

IDENTIFICATION

PRODUCT CODE: AC-F115B-MC
PRODUCT NAME: CZRLHBO RL11/RLV11 CONTROLLER TEST 2
DATE CREATED: 5-JAN-79
REVISED: 7-DEC-79
MAINTAINER: DIAGNOSTIC ENGINEERING
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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:

CVRLABO	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:

CHMDKAO 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 CZRLHB	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 HOE 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 (O) 174400 ?
VECTOR (O) 160 ?
DRIVE TYPE = RL01 (L) Y ?
BR LEVEL (O) 5 ?
DRIVE (O) 0 ? 0-3

UNIT 4

RL11 (L) Y ?
BUS ADDRESS (O) 174400 ? 175400
VECTOR (O) 160 ? 164
DRIVE TYPE = RL01 (L) Y ? N
BR LEVEL (O) 5 ?
DRIVE (O) 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 ONA 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 33 - 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 CZRLHBO RL11/RLV11 CTLR TST 2
2 .ENABLE AMA
3 .ENABLE ABS
4 .MCALL SVC
5
6 002000 .=2000
7
8 .SBttl MACRO DEFINITIONS
9
10 .MACRO CKERFG
11 TST ERFLG ;ERROR IN HEADS HOME ROUTINE
12 BEQ 123$ ;NO, THEN CONTINUE
13 EXIT TST ;YES, EXIT TEST
14 123$: ;CONTINUE WITH TEST
15 .ENDM
16
17 .MACRO WAITUS ARG ;MACRO MICRO-SEC WAIT
18 MOV ARG,XDELAY ;SAVE ARGUMENT
19 JSR PC,TIME ;CALL TIMING ROUTINE
20 .ENDM
21
22 .MACRO WAITMS ARG ;MACRO MILLISEC WAIT
23 MOV ARG,YDELAY ;SAVE ARGUMENT
24 JSR PC,XTIME ;CALL TIMING ROUTINE
25 .ENDM
26
27 .NLIST CND,MD,ME
28
29
30 002000 SVC
31 000000 SVCINS=0
32 000000 SVCTAG=0
33
34
35 002000 POINTER BGNSW,BGNSFT,BGNDU
36
37 002000 BGNMOD MDHEDR
38
39 002000 HEADER CZRLH,B,0,60,0
40 002000 103 .ASCII /C/
41 002001 132 .ASCII /Z/
42 002002 122 .ASCII /R/
43 002003 114 .ASCII /L/
44 002004 110 .ASCII /H/
45 002005 000 .BYTE 0
46 002006 000 .BYTE 0
47 002007 000 .BYTE 0
48 002010 102 .ASCII /B/
49 002011 060 .ASCII /O/
50 002012 000000 .WORD 0
51 002014 000060 .WORD 60
52 002016 033604 .WORD L$HARD
53 002020 033760 .WORD L$SOFT
54 002022 012416 .WORD L$HW
55 002024 012434 .WORD L$SW
```

(4) 002026 034152 .WORD L\$LAST
(4) 002030 000000 .WORD 0
(4) 002032 000000 .WORD 0
(4) 002034 000000 .WORD 0
(4) 002036 000000 .WORD 0
(4) 002040 012450 .WORD L\$DISPATCH
(4) 002042 000000 .WORD 0
(4) 002044 000000 .WORD 0
(4) 002046 000000 .WORD 0
(4) 002050 003 .BYTE C\$REVISION
(3) 002051 003 .BYTE C\$EDIT
(4) 002052 000000 .WORD 0
(5) 002054 000000 .WORD 0
(4) 002056 000000 .WORD 0
(4) 002060 002220 .WORD L\$DVTYP
(4) 002062 000000 .WORD 0
(4) 002064 000000 .WORD 0
(4) 002066 000000 .WORD 0
(4) 002070 000000 .WORD 0
(4) 002072 013562 .WORD L\$DU
(4) 002074 000000 .WORD 0
(4) 002076 002122 .WORD L\$DESC
(4) 002100 104035 EMT ESLOAD
(4) 002102 000000 .WORD 0
(4) 002104 012600 .WORD LSINIT
(4) 002106 013466 .WORD L\$CLEAN
(4) 002110 013300 .WORD LSAUTO
(4) 002112 012406 .WORD L\$PROT
(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>
.ASCIZ /CZRLH TESTS WRITE DATA, READ DATA, AND WRITE CHECK OPERATIONS/
(3) 002122 055103 046122 020110
(3) 002130 042524 052123 020123
(3) 002136 051127 052111 020105
(3) 002144 040504 040524 020054
(3) 002152 042522 042101 042040
(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

.EVEN

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

47
48
49

```

51      .SBTTL GLOBAL EQUATES
52
53      002232
54      002232

(1)          : BIT DEFINITIONS
(1)
(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)          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)          : 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)          : PRIORITY LEVEL DEFINITIONS
(1)

(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) :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

151	002354	000000	RLCS:	.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 :/IS 'TICKING'
190						
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	

207 002722 010000 .WORD BIT12
208 002724 020000 .WORD BIT13
209 002726 040000 .WORD BIT14
210 002730 000003 .WORD 3 :GROW 1
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 :GROW 0
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 :WALK 0
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 :WALK 1
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

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

MACY11 30A(1052) 17-DEC-79 13:44 PAGE 1-7
LIST TO CHECK HEADER L 3
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	7	
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 MACY11 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

NXMMES: .ASCIZ /NMX/

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 000

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 /FRCRD 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/

CZRLHBO RL11/RLV11 CTLR TST 2
CZRLHB.MAC 07-DEC-79 08:12 MACY11 30A(1052) 17-DEC-79 13:44 N 3
GLOBAL TEXT PAGE 1-9

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 NPR 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 ENDMOD
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
(3) 007524 L10000: TRAP C\$MSG
(3) 007524 104423
441
442 007526 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
(3) 007536 L10001: TRAP C\$MSG
(3) 007536 104423
450
451 007540 BGNMSG ERR2
452
453 007540 004737 010522 JSR PC,LINE1
454 007544 PRINTB #FRMT4,GDDAT,BDDAT
(9) 007544 013746 002302 MOV BDDAT,-(SP)
(8) 007550 013746 002300 MOV GDDAT,-(SP)
(7) 007554 012746 011170 MOV #FRMT4,-(SP)
(6) 007560 012746 000003 MOV #3,-(SP)
(3) 007564 010600 MOV SP,R0
(4) 007566 104414 TRAP CSPNTB
(4) 007570 062706 000010 ADD #10,SP
455
456
457 007574 004537 014530 JSR R5,CKERLT ;INCREMENT ERROR AND CHECK LIMIT
458
459 007600 ENDMSG
(3) 007600 L10002: TRAP C\$MSG
(3) 007600 104423
460
461 007602 BGNMSG ERR3
462
463 007602 004737 010522 JSR PC,LINE1

CZRLHBO RL11/RLV11 CTLR TST 2 MACY11 30A(1052) 17-DEC-79 13:44 PAGE 1-11
CZRLHB.MAC 07-DEC-79 08:12 GLOBAL ERRORS

SEQ 0041

464 007606 004737 010556 JSR PC,LINE2
465 007612 013746 002300 PRINTB #FRMT5,TMPO,BDDAT,GDDAT
(10) 007612 013746 002300 MOV GDDAT,-(SP)
(9) 007616 013746 002302 MOV BDDAT,-(SP)
(8) 007622 013746 002272 MOV TMP0,-(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 R5,CKERLT :INCREMENT ERROR AND CHECK LIMIT
469
470 007652 ENDMSG
(3) 007652 L10003:
(3) 007652 104423 TRAP C\$MSG
471
472 007654 BGNMSG ERR4
473
474 007654 004737 010522 JSR PC,LINE1
475 007660 004737 010556 JSR PC,LINE2
476 007664 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 R5,CKERLT :INCREMENT ERROR AND CHECK LIMIT
480
481 007720 ENDMSG
(3) 007720 L10004:
(3) 007720 104423 TRAP C\$MSG
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 R5,CKERLT :INCREMENT ERROR AND CHECK LIMIT
490
491 007756 ENDMSG
(3) 007756 L10005:
(3) 007756 104423 TRAP C\$MSG
492

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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 012746 012106 PRINTB #FRMT99
(7) 007774 012746 000001 MOV #FRMT99,-(SP)
(6) 010000 012746 000001 MOV #1,-(SP)
(3) 010004 010600 MOV SP,RO
(4) 010006 104414 TRAP CSPNTB
(4) 010010 062706 000004 ADD #4,SP
501 010014 004537 014530 JSR R5,CKERLT ;INCREMENT ERROR AND CHECK LIMIT
502
503 010020 ENDMSG
(3) 010020 L10006: TRAP C\$MSG
(3) 010020 104423
504
505 010022 BGNMSG ERR7
506
507
508
509 010022 004537 014530 JSR R5,CKERLT ;INCREMENT ERROR AND CHECK LIMIT
510
511 010026 ENDMSG
(3) 010026 L10007: TRAP C\$MSG
(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) 010064 010600 MOV SP,RO
(4) 010066 104414 TRAP CSPNTB
(4) 010070 062706 000012 ADD #12,SP
520
521
522 01007. 004537 014530 JSR R5,CKERLT ;INCREMENT ERROR AND CHECK LIMIT
523
524 010100 ENDMSG
(3) 010100 L10010: TRAP C\$MSG
(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 R5,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 R5,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 R5,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,R0
(4) 010332 104414 TRAP C\$PNTB
(4) 010334 062706 000014 ADD #14,SP

564
565
566 010340 004537 014530 JSR R5,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,R0
(4) 010400 104414 TRAP C\$PNTB
(4) 010402 062706 000012 ADD #12,SP

574
575
576 010406 004537 014530 JSR R5,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,R0
(4) 010446 104414 TRAP C\$PNTB
(4) 010450 062706 000010 ADD #10,SP

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SEQ 0045

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585
586
587 010454 004537 014530           JSR    R5,CKERLT      ;INCREMENT ERROR AND CHECK LIMIT
588
589 010460
(3) 010460
(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$PNTB
(4) 010510 062706 000006           ADD    #6,SP
596 010514 004537 014530           JSR    R5,CKERLT
597
598 010520           ENDMSG
(3) 010520
(3) 010520 104423
599
600 010522           L10016: PRINTB #FRMT1,RLCS,<B,DRIVE+1>
(9) 010522 005046           CLR    -(SP)
(9) 010524 153716 002247           BISB  DRIVE+1,(SP)
(8) 010530 013746 002354           MOV    RLCS,-(SP)
(7) 010534 012746 011052           MOV    #FRMT1,-(SP)
(6) 010540 012746 000003           MOV    #3,-(SP)
(3) 010544 010600           MOV    SP,RO
(4) 010546 104414           TRAP   C$PNTB
(4) 010550 062706 000010           ADD    #10,SP
601 010554 000207           RTS    PC
602
603 010556           LINE1: PRINTB #FRMT2,#BEREG,#ARLCS,B.CS,#ARLB,A.BA
(12) 010556 013746 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$PNTB
(4) 010616 062706 000016           ADD    #16,SP
604 010622           LINE2: PRINTB #FRMT2A,#ARLDA,B.DA,#ARLM, B.MP
(11) 010622 013746 002336           MOV    B.MP,-(SP)
(10) 010626 012746 003451           MOV    #ARLM, -(SP)
(9) 010632 013746 002334           MOV    B.DA,-(SP)
(8) 010636 012746 003443           MOV    #ARLDA,-(SP)
(7) 010642 012746 011121           MOV    #FRMT2A,-(SP)
(6) 010646 012746 000005           MOV    #5,-(SP)
(3) 010652 010600           MOV    SP,RO
(4) 010654 104414           TRAP   C$PNTB

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SEQ 0046

(4) 010656 062706 000014	ADD #14,SP
605 010662	PRINTB #FRMT2,#AFREG,#ARLCS,E.CS,#ARLBA,E.BA
(12) 010662 013746 002342	MOV E.BA,-(SP)
(11) 010666 012746 003435	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	PRINTB #FRMT2B,#ARLDA,E.DA,#ARLMP,E.MP,E.MP1,E.MP2
(13) 010726 013746 002352	MOV E.MP2,-(SP)
(12) 010732 013746 002350	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	LINE3: PRINTB #FRMT3,#EM1
(8) 011000 012746 004467	MOV #EM1,-(SP)
(7) 011004 012746 011163	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	PRINTB #FRMT3,#EM100
(8) 011024 012746 004522	MOV #EM100,-(SP)
(7) 011030 012746 011163	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 0047

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I 4

630 011652 047045 040445 040522 FRMT10: .ASCII /%N%ARANGE %D3%A - %D3%A MILLISECONDS WAS %D6%N/
 631 011731 045 046501 054101 .ASCII /%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 /%ADRV 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 7 CANNOT BE PERFORMED...CLOCK IS NOT AVAILABLE/
 640
 641 .EVEN
 642
 643
 644
 645 012406 ENDMOD
 646
 647 ;LOAD PROTECTION TABLE
 648 BGNPROT
 649 650 012406 000000 .WORD 0 ;OFFSET OF CSR IN P-TABLE
 651 012406 177777 .WORD -1 ;NOT A MASS-BUS DRIVE
 652 012412 000010 .WORD 10 ;OFFSET OF DRIVE IN P-TABLE
 653
 654 012414 ENDPROT
 655
 656 012414 BGNMOD HPTCODE
 657 012414 BGNHW .WORD L10021-L\$HW/2
 658 (3) 012414 000006
 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
 (3) 012432 L10021:
 667 012432 ENDMOD
 668
 669 012432 BGNMOD SPTCODE
 670 012432 BGNSW .WORD L10022-L\$SW/2
 671 (3) 012432 000005
 672 012434 000000 DROP: .WORD 0
 673 012436 000012 MERLMT: .WORD 10.
 674 012440 000000 T.DMP: .WORD 0
 675 012442 000000 T.LMT: .WORD 0
 676 012444 000001 T.ANS: .WORD 1
 677
 678 012446 ENDSW
 (3) 012446 L10022:
 679 012446 ENDMOD
 680
 681 012446 BGNMOD DSPCODE
 682
 683 012446 DISPATCH .WORD 44
 (4) 012446 000054 .WORD 44

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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

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GLOBAL ERRORS

SEQ 0049

```

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 C$SPRI
694 012606 READEF #EF.PWR
(3) 012606 012700 000034 MOV #EF.PWR, R0
(3) 012612 104447 TRAP C$REFG
695 012614 BNCOMPLETE NOPWR
(2) 012614 103004 BCC NOPWR
696 012616 013737 002012 002416 MOV L$UNIT, PWRFLG
697 012624 000475 BR CONT
698 012626 NOPWR: READEF #EF.RESTART
(3) 012626 012700 000037 MOV #EF.RESTART, R0
(3) 012632 104447 TRAP C$REFG
699 012634 BCOMPLETE START1
(2) 012634 103404 BCS START1
700 012636 READEF #EF.START
(3) 012636 012700 000040 MOV #EF.START, R0
(3) 012642 104447 TRAP C$REFG
701 012644 BNCOMPLETE CONTINUET
(2) 012644 103010 BCC CONTINUET
702 012646 012700 002426 START1: MOV #ERCOUNT, R0
703 012652 012701 000100 MOV #64., R1
704 012656 005020 1$: 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 C$REFG
709 012674 BCOMPLETE CONT
(2) 012674 103451 BCS CONT
710 012676 005737 002250 NXT: TST UUT :DONE WITH ALL UNITS
711 012702 001011 BNE XXX :NO
712 012704 012737 177777 002252 START: MOV #-1, UNITST
713 012712 013737 002012 002250 MOV LSUNIT, UUT
714 012720 012737 002424 002424 MOV #ERCOUNT-2, ERPOINT
715 012726 005237 002252 XXX: INC UNITST
716 012732 062737 000002 002424 ADD #2, ERPOINT
717 012740 005337 002250 DEC UUT
718 012744 013700 002252 REST: GPHARD UNITST, R0
(3) 012744 013700 002252 MOV UNITST, R0
(3) 012750 104442 TRAP C$GPHRD
719 012752 BCOMPLETE 2$ :GET BUS ADDRESS
(2) 012752 103406 BCS 2$ :GET VECTOR
720 012754 005737 002416 TST PWRFLG :GET PRIORITY
721 012760 001746 BEQ NXT
722 012762 005337 002416 DEC PWRFLG
723 012766 000743 BR NXT
724 012770 012037 002364 2$: MOV (R0)+, BCSR
725 012774 012037 002366 MOV (R0)+, BVEC
726 013000 012037 002370 MOV (R0)+, BPRIOR

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CZRLHBO RL11/RLV11 CTLR TST 2 MACY11 30A(1052) 17-DEC-79 13:44 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	CONT:	MOV	BCSR,R0	:CREATE REGISTERS
731	013024	010037	002354		MOV	R0,RLCS	
732	013030	062700	000002		ADD	#2,R0	
733	013034	010037	002356		MOV	R0,RLBA	
734	013040	062700	000002		ADD	#2,R0	
735	013044	010037	002360		MOV	R0,RLDA	
736	013050	062700	000002		ADD	#2,R0	
737	013054	010037	002362		MOV	R0,RLMP	
738	013060	005737	002416		TST	PWRFLG	:POWER UP?
739	013064	001452			BEQ	END	:NO
740	013066	012777	000200	167260	MOV	#200,@RLCS	
741	013074	053777	002246	167252	BIS	DRIVE,@RLCS	
742	013102	012701	000170		MOV	#120.,R1	:INITIALIZE WAIT COUNT
743	013106				WAITMS	#10.	
744	013120	032777	000001	167226	3\$:	BIT #1,@RLCS	
745	013126	001031			BNE	END	
746	013130	005301			DEC	R1	
747	013132	001365			BNE	3\$	
748	013134				FPRINTF	#FRMT99	
(7)	013134	012746	012106		MOV	#FRMT99,-(SP)	
(6)	013140	012746	000001		MOV	#1,-(SP)	
(3)	013144	010600			MOV	SP,R0	
(4)	013146	104417			TRAP	C\$PNTF	
(4)	013150	062706	000004		ADD	#4,SP	
749	013154				PRINTF	#FRMT98	
(7)	013154	012746	012044		MOV	#FRMT98,-(SP)	
(6)	013160	012746	000001		MOV	#1,-(SP)	
(3)	013164	010600			MOV	SP,R0	
(4)	013166	104417			TRAP	C\$PNTF	
(4)	013170	062706	000004		ADD	#4,SP	
750	013174	004737	010522		JSR	PC,LINE1	
751	013200				DODU	UNITST	
(3)	013200	013700	002252		MOV	UNITST,R0	
(3)	013204	104451			TRAP	C\$DODU	
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	1\$: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,#INTSPV,#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 C\$SVEC	
(2)	013272	062706	000010			ADD #10,SP	
760	013276				ENDINIT		
(3)	013276				L10023:		
(3)	013276	104411				TRAP C\$INIT	
761	013300				ENDMOD		
762							

CZRLHBO RL11/RLV11 CTLR TST 2
CZRLHB.MAL 07-DEC-79 08:12MACY11 30A(1052) 17-DEC-79 13:44 M 4
PAGE 1-21
AUTO DROP SECTION

SEQ 0051

764 .SBTTL AUTO DROP SECTION

765

766 013300 BGNAUTO

767 013300 005037 002254 CLR TRPFLG ;CLEAR TRAP FLAG

768 013304 SETVEC ERRVEC,#TRPHAN,#340 ;SET UP TRAP VECTOR TO DETECT

(7) 013304 012746 000340 MOV #340,-(SP)

(6) 013310 012746 015760 MOV #TRPHAN,-(SP)

(5) 013314 013746 002244 MOV ERRVEC,-(SP)

(4) 013320 012746 000003 MOV #3,-(SP)

(3) 013324 104437 TRAP C\$SVEC

(2) 013326 062706 000010 ADD #10,SP

769

770 013332 005777 167016 TST @RLCS ;/NON-EXISTENT CONTROLLER

771 013336 CLRVEC ERRVEC ;ACCESS CONTROLLER

(3) 013336 013700 002244 MOV ERRVEC,RO ;RELEASE TRAP VECTOR

(3) 013342 104436 TRAP C\$CVEC

772 013344 005737 002254 TST TRPFLG ;DID IT TRAP?

773 013350 001416 BEQ 1\$;NO - CHECK ITS DRIVE

774 013352 PRINTB #FRMT16 ;ELSE, PRINT MSG. 'DRIVE DROPPED - NO CONTROLLER'

(7) 013352 012746 012167 MOV #FRMT16,-(SP)

(6) 013356 012746 000001 MOV #1,-(SP)

(3) 013362 010600 MOV SP,RO

(4) 013364 104414 TRAP C\$PNBTB

(4) 013366 062706 000004 ADD #4,SP

775 013372 004737 010522 JSR PC,LINE1 ;PROVIDE DRIVE INFORMATION

776 013376 DODU UNITST ;DO DROP UNIT ON DRIVE

(3) 013376 013700 002252 MOV UNITST,RO

(3) 013402 104451 TRAP C\$DODU

777 013404 000427 BR 2\$;EXIT

778 013406 012777 000200 166740 1\$: MOV #200,@RLCS ;SET CONTROLLER READY

779 013414 053777 002246 166732 BIS DRIVE,@RLCS ;SELECT DRIVE

780 013422 032777 000001 166724 BIT #1,@RLCS ;IS DRIVE READY?

781 013430 001015 BNE 2\$;YES - EXIT

782 013432 PRINTB #FRMT17 ;ELSE, PRINT MSG. 'DRIVE DROPPED - DID NOT

(7) 013432 012746 012233 MOV #FRMT17,-(SP)

(6) 013436 012746 000001 MOV #1,-(SP)

(3) 013442 010600 MOV SP,RO

(4) 013444 104414 TRAP C\$PNBTB

(4) 013446 062706 000004 ADD #4,SP

783

784 013452 004737 010522 JSR PC,LINE1 ;/RESPOND WITH 'READY''

785 013456 DODU UNITST ;PROVIDE DRIVE INFORMATION

(3) 013456 013700 002252 MOV UNITST,RO ;DO DROP UNIT ON DRIVE

(3) 013462 104451 TRAP C\$DODU

786 013464 2\$: ENDAUTO

787 013464 L10024: TRAP C\$AUTO

788

789

CZRLHB0 RL11/RLV11 CTLR TST 2 MACY11 30A(1052) 17-DEC-79 13:44 N 4 PAGE 1-22
 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
 809
 821

823
 824 .SBTTL GLOBAL SUBROUTINES
 825
 826 013566 BGNMOD GLBSUB
 827
 828
 829 013566 012737 000160 002116 TIME: MOV #160,L\$DLY :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 1\$: DELAY #1 :WAIT AT LEAST 100 US--
 (2) 013612 012727 000001 MOV ##1.,(PC)+
 (2) 013616 000000 .WORD 0
 (2) 013620 013727 002116 MOV L\$DLY,(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 1\$:BRANCH - IF NO
 837 013650 000422 BR 4\$:EXIT
 838 013652 012737 000150 002116 2\$: MOV #150,L\$DLY :GET OUTER DELAY LOOP
 839 013660 012727 000001 3\$: DELAY #1 :WAIT WITH RESPECT TO FONZ BUS
 (2) 013660 012727 000001 MOV ##1.,(PC)+
 (2) 013664 000000 .WORD 0
 (2) 013666 013727 002116 MOV L\$DLY,(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 3\$:BRANCH - IF NO
 842 013716 000207 4\$: RTS PC :RETURN
 843
 844 013720 012737 000160 002116 XTIME: MOV #160,L\$DLY :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 1\$:BRANCH - IF YES
 851 013754 012737 000150 002116 MOV #150,L\$DLY :GET OUTER DELAY LOOP
 852 013762 012727 000020 2\$: DELAY #20 :WAIT WITH RESPECT TO FONZ BUS
 (2) 013762 012727 000020 MOV ##20,(PC)+
 (2) 013766 000000 .WORD 0
 (2) 013770 013727 002116 MOV L\$DLY,(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 2\$:BRANCH - IF NO

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855 014020 000417
856 014022 000417
(2) 014022 012727 000010
(2) 014026 000000
(2) 014030 013727 002116
(2) 014034 000000
(2) 014036 005367 177772
(2) 014042 001375
(2) 014044 005367 177756
(2) 014050 001367
857 014052 005237 002630
858 014056 002761
859 014060 000207
860
861
862 014062 010146
863 014064 012700 000120
(3) 014064 104462
(3) 014070 010037 002642
864 014076 103447
(2) 014076 103401
865 014100 012700 000114
(3) 014104 104462
(3) 014106 010037 002642?
866 014112 103401
867 014114 000462
868 014116 104407
(3) 014116 103036
869 014120 005037 002666
870 014122 012746 000340
(7) 014126 012746 014522
(6) 014132 012746 000100
(5) 014136 012746 000003
(4) 014142 104437
(3) 014146 062706 000010
872
873 014154 012700 000240
(3) 014154 104441
874 014162
875 014174
(3) 014174 012700 000340
(3) 014200 104441
876 014202 012700 000100
(3) 014202 104436
877 014210 005737 002666
878 014214 001422
879 014216 013701 002642
880 014222 011137 002644
1$: BR 3$ ;GET TIME
      DELAY #10 ;WAIT AT LEAST 25 MS
      MOV #10,(PC)+ .WORD 0
      MOV LSDLY,(PC)+ .WORD 0
      DEC -6(PC)
      BNE -4
      DEC -22(PC)
      BNE -20
      INC YDELAY
      BLT 1$ ;WAIT FACTOR EXPIRED?
      RTS PC ;RETURN

SETCLK: MOV R1,-(SP) ;SAVE R1
        CLOCK P,PCLKCS ;PROGRAMMABLE CLOCK AVAILABLE? - CSR=772540
        MOV #'P,RO
        TRAP CSCLK
        MOV RO,PCLKCS
        BCOMPLETE 1$ ;BRANCH - IF YES
        BCS 1$
        CLOCK L,PCLKCS ;LINE CLOCK AVAILABLE? - CSR=777546
        MOV #'L,RO
        TRAP CSCLK
        MOV RO,PCLKCS
        BCOMPLETE 20$ ;BRANCH IF L-CLOCK
        BCS 20$
        BR 2$ ;ELSE, INDICATE CLOCK IS NOT PRESENT
        READBUS ;CHECK TYPE OF BUS
        TRAP CSRDBU
        BNCOMPLETE 1$ ;BRANCH IF NOT Q-BUS
        BCC 1$ ;CLEAR CLOCK FIELD FOR STORING 'TICKS'
        CLR CLKFLD ;SET UP LSI-11 L-CLOCK INTERRUPT VECTOR
        SETVEC #100,#CLKTIK,#340
        MOV #340,-(SP)
        MOV #CLKTIK,-(SP)
        MOV #100,-(SP)
        MOV #3,-(SP)
        TRAP CSSVEC
        ADD #10,SP ;TO CHECK IF CLOCK IS "TICKING"
        SETPRI #PRI05 ;SET PRIORITY TO 5 TO ALLOW CLOCK INTERRUPTS
        MOV #PRI05,RO
        TRAP CSSPRI
        WAITMS #5 ;PAUSE TO ALLOW CLOCK INTERRUPTS
        SETPRI #PRI07 ;RESTORE PRIORITY TO 7 TO INHIBIT INTERRUPTS
        MOV #PRI07,RO
        TRAP CSSPRI
        CLRVEC #100 ;CLEAR L-CLOCK INTERRUPT VECTOR
        MOV #100,RO
        TRAP CSCVEC ;L-CLOCK 'TICKS'?
        TST CLKFLD ;BRANCH IF NO 'TICKS'
        BEQ 2$ ;GET POINTER TO CLOCK CONTROL STATUS REGISTER
        MOV PCLKCS,R1 ;GET CLOCK CONTROL STATUS REGISTER
        MOV (R1),PCSR
    
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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    3$          ;BRANCH - IF YES
885 014252 022737 000062 002650    CMP    #50.,HZ      ;50 HZ.?
886 014260 001420                 BEQ    4$          ;BRANCH - IF YES
887 014262 005237 002652          2$:   INC    XITFLG     ;SET EXIT FLAG
888 014266 000475                 BR     8$          ;EXIT
889 014270 005737 002420          3$:   TST    T.CNTLR    ;RL11?
890 014274 001404                 BEQ    9$          ;BRANCH - IF NO
891 014276 012737 000030 002664    MOV    #24.,OPITIM  ;SET OPIMX FOR 60 HZ CLOCK & RL11
892 014304 000403                 BR     10$         ;CONTINUE
893 014306 012737 000047 002664    9$:   MOV    #39.,OPITIM  ;SET OPIMX FOR 60 HZ CLOCK & RLV11
894 014314 005237 002656          10$:  INC    SIXTY     ;SET 60 HZ CLOCK INDICATOR
895 014320 000414                 BR     5$          ;CHECK CLOCK TYPE
896 014322 005737 002420          4$:   TST    T.CNTLR    ;RL11?
897 014326 001404                 BEQ    11$         ;BRANCH - IF NO
898 014330 012737 000024 002664    MOV    #20.,OPITIM  ;SET OPIMX FOR 50 HZ CLOCK & RL11
899 014336 000403                 BR     12$         ;CONTINUE
900 014340 012737 000040 002664    11$:  MOV    #32.,OPITIM  ;SET OPIMX FOR 50 HZ CLOCK & RLV11
901 014346 005237 002654          12$:  INC    FIFTY     ;SET 50 HZ. CLOCK INDICATOR
902 014352 022737 000104 002646    5$:   CMP    #104,VEC   ;P-CLOCK?
903 014360 001016                 BNE    6$          ;BRANCH - IF NO
904 014362 005237 002660          INC    PCLOCK     ;SET P-CLOCK INDICATOR
905 014366 012746 000340          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     8$          ;EXIT
907 014416 022737 000100 002646  6$:   CMP    #100,VEC   ;L-CLOCK?
908 014424 001401                 BEQ    7$          ;BRANCH - IF YES
909 014426 000715                 BR     2$          ;EXIT
910 014430 012746 000340          7$:   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

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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
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    1$           ;OPIMX EXPIRED?
939 014514 005077 166124          CLR    @PCSR
940 014520          1$:
941
942 014520          ENDSRV
(3) 014520          L10031:
(2) 014520 000002          RTI
943
944
945 014522          BGNSRV
946 014522          CLKTIK:           ;L-CLOCK 'TICK' CHECK ROUTINE FOR LSI-11
947
948 014522 005237 002666          INC    CLKFLD
949
950
951 014526          ENDSRV
(3) 014526          L10032:
(2) 014526 000002          RTI
952
953
954 014530          CKERLT: INLOOP
(3) 014530 104420          TRAP   C$INLP
955 014532          BCOMPLETE 99$           ;COMPLETED
(2) 014532 103427          BCS    99$           ;99%
956 014534 005737 012434          TST    DROP
957 014540 001424          BEQ    99$           ;99%
958 014542 005277 165656          INC    @ERPOINT
959 014546 027737 165652 012436          CMP    @ERPOINT, MERLMT
960 014554 002416          BLT    99$           ;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          DODU   UNITST, DROP THIS UNIT
(3) 014602 013700 002252          MOV    UNITST, R0
(3) 014606 104451          TRAP   C$DODU

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CZRLHBO RL11/RLV11 CTLR TST 2 MACY11 30A(1052) 17-DEC-79 13:44 F 5 PAGE 1-27
CZRLHB.MAC 07-DEC-79 08:12 GLOBAL SUBROUTINES

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 2\$;YES, FIND OUT WHICH
 988 014630 000205 RTS R5 ;NO EXIT
 989 014632 012701 004522 2\$: 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 3\$;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 3\$: BIT #NXM,E.CS ;NON-EXISTENT MEMORY ERROR?
 1000 014702 001403 BEQ 4\$;NO, CONTINUE
 1001 014704 004537 015352 JSR R5,FIX ;YES, PUT 'NXM' INTO STRING
 1002 014710 003601 NXMMES ;'NXM'
 1003 014712 032737 002000 002340 4\$: BIT #OPI,E.CS ;IS OPI SET?
 1004 014720 001422 BEQ 6\$;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 5\$;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 5\$: BIT #BIT12,E.CS ;HEADER NOT FOUND?
 1012 014754 001424 BEQ 8\$;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 8\$;PUT 'CRLF' IN STRING
 1016 014766 032737 004000 002340 6\$: BIT #BIT11,E.CS ;DATA CRC ERROR?
 1017 014774 001405 BEQ 7\$;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 7\$: BIT #BIT12,E.CS ;DATA LATE ERROR?
 1022 015016 001403 BEQ 8\$;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 8\$: JSR R5,FIX ;PUT 'CRLF' INTO STRING

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1026 015032 003642      MSCRLF          ;'CRLF'
1027 015034 004537 015352    JSR   R5, FIX       ;MOVE HEADER
1028 015040 000000      RESTMS: WORD 0        ;HEADER FROM TEST
1029 015042 105011      CLRBL (R1)      ;PUT TERMINATOR IN
1030 015044 104455      ERRDF 300,,LF,ERR6
1031 015054 000205      TRAP  C$ERDF
1032                               .WORD 300
1033                               .WORD LF
1034                               .WORD ERR6
1035                               RTS   R5           ;EXIT ROUTINE
1036
1037
1038
1039
1040
1041 015056 032777 040000 165270  LDFUNC: BIT      #BIT14,@RLCS ;DRIVE ERROR SET
1042 015064 001426      BEQ   5$          5$               ;SAVE R5
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$:  BIT      #200,@RLCS
1049 015132 001774      BEQ   6$          6$               ;GET BITS TO LOAD
1050 015134 013777 002334 165216  MOV   B.DA,@RLDA
1051 015142 012537 002260      5$:  MOV   (R5)+,LDCSR ;SAVE R3
1052 015146 010346      MOV   R3,-(SP)  :CLEAR ALL BUT FUNC & INTR EN
1053 015150 042737 177661 002260  BIC   #177661,LDCSR
1054 015156 013737 002260 002372  MOV   LDCSR,FNDFNC ;SAVE FUNCTION
1055 015164 042737 000100 002372  BIC   #INTEN,FNDFNC ;ONLY FUNCTION
1056 015172 012703 015312      MOV   #HDRSLT,R3  ;GET HEADER LIST
1057 015176 006237 002372      ASR   FNDFNC  ;ALIGN TO LEFT
1058 015202 001404      BEQ   2$          2$               ;IF EQUAL TO ZERO, SET R3
1059 015204 022323      1$:  CMP   (R3)+,(R3)+ ;BUMP R3 BY 4
1060 015206 005337 002372      DEC   FNDFNC  ;DEC FUNCTION
1061 015212 001374      BNE   1$          1$               ;FOUND IT? NO-GO BACK
1062 015214 032737 000100 002260  2$:  BIT      #INTEN,LDCSR ;YES, DO WE WANT FLAG OR INTR?
1063 015222 001401      BEQ   3$          3$               ;FLAG BRANCH
1064 015224 005723      TST   (R3)+  ;INTR POINT TO THAT ONE
1065 015226 011303      3$:  MOV   (R3),R3  ;SET HEADER
1066 015230 010337 015040      MOV   R3,RESTMS ;SET UP HEADER
1067 015234 010337 002376      MOV   R3,TRYFNC ;SAVE HEADER FOR LATER
1068 015240 053737 002374 002260  BIS   XMEM,LDCSR ;LOAD E.A. BITS
1069 015246 005037 002374      CLR   XMEM      ;CLEAR OUT THE BITS
1070 015252 053737 002246 002260  BIS   DRIVE,LDCSR ;SELECT DRIVE
1071 015260 052737 000200 002260  BIS   #200,LDCSR
1072 015266 013777 002260 165060  MOV   LDCSR,@RLCS ;LOAD FUNCTION
1073 015274 004537 015364      JSR   R5,BEFORE ;READ REGISTERS
1074 015300 042777 000200 165046  4$:  BIC   #200,@RLCS ;ISSUE COMMAND
1075 015306 012603      MOV   (SP)+,R3  ;RESTORE R3
1076 015310 000205      RTS   R5           ;EXIT
1077

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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 @RLCS.B.CS ;READ CS
1115 015372 017737 164760 002332 MOV @RLBA.B.BA ;BA
1116 015400 017737 164754 002334 MOV @RLDA.B.DA ;DA
1117 015406 017737 164750 002336 MOV @RLMP.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 @RLCS.E.CS ;READ CS
1124 015424 017737 164726 002342 MOV @RLBA.E.BA ;BA
1125 015432 017737 164722 002344 MOV @RLDA.E.DA ;DA
1126 015440 017737 164716 002346 MOV @RLMP.E.MP ;MP
1127 015446 017737 164710 002350 MOV @RLMP.E.MP1 ;MP
1128 015454 017737 164702 002352 MOV @RLMP.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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ROUTINE TO CHECK FOR CONTROLLER ERRORS

SEQ C061

J 5

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,RO	;GET PRESENT CRC
1140	015516	006037	002306		ROR TEMP3	;ROTATE NEW DATA
1141	015522	005500			ADC RO	;MERGE NEW WITH OLD
1142	015524	032700	000001		BIT #1,RO	;BIT 0 SET
1143	015530	001402			BEQ 2\$;IF NOT CONTINUE
1144	015532	005137	002266	2\$:	COM BCCFBK	
1145	015536	013700	002264		MOV XPOLY,RO	;GET CRC POLYNOMIAL (CRC-16)
1146	015542	005100			COM RO	;COMPLEMENT POLYNOMIAL
1147	015544	040037	002266		BIC RO,BCCFBK	
1148	015550	000241			CLC	;CLEAR CARRY
1149	015552	006037	002310		ROR TEMP4	
1150	015556	013700	002266		MOV BCCFBK,RO	
1151	015562	013701	002310		MOV TEMP4,R1	
1152	015566	010102			MOV R1,R2	
1153	015570	040100			BIC R1,RO	
1154	015572	043702	002266		BIC BCCFBK,R2	
1155	015576	050200			BIS R2,RO	
1156	015600	043737	002264	002310	BIC XPOLY,TEMP4	
1157	015606	050037	002310		BIS RO,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)+,RO	
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		BIT #DRDY,@RLCS	
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,ERR5	
(4)	015670	104455			TRAP C\$ERDF	
(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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CZRLHBO 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 015716 WAITUS #20.
1192 015730 005301 DEC R1
1193 015732 001365 BNE 1\$
1194 015734 004537 015416 JSR R5,AFTER
1195
1196 015740 ERRDF 100.,CRTIM,ERR5
(4) 015740 TRAP C\$ERDF
(5) 015742 000144 .WORD 100
(5) 015744 003521 .WORD CRTIM
(5) 015746 007722 .WORD ERR5
1197 015750 000205 RTS R5
1198
1199 015752 004537 015416 2\$: JSR R5,AFTER
1200 015756 000205 RTS R5
1201
1202
1203 015760 005237 002254 TRPHAN: INC TRPFLG
1204 015764 000002 RTI
1205
1206 015766 HDHOME:
1207
1208 015766 BGNSEG ;%%START OF SEGMENT%%
(3) 015766 104404 TRAP C\$BSEG
:ISSUE DRIVE RESET
1209
1210
1211 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 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 016016 104410 TRAP C\$ESCAPE
(3) 016020 000216 .WORD 10000\$-.
1217 016022 004537 015614 JSR R5,CHERR ;CHECK CNTLR FOR ERRORS
1218 016026 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 016026 104410 TRAP C\$ESCAPE
(3) 016030 000206 .WORD 10000\$-.
1219
1220
1221 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 C\$ESCAPE
(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 C\$ESCAPE
(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

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(3) 016060 104410      TRAP    C$ESCAPE
(3) 016062 000154      .WORD   10000$-.

1229
1230 016064 013737 002346 002272      MOV     E.MP,TMPO
1231 016072 042737 000077 002272      BIC     #77,TMPO      ;GET HEADER
1232 016100 001424      BEQ    99$      ;SEEK IS NOT NECESSARY
1233 016102 042737 000100 002272      BIC     #100,TMPO
1234 016110 012777 000001 164242      MOV     #MK,ARLDA
1235 016116 053777 002272 164234      BIS     TMPO,ARLDA      ;SET TO SEEK
                                                ;SET IN DIFFERENCE
1236
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
(3) 016140 000076      .WORD   C$ESCAPE
                                                10000$-.

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
(3) 016150 000066      .WORD   C$ESCAPE
                                                10000$-.

1244
1245 016152 004537 015056      99$: JSR     R5,LDFUNC      ;LOAD THE FUNCTION IN NEXT WORD
1246 016156 000010      RDHDR
1247 016160 004537 015702      JSR     R5,WTCRDY
1248 016164      ESCAPE SEG      ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 016164 104410      TRAP
(3) 016166 000050      .WORD   C$ESCAPE
                                                10000$-.
1249 016170 004537 014614      JSR     R5,CHERR
1250 016174      ESCAPE SEG      ;ON ZERO
(3) 016174 104410      TRAP
(3) 016176 000040      .WORD   C$ESCAPE
                                                10000$-.

1251
1252 016200 013737 002346 002272      MOV     E.MP,TMPO      ;GET HEADER
1253 016206 043737 002262 002272      BIC     SECMSK,TMPO
1254 016214 001404      BEQ     1$      ;IGNORE SECTOR
1255
1256 016216 104455      ERRDF  400.,SKHOME,ERRO      ;CAN'T SEEK TO TRACK 0
(4) 016216
(5) 016220 000620      TRAP   C$ERDF
(5) 016222 004430      .WORD
(5) 016224 007510      .WORD   400
                                                .WORD   SKHOME
                                                .WORD   ERRO
1257
1258 016226 104410      1$:  ESCAPE SEG      ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 016226
(3) 016230 000006      TRAP   C$ESCAPE
                                                10000$-.

1259
1260 016232 005037 002400      CLR     ERFLG      ;INDICATE SUCCESS BACK TO MAIN PROGRAM
1261
1262
1263 016236 104405      10000$: ENDSEG      ;%END OF SEGMENT%
(3) 016236
(3) 016236
1264
1265 016240 000207      TRAP   C$ESEG
1266

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M 5

SEQ 0064

CZRLH80 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    4$          ;NO, BRANCH
1317
1318
1319 016372      ERRSF  3.,WRLOCK,ERRO   ;WRITE LOCK ERROR
  (4) 016372 104454      TRAP   C$ERSF
  (5) 016374 000003      .WORD   3
  (5) 016376 004452      .WORD   WRLOCK
  (5) 016400 007510      .WORD   ERRO
1320 016402      4$:          ENDSEG           ;%END OF SEGMENT%
1321
1322
1323 016402      10001$:     ENDTST           ;**END OF TEST**
  (3) 016402 104405      L10033:    TRAP   C$ESEG
  (3) 016404      ENDTST           /           ;**END OF TEST**
  (3) 016404 104401      TRAP   CSETST
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          PC,HDHOME      ;HEADS GO HOME OKAY
  (4) 016420 104432      TRAP   CSEXIT
  (4) 016422 000112      .WORD   L10034-
1341
1342 016424      BGNSEG           ;%START OF SEGMENT%
  (3) 016424 104404      TRAP   C$BSEG
1343
1344
1345 016426 005037 002256      CLR    INTFLG        ;CLEAR INTERRUPT OCCURANCE FLAG
1346 016432 005077 163722      CLR    @RLDA
1347 016436 012777 177600 163716      MOV    #-128.,@RLMP    ;SET UP WORD COUNT
1348 016444 012777 003426 163704      MOV    #BUF,@RLBA    ;SET UP BUS ADDRESS
1349
1350 016452      SETPRI          #PRI00        ;PRIORITY TO 0
  (3) 016452 012700 000000      MOV    #PRI00,RO
  (3) 016456 104441      TRAP   C$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

B 6
SEQ 0066

(3) 016472 104410 TRAP C\$ESCAPE
(3) 016474 000036 .WORD 10000\$-.
1355
1356 016476 012700 000340 SETPRI #PRI07 ;SET PRIORITY TO 7
(3) 016476 104441 MOV #PRI07,RO
(3) 016502 104441 TRAP CSSPRI
1357 016504 005737 002256 TST INTFLG ;DID INTERRUPT OCCUR?
1358 016510 001004 BNE 2\$;YES-BRANCH NO-REPORT
1359
1360 016512 104455 ERRDF 4.,EM17,ERRO ;WRITE DID NOT INTERRUPT
(4) 016512 104455 TRAP CSERDF
(5) 016514 000004 .WORD 4
(5) 016516 005322 .WORD EM17
(5) 016520 007510 .WORD ERRO
1361 016522 104410 2\$: ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 016522 104410 TRAP C\$ESCAPE
(3) 016524 000006 .WORD 10000\$-.
1362
1363 016526 004537 014614 JSR R5,CHERR ;CHECK CNTLR FOR ERRORS
1364
1365 016532 104405 10000\$: ENDSEG ;%END OF SEGMENT%
(3) 016532 TRAP C\$ESEG
1366 016534 L10034: ENDTST ;**END OF TEST**
(3) 016534 TRAP C\$ETST
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
(4) 016552 000116 .WORD L10035-.
1384 016554 104404 BGNSEG ;%START OF SEGMENT%
(3) 016554 TRAP CSBSEG
1385
1386 016556 005077 163576 3\$: CLR ARLDA
1387 016556 163566 MOV #BUF,ARLBA ;SET UP BUS ADDRESS
1388 016562 012777 003426 163566 MOV #-128.,ARLMP ;WORD COUNT
1389 016570 177600 163564 MOV #BUF,GDDAT ;FORM EXPECTED BUS ADDRESS
1390 016576 012737 003426 002300 ADD #256.,GDDAT ;AFTER WRITE
1391 016604 000400 002300

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★★TEST 3★★ - PROPER INCREMENT OF RLBA ON WRITE

6

SEQ 0067

```

1393 016612 004537 015056          JSR      R5,LDFUNC      ;LOAD THE FUNCTION IN NEXT WORD
1394 016616 000012                WRITE
1395 016620 004537 015702          JSR      R5,WTCRDY      ;:WRITE
1396 016624 104410                ESCAPE
1397 (3) 016624 104410                SEG
1398 (3) 016626 000040                CSESCAPE
1399 016630 004537 014614          JSR      R5,CHERR      ;CHECK CNTLR FOR ERRORS
1400 016634 104410                ESCAPE
1401 (3) 016634 104410                TRAP
1402 (3) 016636 000030                WORD    10000$-
1403 016640 017737 163512 002302    MOV     @RLBA,BDDAT      ;READ 'RLBA' FOR PRESENT ADDRESS
1404 016646 023737 002302 002300    CMP     BDDAT,GDDAT      ;DID 'BA' INCREMENT PROPERLY?
1405 016654 001404                BEQ     2$               ;YES, CONTINUE
1406 016656 104455                ERRDF   5.,EM20,ERR4      ;BA DID NOT INCREMENT
1407 (4) 016656
1408 (5) 016660 000005                TRAP    CSEERDF
1409 (5) 016662 005346                WORD    5
1410 (5) 016664 007654                WORD    EM20
1411 016666                      WORD    ERR4
1412 016666
1413 016666 104405                2$:                 ENDSEG      ;%%END OF SEGMENT%%
1414 016670 104405                10000$:              TRAP    CSESEG
1415 016670 104405                ENDTST      L10035:              TRAP    CSETST      ;**END OF TEST**
1416 016670 104401
1417 016672
1418 016672
1419 016672
1420 016672
1421 016672
1422 016672 004737 015766          STARS
1423 016676 104432                JSR      PC,HDHOME      ;HEADS OVER TRACK 0
1424 (4) 016704 104432                CKERFG
1425 (4) 016706 000114                TRAP    CSEXIT
1426 (4) 016706 000114                WORD    L10036-.
1427 016710 104404                BGNSEG
1428 016712
1429 016712 005037 002300          TRAP    CSBSEG      ;%%START OF SEGMENT%%
1430 016716 013777 002300          5$:                 CLR      GDDAT
1431 016716 013777 002300          MOV     GDDAT,@RLDA      ;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.,@RLMP ;WORD COUNT
1433 016736 012777 003426 163412 MOV #BUF,@RLBA ;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 R5,WTCRDY ;WRITE
1438 016756 ESCAPE R5,WTCRDY ;WAIT FOR CONTROLLER READY
(3) 016756 104410 SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 016760 000040 TRAP C\$ESCAPE
.WORD 10000\$-.
1439
1440 016762 004537 014614 JSR R5,CHERR ;CHECK CNTLR FOR ERRORS
1441 016766 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 016766 104410 TRAP C\$ESCAPE
(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 ERRDF S.,EM21,ERR4 ;DA DID NOT INCREMENT
(4) 017010 TRAP C\$ERDF
(5) 017012 000006 .WORD 6
(5) 017014 005414 .WORD EM21
(5) 017016 007654 .WORD ERR4
1448
1449 017020 2\$:
1450
1451 017020 ENDSEG ;%%END OF SEGMENT%%
(3) 017020 104405 10000\$:
1452 017022 ENDTST C\$ESEG ;**END OF TEST**
(3) 017022 L10036:
(3) 017022 104401 TRAP C\$ETST
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 C\$EXIT
(4) 017040 000120 .WORD L10037-.
1467
1468 017042 BGNSEG ;%%START OF SEGMENT%%
(3) 017042 104404 TRAP C\$BSEG
1469

```

1470
1471 017044 012777 000050 163306      MOV    #40, @RLDA      ;INSURE NOT TO FIND HEADER BY
1472 017052 012777 003426 163276      MOV    #BUF, @RLBA     ;SETTING SECTOR 40 OF CYL. ADDR.
1473 017060 012777 177777 163274      MOV    #-1, @RLMP      ;WORD COUNT
1474
1475 017066 004537 015056          JSR    R5,LDFUNC     ;LOAD THE FUNCTION IN NEXT WORD
1476 017072 000012          WRITE
1477 017074 004537 015702          JSR    R5,WTCRDY     ;WRITE
1478 017100          ESCAPE
1479 (3) 017100 104410          SEG
1480 (3) 017102 000054          TRAP   CSECAPE      ;WAIT FOR CONTROLLER READY
1481          .WORD 10000$-.        WORD
1482 017104 013737 002340 002272      MOV    E,CS,TMPO     ;CHECK FOR FL:LOE, ELSE EXIT SEG
1483 017112 042737 001777 002272      BIC    #1777,TMPO     ;GET RLCS
1484 017120 022737 112000 002272      CMP    #BIT15!BIT12!BIT10,TMPO ;SAVE ERROR BITS
1485 017126 001402          BEQ    1$           ;HDR NOT FOUND SET.
1486 017130 004537 014614          JSR    R5,CHERR     ;YES, CONTINUE
1487 017134 010406          CKLOOP
1488 (3) 017134 104406          TRAP   CSCLP1
1489 017136 022737 112000 002272      CMP    #BIT15!BIT12!BIT10,TMPO
1490 017144 001404          BEQ    2$           ;WHEN FORCED
1491 017146 0104455
1492 017146 000027
1493 017146 005064
1494 017146 007510
1495 017156          10000$: ENDSEG      ;%%END OF SEGMENT%%
1496 (3) 017156 104405          10000$: TRAP   CSESEG     ;**END OF TEST**
1497 (3) 017160          ENDTST
1498 (3) 017160          L10037: TRAP   CSETST
1499 017160 104401          .SBTTL **TEST 6** - FORCE HEADER NOT FOUND WITH WRITE INTERRUPT
1500
1501
1502 017162          BGNTST      ;**START OF TEST**
1503
1504
1505
1506 017162          STARS
1507
1508
1509 017162 004737 015766          JSR    PC,HDHOME     ;HEADS OVER TRACK 0
1510 017166          CKERFG      ;HEADS GO HOME OKAY
1511 (4) 017174 104432          TRAP   CSEXIT
1512 (4) 017176 000160          .WORD  L10040-.

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1511
1512 017200          BGNSEG      ;%START OF SEGMENT%
(3) 017200 104404    TRAP        CSBSEG
1513
1514 017202          SETPRI     #PRI00
(3) 017202 012700 000000  MOV        #PRI00,RO
(3) 017206 104441    TRAP        CSSPRI
1515 017210 005037 002256  CLR        INTFLG   ;CLEAR INTERRUPT OCCURANCE FLAG
1516 017214 012777 000050 163136  MOV        #40.,@RLDA   ;INSURE NOT TO FIND HEADER BY
1517 017222 012777 003426 163126  MOV        #BUF,@RLBA   ;SETTING SECTOR 40 OF CYL. ADDR.
1518 017230 012777 177777 163124  MOV        #-1,@RLMP   ;WORD COUNT
1519
1520 017236 004537 015056  JSR        R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
1521 017242 000112          WRITE!INTEN
1522 017244 004537 015702  JSR        R5,WTCRDY ;WRITE FOR CONTROLLER READY
1523 017250          CKLOOP
(3) 017250 104406    TRAP        CSCLP1
1524 017252          SETPRI     #PRI07
(3) 017252 012700 000340  MOV        #PRI07,RO
(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     SEG      ;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        #1777,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          1$:       CKLOOP
(3) 017332 104406    TRAP        CSCLP1
1541
1542 017334 022737 112000 002272  CMP        #BIT15!BIT12!BIT10,TMPO
1543 017342 001404          BEQ        3$       ;WHEN FORCED
1544 017344          ERRDF      25.,EM10,ERRO
(4) 017344 104455    TRAP        C$ERDF
(5) 017346 000031    .WORD      25
(5) 017350 005064    .WORD      EM10
(5) 017352 007510    .WORD      ERRO
1545
1546 017354          3$:       ENDSEG    10000$- ;%END OF SEGMENT%
1547
1548 017354          ENDSEG    10000$- ;%END OF SEGMENT%
(3) 017354

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TEST 6 - FORCE HEADER NOT FOUND WITH WRITE INTERRUPT

SEQ 0071

(3) 017354 104405 TRAP C\$ESEG
1549 017356 017356 ENDTST L10040: ***END OF TEST**
(3) 017356 104401 TRAP C\$ETST

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
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
1562 ;*****
1563 017360 004737 014062 JSR PC,SETCLK :CALL INITIALIZE CLOCK ROUTINE
1564 017364 005737 002652 TST XITFLG :EXIT?
1565 017370 001412 BEQ 1\$: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 C\$PNTB
(4) 017406 062706 000004 ADD #4,SP
1567
1568 017412 000137 017764 JMP 8\$:CLOCK IS NOT AVAILABLE"
1569 017416 004737 015766 1\$: JSR PC,HDHOME :EXIT
1570 017422 CKERFG :HEADS OVER TRACK 0
(4) 017430 104432 TRAP C\$EXIT :HEADS GO HOME OKAY
(4) 017432 000346 .WORD L10041-.
1571
1572 017434 BGNSEG :%START OF SEGMENT%
(3) 017434 104404 TRAP C\$BSEG
1573
1574 017436 CLRVEC BVEC :CLEAR PRESENT INTERRUPT VECTOR
(3) 017436 013700 002366 MOV BVEC,RO
(3) 017442 104436 TRAP C\$CVÉC
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 C\$SVEC
(2) 017466 062706 000010 ADD #10,SP
1576 017472 SETPRI #PRI00
(3) 017472 012700 000000 MOV #PRI00,RO
(3) 017476 104441 TRAP C\$SPRI
1577 017500 005037 002256 CLR INTFLG :CLEAR INTERRUPT FLAG
1578 017504 012777 000050 162646 MOV #40,.@RLDA :SET UP FOR HDR NT FND
1579 017512 012777 003426 162636 MOV #BUF,@RLBA :BUS ADDRESS
1580 017520 012777 177777 162634 MOV #-1,@RLMP :WORD COUNT
1581 017526 013737 002664 002302 MOV OPITIM,BDDAT :GET OPIMX FOR WORST CASE

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
 (3) 017674 0023737 002414 002302
 1616 017676 023737 002412 002302
 1617 017704 002404
 1618 017706 023737 002412 002302
 1619 017714 003404
 1620 017716 104455
 (4) 017716
 (5) 017720 001716
 (5) 017722 007033
 (5) 017724 010346
 1621 017726 013700 002366
 (3) 017726 104436
 1622 017734 012746 000340
 (7) 017734
 (6) 017740 012746 014466
 (5) 017744 013746 002366
 (4) 017750 012746 000003
 (3) 017754 104437
 (2) 017756 062706 000010
 1623 017762

H 6

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 R5,LDFUNC ;LOAD THE FUNCTION IN THE NEXT WORD
 6\$: 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 OCCURED?
 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
 9\$: 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 C\$SPRI
 CMP OPIMX,BDDAT ;IS IT WITHIN LIMITS
 BLT 4\$;NO, REPORT ERROR
 CMP OPIMN,BDDAT ;WITHIN LIMITS
 BLE 5\$;YES
 4\$: ERRDF 974.,EM56,ERR13 ;OPI TIMING INCORRECT
 TRAP C\$ERDF
 .WORD 974
 .WORD EM56
 .WORD ERR13
 5\$: 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

1

SEQ 0073

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(3) 017762 104405 002652 10000$: TRAP C$ESEG
(3) 017762 104405 002652 8$: CLR XITFLG :INIT EXIT FLAG
1624 017764 005037 002652 CLR SIXTY :INIT 60 HZ. FLAG
1625 017770 005037 002656 CLR PCLOCK :INIT PCLOCK INDICATOR
1626 017774 005037 002660
1627
1628 020000 ENDTST :**END OF TEST**
(3) 020000 L10041: TRAP C$ETST
1629
1630
1631 .SBTTL **TEST 8** - MULTIPLE SECTOR TRANSFER ON WRITE
1632
1633 020002 BGNSTST ;**START OF TEST**
1634
1635 020002 STARS
1636 ;*****CHECK FOR MULTIPLE SECTOR TRANSFER ON WRITE. THIS TEST CHECKS
1637 ;THAT TWO SECTORS CAN BE SUCCESSFULLY WRITTEN. WE LOAD
1638 ;A WORD COUNT OF 129 WORDS (ONE SECTOR + 1 WORD) STARTING AT
1639 ;SECTOR 0 THRU SECTOR 37 AND VERIFY THAT THE RLDA DOES
1640 ;A DOUBLE INCREMENT EACH TIME.
1641 020002 STARS
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 C$EXIT
(4) 020016 000152 .WORD L10042-
1647
1648 020020 005037 002272 CLR TMP0 ;CLEAR TEMP LOCATIONS
1649 020024 005037 002274 CLR TMP1
1650
1651 020030 BGNSEG ;%START OF SEGMENT%
(3) 020030 104404 TRAP C$BSEG
1652
1653
1654 020032 013737 002274 002300 1$: MOV TMP1,GDDAT ;GET CYLINDER
1655 020040 053737 002272 002300 BIS TMP0,GDDAT ;GET SECTOR
1656 020046 013777 002300 162304 MOV GDDAT,@RLDA :SET DISK ADDRESS-SECTOR 0
1657 C20054 062737 000002 002300 ADD #2,GDDAT :SET EXPECTED + 2
1658 020062 012777 003426 162266 MOV #BUF,@RLBA :SET BUS ADDRESS
1659 020070 012777 177577 162264 MOV #-129.,@RLMP :WORD COUNT-SECTOR+1 WORD
1660
1661 020076 004537 015056 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
1662 020102 000012 WRITE ;WRITE
1663 020104 004537 015702 JSR R5,WTCRDY :WAIT FOR CONTROLLER READY?
1664 020110 ESCAPE ;CHECK FOR FL:LOE. ELSE EXIT SEG
(3) 020110 104410 TRAP C$ESCAPE
(3) 020112 000054 .WORD 10000$-
1665
1666 020114 004537 014614 JSR R5,CHERR ;CHECK CNTLR FOR ERRORS
1667 020120 104410 ESCAPE ;CHECK FOR FL:LOE. ELSE EXIT SEG
(3) 020120 104410 TRAP C$ESCAPE

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CZRLHB.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 ?
(5) 020146 005461 .WORD EM22
(5) 020150 007654 .WORD ERR4
1674
1675 020152 2\$: INC TMPO ;NEXT SECTOR
1676
1677 020152 005237 002272 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\$:
1682 020170 ENDTST ;**END OF TEST**
(3) 020170 L10042:
(3) 020170 104401 TRAP C\$ESEG
1683
1684 .SBTTL **TEST 9** - CHECK DIRECTION OF WRITE NPR
1685
1686 020172 BGNTST ;**START OF TEST**
1687
1688 020172 STARS
(2)
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
(2)
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 CLR @RLDA ;LOAD DISK ADDRESS
1708
1709 020232 005077 162122

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 CZRLHB.MAC 07-DEC-79 08:12 **TEST 9** - CHECK DIRECTION OF WRITE NPR

K 6

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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   R5,WTCRDY ;WRITE SOME DATA
1714 020260 004537 015702      JSR    R5,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$-
1716
1717 020270 004537 014614      JSR    R5,CHERR  ;CHECK CNTLR FOR ERRORS
1718 020274      ESCAPE  SEG    C$ESCAPE ;CHECK FOR FL:LOE, ELSE EXIT SEG
  (3) 020274 104410      TRAP    C$ESCAPE
  (3) 020276 000066      .WORD   10000$-
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  CSBSEG ;%%START OF SEGMENT%%
  (3) 020310 104404      TRAP
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    $S      ;YES, CONTINUE
1729
1730 020334 010237 002274      MOV    R2,TMP1 ;LOAD MEMORY LOCATION OF FAILURE
1731 020340      ERDF    8.,EM26,ERR8
  (4) 020340 104455      TRAP    C$ERDF
  (5) 020342 000010      .WORD   8
  (5) 020344 005710      .WORD   EM26
  (5) 020346 010030      .WORD   ERR8
1732
1733 020350      5$:    ESCAPE  SEG    ;CHECK FOR FL:LOE, ELSE EXIT SEG
  (3) 020350 104410      TRAP    C$ESCAPE
  (3) 020352 000010      .WORD   10001$-
1734 020354 005722      6$:    TST    (R2)+  ;NEXT!
1735 020356 005301      DEC    R1    ;DONE?
1736 020360 001357      BNE    $S      ;NO, GO BACK
1737
1738 020362      ENDSEG  ;%%END OF SEGMENT%%
  (3) 020362 104405      TRAP    CSSEG
  (3) 020362      ENDSEG  ;%%END OF SEGMENT%%
1739 020364      10000$:
  (3) 020364 104405      TRAP    CSSEG
  (3) 020364      ENDTST L10043: ;**END OF TEST**
1740 020366      ENDTST L10043: ;**END OF TEST**
  (3) 020366 104401      TRAP    CSSETST
1741
1742      .SBTLL **TEST 10** - CHECK FULL RLBA INCREMENT
1743
1744 020370      BGNST  ;**START OF TEST**
1745
1746 020370      STARS
  (2) 020370      :*****TEST THAT THE RLBA WILL INCREMENT, WE DO NOT DO A FULL 16
  1747

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TEST 10 - CHECK FULL RLBA INCREMENTL 6
SEQ 0076

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 (4) 020402 104432 CKERFG TRAP C\$EXIT ;HEADS GO HOME OKAY
 (4) 020404 000134 .WORD L10044-.
 1757
 1758
 1759 020406 004037 002274 CLR TMP1 ;CLEAR LOCATION
 1760
 1761 020412 (3) 020412 104404 BGNSEG TRAP C\$BSEG ;%START OF SEGMENT%
 1762
 1763 020414 020414 012777 177777 161740 3\$: MOV #1,ARLMP ;ONLY ONE (1) WORD
 1764 020422 005077 161732 CLR @RLDA ;LOAD DISK ADDRESS
 1765 020426 013777 002274 161722 MOV TMP1,@RLBA ;BUS ADDRESS
 1766
 1767
 1768 020434 004537 015056 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
 1769 020440 000012 WRITE
 1770 020442 004537 015702 JSR R5,WTCRDY ;WAIT FOR WRITE TO FINISH
 1771 020446 (3) 020446 104410 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 020450 000066 TRAP C\$ESCAPE .WORD 10000\$-.
 1772
 1773 020452 013737 002274 002300 4\$: 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 5\$;YES, CONTINUE
 1778
 1779 020504 (4) 020504 104455 ERRDF 9.,EM30,ERR4 ;BA INCREMENT ERROR
 (5) 020506 000011 TRAP C\$ERDF
 (5) 020510 006005 .WORD 9
 (5) 020512 007654 .WORD EM30
 .WORD ERR4
 1780 020514 (3) 020514 104410 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 020516 000020 TRAP C\$ESCAPE .WORD 10000\$-.
 1781
 1782 020520 006337 002274 ASL TMP1 ;NEXT PATTERN TO TEST RLBA
 1783 020524 103404 BCS 6\$;DONE?
 1784 020526 052737 000002 002274 BIS #BIT1,TMP1 ;NO, SET IN BIT 1
 1785 020534 000727 BR 3\$;GO CHECK NEXT.
 1786
 1787 020536 6\$: ;END TEST
 1788
 1789 020536 (3) 020536 104405 ENDSEG ;%END OF SEGMENT%
 (3) 020536 104405 10000\$: TRAP C\$ESEG

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M 6
TEST 10 - CHECK FULL RLBA INCREMENT

SEQ 0077

1790 020540 ENDTST ;**END OF TEST**
(3) 020540 L10044: TRAP C\$ETST
(3) 020540 104401 .SBTTL **TEST 11** - BA BIT 16 INCREMENT
1791
1792
1793
1794 020542 BGNTST ;**START OF TEST**
1795
1796 020542 STARS
(2)
1797 :CHECK THAT BA BIT 16 WILL INCREMENT. WE WILL LOAD THE
1798 :RLBA WITH 177776 AND ISSUE A ONE WORD WRITE WE THEN
1799 :CHECK BA BIT 16 TO SET, BA 17 TO STAY A 0 AND THE RLBA
1800 :TO GO TO ZERO
1801 020542 STARS
(2)
1802
1803
1804 020542 004737 015766 JSR PC,HDHOME ;HEADS OVER TRACK 0
1805 020546 CKERFG ;HEADS GO HOME OKAY
(4) 020554 104432 TRAP C\$EXIT
(4) 020556 000160 .WORD L10045-.
1806
1807 020560 BGNSEG ;%START OF SEGMENT%
(3) 020560 104404 TRAP C\$BSEG
1808
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 161560 MOV #-1,ARLMP ;ONE WORD TRANSFER
1812 020574 012777 177777 161560 CLR @RLDA
1813 020602 005077 161552 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
1814 020606 004537 015056 WRITE JSR R5,WTCRDY ;WAIT FOR WRITE TO FINISH
1815 020612 000012 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
1816 020614 004537 015702 TRAP C\$ESCAPE
(3) 020620 104410 .WORD 10000\$.
(3) 020622 000112 BIT #NXM,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 R5,CHERR ;CHECK CNTLR FOR ERRORS
1822 020640 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 020640 104410 TRAP C\$ESCAPE
(3) 020642 000072 .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 C\$ERDF
(5) 020656 000012 .WORD 10
(5) 020660 006040 .WORD EM31
(5) 020662 007510 .WORD ERRO
1828
1829 020664 4\$: CKLOOP CKLOOP
(3) 020664 104406 TRAP C\$CLP1

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 CZRLHB.MAC 07-DEC-79 08:12 **TEST 11** - BA BIT 16 INCREMENT

SEQ 0078

1830
 1831 020666 032737 000040 002340 BIT #BA17,E.CS ;DID BA17 SET ALSO?
 1832 020674 001404 BEQ 5\$;NO, GOOD CONTINUE
 1833
 1834 020676 104455 ERRDF 11.,EM32,ERRO ;BA 17 GOT CARRIED AWAY
 (4) 020676 TRAP C\$ERDF
 (5) 020700 000013 .WORD 11
 (5) 020702 006076 .WORD EM32
 (5) 020704 007510 .WORD ERRO
 1835
 1836 020706 104406 5\$: CKLOOP CSCLP1,
 (3) 020706 TRAP
 1837
 1838 020710 005037 002300 CLR GDDAT ;CHECK THAT BA15-BA0 IS CLEAR
 1839 020714 013737 002342 002302 MOV E.BA,BDDAT ;READ BA
 1840 020722 001404 BEQ 6\$;IS BA ZERO?
 1841 020724 104455 ERRDF 12.,EM33,ERR4 ;BA SHOULD BE ZERO
 (4) 020724 TRAP C\$ERDF
 (5) 020726 000014 .WORD 12
 (5) 020730 006135 .WORD EM33
 (5) 020732 007654 .WORD ERR4
 1842
 1843 020734 6\$: ;
 1844
 1845 020734 ENDSEG ;%END OF SEGMENT%
 (3) 020734 10000\$: ;
 (3) 020734 104405 TRAP C\$ESEG ;**END OF TEST**
 1846 020736 ENDTST ;
 (3) 020736 L10045: ;
 (3) 020736 104401 TRAP C\$ETST ;
 1847
 1848 .SBTTL **TEST 12** - BA BIT 17 INCREMENT
 1849
 1850 020740 BGNTST ;**START OF TEST**
 1851
 1852 020740 STARS ;
 (2)
 1853 ;*****
 1854 ;CHECK THAT BA BIT 17 WILL INCREMENT. WE WILL LOAD THE
 1855 ;RLBA WITH 177776 AND BA 16 SET, WE WILL ISSUE A ONE WORD
 1856 ;WRITE. WE THEN CHECK BA17 TO SET, BA16 TO CLEAR AND
 1857 020740 ;BA15 - BA0 TO CLEAR.
 (2)
 1858
 1859 020740 004737 015766 JSR PC,HDHOME ;HEADS OVER TRACK 0
 1860 020744 CKERFG ;HEADS GO HOME OKAY
 (4) 020752 104432 TRAP C\$EXIT ;
 (4) 020754 000162 .WORD / L10046-.

1862
 1863 020756 104404 B 7
 (3) 020756 BGNSEG :%%START OF SEGMENT%%
 1864
 1865 020760 012777 177776 161370 2\$: TRAP CSBSEG
 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 R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
 1871 021012 000012 WRITE
 1872 021014 004537 015702 JSR R5,WTCRDY ;WAIT FOR WRITE TO FINISH
 1873 021020 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 021020 104410 TRAP C\$ESCAPE
 (3) 021022 000112 .WORD 10000\$.-.
 1874 021024 032737 020000 002340 BIT #NXM,E.CS ;NON-EXISTANT MEMORY ERROR?
 1875 021032 001002 BNE 3\$;YES, CONTINUE
 1876
 1877 021034 004537 014614 3\$: JSR R5,CHERR ;CHECK CNTLR FOR ERRORS
 1878 021040 104410 ESCAPE SEG ;CHFCK FOR FL:LOE, ELSE EXIT SEG
 (3) 021040 104410 TRAP C\$ESCAPE
 (3) 021042 000072 .WORD 10000\$.-.
 1879
 1880 021044 032737 000040 002340 BIT #BA17,E.CS ;DID BA17 SET?
 1881 021052 001004 BNE 4\$;YES, CONTINUE
 1882
 1883 021054 104455 ERRDF 13.,EM34,ERR0 ;BA 17 DID NOT SET
 (4) 021054 TRAP C\$ERDF
 (5) 021056 000015 .WORD 13
 (5) 021060 006171 .WORD EM34
 (5) 021062 007510 .WORD ERRO
 1884
 1885 021064 104406 4\$: CKLOOP TRAP C\$CLP1
 (3) 021064
 1886
 1887 021066 032737 000020 002340 BIT #BA16,E.CS ;DID BA16 SET ALSO?
 1888 021074 001404 BEQ 5\$;NO, GOOD CONTINUE
 1889
 1890 021076 104455 ERRDF 14.,EM35,ERR0 ;BA 16 DIDN'T KNOW WHEN TO QUIT.
 (4) 021076 TRAP C\$ERDF
 (5) 021100 000016 .WORD 14
 (5) 021102 006227 .WORD EM35
 (5) 021104 007510 .WORD ERRO
 1891 021106 104406 5\$: CKLOOP TRAP C\$CLP1
 (3) 021106
 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 6\$;IS BA ZERO?
 1896 021124 104455 ERRDF 15.,EM36,ERR4 ;BA SHOULD BE ZERO
 (4) 021124 TRAP C\$ERDF
 (5) 021126 000017 .WORD 15
 (5) 021130 006265 .WORD EM36
 (5) 021132 007654 .WORD ERRO
 1897
 1898 021134 6\$: :

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 C\$ESEG
1902
1903
1904 .SBTTL **TEST 13** - READ FUNCTION
1905
1906 021140 BGNTST ;**START OF TEST**
1907
1908 021140 STARS
1909 :*****
1910 :CHECK OF THE READ FUNCTION. WE WILL FIRST DO A READ
1911 :HEADER TO FIND OUT WHERE WE ARE AND THEN ISSUE
1912 :A FULL SECTOR READ, WAIT FOR READY AND CHECK FOR
1913 021140 ANY ERRORS
1914 STARS
1915 :*****
1916 021140 004737 015766 JSR PC,HDHOME ;HEADS OVER TRACK 0
1917 021144 CKERFG ;HEADS GO HOME OKAY
(4) 021152 104432 TRAP C\$EXIT
(4) 021154 000064 .WORD L10047-.
1918
1919 021156 BGNSEG ;%START OF SEGMENT%
(3) 021156 104404 TRAP CSBSEG
1920
1921 021160 012737 001750 002272 MOV #1000.,TMPO
1922 021166 005077 161166 CLR @RLDA :LOAD DISK ADDRESS
1923 021172 012777 177600 161162 MOV #-128.,@RLMP :SET WORD LENGTH
1924 021200 012777 003426 161150 MOV #BUF,@RLBA :SET BUS ADDRESS
1925
1926 021206 004537 015056 JSR R5,LDFUNC :LOAD THE FUNCTION IN NEXT WORD
1927 021212 000014 READ ;READ
1928 021214 004537 015702 JSR R5,WTCRDY ;WAIT FOR CONTROLLER READY
1929 021220 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 021220 104410 TRAP C\$ESCAPE
(3) 021222 000014 .WORD 10000\$-.
1930
1931 021224 004537 014614 JSR R5,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 C\$ESEG ;**END OF TEST**
1936 021240 ENDTST L10047:
(3) 021240 104401 TRAP C\$ETST
1937
1938 .SBTTL **TEST 14** - READ FUNCTION INTERRUPT
1939

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TEST 14 - READ FUNCTION INTERRUPT

SEQ 0081

1940 021242 BGNTST ;**START OF TEST**
1941
1942 021242 STARS
(2)
1943 :*****
1944 :CHECK OF THE READ FUNCTION UNDER INTERRUPT CONTROL, WE WILL
1945 :ISSUE A READ HEADER TO GET POSITION AND THEN READ
1946 :A FULL SECTOR WAITING FOR THE INTERRUPT. CHECK FOR
1947 021242 ERRORS ON INTERRUPT.
1948 (2)
1949 STARS
1950 021242 004737 015766 JSR PC,HDHOME ;HEADS OVER TRACK 0
1951 021246 CKERFG ;HEADS GO HOME OKAY
(4) 021254 104432 TRAP C\$EXIT
(4) 021256 000106 .WORD L10050-.
1952
1953 021260 104404 BGNSEG ;%START OF SEGMENT%
(3) 021260 TRAP C\$BSEG
1954
1955 021262 005037 002256 CLR INTFLG ;CLEAR INTERRUPT INDICATOR
1956 021266 005077 161066 CLR @RLDA ;SET DISK ADDRESS
1957 021272 012777 177600 161062 MOV #128.,@RLMP ;SET UP WORD COUNT
1958 021300 012777 003426 161050 MOV #BUF,@RLBA ;SET UP BUS ADDRESS
1959
1960 021306 012700 000000 SETPRI #PRI00 ;PRIORITY TO 0
(3) 021306 104441 MOV #PRI00,RO
(3) 021312 TRAP C\$SPRI
1961 021314 004537 015056 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
1962 021320 000114 READ!INTEN ;READ UNDER INTERRUPT
1963 021322 004537 015702 JSR R5,WTCRDY ;WAIT FOR INTERRUPT
1964 021326 104406 CKLOOP
(3) 021326 TRAP CSCLP1
1965 021330 012700 000340 SETPRI #PRI07 ;PRIORITY TO 7
(3) 021330 MOV #PRI07,RO
(3) 021334 104441 TRAP C\$SPRI
1966
1967 021336 005737 002256 TST INTFLG ;DID INTERRUPT OCCUR?
1968 021342 001004 BNE 1\$;YES-BRANCH NO-REPORT
1969
1970 021344 104455 ERRDF 19.,EM4,ERRO ;READ DID NOT INTERRUPT
(4) 021344 TRAP C\$ERDF
(5) 021346 000023 .WORD 19
(5) 021350 004712 .WORD EM4
(5) 021352 007510 .WORD ERRO
1971 021354 104406 1\$: CKLOOP ;CHECK FOR LOOP
(3) 021354 TRAP CSCLP1
1972
1973 021356 004537 014614 JSR R5,CHERR ;CHECK CTLR FOR ERRORS
1974
1975 021362 ENDSEG ;%END OF SEGMENT%
(3) 021362 104405 10000\$: TRAP C\$ESEG
1976 021364 ENDTST ;**END OF TEST**
(3) 021364 L10050: TRAP C\$ETST
(3) 021364 104401

1977
 1978 .SBTTL **TEST 15** - CHECK READ NPR DIRECTION
 1979
 1980 021366 BGNTST ;**START OF TEST**
 1981
 1982 021366 STARS
 (2)
 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
 (2)
 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 1\$: MOV #BUF,R0 ;SET UP BUFFER BEGINNING
 2003 021424 012701 000200 MOV #128.,R1
 2004 021430 013720 002272 2\$: MOV TMPO,(R0)+ ;WRITE BUFFER
 2005 021434 005301 DEC R1 ;DONE??
 2006 021436 001374 BNE 2\$;NO, GO BACK
 2007 021440 005077 160714 CLR @RLDA ;LOAD DISK ADDRESS
 2008 021444 012777 177600 160710 MOV #-128.,@RLMP ;SET WORD COUNT
 2009 021452 012777 003426 160676 MOV #BUF,@RLBA ;LOAD BUS ADDRESS
 2010 021460 012737 003426 002300 MOV #BUF,GDDAT ;FOR ERROR PRINT
 2011
 2012 021466 004537 015056 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
 2013 021472 000014 READ ;READ
 2014 021474 004537 015702 JSR R5,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 R5,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 4\$: MOV #BUF,R2 ;SET TO START COMPARING DATA
 2021 021520 022237 002272 CMP (R2)+,TMPO ;DID DATA CHANGE?
 2022 021524 001014 BNE 6\$;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
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 5\$: 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 6\$:
2036
2037 021556 10000\$: ENDSEG ;%END OF SEGMENT%
 (3) 021556 TRAP C\$ESEG
 (3) 021556 104405 ENDTST L10051:
2038 021560 TRAP C\$ETST ;**END OF TEST**
 (3) 021560
 (3) 021560 104401
2039
2040 .SBTTL **TEST 16** - PROPER INCREMENT OF RLBA ON READ
2041
2042 021562 BGNTST ;**START OF TEST**
2043
2044 021562 STARS
 (2)
2045 ;*****
2046 ;CHECK THAT THE RLBA WILL INCREMENT WITH THE READ
2047 ;THE RLBA SHOULD CONTAIN 'BUF +256.' AFTER A FULL SECTOR
2048 021562 STARS
 (2)
2049
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 @RLDA ;SET UP DISK ADDRESS
2057 021606 012777 003426 160542 MOV #BUF,@RLBA ;SET UP BUS ADDRESS
2058 021614 012777 177600 160540 MOV #128.,@RLMP ;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 ;READ
2064 021644 004537 015702 JSR R5,WTCRDY ;WAIT FOR CONTROLLER READY
2065 021650 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 021650 104410 TRAP C\$ESCAPE

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TEST 16 - PROPER INCREMENT OF RLBA ON READ

SEQ 0084

(3) 021652 000040 .WORD 10000\$-.
2066
2067 021654 004537 014614 JSR R5,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 .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 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 BGNTST ;**START OF TEST**
2083
2084 021716 STARS ;*****
(2) ;CHECK THAT THE RLDA INCREMENTS BY ONE AFTER A
2085 ;FULL SECTOR READ. WE FIRST READ A HEADER TO FIND
2086 ;OUT WHERE WE ARE, THEN ISSUE A READ AFTER
2087 ;THE READ THE RLDA SHOULD BE RLDA (START) + 1
2088 STARS ;*****
2089 021716 ;*****
2090
2091 021716 004737 015766 JSR PC,HDHOME ;HEADS OVER TRACK 0
2092 021722 CKERFG ;HEADS GO HOME OKAY
2093 (4) 021730 104432 TRAP C\$EXIT
(4) 021732 000114 .WORD L10053-.
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 R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
2104 021774 000014 READ ;READ
2105 021776 004537 015702 JSR R5,WTCRDY ;WAIT FOR CONTROLLER READY

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TEST 17 - PROPER INCREMENT OF RLDA ON READ

SEQ 0085

2106 022002 ESCAPE ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 022002 TRAP C\$ESCAPE
(3) 022004 .WORD 10000\$-.
2107
2108 022006 004537 014614 JSR R5,CHERR ;CHECK CNTLR FOR ERRORS
2109 022012 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 022012 TRAP C\$ESCAPE
(3) 022014 .WORD 10000\$-.
2110
2111 022016 013737 002344 002302 MOV E.DA,BDDAT ;READ DISK ADDRESS
2112 022024 023737 002300 002302 CMP GDDAT,BDDAT ;DID SECTOR INCREMENT PROPERLY
2113 022032 001404 BEQ 1\$;YES, BRANCH NO, REPORT ERROR
2114
2115 022034 ERRDF 22,,EM7,ERR4 ;DISK ADDRESS DID NOT INCREMENT
(4) 022034 TRAP C\$ERRDF
(5) 022036 .WORD 22
(5) 022040 .WORD EM7
(5) 022042 .WORD ERR4
2116
2117 022044 1\$:
2118
2119 022044 ENDSEG ;%%END OF SEGMENT%%
(3) 022044 104405 10000\$:
(3) 022044 TRAP C\$ESEG
2120 022046 ENDTST ;**END OF TEST**
(3) 022046 L10053:
(3) 022046 TRAP C\$ETST
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 TRAP C\$EXIT
(4) 022064 .WORD L10054-.
2135
2136 022066 BGNSEG ;%%START OF SEGMENT%%
(3) 022066 TRAP C\$BSEG
2137
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 R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
2144 022116 000014 READ ;READ

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TEST 18 - FORCE HEADER NOT FOUND WITH READ

I 7
SEQ 0086

2145 022120 004537 015702 JSR R5_WTCRDY :WAIT FOR CONTROLLER READY
2146 022124 104410 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 022124 000036 TRAP C\$ESCAPE
(3) 022126 .WORD 10000\$-.
2147
2148 022130 013737 002340 002272 MOV E.CS,TMPO :GET RLCS
2149 022136 042737 001777 002272 BIC #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\$ERDF
(5) 022156 000027 .WORD 23
(5) 022160 005064 .WORD EM10
(5) 022162 007510 .WORD ERRO
2154
2155 022164 1\$:
2156 :
2157
2158 022164 104405 10000\$: ENDSEG ;%END OF SEGMENT%
(3) 022164 TRAP C\$ESEG
(3) 022164 L10054: ENDTST ;**END OF TEST**
2159 022166 * TRAP C\$ETST
(3) 022166 104401
2160
2161 .SBTTL **TEST 19** - FORCE HEADER NOT FOUND WITH READ INTERRUPT
2162
2163 022170 BGNST :**START OF TEST**
2164
2165
2166 022170 STARS
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
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 :CLEAR INTERRUPT OCCURANCE FLAG
2180 022222 012777 000050 160130 MOV #40.,@RLDA :INSURE NOT TO FIND HEADER BY
2181 022230 012777 003426 160120 MOV #BUF,@RLBA :SETTING SECTOR 40 OF CYL. ADDR.
2182 022236 012777 177777 160116 MOV #-1,@RLMP :WORD COUNT
2183

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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 Q15702 JSR R5,WTCRDY ;WAIT FOR CONTROLLER READY
2187 022256 CKLOOP
(3) 022256 104406 TRAP C\$CLP1
2188 022260 SETPRI #PRI07
(3) 022260 012700 000340 MOV #PRI07,RO
(3) 022264 104441 TRAP C\$SPRI
2189
2190 022266 005737 002256 TST INTFLG ;DID INTERRUPT OCCUR
2191 022272 001004 BNE 2\$;YES
2192
2193 022274 104455 ERRDF 24.,EM43,ERRO ;HNF DID NOT INTERRUPT
(4) 022274 TRAP C\$ERDF
(5) 022276 000030 .WORD 24
(5) 022300 006461 .WORD EM43
(5) 022302 007510 .WORD ERRO
2194
2195 022304 104410 2\$: ESCAPE SEG ;CHECK FOR FL:LOE, ELL EXIT SEG
(3) 022304 TRAP C\$ESCAPE
(3) 022306 000036 .WORD 10000\$-.
2196
2197
2198 022310 013737 002340 002272 MOV E.CS,TMPO ;GET RLCS
2199 022316 042737 001777 002272 BIC #1777,TMPO ;SAVE ERROR BITS
2200 022324 022737 112000 002272 CMP #BIT15!BIT12!BIT10,TMPO ;WDR NOT FOUND SET.
2201 022332 001404 BEQ 1\$;YES, CONTINUE
2202
2203 022334 104455 ERRDF 25.,EM10,ERRO
(4) 022334 TRAP C\$ERDF
(5) 022336 000031 .WORD 25
(5) 022340 005064 .WORD EM10
(5) 022342 007510 .WORD ERRO
2204 :WHEN FORCED
2205 022344 1\$:
2206
2207 022344 ENDSEG ;%END OF SEGMENT%
(3) 022344 104405 10000\$: TRAP C\$SESEG
(3) 022344
2208 022346 ENDTST ;**END OF TEST**
(3) 022346 L10055:
(3) 022346 104401 TRAP C\$ETST
2209
2210 .SBTTL **TEST 20** - CHECK HEADER COMPARE LOGIC
2211
2212 022350 BGNTST ;**START OF TEST**
2213
2214 022350 STARS
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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SEQ 0088

2222 :WE THEN LOAD THE COMPLEMENT PATTERN INTO THE RLDA
 2223 :EXPECTING A HEADER NOT FOUND TO SET
 2224 022350 STARS
 2225 ;*****
 2226
 2227 022350 004737 015766 JSR PC,HDHOME ;HEADS OVER TRACK 0
 2228 022354 CKERFG ;HEADS GO HOME OKAY
 (4) 022362 TRAP C\$EXIT
 (4) 022364 .WORD L10056-.
 2229
 2230 022366 ;%%START OF SEGMENT%%
 (3) 022366 104404 BGNSEG TRAP C\$BSEG
 2231
 2232 022370 SETPRI #PRI07 ;PRIORITY TO 7
 (3) 022370 012700 000340 MOV #PRI07, R0
 (3) 022374 TRAP C\$SPRI
 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 #HDRTAB,R3 ;MOV ADDRESS OF BEG PATTERN TO R3
 2236 022412 000402 BR 33\$;THEN BRANCH
 2237 022414 012703 003050 22\$: MOV #HTAB,R3 ;MOV ADDRESS OF BEG PATTERN TO R3
 2238 022420 022420 104404 33\$: BGNSEG ;START OF SEGMENT
 (3) 022420 TRAP C\$BSEG
 2239 022422 1\$: JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
 2240 022422 004537 015056 RDHDR ;READ HEADER
 2241 022426 000010 JSR R5,WTCRDY ;WAIT FOR CONTROLLER READY
 2242 022430 004537 015702 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
 2243 022434 (3) 022434 104410 ESCAPE C\$ESCAPE
 (3) 022436 000516 .WORD 10001\$-.
 2244
 2245 022440 004537 014614 JSR R5,CHERR ;CHECK CNTLR FOR ERRORS
 2246 022444 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 022444 104410 TRAP C\$ESCAPE
 (3) 022446 000506 .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,@RLDA ;SETUP 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,@RLDA ;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,@RLDA ;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,@RLDA ;SET HEAD SELECT TO ONE
 2262 022552 004537 015056 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		:CHECK FOR FL:LOE, ELSE EXIT SEG
(3)	022574	104410		TRAP	C\$ESCAPE		
(3)	022576	000356		.WORD	10001\$-.		
2271							
2272	022600	004537	015636	JSR	R5,WTDRDY		:WAIT FOR DRIVE READY
2273	022604			ESCAPE	SEG		:CHECK FOR FL:LOE, ELSE EXIT SEG
(3)	022604	104410		TRAP	C\$ESCAPE		
(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		:CHECK FOR FL:LOE, ELSE EXIT SEG
(3)	022632	104410		TRAP	C\$ESCAPE		
(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			BEQ	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),@RLDA	:SET UP DISK ADDRESS
2294	022714	042777	000077	157436	BIC	#77,@RLDA	
2295	022722	012777	177777	157432	MOV	#-1,@RLMP	:WORD COUNT
2296	022730	012777	003426	157420	MOV	#BUF,@RLBA	: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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TEST 20 - CHECK HEADER COMPARE LOGIC

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 R5,WTCRDY ;READ
2314 023022 ESCAPE SEG ;WAIT FOR CONTROLLER READY
2315 (3) 023022 104410 TRAP C\$ESCAPE ;CHECK FOR FL:LOE, ELSE EXIT SEG
2316 (3) 023024 000130 .WORD 10001\$-.
2317 023026 013737 002340 002272 MOV E,CS,TMPO ;GET CS
2318 023034 042737 001777 002272 BIC #1777,TMPO ;SAVE ERROR BITS
2319 023042 022737 112000 002272 CMP #BIT15!BIT12!BIT10,TMPO ;DID HEADER NOT FOUND SET
2320 023050 001402 BEQ 8\$;YES, CONTINUE
2321 023052 004537 014614 JSR R5,CHERR
2322 023056 023056 104406 CKLOOP
2323 (3) 023056 104406 TRAP C\$CLP1
2324 023060 022737 112000 002272 CMP #BIT15!BIT12!BIT10,TMPO
2325 023066 001413 BEQ 6\$
2326 023070 011337 002300 MOV (R3),GDDAT ;SET UP DATA FOR ERROR
2327 023074 013737 002300 002302 MOV GDDAT,BDDAT ;PRINT OUT
2328 023102 005137 002302 COM BDDAT
2329 023106 023106 104455 ERRDF 28.,EM12,ERR4 ;HDR NOT FOUND WOULD NOT SET
2330 (4) 023106 104455 TRAP C\$ERDF
2331 (5) 023110 000034 .WORD 28
2332 (5) 023112 005144 .WORD EM12
2333 (5) 023114 007654 .WORD ERR4
2334 023116 023116 104410 6\$: ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
2335 (3) 023116 104410 TRAP C\$ESCAPE
2336 (3) 023120 000034 .WORD 10001\$-.
2337 023122 005723 TST (R3)+
2338 023124 022737 000001 002232 CMP #1,T.DRIVE ;GET NEXT PATTERN
2339 023132 001003 BNE 60\$;TYPE OF DRIVE RL01 OR RL02
2340 023134 020327 003046 CMP R3,#HDREND ;RL02 ? THEN BRANCH
2341 023140 000402 BR 77\$;CMP IT WITH #HDREND
2342 023142 020327 003234 60\$: CMP R3,#HEND ;THEN BRANCH
2343 023146 001402 77\$: BEQ 7\$;CMP IT WITH #HEND
2344 023150 000137 022422 JMP 1\$;YES, EXIT TEST
2345 023154 023154 7\$: ENDSEG ;NO, GO BACK
2346 (3) 023154 104405 10001\$: ENDSEG ;%%END OF SEGMENT%%
2347 (3) 023156 023156 104405 10000\$: TRAP C\$ESEG
2348 (3) 023156 104405 ENDSEG ;%%END OF SEGMENT%%

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TEST 20 - CHECK HEADER COMPARE LOGICN 7
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2346 023160          ENDTST          ;**END OF TEST**
(3) 023160
(3) 023160 104401    L10056:      TRAP   C$ETST

2347
2348 .SBTTL **TEST 21** - CHECK MULTIPLE SECTORS ON READ
2349
2350 023162          BGNTST          ;**START OF TEST**
2351
2352 023162          STARS
(2)
2353 :;*****VERIFY THAT MULTIPLE SECTORS CAN BE READ, WE WILL CHECK
2354 :;THAT THE RLDA INCREMENTS PROPERLY.
2355 023162          STARS
(2)
2356
2357
2358 023162 004737 015766    JSR    PC,HDHOME   ;HEADS OVER TRACK 0
2359 023166          CKERFG          ;HEADS GO HOME OKAY
(4) 023174 104432      TRAP   C$EXIT
(4) 023176 000156      .WORD  L10057-.

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

2364
2365 023210          BGNSEG          ;%START OF SEGMENT%
(3) 023210 104404      TRAP   C$BSEG

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

2374
2375 023256 004537 015056    JSR    R5,LDFUNC   ;LOAD THE FUNCTION IN NEXT WORD
2376 023262 000014          READ
2377 023264 004537 015702    JSR    R5,WTCRDY   ;READ
2378 023270          ESCAPE          ;WAIT FOR CONTROLLER READY?
(3) 023270 104410          SEG
(3) 023272 000060          TRAP   C$ESCAPE   ;CHECK FOR FL:LOE, ELSE EXIT SEG
.WORD  10000$-.

2379
2380 023274 004537 014614    JSR    R5,CHERR   ;CHECK CNTLR FOR ERRORS
2381 023300          ESCAPE          ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 023300 104410          SEG
(3) 023302 000050          TRAP   C$ESCAPE
.WORD  10000$-.

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
2386
2387 023322          ERRDF          ;YES, BRANCH NO, REPORT ERROR
(4) 023322 104455      TRAP   29.,EM14,ERR4   ;DA DID NOT INCREMENT
(5) 023324 000035      .WORD  C$ERRDF
(5) 023326 005224      .WORD  29
.WORD  EM14

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TEST 21 - CHECK MULTIPLE SECTORS ON READ

SEQ 0092

(5) 023330 007654 .WORD ERR4
2388
2389 023332 104410 2\$: 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\$ESEG
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
2404 023356 STARS
2405 :*****
2406
2407 .SBTTL **TEST 22** - 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 R5,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 4\$;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 104405
(3) 023516
2441 023520 (3) 023520 L10060:
(3) 023520 104401
2442
2443 .SBTTL **TEST 23** - FORCE NON-EXISTENT MEMORY ERROR
2444
2445 023522 BGNTST ;**START OF TEST**
2446
2447 023522 STARS
2448 :*****
2449 :CHECK FOR RLV-11
2450 :&
2451 023522 :SIZE IF MEMORY >= 124K - IF TRUE DO NOT PERFORM TESTS 23 & 24
2452 STARS
2453 023522 005037 002662 CLR NOTST ;INIT ABORT TEST
2454 023526 005737 002420 TST T.CNTRLR ;RLV11?
2455 023532 001013 BNE 4\$;BRANCH - IF NO
2456 023534 013700 002120 MOV LSHIMEM,RO ;GET HIGHEST OCTAL MEMORY ADDRESS IN PAR FORMAT
2457 023540 006200 ASR RO ;DIVIDE BY
2458 023542 006200 ASR RO ;32(10),40(8)
2459 023544 006200 ASR RO ;TO CONVERT TO
2460 023546 006200 ASR RO ;1K(10)
2461 023550 006200 ASR RO ;BLOCKS
2462 023552 005200 INC RO ;TO INCLUDE LOCATION ZERO
2463 023554 022700 000174 CMP #124.,RO ;MEMORY >= 124K.?
2464 023560 003447 BLE 5\$;BRANCH - IF YES
2465
2466
2467 023562 STARS
2468 :*****
2469 :FORCE A NON-EXISTENT MEMORY ERROR.
2470 :WE SET THE RLBA TO EQUAL THE
2471 :LAST ADDRESS IN MEMORY AND ISSUE A READ. THE
2472 023562 STARS
2473 :READ SHOULD ABORT AFTER ONE WORD TRANSFERRED
2474 :*****

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2473
2474
2475 023562 004737 015766      4$:   JSR     PC,HDHOME    ;HEADS OVER TRACK 0
2476 023566          CKERFG
2477 (4) 023574 104432          TRAP
2478 (4) 023576 000106          .WORD   C$EXIT
2479                               L10061-.

2480 023600          BGNSEG    ;%%START OF SEGMENT%%
2481 (3) 023600 104404          TRAP     C$BSEG

2482 023602 012777 160000 156546      MOV     #160000,ARLBA  ;LEAD BA
2483 023610 012737 000060 002374      MOV     #BA16!BA17,XMEM ;SET EA BIT
2484 023616 005077 156536          CLR     @RLDA
2485 023622 012777 177600 156532      MOV     #-128.,ARLMP
2486 023630 004537 015056          JSR     R5,LDFUNC
2487 023634 000014          READ
2488 023636 004537 015702          JSR     R5,WTCRDY
2489 (3) 023642 104410          ESCAPE
2490 (3) 023644 000026          TRAP
2491 023646 032737 020000 002340      WORD   C$ESCAPE
2492 (3) 023654 001004          BIT     10000$-
2493 (4) 023656 104455          BNE
2494 (5) 023660 000037          ERRDF
2495 (5) 023662 005616          TRAP
2496 (5) 023664 007510          WORD   31
2497 023666          WORD   EM24
2498 (3) 023666 104410          WORD   ERRO
2499 (3) 023670 000002          ESCAPE
2500 023672          SEG    ;CHECK FOR FL:LOE, ELSE EXIT SEG
2501 (3) 023672 104405          TRAP   C$ESCAPE
2502 (3) 023674 104432          EXIT   10000$-
2503 (3) 023676 000006          TRAP   TST
2504 023700 005237 002662      3$:   INC    C$EXIT
2505 (3) 023704          WORD   L10061-.
2506 (3) 023704 104401          ENDTST ;ABORT TEST 24
2507 023704          TST    **END OF JEST**
2508 023706          STARS
2509 023706          .SBTTL **TEST 24** - FORCE NON-EXISTENT MEMORY ERROR INTERRUPT
2510 023706          BGNTST ;**START OF TEST**
2511 023706          STARS
2512 (2) 023706          *****CHECK THAT WE CAN FORCE AN INTERRUPT WITH A*****
2513 (2) 023706          ;NON-EXISTENT MEMORY ERROR.
2514 023706          STARS
2515 (2) 023706          ****
2516 023706          TST    NOTST ;RLV-11 & MEMORY SIZE >= 124K.?
2517 023712 001066 002662      BNE   1$   ;BRANCH - IF YES
2518 023714 004737 015766      JSR    PC,HDHOME ;HEADS OVER TRACK 0

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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        CSBSEG

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, @RLBA :PRELOAD BA
2517 023754 012737 000060 002374    MOV         #BA16!BA17, XMEM :SET EA BITS
2518 023762 005077 156372          CLR         @RLDA      :LOAD DA
2519 023766 012777 177777 156366    MOV         #-1, @RLMP :WORD COUNT
2520 023774 004537 015056          JSR         R5, LDFUNC :LOAD THE FUNCTION IN NEXT WORD
2521 024000 000114          READ!INTEN :READ
2522 024002 004537 015702          JSR         R5, 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        C$ESCAPE
(3) 024016 000050          .WORD      10000$-
2525 024020 005737 002256          TST         INTFLG      ;INTERRUPT OCCUR?
2526 024024 001004          BNE         4$        ;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          4$:        ESCAPE      SEG        ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 024036 104410          TRAP        C$ESCAPE
(3) 024040 000026          .WORD      10000$-
2529 024042 032737 020000 002340    BIT         #NXM, E.CS :DID NXM SET?
2530 024050 001004          BNE         3$        ;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          3$:        ESCAPE      SEG        ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 024062 104410          TRAP        C$ESCAPE
(3) 024064 000002          .WORD      10000$-
2533 024066          10000$:    ENDSEG      ;%%END OF SEGMENT%%
(3) 024066 104405          TRAP        C$ESSEG
2534 024070          1$:        ENDTST     L10062:      ;**END OF TEST**
2535
2536 024070          ENDTST     L10062:      ;**END OF TEST**
(3) 024070
(3) 024070 104401          TRAP        C$ETST
2537
2538 .SBTTL  **TEST 25** - CHECK READ WRITE LOOP
2539
2540

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2541
2542
2543 024072           BGNST          ;**START OF TEST**
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        :HEADS GO HOME OKAY
(4) 024104 104432           TRAP  CSEXIT
(4) 024106 000362           .WORD L10063-.

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      3$:   MOV   #125252,(R0)+ :WRITE PATTERN TO BUFFER
2561 024126 005301           DEC   R1         :DONE?
2562 024130 001374           BNE   3$         :NO, BRANCH BACK
2563 024132 005077 156222      CLR   @RLDA       :DISK ADDRESS
2564 024136 012777 177600      MOV   #-128, @RLMP  :WORD COUNT
2565 024144 012777 003426      MOV   #BUF, @RLBA  :BUS ADDRESS
2566 024152 004537 015056      JSR   R5,LDFUNC :LOAD THE FUNCTION IN NEXT WORD
2567 024156 000012           WRITE
2568 024160 004537 015702      JSR   R5,WTCRDY :WRITE THE PATTERN
2569 024164           ESCAPE
2570 024164 104410           SEG
(3) 024166 000300           TRAP  C$ESCAPE :WAIT FOR CONTROLLER READY
(3) 024166 000300           .WORD 10000$- :CHECK FOR FL:LOE, ELSE EXIT SEG

2571 024170 004537 014614      JSR   R5,CHERR    ;CHECK CNTLR FOR ERRORS
2572 024174           ESCAPE
(3) 024174 104410           SEG
(3) 024176 000270           TRAP  C$ESCAPE :CHECK FOR FL:LOE, ELSE EXIT SEG
2573 024200           BGNSEG        ;%START OF SEGMENT%
(3) 024200 104404           TRAP  CSBSEG
2574 024202 012700 003426      MOV   #BUF, R0     :CLEAR OUT BUFFER BEFORE
2575 024206 012701 000200      MOV   #128, R1     :READING
2576 024212 005020           CLR   (R0)+    :CLEAR BUFFER
2577 024214 005301           DEC   R1         :DONE?
2578 024216 001375           BNE   4$         :NO, BRANCH BACK
2579 024220 005077 156134      CLR   @RLDA       :LOAD DISK ADDRESS
2580 024224 012777 177600      MOV   #-128, @RLMP  :WORD COUNT/ONE SECTION
2581 024232 012777 003426      MOV   #BUF, @RLBA  :LOAD BUS ADDRESS
2582 024240 004537 015056      JSR   R5,LDFUNC :LOAD THE FUNCTION IN NEXT WORD
2583 024244 000014           READ
2584 024246 004537 015702      JSR   R5,WTCRDY :GO READ
2585 024252           ESCAPE
(3) 024252 104410           TRAP  C$ESCAPE :WAIT FOR CONTROLLER READY
                                         SEG
                                         C$ESCAPE :CHECK FOR FL:LOE, ELSE EXIT SEG

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(3) 024254 000210 .WORD 10001\$-.
 2586
 2587 024256 004537 014614 JSR R5.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 8\$: 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 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 104410 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 104455 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
 2621 024462 001324 BNE 5\$;NO, GO BACK
 2622 024464 ENDSEG ;%END OF SEGMENT%

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TEST 25 - CHECK READ WRITE LOOP

SEQ 0098

(3) 024464 10001\$: TRAP C\$ESEG
(3) 024464 104405 ENDSEG ;%END OF SEGMENT%
2623 024466 10000\$: TRAP C\$ESEG
(3) 024466 104405 ENDTST ;**END OF TEST**
2624 024470 L10063: TRAP C\$ETST
(3) 024470 104401 .SBTTL **TEST 26** - CHECK SILO LINES
2625 024472 BGNTST ;**START OF TEST**
2629
2630
2631
2632 024472 STARS
2633 (2) :*****
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 (2) :*****
2639 024472 004737 015766 JSR PC,HDHOME :HEADS OVER TRACK 0
2641 024476 CKERFG :HEADS GO HOME OKAY
(4) 024504 104432 TRAP C\$EXIT
(4) 024506 000404 .WORD L10064-.
2642 024510 012703 003236 MOV #DATPAT,R3
2644
2645 024514 104404 BGNSEG ;%START OF SEGMENT%
(3) 024514 104404 TRAP C\$BSEG
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 024534 012777 003426 155614 MOV #BUF, @RLBA :SETUP TO WRITE PATTERN ONTO DISK
2654 024542 005077 155612 CLR @RLDA :LOAD DA
2655 024546 012777 177600 155606 MOV #-128., @RLMP :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 :CHECK FOR FL:LOE, ELSE EXIT SEG
2659 024566 104410 ESCAPE SEG
(3) 024566 104410 TRAP C\$ESCAPE
(3) 024570 000320 .WORD 10000\$-.
2660 024572 004537 014614 JSR R5,CHERR :CHECK CNTLR FOR ERRORS
2661 024576 ESCAPE SEG
(3) 024576 104410 TRAP C\$ESCAPE
(3) 024600 000310 .WORD 10000\$-.
2662 024602 BGNSEG ;%START OF SEGMENT%
(3) 024602 104404 TRAP C\$BSEG

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TEST 26 - CHECK SILO LINES

SEQ 0099

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 002234
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
2704 025014 005237 002234
2705 025020 000416
2706
2707 025022

3\$: MOV #BUF,R0 :CLEAR MEMORY BEFORE READING IT BACK
MOV #128.,R1 :128 WORDS
CLR (R0)+ :CLEAR
DEC R1 :EONE
BNE 3\$:NO
MOV #BUF,@RLBA :SETUP TO READ IT BACK
MOV #-128.,@RLMP :128 WORDS
CLR @RLDA :SECTOR ZERO
JSR R5,LDFUNC :LOAD THE FUNCTION IN NEXT WORD
READ
JSR R5,WTCRDY :CHECK FOR FL:LOE, ELSE EXIT SEG
ESCAPE SEG
TRAP C\$ESCAPE
.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\$: ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
TRAP C\$ESCAPE
.WORD 10001\$-.
BR 99\$:SKIP AROUND
TST T.DMP :DO WE STILL WANT TO CHECK IT
BEQ 10\$:NO
CKLOOP :YES, CHECK FOR LOOP FIRST
TRAP C\$CLP1
99\$: CLR CDCNT :CLEAR NUMBER WE'RE TO PRINT
CLR CHECK :ALLOW HEADER ON FIRST PRINT
MOV (R3),GDDAT :COMPARE WHAT WE READ BACK
MOV #BUF,TMP2 :BUFFER START
MOV #1,TMP1 :START WITH FIRST
5\$: MOV @TMP2,BDDAT :GET DATA
CMP GDDAT,BDDAT :GOOD?
BEQ 4\$:YES, BRANCH
333\$: CMP CDCNT,T.LMT :CHECKED ENOUGH??
BNE 333\$:NO
ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
TRAP C\$ESCAPE
.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 C\$ERDF
.WORD 35
.WORD EM45
.WORD ERR10
INC CHECK :ACCOUNT FOR PRINT OF HEADER
BR 4\$
9\$: PRINTB #FRMT7,TMP1,GDDAT,BDDAT

J 8
CZRLHBO RL11/RLV11 CTLR TST 2 MACY11 30A(1052) 17-DEC-79 13:44 PAGE 2-21
CZRLHB.MAC 07-DEC-79 08:12 **TEST 26** - CHECK SILO LINES

SEQ 0100

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(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     #FRMT7,-(SP)
(6) 025042 012746 000004      MOV     #4,-(SP)
(3) 025046 010600              MOV     SP, R0
(4) 025050 104414              TRAP    C$PNTB
(4) 025052 062706 000012      ADD     #12, SP
2708 025056                  CKLOOP
(3) 025056 104406              TRAP    C$CLP1
2709
2710 025060 062737 000002 002276      ADD     #2, TMP2      ;NEXT LOCATION
2711 025066 005237 002274              INC     TMP1      ;NEXT WORD
2712 025072 023727 002274 000201      CMP     TMP1, #129. ;DONE
2713 025100 001317              BNE    5$          ;NO, GO BACK
2714
2715 025102                  ENDSEG   ;%%END OF SEGMENT%%
(3) 025102 104405              10001$: TRAP    C$ESEG
2716
2717 025104 005723              TST     (R3)+ ;DONE ALL PATTERNS
2718 025106 001203              BNE    6$          ;NO, GO BACK
2719
2720 025110                  ENDSEG   ;%%END OF SEGMENT%%
(3) 025110 104405              10000$: TRAP    C$ESEG
2721 025112                  ENDTST   ;**END OF TEST**
(3) 025112 104401              L10064: TRAP    C$ETST
2722
2723 .SBTTL **TEST 27** - CHECK THROUGHPUT OF SILO
2724
2725 025114                  BGNTST  ;**START OF TEST**
2726
2727
2728
2729 025114                  STARS
(2)                                     ;*****
2730                                     ;TEST THAT THE SILO OPERATES CORRECTLY. WE WILL WRITE A PATTERN
2731                                     ;THAT CONTAINS A UNIQUE PATTERN IN EACH LOCATION. WE EXPECT IT
2732                                     ;BACK IN PROPER ORDER. WE DO A ONE SECTOR TRANSFER.
2733 025114                  STARS
(2)                                     ;*****
2734
2735
2736 025114 004737 015766      JSR     PC, HDHOME ;HEADS OVER TRACK 0
2737 025120                  CKERFG  ;HEADS GO HOME OKAY
(4) 025126 104432              TRAP    C$EXIT
(4) 025130 000410              .WORD   L10065-.
2738
2739 025132                  BGNSEG ;%%START OF SEGMENT%%
(3) 025132 104404              TRAP    C$BSEG
2740
2741
2742 025134 012706 000001      MOV     #1, R0 ;INITIAL 1
2743 025140 012701 000200      MOV     #128., R1 ;128 WORDS

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CZRLHBO RL11/RLV11 CTLR TST 2 MACY11 30A(1052) 17-DEC-79 13:44 PAGE 2-22
CZRLHB.MAC 07-DEC-79 08:12 **TEST 27** - CHECK THROUGHPUT OF SILO

K 8 SEQ 0101

2744 025144 012702 003426 2\$: MOV #BUF,R2 ;BUFFER
2745 025150 010022 MOV R0,(R2)+ ;WRITE A WORD
2746 025152 005200 INC R0 ;NEXT PATTERN (1-128)
2747 025154 005301 DEC R1 ;DONE
2748 025156 001374 BNE 2\$;NO
2749
2750 025160 012777 003426 155170 MOV #BUF,@RLBA ;SETUP TO WRITE
2751 025166 012777 177600 155166 MOV #-128.,@RLMP ;128 WORDS
2752 025174 005077 155160 CLR @RLDA ;DISK ADDRESS 0
2753 025200 004537 015056 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
2754 025204 000012 WRITE
2755 025206 004537 015702 JSR R5,WTCRDY ;CHECK FOR FL:LOE, ELSE EXIT SEG
2756 025212 ESCAPE
(3) 025212 104410 TRAP C\$ESCAPE
(3) 025214 000322 .WORD 10000\$-.
2757
2758 025216 004537 014614 JSR R5,CHERR ;CHECK CNTLR FOR ERRORS
2759 025222 104410 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 025222 104410 TRAP C\$ESCAPE
(3) 025224 000312 .WORD 10000\$-.
2760 025226 BGNSEG ;%%START OF SEGMENT%%
(3) 025226 104404 TRAP C\$BSEG
2761 025230 012700 003426 MOV #BUF,R0 ;CLEAR BUFFER
2762 025234 012701 000200 MOV #128.,R1 ;128 IN LENGTH
2763 025240 005020 CLR (R0)+ ;CLEAR
2764 025242 005301 DEC R1 ;DOWN COUNT
2765 025244 001375 BNE 3\$;DONE?
2766
2767 025246 012777 003426 155102 MOV #BUF,@RLBA ;BUS ADDRESS
2768 025254 012777 177600 155100 MOV #-128.,@RLMP ;WORD COUNT
2769 025262 005077 155072 CLR @RLDA ;DISK ADDRESS
2770 025266 004537 015056 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
2771 025272 000014 READ
2772 025274 004537 015702 JSR R5,WTCRDY ;CHECK FOR FL:LOE, ELSE EXIT SEG
2773 025300 ESCAPE SEG
(3) 025300 104410 TRAP C\$ESCAPE
(3) 025302 000232 .WORD 10001\$-.
2774
2775 025304 004537 014614 JSR R5,CHERR ;CHECK CNTLR FOR ERRORS
2776 025310 005737 002236 TST T.CRC ;WAS ERROR A DCK??
2777 025314 001003 BNE 8\$;YES, SEE IF WE A DUMP
2778 025316 104410 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 025316 104410 TRAP C\$ESCAPE
(3) 025320 000214 .WORD 10001\$-.
2779 025322 000404 BR 99\$;SKIP AROUND
2780 025324 005737 012440 8\$: TST T.DMP ;DO WE STILL WANT TO CHECK IT
2781 025330 001772 BEQ 10\$;NO
2782 025332 CKLOOP ;YES, CHECK FOR LOOP FIRST
(3) 025332 104406 TRAP C\$CLP1
2783
2784 025334 005037 002242 99\$: CLR CDCNT ;CLEAR NUMBER WE'RE TO PRINT
2785 025340 005037 002234 CLR CHECK ;ALLOW HEADER ON FIRST PRINT
2786 025344 012737 000001 002300 MOV #1,GDDAT ;START GOOD AT 1
2787 025352 012737 003426 002276 MOV #BUF,TMP2 ;START OF BUFFER
2788 025360 012737 000001 002274 MOV #1,TMP1 ;FIRST WORD
2789

CZRLHBO RL11/RLV11 CTLR TST 2 MACY11 30A(1052) 17-DEC-79 13:44 PAGE 2-23
 CZRLHB.MAC 07-DEC-79 08:12 **TEST 27** - CHECK THROUGHPUT OF SILO

L 8

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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 CKLOOP
(3) 025504 104406 TRAP C$CLP1
2807
2808 025506 062737 000002 002276 ADD #2,TMP2 ;NEXT
2809 025514 005237 002274 INC TMP1 ;NEXT
2810 025520 005237 002300 INC GDDAT ;NEXT
2811 025524 023727 002274 000201 CMP TMP1,#129. ;DONE?
2812 025532 001315 BNE 4$ .
2813
2814 025534 ENDSEG ;%END OF SEGMENT%
(3) 025534
(3) 025534 104405 TRAP C$ESEG
2815
2816 025536 ENDSEG ;%END OF SEGMENT%
(3) 025536
(3) 025536 104405 TRAP C$ESEG
2817 025540 ENDTST L10065: TRAP C$ETST ;**END OF TEST**
(3) 025540 104401

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TEST 27 - CHECK THROUGHPUT OF SILO

SEQ 0103

2819
2820 .SBTTL **TEST 28** - CHECK ZERO FILL ON WRITE
2821
2822 025542 BGNSTST ;**START OF TEST**
2823
2824
2825
2826 025542 STARS
2827 ;*****
2828 ;WHEN WRITING PARTIAL SECTORS (LESS THAN 128 WORDS) THE
2829 ;CONTROLLER WILL FILL IN THE REMAINING PORTION OF
2830 ;THE SECTOR WITH ZERO WORDS. CHECK THIS FEATURE
2831 025542 STARS
2832 ;*****
2833 025542 004737 015766 JSR PC,HDHOME ;HEADS OVER TRACK 0
2834 025546 CKERFG ;HEADS GO HOME OKAY
2835 (4) 025554 104432 TRAP C\$EXIT
2836 (4) 025556 000442 .WORD L10066-.
2837 025560 BGNSEG ;%%START OF SEGMENT%
2838 (3) 025560 104404 TRAP C\$BSEG
2839 025562 012737 000001 002274 35\$: MOV #1,TMP1 ;START WITH 1 WORD WRITE
2840 025570 012700 003426 3\$: MOV #BUF,RO ;WRITE BUFFER WITH 52525, WE'LL
2841 025574 012701 000200 MOV #128.,R1 ;WRITE 128 WORDS ALL THOUGH WE'RE
2842 025600 012720 052525 3\$: MOV #52525,(RO)+ ;ONLY GOING TO TRANSFER < 128
2843 025604 005301 DEC R1 ;DONE WITH BUFFER?
2844 025606 001374 BNE 3\$;NO, GO BACK
2845 025610 013700 002274 33\$: MOV TMP1,RO ;GET TRANSFER WORD COUNT
2846 025614 005400 NEG RO ;NEGATE FOR RLMP
2847 025616 010077 154540 MOV RO,@RLMP ;STORE WORD COUNT AWAY
2848 025622 012777 003426 154526 MOV #BUF,@RLBA ;SET UP RLBA
2849 025630 005077 154524 CLR @RLDA ;LOAD THE FUNCTION IN NEXT WORD
2850 025634 004537 015056 JSR R5,LDFUNC ;WRITE IT
2851 025640 000012 WRITE ;WAIT FOR WRITE TO FINISH
2852 025642 004537 015702 JSR R5,WTCRDY ;CHECK FOR FL:LOE, ELSE EXIT SEG
2853 (3) 025646 104410 ESCAPE SEG
2854 (3) 025650 000346 TRAP C\$ESCAPE ;CHECK CNTLR FOR ERRORS
2855 025652 004537 014614 JSR R5,CHERR ;CHECK FOR FL:LOE, ELSE EXIT SEG
2856 025656 104410 ESCAPE SEG
2857 (3) 025660 000336 TRAP C\$ESCAPE
2858 (3) 025662 104404 .WORD 10000\$-.
2859 025662 104404 BGNSEG ;%%START OF SEGMENT%
2860 025664 012700 003426 TRAP C\$BSEG
2861 025670 012701 000200 MOV #BUF,RO ;WE'RE GOING TO OVERLAY BUFFER BEFORE
2862 025674 012720 125252 18\$: MOV #128.,R1 ;READING IT BACK.
2863 025700 005301 DEC R1 ;OVERLAY IT WITH COMPLIMENT
2864 025702 001374 BNE 18\$;DONE?
2865 025704 012777 003426 154444 MOV #BUF,@RLBA ;NO, KEEP GOING
2866 025712 012777 177600 154442 MOV #-128.,@RLMP ;SET UP TO READ
2867 025720 005077 154434 CLR @RLDA ;128 WORDS TO CHECK ZERO FILL
2868 ;SECTOR

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TEST 28 - CHECK ZERO FILL ON WRITE

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 C\$ESCAPE
(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 C\$ESCAPE
(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 C\$CLP1
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 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 C\$ESCAPE
(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 TRAP C\$ERDF
(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 026110 013746 002302 9\$: PRINTB #FRMT9,TMP1,R3,GDDAT,BDDAT
(11) 026114 013746 002300 MOV BDDAT,-(SP)
(10) 026120 010346 MOV GDDAT,-(SP)
(9) 026122 013746 002274 MOV R3,-(SP)
(8) 026126 012746 011547 MOV TMP1,-(SP)
(7) 026132 012746 000005 MOV #FRMT9,-(SP)
(6) 026136 010600 MOV #5,-(SP)
(4) 026140 104414 MOV SP,R0
TRAP C\$PNTB

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TEST 28 - CHECK ZERO FILL ON WRITE

SEQ 0105

(4) 026142 062706 050014
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 104401
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 026226
(4) 026234 104432
(4) 026236 000414
2943
2944 026240
(3) 026240 104404

B 9

12\$: ADD #14,SP
CKLOOP
TRAP C\$CLP1
6\$: TST (R3)+
INC TMP2
DEC R1
BEQ 7\$
DEC R2
BGT 4\$
CLR GDDAT
BR 4\$
;DONE ALL WORDS?
;EXIT TEST
;DONE CHECKING NON-ZERO WORDS
;NO, BRANCH BACK
;YES, SET EXP'D AS ZERO
;BRANCH BACK

7\$: ENDSEG ;%END OF SEGMENT%

10001\$: TRAP C\$ESEG
INC TMP1
CMP TMP1,#128.
BEQ 34\$
JMP 35\$

34\$: ENDSEG ;%END OF SEGMENT%

10000\$: TRAP C\$ESEG
ENDTST ;**END OF TEST**
L10066: TRAP C\$ETST

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 C\$EXIT
.WORD L10067-.
BGNSEG ;%START OF SEGMENT%
TRAP C\$BSEG

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 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
 (3) 026326 000320 .WORD 10001\$-.
 2963 026330 005237 002272 INC TMPO ;NEXT SECTOR
 2964 026334 023727 002272 000050 CMP TMPO,#40. ;ALL DONE?
 2965 026342 001342 BNE 199\$;NO GO BACK
 2966 026344 005037 002272 CLR TMPO ;CLEAR
 2967
 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 ;SETUP 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
 (3) 026424 104410 TRAP CSESCAPE
 (3) 026426 000216 .WORD 10002\$-.
 2984
 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
 (3) 026444 000200 .WORD 10002\$-.
 2989 026446 000404 BR 99\$;SKIP AROUND
 2990 026450 005737 012440 8\$: TST T.DMP ;DO WE STILL WANT TO CHECK IT
 2991 026454 001772 BEQ 10\$;NO
 2992 026456 CKLOOP ;YES, CHECK FOR LOOP FIRST

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(3) 026456 104406           TRAP    C$CLP1
2993
2994
2995
2996 026460 005037 002242      99$: 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
(3) 026532 104410      ESCAPE     SEG      :CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 026534 000110      TRAP     C$ESCAPE  10002$-.
3008 026536 005237 002242      .WORD   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
(4) 026550 104455      ERRDF    38.,EM50,ERR11 ;;
(5) 026552 000046      .WORD   TRAP     C$ERDF
(5) 026554 006621      .WORD   38
(5) 026556 010220      .WORD   EM50
3013 026560 005237 002234      INC    CHECK       :ACCOUNT FOR PRINT OF HEADER
3014 026564 000416      BR     6$          :
3015
3016 026566
(10) 026566 013746 002302      9$:   PRINTB #FRMT8,TMPO,GDDAT,BDDAT
(9) 026572 013746 002300      MOV    BDDAT,-(SP)
(8) 026576 013746 002272      MOV    GDDAT,-(SP)
(7) 026602 012746 011426      MOV    TMPO,-(SP)
(6) 026606 012746 000004      MOV    #FRMT8,-(SP)
(3) 026612 010600      MOV    #4,-(SP)
(4) 026614 104414      TRAP    SP,R0
(4) 026616 062706 000012      ADD    CSPNTB
3017 026622      CKLOOP   #12,SP
(3) 026622 104406      TRAP    C$CLP1
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
(3) 026644
(3) 026644 104405      10002$: ENDSEG    :%END OF SEGMENT%
3026
3027 026646
(3) 026646
(3) 026646 104405      10001$: ENDSEG    :%END OF SEGMENT%
3028 026650      TRAP    C$ESEG
ENDSEG

```

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TEST 29 - CHECK SECTOR BITS OF HEADER COMPARE

E 9
SEQ 0108

(3) 026650 10000\$: TRAP C\$ESEG
3029 026652 ENDTST ;**END OF TEST**
(3) 026652 L10067: TRAP C\$ETST
3030 104401 .SBTTL **TEST 30** - WRITE CHECK NPR INTEGRITY
3031 026654 BGNSTST ;**START OF TEST**
3034 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 026654 004737 015756 JSR PC,HDHOME :HEADS OVER TRACK 0
3042 026660 CKERFG :HEADS GO HOME OKAY
(4) 026666 104432 TRAP C\$EXIT
(4) 026670 000376 .WORD L10070-.
3043 026672 BGNSEG ;%START OF SEGMENT%
(3) 026672 104404 TRAP C\$BSEG
3045 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 026714 012777 003426 153434 MOV #BUF,@RLBA :LOAD BUS ADDRESS
3053 026722 012777 177600 153432 MOV #-128.,@RLMP :WORD COUNT
3054 026730 005077 153424 CLR @RLDA :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 000314 TRAP C\$ESCAPE
(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 000304 TRAP C\$ESCAPE
(3) 026760 000304 .WORD 10000\$.
3061
3062
3063 :VERIFY WRITE WITH READ BEFORE WRCHK
3064
3065 026762 005077 153372 CLR @RLDA
3066 026766 012777 003426 153362 MOV #BUF,@RLBA
3067 026774 012777 177600 153360 MOV #-128.,@RLMP
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

F 9
SEQ 0109

(3) 027014	104410		TRAP	C\$ESCAPE	
(3) 027016	000246		.WORD	10000\$-	
3072 027020	004537	014614	JSR	R5.CHERR	:CHECK CNTLR FOR ERRORS
3073 027024			ESCAPE	SEG	:CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 027024	104410		TRAP	C\$ESCAPE	
(3) 027026	000236		.WORD	10000\$-	
3074					
3075 027030			BGNSEG		:%START OF SEGMENT%
(3) 027030	104404		TRAP	C\$BSEG	
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	:CLEAR TRAP OCCURANCE
3079 027064	012777	003426	MOV	#BUF,@RLBA	:BUS ADDRESS
3080 027072	005077	153262	CLR	@RLDA	:LOAD DISK ADDRESS
3081 027076	012777	177600	MOV	#-128.,@RLMP	:WORD COUNT OF 128
3082 027104	005037	002300	CLR	GDDAT	:SET UP CSR TO LOAD
3083 027110	013737	002246	MOV	DRIVE,GDDAT	:SET IN DRIVE
3084 027116	052737	000002	BIS	#WRCHK,GDDAT	:SET IN FUNCTION
3085 027124	004537	015364	JSR	R5,BEFORE	:LOAD FOR ERROR PRINTOUT
3086 027130	013737	002300	MOV	GDDAT,B.CS	:SET IN COMMAND
3087 027136	052737	000201	BIS	#201,B.CS	:LOAD CRDY
3088 027144	042737	002000	BIC	#OPI,B.CS	:CLEAR (BIT 10)
3089 027152	013777	002300	MOV	GDDAT,@RLCS	:ISSUE WRITE CHECK
3090 027160	012701	000144	MOV	#100,,R1	:WAIT FOR CRDY
3091 027164	032777	000200	153162 5\$: BIT	#CRDY,@RLCS	:NPR DONE
3092 027172	001015		BNE	6\$:YES, 6\$
3093 027174			WAITUS	#20.	:WAIT A WHILE
3094 027206	005301		DEC	R1	:A WHILE UP
3095 027210	001365		BNE	5\$:NO, GO BACK
3096					
3097 027212	004537	015416	JSR	R5,AFTER	
3098 027216			ERRDF	0.,CRTIM,ERR5	:CONTROLLER TIMED OUT
(4) 027216	104455		TRAP	C\$ERDF	
(5) 027220	000000		.WORD	0	
(5) 027222	003521		.WORD	CRTIM	
(5) 027224	007722		.WORD	ERR5	
3099 027226			CLRVEC	ERRVEC	:CLEAR VECTOR
(3) 027226	013700	002244	MOV	ERRVEC,RO	
(3) 027232	104436		TRAP	C\$CVEC	
3100 027234			ESCAPE	SEG	:CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 027234	104410		TRAP	C\$ESCAPE	
(3) 027236	000024		.WORD	10001\$-	
3101					
3102 027240	005737	002254	TST	TRPFLG	:DID TRAP OCCUR?
3103 027244	001406		BEQ	7\$:NO
3104 027246	004537	015416	JSR	R5,AFTER	
3105 027252			ERRSF	1.,EM57,ERRO	
(4) 027252	104454		TRAP	C\$ERSF	:TRAP ON WRITE
(5) 027254	000001		.WORD	1	
(5) 027256	007052		.WORD	EM57	

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TEST 30 - WRITE CHECK NRP 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 BGNTST ;**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 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 027306 BGNSEG ;%START OF SEGMENT%
(3) 027306 104404 TRAP C\$BSEG
3129 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 027330 012777 003426 153020 MOV #BUF,@RLBA :LOAD BUS ADDRESS
3137 027336 012777 177600 153016 MOV #-128,@RLMP :WORD COUNT
3138 027344 005077 153010 CLR @RLDA :CLEAR DISK ADDRESS
3139 027350 004537 015056 JSR R5,LDFUNC :LOAD THE FUNCTION IN NEXT WORD
3140 027354 000012 WRITE :
3141 027356 004537 015702 JSR R5,WTCRDY :WAIT FOR CONTROLLER READY
3142 027362 104410 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 027362 104410 TRAP C\$ESCAPE
(3) 027364 000132 .WORD 10000\$-.
3143 027366 004537 014614 JSR R5,CHERR :CHECK CNTLR FOR ERRORS
3144 027372 104410 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 027372 104410 TRAP C\$ESCAPE
(3) 027374 000122 .WORD 10000\$-.
3145 027376 BGNSEG ;%START OF SEGMENT%

(3) 027376 104404 TRAP C\$BSEG
 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 R5,WTCRDY
 3155 027432 104410 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 027432 104410 TRAP C\$ESCAPE
 (3) 027434 000060 .WORD 10001\$-.
 3156 027436 004537 014614 JSR R5,CHERR ;CHECK CNTLR FOR ERRORS
 3157 027442 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 027442 104410 TRAP C\$ESCAPE
 (3) 027444 000050 .WORD 10001\$-.
 3158
 3159 027446 BGNSEG ;%%START OF SEGMENT%%
 (3) 027446 104404 TRAP C\$BSEG
 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 R5,WTCRDY ;WAIT FOR CONTROLLER READY
 3169 027502 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 027502 104410 TRAP C\$ESCAPE
 (3) 027504 000006 .WORD 10002\$-.
 3170
 3171
 3172 027506 004537 014614 JSR R5,CHERR ;CHECK CNTLR FOR ERRORS
 3173
 3174 027512 ENDSEG ;%%END OF SEGMENT%%
 (3) 027512
 (3) 027512 104405 TRAP C\$ESSEG
 3175 027514 ENDSEG ;%%END OF SEGMENT%%
 (3) 027514
 (3) 027514 104405 TRAP C\$ESSEG
 3176 027516 ENDSEG ;%%END OF SEGMENT%%
 (3) 027516
 (3) 027516 104405 TRAP C\$ESSEG
 3177 027520 ENDTST ;**END OF TEST**
 (3) 027520 L10071:
 (3) 027520 104401 TRAP C\$ETST
 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

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 C\$EXIT
 (4) 027536 000252 .WORD L10072-.
 3193
 3194 027540 (3) 027540 104404 BGNSEG :%%START OF SEGMENT%%
 3195 TRAP C\$BSEG
 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 152566 MOV #BUF,@RLBA :LOAD BUS ADDRESS
 3203 027570 012777 177600 152564 MOV #-128.,@RLMP :WORD COUNT
 3204 027576 005077 152556 CLR @RLDA :CLEAR DISK ADDRESS
 3205 027602 004537 015056 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
 3206 027606 000012 WRITE
 3207 027610 004537 015702 JSR R5,WTCRDY :WAIT FOR CONTROLLER READY
 3208 027614 (3) 027614 104410 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
 3209 (3) 027616 000170 TRAP C\$ESCAPE
 3210 027620 004537 014614 .WORD 10000\$-.
 3211 027624 (3) 027624 104410 JSR R5,CHERR :CHECK CNTLR FOR ERRORS
 3212 (3) 027626 000160 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
 ;VERIFY WRITE WITH READ BEFORE WRCHK
 3213 027630 005077 152524 CLR @RLDA
 3214 027634 012777 003426 152514 MOV #BUF,@RLBA
 3215 027642 012777 177600 152512 MOV #-128.,@RLMP
 3216 027650 004537 015056 JSR R5,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 (3) 027662 104410 ESCAPE SEG
 3220 (3) 027664 000122 TRAP C\$ESCAPE
 3221 027666 004537 014614 .WORD 10000\$-.
 3222 027672 (3) 027672 104410 JSR R5,CHERR :CHECK CNTLR FOR ERRORS
 3223 (3) 027674 000112 ESCAPE SEG :CHECK FOR FL:LOE, ELSE EXIT SEG
 ;%%START OF SEGMENT%%
 3224 027676 104404 BGNSEG
 3225 TRAP C\$BSEG
 3226 027700 005037 002256 CLR INTFLG
 3227 027704 005077 152450 CLR @RLDA ;CLEAR INTERRUPT OCCURANCE FLAG

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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 104441      MOV    #PRI00,RO
(3) 027730 000102      TRAP   C$SPRI
3232 027732 004537 015056      JSR    R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
3233 027736 000102      WRCHK!INTEN ;WRITE CHECK UNDER INTERRUPT
3234 027740 004537 015702      JSR    R5,WTCRDY ;WAIT FOR INTERRUPT
3235 027744 104410      ESCAPE SEG      ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 027744 000036      TRAP   C$ESCAPE
(3) 027746 000036      .WORD  10001$-
3236
3237 027750 012700 000340      SETPRI #PRI07   ;SET PRIORITY TO 7
(3) 027750 104441      MOV    #PRI07,RO
(3) 027754 104441      TRAP   C$SPRI
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 000004      TRAP   C$ERDF
(5) 027766 000004      .WORD  4
(5) 027770 007107      .WORD  EM60
(5) 027772 007510      .WORD  ERRO
3242 027774 104410      2$:    ESCAPE SEG      ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 027774 000006      TRAP   C$ESCAPE
(3) 027776 000006      .WORD  10001$-
3243
3244 030000 004537 014614      JSR    R5,CHERR   ;CHECK CTLR FOR ERRORS
3245
3246 030004 104405      10001$: ENDSEG   ;%END OF SEGMENT%
(3) 030004 104405      TRAP   C$ESEG
(3) 030004 104405      ENDSEG
3247 030006 104405      10000$: ENDSEG   ;%END OF SEGMENT%
(3) 030006 104405      TRAP   C$ESEG
(3) 030006 104405      ENDTST
3248 030010 104401      L10072: TRAP   C$ETST    ;**END OF TEST**
(3) 030010 104401
(3) 030010 104401
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 299\$: 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 SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 030104 104410 TRAP C\$ESCAPE
 (3) 030106 000174 .WORD 10000\$-.
 3281 030110 004537 014614 JSR R5,CHERR ;CHECK CNTLR FOR ERRORS
 3282 030114 ESCAPE SEG ;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 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 SEG ;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 :3\$: CLR @RLDA
 3298 030170 005077 152164 MOV #BUF,@RLBA ;SET UP BUS ADDRESS
 3299 030174 012777 003426 152154 MOV #-128.,@RLMP ;WORD COUNT
 3300 030202 012777 177600 152152 MOV #BUF,GDDAT ;FORM EXPECTED BUS ADDRESS
 3301 030210 012737 003426 002300 ADD #256.,GDDAT ;AFTER WRITE
 3302 030216 062737 000400 002300 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
 3303
 3304 030224 004537 015056 JSR WRCHK ;WRITE CHECK
 3305 030230 000002 JSR R5,WTCRDY ;WAIT FOR CONTROLLER READY
 3306 030232 004537 015702 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
 3307 030236

CZRLHBO RL11/RLV11 CTLR TST 2 MACY11 30A(1052) 17-DEC-79 13:44 PAGE 3-12
CZRLHB.MAC 07-DEC-79 08:12 **TEST 33** - PROPER INCREMENT OF RLBA ON WRITE CHECK

L 9 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 5,EM61,ERR4 ;BA DID NOT INCREMENT
(4) 030270 104455 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 ENDSEG ;%END OF SEGMENT%
(3) 030300 104405 10001\$:
(3) 030300 104405 TRAP C\$ESEG ;%END OF SEGMENT%
3320 030302 ENDSEG ;%END OF SEGMENT%
(3) 030302 104405
(3) 030302 104405 TRAP C\$ESEG ;**END OF TEST**
3321 030304 ENDTST L10073:
(3) 030304 104401 TRAP C\$ETST
3322
3323 .SBTTL **TEST 34** - PROPER INCREMENT OF RLDA ON WRITE CHECK
3324
3325 030306 BGNTST ;**START OF TEST**
3326
3327 030306 STARS
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
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 104404 BGNSEG ;%START OF SEGMENT%
(3) 030324 104404 TRAP C\$BSEG
3338
3339 030326 012700 003426 MOV #BUF,RO ;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

CZRLHBO RL11/RLV11 CTLR TST 2 MACY11 30A(1052) 17-DEC-79 13:44 PAGE 3-13
 CZRLHB.MAC 07-DEC-79 08:12 **TEST 34** - PROPER INCREMENT OF RLDA ON WRITE CHECK

SEQ 0116

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	R5,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	R5,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	R5,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	R5,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				3\$:		
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	R5,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	R5,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	2\$;YES, 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
(3) 030574 10000\$: ENDSEG ;%%END OF SEGMENT%%
3392 030574 10000\$: TRAP C\$ESEG
(3) 030574 104405 ENDTST ;**END OF TEST**
3393 030576 L10074: TRAP C\$ETST
(3) 030576 104401
3394
3395
3396 .SBTTL **TEST 35** - MULTIPLE SECTOR WRITE CHECK
3397
3398 030600 BGNTST ;**START OF TEST**
3399
3400 030600 STARS
(2)
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,R0 ;SETUP AND WRITE
3418 030640 012701 000201 MOV #129,R1 ;129 WORDS
3419 030644 012720 125252 299\$: MOV #125252,(R0)+ ;WRITE
3420 030650 005301 DEC R1 ;DONE??
3421 030652 001374 BNE 299\$
3422
3423 030654 012777 003426 151474 1\$: MOV #BUF,@RLBA ;LOAD BUS ADDRESS
3424 030662 012777 177577 151472 MOV #-129,@RLMP ;WORD COUNT
3425 030670 013737 002274 002300 MOV TMP1,GDDAT
3426 030676 053737 002272 002300 BIS TMPO,GDDAT
3427 030704 013777 002300 151446 MOV GDDAT,@RLDA
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 WRITE
3430 030720 004537 015702 JSR R5,WTCRDY :WAIT FOR CONTROLLER READY
3431 030724 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 030724 104410 TRAP CSESCAPE
(3) 030726 000240 .WORD 10000\$-.
3432 030730 004537 014614 JSR R5,CHERR :CHECK CNTLR FOR ERRORS
3433 030734 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 030734 104410 TRAP CSESCAPE
(3) 030736 000230 .WORD 10000\$-.

3434
3435 :VERIFY WRITE WITH READ BEFORE WRCHK
3436
3437 030740 013737 002274 002300 MOV TMP1,GDDAT
3438 030746 053737 002272 002300 BIS TMP0,GDDAT
3439 030754 013777 002300 151376 MOV GDDAT,ARLDA
3440 030762 012777 003426 151366 MOV #BUF,ARLBA
3441 030770 012777 177577 151364 MOV #-129.,ARLMP
3442 030776 004537 015056 JSR R5,LDFUNC :LOAD THE FUNCTION IN NEXT WORD
3443 031002 000014 READ
3444 031004 004537 015702 JSR R5,WTCRDY :CHECK FOR FL:LOE, ELSE EXIT SEG
3445 031010 ESCAPE SEG
(3) 031010 104410 TRAP CSESCAPE
(3) 031012 000154 .WORD 10000\$-.
3446 031014 004537 014614 JSR R5,CHERR :CHECK CNTLR FOR ERRORS
3447 031020 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 031020 104410 TRAP CSESCAPE
(3) 031022 000144 .WORD 10000\$-.

3448
3449 031024 BGNSEG :%%START OF SEGMENT%%
(3) 031024 104404 TRAP CSBSEG

3450
3451
3452 031026 013737 002274 002300 MOV TMP1,GDDAT :GET CYLINDER
3453 031034 053737 002272 002300 BIS TMP0,GDDAT :GET SECTOR
3454 031042 013777 002300 151310 MOV GDDAT,ARLDA :SET DISK ADDRESS-SECTOR 0
3455 031050 062737 000002 002300 ADD #2,GDDAT :SET EXPECTED + 2
3456 031056 012777 003426 151272 MOV #BUF,ARLBA :SET BUS ADDRESS
3457 031064 012777 177577 151270 MOV #-129.,ARLMP :WORD COUNT-SECTOR+1 WORD

3458
3459 031072 004537 015056 JSR R5,LDFUNC :LOAD THE FUNCTION IN NEXT WORD
3460 031076 000002 WRCHK :WRITE CHECK
3461 031100 004537 015702 JSR R5,WTCRDY :WAIT FOR CONTROLLER READY?
3462 031104 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 031104 104410 TRAP CSESCAPE
(3) 031106 000042 .WORD 10001\$-.

3463
3464 031110 004537 014614 JSR R5,CHERR :CHECK CNTLR FOR ERRORS
3465 031114 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 031114 104410 TRAP CSESCAPE
(3) 031116 000032 .WORD 10001\$-.

3466
3467 031120 013737 002344 002302 MOV E.DA,BDDAT :READ DISK ADDRESS
3468 031126 023737 002302 002300 CMP BDDAT,GDDAT :IS DISK ADDRESS CORRECT
3469 031134 001404 BEQ 2\$:YES, BRANCH NO, REPORT ERROR
3470
3471 031136 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
                               TRAP    C$CLP1
3474
3475 031150               10001$: ENDSEG           ;%END OF SEGMENT%
(3) 031150
(3) 031150 104405          TRAP    C$ESEG
3476
3477 031152 005237 002272   INC     TMPO      ;NEXT SECTOR
3478 031156 022737 000046 002272   CMP     #46,TMPO  ;AT END?
3479 031164 001233          BNE     1$        ;NO, GO BACK
3480 031166               10000$: ENDSEG           ;%END OF SEGMENT%
(3) 031166
(3) 031166 104405          TRAP    C$ESEG
3481 031170               ENDTST           ;**END OF TEST**
(3) 031170
(3) 031170 104401          L10075:          TRAP    C$ETST
                               .SBTTL  **TEST 36** - FORCE DCK WITH WRITE CHECK
3482
3483
3484 031172               BGNTST           ;**START OF TEST**
3485
3486 031172               STARS
(2)
3487 :*****:FORCE A DCK WITH WRITE CHECK. THIS IS DONE BY WRITING
3488 :A SECTOR AND CHANGING A WORD IN MEMORY BEFORE WRITE CHECK
3489 :IS ISSUED..
3490 031172               STARS
(2)
3491
3492 031172 004737 015766   JSR     PC,HDHOME  ;HEADS OVER TRACK 0
3493 031176               CKERFG           ;HEADS GO HOME OKAY
3494 (4) 031204 104432
(4) 031206 000262          TRAP    C$EXIT
                               .WORD    L10076-.
3495
3496 031210               299$:     BGNSEG           ;%START OF SEGMENT%
(3) 031210 104404          TRAP    C$BSEG
3497 031212 012700 003426   MOV     #BUF,R0    ;SETUP 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               ESCAPE
(3) 031264 104410          TRAP    SEG      ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 031266 000200          .WORD    C$ESCAPE
                               10000$-

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TEST 36 - FORCE DCK WITH WRITE CHECK

SEQ 0120

3510 031270 004537 014614 JSR R5,CHEERR ;CHECK CNTLR FOR ERRORS
3511 031274 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 031274 104410 TRAP C\$ESCAPE
(3) 031276 000170 WORD 10000\$-.
3512 ;VERIFY WRITE WITH READ BEFORE WRCHK
3513
3514 031300 005077 151054 CLR @RLDA
3515 031304 012777 003426 151044 MOV #BUF,@RLBA
3516 031312 012777 177600 151042 MOV #-128.,@RLMP
3517 031320 004537 015056 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
3518 031324 000014 READ
3519 031326 004537 015702 JSR R5,WTCRDY
3520 031332 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 031332 104410 TRAP C\$ESCAPE
(3) 031334 000132 WORD 10000\$-.
3521 031336 004537 014614 JSR R5,CHEERR ;CHECK CNTLR FOR ERRORS
3522 031342 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 031342 104410 TRAP C\$ESCAPE
(3) 031344 000122 WORD 10000\$-.
3523
3524 031346 BGNSEG ;%%START OF SEGMENT%%
(3) 031346 104404 TRAP C\$BSFG
3525
3526
3527 031350 005037 003426 CLR BUF
3528 031354 005077 151000 CLR @RLDA
3529 031360 012777 003426 150770 MOV #BUF,@RLBA ;SETTING SECTOR 40 OF CYL. ADDR.
3530 031366 012777 177600 150766 MOV #-128.,@RLMP ;WORD COUNT
3531
3532 031374 004537 015056 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
3533 031400 000002 WRCHK ;WRITE CHECK
3534 031402 004537 015702 JSR R5,WTCRDY ;WAIT FOR CONTROLLER READY
3535 031406 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 031406 104410 TRAP C\$ESCAPE
(3) 031410 000054 WORD 10001\$-.
3536
3537 031412 013737 002340 002272 MOV E.CS,TMPO ;GET RLCS
3538 031420 042737 001777 002272 BIC #1777,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 R5,CHEERR
3542 031442 CKLOOP ;WHEN FORCED
(3) 031442 104406 TRAP C\$CLP1
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 C\$ERDF
(5) 031456 000027 WORD 23
(5) 031460 007364 WORD EM65
(5) 031462 007510 WORD ERRO
3548
3549 031464 2\$: 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 ;*****
3562 031472 :FORCE A DCK IN INTERRUPT MODE
3563 STARS
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,@RLBA ;LOAD BUS ADDRESS
3577 031540 012777 177600 150614 MOV #-128.,@RLMP ;WORD COUNT
3578 031546 005077 150606 CLR @RLDA ;CLEAR DISK ADDRESS
3579 031552 004537 015056 JSR R5,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 000240 TRAP CSESCAPE
(3) 031566 000240 .WORD 10000\$-.
3583 031570 004537 014614 JSR R5,CHERR ;CHECK CNTLR FOR ERRORS
3584 031574 104410 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 031574 000230 TRAP CSESCAPE
(3) 031576 000230 .WORD 10000\$-.
3585 :VERIFY WRITE W!TH READ BEFORE WRCHK
3586
3587 031600 005077 150554 CLR @RLDA
3588 031604 012777 003426 150544 MOV #BUF,@RLBA
3589 031612 012777 177600 150542 MOV #-128.,@RLMP
3590 031620 004537 015056 JSR R5,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
3610 031722 012700 000340
(3) 031722 104441
3611
3612 031730 005737 002256
3613 031734 001004 000000
3614
3615 031736 104455
(4) 031736 104455
(5) 031740 000030
(5) 031742 007421
(5) 031744 007510
3616
3617 031746 104410
(3) 031746 104410
(3) 031750 000054
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
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(5) 032016 000031 .WORD 25
 (5) 032020 007364 .WORD EM65
 (5) 032022 007510 .WORD EPRO

3631 :WHEN FORCED
 3632 032024 3\$:
 3633
 3634 032024 ENDSEG ;%END OF SEGMENT%
 (3) 032024 104405 10001\$: TRAP C\$ESEG
 (3) 032024 ENDSEG ;%END OF SEGMENT%
 3635 032026 104405 10000\$: TRAP C\$ESEG
 (3) 032026 ENDTST ;**END OF TEST**
 (3) 032026 L10077: TRAP C\$ETST
 3636 032030 104401
 (3) 032030 104401
 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 C\$EXIT
 (4) 032046 000274 .WORD L10100-.
 3654
 3655 032050 BGNSEG ;%START OF SEGMENT%
 (3) 032050 104404 TRAP C\$BSEG
 3656
 3657 032052 012737 000001 002274 33\$: 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 3\$;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 R5,LDFINC ;LOAD THE FUNCTION IN NEXT WORD
 3669 032130 000012 WRITE ;WRITE IT
 3670 032132 004537 015702 JSR R5,WTC'DY ;WAIT FOR WRITE TO FINISH
 3671 032136 104410 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
 (3) 032136 104410 TRAP C\$ESCAPE

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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 C\$ESCAPE
(3) 032150 000170 .WORD 10000\$-.
3675 ;VERIFY WRITE WITH READ BEFORE WRCHK
3676
3677 032152 005077 150202 CLR @RLDA
3678 032156 012777 003426 150172 MOV #BUF,@RLBA
3679 032164 013700 002274 MOV TMP1,RO
3680 032170 005400 NEG RO
3681 032172 010077 150164 MOV RO,@RLMP
3682 032176 004537 015056 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
3683 032202 000014 READ
3684 032204 004537 015702 JSR R5,WTCRDY
3685 032210 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 032210 104410 TRAP C\$ESCAPE
(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 C\$ESCAPE
(3) 032222 000116 .WORD 10000\$-.
3688
3689 032224 BGNSEG ;%%START OF SEGMENT%%
(3) 032224 104404 TRAP C\$BSEG
3690 032226 012777 003426 150122 MOV #BUF,@RLBA ;SET UP TO READ
3691 032234 013700 002274 MOV TMP1,RO
3692 032240 005400 NEG RO
3693 032242 010077 150114 MOV RO,@RLMP
3694 032246 005077 150106 CLR @RLDA ;SECTOR
3695 032252 004537 015056 JSR R5,LDFUNC ;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 C\$ESCAPE
(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 C\$ESCAPE
3704 032306 000405 .WORD 10001\$-.
3705 032310 104406 8\$: BR 99\$;SKIP AROUND
3706 032312 CKLOOP ;YES, CHECK FOR LOOP FIRST
(4) 032312 104455 TRAP C\$CLP1
(5) 032314 000045 ERRDF 37.,EM64,ERR14
(5) 032316 007321 TRAP C\$ERDF
(5) 032320 010414 .WORD 37
3707 032322 .WORD EM64
3708 032322 .WORD ERR14
3709 032322 99\$: ENDSEG ;EXIT TEST
(3) 032322 104405 10001\$: TRAP C\$ESEG ;%%END OF SEGMENT%%

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CZRLHB.MAC 07-DEC-79 08:12 **TEST 38** - CHECK ZERO FILL ON WRITE WITH WRITE CHECK

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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 C\$ESEG
(3) 032340 ENDTST ;**END OF TEST**
3715 032342 L10100: TRAP C\$ETST
(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 C\$EXIT
(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 22\$: MOV #HTAB,R3 ;MOV #HTAB TO R3 (RL02)
3738
3739 032404 104404 33\$: BGNSEG ;START OF SEGMENT
(3) 032404 TRAP C\$BSEG
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 BIS #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
3754 032460 004537 015702 JSR R5,WTCRDY ;WAIT FOR CONTROLLER READY
3755 032464 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT 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 @RLDA
3763 032506 012777 003426 147642 MOV #BUF,@RLBA
3764 032514 012777 177600 147640 MOV #-128.,@RLMP ;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 3\$: CLR @RLDA
3775 032552 005077 147602 MOV #-128.,@RLMP ;WORD COUNT
3776 032556 012777 177600 147576 MOV #BUF,@RLBA ;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\$ERRHD
(5) 032624 000632 .WORD 410
(5) 032626 010462 .WORD ERR15
(5) 032630 007472 .WORD EM70
3790
3791 032632 4\$: ENDSEG ;%END OF SEGMENT%
3792
3793
3794 032632 10002\$:
(3) 032632

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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 .SBTTL **TEST 40** - READ WITHOUT HEADER COMPARE FUNCTION
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 032716 012777 003426 147432
3826 032724 012777 177777 147426
3827 032732 004537 015056
3828 032736 000016
3829 032740 004537 015702
3830 032744
(3) 032744 104410
(3) 032746 000006
3831
3832 032750 004537 014614
3833
3834 032754
(3) 032754 104405

10001\$: TRAP C\$ESEG
ENDSEG :%%END OF SEGMENT%
10000\$: TRAP C\$ESEG
TST (R3)+
CMP #1,T.DRIVE ;RL01 OR RL02?
BNE 60\$;RL02? THEN BRANCH
CMP R3,#HDREND ;LAST OF PATTERN?
BR 77\$
60\$: CMP R3,#HEND ;LAST OF PATTERN (RL02)
77\$: BNE 298\$
ENDSEG :%%END OF SEGMENT%
TRAP C\$ESEG
ENDTST ;**END OF TEST**
L10101:
TRAP C\$ETST
.SBTTL **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
;*****
BGNTST ;**START OF TEST**
JSR PC,HDHOME ;HEADS OVER TRACK 0
CKERFG ;HEADS GO HOME OKAY
TRAP C\$EXIT
.WORD L10102-.
BGNSEG :%%START OF SEGMENT%
TRAP C\$BSEG
MOV #128.,@RLMP ;SET UP WORD COUNT
MOV #BUF,@RLBA ;SETUP BUS ADDRESS
MOV #-1,@RLDA ;HEADER SHOULDN'T MATTER
JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
RDNHLD ;READ DATA WITHOUT HEADER VERIFY
JSR R5,WTCRDY ;WAIT FOR IT TO FINISH
ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
TRAP C\$ESCAPE
.WORD 10000\$-.
JSR R5,CHERR ;CHECK CTLR FOR ERRORS
ENDSEG :%%END OF SEGMENT%
10000\$: TRAP C\$ESEG

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TEST 40 - READ WITHOUT HEADER COMPARE FUNCTION

L 10
SEQ 0128

3835 032756 ENDTST ;**END OF TEST**
(3) 032756 L10102:
(3) 032756 104401 TRAP C\$ETST

3836
3837 .SBTTL **TEST 41** - READ WITHOUT HEADER COMPARE FUNCTION INTERRUPT
3838
3839 032760 BGNTST ;**START OF TEST**
3840
3841 032760 STARS
(2)
3842 :TEST THAT READ WITHOUT HEADER VERIFICATION WORKS IN
3843 :INTERRUPT MODE.
3844 032760 STARS
(2)
3845
3846 032760 004737 015766 JSR PC,HDHOME ;HEADS OVER TRACK 0
3847 032764 CKERFG ;HEADS GO HOME OKAY
(4) 032772 104432 TRAP C\$EXIT
(4) 032774 000114 .WORD L10103-.

3848
3849 032776 104404 BGNSEG ;%START OF SEGMENT%
(3) 032776 TRAP C\$BSEG

3850
3851 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 ;SETUP BUFFER ADDRESS
3854 033020 012777 177777 147332 MOV #1,.ARLDA ;DISK ADDRESS IS A DON'T CARE
3855 033026
(3) 033026 012700 000000 SETPRI #PRI00
(3) 033032 104441 MOV #PRI00,RO
TRAP C\$SPRI
3856 033034 004537 015056 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
3857 033040 000116 RDNHD!INTEN ;INTERRUPT ENABLED
3858 033042 004537 015702 JSR R5,WTCRDY ;WAIT FOR INTERRUPT
3859 033046
(3) 033046 012700 000340 SETPRI #PRI07
MOV #PRI07,RO
3860 033054 104441 TRAP C\$SPRI
ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 033054 104410 TRAP C\$ESCAPE
(3) 033056 000030 .WORD 10000\$-.

3861
3862 033060 005737 002256 TST INTFLG ;DID IT INTERRUPT
3863 033064 001004 BNE 1\$;IF INTERRUPT GO TO 1\$
3864
3865 033066 ERRDF 40.,EM40,ERRO ;NO INTERRUPT
(4) 033066 104455 TRAP C\$ERDF
(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 C\$ESCAPE
(3) 033100 000006 .WORD 10000\$-.

3867
3868 033102 004537 014614 JSR R5,CHERR ;CHECK CTLR FOR ERRORS
3869
3870 033106 10000\$: ENDSEG ;%END OF SEGMENT%
(3) 033106

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TEST 41 - READ WITHOUT HEADER COMPARE FUNCTION INTERRUPT

M 10
SEQ 0129

(3) 033106 104405
3871 033110 104405 TRAP C\$ESEG
 ENDTST ;**END OF TEST**
(3) 033110 L10103:
(3) 033110 104401 TRAP C\$ETST

3872 .SBTTL **TEST 42** - CHECK RD W/O HDR CMP ACTUALLY READS
3873
3874
3875 033112 BGNTST ;**START OF TEST**
3876
3877 033112 STARS

3878 :CHECK THAT THE READ W/O HDR CMP FUNCTION ACTUALLY READS (INTO MEMORY)
3879 :WE WILL WRITE A PATTERN INTO MEMORY AND THEN ISSUE
3880 :A READ TO OVERLAY THAT PATTERN. AFTER THE READ
3881 :WE CHECK TO SEE IF THE WRITTEN PATTERN HAS CHANGED.
3882 :IF NOT WE ISSUE IT AGAIN AT THE SAME SECTION AFTER
3883 :HAVING MODIFIED OUR PATTERN IN MEMORY (SINCE THERE IS
3884 :ONE CHANCE THAT THE DISK COULD HAVE OUR PATTERN). AFTER
3885 :THE SECOND READ WE CHECK THE BUFFER AGAIN. IF IT'S
3886 :NOT CHANGED WE REPORT AN ERROR
3887 033112 STARS

3888
3889
3890 033112 004737 015766 JSR PC,HDHOME ;HEADS OVER TRACK 0
3891 033116 CKERFG ;HEADS GO HOME OKAY
(4) 033124 104432 TRAP C\$EXIT
(4) 033126 000160 .WORD L10104-.

3892
3893 033130 BGNSEG ;%START OF SEGMENT%
(3) 033130 104404 TRAP C\$BSEG

3894
3895 033132 012737 024350 002272 MOV #24350,TMPO ;SET PATTERN TO WRITE
3896 033140 005037 002274 CLR TMP1 ;CLEAR PASS INDICATOR
3897 033144 012700 003426 1\$: MOV #BUF,R0 ;SET UP BUFFER BEGINNING
3898 033150 012701 000200 MOV #128.,R1
3899 033154 013720 002272 2\$: MOV TMPO,(R0)+ ;WRITE BUFFER
3900 033160 005301 DEC R1 ;DONE??
3901 033162 001374 BNE 2\$;NO, GO BACK
3902 033164 012777 000050 147166 MOV #40.,ARLDA ;LOAD DISK ADDRESS TO NONSENSE
3903 033172 012777 177600 147162 MOV #-128.,ARLMP ;SET WORD COUNT
3904 033200 012777 003426 147150 MOV #BUF,ARLBA ;LOAD BUS ADDRESS
3905 033206 012737 003426 002300 MOV #BUF,GDDAT ;FOR ERROR PRINT
3906
3907 033214 004537 015056 JSR R5,LDFUNC ;LOAD THE FUNCTION IN NEXT WORD
3908 033220 000016 RDNHID ;READ W/O HDR CMP
3909 033222 004537 015702 JSR R5,WTCRDY ;WAIT FOR CONTROLLER READY
3910 033226 104410 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 033226 104410 TRAP C\$ESCAPE
(3) 033230 000054 .WORD 10000\$-.

3911
3912 033232 004537 014614 JSR R5,CHERR ;CHECK CNTLR FOR ERRORS
3913 033236 104410 ESCAPE SEG ;CHECK FOR FL:LOE, ELSE EXIT SEG
(3) 033236 104410 TRAP C\$ESCAPE
(3) 033240 000044 .WORD 10000\$-.
3914

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N 10
TEST 42 - CHECK RD W/O HDR CMP ACTUALLY READS

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
(5) 033302 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
:*****
:CHECK THAT THE RLBA WILL INCREMENT WITH THE READ W/O HDR CMP
:THE RLBA SHOULD CONTAIN 'BUF +256.' AFTER A FULL SECTOR
:READ.
3940
3941
3942
3943 033310 STARS
:*****
3944
3945
3946 033310 004737 015766
3947 033314 CKERFG PC,HDHOME :HEADS OVER TRACK 0
3948 (4) 033322 104432 TRAP CSEXIT :HEADS GO HOME OKAY
(4) 033324 000120 .WORD L10105-.
3949 033326 BGNSEG :%%START OF SEGMENT%%
(3) 033326 104404 TRAP CSBSEG
3950
3951 033330 012777 000050 147022 MOV #40.,@RLDA
3952 033336 012777 003426 147012 MOV #BUF,@RLBA :SET UP BUS ADDRESS
3953 033344 012777 177600 147010 MOV #-128.,@RLMP :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 R5,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 R5,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
3973 033444 ENDTST ;**END OF TEST**
(3) 033444 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 BGNTST ;**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 033446 ;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

CZRLHBO RL11/RLV11 CTLR TST 2 MACY11 30A(1052) 17-DEC-79 13:44 PAGE 3-29
 CZRLHB.MAC 07-DEC-79 08:12 **TEST 44** - CHECK RLDA DOES INCREMENT WITH RD W/O HDR CMP

SEQ 0132

3997	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			RDNHLD		:READ WITHOUT HEADER COMPARE
4005	033530	004537	015702		JSR	R5,WTCRDY	:WAIT FOR CONTROLLER READY
4006	033534				ESCAPE	SEG	:CHECK FOR FL:LOE, ELSE EXIT SEG
(3)	033534	104410			TRAP	C\$ESCAPE	
(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	C\$ESCAPE	
(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	1\$:YES, BRANCH NO, REPORT ERROR
4014							
4015	033566				ERRDF	22.,EM54,ERR4	
(4)	033566	104455			TRAP	C\$ERDF	
(5)	033570	000026			.WORD	22	
(5)	033572	006764			.WORD	EM54	
(5)	033574	007654			.WORD	ERR4	
4016							
4017	033576				1\$:		
4018							
4019	033576				ENDSEG		:%%END OF SEGMENT%%
(3)	033576			10000\$:			
(3)	033576	104405			TRAP	C\$ESEG	
4020	033600			ENDTST			:**END OF TEST**
(3)	033600			L10106:			
(3)	033600	104401			TRAP	C\$ETST	
4021							
4022							
4023							
4024							
4025	033602				BGNMOD	HRDPRM	
4026							
4027	033602				BGNHRD		
(3)	033602	000030			.WORD	L10107-L\$HARD/2	
4028							
4029	033604				GPRML	CNTYPE,CNT,1,YES	
(4)	033604	005130			.WORD	T\$CODE	
(4)	033606	033664			.WORD	CNTYPE	
(4)	033610	000001			.WORD	1	
4030	033612				GPRMA	CSRMSG,CSR,0,160000,177776,YES	
(4)	033612	000031			.WORD	T\$CODE	
(4)	033614	033671			.WORD	CSRMSG	
(4)	033616	160000			.WORD	T\$LOLIM	
(4)	033620	177776			.WORD	T\$HILIM	
4031	033622				GPRML	DRTYPE,TYPDR,1,YES	
(4)	033622	003130			.WORD	T\$CODE	

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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 GPRMA VECMSG,VECT,0,0,776,YES
(4) 033630 001031 .WORD T\$CODE
(4) 033632 033740 .WORD VECMSG
(4) 033634 000000 .WORD T\$LOLIM
(4) 033636 000776 .WORD T\$HILIM
4033 033640 GPRMD BRMSG,PRIOR,0,340,0,7,YES
(4) 033640 002032 .WORD T\$CODE
(4) 033642 033705 .WORD BRMSG
(4) 033644 000340 .WORD 340
(4) 033646 000000 .WORD T\$LOLIM
(4) 033650 000007 .WORD T\$HILIM
4034 033652 GPRMD DRMSG,DRBT,0,03400,0,7,YES
(4) 033652 004032 .WORD T\$CODE
(4) 033654 033747 .WORD DRMSG
(4) 033656 003400 .WORD 03400
(4) 033660 000000 .WORD T\$LOLIM
(4) 033662 000007 .WORD T\$HILIM
4035
4036 033664 ENDRD
(2)
(3) 033664 .EVEN
4037
4038 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
4046 033756 ENDMOD
4047
4048
4049 033756 BGNMOD SFTPRM
4050
4051 033756 BGNNSFT
(3) 033756 000022 .WORD L10110-L\$SOFT/2
4052
4053 033760 GPRML DMSG,DLT,1,YES
(4) 033760 000130 .WORD T\$CODE
(4) 033762 034024 .WORD DMSG
(4) 033764 000001 .WORD 1
4054 033766 XFERF 1\$
(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 T\$LOLIM
(4) 034000 177777 .WORD T\$HILIM
4056 034002 003130 1\$: GPRML CMSG,DMPCK,1,YES
(4) 034002 003130 .WORD T\$CODE
(4) 034004 034050 .WORD CMSG
(4) 034006 000001 .WORD 1
4057 034010 XFERF 2\$
(5) 034010 006044 .WORD T\$CODE
4058 034012 GPRMD LMSG,DLMT,D,177777,1,128.,YES
(4) 034012 004052 .WORD T\$CODE
(4) 034014 034074 .WORD LMSG
(4) 034016 177777 .WORD 177777
(4) 034020 000001 .WORD T\$LOLIM
(4) 034022 000200 .WORD T\$HILIM
4059 034024 2\$: ENDSFT
4060
4061
4062 034024 .EVEN
(2)
(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
4068
4069 034145 ENDMOD
4070
4071
4072 034145 LASTAD
(2) 034146 .EVEN
(4) 034146 000000 .WORD 0
(4) 034150 000000 .WORD 0
(3) 034152 L\$LAST::
4073
4074 000001 .END

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CROSS REFERENCE TABLE -- USER SYMBOLS

F 1

SEQ 0135

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SEQ 0137

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I 11

SEQ 0138

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CROSS REFERENCE TABLE -- USER SYMBOLS

J 1

SEQ 0139

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

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CROSS REFERENCE TABLE -- USER SYMBOLS

K 11

SEQ 0140

ERR13	010346	G	570#	1620											
ERR14	010414	G	580#	3706											
ERR15	010462	G	591#	3789											
ERR2	007540	G	451#												
ERR3	007602	G	461#												
ERR4	007654	G	472#	1404	1447	1673	1779	1841	1896	2073	2115	2289	2329	2387	3315
			3387	3471	3968	4015									
ERR5	007722	G	483#	1181	1196	3098									
ERR6	007760	G	493#	1030											
ERR7	010022	G	505#												
ERR8	010030	G	515#	1731	2612										
ERR9	010102	G	526#	2033	3928										
EVL	= 000004	G	54#												
E\$END	= 002100		31#												
E\$LOAD	= 000035		31#	40											
E.BA	002342		146#	605	1124*	1775	1839	1894	2069	3964					
E.CS	002340		145#	605	986	990	994	999	1003	1007	1011	1016	1021	1123*	1480
			1534	1818	1824	1831	1874	1880	1887	2148	2198	2315	2426	2488	2529
			3537	3620											
E.DA	002344		147#	606	1125*	1443	1669	2111	2383	3383	3467	4011			
E.MP	002346		148#	606	1126*	1230	1252	1314	2247	2282					
E.MP1	002350		149#	606	1127*										
E.MP2	002352		150#	606	1128*										
FIFTY	002654		184#	901*											
FIRST	002312		134#												
FIX	015352		992	997	1001	1005	1009	1013	1019	1023	1025	1027	1104#		
FNDFNC	002372		158#	1054*	1055*	1057*	1060*								
FRMT1	011052		600	618#											
FRMT10	011652		573	630#											
FRMT11	012001		632#	961											
FRMT13	012111		635#												
FRMT14	011476		584	628#											
FRMT15	012142		595	636#											
FRMT16	012167		637#	774											
FRMT17	012233		638#	782											
FRMT18	012316		639#	1566											
FRMT2	011102		603	605	619#										
FRMT2A	011121		604	620#											
FRMT2B	011134		606	621#											
FRMT3	011163		486	609	610	622#									
FRMT4	011170		454	476	530	623#									
FRMT5	011226		465	624#											
FRMT6	011277		519	625#	2616										
FRMT7	011354		541	626#	2707	2805									
FRMT8	011426		552	627#	3016										
FRMT9	011547		563	629#	2901										
FRMT98	012044		633#	749											
FRMT99	012106		500	634#	748										
F\$AU	= 000015		31#												
F\$AUTO	= 000020		31#	766	787										
F\$BGN	= 000040		31#	38	42	53	103	108	324	328	427	429	432	442	451
			461	472	483	493	505	515	526	537	548	559	570	580	591
			647	650	656	667	669	679	681	685	691	692	761	766	794
			795	808	812	813	818	826	916	926	934	945	1208	1216	1218
			1223	1225	1228	1240	1243	1248	1250	1258	1267	1272	1290	1292	1302
			1312	1324	1328	1340	1342	1354	1361	1366	1370	1382	1384	1396	1399

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

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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

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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0142

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

N 11

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CROSS REFERENCE TABLE -- USER SYMBOLS

N 11

SFG 0143

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

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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0144

I\$PROT = 000040
 I\$PTAB = 000041
 I\$PWR = 000041
 I\$RPT = 000041
 I\$SEG = 000041
 31# 31# 31# 31# 31# 31# 31# 31# 31# 31# 31# 31# 31# 31#
 1272 1292# 1302 1312 1323# 1328 1342# 1354 1361 1365# 1370 1384# 1396
 1399 1408# 1413 1426# 1438 1441 1451# 1456 1468# 1478 1494# 1499 1512#
 1531 1548# 1555 1572# 1623# 1633 1651# 1664 1667 1681# 1686 1700# 1715
 1718 1723# 1733 1739# 1744 1761# 1771 1780 1789# 1794 1807# 1817 1822
 1845# 1850 1863# 1873 1878 1900# 1906 1919# 1929 1935# 1940 1953# 1975#
 1980 1998# 2015 2018 2037# 2042 2054# 2065 2068 2077# 2082 2094# 2106
 2109 2119# 2124 2136# 2146 2158# 2163 2176# 2195 2207# 2212 2230# 2238#
 2243 2246 2267 2270 2273 2277 2280 2291 2301 2304 2314 2331 2345#
 2350 2365# 2378 2381 2389 2396# 2409 2415# 2424 2440# 2445 2478# 2487
 2491 2492# 2500 2512# 2524 2528 2532 2533# 2543 2556# 2569 2572 2573#
 2585 2590 2607 2623# 2628 2646# 2659 2661 2662# 2675 2679 2697 2720#
 2725 2739# 2756 2759 2760# 2773 2778 2796 2816# 2822 2836# 2852 2855
 2856# 2868 2873 2892 2921# 2926 2944# 2948# 2962 2968# 2983 2988 3007
 3028# 3033 3044# 3058 3060 3071 3073 3075# 3100 3110# 3116 3128# 3142
 3144 3145# 3155 3157 3159# 3169 3176# 3181 3194# 3208 3210 3219 3221
 3223# 3235 3242 3247# 3252 3266# 3280 3282 3291 3293 3295# 3307 3310
 3320# 3325 3337# 3351 3353 3362 3364 3366# 3378 3381 3392# 3398 3413#
 3431 3433 3445 3447 3449# 3462 3465 3480# 3484 3495# 3509 3511 3520
 3522 3524# 3535 3552# 3557 3568# 3582 3584 3593 3595 3597# 3617 3635#
 3641 3655# 3671 3674 3685 3687 3689# 3698 3703 3714# 3720 3739# 3755
 3757 3758# 3768 3770 3772# 3782 3805# 3815 3821# 3830 3834# 3839 3849#
 3860 3866 3870# 3875 3893# 3910 3913 3932# 3937 3949# 3960 3963 3972#
 I\$SETU = 000041
 31# 31# 31# 31# 31# 31# 31# 31# 31# 31# 31# 31# 31# 31#
 4051# 4062# 916# 921# 926# 932# 934# 942# 945# 951# 1686 1744 1794 1850
 I\$SRV = 000041
 31# 1272 1328 1370 1413 1456 1499 1555 1633 1686 1744 1794 1850
 I\$SUB = 000041
 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# 4006 4009 4019# 4020# 4021# 4022# 4023#
 ISTST = 000041
 31# 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
 J\$JMP = 000167
 31# 31# 31# 31# 31# 31# 31# 31# 31# 31# 31# 31# 31# 31#
 LDCSR 002260
 LDFUNC 015056
 121# 1051* 1053* 1054 1062 1068* 1070* 1071* 1072 1435 1475 1520 1587
 1041# 1213 1221 1237 1245 1298 1309 1351 1393 2103 2143 2184 2240
 1661 1712 1768 1814 1870 1926 1961 2012 2062 2566 2582 2656 2672 2753
 2262 2274 2298 2311 2375 2421 2484 2520 2566 2582 2656 2672 2753
 2770 2849 2865 2959 2980 3055 3068 3139 3152 3165 3205 3216 3232
 3277 3288 3304 3348 3359 3375 3428 3442 3459 3506 3517 3532 3579
 3590 3606 3668 3682 3695 3752 3765 3778 3827 3856 3907 3957 4003
 LF 003640 347# 1030

CZRLHB0 RL11/RLV11 CTLR TST 2
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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0146

L\$SW	012434	G	40	670#
L\$TEST	002114	G	40#	
L\$TML	002014	G	40#	
L\$UNIT	002012	G	40#	696 713
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 2496#
L10062	024070		2510	2536#
L10063	024470		2554	2624#
L10064	025112		2641	2721#

CZRLHB0 RL11/RLV11 CTLR TST 2 MACY11 30A(1052) 17-DEC-79 13:44 PAGE 4-13
CZRLHB.MAC 07-DEC-79 08:12 CROSS REFERENCE TABLE -- USER SYMBOLS

SEO 0148

CZRLH80 RL11/RLV11 CTLR TST 2
CZRLH8.MAC 07-DEC-79 08:12

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CROSS REFERENCE TABLE -- USER SYMBOLS

G 1

SEQ 0149

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

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CROSS REFERENCE TABLE -- USER SYMBOLS

H 12
SEQ 0150

557	568	578	589	598	666	678	760	787	807	817	921	932
942	951	1263	1276	1286	1323	1324	1330	1336	1365	1366	1373	1378
1408	1409	1415	1420	1451	1452	1458	1463	1494	1495	1502	1506	1548
1549	1557	1561	1623	1628	1635	1641	1681	1682	1688	1694	1738	1739
1740	1746	1752	1789	1790	1796	1801	1845	1846	1852	1857	1900	1901
1908	1913	1935	1936	1942	1947	1975	1976	1982	1992	2037	2038	2044
2048	2077	2078	2084	2089	2119	2120	2126	2131	2158	2159	2166	2170
2207	2208	2214	2224	2343	2345	2346	2352	2355	2396	2397	2398	2404
2440	2441	2447	2451	2467	2472	2492	2496	2501	2504	2533	2536	2545
2550	2622	2623	2624	2632	2637	2715	2720	2721	2729	2733	2814	2816
2817	2826	2831	2913	2921	2922	2929	2938	3025	3027	3028	3029	3035
3038	3109	3110	3112	3118	3122	3174	3175	3176	3177	3183	3188	3246
3247	3248	3255	3260	3319	3320	3321	3327	3331	3391	3392	3393	3400
3406	3475	3480	3481	3486	3490	3551	3552	3553	3560	3562	3634	3635
3636	3645	3650	3708	3714	3715	3722	3727	3794	3795	3805	3806	3809
3814	3834	3835	3841	3844	3870	3871	3877	3887	3932	3933	3939	3943
3972	3973	3985	3989	4019	4020	4036	4062					
SVC TST = 177777	31#	1272	1328	1370	1413	1456	1499	1555	1633	1686	1744	1794
	1906	1940	1980	2042	2082	2124	2163	2212	2350	2409	2445	2500
	2628	2725	2822	2926	3033	3116	3181	3252	3325	3398	3484	3557
	3720	3815	3839	3875	3937	3983						

SVHD	002326	140#										
SSLSYM	010000	31#	440#	449#	459#	470#	481#	491#	503#	511#	524#	535#
		568#	578#	589#	598#	666#	678#	760#	787#	807#	817#	921#
		951#	1208#	1292#	1324#	1342#	1366#	1384#	1409#	1426#	1452#	1468#
		1549#	1572#	1628#	1651#	1682#	1700#	1723#	1740#	1761#	1790#	1807#
		1901#	1919#	1936#	1953#	1976#	1998#	2038#	2054#	2078#	2094#	2120#
		2176#	2208#	2230#	2238#	2346#	2365#	2397#	2415#	2441#	2478#	2496#
		2556#	2573#	2624#	2646#	2662#	2721#	2739#	2760#	2817#	2836#	2856#
		2948#	2968#	3029#	3044#	3075#	3112#	3128#	3145#	3159#	3177#	3194#
		3266#	3295#	3321#	3337#	3366#	3393#	3413#	3449#	3481#	3495#	3524#
		3597#	3636#	3655#	3689#	3715#	3739#	3758#	3772#	3806#	3821#	3835#
		3893#	3933#	3949#	3973#	3994#	4020#	4036#	4062#			

TAG	002640	178#										
TEMP	002634	176#										
TEMPO	002632	175#										
TEMP2	002304	131#	1135*	1158*								
TEMP3	002306	132#	1136*	1140*								
TEMP4	002310	133#	1137*	1139	1149*	1151	1156*	1157*	1161			
TIME	013566	829#	1177	1191	3093							
TIMSRV	014474	927#	1575									
TIM.US	002636	177#	830*	845*								
TMPO	002272	126#	465	530	552	1230*	1231*	1233*	1235	1252*	1253*	1480*
		1488	1534*	1535*	1536	1542	1648*	1655	1677*	1678	1921*	1933*
		2021	2030*	2148*	2149*	2150	2198*	2199*	2200	2315*	2316*	2317
		2369	2391*	2392	2946*	2952	2958	2963*	2964	2966*	2976	2998
		3022	3415*	3426	3438	3453	3477*	3478	3537*	3538*	3539	3544
		3622	3628	3895*	3899	3916	3925*					
TMP1	002274	127#	519	541	563	584	1649*	1654	1730*	1759*	1766	1773
		2001*	2026	2029*	2247*	2249*	2253	2363*	2368	2604*	2616	2689*
		2712	2788*	2805	2809*	2811	2838*	2844	2880	2901	2915*	2916
		3437	3452	3657*	3663	3679	3691	3710*	3711	3896*	3921	3924*
TMP2	002276	128#	2251*	2252*	2253*	2257*	2258	2688*	2691	2710*	2787*	2790
		2904*										
TRPFLG	002254	119#	767*	772	1203*	3078*	3102					
TRPHAN	015760	768	797	1203#	3077							

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CROSS REFERENCE TABLE -- USER SYMBOLS

I 12
SEQ 0151

TRYFNC	002376	160#	1067#											
TYPDR	= 000006	90#	4031											
TSARGC	= 000004	40#	454#	465#	476#	486#	500#	519#	530#	541#	552#	563#	573#	584#
		595#	600#	603#	604#	605#	606#	609#	610#	748#	749#	774#	782#	961#
TS CODE	= 004052	1566#	2616#	2707#	2805#	2901#	3016#							
TSERRN	= 000026	4029#	4030#	4031#	4032#	4033#	4034#	4053#	4054#	4055#	4056#	4057#	4058#	
		31#	1030#	1181#	1196#	1256#	1319#	1360#	1404#	1447#	1490#	1529#	1544#	1620#
		1673#	1731#	1779#	1827#	1834#	1841#	1883#	1890#	1896#	1970#	2033#	2073#	2115#
		2153#	2193#	2203#	2289#	2329#	2387#	2436#	2490#	2527#	2531#	2612#	2702#	2801#
		2897#	3012#	3098#	3105#	3241#	3315#	3387#	3471#	3547#	3615#	3630#	3706#	3789#
TS EXCP	= 000000	3865#	3928#	3968#	4015#									
TSFLAG	= 000040	4030#	4032#	4033#	4034#	4055#	4058#							
		1216#	1218#	1223#	1225#	1228#	1240#	1243#	1248#	1250#	1258#	1290#	1302#	1312#
		1340#	1354#	1361#	1382#	1396#	1399#	1424#	1438#	1441#	1466#	1478#	1510#	1531#
		1570#	1646#	1664#	1667#	1698#	1715#	1718#	1733#	1756#	1771#	1780#	1805#	1817#
		1822#	1860#	1873#	1878#	1917#	1929#	1951#	1996#	2015#	2018#	2052#	2065#	2068#
		2092#	2106#	2109#	2134#	2146#	2174#	2195#	2228#	2243#	2246#	2267#	2270#	2273#
		2277#	2280#	2291#	2301#	2304#	2314#	2331#	2359#	2378#	2381#	2389#	2413#	2424#
		2476#	2487#	2491#	2493#	2510#	2524#	2528#	2532#	2554#	2569#	2572#	2585#	2590#
		2607#	2641#	2659#	2661#	2675#	2679#	2697#	2737#	2756#	2759#	2773#	2778#	2796#
		2834#	2852#	2855#	2868#	2873#	2892#	2942#	2962#	2983#	2988#	3007#	3042#	3058#
		3060#	3071#	3073#	3100#	3126#	3142#	3144#	3155#	3157#	3169#	3192#	3208#	3210#
		3219#	3221#	3235#	3242#	3264#	3280#	3282#	3291#	3293#	3307#	3310#	3335#	3351#
		3353#	3362#	3364#	3378#	3381#	3411#	3431#	3433#	3445#	3447#	3462#	3465#	3493#
		3509#	3511#	3520#	3522#	3535#	3566#	3582#	3584#	3593#	3595#	3617#	3653#	3671#
		3674#	3685#	3687#	3698#	3703#	3731#	3755#	3757#	3768#	3770#	3782#	3819#	3830#
		3847#	3860#	3866#	3891#	3910#	3913#	3947#	3960#	3963#	3992#	4006#		
TSGMAN	= 000000	31#												
TSHILI	= 000200	4030#	4032#	4033#	4034#	4055#	4058#							
TSLAST	= 000001	31#	4072#											
TSLOLI	= 000001	4030#	4032#	4033#	4034#	4055#	4058#							
TSLSYM	= 010000	31#	440	449	459	470	481	491	503	511	524	535	546	557
		568	578	589	598	666	678	760	787	807	817	921	932	942
		951	1324	1366	1409	1452	1495	1549	1628	1682	1740	1790	1846	1901
		1936	1976	2038	2078	2120	2159	2208	2346	2397	2441	2496	2536	2624
		2721	2817	2922	3029	3112	3177	3248	3321	3393	3481	3553	3636	3715
TSLTNO	= 000054	3806	3835	3871	3933	3973	4020	4036	4062					
TSNEST	= 177777	4072#												
		31#	38#	42#	53#	103#	108#	324#	328#	427#	429#	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#	570#	578#	580#
		589#	591#	598#	647#	650#	654#	656#	657#	666#	667#	669#	670#	678#
		679#	681#	685#	691#	692#	760#	761#	766#	787#	794#	795#	807#	808#
		812#	813#	817#	818#	826#	916#	921#	926#	932#	934#	942#	945#	951#
		1208#	1263#	1267#	1272#	1292#	1323#	1324#	1328#	1342#	1365#	1366#	1370#	1384#
		1408#	1409#	1413#	1426#	1451#	1452#	1456#	1468#	1494#	1495#	1499#	1512#	1548#
		1549#	1555#	1572#	1623#	1628#	1633#	1651#	1681#	1682#	1686#	1700#	1723#	1738#
		1739#	1740#	1744#	1761#	1789#	1790#	1794#	1807#	1845#	1846#	1850#	1863#	1900#
		1901#	1906#	1919#	1935#	1936#	1940#	1953#	1975#	1976#	1980#	1998#	2037#	2038#
		2042#	2054#	2077#	2078#	2082#	2094#	2119#	2120#	2124#	2136#	2158#	2159#	2163#
		2176#	2207#	2208#	2212#	2230#	2238#	2343#	2345#	2346#	2350#	2365#	2396#	2397#
		2409#	2415#	2440#	2441#	2445#	2478#	2492#	2496#	2500#	2512#	2533#	2536#	2543#
		2556#	2573#	2622#	2623#	2624#	2628#	2646#	2662#	2715#	2720#	2721#	2725#	2739#
		2760#	2814#	2816#	2817#	2822#	2836#	2856#	2913#	2921#	2922#	2926#	2944#	2948#
		2968#	3025#	3027#	3028#	3029#	3033#	3044#	3075#	3109#	3110#	3112#	3116#	3128#
		3145#	3159#	3174#	3175#	3176#	3177#	3181#	3194#	3223#	3246#	3247#	3248#	3252#

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CROSS REFERENCE TABLE -- USER SYMBOLS

J 12
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#	3714#	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#					
TSNS0 = 000000												
38#	42	53#	103	108#	324	328#	427	429#	647	650#	654	656#
667	669#	679	681#	685	691#	761	766#	787	794#	808	812#	818
826#	1267	1272#	1324	1328#	1366	1370#	1409	1413#	1452	1456#	1495	1499#
1549	1555#	1628	1633#	1682	1686#	1740	1744#	1790	1794#	1846	1850#	1901
1906#	1936	1940#	1976	1980#	2038	2042#	2078	2082#	2120	2124#	2159	2163#
2208	2212#	2346	2350#	2397	2409#	2441	2445#	2496	2500#	2536	2543#	2624
2628#	2721	2725#	2817	2822#	2922	2926#	3029	3033#	3112	3116#	3177	3181#
3248	3252#	3321	3325#	3393	3398#	3481	3484#	3553	3557#	3636	3641#	3715
3720#	3806	3815#	3835	3839#	3871	3875#	3933	3937#	3973	3983#	4020	4025#
4046	4049#	4069										
TSNS1 = 000005												
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
570#	578	580#	589	591#	598	657#	666	670#	678	692#	760	795#
807	813#	817	916#	921	926#	932	934#	942	945#	951	1208#	1263
1292#	1323	1342#	1365	1384#	1408	1426#	1451	1468#	1494	1512#	1548	1572#
1623	1651#	1681	1700#	1739	1761#	1789	1807#	1845	1863#	1900	1919#	1935
1953#	1975	1998#	2037	2054#	2077	2094#	2119	2136#	2158	2176#	2207	2230#
2345	2365#	2396	2415#	2440	2478#	2492	2512#	2533	2556#	2623	2646#	2720
2739#	2816	2836#	2921	2944#	3028	3044#	3110	3128#	3176	3194#	3247	3266#
3320	3337#	3392	3413#	3480	3495#	3552	3568#	3635	3655#	3714	3739#	3805
3821#	3834	3849#	3870	3893#	3932	3949#	3972	3994#	4019	4027#	4036	4051#
4054	4057	4062										
TSNS2 = 000003												
1723#	1738	2238#	2343	2573#	2622	2662#	2715	2760#	2814	2856#	2913	2948#
3027	3075#	3109	3145#	3175	3223#	3246	3295#	3319	3366#	3391	3449#	3475
TSNS3 = 000003												
TSPTNU= 000000												
TSSAVL= 177777												
TSEGL= 177777												
31#	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	2988	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#
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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#									

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CROSS REFERENCE TABLE -- USER SYMBOLS

K 12
SEQ 0153

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	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
	3932	3949#	3960	3963	3972	3994#	4006	4009	4019				
T\$SEK1= 010001	1723#	1733	1738	2238#	2243	2246	2267	2270	2273	2277	2280	2291	2301
	2304	2314	2331	2343	2573#	2585	2590	2607	2622	2662#	2675	2679	2697
	2715	2760#	2773	2778	2796	2814	2856#	2868	2873	2892	2913	2948#	2962
	3027	3075#	3100	3109	3145#	3155	3157	3175	3223#	3235	3242	3246	3295#
	3307	3310	3319	3366#	3378	3381	3391	3449#	3462	3465	3475	3524#	3535
	3551	3597#	3617	3634	3689#	3698	3703	3708	3758#	3768	3770	3794	
T\$SEK2= 010002	2968#	2983	2988	3007	3025	3159#	3169	3174	3772#	3782	3794		
T\$SUBN= 000000	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#
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	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#	3112#	3118#	3122#	3126#	3142#	3144#	3155#

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

L 12
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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0154

3157#	3169#	3174#	3175#	3176#	3177#	3183#	3188#	3192#	3208#	3210#	3219#	3221#	
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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#									
T\$TEST= 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#
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	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													
CZRLHB0 RL11/RLV11 CTLR TST 2	CZRLHB.MAC	07-DEC-79	08:12	M 12									
T\$TSTS= 000001	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					
	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#							
T\$\$AUT= 010024	766#	787											
T\$\$CLE= 010025	795#	807											
T\$\$DU = 010026	813#	817											
T\$\$HAR= 010107	4027#	4036											
T\$\$HW = 010021	657#	666											
T\$\$INI= 010023	692#	760											
T\$\$MSG= 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
T\$\$PRO= 010020	570#	578	580#	589	591#	598							
T\$\$SEG= 010000	650#												
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	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
	2988	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#							
T\$\$SOF= 010110	4051#	4062											
T\$\$SRV= 010032	916#	921	926#	932	934#	942	945#	951					
T\$\$SW = 010022	670#	678											
T\$\$TES= 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				
T.CRC	002236	112#	985*	1018*	2588	2677	2776	2871	2986	3701	3786		

CZRLHBO RL11/RLV11 CTLR TST 2
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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#						
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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	907	910		
VECMMSG	033740		4032	4042#						
VECT =	000002		88#	4032						
WCKINT	004016		354#	1083						

CZRLHBO RL11/RLV11 CTLR TST 2
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CROSS REFERENCE TABLE -- USER SYMBOLS

B 1

SEQ 0157

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CROSS REFERENCE TABLE -- MACRO NAMES

6.13

SEQ 0158

CZRLHBO RL11/RLV11 CTLR TST 2 CZRLHB.MAC 07-DEC-79 08:12				MACY11 30A(1052) 17-DEC-79 13:44 PAGE 5-1 CROSS REFERENCE TABLE -- MACRO NAMES										D 13	SEQ 0159
EQUALS	3177	3248	3321	3393	3481	3553	3636	3715	3806	3835	3871	3933	3973	4020	
ERRDF	54														
	1030	1181	1196	1256	1360	1404	1447	1490	1529	1544	1620	1673	1731	1779	1827
	1834	1841	1883	1890	1896	1970	2033	2073	2115	2153	2193	2203	2289	2329	2387
	2436	2490	2527	2531	2612	2702	2801	2897	3012	3098	3241	3315	3387	3471	3547
ERRHRD	3615	3630	3706	3865	3928	3968	4015								
ERRSF	3789														
ESCAPE	1319	3105													
	1216	1218	1223	1225	1228	1240	1243	1248	1250	1258	1302	1312	1354	1361	1396
	1399	1438	1441	1478	1531	1664	1667	1715	1718	1733	1771	1780	1817	1822	1873
	1878	1929	2015	2018	2065	2068	2106	2109	2146	2195	2243	2246	2267	2270	2273
	2277	2280	2291	2301	2304	2314	2331	2378	2381	2389	2424	2487	2491	2524	2528
	2532	2569	2572	2585	2590	2607	2659	2661	2675	2679	2697	2756	2759	2773	2778
	2796	2852	2855	2868	2873	2892	2962	2983	2988	3007	3058	3060	3071	3073	3100
	3142	3144	3155	3157	3169	3208	3210	3219	3221	3235	3242	3280	3282	3291	3293
	3307	3310	3351	3353	3362	3364	3378	3381	3431	3433	3445	3447	3462	3465	3509
	3511	3520	3522	3535	3582	3584	3593	3595	3617	3671	3674	3685	3687	3698	3703
EXIT	3755	3757	3768	3770	3782	3830	3860	3866	3910	3913	3960	3963	4006	4009	
	1290	1340	1382	1424	1466	1510	1570	1646	1698	1756	1805	1860	1917	1951	1996
	2052	2092	2134	2174	2228	2359	2413	2476	2493	2510	2554	2641	2737	2834	2942
	3042	3126	3192	3264	3335	3411	3493	3566	3653	3731	3819	3847	3891	3947	3992
GPHARD	718														
GPRMA	4030	4032													
GPRMD	4033	4034	4055	4058											
GPRML	4029	4031	4053	4056											
HEADER	40														
INLOOP	954														
LASTAD	4072														
MSBYTE	40#														
MSCHEC	1290#	1340#	1382#	1424#	1466#	1510#	1570#	1646#	1698#	1756#	1805#	1860#	1917#	1951#	1996#
	2052#	2092#	2134#	2174#	2228#	2359#	2413#	2476#	2493#	2510#	2554#	2641#	2737#	2834#	2942#
	3042#	3126#	3192#	3264#	3335#	3411#	3493#	3566#	3653#	3731#	3819#	3847#	3891#	3947#	3992#
MSCNTO	4029#	4030#	4031#	4032#	4033#	4034#	4035#	4053#	4055#	4056#	4058#				
MSCOUN	454#	465#	476#	486#	500#	519#	530#	541#	552#	563#	573#	584#	595#	600#	603#
	604#	605#	606#	609#	610#	748#	749#	774#	782#	961#	1566#	2616#	2707#	2805#	2901#
MSDATA	3016#														
MSDECR	40#	44#	46#												
	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#	685#	760#	761#	787#
	807#	808#	817#	818#	921#	932#	942#	951#	1263#	1267#	1323#	1324#	1365#	1366#	1408#
	1409#	1451#	1452#	1494#	1495#	1548#	1549#	1623#	1628#	1681#	1682#	1738#	1739#	1740#	1789#
	1790#	1845#	1846#	1900#	1901#	1935#	1936#	1975#	1976#	2037#	2038#	2077#	2078#	2119#	2120#
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	3109#	3110#	3112#	3174#	3175#	3176#	3177#	3246#	3247#	3248#	3319#	3320#	3321#	3321#	3391#
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	3795#	3805#	3806#	3834#	3835#	3870#	3871#	3932#	3933#	3972#	3973#	4019#	4020#	4036#	4046#
	4062#	4069#													
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CZRLHBO RL11/RLV11 CTLR TST 2 MACY11 30A(1052) 17-DEC-79 13:44 PAGE 5-2
 CZRLHB.MAC 07-DEC-79 08:12 CROSS REFERENCE TABLE -- MACRO NAMES

SEQ 0160

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CZRLHBO RL11/RLV11 CTLR TST 2 MACY11 30A(1052) 17-DEC-79 13:44 PAGE 5-4
CZRLHB.MAC 07-DEC-79 08:12 CROSS REFERENCE TABLE -- MACRO NAMES

SEQ 0162

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MSHAPT	3116#	3181#	3252#	3325#	3398#	3484#	3557#	3641#	3720#	3815#	3839#	3875#	3937#	3983#
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	669#	670#	681#	691#	692#	693#	694#	698#	700#	708#	718#	748#	749#	751#
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CZRLHBO RL11/RLV11 CTLR TST 2 MACY11 30A(1052) 17-DEC-79 13:44 PAGE 5-5
 CZRLHB.MAC 07-DEC-79 08:12 CROSS REFERENCE TABLE -- MACRO NAMES

SEQ 0163

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M\$LDRO	3994#	4006#	4009#	4015#	4019#	4020#	4025#	4027#	4049#	4051#	801#	805#	863#	865#
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	3029#	3109#	3110#	3112#	3174#	3175#	3176#	3177#	3246#	3247#	3248#	3319#	3320#	3321#
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	604#	605#	606#	609#	610#	748#	749#	774#	782#	961#	1566#	2616#	2707#	2805#
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	1761#	1794#	1807#	1850#	1863#	1906#	1919#	1940#	1953#	1980#	1998#	2042#	2054#	2082#
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	2543#	2556#	2573#	2628#	2646#	2662#	2725#	2739#	2760#	2822#	2836#	2856#	2926#	2944#
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CZRLHBO RL11/RLV11 CTLR TST 2 MACY11 30A(1052) 17-DEC-79 13:44 PAGE 5-6
 CZRLHB.MAC 07-DEC-79 08:12 CROSS REFERENCE TABLE -- MACRO NAMES

SEQ 0164

I 13															
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MSRNRO	718#	863#	865#												
MSSETS	38#	53#	108#	328#	429#	432#	442#	451#	461#	472#	483#	493#	505#	515#	526#
	537#	548#	559#	570#	580#	591#	650#	656#	657#	669#	670#	681#	691#	692#	766#
	794#	795#	812#	813#	826#	916#	926#	934#	945#	1208#	1272#	1292#	1328#	1342#	1370#
	1384#	1413#	1426#	1456#	1468#	1499#	1512#	1555#	1572#	1633#	1651#	1686#	1700#	1723#	1744#
	1761#	1794#	1807#	1850#	1863#	1906#	1919#	1940#	1953#	1980#	1998#	2042#	2054#	2082#	2094#
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	2543#	2556#	2573#	2628#	2646#	2662#	2725#	2739#	2760#	2822#	2836#	2856#	2926#	2944#	2948#
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	4049#	4051#													
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	1208#	1216#	1218#	1223#	1225#	1228#	1240#	1243#	1248#	1250#	1256	1258#	1263#	1290#	1292#
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	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#
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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#
	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#
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	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#
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CZRLHBO RL11/RLV11 CTLR TST 2
CZRLHB.MAC 07-DEC-79 08:12MACY11 30A(1052) 17-DEC-79 13:44 PAGE 5-7
CROSS REFERENCE TABLE -- MACRO NAMES

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	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#	2715#	2720#	

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SEQ 0166

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#	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#		
MSWORD	40#	683#	1030#	1181#	1196#	1256#	1290#	1319#	1340#	1360#	1382#	1404#	1424#	1447#
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	1841#	1860#	1883#	1890#	1896#	1917#	1951#	1970#	1996#	2033#	2052#	2073#	2092#	2115#
	2153#	2174#	2193#	2203#	2228#	2289#	2329#	2359#	2387#	2413#	2436#	2476#	2490#	2493#
	2527#	2531#	2554#	2612#	2641#	2702#	2737#	2801#	2834#	2897#	2942#	3012#	3042#	3098#
	3126#	3192#	3241#	3264#	3315#	3335#	3387#	3411#	3471#	3493#	3547#	3566#	3615#	3630#
	3706#	3731#	3789#	3819#	3847#	3865#	3891#	3928#	3947#	3968#	3992#	4015#	4029#	4030#
	4032#	4033#	4034#	4053#	4054#	4055#	4056#	4057#	4058#	4072				4031#
M\$XFER	4054#	4057#												
POINTE	36													
PRINTB	454	465	476	486	500	519	530	541	552	563	573	584	595	600
	604	605	606	609	610	774	782	1566	2616	2707	2805	2901	3016	603
PRINTF	748	749	961											
READBU	868													
READEF	694	698	700	708										
SETPRI	693	873	875	1350	1356	1514	1524	1576	1615	1960	1965	2178	2188	2232
	2523	3231	3237	3599	3610	3855	3859							2515
SETVEC	759	768	797	871	905	910	1575	1622	3077					
STARS	1276	1286	1330	1336	1373	1378	1415	1420	1458	1463	1502	1506	1557	1561
	1641	1688	1694	1746	1752	1796	1801	1852	1857	1908	1913	1942	1947	1982
	2044	2048	2084	2089	2126	2131	2166	2170	2214	2224	2352	2355	2398	2404
	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	3490
	3562	3645	3650	3722	3727	3809	3814	3841	3844	3877	3887	3939	3943	3985
SVC	5#	31												
WAITMS	22#	743	874											
WAITUS	17#	1177	1191	3093										
XFER	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#	2834#
XFERF	3042#	3126#	3192#	3264#	3335#	3411#	3493#	3566#	3653#	3731#	3819#	3847#	3891#	3947#
	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

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

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SEQ 0167

CORE USED: 20K (39 PAGES)