QUESTION MARK. (THE LAST ANSWER GIVEN IS THE DEFAULT) THE DEFAULT IS TAKEN ON A <CR>. CONTROL Z (^Z) WILL DEFAULT ALL REMAINING QUESTIONS AND START THE TEST.

'DROP ON ERROR LIMIT (L) Y?'

TO ALLOW THE UNIT TO BE DROPPED ONCE A PREDETERMINED NUMBER OF ERRORS ARE ENCOUNTERED.

ANSWER Y OR N

"ERROR LIMIT (D) 10?"

NUMBER OF ERRORS ALLOWED BEFORE DROPPING UNIT.

ANSWER 1 TO 65K

"COMPARE DATA ON DCK (L) N?"

WHEN A DATA CHECK IS ENCOUNTERED AND DATA IS KNOWN, ALLOW AN INCORE COMPARISON OF DATA.

ANSWER Y OR N

"# OF WORDS IN ERROR REPORTED (D) 3? "

NUMBER OF MISCOMPARES TO BE PRINTED ON CONSOLE DEVICE.

ANSWER 0 - 128

3.0 ERROR INFORMATION

ALL ERROR INFORMATION IS PRINTED ON THE CONSOLE DEVICE. ERROR REPORTS ARE AIMED AT BEING SELF EXPLANATORY. THE GENERAL FORMAT IS:

DZRL? XXX ERR YYYYY TST ZZZ SUB PPP PC: RRRRRR

WHERE:

?	IS PROGRAM LETTER
XXX	IS SFT - SOFT ERROR
	HRD - HARD ERROR
	DV FAT - DEVICE FATAL ERROR
	SYS FAT - SYSTEM FATAL ERROR
YYYYY	IS THE ERROR NUMBER
ZZZ	IS THE TEST NUMBER
PPP	IS THE SUBTEST NUMBER
RRRRRR	IS THE PROGRAM LISTING LOCATION

ERRORS GIVE THE REGISTER CONTENTS BEFORE AND AFTER THE ERROR ALONG WITH A ONE LINE DESCRIPTION AND RELEVANT DATA.

EXAMPLE:

ONE LINE DESCRIPTION
(OPTIONAL SECOND LINE)
(OPTIONAL THIRD LINE)

BEFORE COMMAND: CS:XXXXXX BA:XXXXXX DA:XXXXXX MP:XXXXXX

TIME OF ERROR: CS:XXXXXX BA:XXXXXX DA:XXXXXX MP:XXXXXX XXXXXX XXXXXX

3.1 ERROR HALTS

ERROR HALTS ARE SUPPORTED PER DESCRIBED IN THE PREVIOUS SECTION WITH /FLAG:HOE. THERE ARE NO OTHER HALTS.

4.0 PERFORMANCE AND PROGRESS REPORTS

4.1 PERFORMANCE REPORTS

THIS PROGRAM WILL NOT GIVE ANY PERFORMANCE REPORTS.

4.2 PROGRESS REPORTS

THIS PROGRAM WILL NOT GIVE ANY PROGRESS REPORTS.

5.0 DEVICE INFORMATION TABLES

THE RL11/RLV11 CONTROLLER HAS THE FOLLOWING FOUR(4) REGISTERS FOR CONTROL OF THE SUBSYSTEM.

RLCS - CONTROL AND STATUS REGISTER (xxxxx0)

- BIT 15 - COMPOSITE ERROR
- BIT 14 - DRIVE ERROR
- BIT 13 - NON EXISTANT MEMORY ERROR
- BIT 12 - HEADER NOT FOUND (WITH BIT 10 SET)
 - DATA LATE (WITH BIT 10 CLEAR)
- BIT 11 - HEADER CRC (WITH BIT 10 SET)
 - DATA CRC (WITH BIT 10 CLEAR)
- BIT 10 - OPERATION INCOMPLETE
- BIT 9/8 - DRIVE SELECT (0-3)
- BIT 7 - CONTROLLER READY
- BIT 6 - INTERRUPT ENABLE
- BIT 5 - EXTENDED BUS ADDRESS (BIT 17)
- BIT 4 - EXTENDED BUS ADDRESS (BIT 16)
- BIT 3-1 - FUNCTION CODE
 - 0 - NOP (PDP-11) MAINT (LSI-11)
 - 1 - WRITE CHECK
 - 2 - GET DRIVE STATUS
 - 3 - SEEK
 - 4 - READ HEADER
 - 5 - WRITE DATA
 - 6 - READ DATA
 - 7 - READ WITHOUT HEADER COMPARE

BIT 0 - DRIVE READY

RLBA - BUS ADDRESS REGISTER (xxxxx2)

BITS 15-1 BUS ADDRESS OF DATA TRANSFER
BIT 0 SHOULD BE 0

RLDA - DISK ADDRESS REGISTER (xxxxx4)

FOR READ/WRITE FUNCTIONS

BIT 15-7 - CYLINDER ADDRESS FOR TRANSFER
BIT 6 - SURFACE FOR TRANSFER
BIT 5-0 - SECTOR FOR TRANSFER (1-40.)

FOR SEEK FUNCTION

BIT 15-7 - DIFFERENCE TO NEW CYLINDER
BIT 6-5 - MUST BE ZERO (0)
BIT 4 - SURFACE (0=UPPER, 1=LOWER)
BIT 3 - MUST BE ZERO (0)
BIT 2 - SEEK DIRECTION(1=IN / 0=OUT)
BIT 1 - MUST BE ZERO (0)
BIT 0 - MUST BE ONE (1)

FOR GET STATUS FUNCTION

BIT 15-4 - IGNORED SHOULD BE ZERO (0)
BIT 3 - DRIVE RESET
BIT 2 - MUST BE ZERO (0)
BIT 1 - MUST BE ONE (1)
BIT 0 - MUST BE ONE (1)

RLMP - MULTIPURPOSE REGISTER

FOR READ/WRITE FUNCTION

BIT 15 - 0 - WORD COUNT (TWO'S COMPLIMENT)

FOR READ HEADER FUNCTION

BIT 15-0 - DISK HEADER OF SECTOR (FIRST READ)
- ZERO WORD (SECOND READ)
- HEADER CRC (THIRD READ)

FOR GET STATUS FUNCTION

HAS DRIVE STATUS

BIT 15 - WRITE DATA ERROR
BIT 14 - CURRENT HEAD ERROR (CHE)
BIT 13 - WRITE LOCK STATUS (WL)
BIT 12 - SEEK TIME OUT (SKTO)
BIT 11 - SPIN ERROR (SPE)
BIT 10 - WRITE GATE ERROR (WGE)
BIT 9 - VOLUME CHECK (VC)
BIT 8 - DRIVE SELECT ERROR (DSE)
BIT 7 - DRIVE TYPE IS RL02 IF SET
BIT 6 - SURFACE (0=UPPER, 1=LOWER)
BIT 5 - COVER OPEN
BIT 4 - HEADS HOME
BIT 3 - BRUSHES HOME
BIT 2-0 -STATE BITS
 0 - LOAD STATE
 1 - SPIN UP
 2 - BRUSH CYCLE
 3 - LOAD HEADS
 4 - SEEK - TRACK COUNTING
 5 - SEEK - LINEAR MODE
 6 - UNLOAD HEADS
 7 - SPIN DOWN

6.0

TEST SUMMARIES

TEST 1 - WRITE FUNCTION

THIS TEST WILL VERIFY THAT THE WRITE FUNCTION WILL RESET
CONTROLLER READY AND POST NO ERRORS.

TEST 2 - WRITE FUNCTION INTERRUPT

THIS TEST WILL VERIFY THAT THE WRITE FUNCTION WILL GENERATE
AN INTERRUPT ON COMPLETION.

TEST 3 - PROPER INCREMENT OF RLBA ON WRITE

THIS TEST WILL VERIFY THAT THE BUS ADDRESS REGISTER INCREMENTS
PROPERLY ON A WRITE FUNCTION.

TEST 4 - PROPER INCREMENT OF RLDA ON WRITE

THIS TEST WILL VERIFY THAT THE DISK ADDRESS REGISTER INCREMENTS PROPERLY ON A WRITE FUNCTION.

TEST 5 - FORCE HEADER NOT FOUND WITH WRITE

THIS TEST WILL FORCE A HEADER NOT FOUND ERROR ON A WRITE. THE RLDA IS SET UP TO LOOK FOR SECTOR 40, A WRITE IS THEN ISSUED. THE HEADER NOT FOUND ERROR SHOULD THEN SET.

TEST 6 - FORCE HEADER NOT FOUND WITH WRITE INTERRUPT

THIS TEST WILL FORCE A HEADER NOT FOUND ERROR UNDER INTERRUPT CONTROL. HEADER NOT FOUND IS FORCED BY SETTING SECTOR 40 OF RLDA AND ISSUING A WRITE.

TEST 7 - CHECK OPI TIME WITH HNF

(KW11-L OR KW11-P CLOCK IS REQUIRED TO PERFORM THIS TEST)

THIS TEST WILL TIME THE SETTING OF HNF (OPI) FROM ISSUANCE. THIS IS DONE BY ISSUING A WRITE TO SECTOR 40. THE TIME OF OPI SHOULD BE AROUND 200 MILLISECONDS.

TEST 8 - MULTIPLE SECTOR TRANSFER ON WRITE

THIS TEST THE ABILITY FOR THE WRITE FUNCTION TO WRITE MORE THAN ONE SECTOR. WE SET UP FOR A TWO SECTOR WRITE.

TEST 9 - CHECK DIRECTION OF WRITE NPR

THIS TEST WILL VERIFY THAT THE NPR DIRECTION OF A WRITE FUNCTION IS FROM MEMORY TO THE CONTROLLER. THIS IS DONE BY WRITING A PATTERN IN MEMORY AND ISSUING A WRITE, THEN CHECKING MEMORY TO VERIFY THAT IT DID NOT GET DISTURBED.

TEST 10 - CHECK FULL INCREMENT OF RLBA

THIS TEST WILL CHECK THAT THE RLBA CAN INCREMENT OF THE FULL 16 BIT RANGE. THIS IS DONE BY ISSUING A ONE WORD WRITE TO CHECK EACH BIT TOGGLE FROM 1-0 AND 0-1. THIS IS DONE FROM 0 TO 177776 REGARDLESS OF MEMORY SIZE.

TEST 11 - BA BIT 16 INCREMENT

THIS TEST WILL CHECK THAT BUS ADDRESS BIT 16 WILL SET WHEN THE RLBA IS 177776. AND THAT THE RLBA GOES TO 0.

TEST 12 - BA BIT 17 INCREMENT

THIS TEST WILL CHECK THAT BUS ADDRESS BIT 17 WILL SET WHEN BIT 16 AND THE RLBA ARE SET. THE RLBA AND BIT 16 ARE CHECKED TO GO TO ZERO.

TEST 14 - READ NPR INTEGRITY

THIS TEST WILL VERIFY THAT THE READ FUNCTION WILL NOT CAUSE A BUS TRAP THEREFORE VERIFYING THE NPR LOGIC BETWEEN THE CONTROLLER AND PROCESSOR.

TEST 13 - READ FUNCTION

THIS TEST WILL VERIFY THAT THE READ FUNCTION WILL RESET CONTROLLER READY AND POST NO ERRORS.

TEST 14 - READ FUNCTION INTERRUPT

THIS TEST WILL VERIFY THAT THE READ FUNCTION WILL GENERATE AN INTERRUPT ON COMPLETION.

TEST 15 - CHECK DIRECTION OF READ NPR

THIS TEST WILL VERIFY THAT THE NPR DIRECTION OF A READ FUNCTION IS FROM CONTROLLER TO THE MEMORY. THIS IS DONE BY WRITING A PATTERN IN MEMORY AND ISSUING A READ, THEN CHECKING MEMORY TO VERIFY THAT IT DID NOT GET DISTURBED.

TEST 16 - PROPER INCREMENT OF RLBA ON READ

THIS TEST WILL VERIFY THAT THE BUS ADDRESS REGISTER INCREMENTS PROPERLY ON A READ FUNCTION.

TEST 17 - PROPER INCREMENT OF RLDA ON READ

THIS TEST WILL VERIFY THAT THE DISK ADDRESS REGISTER INCREMENTS PROPERLY ON A READ FUNCTION.

TEST 18 - FORCE HEADER NOT FOUND WITH READ

THIS TEST WILL FORCE A HEADER NOT FOUND ERROR ON A READ. THE RLDA IS SET UP TO LOOK FOR SECTOR 40. A READ IS THEN ISSUED. THE HEADER NOT FOUND ERROR SHOULD THEN SET.

TEST 19 - FORCE HEADER NOT FOUND WITH READ INTERRUPT

THIS TEST WILL FORCE A HEADER NOT FOUND ERROR UNDER INTERRUPT CONTROL. HEADER NOT FOUND IS FORCED BY SETTING SECTOR 40 OF RLDA AND ISSUING A READ.

TEST 20 - CHECK HEADER COMPARE LOGIC

THIS TEST WILL EXTENSIVELY CHECK THE CYLINDER AND HEAD BITS OF THE HEADER WORD TO COMPARE CORRECTLY. THIS IS DONE BY WALKING AND GROWING 0'S AND 1'S THRU THE PROPER RLDA BITS AND ISSUING READ TO SEE IF ALL BIT POSITIONS CAN COMPARE.

TEST 21 - MULTIPLE SECTOR TRANSFER ON READ

THIS TEST THE ABILITY FOR THE READ FUNCTION TO WRITE MORE THAN ONE SECTOR. WE SET UP FOR A TWO SECTOR READ.

TEST 22 - FORCE HNF AT END OF TRACK

THIS TEST WILL CHECK THE ABILITY TO DETECT HEADER NOT FOUND AT THE END OF A TRACK. THIS DONE BY SETTING UP FOR A TWO SECTOR READ AT SECTOR 39.

TEST 23 - FORCE NON-EXISTENT MEMORY ERROR

THIS TEST WILL CHECK THAT THE NON-EXISTANT MEMORY ERROR (NXM) CAN SET. WE WILL ISSUE A READ TO THE MAXIMUM ADDRESS AND EXPECT A NXM ERROR. (THIS TEST WILL NOT BE DONE ON A 128K MACHINE.)

TEST 24 - FORCE NXM UNDER INTERRUPT

THIS TEST WILL ATTEMPT TO FORCE AN INTERRUPT VIA NXM. (THIS TEST WILL NOT BE DONE ON A 128K MACHINE.)

TEST 25 - CHECK READ WRITE LOOP

THIS TEST WILL WRITE A PATTERN TO SECTOR 0 AND TRY TO RECOVER IT WITH A WRITE.

TEST 26 - CHECK OF SILO LINES

THIS TEST WILL CHECK THAT WE CAN WRITE AND READ UNIQUE BIT PATTERNS VERIFY THAT THE LINES ON THE SILO ARE NOT STUCK OR TIED TOGETHER. THIS IS DONE WITH WALKING AND GROWING 0'S AND 1'S.

TEST 27 - CHECK THROUGHPUT OF SILO

THIS TEST WILL ATTEMPT TO CHECK THAT THE FALL THROUGH OF THE SILO IS WORKING CORRECTLY. WE WRITE A SECTOR OF 128 UNIQUE PATTERNS AND READ IT BACK CHECKING THAT EACH LOCATION IS UNIQUE AND CORRECT.

TEST 28 - CHECK ZERO FILL ON WRITE

THIS TEST WILL CHECK THE ABILITY OF THE CONTROLLER TO FILL THE REMAINING SECTOR WITH ZEROS ON A WRITE. WE WRITE A SECTOR WITH FROM 1 TO 127 WORDS, READ IT BACK AND VERIFY THAT THE NON WRITTEN WORDS ARE ZERO.

TEST 29 - CHECK SECTOR BITS ON HEADER COMPARE

THIS TEST WILL CHECK THAT THE SECTOR BITS CAN COMPARE CORRECTLY. THIS IS DONE BY WRITING THE SECTORS ADDRESS INTO THE SECTOR FOR A FULL TRACK. EACH SECTOR IS READ TO VERIFY THE SECTOR HAS THE CORRECT DATA, IF NOT THEN THE SECTOR BITS ARE NOT COMPARING CORRECTLY.

TEST 30 - WRITE CHECK NPR INTEGRITY

THIS TEST WILL CHECK THAT THE WRITE CHECK WILL FUNCTION WITHOUT CAUSING A BUS TRAP. TEST IS SET UP TO HANDLE BUS TRAPS.

TEST 31 - WRITE CHECK FUNCTION

THIS TEST WILL CHECK THAT A WRITE CHECK FUNCTION WILL COMPLETE WITH THE SPECIFIED TIME WITHOUT POSTING ERRORS.

TEST 32 - WRITE CHECK FUNCTION INTERRUPT

THIS TEST WILL CHECK THAT AN INTERRUPT CAN BE GENERATED FROM ISSUING A WRITE CHECK.

TEST 33 - PROPER INCREMENT OF RLBA ON WRITE CHECK

THIS TEST WILL CHECK THAT THE RLBA INCREMENTS PROPERLY DURING A WRITE CHECK.

TEST 34 - PROPER INCREMENT OF RLDA ON WRITE CHECK

THIS TEST WILL CHECK THAT THE RLDA INCREMENTS PROPERLY DURING A WRITE CHECK.

TEST 35 - MULTIPLE SECTOR WRITE CHECK

THIS TEST WILL CHECK THAT WE CAN WRITE CHECK MORE THAN ONE SECTOR AT A TIME.

TEST 36 - FORCE DCK WITH WRITE CHECK

THIS TEST WILL CHECK THAT WE CAN DETECT A DCK DURING A WRITE CHECK. THIS IS DONE BY MODIFYING MEMORY BETWEEN A WRITE AND A WRITE CHECK.

TEST 37 - FORCE DCK WITH WRITE CHECK INTERRUPT

THIS TEST WILL CHECK THAT A DCK DURING A WRITE CHECK WILL CAUSE AN INTERRUPT TO OCCUR.

TEST 35 - CHECK ZERO FILL ON WRITE WITH WRITE CHECK

THIS TEST WILL VERIFY THAT WE CAN SUCCESSFULLY WRITE CHECK ALL WORD COUNTS FROM 1 - 127.

TEST 39 - EXTENDED CHECK OF WRITE CHECK

THIS TEST WILL VERIFY THAT WE CAN WRITE CHECK SUCCESSFULLY ALL PATTERNS. PATTERNS USED ARE WALKING 1'S, 0'S, GROWING 1'S, 0'S.

TEST 40 - READ WITHOUT HEADER COMPARE

THIS TEST VERIFIES THAT THE FUNCTION READ WITHOUT HEADER COMPARE (7) RESETS THE CONTROLLER READY AND POSTS NO ERRORS. THE DISK ADDRESS IS SET TO ALL ONES.

TEST 41 - READ WITHOUT HEADER COMPARE INTERRUPT

THIS TEST WILL VERIFY THAT THE FUNCTION READ WITHOUT HEADER COMPARE (7) CAN GENERATE AN INTERRUPT ON COMPLETION.

TEST 42 - CHECK RD W/O HDR CMP READS

THIS TEST CHECKS THAT THE FUNCTION CAN ACTUALLY RECOVER DATA. WE WRITE A PATTERN IN MEMORY AND CHECK THAT THE FUNCTION CAN OVERLAY IT WITH DATA.

TEST 43 - CHECK RLBA INCREMENT WITH RD W/O HDR CMP

THIS TEST CHECKS THAT THE RLBA CAN INCREMENT PROPERLY ON THE FUNCTION.

TEST 44 - CHECK RLDA DOES INCREMENT

THIS TEST CHECKS THAT THE RLDA DOES INCREMENT WITH THE FUNCTION READ WITHOUT HEADER COMPARE.

a

8	MACRO DEFINITIONS
51	GLOBAL EQUATES
106	GLOBAL DATA
193	LIST TO CHECK HEADER COMPARE LOGIC
326	GLOBAL TEXT
431	GLOBAL ERRORS
689	INITIALIZATION CODE
764	AUTO DROP SECTION
792	CLEANUP CODE SECTION
824	GLOBAL SUBROUTINES
971	ROUTINE TO CHECK FOR CONTROLLER ERRORS
1270	**TEST 1** - WRITE FUNCTION
1326	**TEST 2** - WRITE FUNCTION INTERRUPT
1368	**TEST 3** - PROPER INCREMENT OF RLBA ON WRITE
1411	**TEST 4** - PROPER INCREMENT OF RLDA ON WRITE
1454	**TEST 5** - FORCE HEADER NOT FOUND WITH WRITE
1497	**TEST 6** - FORCE HEADER NOT FOUND WITH WRITE INTERRUPT
1553	**TEST 7** - CHECK OPI TIME WITH HDR NT FND
1631	**TEST 8** - MULTIPLE SECTOR TRANSFER ON WRITE
1684	**TEST 9** - CHECK DIRECTION OF WRITE NPR
1742	**TEST 10** - CHECK FULL RLBA INCREMENT
1792	**TEST 11** - BA BIT 16 INCREMENT
1848	**TEST 12** - BA BIT 17 INCREMENT
1904	**TEST 13** - READ FUNCTION
1938	**TEST 14** - READ FUNCTION INTERRUPT
1978	**TEST 15** - CHECK READ NPR DIRECTION
2040	**TEST 16** - PROPER INCREMENT OF RLBA ON READ
2080	**TEST 17** - PROPER INCREMENT OF RLDA ON READ
2122	**TEST 18** - FORCE HEADER NOT FOUND WITH READ
2161	**TEST 19** - FORCE HEADER NOT FOUND WITH READ INTERRUPT
2210	**TEST 20** - CHECK HEADER COMPARE LOGIC
2348	**TEST 21** - CHECK MULTIPLE SECTORS ON READ
2407	**TEST 22** - FORCE HDR NT FND AT END OF TRACK
2443	**TEST 23** - FORCE NON-EXISTENT MEMORY ERROR
2498	**TEST 24** - FORCE NON-EXISTENT MEMORY ERROR INTERRUPT
2538	**TEST 25** - CHECK READ WRITE LOOP
2625	**TEST 26** - CHECK SILO LINES
2723	**TEST 27** - CHECK THROUGHTPUT OF SILO
2820	**TEST 28** - CHECK ZERO FILL ON WRITE
2924	**TEST 29** - CHECK SECTOR BITS OF HEADER COMPARE
3031	**TEST 30** - WRITE CHECK NPR INTEGRITY
3114	**TEST 31** - WRITE CHECK FUNCTION
3179	**TEST 32** - WRITE CHECK FUNCTION INTERRUPT
3250	**TEST 33** - PROPER INCREMENT OF RLBA ON WRITE CHECK
3323	**TEST 34** - PROPER INCREMENT OF RLDA ON WRITE CHECK
3396	**TEST 35** - MULTIPLE SECTOR WRITE CHECK
3482	**TEST 36** - FORCE DCK WITH WRITE CHECK
3555	**TEST 37** - FORCE DCK WITH WRITE CHECK INTERRUPT
3639	**TEST 38** - CHECK ZERO FILL ON WRITE WITH WRITE CHECK
3718	**TEST 39** - EXTENDED CHECK OF WRITE CHECK FUNCTION
3807	**TEST 40** - READ WITHOUT HEADER COMPARE FUNCTION
3837	**TEST 41** - READ WITHOUT HEADER COMPARE FUNCTION INTERRUPT
3873	**TEST 42** - CHECK RD W/O HDR CMP ACTUALLY READS
3935	**TEST 43** - CHECK RLBA INCREMENT WITH RD W/O HDR CMP
3981	**TEST 44** - CHECK RLDA DOES INCREMENT WITH RD W/O HDR CMP

1 .TITLE CZRLH80 RL11/RLV11 CTLR TST 2
2 .ENABLE AMA
3 .ENABLE ABS
4 .MCALL SVC
5 .=2000
6 002000
7 .SBttl MACRO DEFINITIONS
8
9 .MACRO CKERFG
10 TST ERFLG ;ERROR IN HEADS HOME ROUTINE
11 BEQ 123\$;NO, THEN CONTINUE
12 EXIT TST ;YES, EXIT TEST
13 123\$:
14 .ENDM ;CONTINUE WITH TEST?
15
16 .MACRO WAITUS ARG ;MACRO MICRO-SEC WAIT
17 MOV ARG,XDELAY ;SAVE ARGUMENT
18 JSR PC,TIME ;CALL TIMING ROUTINE
19 .ENDM
20
21 .MACRO WAITMS ARG ;MACRO MILLISEC WAIT
22 MOV ARG,YDELAY ;SAVE ARGUMENT
23 JSR PC,XTIME ;CALL TIMING ROUTINE
24 .ENDM
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27 .NLIST CND,MD,ME
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30 002000 SVC
31 000000 SVCINS=0
32 000000 SVCTAG=0
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36 002000
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41 002000 103
42 002001 132
43 002002 122
44 002003 114
45 002004 110
46 002005 000
47 002006 000
48 002007 000
49 002010 102
50 002011 060
51 002012 000000
52 002014 000060
53 002016 033604
54 002020 033760
55 002022 012416
56 002024 012434
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(4) 002026 034152 .WORD LSLAST
(4) 002030 000000 .WORD 0
(4) 002032 000000 .WORD 0
(4) 002034 000000 .WORD 0
(4) 002036 000000 .WORD 0
(4) 002040 012450 .WORD LSDISPATCH
(4) 002042 000000 .WORD 0
(4) 002044 000000 .WORD 0
(4) 002046 000000 .WORD 0
(4) 002050 003 .BYTE CSREVISION
(3) 002051 003 .BYTE CSEDIT
(4) 002052 000000 .WORD 0
(5) 002054 000000 .WORD 0
(4) 002056 000000 .WORD 0
(4) 002060 002220 .WORD LSDVTYP
(4) 002062 000000 .WORD 0
(4) 002064 000000 .WORD 0
(4) 002066 000000 .WORD 0
(4) 002070 000000 .WORD 0
(4) 002072 013562 .WORD LSDU
(4) 002074 000000 .WORD 0
(4) 002076 002122 .WORD LSDESC
(4) 002100 104035 EMT ESLOAD
(4) 002102 000000 .WORD 0
(4) 002104 012600 .WORD LSINIT
(4) 002106 013466 .WORD LSCLEAN
(4) 002110 013300 .WORD LSAUTO
(4) 002112 012406 .WORD LSPROT
(4) 002114 000000 .WORD 0
(4) 002116 000000 .WORD 0
(4) 002120 000000 .WORD 0

41
42 002122 ENDMOD
43

44 002122 DESCRIPT <CZRLH TESTS WRITE DATA, READ DATA, AND WRITE CHECK OPERATIONS>
(3) 002122 .ASCIZ /CZRLH TESTS WRITE DATA, READ DATA, AND WRITE CHECK OPERATIONS/
(3) 002130 055103 046122 020110
(3) 002130 042524 052123 020123
(3) 002136 051127 052111 020105
(3) 002144 040504 040524 020054
(3) 002152 042522 042101 042940
(3) 002160 052101 026101 040440
(3) 002166 042116 053440 044522
(3) 002174 042524 041440 042510
(3) 002202 045503 047440 042520
(3) 002210 040522 044524 047117
(3) 002216 000123

(2)
45
46 002220 DEVTYPE <RL01,RL02>
(3) 002220 046122 030460 051054 .ASCIZ /RL01,RL02/
(3) 002226 030114 000062 .EVEN
(2)
47
48
49

51 .SBTTL GLOBAL EQUATES
52
53 002232 BGNMOD GLOBEQAT
54 002232 EQUALS
(1) : BIT DEFINITIONS
(1) 100000 BIT15== 100000
(1) 040000 BIT14== 40000
(1) 020000 BIT13== 20000
(1) 010000 BIT12== 10000
(1) 004000 BIT11== 4000
(1) 002000 BIT10== 2000
(1) 001000 BIT09== 1000
(1) 000400 BIT08== 400
(1) 000200 BIT07== 200
(1) 000100 BIT06== 100
(1) 000040 BIT05== 40
(1) 000020 BIT04== 20
(1) 000010 BIT03== 10
(1) 000004 BIT02== 4
(1) 000002 BIT01== 2
(1) 000001 BIT00== 1
(1) :
(1) 001000 BIT9== BIT09
(1) 000400 BIT8== BIT08
(1) 000200 BIT7== BIT07
(1) 000100 BIT6== BIT06
(1) 000040 BIT5== BIT05
(1) 000020 BIT4== BIT04
(1) 000010 BIT3== BIT03
(1) 000004 BIT2== BIT02
(1) 000002 BIT1== BIT01
(1) 000001 BIT0== BIT00
(1) :
(1) : EVENT FLAG DEFINITIONS
(1) : EF32:EF17 RESERVED FOR SUPERVISOR TO PROGRAM COMMUNICATION
(1) :
(1) 000040 EF.START== 32. : START COMMAND WAS ISSUED
(1) 000037 EF.RESTART== 31. : RESTART COMMAND WAS ISSUED
(1) 000036 EF.CONTINUE== 30. : CONTINUE COMMAND WAS ISSUED
(1) 000035 EF.NEW== 29. : A NEW PASS HAS BEEN STARTED
(1) 000034 EF.PWR== 28. : A POWER-FAIL/POWER-UP OCCURRED
(1) :
(1) :
(1) : PRIORITY LEVEL DEFINITIONS
(1) 000340 PRI07== 340
(1) 000300 PRI06== 300
(1) 000240 PRI05== 240
(1) 000200 PRI04== 200
(1) 000140 PRI03== 140
(1) 000100 PRI02== 100
(1) 000040 PRI01== 40
(1) 000000 PRI00== 0
(1)

(1) ;OPERATOR FLAG BITS

(1)

(1) 000004 EVL== 4

(1) 000010 LOT== 10

(1) 000020 ADR== 20

(1) 000040 IDU== 40

(1) 000100 ISR== 100

(1) 000200 UAM== 200

(1) 000400 BOE== 400

(1) 001000 PNT== 1000

(1) 002000 PRI== 2000

(1) 004000 IXE== 4000

(1) 010000 IBE== 10000

(1) 020000 IER== 20000

(1) 040000 LOE== 40000

(1) 100000 HOE== 100000

55 000001 DRDY=BIT0 : DRIVE READY (RLCS)

56 000100 INTEN=BIT6 : INTERRUPT ENABLE (RLCS)

57 100000 ERR=BIT15 : RL11 ERROR (RLCS)

58 040000 DERR=BIT14 : RL01 DRIVE ERROR (RLCS)

59 002000 OPI=BIT10 : OPERATION INCOMPLETE (RLCS)

60 000200 CRDY=BIT7 : CONTROLLER READY (RLCS)

61 000040 BA17=BIT5 : EXTENDED ADDRESS BIT 17 (RLCS)

62 000020 BA16=BIT4 : EXTENDED ADDRESS BIT 16 (RLCS)

63 020000 NXM=BIT13 : NON-EXISTANT MEMORY (RLCS)

64 000000 DS0=0 : DRIVE SELECT 0 (RLCS)

65 000400 DS1=BIT8 : DRIVE SELECT 1 (RLCS)

66 001000 DS2=BIT9 : DRIVE SELECT 2 (RLCS)

67 001400 DS3=BIT8!BIT9 : DRIVE SELECT 3 (RLCS)

68 000000 NOOP0=0 : FUNCTION NOOP(0)

69 000002 WRCHK=BIT1 : WRITE CHECK FUNCTION

70 000004 GSTAT=BIT2 : GET STATUS FUNCTION

71 000006 SEEK=BIT2!BIT1 : SEEK FUNCTION

72 000010 RDHDR=BIT3 : READ HEADER FUNCTION

73 000012 WRITE=BIT3!BIT1 : WRITE DATA FUNCTION

74 000014 READ=BIT3!BIT2 : READ DATA FUNCTION

75 000016 RDNHD=BIT3!BIT2!BIT1 : READ W/O HEADER VERIFICATION

76 000202 GODRVR=BIT1!BIT7 : CRDY AND DRDY

77 000010 DRST=BIT3 : DRIVE RESET (RLDA)

78 000002 GSBIT=BIT1 : GET STATUS BIT (RLDA)

79 000001 MK=BIT0 : MARKER BIT (RLDA)

80 000004 SIGN=BIT2 : SIGN BIT (RLDA)

81 000100 RHHS=BIT6 : HEAD SELECT IN READ HEADER

82 000100 STHS=BIT6 : HEAD SELECT IN STATUS BACK

83 000020 DAHS=BIT4 : HEAD SELECT IN SEEK

84

85 ;OFFSET FOR HARDWARE P-TABLE

86

87 000000 CSR=0

88 000002 VECT=2

89 000004 PRIOR=4

90 000006 TYPDR=6

91 000010 DRBT=10

92 000012 CNT=12

93

94 ;OFFSET FOR SOFTWARE P-TABLE

CZRLH80 RL11/RLV;1 CTLR TST 2
CZRLH8.MAC 07-DEC-79 08:12

MACY11 30A(1052) 17-DEC-79 13:44 J 3 PAGE 1-5
GLOBAL DATA

SEQ 0035

151 002354 000000 RLC5: .WORD 0
152 002356 000000 RLBA: .WORD 0
153 002360 000000 RLDA: .WORD 0
154 002362 000000 RLMP: .WORD 0
155 002364 000000 BCSR: .WORD 0 ;CSR FROM P-TABLE
156 002366 000000 BVEC: .WORD 0 ;VECTOR FROM P-TABLE
157 002370 000000 BPRIOR: .WORD 0 ;BR LEVEL FROM P-TABLE
158 002372 000000 FNDFNC: .WORD 0
159 002374 000000 XMEM: .WORD 0
160 002376 000000 TRYFNC: .WORD 0 ;
161 002400 000000 ERFLG: .WORD 0
162 002402 001212 LOPIMX: .WORD 650.
163 002404 000233 LOPIMN: .WORD 155.
164 002406 000620 UOPIMX: .WORD 400.
165 002410 000240 UOPIMN: .WORD 160.
166 002412 000000 OPIMN: .WORD 0
167 002414 000000 OPIMX: .WORD 0
168 002416 000000 PWRFLG: .WORD 0
169 002420 000000 T.CNTLR: .WORD 0
170 002422 000000 DERFLG: .WORD 0
171 002424 000000 ERPOINT: .WORD 0
172 002426 000100 ERCOUNT: .BLKW 64.
173 002626 000000 XDELAY: .WORD 0
174 002630 000000 YDELAY: .WORD 0
175 002632 000000 TEMPO: .WORD 0
176 002634 000000 TEMP: .WORD 0
177 002636 000000 TIM.US: .WORD 0
178 002640 000000 TAG: .WORD 0
179 002642 000000 PCLKCS: .WORD 0
180 002644 000000 PCSR: .WORD 0
181 002646 000000 VEC: .WORD 0
182 002650 000000 HZ: .WORD 0
183 002652 000000 XITFLG: .WORD 0
184 002654 000000 FIFTY: .WORD 0
185 002656 000000 SIXTY: .WORD 0
186 002660 000000 PCLOCK: .WORD 0
187 002662 000000 NOTST: .WORD 0
188 002664 000000 OPITIM: .WORD 0
189 002666 000000 CLKFLD: .WORD 0 ;CLOCK FIELD USED TO CHECK IF LSI-11 CLOCK
190 :/IS 'TICKING'
191
192
193 .SBTTL LIST TO CHECK HEADER COMPARE LOGIC
194 002670 000000 HDRTAB: .WORD 0 ;WALK 1
195 002672 000001 .WORD BIT0
196 002674 000002 .WORD BIT1
197 002676 000004 .WORD BIT2
198 002700 000010 .WORD BIT3
199 002702 000020 .WORD BIT4
200 002704 000040 .WORD BIT5
201 002706 000100 .WORD BIT6
202 002710 000200 .WORD BIT7
203 002712 000400 .WORD BIT8
204 002714 001000 .WORD BIT9
205 002716 002000 .WORD BIT10
206 002720 004000 .WORD BIT11

CZRLHBO RL11/RLV11 CTLR TST 2
CZRLHB.MAC 07-DEC-79 08:12

MACY1: 30A(1052) 17-DEC-79 13:44 PAGE 1-6
LIST TO CHECK HEADER COMPARE LOGIC K 3

SEQ 0036

207	002722	010000	.WORD	BIT12
208	002724	020000	.WORD	BIT13
209	002726	040000	.WORD	BIT14
210	002730	000003	.WORD	3
211	002732	000007	.WORD	7
212	002734	000017	.WORD	17
213	002736	000037	.WORD	37
214	002740	000137	.WORD	137
215	002742	000337	.WORD	337
216	002744	000737	.WORD	737
217	002746	001737	.WORD	1737
218	002750	003737	.WORD	3737
219	002752	007737	.WORD	7737
220	002754	017737	.WORD	17737
221	002756	037737	.WORD	37737
222	002760	077737	.WORD	77737
223	002762	077736	.WORD	77736
224	002764	077734	.WORD	77734
225	002766	077730	.WORD	77730
226	002770	077720	.WORD	77720
227	002772	077700	.WORD	77700
228	002774	077600	.WORD	77600
229	002776	077400	.WORD	77400
230	003000	077000	.WORD	77000
231	003002	076000	.WORD	76000
232	003004	074000	.WORD	74000
233	003006	070000	.WORD	70000
234	003010	060000	.WORD	60000
235	003012	040000	.WORD	40000
236	003014	077735	.WORD	77735
237	003016	077733	.WORD	77733
238	003020	077727	.WORD	77727
239	003022	077717	.WORD	77717
240	003024	077637	.WORD	77637
241	003026	077537	.WORD	77537
242	003030	077337	.WORD	77337
243	003032	076737	.WORD	76737
244	003034	075737	.WORD	75737
245	003036	073737	.WORD	73737
246	003040	067737	.WORD	67737
247	003042	057737	.WORD	57737
248	003044	037737	.WORD	37737
249	003046	000000	.WORD	0
250	003050	000000	.WORD	0
251	003052	000001	.WORD	BIT0
252	003054	000002	.WORD	BIT1
253	003056	000004	.WORD	BIT2
254	003060	000010	.WORD	BIT3
255	003062	000020	.WORD	BIT4
256	003064	000040	.WORD	BIT5
257	003066	000100	.WORD	BIT6
258	003070	000200	.WORD	BIT7
259	003072	000400	.WORD	BIT8
260	003074	001000	.WORD	BIT9
261	003076	002000	.WORD	BIT10
262	003100	004000	.WORD	BIT11

HDREND:
HTAB:

;GROW 1

;GROW 0

;WALK 0

;WALK 1

CZRLHB0 RL11/RLV11 CTLR TST 2
CZRLHB.MAC 07-DEC-79 08:12

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LIST TO CHECK HEADER COMPARE LOGIC

SEQ 0037

263 003102 010000 .WORD BIT12
264 003104 020000 .WORD BIT13
265 003106 040000 .WORD BIT14
266 003110 100000 .WORD BIT15
267 003112 000003 .WORD 3 :GROW 1
268 003114 000007 .WORD ?
269 003116 000017 .WORD 17
270 003120 000037 .WORD 37
271 003122 000137 .WORD 137
272 003124 000337 .WORD 337
273 003126 000737 .WORD 737
274 003130 001737 .WORD 1737
275 003132 003737 .WORD 3737
276 003134 007737 .WORD 7737
277 003136 017737 .WORD 17737
278 003140 037737 .WORD 37737
279 003142 077737 .WORD 77737
280 003144 177737 .WORD 177737
281 003146 177736 .WORD 177736 :GROW 0
282 003150 177734 .WORD 177734
283 003152 177730 .WORD 177730
284 003154 177720 .WORD 177720
285 003156 177700 .WORD 177700
286 003160 177600 .WORD 177600
287 003162 177400 .WORD 177400
288 003164 177000 .WORD 177000
289 003166 176000 .WORD 176000
290 003170 174000 .WORD 174000
291 003172 170000 .WORD 170000
292 003174 160000 .WORD 160000
293 003176 140000 .WORD 140000
294 003200 100000 .WORD 100000
295 003202 177735 .WORD 177735 :WALK 0
296 003204 177733 .WORD 177733
297 003206 177727 .WORD 177727
298 003210 177717 .WORD 177717
299 003212 177637 .WORD 177637
300 003214 177537 .WORD 177537
301 003216 177337 .WORD 177337
302 003220 176737 .WORD 176737
303 003222 175737 .WORD 175737
304 003224 173737 .WORD 173737
305 003226 167737 .WORD 167737
306 003230 157737 .WORD 157737
307 003232 137737 .WORD 137737
308 003234 000000 HEND: .WORD 0
309
310
311
312 003236 000001 000002 000004 DATPAT: .WORD 1,2,4,10,20,40,100,200,400,1000,2000,4000,10000,20000,40000,100000
003244 000010 000020 000040
003252 000100 000200 000400
003260 001000 002000 004000
003266 010000C 020000 040000
003274 100000
313 003276 177777 177776 177775 .WORD 177777,177776,177775,177773,177767,177757,177737,177677

CZRLHBO RL11/RLV11 CTLR TST 2 MAC Y11 30A(1052) 17-DEC-79 13:44 PAGE 1-8
 CZRLHB.MAC 07-DEC-79 08:12 LIST TO CHECK HEADER COMPARE LOGIC

M 3

SEQ 0038

	003304	177773	177767	177757		
	003312	177737	177677		.WORD	177577,177377,176777,175777,173777,167777,157777,137777
314	003316	177577	177377	176777		
	003324	175777	173777	167777		
	003332	157777	137777			
315	003336	077777	177774	177770	.WORD	77777,177774,177770,177760,177740,177700,177600,177400
	003344	177760	177740	177700		
	003352	177600	177400		.WORD	177000,176000,174000,170000,160000,140000,3,7,17,37,77
316	003356	177000	176000	174000		
	003364	170000	160000	140000		
	003372	000003	000007	000017		
	003400	000037	000077			
317	003404	000177	000377	000777	.WORD	177,377,777,1777,3777,7777,17777,37777,0
	003412	0C1777	003777	007777		
	003420	017777	037777	000000		

318

319

320

321 003426 000400

BUF : 256. : BUFFER FOR READ/WRITE

322

323

324 003430

ENDMOD

325

326

.SBTTL GLOBAL TEXT

327

328 003430

BGNMOD

GLBTXT

332	003430	051503	020072	000	ARLCS:	.ASCIZ /CS: /
333	003435	040	040502	020072	ARLBA:	.ASCIZ / BA: /
334	003443	040	040504	020072	ARLDA:	.ASCIZ / DA: /
335	003451	040	050115	020072	ARLMP:	.ASCIZ / MP: /
336	003457	102	043105	051117	BEREG:	.ASCIZ /BEFORE COMMAND: /
337	003500	044524	042515	047440	AFREG:	.ASCIZ /TIME OF ERROR: /
338	003521	103	047117	051124	CRTIM:	.ASCIZ /CONTROLLER TIMED OUT/
339	003546	051104	053111	020105	DRTIM:	.ASCIZ /DRIVE READY TIMED OUT/
340	003574	042040	053122	000	DEMES:	.ASCIZ / DRV/
341	003601	040	054116	000115	NOPMES:	.ASCIZ / NXM/
342	003606	047440	044520	000	OPIMES:	.ASCIZ / OPI/
343	003613	040	041510	041522	HCRCMES:	.ASCIZ / HCRC/
344	003621	040	047110	000106	HNFMES:	.ASCIZ / HNF/
345	003626	042040	045503	000	DCKMES:	.ASCIZ / DCK/
346	003633	040	046104	000124	DLTMES:	.ASCIZ / DLT/
347	003640	000015			LF:	.ASCIZ <15>
348	003642	005015	000		MSCRLF:	.ASCIZ <15><12>
349	003645	040	047503	050115	COMP:	.ASCIZ / COMP/
350	003653	106	041522	020104	OPIERR:	.ASCIZ /FRCD OPI C 'SED OTHER ERRS/
351	003705	116	047517	020120	NOPMES:	.ASCIZ /NOOP OPR'TN-FLAG MODE/
352	003733	116	047517	020120	NOPINT:	.ASCIZ /NOOP OPR'TN-INTR. MODE/
353	003762	051127	052111	020105	WCKMES:	.ASCIZ /WRITE CHCK OPR'TN-FLAG MODE/
354	004016	051127	052111	020105	WCKINT:	.ASCIZ /WRITE CHCK OPR'TN-INTR. MODE/
355	004053	122	020104	042110	RHDMES:	.ASCIZ /RD HDR OPR'TN-FLAG MODE/
356	004103	122	020104	042110	RHDINT:	.ASCIZ /RD HDR OP-INTR. MODE/
357	004130	045523	047440	026520	SEKMES:	.ASCIZ /SK OP-FLAG MODE/
358	004150	045523	047440	026520	SEKINT:	.ASCIZ /SK OP-INTR. MODE/
359	004171	107	052105	051440	GSTMES:	.ASCIZ /GET STATUS OP-FLAG MODE/
360	004221	107	052105	051440	GSTINT:	.ASCIZ /GET STATUS OP-INTR MODE/
361	004251	122	020104	050117	RDDMES:	.ASCIZ /RD OP-FLAG MODE/

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SEQ 0039

362	004271	122	020104	050117	RDDINT: .ASCIZ	/RD OP-INTR MODE/
363	004311	127	052122	047440	WRTMES: .ASCIZ	/WRT OP-FLAG MODE/
364	004332	051127	020124	050117	WRTINT: .ASCIZ	/WRT OP-INTR MODE/
365	004353	122	020104	027527	RDNMES: .ASCIZ	%RD W/O HDR - FLG MODE%
366	004401	122	020104	027527	RDNINT: .ASCIZ	%RD W/O HDR - INTR MODE%
367	004430	040503	023516	020124	SKHOME: .ASCIZ	/CAN'T SK TO TRK 0/
368	004452	051127	020124	047514	WRLOCK: .ASCIZ	/WRT LOCK ERR/
369	004467	122	041514	020123	EM1: .ASCIZ	/RLCS HAD FOLLOWING ERR(S):/
370	004522	000170			EM100: .BLKB	120.
371	004712	047516	044440	052116	EM4: .ASCIZ	/NO INTRPT ON RD OP/
372	004735	122	020104	050117	EM5: .ASCIZ	/RD OP DID NOT WRT MEM/
373	004763	122	041114	020101	EM6: .ASCIZ	/RLBA DID NOT INCR DURING RD/
374	005017	123	041505	051124	EM7: .ASCIZ	/SECTR DID NOT INCR PROPERLY AFTER RD/
375	005064	042110	020122	047516	EM10: .ASCIZ	/HDR NOT FND COULD NOT BE FORCED/
376	005124	051127	047117	020107	EM11: .ASCIZ	/WRONG CYL ON SK/
377	005144	042110	020122	047516	EM12: .ASCIZ	/HDR NOT FND WOULD NOT SET/
378	005176	051104	020126	042122	EM13: .ASCIZ	/DRV RDY WOULD NOT SET/
379	005224	051504	020113	042101	EM14: .ASCIZ	/DSK ADDR INCORRECT AFTER MULTIPLE SCTR READ/
380	005300	051104	020126	051105	EM16: .ASCIZ	/DRV ERR ON WRT OP/
381	005322	047516	044440	052116	EM17: .ASCIZ	/NO INTRPT ON WRT OP/
382	005346	046122	040502	042040	EM20: .ASCIZ	/RLBA DID NOT INCR PROPERLY DURING WRT/
383	005414	041523	051124	042040	EM21: .ASCIZ	/SCTR DID NOT INCR PROPERLY AFTER WRT/
384	005461	104	045523	040440	EM22: .ASCIZ	/DSK ADDR (RLDA) INCORRECT AFT MUL'PLE SCTR WRT/
385	005540	042110	020122	047516	EM23: .ASCIZ	/HDR NOT FND COULD NOT BE FORCED AT END OF TRK/
386	005616	054116	020115	042515	EM24: .ASCIZ	/NXM MEM ERR COULD NOT BE FORCED/
387	005656	040504	040524	041440	EM25: .ASCIZ	%DATA CMP ERR - RD/WRT ERR%
388	005710	051127	020124	050117	EM26: .ASCIZ	/WRT OP MODIFIED MEM/
389	005734	051105	020122	047117	EM27: .ASCIZ	/ERR ON PARTIAL SCTR WRT - ZERO FILL CHCK/
390	006005	122	041114	020101	EM30: .ASCIZ	/RLBA DID NOT INCR PROPERLY/
391	006040	040502	041040	052111	EM31: .ASCIZ	/BA BIT 16 DID NOT SET ON INCR/
392	006076	040502	041040	052111	EM32: .ASCIZ	/BA BIT 17 SET ON BA16 INCR TST/
393	006135	122	041114	020101	EM33: .ASCIZ	/RLBA DID NOT INCR WITH BA16/
394	006171	102	020101	044502	EM34: .ASCIZ	/BA BIT 17 DID NOT SET ON INCR/
395	006227	102	020101	044502	EM35: .ASCIZ	/BA BIT 16 DID NOT CLR ON INCR/
396	006265	122	041114	020101	EM36: .ASCIZ	/RLBA DID NOT INCR WITH BA17/
397	006321	122	040505	024104	EM40: .ASCIZ	/READ(FUNCTION 7) DID NOT INTRPT/
398	006361	122	024104	052506	EM41: .ASCIZ	/RD(FUNCTION 7) ERR - BAD DATA/
399	006417	122	020104	043050	EM42: .ASCIZ	/RD, (FUNCTION 7) ERR AT END OF TRK/
400	006461	116	020117	047111	EM43: .ASCIZ	/NO INTRPT WITH HDR NT FND FORCED/
401	006522	047516	044440	052116	EM44: .ASCIZ	/NO INTRPT WITH NXM FORCED/
402	006554	051105	020122	047117	EM45: .ASCIZ	%ERR ON BIT BANG OF SILO%
403	006604	044523	047514	047440	EM47: .ASCIZ	/SILO OP FAIL/
404	006621	110	051104	041440	EM50: .ASCIZ	/HDR CMP FAILURE - SECTOR/
405	006652	042122	053440	047457	EM55: .ASCIZ	?RD W/O HDR CMP OP DID NOT WRT MEMORY?
406	006717	122	041114	020101	EM53: .ASCIZ	?RLBA D'NT INCR DURING RD W/O HDR CMP?
407	006764	046122	040504	042040	EM54: .ASCIZ	?RLDA DID NOT INCR AFTER RD W/O HDR CMP?
408	007033	117	044520	052040	EM56: .ASCIZ	/OPI TIMING ERR/
409	007052	051127	020124	044103	EM57: .ASCIZ	/WRT CHCK NPF CAUSED BUS TRAP/
410	007107	127	052122	041440	EM60: .ASCIZ	/WRT CHCK DID NOT INTRPT/
411	007137	122	041114	020101	EM61: .ASCIZ	/RLBA DID NOT INCR PROPERLY DURING WRCHK/
412	007207	122	042114	020101	EM62: .ASCIZ	/RLDA DID NOT INCR DURING WRCHK/
413	007246	046122	040504	042040	EM63: .ASCIZ	/RLDA DID NOT INCR AFT A MULT' SCTR WRT CHK/
414	007321	127	052122	041440	EM64: .ASCIZ	/WRT CHECK OF PARTIAL SCTR WRT FAIL/
415	007364	040503	047116	052117	EM65: .ASCIZ	/CANNOT FORCE DCK ON WRT CHCK/
416	007421	103	047101	047516	EM66: .ASCIZ	/CANNOT FORCE INTERRUPT WITH DCK ON WRCHK/
417	007472	051127	020124	044103	EM70: .ASCIZ	/WRT CHCK FAIL/

418
419
420
421
425
426
427 007510 ENMOD
428
429 007510 BGNMOD GLBERR
430
431 .SBTTL GLOBAL ERRORS
432 007510 BGNMSG ERRO
433
434 007510 004737 010522 JSR PC,LINE1
435 007514 004737 010556 JSR PC,LINE2
436
437
438 007520 004537 014530 JSR R5,CKERLT :INCREMENT ERROR AND CHECK LIMIT
439
440 007524 ENDMSG
441 (3) 007524 L10000: TRAP CSMSG
442 (3) 007524 104423 BGNMSG ERR1
443
444 007526 004737 010522 JSR PC,LINE1
445
446
447 007532 004537 014530 JSR R5,CKERLT :INCREMENT ERROR AND CHECK LIMIT
448
449 007536 ENDMSG
450 (3) 007536 L10001: TRAP CSMSG
451 (3) 007536 104423 BGNMSG ERR2
452
453 007540 004737 010522 JSR PC,LINE1
454 007544 PRINTB #FRMT4,GDDAT,BDDAT
455 (9) 007544 013746 002302 MOV BDDAT,-(SP)
456 (8) 007550 013746 002300 MOV GDDAT,-(SP)
457 (7) 007554 012746 011170 MOV #FRMT4,-(SP)
458 (6) 007560 012746 000003 MOV #3,-(SP)
459 (3) 007564 010600 MOV SP,RO
460 (4) 007566 104414 TRAP CSPNTB
461 (4) 007570 062706 000010 ADD #10,SP
462
463 007574 004537 014530 JSR R5,CKERLT :INCREMENT ERROR AND CHECK LIMIT
464
465 007600 ENDMSG
466 (3) 007600 L10002: TRAP CSMSG
467 (3) 007600 104423 BGNMSG ERR3
468
469 007602 004737 010522 JSR PC,LINE1

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SEQ 0041

464 007606 004737 010556 JSR PC,LINE2
465 007612 004737 010556 PRINTB #FRMT5,TMPO,BDDAT,GDDAT
(10) 007612 013746 002300 MOV GDDAT,-(SP)
(9) 007616 013746 002302 MOV BDDAT,-(SP)
(8) 007622 013746 002272 MOV TMPO,-(SP)
(7) 007626 012746 011226 MOV #FRMT5,-(SP)
(6) 007632 012746 000004 MOV #4,-(SP)
(3) 007636 010600 MOV SP,RO
(4) 007640 104414 TRAP CSPNTB
(4) 007642 062706 000012 ADD #12,SP
466
467
468 007646 004537 014530 JSR RS,CKERLT :INCREMENT ERROR AND CHECK LIMIT
469
470 007652 L10003: ENDMMSG
(3) 007652 104423 TRAP CSMSG
471
472 007654 BGNMSG ERR4
473
474 007654 004737 010522 JSR PC,LINE1
475 007660 004737 010556 JSR PC,LINE2
476 007664 L10003: PRINTB #FRMT4,GDDAT,BDDAT
(9) 007664 013746 002302 MOV BDDAT,-(SP)
(8) 007670 013746 002300 MOV GDDAT,-(SP)
(7) 007674 012746 011170 MOV #FRMT4,-(SP)
(6) 007700 012746 000003 MOV #3,-(SP)
(3) 007704 010600 MOV SP,RO
(4) 007706 104414 TRAP CSPNTB
(4) 007710 062706 000010 ADD #10,SP
477
478
479 007714 004537 014530 JSR RS,CKERLT :INCREMENT ERROR AND CHECK LIMIT
480
481 007720 L10004: ENDMMSG
(3) 007720 104423 TRAP CSMSG
482
483 007722 BGNMSG ERR5
484
485 007722 004737 010522 JSR PC,LINE1
486 007726 PRINTB #FRMT3,RESTMS
(8) 007726 013746 015040 MOV RESTMS,-(SP)
(7) 007732 012746 011163 MOV #FRMT3,-(SP)
(6) 007736 012746 000002 MOV #2,-(SP)
(3) 007742 010600 MOV SP,RO
(4) 007744 104414 TRAP CSPNTB
(4) 007746 062706 000006 ADD #6,SP
487
488
489 007752 004537 014530 JSR RS,CKERLT :INCREMENT ERROR AND CHECK LIMIT
490
491 007756 L10005: ENDMMSG
(3) 007756 104423 TRAP CSMSG
492

9
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SEQ 0042

493 007760 BGNMSG ERR6
494
495 007760 004737 010522 JSR PC,LINE1
496 007764 004737 011000 JSR PC,LINE3
497 007770 004737 010556 JSR PC,LINE2
498
499
500 007774 PRINTB #FRMT99
(7) 007774 012746 012106 MOV #FRMT99,-(SP)
(6) 010000 012746 000001 MOV #1,-(SP)
(3) 010004 010600 MOV SP, R0
(4) 010006 104414 TRAP CSPNTB
(4) 010010 062706 000004 ADD #4, SP
501 010014 004537 014530 JSR RS,CKERLT :INCREMENT ERROR AND CHECK LIMIT
502
503 010020 ENDMSG
(3) 010020 L10006: TRAP CMSG
(3) 010020 104423
504
505 010022 BGNMSG ERR7
506
507
508
509 010022 004537 014530 JSR RS,CKERLT :INCREMENT ERROR AND CHECK LIMIT
510
511 010026 ENDMSG
(3) 010026 L10007: TRAP CMSG
(3) 010026 104423
512
513
514
515 010030 BGNMSG ERR8
516
517 010030 004737 010522 JSR PC,LINE1
518 010034 004737 010556 JSR PC,LINE2
519 010040 PRINTB #FRMT6,TMP1,GDDAT,BDDAT
(10) 010040 013746 002302 MOV BDDAT,-(SP)
(9) 010044 013746 002300 MOV GDDAT,-(SP)
(8) 010050 013746 002274 MOV TMP1,-(SP)
(7) 010054 012746 011277 MOV #FRMT6,-(SP)
(6) 010060 012746 000004 MOV #4,-(SP)
(3) 010054 010600 MOV SP, R0
(4) 010066 104414 TRAP CSPNTB
(4) 010070 062706 000012 ADD #12, SP
520
521
522 01007.. 004537 014530 JSR RS,CKERLT :INCREMENT ERROR AND CHECK LIMIT
523
524 010100 ENDMSG
(3) 010100 L10010: TRAP CMSG
(3) 010100 104423
525
526 010102 BGNMSG ERR9
527
528 010102 004737 010522 JSR PC,LINE1
529 010106 004737 010556 JSR PC,LINE2

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SEQ 0043

530 010112 PRINTB #FRMT4,TMPO,R2
(9) 010112 MOV R2,-(SP)
(8) 010114 013746 002272 MOV TMPO,-(SP)
(7) 010120 012746 011170 MOV #FRMT4,-(SP)
(6) 010124 012746 000003 MOV #3,-(SP)
(3) 010130 010600 MOV SP, R0
(4) 010132 104414 TRAP CSPNTB
(4) 010134 062706 000010 ADD #10,SP

531

532

533 010140 004537 014530 JSR RS,CKERLT ;INCREMENT ERROR AND CHECK LIMIT

534

535 010144 ENDMMSG

(3) 010144 L10011: TRAP C\$MSG

(3) 010144 104423

536

537 010146 BGNMSG ERR10

538

539 010146 004737 010522 JSR PC,LINE1
540 010152 004737 010556 JSR PC,LINE2
541 010156 PRINTB #FRMT7,TMP1,GDDAT,BDDAT
(10) 010156 013746 002302 MOV BDDAT,-(SP)
(9) 010162 013746 002300 MOV GDDAT,-(SP)
(8) 010166 013746 002274 MOV TMP1,-(SP)
(7) 010172 012746 011354 MOV #FRMT7,-(SP)
(6) 010176 012746 000004 MOV #4,-(SP)
(3) 010202 010600 MOV SP, R0
(4) 010204 104414 TRAP CSPNTB
(4) 010206 062706 000012 ADD #12,SP

542

543

544 010212 004537 014530 JSR RS,CKERLT ;INCREMENT ERROR AND CHECK LIMIT

545

546 010216 ENDMMSG

(3) 010216 L10012: TRAP C\$MSG

(3) 010216 104423

547

548 010220 BGNMSG ERR11

549

550 010220 004737 010522 JSR PC,LINE1
551 010224 004737 010556 JSR PC,LINE2
552 010230 PRINTB #FRMT8,TMPO,GDDAT,BDDAT
(10) 010230 013746 002302 MOV BDDAT,-(SP)
(9) 010234 013746 002300 MOV GDDAT,-(SP)
(8) 010240 013746 002272 MOV TMP0,-(SP)
(7) 010244 012746 011426 MOV #FRMT8,-(SP)
(6) 010250 012746 000004 MOV #4,-(SP)
(3) 010254 010600 MOV SP, R0
(4) 010256 104414 TRAP CSPNTB
(4) 010260 062706 000012 ADD #12,SP

553

554

555 010264 004537 014530 JSR RS,CKERLT ;INCREMENT ERROR AND CHECK LIMIT

556

557 010270 ENDMMSG

(3) 010270 L10013:

(3) 010270 104423 TRAP C\$MSG

558

559 010272 BGNMSG ERR12

560

561 010272 004737 010522 JSR PC,LINE1

562 010276 004737 010556 JSR PC,LINE2

563 010302 PRINTB #FRMT9,TMP1,R3,GDDAT,BDDAT

(11) 010302 013746 002302 MOV BDDAT,-(SP)

(10) 010306 013746 002300 MOV GDDAT,-(SP)

(9) 010312 010346 MOV R3,-(SP)

(8) 010314 013746 002274 MOV TMP1,-(SP)

(7) 010320 012746 011547 MOV #FRMT9,-(SP)

(6) 010324 012746 000005 MOV #5,-(SP)

(3) 010330 010600 MOV SP,RO

(4) 010332 104414 TRAP CSPNTB

(4) 010334 062706 000014 ADD #14,SP

564

565

566 010340 004537 014530 JSR RS,CKERLT ;INCREMENT ERROR AND CHECK LIMIT

567

568 010344 ENDMMSG

(3) 010344 L10014:

(3) 010344 104423 TRAP C\$MSG

569

570 010346 BGNMSG ERR13

571

572 010346 004737 010522 JSR PC,LINE1

573 010352 PRINTB #FRMT10,OPIMN,OPIMX,BDDAT

(10) 010352 013746 002302 MOV BDDAT,-(SP)

(9) 010356 013746 002414 MOV OPIMX,-(SP)

(8) 010362 013746 002412 MOV OPIMN,-(SP)

(7) 010366 012746 011652 MOV #FRMT10,-(SP)

(6) 010372 012746 000004 MOV #4,-(SP)

(3) 010376 010600 MOV SP,RO

(4) 010400 104414 TRAP CSPNTB

(4) 010402 062706 000012 ADD #12,SP

574

575

576 010406 004537 014530 JSR RS,CKERLT ;INCREMENT ERROR AND CHECK LIMIT

577

578 010412 ENDMMSG

(3) 010412 L10015:

(3) 010412 104423 TRAP C\$MSG

579

580 010414 BGNMSG ERR14

581

582 010414 004737 010522 JSR PC,LINE1

583 010420 004737 010556 JSR PC,LINE2

584 010424 PRINTB #FRMT14,TMP1,#BUF

(9) 010424 012746 003426 MOV #BUF,-(SP)

(8) 010430 013746 002274 MOV TMP1,-(SP)

(7) 010434 012746 011476 MOV #FRMT14,-(SP)

(6) 010440 012746 000003 MOV #3,-(SP)

(3) 010444 010600 MOV SP,RO

(4) 010446 104414 TRAP CSPNTB

(4) 010450 062706 000010 ADD #10,SP

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SEQ 0045

585
 586
 587 010454 004537 014530 JSR R5,CKERLT ;INCREMENT ERROR AND CHECK LIMIT
 588
 589 010460 ENDMMSG
 (3) 010460 L10016: TRAP C\$MSG
 (3) 010460 104423
 590
 591 010462 BGNMSG ERR15
 592
 593 010462 004737 010522 JSR PC,LINE1
 594 010466 004737 010556 JSR PC,LINE2
 595 010472 PRINTB #FRMT15,R2
 (8) 010472 010246 MOV R2,-(SP)
 (7) 010474 012746 012142 MOV #FRMT15,-(SP)
 (6) 010500 012746 000002 MOV #2,-(SP)
 (3) 010504 010600 MOV SP,RO
 (4) 010506 104414 TRAP C\$PNTB
 (4) 010510 062706 000006 ADD #6,SP
 596 010514 004537 014530 JSR R5,CKERLT
 597
 598 010520 ENDMMSG
 (3) 010520 L10017: TRAP C\$MSG
 (3) 010520 104423
 599
 600 010522 005046 LINE1: PRINTB #FRMT1,RLCS,<B,DRIVE+1>
 (9) 010522 005046 CLR -(SP)
 (9) 010524 153716 002247 BISB DRIVE+1,(SP)
 (8) 010530 013746 002354 MOV RLCS,-(SP)
 (7) 010534 012746 011052 MOV #FRMT1,-(SP)
 (6) 010540 012746 000003 MOV #3,-(SP)
 (3) 010544 010600 MOV SP,RO
 (4) 010546 104414 TRAP C\$PNTB
 (4) 010550 062706 000010 ADD #10,SP
 601 010554 000207 RTS PC
 602
 603 010556 013746 LINE2: PRINTB #FRMT2,#BEREG,#ARLCS,B.CS,#ARLB,A.BA
 (12) 010556 002332 MOV B.BA,-(SP)
 (11) 010562 012746 003435 MOV #ARLB,-(SP)
 (10) 010566 013746 002330 MOV B.CS,-(SP)
 (9) 010572 012746 003430 MOV #ARLC,S,-(SP)
 (8) 010576 012746 003457 MOV #BEREG,-(SP)
 (7) 010602 012746 011102 MOV #FRMT2,-(SP)
 (6) 010606 012746 000006 MOV #6,-(SP)
 (3) 010612 010600 MOV SP,RO
 (4) 010614 104414 TRAP C\$PNTB
 (4) 010616 062706 000016 ADD #16,SP
 604 010622 013746 PRINTB #FRMT2A,#ARLDA,B.DA,#ARLMP,B.MP
 (11) 010622 002336 MOV B.MP,-(SP)
 (10) 010626 012746 003451 MOV #ARLMP,-(SP)
 (9) 010632 013746 002334 MOV B.DA,-(SP)
 (8) 010636 012746 003443 MOV #ARLDA,-(SP)
 (7) 010642 012746 011121 MOV #FRMT2A,-(SP)
 (6) 010646 012746 000005 MOV #5,-(SP)
 (3) 010652 010600 MOV SP,RO
 (4) 010654 104414 TRAP C\$PNTB

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SEQ 0046

(4) 010656 062706 000014	ADD #14,SP
605 010662 013746 002342	PRINTB #FRMT2, #AFREG, #ARLCS, E.CS, #ARLBA, E.BA
(12) 010662 013746 003435	MOV E.BA,-(SP)
(11) 010666 012746 002340	MOV #ARLBA,-(SP)
(10) 010672 013746 002340	MOV E.CS,-(SP)
(9) 010676 012746 003430	MOV #ARLCS,-(SP)
(8) 010702 012746 003500	MOV #AFREG,-(SP)
(7) 010706 012746 011102	MOV #FRMT2,-(SP)
(6) 010712 012746 000006	MOV #6,-(SP)
(3) 010716 010600	MOV SP,RO
(4) 010720 104414	TRAP CSPNTB
(4) 010722 062706 000016	ADD #16,SP
606 010726 013746 002352	PRINTB #FRMT2B, #ARLDA, E.DA, #ARLMP, E.MP, E.MP1, E.MP2
(13) 010726 013746 002350	MOV E.MP2,-(SP)
(12) 010732 013746 002346	MOV E.MP1,-(SP)
(11) 010736 013746 002346	MOV E.MP,-(SP)
(10) 010742 012746 003451	MOV #ARLMP,-(SP)
(9) 010746 013746 002344	MOV E.DA,-(SP)
(8) 010752 012746 003443	MOV #ARLDA,-(SP)
(7) 010756 012746 011134	MOV #FRMT2B,-(SP)
(6) 010762 012746 000007	MOV #7,-(SP)
(3) 010766 010600	MOV SP,RO
(4) 010770 104414	TRAP CSPNTB
(4) 010772 062706 000020	ADD #20,SP
607 010776 000207	RTS PC
608	
609 011000 012746 004467	LINE 3: PRINTB #FRMT3, #EM1
(8) 011000 012746 011163	MOV #EM1,-(SP)
(7) 011004 012746 000002	MOV #FRMT3,-(SP)
(6) 011010 012746 000002	MOV #2,-(SP)
(3) 011014 010600	MOV SP,RO
(4) 011016 104414	TRAP CSPNTB
(4) 011020 062706 000006	ADD #6,SP
610 011024 012746 004522	PRINTB #FRMT3, #EM100
(8) 011024 012746 011163	MOV #EM100,-(SP)
(7) 011030 012746 000002	MOV #FRMT3,-(SP)
(6) 011034 012746 000002	MOV #2,-(SP)
(3) 011040 010600	MOV SP,RO
(4) 011042 104414	TRAP CSPNTB
(4) 011044 062706 000006	ADD #6,SP
611 011050 000207	RTS PC
612	
613	
617	
618 011052 040445 047103 051124 FRMT1: .ASCIZ /%ACNTRLR: %06%A DRV %01/	
619 011102 047045 052045 052045 FRMT2: .ASCIZ /%NZT%T%06%T%06/	
620 011121 045 022524 033117 FRMT2A: .ASCIZ /%T%06%T%06/	
621 011134 052045 047445 022466 FRMT2B: .ASCIZ /%T%06%T%06%A %06%A %06/	
622 011163 045 022516 000124 FRMT3: .ASCIZ /%NZT/	
623 011170 047045 040445 054105 FRMT4: .ASCIZ /%NZAEXP'D: %06%A REC'D: %06%N/	
624 011226 047045 040445 040514 FRMT5: .ASCIZ /%NZALAST: %06%A PRES: %06%A EXP'D: %06%N/	
625 011277 045 022516 041101 FRMT6: .ASCIZ /%NZABUS ADR: %06%A EXP'D: %06%A REC'D: %06%N/	
626 011354 047045 040445 047527 FRMT7: .ASCIZ /%NZAWORD: %D3%A EXP'D: %06%A REC'D: %06%N/	
627 011426 047045 040445 040504 FRMT8: .ASCIZ /%NZADA: %06%A REC'D: %06%A EXP'D: %06%N/	
628 011476 047045 040445 047527 FRMT14: .ASCIZ /%NZAWORDS WRITTEN: %D3%A BUS ADDR: %06%N/	
629 011547 045 022516 053501 FRMT9: .ASCIZ /%NZAWORDS WRITTEN: %D3%A EXP'D: %06%A REC'D: %06%N/	

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SEQ 0067

GLOBAL ERRORS

1 4

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630 011652 047045 040445 040522 FRMT10: .ASCII /%N%ARANGE %D3%A - %D3%A MILLISECONDS WAS %D6%N/
631 011731 045 046501 054101 .ASCII /%N%AMAX TIMEOUT OF PROGRAM IS 3 SECONDS%N/
632 012001 045 022516 042501 FRMT11: .ASCII /%N%AERR LIMIT EXCEEDED - DROPPED%N/
633 012044 040445 051104 020126 FRMT98: .ASCII /%N%ADR V DID NOT RCVR FROM POWER FAIL/
634 012106 047045 000 FRMT99: .ASCII /%N/
635 012111 045 022516 022524 FRMT13: .ASCII /%N%T%A - WILL NOT TEST%N/
636 012142 047045 040445 040520 FRMT15: .ASCII /%N%APATTERN WAS: %06/
637 012167 045 022516 042101 FRMT16: .ASCII /%N%ADRIVE DROPPED - NO CONTROLLER%N/
638 012233 045 022516 042101 FRMT17: .ASCII /%N%ADRIVE DROPPED - DID NOT RESPOND WITH 'READY'%N/
639 012316 047045 040445 042524 FRMT18: .ASCII /%N%ATEST ? CANNOT BE PERFORMED...CLOCK IS NOT AVAILABLE/
640
641 .EVEN
642
643
644
645
646
647 012406 ENDMOD
648
649 ;LOAD PROTECTION TABLE
650 012406 BGNPROT
651 012406 000000 .WORD 0 ;OFFSET OF CSR IN P-TABLE
652 012410 177777 .WORD -1 ;NOT A MASS-BUS DRIVE
653 012412 000010 .WORD 10 ;OFFSET OF DRIVE IN P-TABLE
654 012414 ENDPROT
655
656 012414 BGNMOD HPTCODE
657 012414 BGNHW
658 (3) 012414 000006 .WORD L10021-L$HW/2
659 012416 174400 .WORD 174400 ;CSR
660 012420 000160 .WORD 160 ;VECTOR
661 012422 000240 .WORD 240 ;PRIORITY
662 012424 000001 .WORD 1 ;TYPE OF DRIVE RL01 OR RL02
663 012426 000000 .WORD 0 ;DRIVE (BITS 8,9,10)
664 012430 000001 .WORD 1 ;RL11=1 RLV11=0
665
666 012432 ENDHW
667 (3) 012432 L10021:
668 012432 ENDMOD
669
670 012432 BGNMOD SPTCODE
671 (3) 012432 BGNHW
672 012432 000005 .WORD L10022-L$SW/2
673 012434 000000 DROP: .WORD 0
674 012436 000012 MERLMT: .WORD 10.
675 012440 000000 T.DMP: .WORD 0
676 012442 000000 T.LMT: .WORD 0
677 012444 000001 T.ANS: .WORD 1
678
679 012446 ENDSW
680 (3) 012446 L10022:
681 012446 ENDMOD
682
683 012446 BGNMOD DSPCODE
684 (4) 012446 000054 DISPATCH .WORD 44

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CZRLHBO RL11/RLV11 CTLR TST 2 MAC V11 30A(1052) 17-DEC-79 13:44 J⁴ PAGE 1-18
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SEQ 0048

(6) 012450	016242	.WORD	T1
(6) 012452	016406	.WORD	T2
(6) 012454	016536	.WORD	T3
(6) 012456	016672	.WORD	T4
(6) 012460	017024	.WORD	T5
(6) 012462	017162	.WORD	T6
(6) 012464	017360	.WORD	T7
(6) 012466	020002	.WORD	T8
(6) 012470	020172	.WORD	T9
(6) 012472	020370	.WORD	T10
(6) 012474	020542	.WORD	T11
(6) 012476	020740	.WORD	T12
(6) 012500	021140	.WORD	T13
(6) 012502	021242	.WORD	T14
(6) 012504	021366	.WORD	T15
(6) 012506	021562	.WORD	T16
(6) 012510	021716	.WORD	T17
(6) 012512	022050	.WORD	T18
(6) 012514	022170	.WORD	T19
(6) 012516	022350	.WORD	T20
(6) 012520	023162	.WORD	T21
(6) 012522	023356	.WORD	T22
(6) 012524	023522	.WORD	T23
(6) 012526	023706	.WORD	T24
(6) 012530	024072	.WORD	T25
(6) 012532	024472	.WORD	T26
(6) 012534	025114	.WORD	T27
(6) 012536	025542	.WORD	T28
(6) 012540	026222	.WORD	T29
(6) 012542	026654	.WORD	T30
(6) 012544	027270	.WORD	T31
(6) 012546	027522	.WORD	T32
(6) 012550	030012	.WORD	T33
(6) 012552	030306	.WORD	T34
(6) 012554	030600	.WORD	T35
(6) 012556	031172	.WORD	T36
(6) 012560	031472	.WORD	T37
(6) 012562	032032	.WORD	T38
(6) 012564	032344	.WORD	T39
(6) 012566	032670	.WORD	T40
(6) 012570	032760	.WORD	T41
(6) 012572	033112	.WORD	T42
(6) 012574	033310	.WORD	T43
(6) 012576	033446	.WORD	T44

684
 685 012600
 686

ENDMOD

688
 689 .SBTTL INITIALIZATION CODE
 690
 691 012600 BGNMOD INITCODE
 692 012600 BGNINIT
 693 012600 SETPRI #PRI07
 (3) 012600 012700 000340 MOV #PRI07, R0
 (3) 012604 104441 TRAP CSSPRI
 694 012606 READEF #EF.PWR
 (3) 012606 012700 000034 MOV #EF.PWR, R0
 (3) 012612 104447 TRAP CSREFG
 695 012614 BNCOMPLETE NOPWR
 (2) 012614 103004 BCC NOPWR
 696 012616 013737 002012 002416 MOV LSUNIT, PWRFLG
 697 012624 000475 BR CONT
 698 012626 NOPWR: READEF #EF.RESTART
 (3) 012626 012700 000037 MOV #EF.RESTART, R0
 (3) 012632 104447 TRAP CSREFG
 699 012634 BCCOMPLETE START1
 (2) 012634 103404 BCS START1
 700 012636 READEF #EF.START
 (3) 012636 012700 000040 MOV #EF.START, R0
 (3) 012642 104447 TRAP CSREFG
 701 012644 BNCOMPLETE CONTINUE1
 (2) 012644 103010 BCC CONTINUE1
 702 012646 012700 002426 START1: MOV #ERCOUNT, R0
 703 012652 012701 000100 MOV #64., R1
 704 012656 005020 1\$: CLR (R0)+
 705 012660 005301 DEC R1
 706 012662 001375 BNE 1\$
 707 012664 000407 BR START
 708 012666 CONTINUE: READEF #EF.CONTINUE
 (3) 012666 012700 000036 MOV #EF.CONTINUE, R0
 (3) 012672 104447 TRAP CSREFG
 709 012674 BCCOMPLETE CONT
 (2) 012674 103451 BCS CONT
 710 012676 005737 002250 NXT: TST UUT :DONE WITH ALL UNITS
 711 012702 001011 BNE XXX :NO
 712 012704 012737 177777 002252 START: MOV #-1, UNITST
 713 012712 013737 002012 002250 MOV LSUNIT, UUT
 714 012720 012737 002424 002424 MOV #ERCOUNT-2, ERPOINT
 715 012726 005237 002252 XXX: INC UNITST
 716 012732 062737 000002 002424 ADD #2, ERPOINT
 717 012740 005337 002250 DEC UUT
 718 012744 013700 002252 REST: GPHARD UNITST, R0
 (3) 012744 104442 MOV UNITST, R0
 (3) 012750 104442 TRAP CGPHRD
 719 012752 BCCOMPLETE 2\$
 (2) 012752 103406 BCS 2\$
 720 012754 005737 002416 TST PWRFLG
 721 012760 001746 BEQ NXT
 722 012762 005337 002416 DEC PWRFLG
 723 012766 000743 BR NXT
 724 012770 012037 002364 2\$: MOV (R0)+, BCSR :GET BUS ADDRESS
 725 012774 012037 002366 MOV (R0)+, BVEC :GET VECTOR
 726 013000 012037 002370 MOV (R0)+, BPRIOR :GET PRIORITY

CZRLHBO RL11/RLV11 CTLR TST 2 MAC(Y11 30A(1052) 17-DEC-79 13:44 L⁴ PAGE 1-20
CZRLHB.MAC 07-DEC-79 08:12 INITIALIZATION CODE

SEQ 0050

727 013004 012037 002232	MOV (R0)+,T.DRIVE	:GET TYPE OF DRIVE
728 013010 012037 002246	MOV (R0)+,DRIVE	:GET DRIVE
729 013014 012037 002420	MOV (R0)+,T.CNTLR	:GET CONTROLLER TYPE
730 013020 013700 002364	MOV BCSR,RO	:CREATE REGISTERS
731 013024 010037 002354	MOV RO,RLCS	
732 013030 062700 000002	ADD #2,RO	
733 013034 010037 002356	MOV RO,RLBA	
734 013040 062700 000002	ADD #2,RO	
735 013044 010037 002360	MOV RO,RLDA	
736 013050 062700 000002	ADD #2,RO	
737 013054 010037 002362	MOV RO,RLMP	
738 013060 005737 002416	TST PWRFLG	:POWER UP?
739 013064 001452	BEQ END	:NO
740 013066 012777 000200 167260	MOV #200,ARLCS	
741 013074 053777 002246 167252	BIS DRIVE,ARLCS	
742 013102 012701 000170	MOV #120,R1	:INITIALIZE WAIT COUNT
743 013106	WAITMS #10.	
744 013120 032777 000001 167226	BIT #1,ARLCS	
745 013126 001031	BNE END	
746 013130 005301	DEC R1	
747 013132 001365	BNE 3S	
748 013134	FPRINTF #FRMT99	
(7) 013134 012746 012106	MOV #FRMT99,-(SP)	
(6) 013140 012746 000001	MOV #1,-(SP)	
(3) 013144 010600	MOV SP,RO	
(4) 013146 104417	TRAP CSPNTF	
(4) 013150 062706 000004	ADJ #4,SP	
749 013154	FPRINTF #FRMT98	
(7) 013154 012746 012044	MOV #FRMT98,-(SP)	
(6) 013160 012746 000001	MOV #1,-(SP)	
(3) 013164 010600	MOV SP,RO	
(4) 013166 104417	TRAP CSPNTF	
(4) 013170 062706 000004	ADD #4,SP	
750 013174 004737 010522	JSR PC,LINE1	
751 013200	DODU UNITST	
(3) 013200 013700 002252	MOV UNITST,RO	
(3) 013204 104451	TRAP CSDDODU	
752 013206 000137 012676	JMP NXT	
753 013212 013737 002410 002412	END: MOV UOPIMN,OPIMN	
754 013220 013737 002406 002414	MOV UOPIMX,OPIMX	
755 013226 005737 002420	TST T.CNTLR	:RL11??
756 013232 001006	BNE 1S	:YES, THEN KEEP LIMITS SET
757 013234 013737 002404 002412	MOV LOPIMN,OPIMN	
758 013242 013737 002402 002414	MOV LOPIMX,OPIMX	
759 013250	1\$: SETVEC BVEC,#INTSRV,#340	
(7) 013250 012746 000340	MOV #340,-(SP)	
(6) 013254 012746 014466	MOV #INTSRV,-(SP)	
(5) 013260 013746 002366	MOV BVEC,-(SP)	
(4) 013264 012746 000003	MOV #3,-(SP)	
(3) 013270 104437	TRAP CSSVEC	
(2) 013272 062706 000010	ADD #10,SP	
760 013276	ENDINIT	
(3) 013276	L10023: TRAP CSINIT	
(3) 013276	ENDMOD	
761 013300		
762		

CZRLH80 RL11/RLV11 CTLR TST 2
CZRLH80.MAL 07-DEC-79 08:12MAC v11 30A(1052) 17-DEC-79 13:44 M⁴
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AUTO DROP SECTION

SEQ 0051

764
 765
 766 013300 .SBTTL AUTO DROP SECTION
 767 013300 005037 002254 BGNAUTO
 768 013304 CLR TRPFLG :CLEAR TRAP FLAG
 (7) 013304 012746 000340 SETVEC #TRPHAN,#340 ;SET UP TRAP VECTOR TO DETECT
 (6) 013310 012746 015760 MOV #340,-(SP)
 (5) 013314 013746 002244 MOV #TRPHAN,-(SP)
 (4) 013320 012746 000003 MOV ERRVEC,-(SP)
 (3) 013324 104437 TRAP CSSVEC
 (2) 013326 062706 000010 ADD #10,SP
 769 013332 005777 167016 TST ARLCS ;NON-EXISTENT CONTROLLER
 770 013336 013700 002244 CLRVEC ERRVEC ;ACCESS CONTROLLER
 (3) 013336 104436 MOV ERRVEC,RO ;RELEASE TRAP VECTOR
 (3) 013342 012746 000001 TRAP CSCVEC
 772 013344 005737 002254 TST TRPFLG ;DID IT TRAP?
 773 013350 001416 BEQ 1\$;NO - CHECK ITS DRIVE
 774 013352 012746 012167 PRINTB #FRMT16 ;ELSE, PRINT MSG. 'DRIVE DROPPED - NO CONTROLLER'
 (7) 013352 012746 000001 MOV #FRMT16,-(SP)
 (6) 013356 012746 000001 MOV #1,-(SP)
 (3) 013362 010600 MOV SP,RO
 (4) 013364 104414 TRAP CSPNTB
 (4) 013366 062706 000004 ADD #4,SP
 775 013372 004737 010522 JSR PC,LINE1 ;PROVIDE DRIVE INFORMATION
 776 013376 013700 002252 DODU UNITST ;DO DROP UNIT ON DRIVE
 (3) 013376 104451 MOV UNITST,RO
 (3) 013402 012777 000200 166740 1\$: TRAP CSDODU
 777 013404 000427 BR 2\$;EXIT
 778 013406 012777 000200 166740 1\$: MOV #200,ARLCS ;SET CONTROLLER READY
 779 013414 053777 002246 166732 BIS DRIVE,ARLCS ;SELECT DRIVE
 780 013422 032777 000001 166724 BIT #1,ARLCS ;IS DRIVE READY?
 781 013430 001015 BNE 2\$;YES - EXIT
 782 013432 012746 012233 PRINTB #FRMT17 ;ELSE, PRINT MSG. 'DRIVE DROPPED - DID NOT
 (7) 013432 012746 000001 MOV #FRMT17,-(SP)
 (6) 013436 012746 000001 MOV #1,-(SP)
 (3) 013442 010600 MOV SP,RO
 (4) 013444 104414 TRAP CSPNTB
 (4) 013446 062706 000004 ADD #4,SP
 783 013452 004737 010522 JSR PC,LINE1 ;RESPOND WITH 'READY''
 784 013456 013700 002252 DODU UNITST ;PROVIDE DRIVE INFORMATION
 (3) 013456 104451 MOV UNITST,RO ;DO DROP UNIT ON DRIVE
 785 013462 012777 L10024: TRAP CSDODU
 786 013464 2\$: ENDAUTO
 787 013464
 (3) 013464
 (3) 013464 TRAP CSAUTO
 788 789 104461

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 CZRLHB.MAC 07-DEC-79 08:12 AUTO DROP SECTION

SEQ 0052

791
 792 .SBTTL CLEANUP CODE SECTION
 793
 794 013466 BGNMOD CLNCODE
 795 013466 BGNCLN
 796
 797 013466 SETVEC ERRVEC, #TRPHAN, #340
 (7) 013466 012746 000340 MOV #340, -(SP)
 (6) 013472 012746 015760 MOV #TRPHAN, -(SP)
 (5) 013476 013746 002244 MOV ERRVEC, -(SP)
 (4) 013502 012746 000003 MOV #3, -(SP)
 (3) 013506 104437 TRAP CSSVEC
 (2) 013510 062706 000010 ADD #10, SP
 798 013514 032777 000200 166632 1\$: BIT #CRDY, #RLCS
 799 013522 001774 BEQ 1\$
 800 013524 042777 000100 166622 BIC #INTEN, #RLCS
 801 013532 CLRVEC BVEC
 (3) 013532 013700 002366 MOV BVEC, RO
 (3) 013536 104436 TRAP CSCVEC
 802 013540 005737 002416 TST PWRFLG
 803 013544 001402 BEQ 2\$
 804 013546 005337 002416 DEC PWRFLG
 805 013552 CLRVEC ERRVEC
 (3) 013552 013700 002244 MOV ERRVEC, RO
 (3) 013556 104436 TRAP CSCVEC
 806
 807 013560 ENDCLN
 (3) 013560 L10025:
 (3) 013560 104412 TRAP CSCLEAN
 808 013562 ENDMOD

823
 824 .SBTTL GLOBAL SUBROUTINES
 825
 826 013566 BGNMOD GLBSUB
 827
 828
 829 013566 012737 000160 002116 TIME: MOV #160,LSDLY :GET OUTER DELAY LOOP
 830 013574 005237 002636 INC TIM.US :US-WAIT ROUTINE INDICATOR
 831 013600 005437 002626 NEG XDELAY :GET NEGATIVE OF FACTOR
 832 013604 005737 002420 TST T.CNTLR :RL11?
 833 013610 001420 BEQ 2\$:BRANCH - IF NO
 834 013612 012727 000001 1S: DELAY #1 :WAIT AT LEAST 100 US--
 (2) 013612 012727 000001 MOV #N1.,(PC)+
 (2) 013616 000000 WORD 0
 (2) 013620 013727 002116 MOV LSDLY,(PC)+
 (2) 013624 000000 WORD 0
 (2) 013626 005367 177772 DEC -6(PC)
 (2) 013632 001375 BNE -4
 (2) 013634 005367 177756 DEC -22(PC)
 (2) 013640 001367 BNE -20
 835 013642 005237 002626 INC XDELAY :WAIT FACTOR EXPIRED?
 836 013646 002761 BLT 1S :BRANCH - IF NO
 837 013650 000422 BR 4S :EXIT
 838 013652 012737 000150 002116 2S: MOV #150,LSDLY :GET OUTER DELAY LOOP
 839 013660 012727 000001 3S: DELAY #1 :WAIT WITH RESPECT TO FONZ BUS
 (2) 013660 012727 000001 MOV #N1.,(PC)+
 (2) 013664 000000 WORD 0
 (2) 013666 013727 002116 MOV LSDLY,(PC)+
 (2) 013672 000000 WORD 0
 (2) 013674 005367 177772 DEC -6(PC)
 (2) 013700 001375 BNE -4
 (2) 013702 005367 177756 DEC -22(PC)
 (2) 013706 001367 BNE -20
 840 013710 005237 002626 INC XDELAY :WAIT FACTOR EXPIRED?
 841 013714 002761 BLT 3S :BRANCH - IF NO
 842 013716 000207 4S: RTS PC :RETURN
 843
 844 013720 012737 000160 002116 XTIME: MOV #160,LSDLY :GET OUTER DELAY LOOP
 845 013726 005037 002636 CLR TIM.US :MS WAIT INDICATOR
 846 013732 006337 002630 ASL YDELAY :MULTIPLY BY FACTOR 4
 847 013736 006337 002630 ASL YDELAY :-----
 848 013742 005437 002630 NEG YDELAY :GET NEGATIVE OF RESULT
 849 013746 005737 002420 TST T.CNTLR :RL11?
 850 013752 001023 BNE 1S :BRANCH - IF YES
 851 013754 012737 000150 002116 MOV #150,LSDLY :GET OUTER DELAY LOOP
 852 013762 012727 000020 2S: DELAY #20 :WAIT WITH RESPECT TO FONZ BUS
 (2) 013762 012727 000020 MOV #N20,(PC)+
 (2) 013766 000000 WORD 0
 (2) 013770 013727 002116 MOV LSDLY,(PC)+
 (2) 013774 000000 WORD 0
 (2) 013776 005367 177772 DEC -6(PC)
 (2) 014002 001375 BNE -4
 (2) 014004 005367 177756 DEC -22(PC)
 (2) 014010 001367 BNE -20
 853 014012 005237 002630 INC YDELAY :WAIT FACTOR EXPIRED?
 854 014016 002761 BLT 2S :BRANCH - IF NO

855 014020 000417		BR 3S		
856 014022 012727	000010	DELAY #10	:GET TIME	
(2) 014022 012727		MOV #10,(PC)+	:WAIT AT LEAST 25 MS	
(2) 014026 000000		.WORD 0		
(2) 014030 013727	002116	MOV LSDLY,(PC)+		
(2) 014034 000000		.WORD 0		
(2) 014036 005367	177772	DEC -6(PC)		
(2) 014042 001375		BNE .-4		
(2) 014044 005367	177756	DEC -22(PC)		
(2) 014050 001367		BNE .-20		
857 014052 005237	002630	INC YDELAY	:WAIT FACTOR EXPIRED?	
858 014056 002761		BLT 1S	:BRANCH - IF NO	
859 014060 000207		RTS PC	:RETURN	
860				
861				
862 014062 010146		SETCLK: MOV R1,-(SP)	:SAVE R1	
863 014064 012700	000120	CLOCK P,PCLKCS	:PROGRAMMABLE CLOCK AVAILABLE? - CSR=772540	
(3) 014064 012700		MOV #'P,RO		
(3) 014070 104462		TRAP CSCLK		
(3) 014072 010037	002642	MOV RO,PCLKCS		
864 014076 103447		BCOMPLETE 1S	:BRANCH - I, ;ES	
(2) 014076 103447		BCS 1S		
865 014100 012700	000114	CLOCK L,PCLKCS	:LINE CLOCK AVAILABLE? - CSR=777546	
(3) 014100 012700		MOV #'L,RO		
(3) 014104 104462		TRAP CSCLK		
(3) 014106 010037	00264?	MOV RO,PCLKCS		
866 014112 103401		BCOMPLETE 20S	:BRANCH IF L-CLOCK	
(2) 014112 103401		BCS 20S		
867 014114 000462		BR 2S	:ELSE, INDICATE CLOCK IS NOT PRESENT	
868 014116 104407		READBUS	:CHECK TYPE OF BUS	
(3) 014116 104407		TRAP CSRDBU		
869 014120 103036		BINCOMPLETE 1S	:BRANCH IF NOT Q-BUS	
(2) 014120 103036		BCC 1S		
870 014122 005037	002666	CLR CLKFLD	:CLEAR CLOCK FIELD FOR STORING 'TICKS'	
871 014126 012746	000340	SETVEC #100,#CLKTIK,#340	:SET UP LSI-11 L-CLOCK INTERRUPT VECTOR	
(7) 014126 012746		MOV #340,-(SP)		
(6) 014132 012746	014522	MOV #CLKTIK,-(SP)		
(5) 014136 012746	000100	MOV #100,-(SP)		
(4) 014142 012746	000003	MOV #3,-(SP)		
(3) 014146 104437		TRAP CSSVEC		
(2) 014150 062706	000010	ADD #10,SP		
872			:TO CHECK IF CLOCK IS 'TICKING'	
873 014154 012700	000240	SETPRI #PRI05	:SET PRIORITY TO 5 TO ALLOW CLOCK INTERRUPTS	
(3) 014154 012700		MOV #PRI05,RO		
(3) 014160 104441		TRAP CSSPRI		
874 014162		WAITMS #5	:PAUSE TO ALLOW CLOCK INTERRUPTS	
875 014174		SETPRI #PRI07	:RESTORE PRIORITY TO 7 TO INHIBIT INTERRUPTS	
(3) 014174 012700	000340	MOV #PRI07,RO		
(3) 014200 104441		TRAP CSSPRI		
876 014202		CLRVEC #100	:CLEAR L-CLOCK INTERRUPT VECTOR	
(3) 014202 012700	000100	MOV #100,RO		
(3) 014206 104436		TRAP CSCVEC		
877 014210 005737	002666	TST CLKFLD	:L-CLOCK 'TICKS'?	
878 014214 001422		BEQ 2S	:BRANCH IF NO 'TICKS'	
879 014216 013701	002642	MOV PCLKCS,R1	:GET POINTER TO CLOCK CONTROL STATUS REGISTER	
880 014222 011137	002644	MOV (R1),PCSR	:GET CLOCK CONTROL STATUS REGISTER	

881	014226	016137	000004	002646	MOV	4(R1), VEC	:GET CLOCK VECTOR ADDRESS
882	014234	016137	000006	002650	MOV	6(R1), HZ	:GET CLOCK FREQUENCY
883	014242	022737	000074	002650	CMP	#60., HZ	:60 HZ.?
884	014250	001407			BEQ	3S	:BRANCH - IF YES
885	014252	022737	000062	002650	CMP	#50., HZ	:50 HZ.?
886	014260	001420			BEQ	4S	:BRANCH - IF YES
887	014262	005237	002652		2S:	INC XITFLG	:SET EXIT FLAG
888	014266	000475			3S:	BR 8S	:EXIT
889	014270	005737	002420		TST	T.CNTLR	:RL11?
890	014274	001404			BEQ	9S	:BRANCH - IF NO
891	014276	012737	000030	002664	MOV	#24., OPITIM	:SET OPIMX FOR 60 HZ CLOCK & RL11
892	014304	000403			BR	10S	:CONTINUE
893	014306	012737	000047	002664	9S:	MOV #39., OPITIM	:SET OPIMX FOR 60 HZ CLOCK & RLV11
894	014314	005237	002656		10S:	INC SIXTY	:SET 60 HZ CLOCK INDICATOR
895	014320	000414			BR	5S	:CHECK CLOCK TYPE
896	014322	005737	002420		4S:	TST T.CNTLR	:RL11?
897	014326	001404			BEQ	11S	:BRANCH - IF NO
898	014330	012737	000024	002664	MOV	#20., OPITIM	:SET OPIMX FOR 50 HZ CLOCK & RL11
899	014336	000403			BR	12S	:CONTINUE
900	014340	012737	000040	002664	11S:	MOV #32., OPITIM	:SET OPIMX FOR 50 HZ CLOCK & RLV11
901	014346	005237	002654		12S:	INC FIFTY	:SET 50 HZ. CLOCK INDICATOR
902	014352	022737	000104	002646	5S:	CMP #104, VEC	:P-CLOCK?
903	014360	001016			BNE	6S	:BRANCH - IF NO
904	014362	005237	002660		INC	PCLOCK	:SET P-CLOCK INDICATOR
905	014366				SETVEC	VEC, #CLKINT, #340	:SET CLOCK INTERRUPT SERVICE ROUTINE
(7)	014366	012746	000340		MOV	#340, -(SP)	
(6)	014372	012746	014506		MOV	#CLKINT, -(SP)	
(5)	014376	013746	002646		MOV	VEC, -(SP)	
(4)	014402	012746	000003		MOV	#3, -(SP)	
(3)	014406	104437			TRAP	CSSVEC	
(2)	014410	062706	000010		ADD	#10, SP	
906	014414	000422			BR	8S	:EXIT
907	014416	022737	000100	002646	6S:	CMP #100, VEC	:L-CLOCK?
908	014424	001401			BEQ	7S	:BRANCH - IF YES
909	014426	000715			BR	2S	:EXIT
910	014430				SETVEC	VEC, #CLKINT, #340	:SET CLOCK INTERRUPT SERVICE ROUTINE
(7)	014430	012746	000340		MOV	#340, -(SP)	
(6)	014434	012746	014506		MOV	#CLKINT, -(SP)	
(5)	014440	013746	002646		MOV	VEC, -(SP)	
(4)	014444	012746	000003		MOV	#3, -(SP)	
(3)	014450	104437			TRAP	CSSVEC	
(2)	014452	062706	000010		ADD	#10, SP	
911	014456	005037	002660		CLR	PCLOCK	:INIT P-CLOCK INDICATOR
912	014462	012601			MOV	(SP)+, R1	:RESTORE R1
913	014464	000207			RTS	PC	:RETURN
914							
915							
916	014466				BGNSRV		
917	014466				INTSRV:		
918							
919	014466	005237	002256		INC	INTFLG	:SET INTERRUPT OCCURANCE FLAG
920							
921	014472				ENDSRV		
(3)	014472				L10027:		
(2)	014472	000002			RTI		
922							

923
 924 :ROUTINE USED IN TIMING OPI
 925
 926 014474 BGNSRV
 927 014474 TIMSRV:
 928
 929 014474 005237 002256 INC INTFLG
 930 014500 005077 166140 CLR @PCSR ;SET INTERRUPT INDICATOR FLAG
 931
 932 014504 ENDSRV
 (3) 014504 L10030:
 (2) 014504 000002 RTI
 933
 934 014506 BGNSRV
 935 014506 CLKINT: ;CLOCK INTERRUPT SERVICE ROUTINE
 936
 937 014506 005337 002664 DEC OPITIM
 938 014512 001002 BNE 1S ;OPIMX EXPIRED?
 939 014514 005077 166124 CLR @PCSR ;BRANCH - IF NO
 940 014520 1S: ;DISABLE CLOCK
 941
 942 014520 ENDSRV
 (3) 014520 L10031:
 (2) 014520 000002 RTI
 943
 944
 945 014522 BGNSRV
 946 014522 CLKTIK: ;L-CLOCK 'TICK' CHECK ROUTINE FOR LSI-11
 947
 948 014522 005237 002666 INC CLKFLD ;INCREMENT CLOCK FIELD TO INDICATE THAT
 949 ;/CLOCK IS 'TICKING'
 950
 951 014526 ENDSRV
 (3) 014526 L10032:
 (2) 014526 000002 RTI
 952
 953
 954 014530 CKERLT: INLOOP
 (3) 014530 104420 TRAP CSINLP
 955 014532 BCOMPLETE 99\$
 (2) 014532 103427 BCS 99\$
 956 014534 005737 012434 TST DROP
 957 014540 001424 BEQ 99\$
 958 014542 005277 165656 INC AERPOINT
 959 014546 027737 165652 012436 CMP AERPOINT, MERLMT
 960 014554 002416 BLT 99\$
 961 014556 PRINTF #FRMT11
 (7) 014556 012746 012001 MOV #FRMT11,-(SP)
 (6) 014562 012746 000001 MOV #1,-(SP)
 (3) 014566 010600 MOV SP, R0
 (4) 014570 104417 TRAP CSPNTF
 (4) 014572 062706 000004 ADD #4, SP
 962 014576 004737 010522 JSR PC, LINE1
 963 014602 013700 002252 DODU UNITST ;DROP THIS UNIT
 (3) 014602 013700 002252 MOV UNITST, R0
 (3) 014606 104451 TRAP CSDODU

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CZRLHB.MAC 07-DEC-79 08:12 GLOBAL SUBROUTINES F 5

SEQ 0057

964 014610
(3) 014610 104444
965
966 014612
967 014612 000205
968

DOCLN
TRAP C\$DCLN
99\$: RTS R5

970
 971 .SBTTL ROUTINE TO CHECK FOR CONTROLLER ERRORS
 972
 973 ;*****
 974 ;*THIS ROUTINE WILL CHECK RLCS FOR ERRORS AND PRINT THEM
 975 ;*ACCORDINGLY. IT WILL MERGE THE ERROR PRINTOUT WITH THE TEST
 976 ;*ERROR MESSAGE.
 977
 978 ;*ROUTINE USES R0,R1 AND PICKS HEADER FROM R3
 979
 980 ;* CALL JSR R5,CHERR ;CHECK CNTLR FOR ERRORS
 981 ;*
 982 ;*
 983 ;*
 984
 985 014614 005037 002236 CHERR: CLR T,CRC
 986 014620 032737 176000 002340 BIT #176000,E.CS :ANY ERROR BITS SET?
 987 014626 001001 BNE 2S :YES, FIND OUT WHICH
 988 014630 000205 RTS R5 :NO EXIT
 989 014632 012701 004522 2S: MOV #EM100,R1 :GET START OF STRING
 990 014636 005737 002340 TST E.CS :IS COMPOSITE ERROR SET?(BETTER BE)
 991 014642 100003 BPL 99\$:IT'S NOT SOMETHING IS WRONG
 992 014644 004537 015352 JSR R5, FIX :YES, PUT 'COMP' IN STRING
 993 014650 003645 COMP :''COMP''
 994 014652 032737 040000 002340 99\$: BIT #DERR,E.CS :DRIVE ERROR SET?
 995 014660 001405 BEQ 3S :NO, CONTINUE
 996 014662 005237 002422 INC DERFLG
 997 014666 004537 015352 JSR R5, FIX :YES, PUT 'DRV' INTO STRING
 998 014672 003574 DEMES :'DRV'
 999 014674 032737 020000 002340 3S: BIT #NXM,E.CS :NON-EXISTENT MEMORY ERROR?
 1000 014702 001403 BEQ 4S :NO, CONTINUE
 1001 014704 004537 015352 JSR R5, FIX :YES, PUT 'NXM' INTO STRING
 1002 014710 003601 NXMMES :'NXM'
 1003 014712 032737 002000 002340 4S: BIT #OPI,E.CS :IS OPI SET?
 1004 014720 001422 BEQ 6S :NO, GO CHECK BITS 11 & 12
 1005 014722 004537 015352 JSR R5, FIX :PUT 'OPI' INTO STRING
 1006 014726 003606 OPIMES :'OPI'
 1007 014730 032737 004000 002340 BIT #BIT11,E.CS :HEADERCRC ERROR?
 1008 014736 001403 BEQ 5S :NO, GO CHECK HEADER NOT FOUND
 1009 014740 004537 015352 JSR R5, FIX :GO PUT 'HCRC' IN STRING
 1010 014744 003613 HCRCMES :'HCRC'
 1011 014746 032737 010000 002340 5S: BIT #BIT12,E.CS :HEADER NOT FOUND?
 1012 014754 001424 BEQ 8S :NO, GO PUT "CRLF" IN STRING
 1013 014756 004537 015352 JSR R5, FIX :PUT 'HNF' IN STRING
 1014 014762 003621 HNFMES :'HNF'
 1015 014764 000420 BR 8S :PUT "CRLF" IN STRING
 1016 014766 032737 004000 002340 6S: BIT #BIT11,E.CS :DATA CRC ERROR?
 1017 014774 001405 BEQ 7S :NO, GO CHECK DATA LATE
 1018 014776 005237 002236 INC T,CRC
 1019 015002 004537 015352 JSR R5, FIX :PUT 'DCK' IN SIRING
 1020 015006 003626 DCKMES :'DCK'
 1021 015010 032737 010000 002340 7S: BIT #BIT12,E.CS :DATA LATE ERROR?
 1022 015016 001403 BEQ 8S :NO, GO PUT IN "CRLF"
 1023 015020 004537 015352 JSR R5, FIX :PUT 'DLT' IN STRING
 1024 015024 003633 DLTMES :'DLT'
 1025 015026 004537 015352 8S: JSR R5, FIX :PUT "CRLF" INTO STRING

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ROUTINE TO CHECK FOR CONTROLLER ERRORS

H 5
SEQ 0059

1026 015032 003642
1027 015034 004537 015352
1028 015040 000000
1029 015042 105011
1030 015044
(4) 015044 104455
(5) 015046 000454
(5) 015050 003640
(5) 015052 007760
1031 015054 000205
1032
1033
1034
1035
1036
1037
1038
1039
1040
1041 015056 032777 040000 165270 LDFUNC: BIT
1042 015064 001426 BEQ 5S
1043 015066 017737 165266 002334 MOV #RLDA,B.DA
1044 015074 012777 000013 165256 MOV #13, #RLDA
1045 015102 012737 000200 002330 MOV #200,B.CS
1046 015110 053737 002246 002330 BIS DRIVE,B.CS
1047 015116 013777 002330 165230 MOV B.CS, #RLCS
1048 015124 032777 000200 165222 6\$: BIT #200, #RLCS
1049 015132 001774 BEQ 6S
1050 015134 013777 002334 165216 MOV B.DA, #RLDA
1051 015142 012537 002260 5\$: MOV (R5)+, LDCSR :GET BITS TO LOAD
1052 015146 010346 MOV R3-(SP) :SAVE R3
1053 015150 042737 177661 002260 BIC #177661, LDCSR :CLEAR ALL BUT FUNC & INTR EN
1054 015156 013737 002260 002372 MOV LDCSR, FNDFNC :SAVE FUNCTION
1055 015164 042737 000100 002372 BIC #INTEN, FNDFNC :ONLY FUNCTION
1056 015172 012703 015312 MOV #HDRLST, R3 :GET HEADER LIST
1057 015176 006237 002372 ASR FNDFNC :ALIGN TO LEFT
1058 015202 001404 BEQ 2S :IF EQUAL TO ZERO, SET R3
1059 015204 022323 1\$: CMP (R3)+, (R3)+ :BUMP R3 BY 4
1060 015206 005337 002372 DEC FNDFNC :DEC FUNCTION
1061 015212 001374 BNE 1S :FOUND IT? NO-GO BACK
1062 015214 032737 000100 002260 2\$: BIT #INTEN, LDCSR :YES, DO WE WANT FLAG OR INTR?
1063 015222 001401 BEQ 3S :FLAG BRANCH
1064 015224 005723 TST (R3)+ :INTR POINT TO THAT ONE
1065 015226 011303 3\$: MOV (R3), R3 :SET HEADER
1066 015230 010337 015040 MOV R3, RESTMS :SET UP HEADER
1067 015234 010337 002376 MOV R3, TRYFNC :SAVE HEADER FOR LATER
1068 015240 053737 002374 002260 BIS XMEM, LDCSR :LOAD E.A. BITS
1069 015246 005037 002374 CLR XMEM :CLEAR OUT THE BITS
1070 015252 053737 002246 002260 BIS DRIVE, LDCSR :SELECT DRIVE
1071 015260 052737 000200 002260 BIS #200, LDCSR :LOAD FUNCTION
1072 015266 013777 002260 165060 MOV LDCSR, #RLCS :READ REGISTERS
1073 015274 004537 015364 JSR R5, BEFORE :ISSUE COMMAND
1074 015300 042777 000200 165046 4\$: BIC #200, #RLCS :RESTORE R3
1075 015306 012603 MOV (SP)+, R3 :RESTORE R3
1076 015310 000205 RTS R5 :EXIT
1077

1078
 1079
 1080 015312 003705 HDRLST: NOPMES
 1081 015314 003733 NOPINT
 1082 015316 003762 WCKMES
 1083 015320 004016 WCKINT
 1084 015322 004171 GSTMES
 1085 015324 004221 GSTINT
 1086 015326 004130 SEKMES
 1087 015330 004150 SEKINT
 1088 015332 004053 RHDMES
 1089 015334 004103 RHDINT
 1090 015336 004311 WRTMES
 1091 015340 004332 WRTINT
 1092 015342 004251 RDDMES
 1093 015344 004271 RDDINT
 1094 015346 004353 RDNMES
 1095 015350 004401 RDNINT

1096
 1097 :*****
 1098 :*ROUTINE TO MOVE ASCII STRINGS
 1099 :*USES REGISTERS R1 - WHERE STRING IS BEING BUILT
 1100 :*
 1101 :* CALL JSR R5, FIX
 1102 :* .WORD :ADDRESS OF STRING TO MOVE
 1103 :*
 1104 015352 012504 FIX: MOV (R5)+, R4 :GET ADDRESS AND MOVE RETURN
 1105 015354 112421 1\$: MOVB (R4)+, (R1)+ :GET BYTE AND UPDATE
 1106 015356 001376 BNE 1\$:WATCH 0 BYTE TERMINATOR
 1107 015360 105741 TSTB -(R1) :BACK UP OVER ZERO BYTE
 1108 015362 000205 RTS R5 :EXIT

1109
 1110
 1111 :ROUTINE TO READ REGISTERS PRIOR TO OPERATION
 1112 :CALL: JSR R5,BEFORE
 1113
 1114 015364 017737 164764 002330 BEFORE: MOV ARLCS.B.CS ;READ CS
 1115 015372 017737 164760 002332 MOV ARLBA.B.BA ;BA
 1116 015400 017737 164754 002334 MOV ARLDA.B.DA ;DA
 1117 015406 017737 164750 002336 MOV ARLMP.B.MP ;MP
 1118 015414 000205 RTS R5

1119
 1120 :ROUTINE TO READ REGISTERS AT TIME OF ERROR
 1121 :CALL: JSR R5,AFTER
 1122
 1123 015416 017737 164732 002340 AFTER: MOV ARLCS.E.CS ;READ CS
 1124 015424 017737 164726 002342 MOV ARLBA.E.BA ;BA
 1125 015432 017737 164722 002344 MOV ARLDA.E.DA ;DA
 1126 015440 017737 164716 002346 MOV ARLMP.E.MP ;MP
 1127 015446 017737 164710 002350 MOV ARLMP.E.MP1 ;MP
 1128 015454 017737 164702 002352 MOV ARLMP.E.MP2 ;MP
 1129 015462 000205 RTS R5

1130
 1131
 1132 015464 010046 SIMBCC: MOV R0,-(SP) ;SAVE R0
 1133 015466 010146 MOV R1,-(SP) ;SAVE R1

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SEQ C001

1134	015470	010246		MOV	R2 -(SP)	; SAVE R2
1135	015472	012537	002304	MOV	(R5)+,TEMP2	; GET NUMBER OF BITS
1136	015476	012537	002306	MOV	(R5)+,TEMP3	; GET DATA FOR CRC CALCULATION
1137	015502	012537	002310	MOV	(R5)+,TEMP4	; GET STARTING CRC
1138	015506	005037	002266	1\$: CLR	BCCFBK	
1139	015512	013700	002310	MOV	TEMP4, R0	; GET PRESENT CRC
1140	015516	006037	002306	ROR	TEMP3	; ROTATE NEW DATA
1141	015522	005500		ADC	R0	; MERGE NEW WITH OLD
1142	015524	032700	000001	BIT	#1,R0	; BIT 0 SET
1143	015530	001402		BEQ	2\$; IF NOT CONTINUE
1144	015532	005137	002266	COM	BCCFBK	
1145	015536	013700	002264	MOV	XPOLY, R0	; GET CRC POLYNOMIAL (CRC-16)
1146	015542	005100		COM	R0	; COMPLEMENT POLYNOMIAL
1147	015544	040037	002266	BIC	R0,BCCFBK	
1148	015550	000241		CLC		; CLEAR CARRY
1149	015552	006037	002310	ROR	TEMP4	
1150	015556	013700	002266	MOV	BCCFBK, R0	
1151	015562	013701	002310	MOV	TEMP4,R1	
1152	015566	010102		MOV	R1,R2	
1153	015570	040100		BIC	R1,R0	
1154	015572	043702	002266	BIC	BCCFBK,R2	
1155	015576	050200		BIS	R2,R0	
1156	015600	043737	002264	002310	BIC	XPOLY, TEMP4
1157	015606	050037	002310	BIS	R0, TEMP4	
1158	015612	005337	002304	DEC	TEMP2	
1159	015616	001333		BNE	1\$	
1160						
1161	015620	013737	002310	002270	MOV	TEMP4,CALBCC
1162	015626	012602		MOV	(SP)+,R2	
1163	015630	012601		MOV	(SP)+,R1	
1164	015632	012600		MOV	(SP)+,R0	
1165	015634	000205		RTS	R5	; RETURN
1166						
1167						
1168						:ROUTINE TO WAIT FOR DRIVE READY
1169						
1170						
1171						
1172						
1173	015636	012701	000144	WTDRDY: 1\$:	MOV	#100.,R1
1174	015642	032777	000001	164504	BIT	#DRDY,ARLCS
1175	015650	001013		BNE	2\$	
1176						
1177	015652			WAITUS	#20.	
1178	015664	005301		DEC	R1	
1179	015666	001365		BNE	1\$	
1180						
1181	015670			ERRDF	200.,DRTIM,ERRS	
(4)	015670	104455		TRAP	CSEDF	
(5)	015672	000310		.WORD	200	
(5)	015674	003546		.WORD	DRTIM	
(5)	015676	007722		.WORD	ERR5	
1182						
1183	015700	000205		2\$:	RTS	R5
1184						
1185						:ROUTINE TO WAIT FOR CONTROLLER

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CZRLHB0 RL11/RLV11 CTR TST 2 MACY11 30A(1052) 17-DEC-79 13:44 PAGE 1-32
CZRLHB.MAC 07-DEC-79 08:12 ROUTINE TO CHECK FOR CONTROLLER ERRORS

SEQ 0062

1186
1187 015702 012701 000620 164440 WTCRDY: MOV #400., R1
1188 015706 032777 000200 1S: BIT #CRDY, @RLCS
1189 015714 001016 BNE 2\$
1190
1191 015710 005301 WAITUS #20.
1192 015730 001365 DEC R1
1193 015732 001365 BNE 1\$
1194 015734 004537 015416 JSR R5, AFTER
1195
1196 015740 104455 ERRDF 100., CRTIM,ERRS
(4) 015740 TRAP CSERDF
(5) 015742 000144 .WORD 100
(5) 015744 003521 .WORD CRTIM
(5) 015746 007722 .WORD ERRS
1197 015750 000205 RTS R5
1198
1199 015752 004537 015416 2\$: JSR R5, AFTER
1200 015756 000205 RTS R5
1201
1202 015760 005237 002254 TRPHAN: INC TRPFLG
1204 015764 000002 RTI
1205
1206 015766 HDHOME:
1207
1208 015766 104404 BGNSEG :%%START OF SEGMENT%%
(3) 015766 TRAP CSBSEG
; ISSUE DRIVE RESET
1209
1210 015770 012737 000001 002400 MOV #1, ERFLG :SET ERROR FLAG
1212 015776 012777 000013 164354 MOV #DRST!MK!GSBIT, @RLDA
1213 016004 004537 015056 JSR R5, LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
1214 016010 000004 GSTAT
1215 016012 004537 015702 JSR R5, WTCRDY
1216 016016 104410 ESCAPE SEG :CHECK FOR FL:LOE. ELSE EXIT SEG
(3) 016016 TRAP CSESCAPE
(3) 016020 000216 .WORD 10000\$-.
1217 016022 004537 015614 JSR R5, CHERR :CHECK CNTLR FOR ERRORS
1218 016026 104410 ESCAPE SEG :CHECK FOR FL:LOE. ELSE EXIT SEG
(3) 016026 TRAP CSESCAPE
(3) 016030 000206 .WORD 10000\$-.
1219
1220 016032 004537 015056 JSR R5, LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
1222 016036 000010 RDHDR
1223 016040 ESCAPE SEG :CHECK FOR FL:LOE. ELSE EXIT SEG
(3) 016040 104410 TRAP CSESCAPE
(3) 016042 000174 .WORD 10000\$-.
1224 016044 004537 015702 JSR R5, WTCRDY
1225 016050 ESCAPE SEG :CHECK FOR FL:LOE. ELSE EXIT SEG
(3) 016050 104410 TRAP CSESCAPE
(3) 016052 000164 .WORD 10000\$-.
1226
1227 016054 004537 014614 JSR R5, CHERR :CHECK CNTLR FOR ERRORS
1228 016060 ESCAPE SEG :CHECK FOR FL:LOE. ELSE EXIT SEG

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SEQ 0063

(3) 016060	104410		TRAP	C\$ESCAPE	
(3) 016062	000154		.WORD	10000\$-.	
1229					
1230 016064	013737	002346	002272	MOV E, MP, TMPO	:GET HEADER
1231 016072	042737	0C0077	002272	BIC #77, TMPO	
1232 016100	001424			BEQ 99\$:SEEK IS NOT NECESSARY
1233 016102	042737	000100	002272	BIC #100, TMPO	
1234 016110	012777	000001	164242	MOV MMK, ARLDA	
1235 016116	053777	002272	164234	BIS TMP0, ARLDA	:SET TO SEEK
1236					:SET IN DIFFERENCE
1237 016124	004537	015056		JSR R5, LDFUNC	:LOAD THE FUNCTION IN NEXT WORD
1238 016130	000006			SEEK	
1239 016132	004537	015702		JSR R5, WTCRDY	
1240 016136				ESCAPE SEG	:CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 016136	104410			TRAP C\$ESCAPE	
(3) 016140	000076			.WORD 10000\$-.	
1241					
1242 016142	004537	014614		JSR R5, CHERR	:CHECK CNTLR FOR ERRORS
1243 016146				ESCAPE SEG	:CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 016146	104410			TRAP C\$ESCAPE	
(3) 016150	000066			.WORD 10000\$-.	
1244					
1245 016152	004537	015056	99\$:	JSR R5, LDFUNC	:LOAD THE FUNCTION IN NEXT WORD
1246 016156	000010			RDHDR	
1247 016160	004537	015702		JSR R5, WTCRDY	
1248 016164				ESCAPE SEG	:CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 016164	104410			TRAP C\$ESCAPE	
(3) 016166	000050			.WORD 10000\$-.	
1249 016170	004537	014614		JSR R5, CHERR	
1250 016174				ESCAPE SEG	
(3) 016174	104410			TRAP C\$ESCAPE	
(3) 016176	000040			.WORD 10000\$-.	
1251					
1252 016200	013737	002346	002272	MOV E, MP, TMPO	:GET HEADER
1253 016206	043737	002262	002272	BIC SECMSK, TMPO	:IGNORE SECTOR
1254 016214	001404			BEQ 1\$:ON ZERO
1255					
1256 016216				ERRDF 400, SKHOME, ERRO	:CAN'T SEEK TO TRACK 0
(4) 016216	104455			TRAP C\$ERDF	
(5) 016220	000620			.WORD 400	
(5) 016222	004430			.WORD SKHOME	
(5) 016224	007510			.WORD ERRO	
1257					
1258 016226			1\$:	ESCAPE SEG	:CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 016226	104410			TRAP C\$ESCAPE	
(3) 016230	000006			.WORD 10000\$-.	
1259					
1260 016232	005037	002400		CLR ERFLG	:INDICATE SUCCESS BACK TO MAIN PROGRAM
1261					
1262					
1263 016236				ENDSEG	:%END OF SEGMENT%
(3) 016236					
(3) 016236	104405			TRAP C\$ESEG	
1264					
1265 016240	000207			RTS PC	
1266					

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ROUTINE TO CHECK FOR CONTROLLER ERRORS

M 5

SEQ 0064

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1267 016242           ENDMOD
1268
1269
1270 .SBTTL **TEST 1** - WRITE FUNCTION
1271
1272 016242           BGNTST          ;**START OF TEST**
1273
1274
1275
1276 016242           STARS
1277 (2)                ;*****  
;CHECK OF WRITE LOGIC UNDER FLAG MODE, WE WILL FIRST ISSUE A
1278 ;READ HEADER SO THAT WE DON'T WRITE ON THE BAD SECTOR
1279 ;FILE TRACK. WE WILL WRITE A FULL SECTOR (128 WORDS) FROM
1280 ;MEMORY (BUF). WE CHECK THAT NO ERRORS OCCUR. IF WE
1281 ;HAVE A DRIVE ERROR WE WILL DO A 'GET STATUS' TO SEE
1282 ;IF WRITE PROTECT IS SET IF IT IS WE WILL ABORT THE
1283 ;TEST. AN ERROR ON THE WRITE WILL LOOP ON JUST THE
1284 ;WRITE PORTION. LOOP ON TEST WILL READ HEADER, SEEK (IF
1285 ;NECESSARY) AND WRITE.
1286 016242           STARS
1287 (2)                ;*****  

1288
1289 016242 004737 015766      JSR    PC,HDHOME   ;HEADS OVER TRACK 0
1290 016246              CKERFG
1291 (4) 016254 104432          TRAP   CSEXIT
1292 (4) 016256 000126          .WORD  L10033-.
1293
1294 016260              BGNSEG          ;%START OF SEGMENT%
1295 016262 005077 164072      38:   CLR    @RLDA        ;SET DISK ADDRESS
1296 016266 012777 177600      MOV    #128.,@RLMP   ;WORD COUNT
1297 016274 012777 003426      MOV    #BUF,@RLBA   ;BUS ADDRESS
1298 016302 004537 015056      JSR    R5,LDFUNC   ;LOAD THE FUNCTION IN NEXT WORD
1299 016306 000012              WRITE
1300
1301 016310 004537 015702      JSR    R5,WTCRDY   ;WAIT FOR CONTROLLER READY
1302 016314              ESCAPE
1303 (3) 016314 104410          TRAP   C$ESCAPE
1304 (3) 016316 000064          .WORD  10001$-.
1305 016320 032777 040000      BIT    #DERR,@RLCS   ;DRIVE ERROR SET?
1306 016326 001425              BEQ    4$          ;BRANCH IF NOT
1307
1308 016330 012777 000003      MOV    MM!GSBIT,@RLDA ;SET GET STATUS OF DRIVE
1309 016336 004537 015056      JSR    R5,LDFUNC   ;LOAD THE FUNCTION IN NEXT WORD
1310 016342 000004              GSTAT
1311 016344 004537 015702      JSR    R5,WTCRDY   ;GET STATUS
1312 016350              ESCAPE
1313 (3) 016350 104410          TRAP   C$ESCAPE
1314 (3) 016352 000030          .WORD  10001$-.

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CZRLHBO RL11/RLV11 CTLR TST 2 MACY11 30A(1052) 17-DEC-79 13:44 PAGE 1-35
 CZRLHB.MAC 07-DEC-79 08:12 **TEST 1** - WRITE FUNCTION N 5

SEQ 0065

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1314 016354 013737 002346 002300      MOV    E,MP,GDDAT      :READ DRIVE STATUS
1315 016362 032737 020000 002300      BIT    #BIT13,GDDAT    :WRITE LOCK ERROR?
1316 016370 001404      BEQ    48          :NO, BRANCH

1317
1318
1319 016372      ERRSF  3.,WRLOCK,ERRO   :WRITE LOCK ERROR
(4) 016372 104454      TRAP    C$ERSF
(5) 016374 000003      .WORD   3
(5) 016376 004452      .WORD   WRLOCK
(5) 016400 007510      .WORD   ERRO

1320 016402      48:              

1321
1322
1323 016402      10001$: ENDSEG           ;%END OF SEGMENT%
(3) 016402
(3) 016402 104405      ENDTST            ;**END OF TEST**
1324 016404      L10033$: TRAP    C$ESEG
(3) 016404
(3) 016404 104401      TRAP    C$ETST

1325
1326      .SBTTL  **TEST 2** - WRITE FUNCTION INTERRUPT
1327
1328 016406      BGNTST            ;**START OF TEST**
1329
1330 016406      STARS
(2)
1331      ;*****CHECK OF WRITE LOGIC UNDER INTERRUPT MODE, WE WILL ISSUE A
1332      ;READ HEADER SO THAT WE DON'T WRITE ON THE BAD SECTOR FILE
1333      ;TRACK. WE WILL WRITE A FULL SECTOR (128 WORDS) FROM MEMORY (BUF).
1334      ;WE CHECK THAT NO ERRORS OCCUR. WE DO NOT CHECK RLDA OR RLBA
1335      ;INCREMENT AT THIS TIME.
1336 016406      STARS
(2)
1337
1338
1339 016406 004737 015766      JSR    PC,HDHOME      ;HEADS OVER TRACK 0
1340 016412      CKERFG           ;HEADS GO HOME OKAY
(4) 016420 104432      TRAP    C$EXIT
(4) 016422 000112      .WORD   L10034-.

1341
1342 016424      104404      BGNSEG            ;%START OF SEGMENT%
(3) 016424
1343
1344
1345 016426 005037 002256      CLR    INTFLG          ;CLEAR INTERRUPT OCCURANCE FLAG
1346 016432 005077 163722      CLR    @RLDA
1347 016436 012777 177600      MOV    #-128.,@RLMP      ;SET UP WORD COUNT
1348 016444 012777 003426      MOV    #BUF,@RLBA      ;SET UP BUS ADDRESS
1349
1350 016452      163716      SETPRI #PRI00          ;PRIORITY TO 0
(3) 016452 012700 000000      MOV    #PRI00,RO
(3) 016456 104441      TRAP    C$SPRI
1351 016460 004537 015056      JSR    R5,LDFUNC      ;LOAD THE FUNCTION IN NEXT WORD
1352 016464 000112      WRITE!INTEN    ;WRITE UNDER INTERRUPT
1353 016466 004537 015702      JSR    R5,WTCRDY      ;WAIT FOR INTERRUPT
1354 016472      ESCAPE SEG       ;CHECK FOR FL:LOE, ELSE EXIT SEG

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TEST 2 - WRITE FUNCTION INTERRUPT

SEQ 0066

B 6

(3) 016472 104410 TRAP C\$ESCAPE
(3) 016474 000036 .WORD 10000\$-.

1355
1356 016476 012700 000340 SETPRI #PRI07 :SET PRIORITY TO 7
(3) 016476 012700 000340 MOV #PRI07, R0
(3) 016502 104441 TRAP C\$SPRI
1357 016504 005737 002256 TST INTFLG ;DID INTERRUPT OCCUR?
1358 016510 001004 BNE 2\$;YES-BRANCH NO-REPORT

1359
1360 016512 104455 ERRDS 4., EM17, ERRO ;WRITE DID NOT INTERRUPT
(4) 016512 104455 TRAP C\$ERDF
(5) 016514 000004 .WORD 4
(5) 016516 005322 .WORD EM17
(5) 016520 007510 .WORD ERRO
1361 016522 004537 014614 2\$: ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 016522 104410 TRAP C\$ESCAPE
(3) 016524 000036 .WORD 10000\$-.

1362
1363 016526 004537 014614 JSR RS, CHERR ;CHECK CTLR FOR ERRORS

1364
1365 016532 104405 10000\$: ENDSEG ;%END OF SEGMENT%

(3) 016532 104405 ENDTST
1366 016534 L10034: TRAP C\$ESEG ;**END OF TEST**
(3) 016534 104401
1367
1368 .SBTTL **TEST 3** - PROPER INCREMENT OF RLBA ON WRITE
1369
1370 016536 BGNTST ;**START OF TEST**

1371
1372
1373 016536 STARS
1374 ;*****
1375 ;CHECK THAT THE RLBA WILL INCREMENT PROPERLY AFTER THE
1376 ;WRITE WAS FINISHED THE RLBA SHOULD BE 128 WORDS (256 BYTES)
1377 ;CREATER. STARTING RLBA IS 'BUF', ENDING SHOULD BE 'BUF + 256.'"
1378 016536 STARS
1379
1380
1381 016536 004737 015766 JSR PC, HDHOME ;HEADS OVER TRACK 0
1382 016542 CKERFG ;HEADS GO HOME OKAY
1383 (4) 016550 104432 TRAP C\$EXIT
1384 (4) 016552 000116 .WORD L10035-.

1385
1386 016556 005077 163576 3\$: BGNSEG ;%START OF SEGMENT%
1387 016556 012777 003426 163566 TRAP CSBSEG
1388 016562 012777 177600 163564 CLR ARLDA
1389 016570 012777 003426 002300 MOV #BUF, ARLBA ;SET UP BUS ADDRESS
1390 016576 012737 003426 002300 MOV #128, ARLMP ;WORD COUNT
1391 016604 062737 000400 002300 MOV #BUF, GDDAT ;FORM EXPECTED BUS ADDRESS
ADD #156, GDDAT ;AFTER WRITE

1392
 1393 016612 004537 015056 JSR RS,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
 1394 016616 000012
 1395 016620 004537 015702 JSR RS,WTCRDY ;WAIT FOR CONTROLLER READY
 1396 016624
 (3) 016624 104410 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 016626 000040 TRAP CSESCAPE
 .WORD 10000\$-.
 1397
 1398 016630 004537 014614 JSR RS,CHERR ;CHECK CNTLR FOR ERRORS
 1399 016634
 (3) 016634 104410 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 016636 000030 TRAP CSESCAPE
 .WORD 10000\$-.
 1400 016640 017737 163512 002302 MOV ARLBA,BDDAT ;READ 'RLBA' FOR PRESENT ADDRESS
 1401 016646 023737 002302 002300 CMP BDDAT,GDDAT ;DID 'BA' INCREMENT PROPERLY?
 1402 016654 001404 BEQ 2\$;YES, CONTINUE
 1403
 1404 016656 JSR S,EM20,ERR4 ;BA DID NOT INCREMENT
 (4) 016656 104455 TRAP CSERDF
 (5) 016660 000005 .WORD 5
 (5) 016662 005346 .WORD EM20
 (5) 016664 007654 .WORD ERR4
 1405
 1406 016666 2\$:
 1407
 1408 016666 104405 10000\$: ENDSEG ;%END OF SEGMENT%
 (3) 016666 TRAP CSESEG
 (3) 016666 ENDTST L10035: ;**END OF TEST**
 1409 016670 104401 TRAP CSETST
 1410
 1411 .SBTTL **TEST 4** - PROPER INCREMENT OF RLDA ON WRITE
 1412
 1413 016672 BGNST ;**START OF TEST**
 1414
 1415 016672 STARS
 (2)
 1416 ;*****
 ;CHECK THAT THE SECTOR INCREMENTS AFTER THE WRITE WAS FINISHED.
 1417 ;WE RANDOMLY PICK A SECTOR (OTHER THAN LAST TRACK) AND ISSUE
 1418 ;A FULL SECTOR WRITE THE RLDA SHOULD REFLECT AN INCREMENT
 1419 ;OF THE SECTOR. 'GDDAT' WAS THE EXPECTED RLDA.
 1420 016672 STARS
 (2)
 1421
 1422
 1423 016672 004737 015766 JSR PC,HDHOME ;HEADS OVER TRACK 0
 1424 016676 CKERFG ;HEADS GO HOME OKAY
 (4) 016704 104432 TRAP CSEXIT
 (4) 016706 000114 .WORD L10036-.
 1425
 1426 016710 BGNSEG ;%START OF SEGMENT%
 (3) 016710 104404 TRAP CSBSEG
 1427
 1428 016712 3\$:
 1429 016712 005037 002300 CLR GDDAT
 1430 016716 013777 002300 163434 MOV GDDAT,ARLDA ;SETUP DISK ADDRESS

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TEST 4 - PROPER INCREMENT OF RLDA ON WRITE

D 6
SEQ 0068

1431 016724 005237 002300 INC GDDAT ;CREATE EXPECTED SECTOR
1432 016730 012777 177600 163424 MOV #128, ARLMP ;WORD COUNT
1433 016736 012777 003426 163412 MOV #BUF, ARLBA ;SETUP BUS ADDRESS
1434
1435 016744 004537 015056 JSR LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
1436 016750 000012 WRITE
1437 016752 004537 015702 JSR RS_WTCRDY ;WRITE
1438 016756 ESCAPE RS ;WAIT FOR CONTROLLER READY
(3) 016756 104410 SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 016760 000040 TRAP CSECAPE
.WORD 10000\$-.
1439
1440 016762 004537 014614 JSR CHERR ;CHECK CNTLR FOR ERRORS
1441 016766 ESCAPE SEG
(3) 016766 104410 TRAP CSECAPE
(3) 016770 000030 .WORD 10000\$-.
1442
1443 016772 013737 002344 002302 MOV F_DA,BDDAT ;READ DISK ADDRESS
1444 017000 023737 002300 002302 CMP GDDAT,BDDAT ;DID SECTOR INCREMENT PROPERLY
1445 017006 001404 BEQ 2\$;YES, BRANCH NO, REPORT ERROR
1446
1447 017010 104455 ERDF S_EM21,ERR4 ;DA DID NOT INCREMENT
(4) 017010 TRAF CSEERDF
(5) 017012 000006 .WORD 6
(5) 017014 005414 .WORD EM21
(5) 017016 007654 .WORD ERR4
1448
1449 017020 2\$:
1450
1451 017020 104405 ENDSEG ;%END OF SEGMENT%
(3) 017020
(3) 017020 104405 10000\$: TRAP CSESEG
1452 017022 ENDTST ;**END OF TEST**
(3) 017022 L10036:
(3) 017022 104401 TRAP CSETST
1453
1454 .SBTTL **TEST 5** - FORCE HEADER NOT FOUND WITH WRITE
1455
1456 017024 BGNST ;**START OF TEST**
1457
1458 017024 STARS
1459 ;*****
1460 ;FORCE HEADER NOT FOUND ERROR TO OCCUR. THIS IS DONE
1461 ;BY SETTING SECTOR 40 OF THE RLDA AND ISSUING A
1462 ;WRITE. SECTOR 40 DOES NOT EXIST ON THE RL01 PACK
1463 017024 STARS
1464 ;*****
1465 017024 004737 015766 JSR PC,HDHOME ;HEADS OVER TRACK 0
1466 017030 CKERFG ;HEADS GO HOME OKAY
(4) 017036 104432 TRAP CSEXIT
(4) 017040 000120 .WORD L10037-.
1467
1468 017042 BGNSEG ;%START OF SEGMENT%
(3) 017042 104404 TRAP CSBSEG
1469

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CZRLHB.MAC 07-DEC-79 08:12 **TEST 5** - FORCE HEADER NOT FOUND WITH WRITE

SEQ 0069

E 6

1470
1471 017044 012777 000050 163306 MOV #40, RRLDA :INSURE NOT TO FIND HEADER BY
1472 017052 012777 003426 163276 MOV #BUF, RRLBA :SETTING SECTOR 40 OF CYL. ADDR.
1473 017060 012777 177777 163274 MOV #-1, RRLMP :WORD COUNT
1474
1475 017066 004537 015056 JSR RS,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
1476 017072 000012 WRITE
1477 017074 004537 015702 JSR RS,WTCRDY ;WRITE
ESCAPE RS,WTCRDY ;WAIT FOR CONTROLLER READY
1478 017100 SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 017100 104410 TRAP CSESCAPE
(3) 017102 000054 .WORD 10000\$-.
1479
1480 017104 013737 002340 002272 MOV E.CS,TMPO :GET RLCS
1481 017112 042737 001777 002272 BIC #177\$ TMPO :SAVE ERROR BITS
1482 017120 022737 112000 002272 CMP #BIT15!BIT12!BIT10,TMPO ;HDR NOT FOUND SET.
1483 017126 001402 BEQ 1\$;YES, CONTINUE
1484
1485 017130 004537 014614 JSR RS,CHERR
1486 017134 CKLOOP :1\$: JSR CSCLP1
(3) 017134 104406 TRAP
1487
1488 017136 022737 112000 002272 CMP #BIT15!BIT12!BIT10,TMPO
1489 017144 001404 BEQ 2\$
1490 017146 ERRDF 23, EM10,ERRO
(4) 017146 104455 TRAP CSERDF
(5) 017150 000027 .WORD 23
(5) 017152 005064 .WORD EM10
(5) 017154 007510 .WORD ERRO
1491
1492 017156 :WHEN FORCED
1493
1494 017156 104405 2\$: ENDSEG :%END OF SEGMENT%
(3) 017156 TRAP CSESEG
(3) 017156 ENDTST L10037: :**END OF TEST**
1495 017160
(3) 017160 TRAP CSETST
(3) 017160 104401
1496
1497 .SBTTL **TEST 6** - FORCE HEADER NOT FOUND WITH WRITE INTERRUPT
1498
1499 017162 BGNTST :**START OF TEST**
1500
1501
1502 017162 STARS
1503 :*****
1504 :TEST THAT HEADER NOT FOUND ERROR WILL GENERATE AN INTERRUPT
1505 :ON OCCURRENCE. HEADER NOT FOUND WILL BE FORCED BY SETTING
1506 017162 SECTOR 40 OF RLDA AND ISSUING A WRITE
1507 STARS
1508 :*****
1509 017162 004737 015766 JSR PC,HDHOME ;HEADS OVER TRACK 0
1510 017166 CKERFG ;HEADS GO HOME OKAY
(4) 017174 104432 TRAP CSEXIT
(4) 017176 000160 .WORD L10040-.

			BGNSEG	TRAP	C\$BSEG		
1511						:%START OF SEGMENT%	
1512	017200						
(3)	017200	104404					
1513							
1514	017202			SETPRI	#PRI00		
(3)	017202	012700	000000	MOV	#PRI00, R0		
(3)	017206	104441		TRAP	CSSPRI		
1515	017210	005037	002256	CLR	INTFLG	:CLEAR INTERRUPT OCCURANCE FLAG	
1516	017214	012777	000050	MOV	#40, ARLDA	:INSURE NOT TO FIND HEADER BY	
1517	017222	012777	003426	MOV	#BUF, ARLBA	:SETTING SECTOR 40 OF CYL. ADDR.	
1518	017230	012777	177777	MOV	#-1, ARLMP	:WORD COUNT	
1519							
1520	017236	006537	015056	JSR	R5, LDFUNC		
1521	017242	000112		WRITE! INTEN		:LOAD THE FUNCTION IN NEXT WORD	
1522	017244	006537	015702	JSR	R5, WTCRDY	:WRITE	
1523	017250			CKLOOP		:WAIT FOR CONTROLLER READY	
(3)	017250	104406		TRAP	C\$CLP1		
1524	017252			SETPRI	#PRI07		
(3)	017252	012700	000340	MOV	#PRI07, R0		
(3)	017256	104441		TRAP	CSSPRI		
1525							
1526	017260	005737	002256	TST	INTFLG	:DID INTERRUPT OCCUR	
1527	017264	001004		BNE	2\$:YES OKAY	
1528							
1529	017266			ERRDF	24, EM43, ERRO	:NO INTERRUPT FROM OPI	
(4)	017266	104455		TRAP	C\$ERDF		
(5)	017270	000030		.WORD	24		
(5)	017272	006461		.WORD	EM43		
(5)	017274	007510		.WORD	ERRO		
1530							
1531	017276			2\$:	ESCAPE	:CHECK FOR FL:LOE, ELSE EXIT SEG	
(3)	017276	104410		TRAP	C\$ESCAPE		
(3)	017300	000054		.WORD	10000\$-		
1532							
1533							
1534	017302	013737	002340	002272	MOV	E, CS, TMPO	:GET RLCS
1535	017310	042737	001777	002272	BIC	#177\$, TMPO	:SAVE ERROR BITS
1536	017316	022737	112000	002272	CMP	#BIT15:BIT12:BIT10, TMPO	:WDR NOT FOUND SET.
1537	017324	001402			BEQ	1\$:YES, CONTINUE
1538							
1539	017326	004537	014614		JSR	R5, CHERR	
1540	017332				CKLOOP		
(3)	017332	104406			TRAP	C\$CLP1	
1541							
1542	017334	022737	112000	002272	CMP	#BIT15:BIT12:BIT10, TMPO	
1543	017342	001404			BEQ	3\$	
1544	017344				ERRDF	25, EM10, ERRO	
(4)	017344	104455			TRAP	C\$ERDF	
(5)	017346	000031			.WORD	25	
(5)	017350	005064			.WORD	EM10	
(5)	017352	007510			.WORD	ERRO	
1545							
1546	017354						:WHEN FORCED
1547							
1548	017354				ENDSEG		:%END OF SEGMENT%
(3)	017354				10000\$:		

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TEST 6 - FORCE HEADER NOT FOUND WITH WRITE INTERRUPT

SEQ 0071

(3) 017354 104405 TRAP CSESEG
1549 017356 ENDTST L10040: ***END OF TEST**
(3) 017356 104401 TRAP CSETST
1550
1551
1552
1553 .SBTTL **TEST 7** - CHECK OPI TIME WITH HDR NT FND
1554
1555 017360 BGNST :**START OF TEST**
1556
1557 017360 STARS
(2)
1558 :*****
:CHECK OPI TIME IT SHOULD BE AROUND 200 MILLISECONDS (ON UNIBUS)
1559 :CHECK THIS BY TIMING OPI ON A FORCED HEADER NOT FOUND
1560 :ISSUE WRITE WITH SECTOR 40 SET IN THE DISK ADDRESS
1561 017360 STARS
(2)
1562 :*****
1563 017360 004737 014062 JSR PC,SETCLK :CALL INITIALIZE CLOCK ROUTINE
1564 017364 005737 002652 TST XITFLG :EXIT?
1565 017370 001412 BEQ 1S :BRANCH - IF NO
1566 017372 012746 012316 PRINTB #FRMT18 :ELSE. PRINT MSG. 'TEST 7 CANNOT BE PERFORMED...'
(7) 017372 012746 012316 MOV #FRMT18,-(SP)
(6) 017376 012746 000001 MOV #1,-(SP)
(3) 017402 010600 MOV SP,RO
(4) 017404 104414 TRAP CSPNTB
(4) 017406 062706 000004 ADD #4,SP
1567
1568 017412 000137 017764 JMP 8S :/CLOCK IS NOT AVAILABLE/
1569 017416 004737 015766 1\$: JSR PC,HDHOME :EXIT
1570 017422 CKERFG :HEADS OVER TRACK 0
(4) 017430 104432 TRAP CSEXIT :HEADS GO HOME OKAY
(4) 017432 000346 .WORD L10041-.
1571
1572 017434 104404 BGNSEG :%START OF SEGMENT%
(3) 017434 104404 TRAP CSBSEG
1573
1574 017436 CLRVEC BVEC :CLEAR PRESENT INTERRUPT VECTOR
(3) 017436 013700 002366 MOV BVEC,RO
(3) 017442 104436 TRAP CSCVEC
1575 017444 SETVEC BVEC,#TIMSRV,#340 :SET INTR. VEC. WITH DISABLE CLOCK
(7) 017444 012746 000340 MOV #340,-(SP)
(6) 017450 012746 014474 MOV #TIMSRV,-(SP)
(5) 017454 013746 002366 MOV BVEC,-(SP)
(4) 017460 012746 000003 MOV #3,-(SP)
(3) 017464 104437 TRAP CSSVEC
(2) 017466 062706 000010 ADD #10,SP
1576 017472 SETPRI #PRI00
(3) 017472 012700 000000 MOV #PRI00,RO
(3) 017476 104441 TRAP CSSPRI
1577 017500 005037 002256 CLR INTFLG :CLEAR INTERRUPT FLAG
1578 017504 012777 000050 162646 MOV #40,.ARLDA :SET UP FOR HDR NT FND
1579 017512 012777 003426 162636 MOV #BUF,.ARLBA :BUS ADDRESS
1580 017520 012777 177777 162634 MOV #1,.ARLMP :WORD COUNT
1581 017526 013737 002664 002302 MOV OPITIM,BDDAT :GET OPIMX FOR WORST CASE

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TEST 7 - CHECK OPI TIME WITH HDR NT FND

SEQ 0072

1582 017534 013701 002644
1583 017540 005737 002660
1584 017544 001404
1585 017546 012711 000014
1586 017552 005061 000002
1587 017556 004537 015056
1588 017562 000112
1589 017564 013700 002664
1590 017570 052711 000101
1591 017574 005737 002664
1592 017600 001446
1593 017602 005737 002256
1594 017606 001772
1595 017610 005437 002664
1596 017614 060037 002664
1597 017620 013700 002664
1598 017624 005737 002656
1599 017630 001405
1600 017632 006300
1601 017634 006300
1602 017636 006300
1603 017640 006300
1604 017642 000410
1605 017644 006300
1606 017646 006300
1607 017650 006300
1608 017652 006300
1609 017654 063700 002664
1610 017660 063700 002664
1611
1612 ;CHECK THAT OPI TIME IS WITHIN LIMITS
1613
1614 017664 010037 002302
1615 017670 012700 000340
(3) 017670 104441
1616 017676 023737 002414 002302
1617 017704 002404
1618 017706 023737 002412 002302
1619 017714 003404
1620 017716
(4) 017716 104455
(5) 017720 001716
(5) 017722 007033
(5) 017724 010346
1621 017726
(3) 017726 013700 002366
(3) 017732 104436
1622 017734
(7) 017734 012746 000340
(6) 017740 012746 014466
(5) 017744 013746 002366
(4) 017750 012746 000003
(3) 017754 104437
(2) 017756 062706 000010
1623 017762

MOV PCSR,R1 :GET CSR
TST PCLOCK :USING THE P-CLOCK?
BEQ 6\$:BRANCH - IF NO
MOV #14,(R1) :SET P-CLOCK, REPEAT-INT,LINE FREQ.
CLR 2(R1) :INIT COUNT BUFFER REGISTER
JSR RS,LDFUNC :LOAD THE FUNCTION IN THE NEXT WORD
WRITE!INTEN :WRITE UNDER INTERRUPT
MOV OPITIM,RO :GET OPIMX TO CALCULATE TIME EXPIRED
BIS #101,(R1) :ENABLE CLOCK
TST OPITIM :COUNT EXPIRED?
BEQ 4\$:BRANCH - IF YES
TST INTFLG :INTERRUPT OCCURRED?
BEQ 40\$:BRANCH - IF NO
NEG OPITIM :GET NEGATIVE OF FACTOR FOR SUBTRACTION
ADD RO,OPITIM :SUBTRACT PASSING TIME FROM ORIGINAL
MOV OPITIM,RO :GET TIME EXPIRED
TST SIXTY :60 HZ.?
BEQ 9\$:BRANCH - IF NO
ASL RO :MULTIPLY BY 16(10)
ASL RO :FOR
ASL RO :60 HZ.
ASL RO :CASE
BR 2\$:EXIT
ASL RO :MULTIPLY BY 20(10)
ASL RO :FOR
ASL RO :THE
ASL RO :50 HZ.
ADD OPITIM,RO :CASE
ADD OPITIM,RO :STOP HERE

;CHECK THAT OPI TIME IS WITHIN LIMITS

2\$: MOV RO,BDDAT :SAVE EXPIRED TIME
SETPRI #PRI07
MOV #PRI07,RO
TRAP CSSPRI
CMP OPIMX,BDDAT :IS IT WITHIN LIMITS
BLT 4\$:NO, REPORT ERROR
CMP OPIMN,BDDAT :WITHIN LIMITS
BLE 5\$:YES
ERRDF 974.,EM56,ERR13 :OPI TIMING INCORRECT
TRAP C\$ERDF
.WORD 974
.WORD EM56
.WORD ERR13

4\$: CLRVEC BVEC :CLEAR PRESENT VECTOR
MOV BVEC,RO
TRAP C\$CVEC
SETVEC BVEC,#INTSRV,#340 :SET IN OLD VECTOR
MOV #340,-(SP)
MOV #INTSRV,-(SP)
MOV BVEC,-(SP)
MOV #3,-(SP)
TRAP C\$SVEC
ADD #10,SP
ENDSEG ;%END OF SEGMENT%

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TEST 7 - CHECK OPI TIME WITH HDR NT FND

(3) 017762
 (3) 017762 104405
 1624 017764 005037 002652
 1625 017770 005037 002656
 1626 017774 005037 002660
 1627
 1628 020000
 (3) 020000
 (3) 020000 104401
 1629
 1630
 1631 .SBTTL **TEST 8** - MULTIPLE SECTOR TRANSFER ON WRITE
 1632
 1633 020002 BGNST
 1634
 1635 020002 STARS
 (2)
 1636 :;*****
 :CHECK FOR MULTIPLE SECTOR TRANSFER ON WRITE. THIS TEST CHECKS
 :THAT TWO SECTORS CAN BE SUCCESSFULLY WRITTEN. WE LOAD
 :A WORD COUNT OF 129 WORDS (ONE SECTOR + 1 WORD) STARTING AT
 :SECTOR 0 THRU SECTOR 37 AND VERIFY THAT THE RLDA DOES
 :A DOUBLE INCREMENT EACH TIME.
 1640 STARS
 (2)
 1642
 1643
 1644
 1645 020002 004737 015766 JSR PC,HDHOME :HEADS OVER TRACK 0
 1646 020006 CKERFG :HEADS GO HOME OKAY
 (4) 020014 104432 TRAP CSEXIT
 (4) 020016 000152 .WORD L10042-.
 1647
 1648 020020 005037 002272 CLR TMP0 :CLEAR TEMP LOCATIONS
 1649 020024 005037 002274 CLR TMP1
 1650
 1651 020030 BGNSEG :%START OF SEGMENT%
 (3) 020030 104404 TRAP CSBSEG
 1652
 1653
 1654 020032 013737 002274 002300 1\$: MOV TMP1,GDDAT :GET CYLINDER
 1655 020040 053737 002272 002300 BIS TMP0,GDDAT :GET SECTOR
 1656 020046 013777 002300 162304 MOV GDDAT,ARLDA :SET DISK ADDRESS-SECTOR 0
 1657 C20054 062737 000002 002300 ADD #2,GDDAT :SET EXPECTED + 2
 1658 020062 012777 003426 162266 MOV #BUF,ARLBA :SET BUS ADDRESS
 1659 020070 012777 177577 162264 MOV #-129.,ARLMP :WORD COUNT-SECTOR+1 WORD
 1660
 1661 020076 004537 015056 JSR R5,LDFUNC :LOAD THE FUNCTION IN NEXT WORD
 1662 020102 000012 WRITE :WRITE
 1663 020104 004537 015702 JSR RS,WTCRDY :WAIT FOR CONTROLLER READY?
 1664 020110 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 020110 104410 TRAP CSESCAPE
 (3) 020112 000054 .WORD 10000\$-.
 1665
 1666 020114 004537 014614 JSR R5,CHERR :CHECK CTLR FOR ERRORS
 1667 020120 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 020120 104410 TRAP CSESCAPE

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CZRLHBO.MAC 07-DEC-79 08:12. **TEST 8** - MULTIPLE SECTOR TRANSFER ON WRITE

J 6
SEQ 0074

(3) 020122 000044 .WORD 10000\$-.
1668
1669 020124 013737 002344 002302 MOV E.DA,BDDAT ;READ DISK ADDRESS
1670 020132 023737 002302 002300 CMP BDDAT,GDDAT ;IS DISK ADDRESS CORRECT
1671 020140 001404 BEQ 2\$;YES, BRANCH NO, REPORT ERROR
1672
1673 020142 . ERRDF 7,EM22,ERR4 ;DISK ADDRESS NOT CORRECT
(4) 020142 104455 TRAP C\$ERDF
(5) 020144 000007 .WORD 7
(5) 020146 005461 .WORD EM22
(5) 020150 007654 .WORD ERR4
1674
1675 020152 2\$: INC TMPO ;NEXT SECTOR
1676
1677 020152 005237 002272 CMP #46,TMPO ;AT END?
1678 020156 022737 000046 002272 BNE 1\$;NO, GO BACK
1679 020164 001322
1680
1681 020166 ENDSEG ;%END OF SEGMENT%
(3) 020166
(3) 020166 104405 10000\$: TRAP C\$ESEG
1682 020170 ENDTST ;**END OF TEST**
(3) 020170 L10042:
(3) 020170 104401 TRAP C\$ETST
1683
1684 .SBTTL **TEST 9** - CHECK DIRECTION OF WRITE NPR
1685
1686 020172 BGNTST ;**START OF TEST**
1687
1688 020172 STARS
1689 ;*****
1690 ;VERIFY THAT A WRITE IS WRITING NOT READING. WE WRITE A
1691 ;KNOWN PATTERN IN 'BUF' (128 WORD). WE THEN ISSUE A WRITE.
1692 ;ONCE THE WRITE IS FINISHED WE CHECK THAT 'BUF' IS INTACT.
1693 ;THIS IS DONE TO PROVE THAT THE NPR IS GOING THE RIGHT
1694 020172 WAY.
1695 STARS
1696 ;*****
1697 020172 004737 015766 JSR PC,HDHOME ;HEADS OVER TRACK 0
1698 020176 CKERFG ;HEADS GO HOME OKAY
(4) 020204 104432 TRAP C\$EXIT
(4) 020206 000160 .WORD L10043-.
1699
1700 020210 BGNSEG ;%START OF SEGMENT%
(3) 020210 104404 TRAP C\$BSEG
1701
1702 020212 2\$: MOV #BUF,R2 ;WRITE BUFFER FOR WRITE OPERATION
1703 020212 012702 003426 MOV #128,R1 ;ONE SECTOR'S WORTH
1704 020216 012701 000200 MOV #125252,(R2)+ ;WRITE BUFFER
1705 020222 012722 125252 DEC R1 ;DONE?
1706 020226 005301 BNE 3\$;NO, GO BACK
1707 020230 001374
1708
1709 020232 005077 162122 CLR @RLDA ;LOAD DISK ADDRESS

SEQ 0075

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TEST 9 - CHECK DIRECTION OF WRITE NPR

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1710 020236 012777 177600 162116      MOV    #128.,@RLMP   ;WORD COUNT
1711 020244 012777 003426 162104      MOV    #BUF,@RLBA   ;BUS ADDRESS
1712 020252 004537 015056      JSR    R5,LDFUNC  ;LOAD THE FUNCTION IN NEXT WORD
1713 020256 000012      WRITE   RS,WTCRDY ;WRITE SOME DATA
1714 020260 004537 015702      JSR    RS,WTCRDY ;WAIT FOR IT TO FINISH
1715 020264      ESCAPE  SEG    C$ESCAPE ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 020264 104410      TRAP    C$ESCAPE
(3) 020266 000076      .WORD   10000$-
1716
1717 020270 004537 014614      JSR    RS,CHERR  ;CHECK CNTLR FOR ERRORS
1718 020274      ESCAPE  SEG    C$ESCAPE
(3) 020274 104410      TRAP    C$ESCAPE ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 020276 000066      .WORD   10000$-
1719
1720 020300 012702 003426      MOV    #BUF,R2   ;SET UP TO CHECK BUFFER
1721 020304 012701 000200      MOV    #128.,R1   ;CHECK 128 WORDS
1722
1723 020310      BGNSEG
(3) 020310 104404      TRAP    CSBSEG   ;%START OF SEGMENT%
1724
1725 020312 012737 125252 002300      MOV    #125252,GDDAT ;DATA SHOULD BE 125252
1726 020320 011237 002302 002302      MOV    (R2),BDDAT  ;LOAD DATA INTO BDDAT
1727 020324 023737 002300 002302      CMP    GDDAT,BDDAT ;IS IT OKAY?
1728 020332 001406      BEQ    SS       ;YES, CONTINUE
1729
1730 020334 010237 002274      MOV    R2,TMP1 ;LOAD MEMORY LOCATION OF FAILURE
1731 020340      ERDF    8.,EM26,ERR8
(4) 020340 104455      TRAP    CSERDF
(5) 020342 000010      .WORD   8
(5) 020344 005710      .WORD   EM26
(5) 020346 010030      .WORD   ERR8
1732
1733 020350      SS:    ESCAPE  SEG    C$ESCAPE ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 020350 104410      TRAP    C$ESCAPE
(3) 020352 000010      .WORD   10001$-
1734 020354 005722      6$:    TST    (R2)+  ;NEXT!
1735 020356 005301      DEC    R1     ;DONE?
1736 020360 001357      BNE    4$     ;NO, GO BACK
1737
1738 020362      ENDSEG   ;%END OF SEGMENT%
(3) 020362 104405      TRAP    CSSEG   ;%END OF SEGMENT%
1739 020364      10001$:
(3) 020364 104405      ENDSEG   ;%END OF SEGMENT%
(3) 020364 104405      TRAP    CSSEG   ;%END OF SEGMENT%
1740 020366      ENDTST  L10043: ;**END OF TEST**
(3) 020366 104401      TRAP    CSETST
1741
1742      .SBTLL **TEST 10** - CHECK FULL RLBA INCREMENT
1743
1744 020370      BGNST   ;**START OF TEST**
1745
1746 020370      STARS
(2)
1747      :***** TEST THAT THE RLBA WILL INCREMENT, WE DO NOT DO A FULL 16

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TEST 10 - CHECK FULL RLBA INCREMENT

SEQ 0076

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1748 :BIT INCREMENT WE CHECK THAT EACH BIT WILL TOGGLE 0 TO 1
1749 :AND 1 TO 0. WE DO CHECK ALL BITS EVEN IF ALL MEMORY
1750 :IS NOT AVAILABLE. (WE IGNORE NON-EXISTANT MEMORY ERRORS).
1751 :WE USE THE SAME DISK ADDRESS (RANDOM) AND A 1 WORD TRANSFER.
1752 020370 STARS
(2)
1753
1754
1755 020370 004737 015766 JSR PC,HDHOME :HEADS OVER TRACK 0
1756 020374 .CKERFG :HEADS GO HOME OKAY
(4) 020402 104432 TRAP CSEXIT
(4) 020404 000134 .WORD L10044-.
1757
1758
1759 020406 007037 002274 CLR TMP1 :CLEAR LOCATION
1760
1761 020412 BGNSEG :%START OF SEGMENT%
(3) 020412 104404 TRAP CSBSEG
1762
1763 020414 012777 177777 161740 3S: MOV #1,ARLMP :ONLY ONE (1) WORD
1764 020414 005077 161732 161722 CLR ARLDA :LOAD DISK ADDRESS
1765 020422 013777 002274 161722 MOV TMP1,ARLBA :BUS ADDRESS
1766
1767
1768 020434 004537 015056 JSR RS,LDFUNC :LOAD THE FUNCTION IN NEXT WORD
1769 020440 000012 WRITE
1770 020442 004537 015702 JSR RS,WTCRDY :WAIT FOR WRITE TO FINISH
1771 020446 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 020446 104410 TRAP CSESCAPE
(3) 020450 000066 .WORD 10000\$-.
1772
1773 020452 013737 002274 002300 4S: MOV TMP1,GDDAT :SET UP EXPECTED RLBA
1774 020460 062737 000002 002300 ADD #2,GDDAT :PREVIOUS RLBA+2
1775 020466 013737 002342 002302 MOV E.BA,BDDAT :READ RLBA
1776 020474 023737 002300 002302 CMP GDDAT,BDDAT :WAS IT UPDATED PROPERLY?
1777 020502 001404 BEQ 5S :YES, CONTINUE
1778
1779 020504 104455 ERRDF 9.,EM30,ERR4 :BA INCREMENT ERROR
(4) 020504 .WORD CSERDF
(5) 020506 000011 .WORD 9
(5) 020510 006005 .WORD EM30
(5) 020512 007654 .WORD ERR4
1780 020514 104410 5S: ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 020514 TRAP CSESCAPE
(3) 020516 000020 .WORD 10000\$-.
1781
1782 020520 006337 002274 ASL TMP1 :NEXT PATTERN TO TEST RLBA
1783 020524 103404 BCS 6S :DONE?
1784 020526 052737 000002 002274 BIS #BIT1,TMP1 :NO, SET IN BIT 1
1785 020534 000727 BR 3S :GO CHECK NEXT.
1786
1787 020536 6S: :END TEST
1788
1789 020536 ENDSEG :%END OF SEGMENT%
(3) 020536 104405 10000\$: TRAP CSESEG

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★★TEST 10★★ - CHECK FULL RLBA INCREMENT

SEQ 0077

1790 020540 ENDTST ;**END OF TEST**
(3) 020540 L10044:
(3) 020540 104401 TRAP CSETST

1791 .
1792 .SBTTL ★★TEST 11★★ - BA BIT 16 INCREMENT
1793 .
1794 020542 BGNST :**START OF TEST**
1795 .
1796 020542 STARS
1797 ;:*****
1798 ;:CHECK THAT BA BIT 16 WILL INCREMENT. WE WILL LOAD THE
1799 ;:RLBA WITH 177776 AND ISSUE A ONE WORD WRITE WE THEN
1800 ;:CHECK BA BIT 16 TO SET, BA 17 TO STAY A 0 AND THE RLBA
1801 020542 STARS
1802 .
1803 .
1804 020542 004737 015766 JSR PC,HDHOME :HEADS OVER TRACK 0
1805 020546 CKERFG :HEADS GO HOME OKAY
(4) 020554 104432 TRAP CSEXIT
(4) 020556 000160 .WORD L10045-.

1806 .
1807 020560 BGNSEG :%START OF SEGMENT%
(3) 020560 104404 TRAP CSBSEG

1809 020562 2\$: MOV #177776,ARLBA :SET MAX BA TO INC. BA16
1810 020562 012777 177776 161566 CLR XMEM :WE DON'T WANT TO LOAD ANY EA
1811 020570 005037 002374 MOV #1,ARLMP :ONE WORD TRANSFER
1812 020574 012777 177777 161560 CLR ARLDA :LOAD THE FUNCTION IN NEXT WORD
1813 020602 005077 161552 JSR RS,LDFUNC
1814 020606 004537 015056 WRITE RS,WTCRDY :WAIT FOR WRITE TO FINISH
1815 020612 000012 JSR ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
1816 020614 004537 015702 TRAP CSESCAPE
(3) 020620 104410 .WORD 10000\$.
(3) 020622 000112 BIT ANXM,E,CS :NON-EXISTANT MEMORY ERROR?
1818 020624 032737 020000 002340 BNE 3\$:YES, CONTINUE
1819 020632 001002 .

1820 .
1821 020634 004537 014614 3\$: JSR RS,CHERR :CHECK CNTLR FOR ERRORS
1822 020640 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 020640 104410 TRAP CSESCAPE
(3) 020642 .WORD 10000\$.

1823 .
1824 020644 032737 000020 002340 BIT #BA16,E,CS :DID BA16 SET?
1825 020652 001004 BNE 4\$:YES, CONTINUE

1826 .
1827 020654 ERRDF 10.,EM31,ERRO :BA 16 DID NOT INCREMENT
(4) 020654 104455 TRAP CSERDF
(5) 020656 000012 .WORD 10
(5) 020660 006040 .WORD EM31
(5) 020662 007510 .WORD ERRO

1828 .
1829 020664 4\$: CKLOOP TRAP CSCLP1
(3) 020664 104406 .

CZRLH80 RL11/RLV11 CTLR TST 2 MACY11 30A(1052) 17-DEC-79 13:44 PAGE 1-48
 CZRLHB.MAC 07-DEC-79 08:12 **TEST 11** - BA BIT 16 INCREMENT N 6

SEQ 0078

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1830
1831 020666 032737 000040 002340      BIT      #BA17,E.CS   :DID BA17 SET ALSO?
1832 020674 001404                      BEQ      $S
1833
1834 020676 104455                      ERRDF    11.,EM32,ERRO :BA 17 GOT CARRIED AWAY
  (4) 020676
  (5) 020700 000013                      TRAP     C$ERDF
  (5) 020702 006076                      .WORD    11
  (5) 020704 007510                      .WORD    EM32
                                         .WORD    ERRO

1835
1836 020706 104406                      SS:     CKLOOP
  (3) 020706                                TRAP     C$CLP1,
1837
1838 020710 005037 002300 002302      CLR      GDDAT
1839 020714 013737 002342              MOV      E.BA,BDDAT :CHECK THAT BA15-BA0 IS CLEAR
1840 020722 001404                      BEQ      6S
1841 020724 104455                      ERRDF    12.,EM33,ERR4 :READ BA
  (4) 020724                                TRAP     C$ERDF
  (5) 020726 000014                      .WORD    12
  (5) 020730 006135                      .WORD    EM33
  (5) 020732 007654                      .WORD    ERR4

1842
1843 020734 104405                      6S:
1844
1845 020734 104405                      ENDSEG   ;%END OF SEGMENT%
  (3) 020734
  (3) 020734
1846 020736 104401                      ENDTST   L10045: ;**END OF TEST**
  (3) 020736
  (3) 020736
1847
1848 .SBTTL **TEST 12** - BA BIT 17 INCREMENT
1849
1850 020740 104401                      BGNTST   ;**START OF TEST**
1851
1852 020740 104401                      STARS
  (2)
1853
1854
1855
1856
1857 020740 104401                      STARS
  (2)
1858
1859 020740 004737 015766      JSR      PC,HDHOME :HEADS OVER TRACK 0
1860 020744 104432                      CKERFG
  (4) 020752 104432                      TRAP     C$EXIT
  (4) 020754 000162                      .WORD    L10046-.
                                         .WORD

```

1862
 1863 020756 (3) 020756 104404 BGNSEG TRAP CSBSEG ;%START OF SEGMENT%

1864
 1865 020760 020760 012777 177776 161370 2S:
 1866 020760 012737 000020 002374 MOV #177776,ARLBA :SET MAX BA TO INC. BA16
 1867 020766 012737 MOV #BA16,XMEM :SET BA16 IN RLCs
 1868 020774 012777 177777 161360 MOV #-1,ARLMP :ONE WORD TRANSFER
 1869 021002 005077 161352 CLR ARLDA
 1870 021006 004537 015056 JSR RS,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
 1871 021012 000012 WRITE JSR RS,WTCRDY ;WAIT FOR WRITE TO FINISH
 1872 021014 004537 015702 ESCAPE JSR SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
 1873 021020 (3) 021020 104410 TRAP CSESCAPE
 (3) 021022 000112 .WORD 10000\$-.
 1874 021024 032737 020000 002340 BIT MNXM,E.CS ;NON-EXISTANT MEMORY ERROR?
 1875 021032 001002 BNE 3S ;YES, CONTINUE
 1876
 1877 021034 004537 014614 3S: JSR RS,CHERR ;CHECK CTLR FOR ERRORS
 1878 021040 021040 104410 ESCAPE SEG ;CHFCK FOR FL:LOE, ELSE EXIT SEG
 (3) 021040 104410 TRAP CSESCAPE
 (3) 021042 000072 .WORD 10000\$-.
 1879
 1880 021044 032737 000040 002340 BIT #BA17,E.CS ;DID BA17 SET?
 1881 021052 001004 BNE 4S ;YES, CONTINUE
 1882
 1883 021054 (4) 021054 104455 ERRDF 13.,EM34,ERR0 ;BA 17 DID NOT SET
 (5) 021056 000015 TRAP CSERDF
 (5) 021060 006171 .WORD 13
 (5) 021062 007510 .WORD EM34
 .WORD ERRO
 1884
 1885 021064 (3) 021064 104406 4S: CKLOOP TRAP CSCLP1
 1886
 1887 021066 032737 000020 002340 BIT #BA16,E.CS ;DID BA16 SET ALSO?
 1888 021074 001404 BEQ SS ;NO, GOOD CONTINUE
 1889
 1890 021076 (4) 021076 104455 ERRDF 14.,EM35,ERR0 ;BA 16 DIDN'T KNOW WHEN TO QUIT.
 (5) 021100 000016 TRAP CSERDF
 (5) 021102 006227 .WORD 14
 (5) 021104 007510 .WORD EM35
 .WORD ERRO
 1891 021106 (3) 021106 104406 5S: CKLOOP TRAP CSCLP1
 1892
 1893 021110 005037 002300 CLR GDDAT ;CHECK THAT BA15-BA0 IS CLEAR
 1894 021114 013737 002342 002302 MOV E.BA,BDDAT ;READ BA
 1895 021122 001404 BEQ 6S ;IS BA ZERO?
 1896 021124 (4) 021124 104455 ERRDF 15.,EM36,ERR4 ;BA SHOULD BE ZERO
 (5) 021126 000017 TRAP CSERDF
 (5) 021130 006265 .WORD 15
 (5) 021132 007654 .WORD EM36
 .WORD ERR4
 1897
 1898 021134 6S: :

1899
 1900 021134 ENDSEG ;%END OF SEGMENT%
 (3) 021134
 (3) 021134 104405
 1901 021136 ENDTST ;**END OF TEST**
 (3) 021136 L10046:
 (3) 021136 104401 TRAP CSETST
 1902
 1903
 1904 .SBTTL **TEST 13** - READ FUNCTION
 1905
 1906 021140 BGNST ;**START OF TEST**
 1907
 1908 021140 STARS
 (2)
 1909 ;*****
 :CHECK OF THE READ FUNCTION. WE WILL FIRST DO A READ
 1910 :HEADER TO FIND OUT WHERE WE ARE AND THEN ISSUE
 1911 :A FULL SECTOR READ, WAIT FOR READY AND CHECK FOR
 1912 :ANY ERRORS
 1913 021140 STARS
 (2)
 1914
 1915
 1916 021140 004737 015766 JSR PC,HDHOME ;HEADS OVER TRACK 0
 1917 021144 CKERFG ;HEADS GO HOME OKAY
 (4) 021152 104432 TRAP CSEXIT
 (4) 021154 000064 .WORD L10047-.
 1918
 1919 021156 BGNSEG ;%START OF SEGMENT%
 (3) 021156 104404 TRAP CSBSEG
 1920
 1921 021160 012737 001750 002272 1\$: MOV #1000.,TMPO
 1922 021166 005077 161166 CLR ARLDA :LOAD DISK ADDRESS
 1923 021172 012777 177600 161162 MOV #-128.,ARLMP :SET WORD LENGTH
 1924 021200 012777 003426 161150 MOV #BUF,ARLBA :SET BUS ADDRESS
 1925
 1926 021206 004537 015056 JSR RS,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
 1927 021212 000014 READ ;READ
 1928 021214 004537 015702 JSR RS,WTCRDY ;WAIT FOR CONTROLLER READY
 1929 021220 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 021220 104410 TRAP CSESCAPE
 (3) 021222 000014 .WORD 10000\$-.
 1930
 1931 021224 004537 014614 JSR RS,CHERR ;CHECK CTLR FOR ERRORS
 1932
 1933 021230 005337 002272 DEC TMPO
 1934 021234 001354 BNE 1\$;%END OF SEGMENT%
 1935 021236 ENDSEG
 (3) 021236
 (3) 021236 104405 10000\$: TRAP CSESEG ;**END OF TEST**
 1936 021240 ENDTST
 (3) 021240 L10047:
 (3) 021240 104401 TRAP CSETST
 1937
 1938 .SBTTL **TEST 14** - READ FUNCTION INTERRUPT
 1939

D 7

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1940 021242          BGNST                      ;**START OF TEST**
1941
1942 021242          STARS
1943 (2)               :*****CHECK OF THE READ FUNCTION UNDER INTERRUPT CONTROL, WE WILL
1944               :ISSUE A READ HEADER TO GET POSITION AND THEN READ
1945               :A FULL SECTOR WAITING FOR THE INTERRUPT. CHECK FOR
1946               :ERRORS ON INTERRUPT.
1947 021242          STARS
1948 (2)
1949
1950 021242 004737 015766      JSR   PC,HDHOME    :HEADS OVER TRACK 0
1951 021246           CKERFG
1952 (4) 021254 104432           TRAP
1953 (4) 021256 000106           .WORD  CSEXIT      ;HEADS GO HOME OKAY
1954 L10050-.

1955 021260          104404          BGNSEG        ;%START OF SEGMENT%
1956 (3)              021260
1957 (3)              104404          TRAP          CSBSEG
1958
1959
1960 021262 005037 002256      CLR   INTFLG      :CLEAR INTERRUPT INDICATOR
1961 021266 005077 161066      CLR   ARLDA       :SET DISK ADDRESS
1962 021272 012777 177600      MOV   #128.,ARLMP  :SET UP WORD COUNT
1963 021300 012777 003426      MOV   #BUF,ARLBA  :SET UP BUS ADDRESS
1964
1965 021306 012700 000000      SETPRI        #PRI00      :PRIORITY TO 0
1966 (3)              021306
1967 (3)              104441          MOV   #PRI00,RO
1968 (3)              021312          TRAP          CSSPRI
1969 (3)              104441          JSR   RS,LDFUNC  :LOAD THE FUNCTION IN NEXT WORD
1970 (3)              021314 004537 015056      READ!INTEN
1971 (3)              021320 000114 015702      JSR   R5,WTCRDY  :READ UNDER INTERRUPT
1972 (3)              021322 004537 015702      CKLOOP
1973 (3)              021326 104406          TRAP          CSCLP1     :WAIT FOR INTERRUPT
1974 (3)              021330 012700 000340      SETPRI        #PRI07      :PRIORITY TO 7
1975 (3)              021330
1976 (3)              104441          MOV   #PRI07,RO
1977 (3)              021334          TRAP          CSSPRI
1978
1979 021336 005737 002256      TST   INTFLG      :DID INTERRUPT OCCUR?
1980 021342 001004           BNE   1$          ;YES-BRANCH NO-REPORT
1981
1982 021344 104455           ERRDF        19.,EM4,ERRO  :READ DID NOT INTERRUPT
1983 (4)              021344
1984 (5)              021346 000023           TRAP          CSERDF
1985 (5)              021350 004712           .WORD  19
1986 (5)              021352 007510           .WORD  EM4
1987 (5)              021354 104406           .WORD  ERRO
1988 (3)              021354
1989 (3)              104406          1$:            CKLOOP
1990 (3)              021356 004537 014614      TRAP          CSCLP1     :CHECK FOR LOOP
1991
1992 021356           004537          JSR   RS,CHERR    :CHECK CTLR FOR ERRORS
1993
1994 021362           104405          10000$:        ENDSEG        ;%END OF SEGMENT%
1995 (3)              021362
1996 (3)              104405          ENDTST      CSESEG
1997 (3)              021364 L10050:        TRAP          CSETST
1998 (3)              021364 104401

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END OF TEST

1977
 1978 .SBTTL **TEST 15** - CHECK READ NPR DIRECTION
 1979
 1980 021366 BGNTST ;**START OF TEST**
 1981
 1982 021366 STARS
 1983 :CHECK THAT THE READ FUNCTION ACTUALLY READS (INTO MEMORY)
 1984 :WE WILL WRITE A PATTERN INTO MEMORY AND THEN ISSUE
 1985 :A READ TO OVERLAY THAT PATTERN. AFTER THE READ
 1986 :WE CHECK TO SEE IF THE WRITTEN PATTERN HAS CHANGED.
 1987 :IF NOT WE ISSUE IT AGAIN AT THE SAME SECTION AFTER
 1988 :HAVING MODIFIED OUR PATTERN IN MEMORY (SINCE THERE IS
 1989 :ONE CHANCE THAT THE DISK COULD HAVE OUR PATTERN). AFTER
 1990 :THE SECOND READ WE CHECK THE BUFFER AGAIN. IF IT'S
 1991 :NO CHANGED WE REPORT AN ERROR
 1992 021366 STARS
 1993
 1994
 1995 021366 004737 015766 JSR PC,HDHOME ;HEADS OVER TRACK 0
 1996 021372 CKERFG ;HEADS GO HOME OKAY
 (4) 021400 104432 TRAP CSEXIT
 (4) 021402 000156 .WORD L10051-.
 1997
 1998 021404 BGNSEG ;%START OF SEGMENT%
 (3) 021404 104404 TRAP CSBSEG
 1999
 2000 021406 012737 123456 002272 MOV #123456,TMPO ;SET PATTERN TO WRITE
 2001 021414 005037 002274 CLR TMP1 ;CLEAR PASS INDICATOR
 2002 021420 012700 003426 1S: MOV #BUF,R0 ;SET UP BUFFER BEGINNING
 2003 021424 012701 000200 MOV #128.,R1
 2004 021430 013720 002272 2S: MOV TMPO,(R0)+ ;WRITE BUFFER
 2005 021434 005301 DEC R1 ;DONE??
 2006 021436 001374 BNE 2S ;NO, GO BACK
 2007 021440 005077 160714 CLR ARLDA ;LOAD DISK ADDRESS
 2008 021444 012777 177600 160710 MOV #128.,ARLMP ;SET WORD COUNT
 2009 021452 012777 003426 160676 MOV #BUF,ARLBA ;LOAD BUS ADDRESS
 2010 021460 012737 003426 002300 MOV #BUF,GDDAT ;FOR ERROR PRINT
 2011
 2012 021466 004537 015056 JSR RS,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
 2013 021472 000014 READ ;READ
 2014 021474 004537 015702 JSR RS,WTCRDY ;WAIT FOR CONTROLLER READY
 2015 021500 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 021500 104410 TRAP CSESCAPE
 (3) 021502 000054 .WORD 10000\$-.
 2016
 2017 021504 004537 014614 JSR RS,CHERR ;CHECK CNTLR FOR ERRORS
 2018 021510 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 021510 104410 TRAP CSESCAPE
 (3) 021512 000044 .WORD 10000\$-.
 2019
 2020 021514 012702 003426 4S: MOV #BUF,R2 ;SET TO START COMPARING DATA
 2021 021520 022237 002272 CMP (R2)+,TMPO ;DID DATA CHANGE?
 2022 021524 001014 BNE 6S ;YES, CHECK FOR END
 2023

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TEST 15 - CHECK READ NPR DIRECTION

F 7
SEQ 0083

2024
2025
2026 021526 005737 002274 TST TMP1 :DATA DIDN'T CHANGE, CHECK
2027 021532 001005 002274 BNE \$S :IF 1ST OR 2ND TIME?
2028 :2ND-REPORT 1ST-TRY AGAIN
2029 021534 005237 002274 INC TMP1 :INC PASS COUNT
2030 021540 005137 002272 COM TMP0 :COMPLIMENT PATTERN
2031 021544 000725 BR 1\$:GO DO IT AGAIN
2032
2033 021546 SS: ERRDF 20.,EM5,ERR9 :READ DID NOT MODIFY MEMORY
(4) 021546 104455 TRAP C\$ERDF
(5) 021550 000024 .WORD 20
(5) 021552 004735 .WORD EM5
(5) 021554 010102 .WORD ERR9
2034
2035 021556 SS:
2036
2037 021556 10000\$: ENDSEG ;%END OF SEGMENT%
(3) 021556 TRAP C\$ESEG
(3) 021556 104405 ENDTST
2038 021560 L10051: TRAP C\$ETST ;**END OF TEST**
(3) 021560 104401
2039
2040 .SBTTL **TEST 16** - PROPER INCREMENT OF RLBA ON READ
2041
2042 021562 BGNSTST ;**START OF TEST**
2043
2044 021562 STARS
2045 ;*****
2046 ;CHECK THAT THE RLBA WILL INCREMENT WITH THE READ
2047 ;THE RLBA SHOULD CONTAIN 'BUF +256.' AFTER A FULL SECTOR
2048 021562 READ
2049 STARS
2050 ;*****
2051 021562 004737 015766 JSR PC,HDHOME :HEADS OVER TRACK 0
2052 021566 CKERFG :HEADS GO HOME OKAY
(4) 021574 104432 TRAP C\$EXIT
(4) 021576 000116 .WORD L10052-.
2053
2054 021600 BGNSEG ;%START OF SEGMENT%
(3) 021600 104404 TRAP C\$BSEG
2055
2056 021602 005077 160552 CLR ARLDA :SET UP DISK ADDRESS
2057 021606 012777 003426 160542 MOV #BUF,ARLBA :SET UP BUS ADDRESS
2058 021614 012777 177600 160540 MOV #128.,ARLMP :WORD COUNT
2059 021622 012737 003426 002300 MOV #BUF,GDDAT :FORM EXPECTED BUS ADDRESS
2060 021630 062737 000400 002300 ADD #256.,GDDAT :AFTER READ
2061
2062 021636 004537 015056 JSR R5,LDFUNC :LOAD THE FUNCTION IN NEXT WORD
2063 021642 000014 READ
2064 021644 004537 015702 JSR R5,WTCRDY :READ
2065 021650 ESCAPE SEG :WAIT FOR CONTROLLER READY
(3) 021650 104410 TRAP C\$ESCAPE :CHECK FOR FL:LOE. ELSE EXIT SEG

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TEST 16 - PROPER INCREMENT OF RLBA ON READ

SEQ 0084

6 7

(3) 021652 000040 .WORD 10000\$-.
2066
2067 021654 004537 014614 JSR RS,CHERR ;CHECK CNTLR FOR ERRORS
2068 021660 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 021660 104410 TRAP C\$ESCAPE
(3) 021662 000030 .WORD 10000\$-.
2069 021664 013737 002342 002302 MOV E.BA,BDDAT ;READ 'RLBA' FOR PRESENT ADDRESS
2070 021672 023737 002302 002300 CMP BDDAT,GDDAT ;DID 'BA' INCREMENT PROPERLY?
2071 021700 001404 BEQ 1\$;YES, CONTINUE
2072
2073 021702 104455 ERRDF 21.,EM6,ERR4 ;BA DID NOT INCREMENT PROPERLY
(4) 021702 104455 TRAP C\$ERDF
(5) 021704 000025 .WORD 21
(5) 021706 004763 .WORD EM6
(5) 021710 007654 .WORD ERR4
2074
2075 021712 1\$:
2076
2077 021712 104405 10000\$: ENDSEG ;%END OF SEGMENT%
(3) 021712 TRAP C\$ESEG
(3) 021712 104405 ENDTST L10052: ;**END OF TEST**
2078 021714 TRAP C\$ETST
(3) 021714 104401
2079
2080 .SBTTL **TEST 17** - PROPER INCREMENT OF RLDA ON READ
2081
2082 021716 BGNST :**START OF TEST**
2083
2084 021716 STARS
2085 ;*****
2086 ;CHECK THAT THE RLDA INCREMENTS BY ONE AFTER A
2087 ;FULL SECTOR READ, WE FIRST READ A HEADER TO FIND
2088 ;OUT WHERE WE ARE, THEN ISSUE A READ AFTER
2089 ;THE READ THE RLDA SHOULD BE RLDA (START) + 1
2090 021716 STARS
2091 021716 004737 015766 JSR PC,HDHOME ;HEADS OVER TRACK 0
2092 021722 CKERFG ;HEADS GO HOME OKAY
(4) 021730 104432 TRAP C\$EXIT
(4) 021732 000114 .WORD L10053-.
2093
2094 021734 BGNSEG ;%START OF SEGMENT%
(3) 021734 104404 TRAP C\$BSEG
2095
2096
2097 021736 005037 002300 CLR GDDAT
2098 021742 013777 002300 160410 MOV GDDAT,@RLDA ;SETUP DISK ADDRESS
2099 021750 005237 002300 INC GDDAT ;CREATE EXPECTED SECTOR
2100 021754 012777 177600 160400 MOV #128.,@RLMP ;WORD COUNT
2101 021762 012777 003426 160366 MOV #BUF,@RLBA ;SETUP BUS ADDRESS
2102
2103 021770 004537 015056 JSR RS,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
2104 021774 000014 READ ;READ
2105 021776 004537 015702 JSR RS,WTCRDY ;WAIT FOR CONTROLLER READY

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TEST 17 - PROPER INCREMENT OF RLDA ON READ

SEQ 0085

2106 022002 104410
(3) 022002 000040
2107
2108 022006 004537 014614
2109 022012 104410
(3) 022012 000030
2110
2111 022016 013737 002344 002302
2112 022024 023737 002300 002302
2113 022032 001404
2114
2115 022034 104455
(4) 022034 000026
(5) 022040 005017
(5) 022042 007654
2116
2117 022044 1\$:
2118
2119 022044
(3) 022044 104405
2120 022046
(3) 022046 104401
2121
2122 .SBTTL **TEST 18** - FORCE HEADER NOT FOUND WITH READ
2123
2124 022050 BGNST :**START OF TEST**
2125
2126 022050 STARS
2127 ;*****
2128 ;FORCE HEADER NOT FOUND ERROR TO OCCUR. THIS IS DONE
2129 ;BY SETTING SECTOR 40 OF THE RLDA AND ISSUING A
2130 ;READ. SECTOR 40 DOES NOT EXIST ON THE RL01 PACK
2131 022050 STARS
2132 ;*****
2133 022050 004737 015766 JSR PC,HDHOME :HEADS OVER TRACK 0
2134 022054 CKERFG :HEADS GO HOME OKAY
(4) 022062 104432 TRAP C\$EXIT
(4) 022064 000102 .WORD L10054-.
2135
2136 022066
(3) 022066 104404 BGNSEG :**START OF SEGMENT**
2137 TRAP C\$BSEG
2138
2139 022070 012777 000050 160262 MOV #40.,@RLDA :INSURE NOT TO FIND HEADER BY
2140 022076 012777 003426 160252 MOV #BUF,@RLBA :SETTING SECTOR 40 OF CYL. ADDR.
2141 022104 012777 177777 160250 MOV #-1,@RLMP :WORD COUNT
2142
2143 022112 004537 015056 JSR RS,LDFUNC :LOAD THE FUNCTION IN NEXT WORD
2144 022116 000014 READ :READ

I 7
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CZRLHBO RL11/RLV11 CTLR TST 2 MAC V11 30A(1052) 17-DEC-79 13:44 **TEST 18** - FORCE HEADER NOT FOUND WITH READ

SEQ 0080

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2145 022120 004537 015702      JSR      R5,WTCRDV    ;WAIT FOR CONTROLLER READY
2146 022124 104410      ESCAPE   SEG          ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 022124
(3) 022126 000036      TRAP     C$ESCAPE
                           .WORD    10000$-
2147
2148 022130 013737 002340 002272      MOV      E.CS,TMPO    ;GET RLCS
2149 022136 042737 001777 002272      RIC      #177$,TMPO    ;SAVE ERROR BITS
2150 022144 022737 112000 002272      CMP      #BIT15!BIT12!BIT10,TMPO ;HDR NOT FOUND SET.
2151 022152 001404      BEQ     1$           ;YES, CONTINUE
2152
2153 022154      ERRDF   23.,EM10,ERRO ;HEADER NOT FOUND WOULD NOT SET
(4) 022154 104455      TRAP     C$ERRDF
(5) 022156 000027      .WORD    23
(5) 022160 005064      .WORD    EM10
(5) 022162 007510      .WORD    ERRO
2154
2155 022164      1$:
2156 :
2157
2158 022164      10000$: ENDSEG      ;%END OF SEGMENT%
(3) 022164
(3) 022164 104405      TRAP     C$SEG
2159 022166      ENDTST      ;**END OF TEST**
(3) 022166 L10054:      .
(3) 022166 104401      TRAP     C$ETST
2160
2161      .SBTTL  **TEST 19** - FORCE HEADER NOT FOUND WITH READ INTERRUPT
2162
2163 022170      BGNTST      ;**START OF TEST**
2164
2165
2166 022170      STARS
(2)
2167      ;*****TEST THAT HEADER NOT FOUND ERROR WILL GENERATE AN INTERRUPT*****
2168      ;ON OCCURANCE. HEADER NOT FOUND WILL BE FORCED BY SETTING
2169      ;SECTOR 40 OF RLDA AND ISSUING A READ
2170 022170      STARS
(2)
2171
2172
2173 022170 004737 015766      JSR      PC,HDHOME    ;HEADS OVER TRACK 0
2174 022174      CKERFG      ;HEADS GO HOME OKAY
(4) 022202 104432      TRAP     C$EXIT
(4) 022204 000142      .WORD    L10055-
2175
2176 022206      BGNSEG      ;%START OF SEGMENT%
(3) 022206 104404      TRAP     C$BSEG
2177
2178 022210      SETPRI     #PRI00
(3) 022210 012700 000000      MOV      #PRI00,RO
(3) 022214 104441      TRAP     C$SPRI
2179 022216 005037 002256      CLR      INTFLG
2180 022222 012777 000050 160130      MOV      #40.,@RLDA    ;CLEAR INTERRUPT OCCURANCE FLAG
2181 022230 012777 003426 160120      MOV      #BUF,@RLBA   ;INSURE NOT TO FIND HEADER BY
2182 022236 012777 177777 160116      MOV      #-1,@RLMP    ;SETTING SECTOR 40 OF CYL. ADDR.
2183

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CZRLHB0 RL11/RLV11 CTLR TST 2 MAC(Y11 30A(1052) J 7
CZRLHB.MAC 07-DEC-79 08:12 **TEST 19** - FORCE HEADER NOT FOUND WITH READ INTERRUPT

SEQ 0087

2184 022244 004537 015056 JSR R5,LDFUNC :LOAD THE FUNCTION IN NEXT WORD
2185 022250 000114 READ:INTEN :READ
2186 022252 004537 015702 JSR R5,WTCRDY :WAIT FOR CONTROLLER READY
2187 022256 CKLOOP
(3) 022256 104406 TRAP CSCLP1
2188 022260 SETPRI #PRI07
(3) 022260 012700 000340 MOV #PRI07,RO
(3) 022264 104441 TRAP CSSPRI
2189
2190 022266 005737 002256 TST INTFLG :DID INTERRUPT OCCUR
2191 022272 001004 BNE 2S :YES
2192
2193 022274 ERRDF 24..EM43,ERRO :HNF DID NOT INTERRUPT
(4) 022274 104455 TRAP CSERDF
(5) 022276 000030 .WORD 24
(5) 022300 006461 .WORD EM43
(5) 022302 007510 .WORD ERRO
2194
2195 022304 2\$: ESCAPE SEG :CHECK FOR FL:LOE, ELL EXIT SEG
(3) 022304 104410 TRAP CSESCAPE
(3) 022306 000036 .WORD 10000\$-.
2196
2197
2198 022310 013737 002340 002272 MOV E.CS,TMPO :GET RLC S
2199 022316 042737 001777 002272 BIC #177\$,TMPO :SAVE ERROR BITS
2200 022324 022737 112000 002272 CMP #BIT15!BIT12!BIT10,TMPO ;WDP NOT FOUND SET.
2201 022332 001404 BEQ 1S :YES, CONTINUE
2202
2203 022334 ERRDF 25..EM10,ERRO
(4) 022334 104455 TRAP CSERDF
(5) 022336 000031 .WORD 25
(5) 022340 005064 .WORD EM10
(5) 022342 007510 .WORD ERRO
2204
2205 022344 1\$: WHEN FORCED
2206
2207 022344 ENDSEG :%END OF SEGMENT%
(3) 022344 104405 10000\$: TRAP CSESEG
(3) 022344 104405 ENDTST L10055: :**END OF TEST**
2208 022346 104401 TRAP CSETST
2209
2210 .SBTTL **TEST 20** - CHECK HEADER COMPARE LOGIC
2211 022350 BGNST :**START OF TEST**
2212 022350 STARS
2213
2214 022350 (2)
2215 :*****
2216 :CHECK THE HEADER COMPARE LOGIC WORKS. UP TO THIS POINT WE
2217 :KNOW THAT THE LOGIC FUNCTIONS PROPERLY BUT NOW WE WILL
2218 :CHECK ALL THE BITS IN THE HEADER WORD. FOUR PATTERNS
2219 :ARE USED A WALKING 1, GROWING 1, WALKING 0, GROWING 0. A SEEK
2220 :IS ISSUED BEFORE EACH READ TO INSURE WE ARE ON THE PROPER
2221 :TRACK. ONCE WE ARE ON THE RIGHT TRACKWE LOAD THE RLDA
:AND ISSUE THE READ. UPON COMPLETION WE WILL CHECK FOR ERRORS

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TEST 20 - CHECK HEADER COMPARE LOGIC PAGE 2-9

SEQ 0088

2222 :WE THEN LOAD THE COMPLEMENT PATTERN INTO THE RLDA
 2223 :EXPECTING A HEADER NOT FOUND TO SET
 2224 STARS
 2225 ;*****
 2226
 2227 022350 004737 015766 JSR PC,HDHOME ;HEADS OVER TRACK 0
 2228 022354 CKERFG ;HEADS GO HOME OKAY
 (4) 022362 TRAP CSEXIT
 (4) 022364 .WORD L10056-.
 2229
 2230 022366 004737 015766 BGNSEG ;%START OF SEGMENT%
 (3) 022366 104404 TRAP CSBSEG
 2231
 2232 022370 012700 000340 SETPRI #PRI07 ;PRIORITY TO 7
 (3) 022370 104441 MOV #PRI07, R0
 (3) 022374 TRAP CSSPRI
 2233 022376 022737 000001 002232 CMP #1,T.DRIVE ;CHECK TYPE OF DRIVE (RL01 OR RL02)
 2234 022404 001003 BNE 22\$;RL02? THEN BRANCH
 2235 022406 012703 002670 MOV #HDTAB,R3 ;MOV ADDRESS OF BEG PATTERN TO R3
 2236 022412 000402 BR 33\$;THEN BRANCH
 2237 022414 012703 003050 MOV #HTAB,R3 ;MOV ADDRESS OF BEG PATTERN TO R3
 2238 022420 104404 BGNSEG ;START OF SEGMENT
 (3) 022420 TRAP CSBSEG
 2239 022422 004537 015056 1\$: JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
 2240 022426 000010 RDHDR ;READ HEADER
 2241 022430 004537 015702 JSR R5,WTCRDY ;WAIT FOR CONTROLLER READY
 2242 022434 104410 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 022434 TRAP CSESCAPE
 (3) 022436 .WORD 10001\$-.
 2244
 2245 022440 004537 014614 JSR R5,CHERR ;CHECK CNTLR FOR ERRORS
 2246 022444 104410 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 022444 TRAP CSESCAPE
 (3) 022446 .WORD 10001\$-.
 2247 022450 013737 002346 002274 MOV E.MP,TMP1 ;READ AND SAVE HEADER
 2248
 2249 022456 042737 000177 002274 BIC #177,TMP1 ;CLEAR OUT SECTOR AND H.S.
 2250 022464 012777 000001 157666 MOV #1,ARLDA ;SET UP MARKER FOR SEEK
 2251 022472 011337 002276 MOV (R3),TMP2 ;GET HEADER PATTERN
 2252 022476 042737 000177 002276 BIC #177,TMP2 ;CLEAR OUT SECTOR AND H.S.
 2253 022504 163737 002274 002276 SUB TMP1,TMP2 ;CALCULATE DIFFERENCE TO SEEK
 2254 022512 103404 BCS 2\$;BRANCH FOR SEEK OUT
 2255 022514 052777 000004 157636 BIS #SIGN,ARLDA ;SEEK TOWARDS SPINDLE
 2256 022522 000402 BR 3\$;GO PUT IN DIFFERENCE WORD
 2257 022524 005437 002276 2\$: NEG TMP2 ;WE HAVE TO NEGATE DIFFERENCE
 2258 022530 053777 002276 157622 3\$: BIS TMP2,ARLDA ;SET IN DIFFERENCE WORD
 2259 022536 032713 000100 BIT #RHHS,(R3) ;DO WE WANT HEAD SELECT AS 0?
 2260 022542 001403 BEQ 4\$;YES, SKIP OVER SETTING H.S.
 2261 022544 052777 000020 157606 BIS #DAHS,ARLDA ;SET HEAD SELECT TO ONE
 2262 022552 004537 015056 4\$: JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
 2263 022556 000006 SEEK ;SEEK
 2264
 2265
 2266 022560 004537 015702 JSR R5,WTCRDY ;WAIT FOR CONTROLLER READY

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TEST 20 - CHECK HEADER COMPARE LOGIC PAGE 2-10

SEQ 0089

2267	022564			ESCAPE	SEG				;CHECK FOR FL:LOE, ELSE EXIT SEG
(3)	022564	104410		TRAP	C\$ESCAPE				
(3)	022566	000366		.WORD	10001\$-.				
2268									
2269	022570	004537	014614	JSR	R5,CHERR				:CHECK CNTLR FOR ERRORS
2270	022574			ESCAPE	SEG				
(3)	022574	104410		TRAP	C\$ESCAPE				:CHECK FOR FL:LOE, ELSE EXIT SEG
(3)	022576	000356		.WORD	10001\$-.				
2271									
2272	022600	004537	015636	JSR	R5,WTRDY				:WAIT FOR DRIVE READY
2273	022604			ESCAPE	SEG				
(3)	022604	104410		TRAP	C\$ESCAPE				:CHECK FOR FL:LOE, ELSE EXIT SEG
(3)	022606	000346		.WORD	10001\$-.				
2274	022610	004537	015056	JSR	R5,LDFUNC				:LOAD THE FUNCTION IN NEXT WORD
2275	022614	000010		RDHDR					:READ HEADER (VERIFY SEEK)
2276	022616	004537	015702	JSR	R5,WTCRDY				:WAIT FOR CONTROLLER READY
2277	022622			ESCAPE	SEG				:CHECK FOR FL:LOE, ELSE EXIT SEG
(3)	022622	104410		TRAP	C\$ESCAPE				
(3)	022624	000330		.WORD	10001\$-.				
2278									
2279	022626	004537	014614	JSR	R5,CHERR				:CHECK CNTLR FOR ERRORS
2280	022632			ESCAPE	SEG				
(3)	022632	104410		TRAP	C\$ESCAPE				:CHECK FOR FL:LOE, ELSE EXIT SEG
(3)	022634	000320		.WORD	10001\$-.				
2281									
2282	022636	013737	002346	002302	MOV	E,MP,BDDAT			:READ HEADER
2283	022644	043737	002262	002302	BIC	SECMSK,BDDAT			:SAVE CYLINDER FOR COMPARE
2284	022652	011337	002300		MOV	(R3),GDDAT			:GET EXPECTED HEADER
2285	022656	043737	002262	002300	BIC	SECMSK,GDDAT			:SAVE CYLINDER FOR COMPARE
2286	022664	023737	002300	002302	CMP	GDDAT,BDDAT			:SEEK END UP OKAY
2287	022672	001404			BEO	5\$:YES, CONTINUE
2288									
2289	022674				ERRDF	27.,EM11,ERR4			:SEEK INCORRECT
(4)	022674	104455			TRAP	C\$ERDF			
(5)	022676	000033			.WORD	27			
(5)	022700	005124			.WORD	EM11			
(5)	022702	007654			.WORD	ERR4			
2290									
2291	022704			5\$:	ESCAPE	SEG			:CHECK FOR FL:LOE, ELSE EXIT SEG
(3)	022704	104410			TRAP	C\$ESCAPE			
(3)	022706	000246			.WORD	10001\$-.			
2292									
2293	022710	011377	157444		MOV	(R3),ARLDA			:SET UP DISK ADDRESS
2294	022714	042777	000077	157436	BIC	#77,ARLDA			
2295	022722	012777	177777	157432	MOV	#-1,ARLMP			:WORD COUNT
2296	022730	012777	003426	157420	MOV	MBUF,ARLBA			:BUS ADDRESS
2297									
2298	022736	004537	015056		JSR	R5,LDFUNC			:LOAD THE FUNCTION IN NEXT WORD
2299	022742	000014			READ				:READ
2300	022744	004537	015702		JSR	R5,WTCRDY			:WAIT FOR CONTROLLER READY
2301	022750				ESCAPE	SEG			:CHECK FOR FL:LOE, ELSE EXIT SEG
(3)	022750	104410			TRAP	C\$ESCAPE			
(3)	022752	000202			.WORD	10001\$-.			
2302									
2303	022754	004537	014614		JSR	R5,CHERR			:CHECK CNTLR FOR ERRORS
2304	022760				ESCAPE	SEG			:CHECK FOR FL:LOE, ELSE EXIT SEG

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SEQ 0090

(3) 022760 104410 TRAP C\$ESCAPE
 (3) 022762 000172 .WORD 10001\$-.

2305
 2306 022764 011377 157370 MOV (R3),@RLDA ;SET UP DISK ADDRESS AS
 2307 022770 005177 157364 COM @RLDA ;COMPLIMENT TO CAUSE HDR NT FND
 2308 022774 012777 177777 157360 MOV #1,@RLMP ;WORD COUNT
 2309 023002 012777 003426 157346 MOV #BUF,@RLBA ;BUS ADDRESS

2310
 2311 023010 004537 ? 015056 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
 2312 023014 000014 READ
 2313 023016 004537 015702 JSR RS,WTCRDY ;READ
 2314 023022 ESCAPE SEG ;WAIT FOR CONTROLLER READY
 (3) 023022 104410 C\$ESCAPE ;CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 023024 000130 .WORD 10001\$-.

2315 023026 013737 002340 002272 MOV E.CS,TMPO ;GET CS
 2316 023034 042737 001777 002272 BIC #177\$,TMPO ;SAVE ERROR BITS
 2317 023042 022737 112000 002272 CMP #BIT15!BIT12!BIT10,TMPO ;DID HEADER NOT FOUND SET
 2318 023050 001402 BEQ 8\$;YES, CONTINUE
 2319 023052 004537 014614 JSR R5,CHERR
 2320 023056 CKLOOP
 (3) 023056 104406 TRAP C\$CLP1

2321
 2322 023060 022737 112000 002272 CMP #BIT15!BIT12!BIT10,TMPO
 2323 023066 001413 BEQ 6\$

2324
 2325 023070 011337 002300 MOV (R3),GDDAT ;SET UP DATA FOR ERROR
 2326 023074 013737 002300 002302 MOV GDDAT,BDDAT ;PRINT OUT
 2327 023102 005137 002302 COM BDDAT

2328
 2329 023106 104455 ERRDF 28.,EM12,ERR4 ;HDR NOT FOUND WOULD NOT SET
 (4) 023106 104455 TRAP C\$ERDF
 (5) 023110 000034 .WORD 28
 (5) 023112 005144 .WORD EM12
 (5) 023114 007654 .WORD ERR4

2330
 2331 023116 104410 6\$: ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 023116 104410 TRAP C\$ESCAPE
 (3) 023120 000034 .WORD 10001\$-.

2332
 2333 023122 005723 TST (R3)+ ;GET NEXT PATTERN
 2334 023124 022737 000001 002232 CMP #1,T.DRIVE ;TYPE OF DRIVE RL01 OR RL02
 2335 023132 001003 BNE 6\$;RL02 ? THEN BRANCH
 2336 023134 020327 003046 CMP R3,#HDREND ;CMP IT WITH #HDREND
 2337 023140 000402 BR 77\$;THEN BRANCH
 2338 023142 020327 003234 60\$: CMP R3,#HEND ;CMP IT WITH #HEND
 2339 023146 001402 77\$: BEQ 7\$;YES, EXIT TEST
 2340 023150 000137 022422 JMP 1\$;NO, GO BACK

2341
 2342 023154 7\$:
 2343 023154 ENDSEG ;%END OF SEGMENT%
 (3) 023154 104405 10001\$: TRAP C\$ESEG

2344
 2345 023156 104405 10000\$: ENDSEG ;%END OF SEGMENT%
 (3) 023156 104405 TRAP C\$ESEG

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TEST 20 - CHECK HEADER COMPARE LOGIC

SEQ 0091

2346 023160 ENDTST ;**END OF TEST**
 (3) 023160 L10056:
 (3) 023160 104401 TRAP CSETST

2347 .SBTTL **TEST 21** - CHECK MULTIPLE SECTORS ON READ

2348 2349 2350 023162 BGNTST ;**START OF TEST**

2351 2352 023162 STARS

2353 2354 :VERIFY THAT MULTIPLE SECTORS CAN BE READ, WE WILL CHECK
2355 023162 THAT THE RLDA INCREMENTS PROPERLY.

2356 2357 2358 023162 004737 015766 JSR PC,HDHOME :HEADS OVER TRACK 0
2359 023166 CKERFG :HEADS GO HOME OKAY
 (4) 023174 104432 TRAP CSEXIT
 (4) 023176 000156 .WORD L10057-.

2360 2361 2362 023200 005037 002272 CLR TMP0 :CLEAR LOCATIONS
2363 023204 005037 002274 CLR TMP1

2364 2365 023210 023210 104404 BGNSEG ;%START OF SEGMENT%
TRAP CSBSEG

2366 2367 023212 013737 002274 002300 1S:
2368 023212 053737 002272 002300 MOV TMP1,GDDAT :GET CYLINDER
2369 023220 013777 002300 157124 BIS TMP0,GDDAT :GET SECTOR
2370 023226 062737 000002 002300 MOV GDDAT,ARLDA :SET DISK ADDRESS-SECTOR 0
2371 023234 012777 003426 157106 ADD #2,GDDAT :SET EXPECTED + 2
2372 023242 012777 177577 157104 MOV #BUF,ARLBA :SET BUS ADDRESS
2373 023250 104404 MOV #129.,ARLMP :WORD COUNT-SECTOR+1 WORD

2374 2375 023256 004537 015056 JSR R5,LDFUNC :LOAD THE FUNCTION IN NEXT WORD
2376 023262 000014 READ :READ
2377 023264 004537 015702 JSR R5,WTCRDY :WAIT FOR CONTROLLER READY?
2378 023270 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 023270 104410 TRAP CSESCAPE
 (3) 023272 000060 .WORD 10000\$-.
 2379 2380 023274 004537 014614 JSR R5,CHERR :CHECK CNTLR FOR ERRORS
2381 023300 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 023300 104410 TRAP CSESCAPE
 (3) 023302 000050 .WORD 10000\$-.

2382 2383 023304 013737 002344 002302 MOV E.DA,BDDAT :READ DISK ADDRESS
2384 023312 023737 002302 002300 CMP BDDAT,GDDAT :IS DISK ADDRESS CORRECT
2385 023320 001404 BEQ 2\$:YES, BRANCH NO, REPORT ERROR

2386 2387 023322 104455 ERRDF 29.,EM14,ERR4 :DA DID NOT INCREMENT
 (4) 023322 CSERDF :WORD 29
 (5) 023324 000035 .WORD EM14
 (5) 023326 005224

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TEST 21 - CHECK MULTIPLE SECTORS ON READ

SEQ 0092

(5) 023330 007654 .WORD ERR4
2388
2389 023332 104410 28: ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 023332 000016 TRAP C\$ESCAPE
(3) 023334 000016 .WORD 10000\$-.
2390
2391 023336 005237 002272 INC TMPO ;NEXT SECTOR?
2392 023342 022737 000046 002272 CMP #46,TMPO ;DONE?
2393 023350 001320 BNE 1\$;NO, GO BACK
2394
2395
2396 023352 104405 10000\$: ENDSEG ;%END OF SEGMENT%
(3) 023352 104405 TRAP C\$SEG
2397 023354 L10057: ENDTST ;**END OF TEST**
(3) 023354 104401 TRAP C\$ETST
2398 023356 STARS
2399 :*****
2400 :CHECK THAT WE CAN FORCE A HEADER NOT FOUND AT THE
2401 :END OF A TRACK DOING A MULTIPLE SECTOR READ. WE
2402 :SET UP TO READ TWO SECTORS STARTING AT SECTOR 39
2403 :WE SHOULD TRANSFER 128 WORDS THEN ABORT WITH A
2404 :HEADER NOT FOUND FOR SECTOR 40
2405 023356 STARS
2406 :*****
2407 .SBttl **TEST 2?** - FORCE HDR NT FND AT END OF TRACK
2408
2409 023356 BGNST :**START OF TEST**
2410
2411
2412 023356 004737 015766 JSR PC,HDHOME ;HEADS OVER TRACK 0
2413 023362 CKERFG ;HEADS GO HOME OKAY
(4) 023370 104432 TRAP C\$EXIT
(4) 023372 000126 .WORD L10060-.
2414
2415 023374 104404 BGNSEG ;%START OF SEGMENT%
(3) 023374 104404 TRAP C\$BSEG
2416
2417 023376 012737 000047 002300 MOV #39.,GDDAT ;CREATE LAST SECTOR
2418 023404 013777 002300 156746 MOV GDDAT,ARLDA ;LOAD DISK ADDRESS
2419 023412 012777 177577 156742 MOV #129.,ARLMP ;WORD COUNT
2420 023420 012777 003426 156730 MOV #BUF,ARLBA ;BUS ADDRESS
2421 023426 004537 015056 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
2422 023432 000014 READ ;READ
2423 023434 004537 015702 JSR RS,WTCRDY ;WAIT FOR CONTROLLER READY
2424 023440 104410 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 023440 104410 TRAP C\$ESCAPE
(3) 023442 000054 .WORD 10000\$-.
2425
2426 023444 013737 002340 002302 MOV E.CS,BDDAT ;READ CS
2427 023452 042737 001777 002302 BIC #1777,BDDAT ;SAVE ERROR BITS
2428 023460 022737 112000 002302 CMP #112000,BDDAT ;HDR NOT FOUND SET?
2429 023466 001402 BEQ 48 ;YES, CONTINUE

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TEST 22 - FORCE HDR NT FND AT END OF TRACK

C 8
SEQ 0093

2430 023470 004537 014614
2431 023474
(3) 023474 104406
2432
2433 023476 022737 112000 002302
2434 023504 001404
2435
2436 023506
(4) 023506 104455
(5) 023510 000036
(5) 023512 005540
(5) 023514 007510
2437
2438 023516
2439
2440 023516
(3) 023516
(3) 023516 104405
2441 023520
(3) 023520
(3) 023520 104401
2442
2443 .SBTTL **TEST 23** - FORCE NON-EXISTENT MEMORY ERROR
2444
2445 023522
2446
2447 023522
(2)
2448 :STARS
:CHECK FOR RLV-11
2449 :&
2450 :SIZE IF MEMORY >= 124K - IF TRUE DO NOT PERFORM TESTS 23 & 24
2451 023522
(2)
2452
2453 023522 005037 002662
2454 023526 005737 002420
2455 023532 001013
2456 023534 013700 002120
2457 023540 006200
2458 023542 006200
2459 023544 006200
2460 023546 006200
2461 023550 006200
2462 023552 005200
2463 023554 022700 000174
2464 023560 003447
2465
2466
2467 023562
(2)
2468 :STARS
:FORCE A NON-EXISTENT MEMORY ERROR.
2469 :WE SET THE RLBA TO EQUAL THE
2470 :LAST ADDRESS IN MEMORY AND ISSUE A READ. THE
2471 :READ SHOULD ABORT AFTER ONE WORD TRANSFERRED
2472 023562
(2)

4S: JSR CKLOOP TRAP CSCLP1
CMP BEQ #112000,BDDAT 1S
ERRDF TRAP CSERDF .WORD 30 .WORD EM23 .WORD ERRO
1S:
ENDSEG ;%END OF SEGMENT%
10000\$: ENDTST L10060: TRAP CSETST ;**END OF TEST**
BGNTST ;**START OF TEST**
STARS ;*****
;CHECK FOR RLV-11
;&
;SIZE IF MEMORY >= 124K - IF TRUE DO NOT PERFORM TESTS 23 & 24
STARS ;*****
CLR NOTST ;INIT ABORT TEST
TST T.CNTR ;RLV11?
BNE 4S ;BRANCH - IF NO
MOV L\$HIMEM,RO ;GET HIGHEST OCTAL MEMORY ADDRESS IN PAR FORMAT
ASR RO ;DIVIDE BY
ASR RO ;32(10),40(8)
ASR RO ;TO CONVERT TO
ASR RO ;1K(10)
ASR RO ;BLOCKS
INC RO ;TO INCLUDE LOCATION ZERO
CMP #124.,RO ;MEMORY >= 124K.?
BLE 5S ;BRANCH - IF YES
STARS ;*****
;FORCE A NON-EXISTENT MEMORY ERROR.
;WE SET THE RLBA TO EQUAL THE
;LAST ADDRESS IN MEMORY AND ISSUE A READ. THE
;READ SHOULD ABORT AFTER ONE WORD TRANSFERRED
STARS ;*****

2473
 2474
 2475 023562 004737 015766 4\$: JSR PC,HDHOME :HEADS OVER TRACK 0
 2476 023566 CKERFG :HEADS GO HOME OKAY
 (4) 023574 104432 TRAP CSEXIT
 (4) 023576 000106 .WORD L10061-.
 2477
 2478 023600 BGNSEG :%%START OF SEGMENT%%
 (3) 023600 104404 TRAP CSBSEG
 2479
 2480 023602 012777 160000 156546 MOV #160000,ARLBA :LEAD BA
 2481 023610 012737 000060 002374 MOV #BA16!BA17,XMEM :SET EA BIT
 2482 023616 005077 156536 CLR ARLDA :LOAD DISK AVAILABLE
 2483 023622 012777 177600 156532 MOV #-128.,ARLMP :WORD COUNT
 2484 023630 004537 015056 JSR RS,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
 2485 023634 000014 READ :READ
 2486 023636 004537 015702 JSR RS,WTCRDY :WAIT FOR CONTROLLER
 2487 023642 104410 ESCAPE :CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 023644 000026 .WORD CSESCAPE
 2488 023646 032737 020000 002340 .WORD 10000\$.
 2489 023654 001004 BNE 3\$:DID NXM SET?
 2490 023656 104455 ERRDF 31..EM24,ERRO :YES, CONTINUE
 (4) 023656 TRAP CSERDF :NXM DID NOT SET
 (5) 023660 000037 .WORD 31
 (5) 023662 005616 .WORD EM24
 (5) 023664 007510 .WORD ERRO
 2491 023666 104410 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 023666 TRAP CSESCAPE
 (3) 023670 000002 .WORD 10000\$.
 2492 023672 ENDSEG :%%END OF SEGMENT%%
 (3) 023672 104405 TRAP CSESEG
 2493 023674 EXIT TST
 (3) 023674 104432 TRAP CSEXIT
 (3) 023676 000006 .WORD L10061-.
 2494 023700 005237 002662 5\$: INC NOTST :ABORT TEST 24
 2495
 2496 023704 ENDTST :**END OF JEST**
 (3) 023704 L10061:
 (3) 023704 104401 TRAP CSETST
 2497
 2498 .SBTTL **TEST 24** - FORCE NON-EXISTENT MEMORY ERROR INTERRUPT
 2499
 2500 023706 BGNST :**START OF TEST**
 2501 023706 STARS
 (2) :*****
 2502 :CHECK THAT WE CAN FORCE AN INTERRUPT WITH A
 2503 : -EXISTENT MEMORY ERROR.
 2504 023706 STARS
 (2) :*****
 2505
 2506
 2507 023706 005737 002662 TST NOTST :RLV-11 & MEMORY SIZE >= 124K.?
 2508 023712 001066 BNE 1\$:BRANCH - IF YES
 2509 023714 004737 015766 JSR PC,HDHOME :HEADS OVER TRACK 0

2510 023720 CKERFG :HEADS GO HOME OKAY
 (4) 023726 104432 TRAP CSEXIT
 (4) 023730 000140 .WORD L10062-.
 2511
 2512 023732 BGNSEG :%START OF SEGMENT%
 (3) 023732 104404 TRAP CSSEG
 2513
 2514 023734 005037 002256 CLR INTFLG :CLEAR INTERRUPT OCCURANCE FLAG
 2515 023740 SETPRI #PRI00
 (3) 023740 012700 000000 MOV #PRI00, R0
 (3) 023744 104441 TRAP CSSPRI
 2516 023746 012777 160000 156402 MOV #160000, ARLBA :PRELOAD BA
 2517 023754 012737 000060 002374 MOV #BA16!BA17, XMEM :SET EA BITS
 2518 023762 005077 156372 CLR ARLDA :LOAD DA
 2519 023766 012777 177777 156366 MOV #-1, ARLMP :WORD COUNT
 2520 023774 004537 015056 JSR RS, LDFUNC :LOAD THE FUNCTION IN NEXT WORD
 2521 024000 000114 READ!INTEN :READ
 2522 024002 004537 015702 JSR RS, WTCRDY :WAIT FOR CONTROLLER
 2523 024006 SETPRI #PRI07 :PRIORITY TO 7
 (3) 024006 012700 000340 MOV #PRI07, R0
 (3) 024012 104441 TRAP CSSPRI
 2524 024014 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 024014 104410 TRAP CSESCAPE
 (3) 024016 000050 .WORD 10000\$-.
 2525 024020 005737 002256 TST INTFLG :INTERRUPT OCCUR?
 2526 024024 001004 BNE 4S :YES OKAY
 2527 024026 ERRDF 32, EM44, ERRO :NO INTERRUPT W/NXM
 (4) 024026 104455 TRAP CSERDF
 (5) 024030 000040 .WORD 32
 (5) 024032 006522 .WORD EM44
 (5) 024034 007510 .WORD ERRO
 2528 024036 4S: ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 024036 104410 TRAP CSESCAPE
 (3) 024040 000020 .WORD 10000\$-.
 2529 024042 032737 020000 002340 BIT #NXM, E.CS :DID NXM SET?
 2530 024050 001004 BNE 3S :YES, CONTINUE
 2531 024052 ERRDF 33, EM24, ERRO :NO NXM
 (4) 024052 104455 TRAP CSERDF
 (5) 024054 000041 .WORD 33
 (5) 024056 005616 .WORD EM24
 (5) 024060 007510 .WORD ERRO
 2532 024062 3S: ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 024062 104410 TRAP CSESCAPE
 (3) 024064 000002 .WORD 10000\$-.
 2533 024066 104405 ENDSEG :%END OF SEGMENT%
 (3) 024066 104405 10000\$: TRAP CSESEG
 2534 024070 1S:
 2535
 2536 024070 ENDTST :**END OF TEST**
 (3) 024070 L10062:
 (3) 024070 TRAP CSETST
 2537
 2538 .SBTTL **TEST 25** - CHECK READ WRITE LOOP
 2539
 2540

2541
 2542
 2543 024072 BGNST
 2544
 2545 024072 STARS
 (2)
 2546 :VERIFY THAT THE WRITE ACTUALLY WRITES. AT THIS
 2547 :TIME WE KNOW THAT THE WRITE FUNCTION GOES THRU
 2548 :THE MOTIONS BUT WE DON'T KNOW THAT THE DATA
 2549 :ACTUALLY GETS RECORDED ON THE PLATTER.
 2550 024072 STARS
 (2)
 2551
 2552
 2553 024072 004737 015766 JSR PC,HDHOME :HEADS OVER TRACK 0
 2554 024076 CKERFG TRAP CSEXIT :HEADS GO HOME OKAY
 (4) 024104 104432 .WORD L10063-.
 (4) 024106 000362
 2555
 2556 024110 BGNSEG :%START OF SEGMENT%
 (3) 024110 104404 TRAP CSBSEG
 2557
 2558 024112 012700 003426 MOV #BUF, R0 :SET UP WRITE BUFFER
 2559 024116 012701 000200 MOV #128, R1 :128 WORDS/ONE SECTOR
 2560 024122 012720 125252 MOV #125252,(R0)+ :WRITE PATTERN TO BUFFER
 2561 024126 005301 DEC R1 :DONE?
 2562 024130 001374 BNE 3S :NO, BRANCH BACK
 2563 024132 005077 156222 CLR ARLDA :DISK ADDRESS
 2564 024136 012777 177600 MOV #-128, ARLMP :WORD COUNT
 2565 024144 012777 003426 MOV #BUF, ARLBA :BUS ADDRESS
 2566 024152 004537 015056 JSR R5,LDFUNC :LOAD THE FUNCTION IN NEXT WORD
 2567 024156 000012 WRITE :WRITE THE PATTERN
 2568 024160 004537 015702 JSR R5,WTCRDY :WAIT FOR CONTROLLER READY
 2569 024164 0104410 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 024164 104410 TRAP CSECAPE
 (3) 024166 000300 .WORD 10000\$-.
 2570
 2571 024170 004537 014614 JSR R5,CHERR :CHECK CTLR FOR ERRORS
 2572 024174 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 024174 104410 TRAP CSECAPE
 (3) 024176 000270 .WORD 10000\$-.
 2573 024200 BGNSEG :%START OF SEGMENT%
 (3) 024200 104404 TRAP CSBSEG
 2574 024202 012700 003426 MOV #BUF, R0 :CLEAR OUT BUFFER BEFORE
 2575 024206 012701 000200 MOV #128,,R1 :READING
 2576 024212 005020 CLR (R0)+ :CLEAR BUFFER
 2577 024214 005301 DEC R1 :DONE?
 2578 024216 001375 BNE 4S :NO, BRANCH BACK
 2579 024220 005077 156134 CLR ARLDA :LOAD DISK ADDRESS
 2580 024224 012777 177600 MOV #-128, ARLMP :WORD COUNT/ONE SECTION
 2581 024232 012777 003426 MOV #BUF, ARLBA :LOAD BUS ADDRESS
 2582 024240 004537 015056 JSR R5,LDFUNC :LOAD THE FUNCTION IN NEXT WORD
 2583 024244 000014 READ :GO READ
 2584 024246 004537 015702 JSR R5,WTCRDY :WAIT FOR CONTROLLER READY
 2585 024252 0104410 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 024252 104410 TRAP CSECAPE

(3) 024254 000210 .WORD 10001\$-.
 2586
 2587 024256 004537 014614 JSR RS,CHERR :CHECK CNTLR FOR ERRORS
 2588 024262 005737 002236 TST T,CRC :WAS ERROR A DCK??
 2589 024266 001003 BNE 8\$:YES, SEE IF WE A DUMP
 2590 024270 104410 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 024270 104410 TRAP C\$ESCAPE
 (3) 024272 000172 .WORD 10001\$-.
 2591 024274 000404 BR 99\$:SKIP AROUND
 2592 024276 005737 012440 TST T,DMP :DO WE STILL WANT TO CHECK IT
 2593 024302 001772 BEQ 10\$:NO
 2594 024304 CKLOOP :YES, CHECK FOR LOOP FIRST
 (3) 024304 104406 TRAP C\$CLP1
 2595
 2596 024306 005037 002242 99\$: CLR CDCNT :CLEAR NUMBER WE'RE TO PRINT
 2597 024312 005037 002234 CLR CHECK :ALLOW HEADER ON FIRST PRINT
 2598 024316 012702 003426 MOV #BUF,R2 :COMPARE BUFFER TO CHECK WRITE
 2599 024322 012701 000200 MOV #128,R1 :128 WORDS
 2600 024326 012737 125252 002300 MOV #125252,GDDAT :SET UP EXPECTED
 2601 024334 011237 002302 002302 5\$: MOV (R2),BDDAT :GET DATA
 2602 024340 023737 002300 002302 CMP GDDAT,BDDAT :IS DATA OKAY
 2603 024346 001442 BEQ 6\$:YES, CONTINUE
 2604 024350 010237 002274 MOV R2,TMP1 :LOAD BAD MEM LOCATION
 2605 024354 023737 002242 012442 CMP CDCNT,T,LMT :CHECKED ENOUGH??
 2606 024362 001002 BNE 333\$:NO
 2607 024364 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 024364 104410 TRAP C\$ESCAPE
 (3) 024366 000076 .WORD 10001\$-.
 2608 024370 005237 002242 333\$: INC CDCNT :ACCOUNT FOR IT
 2609
 2610 024374 005737 002234 TST CHECK :HEADER OR JUST DATA
 2611 024400 001007 BNE 9\$:JUST DATA
 2612 024402 ERRDF 34..EM25,ERR8 :BAD DATA
 (4) 024402 104455 TRAP C\$ERDF
 (5) 024404 000042 .WORD 34
 (5) 024406 005656 .WORD EM25
 (5) 024410 010030 .WORD ERR8
 2613 024412 005237 002234 INC CHECK :ACCOUNT FOR PRINT OF HEADER
 2614 024416 000416 BR 6\$
 2615
 2616 024420 013746 002302 9\$: PRINTB #FRMT6,TMP1,GDDAT,BDDAT
 (10) 024420 013746 002302 MOV BDDAT,-(SP)
 (9) 024424 013746 002300 MOV GDDAT,-(SP)
 (8) 024430 013746 002274 MOV TMP1,-(SP)
 (7) 024434 012746 011277 MOV #FRMT6,-(SP)
 (6) 024440 012746 000004 MOV #4,-(SP)
 (3) 024444 010600 MOV SP,RO
 (4) 024446 104414 TRAP C\$PNTB
 (4) 024450 062706 000012 ADD #12,SP
 2617
 2618 024454 104406 6\$: CKLOOP :BUMP BUFFER POINTER
 (3) 024454 104406 TRAP C\$CLP1
 2619 024456 005722 7\$: TST (R2)+ :DONE?
 2620 024460 005301 DEC R1 :NO, GO BACK
 2621 024462 001324 BNE 5\$:%END OF SEGMENT%
 2622 024464 ENDSEG

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TEST 25 - CHECK READ WRITE LOOP H 8

SEQ 0098

(3) 024464 10001\$:
(3) 024464 104405 TRAP CSESEG
2623 024466 ENDSEG ;%END OF SEGMENT%
(3) 024466 10000\$:
(3) 024466 104405 TRAP CSESEG
2624 024470 ENDTST ;**END OF TEST**
(3) 024470 L10063:
(3) 024470 104401 TRAP CSETST
2625
2626 .SBTTL **TEST 26** - CHECK SILO LINES
2627
2628 024472 BGNTST ;**START OF TEST**
2629
2630
2631
2632 024472 STARS
2633 :;*****
2634 :TEST THAT LINES IN / TO SILO ARE GOOD, THAT IS THAT EACH LINE IS
2635 :GOOD AND CAN BE AT EITHER A 1 OR A 0 STATE INDEPENDENTLY OF EACH
2636 :OTHER BIT POSITION THIS IS DONE BY WRITING PATTERNS OF FLOATING 1,
2637 024472 STARS
2638 :;*****
2639
2640 024472 004737 015766 JSR PC,HDHOME ;HEADS OVER TRACK 0
2641 024476 CKERFG ;HEADS GO HOME OKAY
(4) 024504 104432 TRAP CSEXIT
(4) 024506 000404 .WORD L10064-.
2642
2643 024510 012703 003236 MOV #DATPAT,R3
2644
2645
2646 024514 104404 BGNSEG ;%START OF SEGMENT%
(3) 024514 104404 TRAP CSBSEG
2647 024516 012700 003426 6\$: MOV #BUF,R0 ;WRITE PATTERN INTO MEMORY
2648 024522 012701 000200 MOV #128.,R1 ;128 WORDS
2649 024526 011320 MOV (R3),(R0)+ ;WRITE THE PATTERN
2650 024530 005301 DEC R1 ;DONE?
2651 024532 001375 BNE 2\$;NO GO BACK
2652
2653 024534 012777 003426 155614 MOV #BUF,ARLBA ;SETUP TO WRITE PATTERN ONTO DISK
2654 024542 005077 155612 CLR ARLDA ;LOAD DA
2655 024546 012777 177600 155606 MOV #-128.,ARLMP ;WORD COUNT
2656 024554 004537 015056 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
2657 024560 000012 WRITE
2658 024562 004537 015702 JSR R5,WTCRDY
2659 024566 104410 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 024566 104410 TRAP CSESCAPE
(3) 024570 000320 .WORD 10000\$-.
2660 024572 004537 014614 JSR R5,CHERR ;CHECK CNTRLR FOR ERRORS
2661 024576 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 024576 104410 TRAP CSESCAPE
(3) 024600 000310 .WORD 10000\$-.
2662 024602 BGNSEG ;%START OF SEGMENT%
(3) 024602 104404 TRAP CSBSEG

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TEST 26 - CHECK SILO LINES

SEQ 0009

1 8

2663 024604 012700 003426
2664 024610 012701 000200
2665 024614 005020
2666 024616 005301
2667 024620 001375
2668
2669 024622 012777 003426 155526
2670 024630 012777 177600 155524
2671 024636 005077 155516
2672 024642 004537 015056
2673 024646 000014
2674 024650 004537 015702
2675 024654 (3) 024654 104410
2676 024660 004537 014614
2677 024664 005737 002236
2678 024670 001003
2679 024672 (3) 024672 104410
2680 024676 000404
2681 024700 005737 012440
2682 024704 001772
2683 024706 (3) 024706 104406
2684
2685 024710 005037 002242
2686 024714 005037 C02234
2687 024720 011337 002300
2688 024724 012737 003426 002276
2689 024732 012737 000001 002274
2690
2691 024740 017737 155332 002302
2692 024746 023737 002300 002302
2693 024754 001440
2694
2695 024756 023737 002242 012442
2696 024764 001002
2697 024766 (3) 024766 104410
2698 024772 005237 002242
2699
2700 024776 005737 002234
2701 025002 001007
2702 025004 (4) 025004 104455
2703 025014 005237 002234
2704 025020 000416
2705 025012 010146
2706
2707 025022

38: MOV #BUF, R0 ;CLEAR MEMORY BEFORE READING IT BACK
MOV #128., R1 ;128 WORDS
CLR (R0)+ ;CLEAR
DEC R1 ;EONE
BNE 38 ;NO

MOV #BUF, @RLBA ;SETUP TO READ IT BACK
MOV #-128., @RLMP ;128 WORDS
CLR @RLDA ;SECTOR ZERO
JSR RS,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD

READ JSR RS,WTCRDY ;CHECK FOR FL:LOE, ELSE EXIT SEG
ESCAPE SEG
TRAP CSESCAPE
.WORD 10001\$-
JSR R5,CHERR ;CHECK CNTLR FOR ERRORS
TST T.CRC ;WAS ERROR A DCK??
BNE 8\$;YES, SEE IF WE A DUMP
8\$;CHECK FOR FL:LOE, ELSE EXIT SEG

10\$: ESCAPE SEG
TRAP CSESCAPE
.WORD 10001\$-
BR 99\$;SKIP AROUND
TST T.DMP ;DO WE STILL WANT TO CHECK IT
BEQ 10\$;NO
CKLOOP TRAP CSCLP1 ;YES, CHECK FOR LOOP FIRST

8\$: BR 99\$;CLEAR NUMBER WE'RE TO PRINT
TST T.DMP ;ALLOW HEADER ON FIRST PRINT
BEQ 10\$;COMPARE WHAT WE READ BACK
CKLOOP TRAP CSCLP1 ;BUFFER START
MOV #1,TMP1 ;START WITH FIRST

99\$: CLR CDCNT ;GET DATA
CLR CHECK ;GOOD?
MOV (R3),GDDAT ;YES, BRANCH

5\$: MOV @TMP2,BDDAT ;CHECKED ENOUGH??
CMP GDDAT,BDDAT ;NO
BEQ 4\$;CHECK FOR FL:LOE, ELSE EXIT SEG

333\$: CMP CDCNT,T.LMT ;CHECKED ENOUGH??
BNE 333\$;NO
ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
TRAP CSESCAPE
.WORD 10001\$-
INC CDCNT ;ACCOUNT FOR IT

TST CHECK ;HEADER OR JUST DATA
BNE 9\$;JUST DATA
ERRDF 35, EM45,ERR10 ;BAD DATA BACK

TRAP CSERDF
.WORD 35
.WORD EM45
.WORD ERR10

INC CHECK ;ACCOUNT FOR PRINT OF HEADER
BR 4\$

9\$: PRINTB #FRM17,TMP1,GDDAT,BDDAT

CZRLHBO RL11/RLV11 CTLR TST 2 MAC(Y11 30A(1052) 17-DEC-79 13:44 PAGE 2-21
CZRLHB.MAC 07-DEC-79 08:12 **TEST 26** - CHECK SILO LINES J 8

SEQ 0100

(10) 025022 013746 002302 MOV BDDAT,-(SP)
(9) 025026 013746 002300 MOV GDDAT,-(SP)
(8) 025032 013746 002274 MOV TMP1,-(SP)
(7) 025036 012746 011354 MOV #FRM17,-(SP)
(6) 025042 012746 000004 MOV #4,-(SP)
(3) 025046 010500 MOV SP,R0
(4) 025050 104414 TRAP CSPNTB
(4) 025052 062706 000012 ADD #12,SP
2708 025056 104406 4\$: CKLOOP
 (3) 025056 104406 TRAP C\$CLP1
2709
2710 025060 062737 000002 002276 ADD #2,TMP2 ;NEXT LOCATION
2711 025066 005237 002274 000201 INC TMP1 ;NEXT WORD
2712 025072 023727 002274 000201 CMP TMP1,#129. ;DONE
2713 025100 001317 BNE 5\$;NO, GO BACK
2714
2715 025102 104405 10001\$: ENDSEG ;%END OF SEGMENT%
 (3) 025102 TRAP C\$ESEG
 (3) 025102 104405
2716
2717 025104 005723 TST (R3)+ ;DONE ALL PATTERNS
2718 025106 001203 BNE 6\$;NO, GO BACK
2719
2720 025110 104405 10000\$: ENDSEG ;%END OF SEGMENT%
 (3) 025110 TRAP C\$ESEG
 (3) 025110 104405
2721 025112 ENDTST L10064: ;**END OF TEST**
 (3) 025112 104401 TRAP C\$ETST
2722
2723 .SBTTL **TEST 27** - CHECK THROUGHPUT OF SILO
2724
2725 025114 BGNST ;**START OF TEST**
2726
2727
2728
2729 025114 STARS
 (2)
2730 ;TEST THAT THE SILO OPERATES CORRECTLY. WE WILL WRITE A PATTERN
2731 ;THAT CONTAINS A UNIQUE PATTERN IN EACH LOCATION. WE EXPECT IT
2732 ;BACK IN PROPER ORDER. WE DO A ONE SECTOR TRANSFER.
2733 025114 STARS
 (2)
2734
2735
2736 025114 004737 015766 JSR PC,HDHOME ;HEADS OVER TRACK 0
2737 025120 CKERFG ;HEADS GO HOME OKAY
 (4) 025126 104432 TRAP C\$EXIT
 (4) 025130 000410 .WORD L10065-.
2738
2739 025132 104404 BGNSEG ;%START OF SEGMENT%
 (3) 025132 104404 TRAP CSBSEG
2740
2741
2742 025134 012700 000001 MOV #1,R0 ;INITIAL 1
2743 025140 012701 000200 MOV #128.,R1 ;128 WORDS

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TEST 27 - CHECK THROUGHPUT OF SILO

SEQ 0101

2744 025144 012702 003426
2745 025150 010022
2746 025152 005200
2747 025154 005301
2748 025156 001374
2749
2750 025160 012777 003426 155170
2751 025166 012777 177600 155166
2752 025174 005077 155160
2753 025200 004537 015056
2754 025204 000012
2755 025206 004537 015702
2756 025212
(3) 025212 104410
(3) 025214 000322
2757
2758 025216 004537 014614
2759 025222
(3) 025222 104410
(3) 025224 000312
2760 025226
(3) 025226 104404
2761 025230 012700 003426
2762 025234 012701 000200
2763 025240 005020
2764 025242 005301
2765 025244 001375
2766
2767 025246 012777 003426 155102
2768 025254 012777 177600 155100
2769 025262 005077 155072
2770 025266 004537 015056
2771 025272 000014
2772 025274 004537 015702
2773 025300
(3) 025300 104410
(3) 025302 000232
2774
2775 025304 004537 014614
2776 025310 005737 002236
2777 025314 001003
2778 025316
(3) 025316 104410
(3) 025320 000214
2779 025322 000404
2780 025324 005737 012440
2781 025330 001772
2782 025332
(3) 025332 104406
2783
2784 025334 005037 002242
2785 025340 005037 002234
2786 025344 012737 000001 002300
2787 025352 012737 003426 002276
2788 025360 012737 000001 002274
2789

2\$: MOV #BUF,R2 ;BUFFER
MOV R0,(R2)+ ;WRITE A WORD
INC R0 ;NEXT PATTERN (1-128)
DEC R1 ;DONE
BNE 2\$;NO

MOV #BUF, @RLBA ;SETUP TO WRITE
MOV #128., @RLMP ;128 WORDS
CLR @RLDA ;DISK ADDRESS 0
JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD

JSR WRITE ;CHECK FOR FL:LOE, ELSE EXIT SEG

JSR ESCAPE ;SEG
TRAP C\$ESCAPE ;WORD 10000\$-.
JSR RS,WTCRDY ;CHECK CNTLR FOR ERRORS

JSR ESCAPE ;SEG
TRAP C\$ESCAPE ;WORD 10000\$-.
JSR RS,CHERR ;CHECK FOR FL:LOE, ELSE EXIT SEG

BGNSEG ;%START OF SEGMENT%

TRAP C\$BSEG ;CLEAR BUFFER
MOV #BUF, R0 ;128 IN LENGTH
MOV #128., R1 ;CLEAR
CLR (R0)+ ;DOWN COUNT
DEC R1 ;DONE?

MOV #BUF, @RLBA ;BUS ADDRESS
MOV #128., @RLMP ;WORD COUNT
CLR @RLDA ;DISK ADDRESS
JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD

JSR RS,WTCRDY ;CHECK FOR FL:LOE, ELSE EXIT SEG

JSR ESCAPE ;SEG
TRAP C\$ESCAPE ;WORD 10001\$-.
JSR RS,CHERR ;CHECK CNTLR FOR ERRORS

TST T.CRC ;WAS ERROR A DCK??
BNE 8\$;YES, SEE IF WE A DUMP
JSR ESCAPE ;CHECK FOR FL:LOE, ELSE EXIT SEG

BR 99\$;SKIP AROUND

10\$: TST T.DMP ;DO WE STILL WANT TO CHECK IT
BEQ 10\$;NO
JSR CKLOOP ;YES, CHECK FOR LOOP FIRST

TRAP C\$CLP1 ;CLEAR NUMBER WE'RE TO PRINT
CLR CDCNT ;ALLOW HEADER ON FIRST PRINT
CLR CHECK ;START GOOD AT 1
MOV #1,GDDAT ;START OF BUFFER
MOV #BUF,TMP2 ;FIRST WORD
MOV #1,TMP1

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 CZRLH8.MAC 07-DEC-79 08:12 **TEST 27** - CHECK THROUGHPUT OF SILO L 8
 SEQ 0102

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2790 025366 017737 154704 002302 4$: MOV @TMP2,BDDAT :GET WORD
2791 025374 023737 002302 002300 CMP BDDAT,GDDAT :CORRECT?
2792 025402 001440 BEQ 6$ :YES
2793
2794 025404 023737 002242 012442 CMP CDCNT,T.LMT :CHECKED ENOUGH??
2795 025412 001002 BNE 333$ :NO
2796 025414 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 025414 104410 TRAP C$ESCAPE
(3) 025416 000116 WORD 10001$-
2797 025420 005237 002242 333$: INC CDCNT :ACCOUNT FOR IT
2798
2799 025424 005737 002234 TST CHECK :HEADER OR JUST DATA
2800 025430 001007 BNE 9$ :JUST DATA
2801 025432 ERRDF 36.,EM47,ERR10 :BAD DATA
(4) 025432 104455 TRAP C$ERDF
(5) 025434 000044 WORD 36
(5) 025436 006604 WORD EM47
(5) 025440 010146 WORD ERR10
2802 025442 005237 002234 INC CHECK :ACCOUNT FOR PRINT OF HEADER
2803 025446 000416 BR 6$ .
2804
2805 025450 013746 002302 9$: PRINTB #FRMT7,TMP1,GDDAT,BDDAT
(10) 025450 013746 002300 MOV BDDAT,-(SP)
(9) 025454 013746 002274 MOV GDDAT,-(SP)
(8) 025460 013746 002274 MOV TMP1,-(SP)
(7) 025464 012746 011354 MOV #FRMT7,-(SP)
(6) 025470 012746 000004 MOV #4,-(SP)
(3) 025474 010600 MOV SP,RO
(4) 025476 104414 TRAP C$PNTB
(4) 025500 062706 000012 ADD #12,SP
2806 025504 062737 000002 002276 6$: CKLOOP :NEXT
(3) 025504 104406 TRAP CSCLP1 :NEXT
2807
2808 025506 062737 000002 002276 ADD #2,TMP2 :NEXT
2809 025514 005237 002274 INC TMP1 :NEXT
2810 025520 005237 002300 INC GDDAT :NEXT
2811 025524 023727 002274 000201 CMP TMP1,#129. :DONE?
2812 025532 001315 BNE 4$ .
2813
2814 025534 ENDSEG :%END OF SEGMENT%
(3) 025534 104405 TRAP C$SEG
(3) 025534 104405 10001$:
2815
2816 025536 ENDSEG :%END OF SEGMENT%
(3) 025536 104405 TRAP C$SEG
(3) 025536 104405 10000$:
2817 025540 ENDTST :**END OF TEST**
(3) 025540 104401 L10065: TRAP C$ETST
  
```

2819
 2820 .SBTTL **TEST 28** - CHECK ZERO FILL ON WRITE
 2821
 2822 025542 BGNSTST ;**START OF TEST**
 2823
 2824
 2825
 2826 025542 STARS
 (2)
 2827 :WHEN WRITING PARTIAL SECTORS (LESS THAN 128 WORDS) THE
 2828 :CONTROLLER WILL FILL IN THE REMAINING PORTION OF
 2829 :THE SECTOR WITH ZERO WORDS. CHECK THIS FEATURE
 2830 :WITH WORD COUNTS FROM 1 TO 127
 2831 025542 STARS
 (2)
 2832
 2833 025542 004737 015766 JSR PC,HDHOME :HEADS OVER TRACK 0
 2834 025546 CKERFG :HEADS GO HOME OKAY
 (4) 025554 104432 TRAP CSEXIT
 (4) 025556 000442 .WORD L10066-.
 2835
 2836 025560 BGNSEG :%%START OF SEGMENT%%
 (3) 025560 104404 TRAP CSBSEG
 2837
 2838 025562 012737 000001 002274 35\$: MOV #1,TMP1 :START WITH 1 WORD WRITE
 2839 025570 012700 003426 154526 MOV #BUF,RO :WRITE BUFFER WITH 52525, WE'LL
 2840 025574 012701 000200 154526 MOV #128,R1 :WRITE 128 WORDS ALL THOUGH WE'RE
 2841 025600 012720 052525 MOV #52525,(RO)+ ONLY GOING TO TRANSFER < 128
 2842 025604 005301 DEC R1 :DONE WITH BUFFER?
 2843 025606 001374 BNE 3S :NO, GO BACK
 2844 025610 013700 002274 33\$: MOV TMP1,RO :GET TRANSFER WORD COUNT
 2845 025614 005400 NEG RO :NEGATE FOR RLMP
 2846 025616 010077 154540 MOV RO,ARLMP :STORE WORD COUNT AWAY
 2847 025622 012777 003426 154526 MOV #BUF,ARLBA :SET UP RLBA
 2848 025630 005077 154524 CLR ARLDA
 2849 025634 004537 015056 JSR RS,LDFUNC :LOAD THE FUNCTION IN NEXT WORD
 2850 025640 000012 WRITE :WRITE IT
 2851 025642 004537 015702 JSR RS,WTCRDY :WAIT FOR WRITE TO FINISH
 2852 025646 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 025646 104410 TRAP CSESCAPE
 (3) 025650 000346 .WORD 10000\$-.
 2853
 2854 025652 004537 014614 JSR RS,CHERR :CHECK CNTLR FOR ERRORS
 2855 025656 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 025656 104410 TRAP CSESCAPE
 (3) 025660 000336 .WORD 10000\$-.
 2856 025662 BGNSEG :%%START OF SEGMENT%%
 (3) 025662 104404 TRAP CSBSEG
 2857 025664 012700 003426 MOV #BUF,RO :WE'RE GOING TO OVERLAY BUFFER BEFORE
 2858 025670 012701 000200 MOV #128,R1 :READING IT BACK.
 2859 025674 012720 125252 MOV #125252,(RO)+ :OVERLAY IT WITH COMPLIMENT
 2860 025700 005301 DEC R1 :DONE?
 2861 025702 001374 BNE 18\$:NO, KEEP GOING
 2862 025704 012777 003426 154444 MOV #BUF,ARLBA :SET UP TO READ
 2863 025712 012777 177600 154442 MOV #128.,ARLMP :128 WORDS TO CHECK ZERO FILL
 2864 025720 005077 154434 CLR ARLDA :SECTOR

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TEST 28 - CHECK ZERO FILL ON WRITE

N 8
SEQ 0104

2865 025724 004537 015056 JSR R5,LDFUNC :LOAD THE FUNCTION IN NEXT WORD
2866 025730 000014 READ
2867 025732 004537 015702 JSR R5,WTCRDY :WAIT TIL WE FINISH THE READ
2868 025736 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 025736 104410 TRAP CSESCAPE
(3) 025740 000234 .WORD 10001\$-.
2869
2870 025742 004537 014614 JSR R5,CHERR :CHECK CNTLR FOR ERRORS
2871 025746 005737 002236 TST T,CRC :WAS ERROR A DCK??
2872 025752 001003 BNE 8\$:YES, SEE IF WE A DUMP
2873 025754 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 025754 104410 TRAP CSESCAPE
(3) 025756 000216 .WORD 10001\$-.
2874 025760 000404 BR 99\$:SKIP AROUND
2875 025762 005737 012440 TST T,DMP :DO WE STILL WANT TO CHECK IT
2876 025766 001772 BEQ 10\$:NO
2877 025770 CKLOOP :YES, CHECK FOR LOOP FIRST
(3) 025770 104406 TRAP CSCLP1
2878 025772 005037 002242 CLR CDCNT :CLEAR NUMBER WE'RE TO PRINT
2879 025776 005037 002234 CLR CHECK :ALLOW HEADER ON FIRST PRINT
2880 026002 013702 002274 MOV TMP1,R2 :WORDS WRITTEN IN R2
2881 026006 012701 000200 MOV #128.,R1 :CHECK 128 WORDS
2882
2883 026012 012703 003426 MOV #BUF,R3 :SET UP BUFFER BEGINNING
2884 026016 005037 002276 CLR TMP2 :ZERO WORD COUNT
2885 026022 012737 052525 002300 MOV #52525,GDDAT :SET UP EXPECTED
2886 026030 011337 002302 002300 4\$: MOV (R3),BDDAT :GET WORD
2887 026034 023737 002302 002300 CMP BDDAT,GDDAT :IS WORD CORRECT?
2888 026042 001441 BEQ 12\$:YES, GO CHECK COUNTS AND REPEAT
2889
2890 026044 023737 002242 012442 CMP CDCNT,T,LMT :CHECKED ENOUGH??
2891 026052 001002 BNE 333\$:NO
2892 026054 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 026054 104410 TRAP CSESCAPE
(3) 026056 000116 .WORD 10001\$-.
2893 026060 005237 002242 333\$: INC CDCNT :ACCOUNT FOR IT
2894
2895 026064 005737 002234 TST CHECK :HEADER OR JUST DATA
2896 026070 001007 BNE 9\$:JUST DATA
2897 026072 104455 ERRDF 37.,EM27,ERR12
(4) 026072 .WORD CSERDF
(5) 026074 000045 .WORD 37
(5) 026076 005734 .WORD EM27
(5) 026100 010272 .WORD ERR12
2898 026102 005237 002234 INC CHECK :ACCOUNT FOR PRINT OF HEADER
2899 026106 000417 BR 12\$
2900
2901 026110 PRINTB #FRMT9,TMP1,R3,GDDAT,BDDAT
(11) 026110 013746 002302 MOV BDDAT,-(SP)
(10) 026114 013746 002300 MOV GDDAT,-(SP)
(9) 026120 010346 MOV R3,-(SP)
(8) 026122 013746 002274 MOV TMP1,-(SP)
(7) 026126 012746 011547 MOV #FRMT9,-(SP)
(6) 026132 012746 000005 MOV #5,-(SP)
(3) 026136 010600 MOV SP,R0
(4) 026140 104414 TRAP CSPNTB

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TEST 28 - CHECK ZERO FILL ON WRITE

SEQ 0105

(4) 026142 062706 000014
2902 026146 104406
(3) 026146 104406
2903 026150 005723
2904 026152 005237 002276
2905 026156 005301
2906 026160 001405
2907 026162 005302
2908 026164 003321
2909 026166 005037 002300
2910 026172 000716
2911
2912 026174
2913 026174
(3) 026174
(3) 026174 104405
2914
2915 026176 005237 002274 000200
2916 026202 023727 002274
2917 026210 001402
2918 026212 000137 025570
2919 026216
2920
2921 026216
(3) 026216
(3) 026216 104405
2922 026220
(3) 026220
(3) 026220 L10066:
2923
2924 .SBTTL **TEST 29** - CHECK SECTOR BITS OF HEADER COMPARE
2925
2926 026222
2927
2928
2929 026222
(2)
2930 :TEST THAT ALL SECTOR BITS OF HEADER WORD CAN COMPARE
2931 :UNIQUELY. WE TESTED THE HEADER COMPARE LOGIC EARLIER
2932 :BUT THAT WAS NOT AN EXTENSIVE TEST OF THE SECTOR BITS.
2933 :THE TEST PROCEDURE IS TO WRITE EACH SECTOR OF TRACK
2934 :0 WITH THE SECTOR ADDRESS, THEN GO BACK AND READ
2935 :EACH SECTOR. IF ANY SECTOR HAS ANY DATA THEN THAT
2936 :WHICH WAS EXPECTED THEN WE HAVE AN ERROR
2937 :ERROR PRINT OUT WILL GIVE SECTOR, EXPECTED AND RECEIVED
2938 026222
(2)
2939
2940
2941 026222 004737 015766
2942 026220
(4) 026234 104432
(4) 026236 000414
2943
2944 026240
(3) 026240 104404

12\$: ADD #14,SP
CKLOOP
TRAP CSCLP1
6\$: TST (R3)+
INC TMP2
DEC R1
BEQ 7\$:DONE ALL WORDS?
DEC R2
BGT 4\$:DONE CHECKING NON-ZERO WORDS
CLR GDDAT :NO, BRANCH BACK
BR 4\$:YES, SET EXP'D AS ZERO
:BRANCH BACK

7\$: :EXIT TEST
ENDSEG ;%END OF SEGMENT%
10001\$: TRAP CSESEG
INC TMP1
CMP TMP1,#128.
BEQ 34\$
JMP 35\$

34\$: ENDSEG ;%END OF SEGMENT%
10000\$: TRAP CSESEG
ENDTST ;**END OF TEST**
L10066:
TRAP CSETST

.SBTTL **TEST 29** - CHECK SECTOR BITS OF HEADER COMPARE
BGNTST ;**START OF TEST**

STARS
;*****
:TEST THAT ALL SECTOR BITS OF HEADER WORD CAN COMPARE
:UNIQUELY. WE TESTED THE HEADER COMPARE LOGIC EARLIER
:BUT THAT WAS NOT AN EXTENSIVE TEST OF THE SECTOR BITS.
:THE TEST PROCEDURE IS TO WRITE EACH SECTOR OF TRACK
:0 WITH THE SECTOR ADDRESS, THEN GO BACK AND READ
:EACH SECTOR. IF ANY SECTOR HAS ANY DATA THEN THAT
:WHICH WAS EXPECTED THEN WE HAVE AN ERROR
:ERROR PRINT OUT WILL GIVE SECTOR, EXPECTED AND RECEIVED
STARS
;*****

JSR PC,HDHOME :HEADS OVER TRACK 0
CKERFG :HEADS GO HOME OKAY
TRAP CSEXIT
.WORD L10067-.
BGNSEG
TRAP CSBSEG ;%START OF SEGMENT%

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TEST 29 - CHECK SECTOR BITS OF HEADER COMPARE

SEQ 0106

2945
2946 026242 005037 002272 1\$: CLR TMPO ;CLEAR
2947
2948 026246 (3) 026246 104404 BGNSEG TRAP CSBSEG ;%START OF SEGMENT%
2949
2950 C26250 012702 003426 199\$: MOV #BUF,R2 ;WRITE A PATTERN FOR THE WRITE
2951 026254 012701 000200 MOV #128.,R1 ;ONE SECTOR'S WORTH
2952 026260 013722 002272 2\$: MOV TMPO,(R2)+ ;WRITE IT
2953 026264 005301 DEC R1 ;DONE,
2954 026266 001374 BNE 2\$;IF NOT, GO BACK
2955
2956 026270 012777 177600 154064 MOV #-128.,ARLMP ;ONE SECTOR WORD COUNT
2957 026276 012777 003426 154052 MOV #BUF,ARLBA ;WRITE FROM BUF
2958 026304 013777 002272 154046 MOV TMPO,ARLDA ;SECTOR
2959 026312 004537 015056 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
2960 026316 000012 WRITE JSR R5,WTCRDY ;WAIT FOR WRITE TO FINISH
2961 026320 004537 015702 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
2962 026324 (3) 026324 104410 TRAP CSESCAPE
2963 026330 (3) 026326 000320 .WORD 10001\$-.
2964 026334 005237 002272 INC TMPO ;NEXT SECTOR
2965 026334 023727 002272 000050 CMP TMPO,#40. ;ALL DONE?
2966 026342 001342 BNE 199\$;NO GO BACK
2967 026344 005037 002272 CLR TMPO ;CLEAR
2968 026350 (3) 026350 104404 BGNSEG TRAP CSBSEG ;%START OF SEGMENT%
2969
2970 026352 012702 003426 98\$: MOV #BUF,R2 ;CLEAR THE BUFFER FIRST
2971 026356 012701 000200 MOV #128.,R1 ;128 WORDS
2972 026362 005022 CLR (R2)+
2973 026364 005301 DEC R1
2974 026366 001375 BNE 3\$
2975
2976 026370 013777 002272 153762 MOV TMPO,ARLDA ;GET SECTOR
2977 026376 012777 003426 153752 MOV #BUF,ARLBA ;SET UP BUS ADDRESS
2978
2979 026404 012777 177600 153750 MOV #-128.,ARLMP ;READ A SECTOR
2980 026412 004537 015056 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
2981 026416 000014 READ JSR R5,WTCRDY ;CHECK FOR FL:LOE, ELSE EXIT SEG
2982 026420 004537 015702 ESCAPE SEG
2983 026424 (3) 026424 104410 TRAP CSESCAPE
2984 (3) 026426 000216 .WORD 10002\$-.
2985 026430 004537 014614 JSR R5,CHERR ;CHECK CTLR FOR ERRORS
2986 026434 005737 002236 TST T.CRC ;WAS ERROR A DCK??
2987 026440 001003 BNE 8\$;YES, SEE IF WE A DUMP
2988 026442 (3) 026442 104410 10\$: ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
2989 (3) 026444 000200 TRAP CSESCAPE
2990 026446 000404 .WORD 10002\$-.
2991 026450 005737 012440 8\$: BR 99\$;SKIP AROUND
2992 026454 001772 BEQ T.DMP ;DO WE STILL WANT TO CHECK IT
2993 026456 CKLOOP 10\$;NO
2994 ;YES, CHECK FOR LOOP FIRST

(3) 026456 104406 TRAP C\$CLP1

2993 ;CHECK NOW TO SEE IF WE READ THE RIGHT SECTOR

2996 026460 005037 002242 99\$: CLR CDCNT :CLEAR NUMBER WE'RE TO PRINT
2997 026464 005037 002234 CLR CHECK :ALLOW HEADER ON FIRST PRINT
2998 026470 013737 002272 002300 MOV TMPO,GDDAT :EXPECTED DATA
2999 026476 012702 003426 MOV #BUF,R2 :BUFFER
3000 026502 012701 000200 MOV #128.,R1 :WORD COUNT
3001 026506 012237 002302 5\$: MOV (R2)+,BDDAT
3002 026512 023737 002302 002300 CMP BDDAT,GDDAT
3003 026520 001440 BEQ 6\$: ;
3004 ;
3005 026522 023737 002242 012442 CMP CDCNT,T.LMT :CHECKED ENOUGH??
3006 026530 001002 BNE 333\$: ;NO
3007 026532 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 026532 104410 TRAP C\$ESCAPE
(3) 026534 000110 .WORD 10002\$-.
3008 026536 005237 002242 333\$: INC CDCNT ;ACCOUNT FOR IT
3009 ;
3010 026542 005737 002234 TST CHECK :HEADER OR JUST DATA
3011 026546 001007 BNE 9\$: ;JUST DATA
3012 026550 ERRDF 38.,EM50,ERR11 ;
(4) 026550 104455 TRAP C\$ERDF
(5) 026552 000046 .WORD 38
(5) 026554 006621 .WORD EM50
(5) 026556 010220 .WORD ERR11
3013 026560 005237 002234 INC CHECK ;ACCOUNT FOR PRINT OF HEADER
3014 026564 000416 BR 6\$: ;
3015 ;
3016 026566 013746 002302 9\$: PRINTB #FRMT8,TMPO,GDDAT,BDDAT
(10) 026566 013746 002302 MOV BDDAT,-(SP)
(9) 026572 013746 002300 MOV GDDAT,-(SP)
(8) 026576 013746 002272 MOV TMPO,-(SP)
(7) 026602 012746 011426 MOV #FRMT8,-(SP)
(6) 026606 012746 000004 MOV #4,-(SP)
(3) 026612 010600 MOV SP,R0
(4) 026614 104414 TRAP C\$PNTB
(4) 026616 062706 000012 ADD #12,SP
3017 026622 104406 6\$: CKLOOP TRAP C\$CLP1
(3) 026622 104406 ;
3018 ;
3019 026624 005301 DEC R1 ;ALL OF SECTOR CHECKED?
3020 026626 001327 BNE 5\$: ;GO BACK IF NOT
3021 026630 005237 002272 000050 INC TMPO ;NEXT SECTOR
3022 026634 023727 002272 CMP TMPO,#40. ;DONE?
3023 026642 001243 BNE 98\$: ;NO, GO BACK
3024 ;
3025 026644 104405 10002\$: ENDSEG ;%END OF SEGMENT%
(3) 026644 ;
(3) 026644 TRAP C\$ESEG
3026 ;
3027 026646 104405 10001\$: ENDSEG ;%END OF SEGMENT%
(3) 026646 TRAP C\$ESEG
3028 026650 ENDSEG ;%END OF SEGMENT%

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TEST 29 - CHECK SECTOR BITS OF HEADER COMPARE

SEQ 0108

E 9

(3) 026650 104405
3029 026652 L10067:
(3) 026652 TRAP CSESEG
(3) 026652 104401 ENDTST ;**END OF TEST**
3030
3031 .SBTTL **TEST 30** - WRITE CHECK NPR INTEGRITY
3032
3033 026654 BGNTST ;**START OF TEST**
3034
3035 026654 STARS
(2) ;*****
3036 :CHECK THAT NPR WILL NOT INTERFERE WITH THE OPERATION OF THE
3037 :UNIBUS. WE SET UP LOCATION 4 TO HANDLE THE TRAP IF IT HAPPENS.
3038 026654 STARS
(2) ;*****
3039
3040
3041 026654 004737 015756 JSR PC,HDHOME :HEADS OVER TRACK 0
3042 026660 CKERFG :HEADS GO HOME OKAY
(4) 026666 104432 TRAP CSEXIT
(4) 026670 000376 .WORD L10070-.
3043
3044 026672 BGNSEG ;%START OF SEGMENT%
(3) 026672 104404 TRAP CSBSEG
3045
3046 026674 012700 003426 299\$: MOV #BUF,R0 :SETUP AND WRITE
3047 026700 012701 000200 MOV #128.,R1 :128 WORDS
3048 026704 012720 125252 MOV #125252,(R0)+ :WRITE
3049 026710 005301 DEC R1 :DONE??
3050 026712 001374 BNE 299\$
3051
3052 026714 012777 003426 153434 MOV #BUF,ARLBA :LOAD BUS ADDRESS
3053 026722 012777 177600 153432 MOV #-128.,ARLMP :WORD COUNT
3054 026730 005077 153424 CLR ARLDA :CLEAR DISK ADDRESS
3055 026734 004537 015056 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
3056 026740 000012 WRITE
3057 026742 004537 015702 JSR R5,WTCRDY :WAIT FOR CONTROLLER READY
3058 026746 104410 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 026746 104410 TRAP CSESCAPE
(3) 026750 000314 .WORD 10000\$.
3059 026752 004537 014614 JSR R5,CHERR ;CHECK CNTLR FOR ERRORS
3060 026756 026756 104410 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 026756 104410 TRAP CSESCAPE
(3) 026760 000304 .WORD 10000\$.
3061
3062
3063 ;VERIFY WRITE WITH READ BEFORE WRCHK
3064
3065 026762 005077 153372 CLR ARLDA
3066 026766 012777 003426 153362 MOV #BUF,ARLBA
3067 026774 012777 177600 153360 MOV #-128.,ARLMP
3068 027002 004537 015056 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
3069 027006 000014 READ
3070 027010 004537 015702 JSR R5,WTCRDY
3071 027014 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG

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TEST 30 - WRITE CHECK NPR INTEGRITY

SEQ 0109

F 9

(3) 027014 104410	TRAP	C\$ESCAPE	
(3) 027016 000246	.WORD	10000\$-.	
3072 027020 004537 014614	JSR	R5,CHERR	
3073 027024	ESCAPE	SEG	;CHECK CNTLR FOR ERRORS
(3) 027024 104410	TRAP	C\$ESCAPE	;CHECK FOR FL:LCE, ELSE EXIT SEG
(3) 027026 000236	.WORD	10000\$-.	
3074			
3075 027030	BGNSEG		
(3) 027030 104404	TRAP	C\$BSEG	;%%START OF SEGMENT%%
3076			
3077 027032	1\$: SETVEC	ERRVEC, #TRPHAN, #340	;SET UP FOR TRAP
(7) 027032 012746 000340	MOV	#340,-(SP)	
(6) 027036 012746 015760	MOV	#TRPHAN,-(SP)	
(5) 027042 013746 002244	MOV	ERRVEC,-(SP)	
(4) 027046 012746 000003	MOV	#3,-(SP)	
(3) 027052 104437	TRAP	C\$SVEC	
(2) 027054 062706 000010	ADD	#10,SP	
3078 027060 005037 002254	CLR	TRPFLG	
3079 027064 012777 003426 153264	MOV	#BUF, @RLBA	;CLEAR TRAP OCCURANCE
3080 027072 005077 153262	CLR	@RLDA	;BUS ADDRESS
3081 027076 012777 177600 153256	MOV	#-128., @RLMP	;LOAD DISK ADDRESS
3082 027104 005037 C02300	CLR	GDDAT	
3083 027110 013737 002246 002300	MOV	DRIVE,GDDAT	
3084 027116 052737 000002 002300	BIS	#URCHK,GDDAT	
3085 027124 004537 015364	JSR	R5,BEFORE	
3086 027130 013737 002300 002330	MOV	GDDAT,B.CS	
3087 027136 052737 000201 002330	BIS	#201,B.CS	
3088 027144 042737 002000 002330	BIC	#OPI,B.CS	
3089 027152 013777 002300 153174	MOV	GDDAT,@RLCS	
3090 027160 012701 000144	MOV	#100.,R1	
3091 027164 032777 000200 153162 5\$: BIT	BIT	#CRDY,@RLCS	
3092 027172 001015	BNE	6\$	
3093 027174	WAITUS	#20.	
3094 027206 005301	DEC	R1	
3095 027210 001365	BNE	5\$	
3096			
3097 027212 004537 015416	JSR	R5,AFTER	
3098 027216	ERRDF	0.,CRTIM,ERR5	
(4) 027216 104455	TRAP	C\$ERDF	
(5) 027220 000000	.WORD	0	
(5) 027222 003521	.WORD	CRTIM	
(5) 027224 007722	.WORD	ERR5	
3099 027226	6\$: CLRVEC	ERRVEC	
(3) 027226 013700 002244	MOV	ERRVEC, R0	
(3) 027232 104436	TRAP	C\$CVEC	
3100 027234	ESCAPE	SEG	
(3) 027234 104410	TRAP	C\$ESCAPE	
(3) 027236 000024	.WORD	10001\$-.	
3101			
3102 027240 005737 002254	TST	TRPFLG	
3103 027244 001406	BEQ	7\$	
3104 027246 004537 015416	JSR	R5,AFTER	
3105 027252	ERRSF	1.,EM57,ERRO	
(4) 027252 104454	TRAP	C\$ERSF	
(5) 027254 000001	.WORD	1	
(5) 027256 007052	.WORD	EM57	

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TEST 30 - WRITE CHECK NPR INTEGRITY

G 9
SEQ 0110

(5) 027260 007510 .WORD ERRO
3106 027262 7\$:
3107
3108
3109 027262 ENDSEG ;%END OF SEGMENT%
(3) 027262 104405 10001\$: TRAP C\$ESEG
3110 027264 ENDSEG ;%END OF SEGMENT%
(3) 027264 104405 10000\$: TRAP C\$ESEG
3111 027266 ENDTST ;**END OF TEST**
(3) 027266 L10070: TRAP C\$ETST
3112 027266 104401 .SBttl **TEST 31** - WRITE CHECK FUNCTION
3113 027270 BGNST ;**START OF TEST**
3117 027270 STARS
3118 027270 ;*****
3119 ;CHECK OF WRITE CHECK LOGIC UNDER FLAG MODE
3120 ;WE WILL WRITE CHECK A FULL SECTOR (128 WORDS) FROM
3121 ;MEMORY (BUF). WE CHECK THAT NO ERRORS OCCUR.
3122 027270 STARS
3123
3124
3125 027270 004737 015766 JSR PC,HDHOME ;HEADS OVER TRACK 0
3126 027274 CKERFG ;HEADS GO HOME OKAY
(4) 027302 104432 TRAP C\$EXIT
(4) 027304 000214 .WORD L10071-.
3127
3128 027306 BGNSEG ;%START OF SEGMENT%
(3) 027306 104404 TRAP C\$BSEG
3129
3130 027310 012700 003426 MOV #BUF,R0 ;SETUP AND WRITE
3131 027314 012701 000200 MOV #128,R1 ;128 WORDS
3132 027320 012720 125252 MOV #125252,(R0)+ ;WRITE
3133 027324 005301 DEC R1 ;DONE??
3134 027326 001374 BNE 299\$
3135
3136 027330 012777 003426 153020 MOV #BUFC,ARLBA ;LOAD BUS ADDRESS
3137 027336 012777 177600 153016 MOV #-128.,ARLMP ;WORD COUNT
3138 027344 005077 153010 CLR ARLSA ;CLEAR DISK ADDRESS
3139 027350 004537 015056 JSR RS,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
3140 027354 000012 WRITE
3141 027356 004537 015702 JSR RS,WTCRDY ;WAIT FOR CONTROLLER READY
3142 027362 104410 ESCAPE ;CHECK FOR FL:LOE, ELSE EXIT SEG
3143 027364 000132 TRAP C\$ESCAPE
3144 027366 004537 014614 .WORD 10000\$-.
3145 027372 104410 JSR RS,CHERR ;CHECK CNTLR FOR ERRORS
3146 027374 000122 ESCAPE ;CHECK FOR FL:LOE, ELSE EXIT SEG
3147 027376 BGNSEG ;%START OF SEGMENT%

(3) 027376 104404 TRAP CSBSEG
 3146
 3147 :VERIFY WRITE WITH READ BEFORE WRCHK
 3148
 3149 027400 005077 152754 CLR @RLDA
 3150 027404 012777 003426 152744 MOV #BUF @RLBA
 3151 027412 012777 177600 152742 MOV #-128., @RLMP
 3152 027420 004537 015056 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
 3153 027424 000014 READ
 3154 027426 004537 015702 JSR RS,WTCRDY
 3155 027432 104410 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 027432 104410 TRAP CSESCAPE
 (3) 027434 000060 .WORD 10001\$-.
 3156 027436 004537 014614 JSR RS,CHERR ;CHECK CNTLR FOR ERRORS
 3157 027442 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 027442 104410 TRAP CSESCAPE
 (3) 027444 000050 .WORD 10001\$-.
 3158
 3159 027446 BGNSEG ;%START OF SEGMENT%
 (3) 027446 104404 TRAP CSBSEG
 3160
 3161 027450 3\$: CLR @RLDA
 3162 027450 005077 152704 MOV #-128., @RLMP ;WORD COUNT
 3163 027454 012777 177600 152700 MOV #BUF, @RLBA ;BUS ADDRESS
 3164 027462 012777 003426 152666 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
 3165 027470 004537 015056 WRCHK ;WRITE CHECK
 3166 027474 000002
 3167
 3168 027476 004537 015702 JSR RS,WTCRDY ;WAIT FOR CONTROLLER READY
 3169 027502 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 027502 104410 TRAP CSESCAPE
 (3) 027504 000006 .WORD 10002\$-.
 3170
 3171
 3172 027506 004537 014614 JSR RS,CHERR ;CHECK CNTLR FOR ERRORS
 3173
 3174 027512 10002\$: ENDSEG ;%END OF SEGMENT%
 (3) 027512
 (3) 027512 104405 TRAP CSESEG
 3175 027514 10001\$: ENDSEG ;%END OF SEGMENT%
 (3) 027514
 (3) 027514 104405 TRAP CSESEG
 3176 027516 10000\$: ENDSEG ;%END OF SEGMENT%
 (3) 027516
 (3) 027516 104405 TRAP CSETST ;**END OF TEST**
 3177 027520 L10071:
 (3) 027520 TRAP CSETST
 3178
 3179 .SBTTL **TEST 32** - WRITE CHECK FUNCTION INTERRUPT
 3180
 3181 027522 BGNST ;**START OF TEST**
 3182
 3183 027522 STARS ;*****
 (2)
 3184 :CHECK OF WRITE CHECK LOGIC UNDER INTERRUPT MODE

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TEST 32 - WRITE CHECK FUNCTION INTERRUPT

SEQ 0112

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3185 :WE WILL WRITE CHECK A FULL SECTOR (128 WORDS) FROM MEMORY (BUF).
3186 :WE CHECK THAT NO ERRORS OCCUR. WE DO NOT CHECK RLDA OR RLBA
3187 :INCREMENT AT THIS TIME.
3188 027522 STARS
(2) ;*****
3189
3190
3191 027522 004737 015766 JSR PC,HDHOME :HEADS OVER TRACK 0
3192 027526 CKERFG :HEADS GO HOME OKAY
(4) 027534 104432 TRAP CSEXIT
(4) 027536 000252 .WORD L10072-.
3193
3194 027540 :%START OF SEGMENT%
(3) 027540 104404 BGNSEG
3195 TRAP CSBSEG
3196 027542 012700 003426 MOV #BUF,R0 :SETUP AND WRITE
3197 027546 012701 000200 MOV #128.,R1 :128 WORDS
3198 027552 012720 125252 MOV #125252,(R0)+ :WRITE
3199 027556 005301 DEC R1 :DONE??
3200 027560 001374 BNE 299\$
3201
3202 027562 012777 003426 MOV #BUF,ARLBA :LOAD BUS ADDRESS
3203 027570 012777 177600 MOV #-128.,ARLMP :WORD COUNT
3204 027576 005077 152556 CLR ARLDA :CLEAR DISK ADDRESS
3205 027602 004537 015056 JSR RS,LDFUNC :LOAD THE FUNCTION IN NEXT WORD
3206 027606 000012 WRITE
3207 027610 004537 015702 JSR R5,WTCRDY :WAIT FOR CONTROLLER READY
3208 027614 104410 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 027614 .WORD CSECAPE
(3) 027616 000170 TRAP 10000\$.-
3209 027620 004537 014614 JSR R5,CHERR :CHECK CNTLR FOR ERRORS
3210 027624 027624 104410 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 027624 .WORD CSECAPE
(3) 027626 000160 10000\$.-
3211 :VERIFY WRITE WITH READ BEFORE WRCHK
3212
3213 027630 005077 152524 CLR ARLDA
3214 027634 012777 003426 MOV #BUF,ARLBA
3215 027642 012777 177600 MOV #-128.,ARLMP
3216 027650 004537 015056 JSR RS,LDFUNC :LOAD THE FUNCTION IN NEXT WORD
3217 027654 000014 READ
3218 027656 004537 015702 JSR R5,WTCRDY :CHECK FOR FL:LOE, ELSE EXIT SEG
3219 027662 104410 ESCAPE SEG
(3) 027662 .WORD CSECAPE
(3) 027664 000122 TRAP 10000\$.-
3220 027666 004537 014614 JSR R5,CHERR :CHECK CNTLR FOR ERRORS
3221 027672 027672 104410 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 027672 .WORD CSECAPE
(3) 027674 000112 10000\$.-
3222
3223 027676 027676 104404 BGNSEG :%START OF SEGMENT%
(3) 027676 104404 TRAP CSBSEG
3224
3225
3226 027700 005037 002256 CLR INTFLG :CLEAR INTERRUPT OCCURANCE FLAG
3227 027704 005077 152450 CLR ARLDA

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SEQ 0113

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3228 027710 012777 177600 152444      MOV    #-128, @RLMP     ;SET UP WORD COUNT
3229 027716 012777 003426 152432      MOV    #BUF, @RLBA     ;SET UP BUS ADDRESS
3230
3231 027724 012700 000000      SETPRI #PRI00      ;PRIORITY TO 0
(3) 027724 012700 000000      MOV    #PRI00, RO
(3) 027730 104441      TRAP   CSSPRI
3232 027732 004537 015056      JSR    R5,LDFUNC   ;LOAD THE FUNCTION IN NEXT WORD
3233 027736 000102      WRCHK!INTEN ;WRITE CHECK UNDER INTERRUPT
3234 027740 004537 015702      JSR    R5,WTCRDY   ;WAIT FOR INTERRUPT
3235 027744 104410      ESCAPE SEG
(3) 027744 104410      TRAP   CSESCAPE   ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 027746 000036      .WORD  10001$-
3236
3237 027750 012700 000340      SETPRI #PRI07      ;SET PRIORITY TO 7
(3) 027750 012700 000340      MOV    #PRI07, RO
(3) 027754 104441      TRAP   CSSPRI
3238 027756 005737 002256      TST    INTFLG      ;DID INTERRUPT OCCUR?
3239 027762 001004      BNE   2$          ;YES-BRANCH NO-REPORT
3240
3241 027764 104455      ERRDF 4., EM60, ERRO ;WRITE DID NOT INTERRUPT
(4) 027764 104455      TRAP   CSERDF
(5) 027766 000004      .WORD  4
(5) 027770 007107      .WORD  EM60
(5) 027772 007510      .WORD  ERRO
3242 027774 104410      2$:   ESCAPE SEG      ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 027774 104410      TRAP   CSESCAPE
(3) 027776 000006      .WORD  10001$-
3243
3244 030000 004537 014614      JSR    R5,CHERR    ;CHECK CTLR FOR ERRORS
3245
3246 030004 104405      10001$: ENDSEG      ;%END OF SEGMENT%
(3) 030004 104405      TRAP   CSESEG
3247 030006 104405      10000$: ENDSEG      ;%END OF SEGMENT%
(3) 030006 104405      TRAP   CSESEG
3248 030010 104401      ENDST L10072:      ;**END OF TEST**
(3) 030010 104401      TRAP   CSETST
3249
3250 .SBTTL **TEST 33** - PROPER INCREMENT OF RLBA ON WRITE CHECK
3251
3252 030012      BGNTST      ;**START OF TEST**
3253
3254
3255 030012      STARS
(2)
3256 ;*****:CHECK THAT THE RLBA WILL INCREMENT PROPERLY AFTER THE
3257 ;WRITE CHECK WAS FINISHED THE RLBA SHOULD BE 128 WORDS (256 BYTES)
3258 ;CREATER. STARTING RLBA IS 'BUF', ENDING SHOULD BE 'BUF + 256.''
3259 ;WE WILL MONITOR ALL ERRORS AND REPORT THEM ACCORDINGLY
3260 030012      STARS
(2)
3261
3262
3263 030012 004737 015766      JSR    PC,HDHOME   ;HEADS OVER TRACK 0

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3264 030016 CKERFG ;HEADS GO HOME OKAY
 (4) 030024 104432 TRAP C\$EXIT
 (4) 030026 000256 .WORD L10073-.
 3265
 3266 030030 BGNSEG ;%START OF SEGMENT%
 (3) 030030 104404 TRAP C\$BSEG
 3267
 3268 030032 012700 003426 MOV #BUF, R0 ;SETUP AND WRITE
 3269 030036 012701 000200 MOV #128., R1 ;128 WORDS
 3270 030042 012720 125252 MOV #125252, (R0)+ ;WRITE
 3271 030046 005301 DEC R1 ;DONE??
 3272 030050 001374 BNE 299\$
 3273
 3274 030052 012777 003426 152276 MOV #BUF, @RLBA ;LOAD BUS ADDRESS
 3275 030060 012777 177600 152274 MOV #128., @RLMP ;WORD COUNT
 3276 030066 005077 152266 CLR @RLDA ;CLEAR DISK ADDRESS
 3277 030072 004537 015056 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
 3278 030076 000012 WRITE
 3279 030100 004537 015702 JSR R5,WTCRDY ;WAIT FOR CONTROLLER READY
 3280 030104 ESCAPE ;CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) C30104 104410 TRAP C\$ESCAPE
 (3) 030106 000174 .WORD 10000\$-.
 3281 030110 004537 014614 JSR R5,CHERR ;CHECK CNTLR FOR ERRORS
 3282 030114 ESCAPE ;CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 030114 104410 TRAP C\$ESCAPE
 (3) 030116 000164 .WORD 10000\$-.
 3283 :VERIFY WRITE WITH READ BEFORE WRCHK
 3284
 3285 030120 005077 152234 CLR @RLDA
 3286 030124 012777 003426 152224 MOV #BUF, @RLBA
 3287 030132 012777 177600 152222 MOV #128., @RLMP ;LOAD THE FUNCTION IN NEXT WORD
 3288 030140 004537 015056 JSR R5,LDFUNC
 3289 030144 000014 READ
 3290 030146 004537 015702 JSR R5,WTCRDY ;CHECK FOR FL:LOE, ELSE EXIT SEG
 3291 030152 ESCAPE ;CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 030152 104410 TRAP C\$ESCAPE
 (3) 030154 000126 .WORD 10000\$-.
 3292 030156 004537 014614 JSR R5,CHERR ;CHECK CNTLR FOR ERRORS
 3293 030162 ESCAPE ;CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 030162 104410 TRAP C\$ESCAPE
 (3) 030164 000116 .WORD 10000\$-.
 3294
 3295 030166 BGNSEG ;%START OF SEGMENT%
 (3) 030166 104404 TRAP C\$BSEG
 3296
 3297 030170 :38:
 3298 030170 005077 152164 CLR @RLDA
 3299 030174 012777 003426 152154 MOV #BUF, @RLBA ;SET UP BUS ADDRESS
 3300 030202 012777 177600 152152 MOV #128., @RLMP ;WORD COUNT
 3301 030210 012737 003426 002300 MOV #BUF, GDDAT ;FORM EXPECTED BUS ADDRESS
 3302 030216 062737 000400 002300 ADD #256., GDDAT ;AFTER WRITE
 3303
 3304 030224 004537 015056 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
 3305 030230 000002 WRCHK ;WRITE CHECK
 3306 030232 004537 015702 JSR R5,WTCRDY ;WAIT FOR CONTROLLER READY
 3307 030236 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG

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TEST 33 - PROPER INCREMENT OF RLBA ON WRITE CHECK

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SEQ 0115

(3) 030236 104410 TRAP C\$ESCAPE
(3) 030240 000040 .WORD 10001\$-.
3308
3309 030242 004537 014614 JSR R5,CHERR ;CHECK CNTLR FOR ERRORS
3310 030246 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 030246 104410 TRAP C\$ESCAPE
(3) 030250 000030 .WORD 10001\$-.
3311 030252 017737 152100 002302 MOV @RLBA,BDDAT ;READ 'RLBA' FOR PRESENT ADDRESS
3312 030260 023737 002302 002300 CMP BDDAT,GDDAT ;DID 'BA' INCREMENT PROPERLY?
3313 030266 001404 BEQ 2\$;YES, CONTINUE
3314
3315 030270 104455 ERRDF S,EM61,ERR4 ;BA DID NOT INCREMENT
(4) 030270 TRAP C\$ERDF
(5) 030272 000005 .WORD 5
(5) 030274 007137 .WORD EM61
(5) 030276 007654 .WORD ERR4
3316
3317 030300 2\$:
3318
3319 030300 104405 10001\$: ENDSEG ;%END OF SEGMENT%
(3) 030300 TRAP C\$ESEG
3320 030302 104405 10000\$: ENDSEG ;%END OF SEGMENT%
(3) 030302 TRAP C\$ESEG
3321 030304 ENDTST L10073: ;**END OF TEST**
(3) 030304 TRAP C\$ETST
3322
3323 .SBTTL **TEST 34** - PROPER INCREMENT OF RLDA ON WRITE CHECK
3324
3325 030306 BGNSTST ;**START OF TEST**
3326
3327 030306 STARS
(2) ;*****
3328 ;CHECK THAT THE SECTOR INCREMENTS AFTER THE WRITE CHECK WAS FINISHED.
3329 ;A FULL SECTOR WRITE CHECK THE RLDA SHOULD REFLECT AN INCREMENT
3330 ;OF THE SECOTR. 'GDDAT' WAS THE EXPECTED RLDA.
3331 030306 STARS
(2) ;*****
3332
3333
3334 030306 004737 015766 ; JSR PC,HDHOME ;HEADS OVER TRACK 0
3335 030312 CKERFG ;HEADS GO HOME OKAY
(4) 030320 104432 TRAP C\$EXIT
(4) 030322 000254 .WORD L10074-.
3336
3337 030324 BGNSEG ;%START OF SEGMENT%
(3) 030324 104404 TRAP C\$BSEG
3338
3339 030326 012700 003426 299\$: MOV #BUF,R0 ;SETUP AND WRITE
3340 030332 012701 000200 MOV #128,R1 ;128 WORDS
3341 030336 012720 125252 MOV #125252,(R0)+ ;WRITE
3342 030342 005301 DEC R1 ;DONE??
3343 030344 001374 BNE 299\$
3344

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3345	030346	012777	003426	152002	MOV	#BUF, @RLBA	;LOAD BUS ADDRESS
3346	030354	012777	177600	152000	MOV	#-128., @RLMP	;WORD COUNT
3347	030362	005077	151772		CLR	@RLDA	;CLEAR DISK ADDRESS
3348	030366	004537	015056		JSR	R5,LDFUNC	;LOAD THE FUNCTION IN NEXT WORD
3349	030372	000012			WRITE		
3350	030374	004537	015702		JSR	RS,WTCRDY	;WAIT FOR CONTROLLER READY
3351	030400				ESCAPE	SEG	;CHECK FOR FL:LOE, ELSE EXIT SEG
(3)	030400	104410			TRAP	C\$ESCAPE	
(3)	030402	000172			.WORD	10000\$-.	
3352	030404	004537	014614		JSR	RS,CHERR	;CHECK CNTLR FOR ERRORS
3353	030410				ESCAPE	SEG	;CHECK FOR FL:LOE, ELSE EXIT SEG
(3)	030410	104410			TRAP	C\$ESCAPE	
(3)	030412	000162			.WORD	10000\$-.	
3354					:VERIFY	WRITE WITH READ BEFORE WRCHK	
3355							
3356	030414	005077	151740		CLR	@RLDA	
3357	030420	012777	003426	151730	MOV	#BUF, @RLBA	
3358	030426	012777	177600	151726	MOV	#-128., @RLMP	
3359	030434	004537	015056		JSR	R5,LDFUNC	;LOAD THE FUNCTION IN NEXT WORD
3360	030440	000014			READ		
3361	030442	004537	015702		JSR	RS,WTCRDY	
3362	030446				ESCAPE	SEG	;CHECK FOR FL:LOE, ELSE EXIT SEG
(3)	030446	104410			TRAP	C\$ESCAPE	
(3)	030450	000124			.WORD	10000\$-.	
3363	030452	004537	014614		JSR	RS,CHERR	;CHECK CNTLR FOR ERRORS
3364	030456				ESCAPE	SEG	;CHECK FOR FL:LOE, ELSE EXIT SEG
(3)	030456	104410			TRAP	C\$ESCAPE	
(3)	030460	000114			.WORD	10000\$-.	
3365							
3366	030462				BGNSEG		;%%START OF SEGMENT%%
(3)	030462	104404			TRAP	C\$BSEG	
3367							
3368	030464				38:		
3369	030464	005037	002300		CLR	GDDAT	
3370	030470	013777	002300	151662	MOV	GDDAT,@RLDA	;SETUP DISK ADDRESS
3371	030476	005237	002300		INC	GDDAT	;CREATE EXPECTED SECTOR
3372	030502	012777	177600	151652	MOV	#-128., @RLMP	;WORD COUNT
3373	030510	012777	003426	151640	MOV	#BUF, @RLBA	;SETUP BUS ADDRESS
3374							
3375	030516	004537	015056		JSR	R5,LDFUNC	;LOAD THE FUNCTION IN NEXT WORD
3376	030522	000002			WRCHK		;WRITE CHECK
3377	030524	004537	015702		JSR	RS,WTCRDY	;WAIT FOR CONTROLLER READY
3378	030530				ESCAPE	SEG	;CHECK FOR FL:LOE, ELSE EXIT SEG
(3)	030530	104410			TRAP	C\$ESCAPE	
(3)	030532	000040			.WORD	10001\$-.	
3379							
3380	030534	004537	014614		JSR	RS,CHERR	;CHECK CNTLR FOR ERRORS
3381	030540				ESCAPE	SEG	;CHECK FOR FL:LOE, ELSE EXIT SEG
(3)	030540	104410			TRAP	C\$ESCAPE	
(3)	030542	000030			.WORD	10001\$-.	
3382							
3383	030544	013737	002344	002302	MOV	E.DA,BDDAT	;READ DISK ADDRESS
3384	030552	023737	002300	002302	CMP	GDDAT,BDDAT	;DID SECTOR INCREMENT PROPERLY
3385	030560	001404			BEQ	28	;YFS, BRANCH NO, REPORT ERROR
3386							
3387	030562				ERRDF	6., EM62,ERR4	;DA DID NOT INCREMENT

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***TEST 34** - PROPER INCREMENT OF RLDA ON WRITE CHECK

SEQ 0117

(4) 030562 104455 TRAP C\$ERDF
(5) 030564 000006 .WORD 6
(5) 030566 007207 .WORD EM62
(5) 030570 007654 .WORD ERR4

3388
3389 030572 2\$:
3390
3391 030572 10001\$: ENDSEG ;%%END OF SEGMENT%%
(3) 030572 104405 TRAP C\$ESEG
3392 030574 10000\$: ENDSEG ;%%END OF SEGMENT%%
(3) 030574 104405 TRAP C\$ESEG
3393 030576 ENDTST ;**END OF TEST**
(3) 030576 L10074: TRAP C\$ETST
3394
3395
3396 .SBTTL **TEST 35** - MULTIPLE SECTOR WRITE CHECK
3397
3398 030600 BGNTST ;**START OF TEST**
3399
3400 030600 STARS
3401 ;*****
3402 ;CHECK FOR MULTIPLE SECTOR WRITE CHECK. THIS TEST CHECKS
3403 ;THAT TWO SECTORS CAN BE SUCCESSFULLY CHECKED. WE LOAD
3404 ;A WORD COUNT OF 129 WORDS (ONE SECTOR + 1 WORD) STARTING AT
3405 ;SECTOR 0 THRU SECTOR 37 AND VERIFY THAT THE RLDA DOES
3406 030600 STARS ;*****
3407
3408
3409
3410 030600 004737 015766 JSR PC,HDHOME ;HEADS OVER TRACK 0
3411 030604 CKERFG ;HEADS GO HOME OKAY
(4) 030612 104432 TRAP C\$EXIT
(4) 030614 000354 .WORD L10075-.
3412
3413 030616 BGNSEG ;%%START OF SEGMENT%%
(3) 030616 104404 TRAP C\$BSEG
3414
3415 030620 012737 000000 002272 MOV #0,TMPO
3416 030626 012737 000000 002274 MOV #0,TMP1
3417 030634 012700 003426 MOV #BUF,RO ;SETUP AND WRITE
3418 030640 012701 000201 MOV #129,R1 ;129 WORDS
3419 030644 012720 125252 MOV #125252,(R0)+ ;WRITE
3420 030650 005301 DEC R1 ;DONE??
3421 030652 001374 BNE 299\$
3422
3423 030654 012777 003426 151474 1\$: MOV #BUF,ARLBA ;LOAD BUS ADDRESS
3424 030662 012777 177577 151472 MOV #-129,,ARLMP ;WORD COUNT
3425 030670 013737 002274 002300 MOV TMP1,GDDAT
3426 030676 053737 002272 002300 BIS TMP0,GDDAT
3427 030704 013777 002300 151446 MOV GDDAT,ARLDA
3428 030712 004537 015056 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD

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TEST 35 - MULTIPLE SECTOR WRITE CHECK

B 10
SEQ 0118

3429 030716 000012
3430 030720 004537 015702
3431 030724
(3) 030724 104410
(3) 030726 000240
3432 030730 004537 014614
3433 030734
(3) 030734 104410
(3) 030736 000230
3434
3435 :VERIFY WRITE WITH READ BEFORE WRCHK
3436
3437 030740 013737 002274 002300
3438 030746 053737 002272 002300
3439 030754 013777 002300 151376
3440 030762 012777 003426 151366
3441 030770 012777 177577 151364
3442 030776 004537 015056
3443 031002 000014
3444 031004 004537 015702
3445 031010
(3) 031010 104410
(3) 031012 000154
3446 031014 004537 014614
3447 031020
(3) 031020 104410
(3) 031022 000144
3448
3449 031024
(3) 031024 104404
3450
3451
3452 031026 013737 002274 002300
3453 031034 053737 002272 002300
3454 031042 013777 002300 151310
3455 031050 062737 000002 002300
3456 031056 012777 003426 151272
3457 031064 012777 177577 151270
3458
3459 031072 004537 015056
3460 031076 000002
3461 031100 004537 015702
3462 031104
(3) 031104 104410
(3) 031106 000042
3463
3464 031110 004537 014614
3465 031114
(3) 031114 104410
(3) 031116 000032
3466
3467 031120 013737 002344 002302
3468 031126 023737 002302 002300
3469 031134 001404
3470
3471 031136

WRITE
JSR R5,WTCRDY :WAIT FOR CONTROLLER READY
ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
TRAP CSESCAPE
.WORD 10000\$-.
JSR R5,CHERR :CHECK CNTLR FOR ERRORS
ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
TRAP CSESCAPE
.WORD 10000\$-.

:VERIFY WRITE WITH READ BEFORE WRCHK

MOV TMP1,GDDAT
BIS TMP0,GDDAT
MOV GDDAT,ARLDA
MOV #BUF,ARLBA
MOV #-129.,ARLMP :LOAD THE FUNCTION IN NEXT WORD
JSR R5,LDFUNC
READ
JSR R5,WTCRDY :CHECK FOR FL:LOE, ELSE EXIT SEG
ESCAPE SEG
TRAP CSESCAPE
.WORD 10000\$-.
JSR R5,CHERR :CHECK CNTLR FOR ERRORS
ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
TRAP CSESCAPE
.WORD 10000\$-.

BGNSEG :%%START OF SEGMENT%%
TRAP CSBSEG

MOV TMP1,GDDAT :GET CYLINDER
BIS TMP0,GDDAT :GET SECTOR
MOV GDDAT,ARLDA :SET DISK ADDRESS-SECTOR 0
ADD #2,GDDAT :SET EXPECTED + 2
MOV #BUF,ARLBA :SET BUS ADDRESS
MOV #-129.,ARLMP :WORD COUNT-SECTOR+1 WORD
JSR R5,LDFUNC :LOAD THE FUNCTION IN NEXT WORD
WRCHK
JSR R5,WTCRDY :WRITE CHECK
ESCAPE SEG :WAIT FOR CONTROLLER READY?
TRAP CSESCAPE :CHECK FOR FL:LOE, ELSE EXIT SEG
.WORD 10001\$-.
JSR R5,CHERR :CHECK CNTLR FOR ERRORS
ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
TRAP CSESCAPE
.WORD 10001\$-.
MOV E.DA,BDDAT :READ DISK ADDRESS
CMP BDDAT,GDDAT :IS DISK ADDRESS CORRECT
BEQ 2S :YES, BRANCH NO, REPORT ERROR
ERRDF 7.,EM63,ERR4 :DISK ADDRESS NOT CORRECT

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TEST 35 - MULTIPLE SECTOR WRITE CHECK

C 10
SEQ 0119

(4) 031136 104455 TRAP C\$ERDF
(5) 031140 000007 .WORD 7
(5) 031142 007246 .WORD EM63
(5) 031144 007654 .WORD ERR4

3472
3473 031146 104406 2\$: CKLOOP
(3) 031146 104406 TRAP C\$CLP1

3474
3475 031150 ENDSEG ;%END OF SEGMENT%
(3) 031150
(3) 031150 104405 10001\$: TRAP C\$ESEG

3476
3477 031152 005237 002272 INC TMPO
3478 031156 022737 000046 002272 CMP #46,TMPO ;NEXT SECTOR
3479 031164 001233 BNE 1S ;AT END?
3480 031166 ENDSEG ;NO, GO BACK
(3) 031166
(3) 031166 104405 10000\$: TRAP C\$ESEG ;%END OF SEGMENT%
3481 031170 ENDTST L10075: ;**END OF TEST**
(3) 031170
(3) 031170 104401 TRAP C\$ETST
.SBTTL **TEST 36** - FORCE DCK WITH WRITE CHECK

3482
3483
3484 031172 BGNTST ;**START OF TEST**
3485
3486 031172 STARS
3487 ;*****
3488 ;FORCE A DCK WITH WRITE CHECK. THIS IS DONE BY WRITING
3489 ;A SECTOR AND CHANGING A WORD IN MEMORY BEFORE WRITE CHECK
3490 031172 STARS
3491
3492 031172 004737 015766 JSR PC,HDHOME ;HEADS OVER TRACK 0
3493 031176 104432 CKERFG ;HEADS GO HOME OKAY
(4) 031204 104432 TRAP C\$EXIT
(4) 031206 000262 .WORD L10076-.
3494
3495 031210 104404 BGNSSEG ;%START OF SEGMENT%
(3) 031210 104404 TRAP C\$BSEG

3496
3497 031212 012700 003426 MOV #BUF,R0 ;SET UP AND WRITE
3498 031216 012701 000200 MOV #128,R1 ;128 WORDS
3499 031222 012720 125252 MCV #125252,(R0)+ ;WRITE
3500 031226 005301 DEC R1 ;DONE??
3501 031230 001374 BNE 299\$

3502
3503 031232 012777 003426 151116 MOV #BUF,ARLBA ;LOAD BUS ADDRESS
3504 031240 012777 177600 151114 MOV #-128,.ARLMP ;WORD COUNT
3505 031246 005077 151106 CLR ARLDA ;CLEAR DISK ADDRESS
3506 031252 004537 015056 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
3507 031256 000012 WRITE
3508 031260 004537 015702 JSR R5,WTCRDY ;WAIT FOR CONTROLLER READY
3509 031264 000200 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 031264 104410 TRAP C\$ESCAPE
(3) 031266 000200 .WORD 10000\$-

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TEST 36 - FORCE DCK WITH WRITE CHECK

SEQ 0120

3510 031270 004537 014614 JSR RS,CHERR :CHECK CNTLR FOR ERRORS
3511 031274 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 031274 104410 TRAP CSESCAPE
(3) 031276 000170 WORD 10000\$-.
3512 ;VERIFY WRITE WITH READ BEFORE WRCHK
3513
3514 031300 005077 151054 CLR ARLDA
3515 031304 012777 003426 151044 MOV #BUF,ARLBA
3516 031312 012777 177600 151042 MOV #128.,ARLMP
3517 031320 004537 015056 JSR RS,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
3518 031324 000014 READ
3519 031326 004537 015702 JSR RS,WTCRDY
3520 031332 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 031332 104410 TRAP CSESCAPE
(3) 031334 000132 WORD 10000\$-.
3521 031336 004537 014614 JSR RS,CHERR :CHECK CNTLR FOR ERRORS
3522 031342 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 031342 104410 TRAP CSESCAPE
(3) 031344 000122 WORD 10000\$-.
3523
3524 031346 BGNSEG :%%START OF SEGMENT%%
(3) 031346 104404 TRAP CSBSFG
3525
3526
3527 031350 005037 003426 CLR BUF
3528 031354 005077 151000 CLR ARLDA
3529 031360 012777 003426 MOV #BUF,ARLBA ;SETTING SECTOR 40 OF CYL. ADDR.
3530 031366 012777 177600 150770 MOV #128.,ARLMP ;WORD COUNT
3531
3532 031374 004537 015056 JSR RS,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
3533 031400 000002 WRCHK ;WRITE CHECK
3534 031402 004537 015702 JSR RS,WTCRDY ;WAIT FOR CONTROLLER READY
3535 031406 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 031406 104410 TRAP CSESCAPE
(3) 031410 WORD 10001\$-.
3536
3537 031412 013737 002340 002272 MOV E.CS,TMPO :GET RLCs
3538 031420 042737 001777 002272 BIC #177\$ TMPO :SAVE ERROR BITS
3539 031426 022737 104000 002272 CMP #BIT15!BIT11,TMPO ;DCK SET.
3540 031434 001402 BEQ 1\$;YES, CONTINUE
3541 031436 004537 014614 JSR RS,CHERR
3542 031442 CKLOOP :WHEN FORCED
(3) 031442 104406 TRAP CSCLP1
3543
3544 031444 022737 104000 002272 CMP #BIT15!BIT11,TMPO
3545 031452 001404 BEQ 2\$
3546
3547 031454 ERRDF 23.,EM65,ERRO
(4) 031454 104455 TRAP CSERDF
(5) 031456 000027 WORD 23
(5) 031460 007364 WORD EM65
(5) 031462 007510 WORD ERRO
3548
3549 031464 28: ENDSEG :%%END OF SEGMENT%%
3550
3551 031464

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TEST 36 - FORCE DCK WITH WRITE CHECK

E 10
SEQ 0121

(3) 031464
(3) 031464 104405
3552 031466
(3) 031466
(3) 031466 104405
3553 031470
(3) 031470
(3) 031470 104401
3554
3555 .SBTTL **TEST 37** - FORCE DCK WITH WRITE CHECK INTERRUPT
3556
3557 031472 BGNTST ;**START OF TEST**
3558
3559
3560 031472 STARS
3561 :FORCE A DCK IN INTERRUPT MODE
3562 031472 STARS
3563
3564
3565 031472 004737 015766 JSR PC,HDHOME ;HEADS OVER TRACK 0
3566 031476 CKERFG ;HEADS GO HOME OKAY
(4) 031504 104432 TRAP CSEXIT
(4) 031506 000322 .WORD L10077-.
3567
3568 031510 BGNSEG ;%START OF SEGMENT%
(3) 031510 104404 TRAP CSBSEG
3569
3570 031512 012700 003426 MOV #BUF,R0 ;SETUP AND WRITE
3571 031516 012701 000200 MOV #128,R1 ;128 WORDS
3572 031522 012720 125252 MOV #125252,(R0)+ ;WRITE
3573 031526 005301 DEC R1 ;DONE??
3574 031530 001374 BNE 299\$
3575
3576 031532 012777 003426 150616 MOV #BUF,ARLBA ;LOAD BUS ADDRESS
3577 031540 012777 177600 150614 MOV #-128.,ARLMP ;WORD COUNT
3578 031546 005077 150606 CLR ARLDA ;CLEAR DISK ADDRESS
3579 031552 004537 015056 JSR RS,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
3580 031556 000012 WRITE
3581 031560 004537 015702 JSR R5,WTCRDY ;WAIT FOR CONTROLLER READY
3582 031564 104410 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 031564 104410 TRAP CSESCAPE
(3) 031566 000240 .WORD 10000\$-.
3583 031570 004537 014614 JSR R5,CHERR ;CHECK CTLR FOR ERRORS
3584 031574 104410 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 031574 104410 TRAP CSESCAPE
(3) 031576 000230 .WORD 10000\$-.
3585 :VERIFY WRITE W!TH READ BEFORE WRCHK
3586
3587 031600 005077 150554 CLR ARLDA
3588 031604 012777 003426 150544 MOV #BUF,ARLBA
3589 031612 012777 177600 150542 MOV #-128.,ARLMP
3590 031620 004537 015056 JSR RS,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
3591 031624 000014 READ
3592 031626 004537 015702 JSR R5,WTCRDY

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TEST 37 - FORCE DCK WITH WRITE CHECK INTERRUPT

F 10
SEQ 0122

3593 031632 031632 104410
(3) 031632 104410
(3) 031634 000172
3594 031636 004537 014614
3595 031642 104410
(3) 031642 104410
(3) 031644 000162
3596
3597 031646 104404
(3) 031646 104404
3598
3599 031650 012700 000000
(3) 031650 012700 000000
(3) 031654 104441
3600 031656 005037 002256
3601 031662 005037 003426
3602 031666 005077 150466
3603 031672 012777 003426 150456
3604 031700 012777 177600 150454
3605
3606 031706 004537 015056
3607 031712 000102 000000
3608 031714 004537 015702
3609 031720 104406
(3) 031720 104406
3610 031722 012700 000340
(3) 031722 012700 000340
(3) 031726 104441
3611
3612 031730 005737 002256
3613 031734 001004 000000
3614
3615 031736 104455 000030
(5) 031740 000030
(5) 031742 007421
(5) 031744 007510
3616
3617 031746 104410 000054
(3) 031746 104410
(3) 031750 000054
28:
3618
3619
3620 031752 013737 002340 002272
3621 031760 042737 001777 002272
3622 031766 022737 104000 002272
3623 031774 001402 000000
3624
3625 031776 004537 014614
3626 032002 104406
1\$:
3627
3628 032004 022737 104000 002272
3629 032012 001404
3630 032014 104455
ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
TRAP C\$ESCAPE
.WORD 10000\$-.
JSR R5,CHERR ;CHECK CNTLR FOR ERRORS
ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
TRAP C\$ESCAPE
.WORD 10000\$-.
BGNSEG ;%START OF SEGMENT%
TRAP CS\$SEG
SETPRI #PRI00
MOV #PRI00, R0
TRAP C\$SPRI
CLR INTFLG ;CLEAR INTERRUPT OCCURANCE FLAG
CLR BUF
CLR ARLDA
MOV #BUF, ARLBA ;SETTING SECTOR 40 OF CYL. ADDR.
MOV #128., ARLMP ;WORD COUNT
JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
WRCHK!INTEN ;WRITE CHECK
JSR R5,WTCRDY ;WAIT FOR CONTROLLER READY
CKLOOP
TRAP C\$CLP1
SETPRI #PRI07
MOV #PRI07, R0
TRAP C\$SPRI
TST INTFLG ;DID INTERRUPT OCCUR
BNE 28 ;YES OKAY
ERRDF 24., EM66, ERRO ;NO INTERRUPT FROM DCK
TRAP C\$ERDF
.WORD 24
.WORD EM66
.WORD ERRO
28: ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
TRAP C\$ESCAPE
.WORD 10001\$-.
MOV E.CS, TMPO ;GET RLCS
BIC #1777, TMPO ;SAVE ERROR BITS
CMP #BIT15!BIT11, TMPO ;DCK SET.
BEQ 1\$;YES, CONTINUE
JSR R5,CHERR
CKLOOP
TRAP C\$CLP1
CMP #BIT15!BIT11, TMPO
BEQ 3\$
ERRDF 25., EM65, ERRO
TRAP C\$ERDF

(5) 032016 000031 .WORD 25
 (5) 032020 007364 .WORD EM65
 (5) 032022 007510 .WORD EPRO

3631 :WHEN FORCED
 3632 032024 3S:
 3633
 3634 032024 10001\$: ENDSEG ;%END OF SEGMENT%
 (3) 032024 104405 TRAP CSESEG
 3635 032026 ENDSEG ;%END OF SEGMENT%
 (3) 032026 10000\$:
 (3) 032026 104405 TRAP CSESEG
 3636 032030 ENDTST ;**END OF TEST**
 (3) 032030 L10077:
 (3) 032030 104401 TRAP CSETST

3637
 3638
 3639 .SBttl **TEST 38** - CHECK ZERO FILL ON WRITE WITH WRITE CHECK
 3640 032032 BGNTST ;**START OF TEST**
 3641
 3642
 3643
 3644
 3645 032032 STARS
 (2)
 3646 :WHEN WRITING PARTIAL SECTORS (LESS THAN 128 WORDS) THE
 3647 :CONTROLLER WILL FILL IN THE REMAINING PORTION OF
 3648 :THE SECTOR WITH ZERO WORDS. CHECK THIS FEATURE CAN BE WRITE CHECKED
 3649 :WITH WORD COUNTS FROM 1 TO 127
 3650 032032 STARS
 (2)
 3651
 3652 032032 004737 015766 JSR PC,HDHOME :HEADS OVER TRACK 0
 3653 032036 CKERFG :HEADS GO HOME OKAY
 (4) 032044 104432 TRAP CSEXIT
 (4) 032046 000274 .WORD L10100-.
 3654
 3655 032050 BGNSEG ;%START OF SEGMENT%
 (3) 032050 104404 TRAP CSBSEG
 3656
 3657 032052 012737 000001 002274 3S: MOV #1,TMP1 :START WITH 1 WORD WRITE
 3658 032060 012700 003426 MOV #BUF,RO :WRITE BUFFER WITH 52525, WE'LL
 3659 032064 012701 000200 MOV #128,R1 :WRITE 128 WORDS ALL THOUGH WE'RE
 3660 032070 012720 052525 MOV #52525,(RO)+ :ONLY GOING TO TRANSFER < 128
 3661 J32074 005301 DEC R1 :DONE WITH BUFFER?
 3662 032076 001374 BNE 3S :NO, GO BACK
 3663 032100 013700 002274 MOV TMP1,RO :GET TRANSFER WORD COUNT
 3664 032104 005400 NEG RO :NEGATE FOR RLMP
 3665 032106 010077 150250 MOV RO,ARLMP :STORE WORD COUNT AWAY
 3666 032112 012777 003426 150236 MOV #BUF,ARLBA :SET UP RLBA
 3667 032120 005077 150234 CLR ARLDA
 3668 032124 004537 015056 JSR RS,LDF!INC :LOAD THE FUNCTION IN NEXT WORD
 3669 032130 000012 WRITE :WRITE IT
 3670 032132 004537 015702 JSR RS,WTC!DY :WAIT FOR WRITE TO FINISH
 3671 032136 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 032136 104410 TRAP CSESCAPE

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TEST 38 - CHECK ZERO FILL ON WRITE WITH WRITE CHECK

H 10

SEQ 0124

(3) 032140 000200 .WORD 10000\$-.
3672
3673 032142 004537 014614 JSR R5,CHERR :CHECK CNTLR FOR ERRORS
3674 032146 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 032146 104410 TRAP CSECAPE
(3) 032150 000170 .WORD 10000\$-.
3675 ;VERIFY WRITE WITH READ BEFORE WRCHK
3676
3677 032152 005077 150202 CLR ARLDA
3678 032156 012777 003426 150172 MOV MBUF,ARLBA
3679 032164 013700 002274 MOV TMP1,RO
3680 032170 005400 NEG RO
3681 032172 010077 150164 MOV RO,ARLMP
3682 032176 004537 015056 JSR R5,LDFUNC :LOAD THE FUNCTION IN NEXT WORD
3683 032202 000016 READ
3684 032204 004537 015702 JSR R5,WTCRDY
3685 032210 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 032210 104410 TRAP CSECAPE
(3) 032212 000126 .WORD 10000\$-.
3686 032214 004537 014614 JSR R5,CHERR :CHECK CNTLR FOR ERRORS
3687 032220 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 032220 104410 TRAP CSECAPE
(3) 032222 000116 .WORD 10000\$-.
3688
3689 032224 BGNSEG :%%START OF SEGMENT%%
(3) 032224 104404 TRAP CSBSEG
3690 032226 012777 003426 150122 MOV MBUF,ARLBA :SET UP TO READ
3691 032234 013700 002274 MOV TMP1,RO
3692 032240 005400 NEG RO
3693 032242 010077 150114 MOV RO,ARLMP
3694 032246 005077 150106 CLR ARLDA
3695 032252 004537 015056 JSR R5,LDFUNC :SECTOR :LOAD THE FUNCTION IN NEXT WORD
3696 032256 000002 WRCHK
3697 032260 004537 015702 JSR R5,WTCRDY :WAIT TIL WE FINISH THE WRCHK
3698 032264 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 032264 104410 TRAP CSECAPE
(3) 032266 000034 .WORD 10001\$-.
3699
3700 032270 004537 014614 JSR R5,CHERR :CHECK CNTLR FOR ERRORS
3701 032274 005737 002236 TST T.CRC :WAS ERROR A DCK??
3702 032300 001003 BNE 8\$:YES, GIVE MOR INFO
3703 032302 104410 10\$: ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 032302
(3) 032304 000016 TRAP CSECAPE
3704 032306 000405 .WORD 10001\$-.
3705 032310 104406 8\$: BR 99\$:SKIP AROUND
(3) 032310 TRAP CKLOOP :YES, CHECK FOR LOOP FIRST
3706 032312 ERRDF 37, EM64,ERR14
(4) 032312 104455 TRAP CSERDF
(5) 032314 000045 .WORD 37
(5) 032316 007321 .WORD EM64
(5) 032320 010414 .WORD ERR14
3707 032322 99\$: ENDSEG :EXIT TEST
3708 032322 10001\$: TRAP CSESEG :%%END OF SEGMENT%%
(3) 032322 104405

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SEQ 0125

3709
3710 032324 005237 002274 000200 INC TMP1
3711 032330 023727 002274 000200 CMP TMP1,#128.
3712 032336 001250 BNE 33\$
3713
3714 032340 ENDSEG :%END OF SEGMENT%
(3) 032340 104405 10000\$: TRAP CSESEG
(3) 032340 ENDTST :**END OF TEST**
3715 032342 L10100: TRAP CSETST
(3) 032342 104401
3716
3717
3718 .SBttl **TEST 39** - EXTENDED CHECK OF WRITE CHECK FUNCTION
3719
3720 032344 BGNST :**START OF TEST**
3721
3722 032344 STARS
3723 :*****
3724 :CHECK OF WRITE CHECK LOGIC UNDER FLAG MODE
3725 :TEST IS DONE WITH ALL BIT PATTERNS
3726 : WE WILL WRITE CHECK A FULL SECTOR (128 WORDS) FROM
3727 :MEMORY (BUF). WE CHECK THAT NO ERRORS OCCUR.
3728 032344 STARS
3729 :*****
3730 032344 004737 015766 JSR PC,HDHOME :HEADS OVER TRACK 0
3731 032350 CKERFG :HEADS GO HOME OKAY
(4) 032356 104432 TRAP CSEXIT
(4) 032360 000306 .WORD L10101-.
3732
3733 032362 022737 000001 002232 CMP #1,T.DRIVE :CHECK TYPE OF DRIVE
3734 032370 001003 BNE 22\$:NOT RL01 THEN BRANCH
3735 032372 012703 002670 MOV #HDRTAB,R3 :MOV #HDRTAB TO R3
3736 032376 000402 BR 33\$:THEN BRANCH
3737 032400 012703 003050 MOV #HTAB,R3 :MOV #HTAB TO R3 (RL02)
3738
3739 032404 104404 33\$: BGNSEG :START OF SEGMENT
(3) 032404 TRAP CSBSEG
3740
3741 032406 012700 003426 298\$: MOV #BUF,R0 :SETUP AND WRITE
3742 032412 012701 000200 MOV #128.,R1 :128 WORDS
3743 032416 011302 MOV (R3),R2 :GET PATTERN
3744 032420 052702 100000 BJS #BIT15,R2
3745 032424 010220 299\$: MOV R2,(R0)+
3746 032426 005301 DEC R1 :DONE??
3747 032430 001375 BNE 299\$
3748
3749 032432 012777 003426 147716 MOV #BUF,@RLBA :LOAD BUS ADDRESS
3750 032440 012777 177600 147714 MOV #-128.,@RLMP :WORD COUNT
3751 032446 005077 147706 CLR @RLDA :CLEAR DISK ADDRESS
3752 032452 004537 015056 JSR R5,LDFUNC :LOAD THE FUNCTION IN NEXT WORD
3753 032456 000012 WRITE R5,WTCRDY :WAIT FOR CONTROLLER READY
3754 032460 004537 015702 JSR R5,ESCAPE :CHECK FOR FL:LOE, ELSE EXIT SEG
3755 032464 SEG

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TEST 39 - EXTENDED CHECK OF WRITE CHECK FUNCTION

SEQ 0126

(3) 032464 104410 TRAP C\$ESCAPE
(3) 032466 000176 .WORD 10000\$-.
3756 032470 004537 014614 JSR R5,CHERR ;CHECK CNTLR FOR ERRORS
3757 032474 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 032474 104410 TRAP C\$ESCAPE
(3) 032476 000166 .WORD 10000\$-.
3758 032500 BGNSEG ;%%START OF SEGMENT%%
(3) 032500 104404 TRAP C\$BSEG
3759
3760 :VERIFY WRITE WITH READ BEFORE WRCHK
3761
3762 032502 005077 147652 CLR ARLDA
3763 032506 012777 003426 147642 MOV #BUF,ARLBA
3764 032514 012777 177600 147640 MOV #-128.,ARLMP ;LOAD THE FUNCTION IN NEXT WORD
3765 032522 004537 015056 JSR R5,LDFUNC
3766 032526 000014 READ
3767 032530 004537 015702 JSR R5,WTCRDY
3768 032534 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 032534 104410 TRAP C\$ESCAPE
(3) 032536 000076 .WORD 10001\$-.
3769 032540 004537 014614 JSR R5,CHERR ;CHECK CNTLR FOR ERRORS
3770 032544 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 032544 104410 TRAP C\$ESCAPE
(3) 032546 000066 .WORD 10001\$-.
3771
3772 032550 BGNSEG ;%%START OF SEGMENT%%
(3) 032550 104404 TRAP C\$BSEG
3773
3774 032552 38: CLR ARLDA
3775 032552 005077 147602 MOV #-128.,ARLMP ;WORD COUNT
3776 032556 012777 177600 147576 MOV #BUF,ARLBA ;BUS ADDRESS
3777 032564 012777 003426 147564 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
3778 032572 004537 015056 WRCHK ;WRITE CHECK
3779 032576 000002
3780
3781 032600 004537 015702 JSR R5,WTCRDY ;WAIT FOR CONTROLLER READY
3782 032604 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 032604 104410 TRAP C\$ESCAPE
(3) 032606 000024 .WORD 10002\$-.
3783
3784
3785 032610 004537 014614 JSR R5,CHERR ;CHECK CNTLR FOR ERRORS
3786 032614 005737 002236 TST T,CRC
3787 032620 001404 BEQ 4\$
3788
3789 032622 ERRHRD 410.,ERR15,EM70
(4) 032622 104456 TRAP C\$ERRHRD
(5) 032624 000632 .WORD 410
(5) 032626 010462 .WORD ERR15
(5) 032630 007472 .WORD EM70
3790
3791 032632 4\$:
3792
3793
3794 032632 ENDSEG ;%%END OF SEGMENT%%
(3) 032632 10002\$:

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TEST 39 - EXTENDED CHECK OF WRITE CHECK FUNCTION

K 10
SEQ 0127

(3) 032632 104405
3795 032634 104405
(3) 032634 104405
(3) 032634 104405
3796
3797 032636 005723
3798 032640 022737 000001 002232
3799 032646 001003
3800 032650 020327 003046
3801 032654 000402
3802 032656 020327 003234
3803 032662 001251
3804
3805 032664
(3) 032664 104405
(3) 032664 104405
3806 032666
(3) 032666 104401
3807
3808
3809 032670
(2)
3810 : TEST THAT READ WITHOUT HEADER VERIFICATION WORKS. THIS FUNCTION SHOULD
3811 : READ AT THE NEXT SECTOR ENCOUNTERED. SET THE RLDA TO 0
3812 : AND ISSUE THE FUNCTION IN FLAG MODE. UPON COMPLETION CHECK
3813 : FOR ERRORS
3814 032670
(2)
3815 032670
3816
3817
3818 032670 004737 015766
3819 032674
(4) 032702 104432
(4) 032704 000052
3820
3821 032706
(3) 032706 104404
3822
3823
3824 032710 012777 177600 147444
3825 032715 012777 003426 147432
3826 032724 012777 177777 147426
3827 032732 004537 015056
3828 032736 000016
3829 032740 004537 015702
3830 032744 104410
(3) 032744 104410
(3) 032746 000006
3831
3832 032750 004537 014614
3833
3834 032754
(3) 032754 104405
10000\$:
10001\$:
10000\$:
L10101:
.SBTTL
BGNST
JSR
CKERFG
TRAP
.WORD
BGNSEG
TRAP
MOV
MOV
MOV
JSR
RDNH
JSR
ESCAPE
TRAP
.WORD
JSR
ENDSEG
TRAP

CSESEG
ENDSEG
TST
CMP
BNE
CMP
BR
60\$:
77\$:
ENDSEG
TRAP
CSESEG
(R3)+
#1,T.DRIVE
60\$
R3, #HDREND
77\$
R3, #HEND
298\$

CSESEG
CSETST
TEST 40 - READ WITHOUT HEADER COMPARE FUNCTION

STARS

: TEST THAT READ WITHOUT HEADER VERIFICATION WORKS. THIS FUNCTION SHOULD
: READ AT THE NEXT SECTOR ENCOUNTERED. SET THE RLDA TO 0
: AND ISSUE THE FUNCTION IN FLAG MODE. UPON COMPLETION CHECK
: FOR ERRORS
STARS

:***START OF TEST**

PC, HDHOME
CSE, IT
L10102-.
CSESEG
CSESEG
#-128., ARLMP
#BUF, ARLBA
#-1, ARLDA
R5, LDFUNC
R5, WTCRDY
SEG
CSECAF
10000\$-.
R5, CHERR

:HEADS OVER TRACK 0
:HEADS GO HOME OKAY
:SET UP WORD COUNT
:SETUP BUS ADDRESS
:HEADER SHOULDN'T MATTER
:LOAD THE FUNCTION IN NEXT WORD
:READ DATA WITHOUT HEADER VERIFY
:WAIT FOR IT TO FINISH
:CHECK FOR FL:LOE, ELSE EXIT SEG
:CHECK CNTLR FOR ERRORS
:%%END OF SEGMENT%%

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TEST 40 - READ WITHOUT HEADER COMPARE FUNCTION

SEQ 0128

3835 032756 ENDTS? ;**END OF TEST**
(3) 032756 L10102:
(3) 032756 104401 TRAP CSETST

3836 .SBTTL **TEST 41** - READ WITHOUT HEADER COMPARE FUNCTION INTERRUPT

3837 032760 BGNTST ;**START OF TEST**

3840 032760 STARS
(2) :*****
3842 :TEST THAT READ WITHOUT HEADER VERIFICATION WORKS IN
3843 :INTERRUPT MODE.
3844 032760 STARS
(2) :*****
3845 .JSR PC,HDHOME ;HEADS OVER TRACK 0
3846 032760 004737 015766 CKERFG ;HEADS GO HOME OKAY
3847 032764 TRAP CSEXIT
(4) 032772 104432 .WORD L10103-.

3848 032776 104404 BGNSEG ;%START OF SEGMENT%
(3) 032776 TRAP CSBSEG

3850 033000 005037 002256 CLR INTFLG ;CLEAR INTERRUPT OCCURANCE FLAG
3852 033004 012777 177600 147350 MOV #128,ARLMP ;SET UP WORD COUNT FOR ONE SECTOR
3853 033012 012777 003426 147336 MOV #BUF,ARLBA ;SET UP BUFFER ADDRESS
3854 033020 012777 177777 147332 MOV #1,ARLDA ;DISK ADDRESS IS A DON'T CARE
3855 033026 SETPRI MPRI00
(3) 033026 012700 000000 MOV MPRI00,RO
(3) 033032 104441 TRAP CSSPRI
3856 033034 004537 015056 JSR RS,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
3857 033040 000116 RDNHD!INTEN ;INTERRUPT ENABLED
3858 033042 004537 015702 JSR RS,WTCRDY ;WAIT FOR INTERRUPT
3859 033046 SETPRI MPRI07
(3) 033046 012700 000340 MOV MPRI07,RO
(3) 033052 104441 TRAP CSSPRI
3860 033054 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 033054 104410 TRAP CSECAPE
(3) 033056 000030 .WORD 10000\$-.

3861 033060 005737 002256 TST INTFLG ;DID IT INTERRUPT
3863 033064 001004 BNE 1\$;IF INTERRUPT GO TO 1\$

3864 033066 ERRDF 40,EM40,ERRO ;NO INTERRUPT
(4) 033066 104455 TRAP CSERDF
(5) 033070 000050 .WORD 40
(5) 033072 006321 .WORD EM40
(5) 033074 007510 .WORD ERRO

3866 033076 104410 1\$: ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 033076 104410 TRAP CSECAPE
(3) 033100 000006 .WORD 10000\$-.

3867 033102 004537 014614 JSR RS,CHERR ;CHECK CNTLR FOR ERRORS
3868 033106 10000\$: ENDSEG ;%END OF SEGMENT%
(3) 033106

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CZRLHB.MAC 07-DEC-79 08:12 **TEST 41** - READ WITHOUT HEADER COMPARE FUNCTION INTERRUPT

M 10 SEQ 0129

(3) 033106 104405
3871 033110 104405 TRAP CSESEG
(3) 033110 ENDTST ;**END OF TEST**
(3) 033110 L10103:
3872 104401 TRAP CSETST
3873 .SBTTL **TEST 42** - CHECK RD W/O HDR CMP ACTUALLY READS
3874
3875 033112 BGNTST ;**START OF TEST**
3876
3877 033112 STARS
3878 ;*****
3879 ;CHECK THAT THE READ W/O HDR CMP FUNCTION ACTUALLY READS (INTO MEMORY)
3880 ;WE WILL WRITE A PATTERN INTO MEMORY AND THEN ISSUE
3881 ;A READ TO OVERLAY THAT PATTERN. AFTER THE READ
3882 ;WE CHECK TO SEE IF THE WRITTEN PATTERN HAS CHANGED.
3883 ;IF NOT WE ISSUE IT AGAIN AT THE SAME SECTION AFTER
3884 ;HAVING MODIFIED OUR PATTERN IN MEMORY (SINCE THERE IS
3885 ;ONE CHANCE THAT THE DISK COULD HAVE OUR PATTERN). AFTER
3886 ;THE SECOND READ WE CHECK THE BUFFER AGAIN. IF IT'S
3887 ;NOT CHANGED WE REPORT AN ERROR
3888 033112 STARS
3889 ;*****
3890 033112 004737 015766 JSR PC,HDHOME ;HEADS OVER TRACK 0
3891 033116 CKERFG ;HEADS GO HOME OKAY
3892 (4) 033124 104432 TRAP CSEXIT
3893 (4) 033126 000160 .WORD L10104-.
3894
3895 033130 104404 BGNSEG ;%START OF SEGMENT%
3896 (3) 033130 104404 TRAP CSBSEG
3897 033132 012737 024350 002272 MOV #24350,TMPO ;SET PATTERN TO WRITE
3898 033140 005037 002274 CLR TMP1 ;CLEAR PASS INDICATOR
3899 033144 012700 003426 1\$: MOV #BUF,R0 ;SET UP BUFFER BEGINNING
3900 033150 012701 000200 MOV #128,.R1
3901 033154 013720 002272 2\$: MOV TMPO,(R0)+ ;WRITE BUFFER
3902 033160 005301 DEC R1 ;DONE??
3903 033162 001374 BNE 2\$;NO, GO BACK
3904 033164 012777 000050 147166 MOV #40,ARLDA ;LOAD DISK ADDRESS TO NONSENSE
3905 033172 012777 177600 147162 MOV #-128,ARLMP ;SET WORD COUNT
3906 033200 012777 003426 147150 MOV #BUF,ARLBA ;LOAD BUS ADDRESS
3907 033206 012737 003426 002300 MOV #BUF,GDDAT ;FOR ERROR PRINT
3908 033214 004537 015056 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
3909 033220 000016 RDNHLD ;READ W/O HDR CMP
3910 033222 004537 015702 JSR R5,WTCRDY ;WAIT FOR CONTROLLER READY
3911 033226 104410 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
3912 (3) 033226 104410 TRAP CSESCAPE
3913 (3) 033230 000054 .WORD 10000\$-.
3914
3915 033232 004537 014614 ;JSR R5,CHERR ;CHECK CNTLR FOR ERRORS
3916 033236 104410 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
3917 (3) 033236 104410 TRAP CSESCAPE
3918 (3) 033240 000044 .WORD 10000\$-.
3919

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TEST 42 - CHECK RD W/O HDR CMP ACTUALLY READS PAGE 3-27

SEQ 0130

3915 033242 012702 003426
3916 033246 022237 002272
3917 033252 001014
3918
3919
3920
3921 033254 005737 002274
3922 033260 001005
3923
3924 033262 005237 002274
3925 033266 005137 002272
3926 033272 000724
3927
3928 033274 104455
(4) 033274 000024
(5) 033276 006652
(5) 033300 010102
3929
3930 033304
3931
3932 033304
(3) 033304 104405
(3) 033304
3933 033306
(3) 033306
(3) 033306 104401
3934
3935 .SBTTL **TEST 43** - CHECK RLBA INCREMENT WITH RD W/O HDR CMP
3936
3937 033310 BGNST
3938
3939 033310 STARS
3940 :*****
3941 :CHECK THAT THE RLBA WILL INCREMENT WITH THE READ W/O HDR CMP
3942 :THE RLBA SHOULD CONTAIN 'BUF +256.' AFTER A FULL SECTOR
3943 033310 STARS
3944
3945
3946 033310 004737 015766 JSR PC,HDHOME :HEADS OVER TRACK 0
3947 033314 CKERFG :HEADS GO HOME OKAY
(4) 033322 104432 TRAP CSEXIT
(4) 033324 000120 .WORD L10105-.
3948
3949 033326 104404 BGN\$SEG :**START OF SEGMENT**
(3) 033326 TRAP CSBSEG
3950
3951 033330 012777 000050 147022 MOV #40.,ARLDA
3952 033336 012777 003426 147012 MOV #BUF,ARLBA :SET UP BUS ADDRESS
3953 033344 012777 177600 147010 MOV #-128.,ARLMP :WORD COUNT
3954 033352 012737 003426 002300 MOV #BUF,GDDAT :FORM EXPECTED BUS ADDRESS
3955 033360 062737 000400 002300 ADD #256.,GDDAT :AFTER READ
3956
3957 033366 004537 015056 JSR RS,LDFUNC :LOAD THE FUNCTION IN NEXT WORD

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TEST 43 - CHECK RLBA INCREMENT WITH RD W/O HDR CMP

B 11
SEQ 0131

3958 033372 000016 RDNHD :READ W/O HDR CMP
3959 033374 004537 015702 JSR R5,WTCRDY :WAIT FOR CONTROLLER READY
3960 033400 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 033400 104410 TRAP C\$ESCAPE
(3) 033402 000040 .WORD 10000\$-.
3961
3962 033404 004537 014614 JSR RS,CHERR :CHECK CNTLR FOR ERRORS
3963 033410 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 033410 104410 TRAP C\$ESCAPE
(3) 033412 000030 .WORD 10000\$-.
3964 033414 013737 002342 002302 MOV E.BA,BDDAT :READ 'RLBA' FOR PRESENT ADDRESS
3965 033422 023737 002302 002300 CMP BDDAT,GDDAT :DID 'BA' INCREMENT PROPERLY?
3966 033430 001404 BEQ 1\$:YES, CONTINUE
3967
3968 033432 ERRDF 21,EM53,ERR4
(4) 033432 104455 TRAP C\$ERDF
(5) 033434 000025 .WORD 21
(5) 033436 006717 .WORD EM53
(5) 033440 007654 .WORD ERR4
3969
3970 033442 1\$:
3971
3972 033442 ENDSEG :%END OF SEGMENT%
(3) 033442 104405 10000\$:
(3) 033442 TRAP C\$ESEG :**END OF TEST**
3973 033444 ENDTST L10105:
(3) 033444 TRAP C\$ETST
3974
3975
3976
3977
3978
3979
3980
3981 .SBTTL **TEST 44** - CHECK RLDA DOES INCREMENT WITH RD W/O HDR CMP
3982
3983 033446 BGNST :**START OF TEST**
3984
3985 033446 STARS
3986 ;*****
3987 ;CHECK THAT THE RLDA DOES INCREMENT BY ONE AFTER A
3988 ;FULL SECTOR READ W/O HDR CMP
3989 ;AFTER THE READ THE RLDA SHOULD STILL BE THE INITIAL RLDA + 1
3990 STARS
3991 033446 004737 015766 JSR PC,HDHOME :HEADS OVER TRACK 0
3992 033452 CKERFG :HEADS GO HOME OKAY
(4) 033460 104432 TRAP C\$EXIT
(4) 033462 000116 .WORD L10106-.
3993
3994 033464 BGNSEG :%START OF SEGMENT%
(3) 033464 104404 TRAP C\$BSEG
3995
3996

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TEST 44 - CHECK RLDA DOES INCREMENT WITH RD W/O HDR CMP

SEQ 0132

5997 033466 012737 000050 002300 MOV #40.,GDDAT ;DA TO NONSENSE
3998 033474 013777 002300 146656 MOV GDDAT,ARLDA ;SETUP DISK ADDRESS
3999 033502 005237 002300 INC GDDAT
4000 033506 012777 177600 146646 MOV #128.,ARLMP ;WORD COUNT
4001 033514 012777 003426 146634 MOV #BUF,ARLBA ;SETUP BUS ADDRESS
4002
4003 033522 004537 015056 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
4004 033526 000016 RDHMD
4005 033530 004537 015702 JSR R5,WTCRDY ;READ WITHOUT HEADER COMPARE
4006 033534 ESCAPE SEG ;WAIT FOR CONTROLLER READY
(3) 033534 104410 TRAP CSESCAPE ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 033536 000040 .WORD 10000\$-.
4007
4008 033540 004537 014614 JSR R5,CHERR ;CHECK CNTLR FOR ERRORS
4009 033544 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 033544 104410 TRAP CSESCAPE
(3) 033546 000030 .WORD 10000\$-.
4010
4011 033550 013737 002344 002302 MOV E.DA,BDDAT ;READ DISK ADDRESS
4012 033556 023737 002300 002302 CMP GDDAT,BDDAT ;DID SECTOR INCREMENT PROPERLY
4013 033564 001404 BEQ 1S ;YES, BRANCH NO, REPORT ERROR
4014
4015 033566 ER RDF 22.,EM54,ERR4
(4) 033566 104455 TRAP CSERDF
(5) 033570 000026 .WORD 22
(5) 033572 006764 .WORD EM54
(5) 033574 007654 .WORD ERR4
4016
4017 033576 1S:
4018
4019 033576 104405 ENDSEG ;%END OF SEGMENT%
(3) 033576
(3) 033576 TRAP CSESEG ;**END OF TEST**
4020 033600 ENDTST L10106:
(3) 033600 TRAP CSETST
4021
4022
4023
4024
4025 033602 BGNMOD HRDP RM
4026
4027 033602 BGNHRD .WORD L10107-LSHARD/2
(3) 033602 000030
4028
4029 033604 GPRML CNTYPE,CNT,1,YES
(4) 033604 005130 .WORD TSCODE
(4) 033606 033664 .WORD CNTYPE
(4) 033610 000001 .WORD 1
4030 033612 GPRMA CSRMSG,CSR,0,160000,177776,YES
(4) 033612 000031 .WORD TSCODE
(4) 033614 033671 .WORD CSRMSG
(4) 033616 160000 .WORD TBLOLIM
(4) 033620 177776 .WORD TSHILIM
4031 033622 GPRML DRTYPE,TYPDR,1,YES
(4) 033622 003130 .WORD TSCODE

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TEST 44 - CHECK RLDA DOES INCREMENT WITH RD W/O HDR CMP

SEQ 0133

(4) 033624 033716 .WORD DRTYPE
(4) 033626 000001 .WORD 1
4032 033630 001031 GPRMA VECMSG,VECT,0,0,776,YES
(4) 033630 033740 .WORD T\$CODE
(4) 033632 000000 .WORD VECMSG
(4) 033634 000776 .WORD T\$LOLIM
4033 033640 002032 .WORD T\$HILIM
(4) 033640 033705 GPRMD BRMSG,PRIOR,0,340,0,7,YES
(4) 033642 000340 .WORD T\$CODE
(4) 033644 000000 .WORD BRMSG
(4) 033646 000000 .WORD 340
(4) 033650 000007 .WORD T\$LOLIM
4034 033652 004032 .WORD T\$HILIM
(4) 033652 033747 GPRMD DRMSG,DRBT,0,03400,0,7,YES
(4) 033654 003400 .WORD T\$CODE
(4) 033656 000000 .WORD DRMSG
(4) 033660 000000 .WORD 03400
(4) 033662 000007 .WORD T\$LOLIM
4035 033664 .WORD T\$HILIM
4036 033664 ENDHRD
(2) .EVEN
(3) 033664 L10107:
4037 033664 046122 030461 000 CNTYPE: .ASCIZ /RL11/
4039 033671 102 051525 040440 CSRMSG: .ASCIZ /BUS ADDRESS/
033676 042104 042522 051523
033704 000
4040 033705 102 020122 042514 BRMSG: .ASCIZ /BR LEVEL/
033712 042526 000114
4041 033716 051104 053111 020105 DRTYPE: .ASCIZ /DRIVE TYPE = RL01/
033724 054524 042520 036440
033732 051040 030114 000061
4042 033740 042526 052103 051117 VECMSG: .ASCIZ /VECTOR/
033746 000
4043 033747 104 044522 042526 DRMSG: .ASCIZ /DRIVE/
033754 000
4044 033756 .EVEN
4045 033756 ENDMOD
4046 033756
4047
4048
4049 033756 BGNMOD SF TPRM
4050
4051 033756 (3) 033756 000022 BGNSFT
.WORD L10110-L\$SOFT/2
4052
4053 033760 000130 GPRML DMSG,DLT,1,YES
(4) 033760 034024 .WORD T\$CODE
(4) 033762 000001 .WORD DMSG
(4) 033764 006044 .WORD 1
4054 033766 XFERF 1S
(5) 033766 006044 .WORD T\$CODE
4055 033770 GPRMD EMSG,ELT,D,177777,0,177777,YES
(4) 033770 001052 .WORD T\$CODE
(4) 033772 034131 .WORD EMSG

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TEST 44 - CHECK RLDA DOES INCREMENT WITH RD W/O HDR CMP

SEQ 0134

(4) 033774 177777 .WORD 177777
(4) 033776 000000 .WORD TSLOLIM
(4) 034000 177777 .WORD TSHILIM
4056 034002 003130 1\$: GPRML CMSG,DMPCK,1,YES
(4) 034002 003130 .WORD TS CODE
(4) 034004 034050 .WORD CMSG
(4) 034006 000001 .WORD 1
4057 034010 XFERF 2\$
(5) 034010 006044 .WORD TS CODE
4058 034012 004052 GPRMD LMSG,DLMT,D,177777,1,128.,YES
(4) 034012 004052 .WORD TS CODE
(4) 034014 034074 .WORD LMSG
(4) 034016 177777 .WORD 177777
(4) 034020 000001 .WORD TSLOLIM
(4) 034022 000200 .WORD TSHILIM
4059 034024 2\$:
4060
4061
4062 034024 ENDSFT
(2) .EVEN
(3) 034024 L10110:
4063
4064 034024 051104 050117 047440 DMSG: .ASCIZ /DROP ON ERROR LIMIT/
034032 020116 051105 047522
034040 020122 044514 044515
034046 000124
4065 034050 047503 050115 051101 CMSG: .ASCIZ /COMPARE DATA ON DCK/
034056 020105 040504 040524
034064 047440 020116 041504
034072 000113
4066 034074 020043 043117 053440 LMSG: .ASCIZ /# OF WORDS IN ERROR REPORTED/
034102 051117 051504 044440
034110 020116 051105 047522
034116 020122 042522 047520
034124 052122 042105 000
4067 034131 105 051122 051117 EMSG: .ASCIZ /ERROR LIMIT/
034136 046040 046511 052111
034144 000 LASTAD
4068 034145 ENDMOD
4069
4070
4071
4072 034145
(2) 034146 .EVEN
(4) 034146 000000 .WORD 0
(4) 034150 000000 .WORD 0
(3) 034152 L\$LAST:::
4073
4074 000001 .END

CZRLHBO RL11/RLV11 CTLR TST 2
CZRLHB.MAC 07-DEC-79 08:12

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CROSS REFERENCE TABLE -- USER SYMBOLS

1

SEQ 0135

CZRLHBO RL 11/RLV11 CTLR TST 2
CZRLHB.MAC 07-DEC-79 08:12

G 11

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CROSS REFERENCE TABLE -- USER SYMBOLS

SE 0 0136

CZRLHBO RL11/RLV11 CTLR TST 2
CZRLHB.MAC 07-DEC-79 08:12

H 11
MAC(V11 30A(1052) 17-DEC-79 13:44 PAGE 4-2
CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0137

CZRLHBO RL11/RLV11 CILR TSI 2
CZRLHB.MAC 07-DEC-79 08:12

I 11
MAC(V11) 30A(1052) 17-DEC-79 13:44 PAGE 4-3
CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0138

CZRLHBO RL11/RLV11 CTLR TST 2
CZRLHB.MAC 07-DEC-79 08:12

J 11
MACY11 30A(1052) 17-DEC-79 13:44 PAGE 4-4
CROSS REFERENCE TABLE -- USER SYMBOL

J

SEC 0139

CZRLHBO RL 11/RLV11 CTLR TST 2
CZRLHB.MAC 07-DEC-79 08:12

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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0140

CZRLHB0 RL11/RLV11 CTLR TST 2
CZRLHB.MAC 07-DEC-79 08:12

L 11
MAC(Y11) 30A(1052) 17-DEC-79 13:44 PAGE 4-6
CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0141

1409	1413	1424	1426	1438	1441	1452	1456	1466	1468	1478	1495	1499
1510	1512	1531	1549	1555	1570	1572	1628	1633	1646	1651	1664	1667
1682	1686	1698	1700	1715	1718	1723	1733	1740	1744	1756	1761	1771
1780	1790	1794	1805	1807	1817	1822	1846	1850	1860	1863	1873	1878
1901	1906	1917	1919	1929	1936	1940	1951	1953	1976	1980	1996	1998
2015	2018	2038	2042	2052	2054	2065	2068	2078	2082	2092	2094	2106
2109	2120	2124	2134	2136	2146	2159	2163	2174	2176	2195	2208	2212
2228	2230	2238	2243	2246	2267	2270	2273	2277	2280	2291	2301	2304
2314	2331	2346	2350	2359	2365	2378	2381	2389	2397	2409	2413	2415
2424	2441	2445	2476	2478	2487	2491	2493	2496	2500	2510	2512	2524
2528	2532	2536	2543	2554	2556	2569	2572	2573	2585	2590	2607	2624
2628	2641	2646	2659	2661	2662	2675	2679	2697	2721	2725	2737	2739
2756	2759	2760	2773	2778	2796	2817	2822	2834	2836	2852	2855	2856
2868	2873	2892	2922	2926	2942	2944	2948	2962	2968	2983	2988	3007
3029	3033	3042	3044	3058	3060	3071	3073	3075	3100	3112	3116	3126
3128	3142	3144	3145	3155	3157	3159	3169	3177	3181	3192	3194	3208
3210	3219	3221	3223	3235	3242	3248	3252	3264	3266	3280	3282	3291
3293	3295	3307	3310	3321	3325	3335	3337	3351	3353	3362	3364	3366
3378	3381	3393	3398	3411	3413	3431	3433	3445	3447	3449	3462	3465
3481	3484	3493	3495	3509	3511	3520	3522	3524	3535	3553	3557	3566
3568	3582	3584	3593	3595	3597	3617	3636	3641	3653	3655	3671	3674
3685	3687	3689	3698	3703	3715	3720	3731	3739	3755	3757	3758	3768
3770	3772	3782	3806	3815	3819	3821	3830	3835	3839	3847	3849	3860
3866	3871	3875	3891	3893	3910	3913	3933	3937	3947	3949	3960	3963
3973	3983	3992	3994	4006	4009	4020	4025	4027	4046	4049	4051	4069

F\$CLEA= 000007
F\$DU = 000016
F\$END = 000041

31#	795	807										
31#	813	817										
31#	38	42	53	103	108	324	328	427	429	440	449	.59
470	481	491	503	511	524	535	546	557	568	578	589	598
647	656	667	669	679	681	685	691	760	761	787	794	807
808	812	817	818	826	921	932	942	951	1216	1218	1223	1225
1228	1240	1243	1248	1250	1258	1263	1267	1272	1290	1302	1312	1323
1324	1328	1340	1354	1361	1365	1366	1370	1382	1396	1399	1408	1409
1413	1424	1438	1441	1451	1452	1456	1466	1478	1494	1495	1499	1510
1531	1548	1549	1555	1570	1623	1628	1633	1646	1664	1667	1681	1682
1686	1698	1715	1718	1733	1739	1740	1744	1756	1771	1780	1789	1790
1794	1805	1817	1822	1845	1846	1850	1860	1873	1878	1900	1901	1906
1917	1929	1935	1936	1940	1951	1975	1976	1980	1996	2015	2018	2037
2038	2042	2052	2065	2068	2077	2078	2082	2092	2106	2109	2119	2120
2124	2134	2146	2158	2159	2163	2174	2195	2207	2208	2212	2228	2243
2246	2267	2270	2273	2277	2280	2291	2301	2304	2314	2331	2345	2346
2350	2359	2378	2381	2389	2396	2397	2409	2413	2424	2440	2441	2445
2476	2487	2491	2492	2493	2496	2500	2510	2524	2528	2532	2533	2536
2543	2554	2569	2572	2585	2590	2607	2623	2624	2628	2641	2659	2661
2675	2679	2697	2720	2721	2725	2737	2756	2759	2773	2778	2796	2816
2817	2822	2834	2852	2855	2868	2873	2892	2921	2922	2926	2942	2962
2983	2988	3007	3028	3029	3033	3042	3058	3060	3071	3073	3100	3110
3112	3116	3126	3142	3144	3155	3157	3169	3176	3177	3181	3192	3208
3210	3219	3221	3235	3242	3247	3248	3252	3264	3280	3282	3291	3293
3307	3310	3320	3321	3325	3335	3351	3353	3362	3364	3378	3381	3392
3393	3398	3411	3431	3433	3445	3447	3462	3465	3480	3481	3484	3493
3509	3511	3520	3522	3535	3552	3553	3557	3566	3582	3584	3593	3595
3617	3635	3636	3641	3653	3671	3674	3685	3687	3698	3703	3714	3715
3720	3731	3755	3757	3768	3770	3782	3805	3806	3815	3819	3830	3834
3835	3839	3847	3860	3866	3870	3871	3875	3891	3910	3913	3932	3933
3937	3947	3960	3963	3972	3973	3983	3992	4006	4009	4019	4020	4025

CZRLHB0 RL11/RLV11 CTLR TST 2
CZRLHB.MAC 07-DEC-79 08:12

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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0142

CZRLHB0 RL11/RLV11 CTLR TST 2
CZRLHB.MAC 07-DEC-79 08:12

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CROSS REFERENCE TABLE -- USER SYMBOLS

N 11

Page 4-8 SYMBOL

SFQ 0143

CZRLHB0 RL11/RLV11 CTLR TST 2
CZRLHB.MAC 07-DEC-79 08:12

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B 12
CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0144

CZRLHBO RL11/RLV11 CTLR TST 2
CZRLHB.MAC 07-DEC-79 08:12

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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0145

CZRLMBO RL11/RLV11 CILR TST 2
CZRLMB.MAC 07-DEC-79 08:12

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MACY11 30A(1052) 17-DEC-79 13:44 PAGE 4-11
CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0146

LSSW	012434	G	40	670#
LSTEST	002114	G	40#	
LSTIML	002014	G	40#	
LSUNIT	002012	G	40#	
L10000	007524		440#	
L10001	007536		449#	
L10002	007600		459#	
L10003	007652		470#	
L10004	007720		481#	
L10005	007756		491#	
L10006	010020		503#	
L10007	010026		511#	
L10010	010100		524#	
L10011	010144		535#	
L10012	010216		546#	
L10013	010270		557#	
L10014	010344		568#	
L10015	010412		578#	
L10016	010460		589#	
L10017	010520		598#	
L10021	012432		657	666#
L10022	012446		670	678#
L10023	013276		760#	
L10024	013464		787#	
L10025	013560		807#	
L10026	013564		817#	
L10027	014472		921#	
L10030	014504		932#	
L10031	014520		942#	
L10032	014526		951#	
L10033	016404		1290	1324#
L10034	016534		1340	1366#
L10035	016670		1382	1409#
L10036	017022		1424	1452#
L10037	017160		1466	1495#
L10040	017356		1510	1549#
L10041	020000		1570	1628#
L10042	020170		1646	1682#
L10043	020366		1698	1740#
L10044	020540		1756	1790#
L10045	020736		1805	1846#
L10046	021136		1860	1901#
L10047	021240		1917	1936#
L10050	021364		1951	1976#
L10051	021560		1996	2038#
L10052	021714		2052	2078#
L10053	022046		2092	2120#
L10054	022166		2134	2159#
L10055	022346		2174	2208#
L10056	023160		2228	2346#
L10057	023354		2359	2397#
L10060	023520		2413	2441#
L10061	023704		2476	2493
L10062	024070		2510	2536#
L10063	024470		2554	2624#
L10064	025112		2641	2721#

2496#

CZRLHB0 RL11/RLV11 CTLR TST 2
CZRLHB.MAC 07-DEC-79 08:12

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CROSS REFERENCE TABLE -- USER SYMBOLS

SEO 0147

CZRLHBO RL11/RLV11 CTLR TST 2
CZRLHB.MAC 07-DEC-79 08:12

F 12

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CROSS REFERENCE TABLE -- USER SYMBOLS

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SEQ 0148

CZRLHBO RL 11/RLV11 CTLR TST 2
CZRLHB.MAC 07-DEC-79 08:12

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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0149

CZRLHBO RL 11/RLV11 C7LR TST 2
CZRLHB.MAC 07-DEC-79 08:12

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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0150

CZRLHB0 RL11/RLV11 CTLR TST 2
CZRLHB.MAC 07-DEC-79 08:12

MACY11 30A(1052) 17-DEC-79 13:44 I 12
CROSS REFERENCE TABLE -- USER SYMBOLS PAGE 4-16

00151

CZRLHBO RL11/RLV11 CTLR TST 2
CZRLH8.MAC 07-DEC-79 08:12

J 12
MACY11 30A(1052) 17-DEC-79 13:44 PAGE 4-17
CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0152

3266#	3295#	3319#	3320#	3321#	3325#	3337#	3366#	3391#	3392#	3393#	3398#	3413#
3449#	3475#	3480#	3481#	3484#	3495#	3524#	3551#	3552#	3553#	3557#	3568#	3597#
3634#	3635#	3636#	3641#	3655#	3689#	3708#	3716#	3715#	3720#	3739#	3758#	3772#
3794#	3795#	3805#	3806#	3815#	3821#	3834#	3835#	3839#	3849#	3870#	3871#	3875#
3893#	3932#	3933#	3937#	3949#	3972#	3973#	3983#	3994#	4019#	4020#	4025#	4027#
4036#	4046#	4049#	4051#	4054	4057	4062#	4069#	429#	647	650#	654	656#
TNSN0 = 000000	38#	42	53#	103	108#	324	328#	427	647	650#	654	656#
	667	669#	679	681#	685	691#	761	766#	787	794#	808	812#
	826#	1267	1272#	1324	1328#	1366	1370#	1409	1413#	1452	1456#	1495
	1549	1555#	1628	1633#	1682	1686#	1740	1744#	1790	1794#	1846	1850#
	1906#	1936	1940#	1976	1980#	2038	2042#	2078	2082#	2120	2124#	2159
	2208	2212#	2346	2350#	2397	2409#	2441	2445#	2496	2500#	2536	2543#
	2628#	2721	2725#	2817	2822#	2922	2926#	3029	3033#	3112	3116#	3177
	3248	3252#	3321	3325#	3393	3398#	3481	3484#	3553	3557#	3636	3641#
	3720#	3806	3815#	3835	3839#	3871	3875#	3933	3937#	3973	3983#	4020
	4046	4049#	4069									
TNSN1 = 000005	432#	440	442#	449	451#	459	461#	470	472#	481	483#	491
	503	505#	511	515#	524	526#	535	537#	546	548#	557	559#
	570#	578	580#	589	591#	598	657#	666	670#	678	692#	760
	807	813#	817	916#	921	926#	932	934#	942	945#	951	1208#
	1292#	1323	1342#	1365	1384#	1408	1426#	1451	1468#	1494	1512#	1548
	1623	1651#	1681	1700#	1739	1761#	1789	1807#	1845	1863#	1900	1919#
	1953#	1975	1998#	2037	2054#	2077	2094#	2119	2136#	2158	2176#	2207
	2345	2365#	2396	2415#	2440	2478#	2492	2512#	2533	2556#	2623	2646#
	2739#	2816	2836#	2921	2944#	3028	3044#	3110	3128#	3176	3194#	3247
	3320	3337#	3392	3413#	3480	3495#	3552	3568#	3635	3655#	3714	3739#
	3821#	3834	3849#	3870	3893#	3932	3949#	3972	3994#	4019	4027#	4051#
TNSN2 = 000003	4054	4057	4062									
	1723#	1738	2238#	2343	2573#	2622	2662#	2715	2760#	2814	2856#	2913
	3027	3075#	3109	3145#	3175	3223#	3246	3295#	3319	3366#	3391	3449#
TNSN3 = 000003	3524#	3551	3597#	3634	3689#	3708	3758#	3795				
TSPTNU= 000000	2968#	3025	3159#	3174	3772#	3794						
TSSAVL= 177777	31#											
TSS EGL= 177777	31#											
	31#	1208#	1216	1218	1223	1225	1228	1240	1243	1248	1250	1258
	1292#	1302	1312	1323#	1342#	1354	1361	1365#	1384#	1396	1399	1408#
	1438	1441	1451#	1468#	1478	1494#	1512#	1531	1548#	1572#	1623#	1651#
	1667	1681#	1700#	1715	1718	1723#	1733	1738#	1739#	1761#	1771	1780
	1807#	1817	1822	1845#	1863#	1873	1878	1900#	1919#	1929	1935#	1953#
	1998#	2015	2018	2037#	2054#	2065	2068	2077#	2094#	2106	2109	2119#
	2146	2158#	2176#	2195	2207#	2230#	2238#	2243	2246	2267	2270	2273
	2280	2291	2301	2304	2314	2331	2343#	2345#	2365#	2378	2381	2389
	2415#	2424	2440#	2478#	2487	2491	2492#	2512#	2524	2528	2532	2533#
	2569	2572	2573#	2585	2590	2607	2622#	2623#	2646#	2659	2661	2662#
	2679	2697	2715#	2720#	2739#	2756	2759	2760#	2773	2778	2796	2814#
	2836#	2852	2855	2856#	2868	2873	2892	2913#	2921#	2944#	2948#	2962
	2983	2988	3007	3025#	3027#	3028#	3044#	3058	3060	3071	3073	3075#
	3109#	3110#	3128#	3142	3144	3145#	3155	3157	3159#	3169	3174#	3175#
	3194#	3208	3210	3219	3221	3223#	3235	3242	3246#	3247#	3266#	3280
	3291	3293	3295#	3307	3310	3319#	3320#	3337#	3351	3353	3362	3364
	3378	3381	3391#	3392#	3413#	3431	3433	3445	3447	3449#	3462	3465
	3480#	3495#	3509	3511	3520	3522	3524#	3535	3551#	3552#	3568#	3582
	3593	3595	3597#	3617	3634#	3635#	3655#	3671	3674	3685	3687	3698
	3703	3708#	3714#	3739#	3755	3757	3758#	3768	3770	3772#	3782	3794#
	3805#	3821#	3830	3834#	3849#	3860	3866	3870#	3893#	3910	3913	3932#
	3960	3963	3972#	3994#	4006	4009	4019#					3949#

CZRLHBO RL11/RLV11 CTLR TST 2
CZRLHB.MAC 07-DEC-79 08:12

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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0153

T\$SEK0= 010000	1208#	1216	1218	1223	1225	1228	1240	1243	1248	1250	1258	1263	1292#
	1302	1312	1323	1342#	1354	1361	1365	1384#	1396	1399	1408	1426#	1438
	1441	1451	1468#	1478	1494	1512#	1531	1548	1572#	1623	1651#	1664	1667
	1681	1700#	1715	1718	1739	1761#	1771	1780	1789	1807#	1817	1822	1845
	1863#	1873	1878	1900	1919#	1929	1935	1953#	1975	1998#	2015	2018	2037
	2054#	2065	2068	2077	2094#	2106	2109	2119	2136#	2146	2158	2176#	2195
	2207	2230#	2345	2365#	2378	2381	2389	2396	2415#	2424	2440	2478#	2487
	2491	2492	2512#	2524	2528	2532	2533	2556#	2569	2572	2623	2646#	2659
	2661	2720	2739#	2756	2759	2816	2836#	2852	2855	2921	2944#	3028	3044#
	3058	3060	3071	3073	3110	3128#	3142	3144	3176	3194#	3208	3210	3219
	3221	3247	3266#	3280	3282	3291	3293	3320	3337#	3351	3353	3362	3364
	3392	3413#	3431	3433	3445	3447	3480	3495#	3509	3511	3520	3522	3552
	3568#	3582	3584	3593	3595	3635	3655#	3671	3674	3685	3687	3714	3739#
	3755	3757	3805	3821#	3830	3834	3849#	3860	3866	3870	3893#	3910	3913
T\$SEK1= 010001	3932	3949#	3960	3963	3972	3994#	4006	4009	4019	2277	2280	2291	2301
	1723#	1733	1738	2238#	2243	2246	2267	2270	2273	2662#	2675	2679	2697
	2304	2314	2331	2343	2573#	2585	2590	2607	2622	2892	2913	2948#	2962
	2715	2760#	2773	2778	2796	2814	2856#	2868	2873	3223#	3235	3242	3246
	3027	3075#	3100	3109	3145#	3155	3157	3175	3223#	3462	3465	3475	3295#
	3307	3310	3319	3366#	3378	3381	3391	3449#	3758#	3768	3770	3794	3535
T\$SEK2= 010002	3551	3597#	3617	3634	3689#	3698	3703	3708	3772#	3782	3794	3795	
T\$SUBN= 000000	2968#	2983	2988	3007	3025	3159#	3169	3174	1633#	1686#	1744#	1794#	1850#
	31#	1272#	1328#	1370#	1413#	1456#	1499#	1555#	1686#	1744#	1794#	1850#	
	1906#	1940#	1980#	2042#	2082#	2124#	2163#	2212#	2350#	2409#	2445#	2500#	2543#
	2628#	2725#	2822#	2926#	3033#	3116#	3181#	3252#	3325#	3398#	3484#	3557#	3641#
T\$TAGL= 177777	31#												
T\$TAGN= 010111	31#	432#	442#	451#	461#	472#	483#	493#	505#	515#	526#	537#	548#
	559#	570#	580#	591#	650#	657#	670#	692#	766#	795#	813#	916#	926#
	934#	945#	1272#	1328#	1370#	1413#	1456#	1499#	1555#	1633#	1686#	1744#	1794#
	1850#	1906#	1940#	1980#	2042#	2082#	2124#	2163#	2212#	2350#	2409#	2445#	2500#
	2543#	2628#	2725#	2822#	2926#	3033#	3116#	3181#	3252#	3325#	3398#	3484#	3557#
T\$TEMP= 000000	3661#	3720#	3815#	3839#	3875#	3937#	3983#	4027#	4051#	4070#	481#	491#	503#
	42#	103#	324#	427#	440#	449#	459#	470#	481#	491#	503#	511#	524#
	535#	546#	557#	568#	578#	589#	598#	647#	654#	666#	667#	678#	679#
	683#	685#	760#	761#	787#	807#	808#	817#	818#	921#	932#	942#	951#
	1216#	1218#	1223#	1225#	1228#	1240#	1243#	1248#	1250#	1258#	1263#	1267#	1276#
	1286#	1290#	1302#	1312#	1323#	1324#	1330#	1336#	1340#	1354#	1361#	1365#	1366#
	1373#	1378#	1382#	1396#	1399#	1408#	1409#	1415#	1420#	1424#	1438#	1441#	1451#
	1452#	1458#	1463#	1466#	1478#	1494#	1495#	1502#	1506#	1510#	1531#	1548#	1549#
	1557#	1561#	1570#	1623#	1628#	1635#	1641#	1646#	1664#	1667#	1681#	1682#	1688#
	1694#	1698#	1715#	1718#	1733#	1738#	1739#	1740#	1746#	1752#	1756#	1771#	1780#
	1789#	1790#	1796#	1801#	1805#	1817#	1822#	1845#	1846#	1852#	1857#	1860#	1873#
	1878#	1900#	1901#	1908#	1913#	1917#	1929#	1935#	1936#	1942#	1947#	1951#	1975#
	1976#	1982#	1992#	1996#	2015#	2018#	2037#	2038#	2044#	2048#	2052#	2065#	2068#
	2077#	2078#	2084#	2089#	2092#	2106#	2109#	2119#	2120#	2126#	2131#	2134#	2146#
	2158#	2159#	2166#	2170#	2174#	2195#	2207#	2208#	2214#	2224#	2228#	2243#	2246#
	2267#	2270#	2273#	2277#	2280#	2291#	2301#	2304#	2314#	2331#	2343#	2345#	2346#
	2352#	2355#	2359#	2378#	2381#	2389#	2396#	2397#	2398#	2404#	2413#	2424#	2440#
	2441#	2447#	2451#	2467#	2472#	2476#	2487#	2491#	2492#	2493#	2496#	2501#	2504#
	2510#	2524#	2528#	2532#	2533#	2536#	2545#	2550#	2554#	2569#	2572#	2585#	2590#
	2607#	2622#	2623#	2624#	2632#	2637#	2641#	2659#	2661#	2675#	2679#	2697#	2715#
	2720#	2721#	2729#	2733#	2737#	2756#	2759#	2773#	2778#	2796#	2814#	2816#	2817#
	2826#	2831#	2834#	2852#	2855#	2868#	2873#	2892#	2913#	2921#	2922#	2929#	2938#
	2942#	2962#	2983#	2988#	3007#	3025#	3027#	3028#	3029#	3035#	3038#	3042#	3058#
	3060#	3071#	3073#	3100#	3109#	3110#							

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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0154

3157#	3169#	3174#	3175#	3176#	3177#	3183#	3188#	3192#	3208#	3210#	3219#	3221#	
3235#	3242#	3246#	3247#	3248#	3255#	3260#	3264#	3280#	3282#	3291#	3293#	3307#	
3310#	3319#	3320#	3321#	3327#	3331#	3335#	3351#	3353#	3362#	3364#	3378#	3381#	
3391#	3392#	3393#	3400#	3406#	3411#	3431#	3433#	3445#	3447#	3462#	3465#	3475#	
3480#	3481#	3486#	3490#	3493#	3509#	3511#	3520#	3522#	3535#	3551#	3552#	3553#	
3560#	3562#	3566#	3582#	3584#	3593#	3595#	3617#	3634#	3635#	3636#	3645#	3650#	
3653#	3671#	3674#	3685#	3687#	3698#	3703#	3708#	3714#	3715#	3722#	3727#	3731#	
3755#	3757#	3768#	3770#	3782#	3794#	3795#	3805#	3806#	3809#	3814#	3819#	3830#	
3834#	3835#	3841#	3844#	3847#	3860#	3866#	3870#	3871#	3877#	3887#	3891#	3910#	
3913#	3932#	3933#	3939#	3943#	3947#	3960#	3963#	3972#	3973#	3985#	3989#	3992#	
4006#	4009#	4019#	4020#	4029#	4030#	4031#	4032#	4033#	4034#	4036#	4046#	4053#	
4055#	4056#	4058#	4062#	4069#									
TSTEST = 000054	31#	1272#	1328#	1370#	1413#	1456#	1499#	1555#	1633#	1686#	1744#	1794#	1850#
	1906#	1940#	1980#	2042#	2082#	2124#	2163#	2212#	2350#	2409#	2445#	2500#	2543#
	2628#	2725#	2822#	2926#	3033#	3116#	3181#	3252#	3325#	3398#	3484#	3557#	3641#
TSTSTM = 177777	3720#	3815#	3839#	3875#	3937#	3983#	4072						
	31#	440	449	454	459	465	470	476	481	486	491	500	503
	511	519	524	530	535	541	546	552	557	563	568	573	578
	584	589	595	598	600	603	604	605	606	609	610	693	694
	698	700	708	718	748	749	751	759	760	768	771	774	776
	782	785	787	797	801	805	807	817	863	865	868	871	873
	875	876	905	910	954	961	963	964	1030	1181	1196	1208	1216
	1218	1223	1225	1228	1240	1243	1248	1250	1256	1258	1263	1290	1292
	1302	1312	1319	1323	1324	1340	1342	1350	1354	1356	1360	1361	1365
	1366	1382	1384	1396	1399	1404	1408	1409	1424	1426	1438	1441	1447
	1451	1452	1466	1468	1478	1486	1490	1494	1495	1510	1512	1514	1523
	1524	1529	1531	1540	1544	1548	1549	1566	1570	1572	1574	1575	1576
	1615	1620	1621	1622	1623	1628	1646	1651	1664	1667	1673	1681	1682
	1698	1700	1715	1718	1723	1731	1733	1738	1739	1740	1756	1761	1771
	1779	1780	1789	1790	1805	1807	1817	1822	1827	1829	1834	1836	1841
	1845	1846	1860	1863	1873	1878	1883	1885	1890	1891	1896	1900	1901
	1917	1919	1929	1935	1936	1951	1953	1960	1964	1965	1970	1971	1975
	1976	1996	1998	2015	2018	2033	2037	2038	2052	2054	2065	2068	2073
	2077	2078	2092	2094	2106	2109	2115	2119	2120	2134	2136	2146	2153
	2158	2159	2174	2176	2178	2187	2188	2193	2195	2203	2207	2208	2228
	2230	2232	2238	2243	2246	2267	2270	2273	2277	2280	2289	2291	2301
	2304	2314	2320	2329	2331	2343	2345	2346	2359	2365	2378	2381	2387
	2389	2396	2397	2413	2415	2424	2431	2436	2440	2441	2476	2478	2487
	2490	2491	2492	2493	2496	2510	2512	2515	2523	2524	2527	2528	2531
	2532	2533	2536	2554	2556	2569	2572	2573	2585	2590	2594	2607	2612
	2616	2618	2622	2623	2624	2641	2646	2659	2661	2662	2675	2679	2683
	2697	2702	2707	2708	2715	2720	2721	2737	2739	2756	2759	2760	2773
	2778	2782	2796	2801	2805	2806	2814	2816	2817	2834	2836	2852	2855
	2856	2868	2873	2877	2892	2897	2901	2902	2913	2921	2922	2942	2944
	2948	2962	2968	2983	2988	2992	3007	3012	3016	3017	3025	3027	3028
	3029	3042	3044	3058	3060	3071	3073	3075	3077	3098	3099	3100	3105
	3109	3110	3112	3126	3128	3142	3144	3145	3155	3157	3159	3169	3174
	3175	3176	3177	3192	3194	3208	3210	3219	3221	3223	3231	3235	3237
	3241	3242	3246	3247	3248	3264	3266	3280	3282	3291	3293	3295	3307
	3310	3315	3319	3320	3321	3335	3337	3351	3353	3362	3364	3366	3378
	3381	3387	3391	3392	3393	3411	3413	3431	3433	3445	3447	3449	3462
	3465	3471	3473	3475	3480	3481	3493	3495	3509	3511	3520	3522	3524
	3535	3542	3547	3551	3552	3553	3566	3568	3582	3584	3593	3595	3597
	3599	3609	3610	3615	3617	3626	3630	3634	3635	3636	3653	3655	3671
	3674	3685	3687	3689	3698	3703	3705	3706	3708	3714	3715	3731	3739
	3755	3757	3758	3768	3770	3772	3782	3789	3794	3795	3805	3806	3819

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CROSS REFERENCE TABLE -- USER SYMBOLS

M 12
SEQ 0155

	3821	3830	3834	3835	3847	3849	3855	3859	3860	3865	3866	3870	3871
	3891	3893	3910	3913	3928	3932	3933	3947	3949	3960	3963	3968	3972
	3973	3992	3994	4006	4009	4015	4019	4020					
TSTS= 000001	31#	1272#	1328#	1370#	1413#	1456#	1499#	1555#	1633#	1686#	1744#	1794#	1850#
	1906#	1940#	1980#	2042#	2082#	2124#	2163#	2212#	2350#	2409#	2445#	2500#	2543#
	2628#	2725#	2822#	2926#	3033#	3116#	3181#	3252#	3325#	3398#	3484#	3557#	3641#
	3720#	3815#	3839#	3875#	3937#	3983#							
TSSAUT= 010024	766#	787											
TSSCLE= 010025	795#	807											
TSSDU= 010026	813#	817											
TSSHAR= 010107	4027#	4036											
TSSHJ= 010021	657#	666											
TSSINI= 010023	692#	760											
TSSMSG= 010017	432#	440	442#	449	451#	459	461#	470	472#	481	483#	491	493#
	503	505#	511	515#	524	526#	535	537#	546	548#	557	559#	568
TSSPRO= 010020	570#	578	580#	589	591#	598							
TSSSEG= 010000	650#												
	1208#	1216	1218	1223	1225	1228	1240	1243	1248	1250	1258	1263#	1292#
	1302	1312	1323#	1342#	1354	1361	1365#	1384#	1396	1399	1408#	1426#	1438
	1441	1451#	1468#	1478	1494#	1512#	1531	1548#	1572#	1623#	1651#	1664	1667
	1681#	1700#	1715	1718	1723#	1733	1738#	1739#	1761#	1771	1780	1789#	1807#
	1817	1822	1845#	1863#	1873	1878	1900#	1919#	1929	1935#	1953#	1975#	1998#
	2015	2018	2037#	2054#	2065	2068	2077#	2094#	2106	2109	2119#	2136#	2146
	2158#	2176#	2195	2207#	2230#	2238#	2243	2246	2267	2270	2273	2277	2280
	2291	2301	2304	2314	2331	2343#	2345#	2365#	2378	2381	2389	2396#	2415#
	2424	2440#	2478#	2487	2491	2492#	2512#	2524	2528	2532	2533#	2556#	2569
	2572	2573#	2585	2590	2607	2622#	2623#	2646#	2659	2661	2662#	2675	2679
	2697	2715#	2720#	2739#	2756	2759	2760#	2773	2778	2796	2814#	2816#	2836#
	2852	2855	2856#	2868	2873	2892	2913#	2921#	2944#	2948#	2962	2968#	2983
	2998	3007	3025#	3027#	3028#	3044#	3058	3060	3071	3073	3075#	3100	3109#
	3110#	3128#	3142	3144	3145#	3155	3157	3159#	3169	3174#	3175#	3176#	3194#
	3208	3210	3219	3221	3223#	3235	3242	3246#	3247#	3266#	3280	3282	3291
	3293	3295#	3307	3310	3319#	3320#	3337#	3351	3353	3362	3364	3366#	3378
	3381	3391#	3392#	3413#	3431	3433	3445	3447	3449#	3462	3465	3475#	3480#
	3495#	3509	3511	3520	3522	3524#	3535	3551#	3552#	3568#	3582	3584	3593
	3595	3597#	3617	3634#	3635#	3655#	3671	3674	3685	3687	3689#	3698	3703
	3708#	3714#	3739#	3755	3757	3758#	3768	3770	3772#	3782	3794#	3795#	3805#
	3821#	3830	3834#	3849#	3860	3866	3870#	3893#	3910	3913	3932#	3949#	3960
	3963	3972#	3994#	4006	4009	4019#							
TSSSOF= 010110	4051#	4062											
TSSSRV= 010032	916#	921	926#	932	934#	942	945#	951					
TSSSW = 010022	670#	678											
TSSTES= 010106	1272#	1290	1324	1328#	1340	1366	1370#	1382	1409	1413#	1424	1452	1456#
	1466	1495	1499#	1510	1549	1555#	1570	1628	1633#	1646	1682	1686#	1698
	1740	1744#	1756	1790	1794#	1805	1846	1850#	1860	1901	1906#	1917	1936
	1940#	1951	1976	1980#	1996	2038	2042#	2052	2078	2082#	2092	2120	2124#
	2134	2159	2163#	2174	2208	2212#	2228	2346	2350#	2359	2397	2409#	2413
	2441	2445#	2476	2493	2496	2500#	2510	2536	2543#	2554	2624	2628#	2641
	2721	2725#	2737	2817	2822#	2834	2922	2926#	2942	3029	3033#	3042	3112
	3116#	3126	3177	3181#	3192	3248	3252#	3264	3321	3325#	3335	3393	3398#
	3411	3481	3484#	3493	3553	3557#	3566	3636	3641#	3653	3715	3720#	3731
	3806	3815#	3819	3835	3839#	3847	3871	3875#	3891	3933	3937#	3947	3973
	3983#	3992	4020										
T.ANS	012444	676#											
T.CNTL	002420	169#	729*	755	832	849	889	896	2454	2986	3701	3786	
T.CRC	002236	112#	985*	1018*	2588	2677	2776	2871					

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CROSS REFERENCE TABLE -- USER SYMBOLS N 12

SEQ 0156

T.DMP	012440	674#	2592	2681	2780	2875	2990			
T.DRIV	002232	110#	727*	2233	2334	3733	3798			
T.LMT	012442	675#	2605	2695	2794	2890	3005			
T1	016242	G	683	1272#						
T10	020370	G	683	1744#						
T11	020542	G	683	1794#						
T12	020740	G	683	1850#						
T13	021140	G	683	1906#						
T14	021242	G	683	1940#						
T15	021366	G	683	1980#						
T16	021562	G	683	2042#						
T17	021716	G	683	2082#						
T18	022050	G	683	2124#						
T19	022170	G	683	2163#						
T2	016406	G	683	1328#						
T20	022350	G	683	2212#						
T21	023162	G	683	2350#						
T22	023356	G	683	2409#						
T23	023522	G	683	2445#						
T24	023706	G	683	2500#						
T25	024072	G	683	2543#						
T26	024472	G	683	2628#						
T27	025114	G	683	2725#						
T28	025542	G	683	2822#						
T29	026222	G	683	2926#						
T3	016536	G	683	1370#						
T30	026654	G	683	3033#						
T31	027270	G	683	3116#						
T32	027522	G	683	3181#						
T33	030012	G	683	3252#						
T34	030306	G	683	3325#						
T35	030600	G	683	3398#						
T36	031172	G	683	3484#						
T37	031472	G	683	3557#						
T38	032032	G	683	3641#						
T39	032344	G	683	3720#						
T4	016672	G	683	1413#						
T40	032670	G	683	3815#						
T41	032760	G	683	3839#						
T42	033112	G	683	3875#						
T43	033310	G	683	3937#						
T44	033446	G	683	3983#						
T5	017024	G	683	1456#						
T6	017162	G	683	1499#						
T7	017360	G	683	1555#						
T8	020002	G	683	1633#						
T9	020172	G	683	1686#						
UAM =	000200	G	54#							
UNITST	002252		118#	712*	715*	718	751	776	785	963
UOPIMN	002410		165#	753						
UOPIMX	002406		164#	754						
UUT	002250		117#	710	713*	717*	902	905	907	910
VEC	002646		181#	881*	902	905				
VECMMSG	033740		4032	4042#						
VECT =	000002		88#	4032						
WCKINT	004016		354#	1083						

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CROSS REFERENCE TABLE -- USER SYMBOLS

B1

SEO 0157

CZRLHBO RL11/RLV11 CTLR TST 2 MACY11 30A(1052) 17-DEC-79 13:44 PAGE 5
CZRLHB.MAC 07-DEC-79 08:12 CROSS REFERENCE TABLE -- MACRO NAMES

SEQ 0158

	699	709	719	864	866	955										
BGNCLN	795															
BGNDU	813															
BGNARD	4027															
BGNHN	657															
BGNINI	692															
BGNODD	38	53	108	328	429	656	669	681	691	734	812	826	4025	4049		
BGNMSG	432	442	451	461	472	483	493	505	515	526	537	548	559	570	580	
BGNPRO	650															
BGNSEG	1208	1292	1342	1384	1426	1468	1512	1572	1651	1700	1723	1761	1807	1863	1919	
	1953	1998	2054	2094	2136	2176	2230	2238	2365	2415	2478	2512	2556	2573	2646	
	2662	2739	2760	2836	2856	2944	2948	2968	3044	3075	3128	3145	3159	3194	3223	
	3266	3295	3337	3365	3413	3449	3495	3524	3568	3597	3655	3689	3739	3758	3772	
	3821	3849	3893	3949	3994											
BGNSFT	4051															
BGNSRV	916	926	934	945												
BGNSW	670															
BGNTST	1272	1328	1370	1413	1456	1499	1555	1633	1686	1744	1794	1850	1906	1940	1980	
	2042	2082	2124	2163	2212	2350	2409	2445	2500	2543	2628	2725	2822	2926	3033	
	3116	3181	3252	3325	3398	3484	3557	3641	3720	3815	3839	3875	3937	3983		
BNCOMP	695	701	869													
CKERFG	104	1290	1340	1382	1424	1466	1510	1570	1646	1698	1756	1805	1860	1917	1951	
	1996	2052	2092	2134	2174	2228	2359	2413	2476	2510	2554	2641	2737	2834	2942	
	3042	3126	3192	3264	3335	3411	3493	3566	3653	3731	3819	3847	3891	3947	3992	
CKLOOP	1486	1523	1540	1829	1836	1885	1891	1964	1971	2187	2320	2431	2594	2618	2683	
	2708	2782	2806	2877	2902	2992	3017	3473	3542	3609	3626	3705				
CLOCK	863	865														
CLRVEC	771	801	805	876	1574	1621	3099									
DELAY	834	839	852	856												
DESCRI	44															
DEVTYP	46															
DISPAT	683															
DOCLN	964															
DODU	751	776	785	963												
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ENDCLN	807															
ENDDU	817															
ENDHRD	4036															
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ENDMOD	42	103	324	427	647	667	679	685	761	808	818	1267	4046	4069		
ENDMSG	440	449	459	470	481	491	503	511	524	535	546	557	568	578	589	
	598															
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	1975	2037	2077	2119	2158	2207	2343	2345	2396	2440	2492	2533	2622	2623	2715	
	2720	2814	2816	2913	2921	3025	3027	3028	3109	3110	3174	3175	3176	3246	3247	
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	3834	3870	3932	3972	4019											
ENDSF T	4062															
ENDSRV	921	932	942	951												
ENDSW	678															
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CROSS REFERENCE TABLE -- MACRO NAMES

SEQ 0159

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	2436	2490	2527	2531	2612	2702	2801	2897	3012	3098	3241	3315	3387	3471
ERRHRD	3615	3630	3706	3865	3928	3968	4015							3547
ERRSF	3789													
ESCAPE	1319	3105												
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	1399	1438	1441	1478	1531	1664	1667	1715	1718	1733	1771	1780	1817	1822
	1878	1929	2015	2018	2065	2068	2106	2109	2146	2195	2243	2246	2267	2270
	2277	2280	2291	2301	2304	2314	2331	2378	2381	2389	2424	2487	2491	2524
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	3307	3310	3351	3353	3362	3364	3378	3381	3431	3433	3445	3447	3462	3465
	3511	3520	3522	3535	3582	3584	3593	3595	3617	3671	3674	3685	3687	3509
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GPRMD	4030	4032												
GPRML	4033	4034	4055	4058										
HEADER	4029	4031	4053	4056										
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LASTAD	4072													
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 CZRLHBO RL11/RLV11 CTLR TST 2
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 CZRLHB.MAC 07-DEC-79 08:12 CROSS REFERENCE TABLE -- MACRO NAMES

SEQ 0160

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4069#															
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	3307#	3310#	3351#	3353#	3362#	3364#	3378#	3381#	3431#	3433#	3445#	3462#	3465#	3509#	
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CROSS REFERENCE TABLE -- MACRO NAMES

SEQ 0161

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 CZRLHB.MAC 07-DEC-79 08:12 CROSS REFERENCE TABLE -- MACRO NAMES

SEQ 0162

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MSGNL S														
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MSHNAP														
MSINCR														
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530#	535#	537#	541#	546#	548#	552#	557#	559#	563#	558#	570#	573#	578#	580#
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CZRLHBO RL11/RLV11 CTLR TST 2
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CROSS REFERENCE TABLE -- MACRO NAMES

SEQ 0163

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MSMCLO	31#														
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	807#	808#	817#	818#	921#	932#	942#	951#	1263#	1267#	1323#	1324#	1365#	1366#	
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M\$PUT	4049#</td														

CZRLHBO RL11/RLV11 CTR TST 2
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I 13
CROSS REFERENCE TABLE -- MACRO NAMES

SEQ 0104

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MSRNRO	4029#	4030#	4031#	4032#	4033#	4034#	4053#	4055#	4056#	4058#					
MSSETS	718#	863#	865#												
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	537#	548#	559#	570#	580#	591#	650#	656#	657#	669#	670#	681#	691#	692#	766#
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	2109#	2115	2119#	2120#	2134#	2136#	2146#	2153	2158#	2159#	2174#	2176#	2178#	2187#	2188#
	2193	2195#	2203	2207#	2208#	2228#	2230#	2232#	2238#	2243#	2246#	2267#	2270#	2273#	2277#
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	2624#	2641#	2646#	2659#	2661#	2662#	2675#	2679#	2683#	2697#	2702	2707#	2708#	2715#	2720#
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CZRLH80 RL11/RLV11 CTLR TST 2
CZRLH8.MAC 07-DEC-79 08:12

MAC V11 30A(1052) 17-DEC-79 13:44 PAGE 5-7
CROSS REFERENCE TABLE -- MACRO NAMES J 13

SEG 0165

759#	760#	768#	771#	774#	776#	782#	785#	787#	797#	801#	805#	807#	817#	863#
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865#	868#	871#	873#	875#	876#	905#	910#	954#	961#	963#	964#	1030#	1181#	1196#
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CZRLHB0 RL11/RLV11 CTLR TST 2
CZRLHB.MAC 07-DEC-79 08:12

MACY11 30A(1052) 17-DEC-79 13:44 PAGE 5-8
K 13
CROSS REFERENCE TABLE -- MACRO NAMES

SEQ 0166

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2922#	2942#	2944#	2948#	2962#	2964#	2983#	2988#	2992#	3007#	3012#	3016#	3017#	3025#	3027#
3028#	3029#	3042#	3044#	3058#	3060#	3071#	3073#	3075#	3077#	3098#	3099#	3100#	3105#	3109#
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	4032#	4033#	4034#	4053#	4054#	4055#	4056#	4057#	4058#	4072				4031#
M\$XFER	4054#	4057#												
POINTE														
PRINTB	36													
PRINTF	454	465	476	486	500	519	530	541	552	563	573	584	595	600
READBU	604	605	606	609	610	774	782	1566	2616	2707	2805	2901	3016	603
READEF	748	749	961											
SETPRI	868													
SETVEC	694	698	700	708										
STARS	693	873	875	1350	1356	1514	1524	1576	1615	1960	1965	2178	2188	2232
	759	3231	3237	3599	3610	3855	3859							2515
	1276	1286	1330	1336	1373	1378	1415	1420	1458					
	1641	1688	1694	1746	1752	1796	1801	1852	1857	1908	1913	1942	1947	1961
	2044	2048	2084	2089	2126	2131	2166	2170	2214	2224	2352	2355	2398	1635
	2451	2467	2472	2501	2504	2545	2550	2632	2637	2729	2733	2826	2831	2929
	3035	3038	3118	3122	3183	3188	3255	3260	3327	3331	3400	3406	3486	2938
SVC	3562	3645	3650	3722	3727	3809	3814	3841	3844	3877	3887	3939	3943	3985
WAITMS	5#	31												3989
WAITUS	22#	743	874											
XFER	17#	1177	1191	3093										
	1290#	1340#	1382#	1424#	1466#	1510#	1570#	1646#	1698#	1756#	1805#	1860#	1917#	1951#
	2052#	2092#	2134#	2174#	2228#	2359#	2413#	2476#	2493#	2510#	2554#	2641#	2737#	1996#
XFERF	3042#	3126#	3192#	3264#	3335#	3411#	3493#	3566#	3653#	3731#	3819#	3847#	3891#	2942#
	4054	4057												3992#

. ABS. 034152 000

ERRORS DETECTED: 0

,CZRLHB.LST/CRF=SVC33/ML,CZRLHB.MAC

RUN-TIME: 153 156 21 SECONDS

RUN-TIME RATIO: 503/332=1.5

CZRLH80 RL11/RLV11 CTLR TST 2 MACV11 30A(1052) 17-DEC-79 13:44 PAGE 5-9
CZRLH8.MAC 07-DEC-79 08:12 CROSS REFERENCE TABLE -- MACRO NAMES

CORE USED: 20K (39 PAGES)

SEQ 0167