

RK06

DISK DRIVE DIAG. PART 1
MD-11-DZR6H-C

EP-DZR6H-C-DL-B
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RK06

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IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DZRGH-C-D
PRODUCT NAME: UNIBUS RK06 DISK DRIVE DIAGNOSTIC: PART 1
DATE: DECEMBER 1976
MAINTAINER: DIAGNOSTIC GROUP
AUTHOR: GARY PAPAIZIAN

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1.0 ABSTRACT

THIS PROGRAM PERFORMS PART 1 OF THE DRIVE DIAGNOSTICS TO INSURE THAT THE DISK IS CAPABLE OF PERFORMING ALL STATIC & CYCLE UP TESTS. IT INSURES THAT THE DRIVE CAN WRITE AND READ HEADERS IN BOTH 20 & 22 SECTOR FORMATS. FINALLY, IT INSURES THAT THE DISK CAN PERFORM SEEK OPERATIONS BY DOING SEVERAL SEEK PATTERNS. ERROR DETECTION LOGIC IS CHECKED BY SOFTWARE ERROR FORCING.

AFTER A SUCCESSFUL RUN (WITH NO ERRORS) OF PART 1, THE DRIVE IS READY FOR PART 2 OF THE DRIVE DIAGNOSTICS.

TESTING IS BASED ON A HIERARCHY APPROACH STARTING WITH BASIC LOGIC TESTS AND PROCEEDING THRU DYNAMIC TESTING. THE TESTS WILL BE KEPT SMALL TO FACILITATE SCOPING LOOPS.

*****CAUTION*****

HALTING THIS PROGRAM ANYWHERE BUT AT THE END OF A PASS, MAY LEAVE THE HEADERS IN THE DISK CARTRIDGE IN AN UNDETERMINED STATE.

2.0 REQUIREMENTS

2.1 HARDWARE

THE FOLLOWING HARDWARE IS REQUIRED TO RUN THE DISK DIAGNOSTIC:

PDP-11
CONSOLE TELETYPE
16K MEMORY
KW11-L OR KW11-P CLOCK
RK06 UNIBUS CONTROLLER (RK611)
1 TO 8 RK06 DRIVES

- NOTES: 1. IF NEITHER KW11-L OR P CLOCK IS USED, ALL TIMING TESTS WILL BE BYPASSED. A MSG AT THE BEGINNING OF THE TESTS WILL CONFIRM THIS.
2. THE PROGRAM CAN WORK OFF EITHER FORMATTED OR NON-FORMATTED PACKS.

2.2 PRELIMINARY TESTING & PROGRAMS

THE RK611 DISKLESS CONTROLLER DIAGNOSTICS (ALL PARTS) SHOULD FIRST RUN SUCCESSFU

3.0 PROGRAM CONSIDERATIONS

THIS PROGRAM CAN BE USED BY THE PDP-11/04,05,10,20,
34,35,40,45,50, & 70.

2.2 XXDP

CHAIN MODE OPERATION (MONITOR)

- NOTE: THE DRIVE PRESENT CONDITION IS:

- ## SUMP MODE OPERATION (MANUAL)

- ### 3.3 ACT/APT

FOR OTHER INTERFACES, APT MAY ONLY LOAD & START THE PROGRAM.
I.E. LOAD & DUMP MODE.

AUTOMATIC MODE (MONITOR)

1. THE INPUT DIALOGUE IS BYPASSED.
2. THE BUSS ADDRESS & CONTROLLER INTERRUPT VECTOR IS DEFAULTED.
3. ALL DRIVES IN THE 'DRIVE PRESENT' CONDITION WILL BE TESTED.

NOTE: THE DRIVE PRESENT CONDITION IS:

- A. HEADS MANUALLY LOADED
- B. CORRECT PORT SELECTED
- C. WRITE LOCK DISABLED
- D. DRIVE READY INDICATOR ON

DUMP MODE (MANUAL): INPUT DIALOGUE IF STARTED FROM 220.

3.3.1 APT ETABLE DEFINITIONS

THE FOLLOWING DEFINITIONS ARE VALID FOR SPECIFYING APT ENVIRONMENTAL TABLE (ETABLE) ENTRIES, VIA RUNNING THE APT UTILITY PROGRAM "TSP":

1. SOFTWARE ENVIRONMENT:
=1 IF APT SCRIPT MODE
=0 IF STANDALONE MODE
2. ENVIRONMENT MODE:
BIT 7 = 1 ETABLE DOES SIZING
 = 0 PROGRAM DOES SIZING
BIT 6 = 1 SPOOL MSGS TO APT IF SCRIPT MODE
 = 0 DON'T SPOOL TO APT
BIT 5 = 1 SUPPRESS CONSOLE OUTPUT
 = 0 ALLOW CONSOLE OUTPUT
BITS 4-0 NOT USED
3. SWITCH 1 (SOFTWARE SWITCH REGISTER)
IF ENVIRONMENT MODE BIT 7 (SIZING BIT) IS SET TO 1,
THE SOFTWARE SWITCH REGISTER WILL BE USED. INSTEAD
OF THE HARDWARE CONSOLE SWITCH REGISTER. REGARDLESS
OF WHICH ONE IS USED, ALL BITS DEFINED IN SECTIONS
4.3 & 4.4 (SWITCH REGISTER OPTIONS) MAY USED
WHEN RUNNING IN STANDALONE MODE. IN APT SCRIPT MODE,
HOWEVER, BIT 14 (LOOP ON TEST) MUST ALWAYS BE SET
TO 0.
4. SWITCH 2 (USER SWITCH REGISTER)
NOT USED
5. CPU OPTIONS:
NOT USED
6. MEMORY TYPES 1-4 AND MAX MEMORY ADDRESSES
NOT USED
7. INTERRUPT VECTOR 1:
USED WHEN ENVIRONMENT MODE BIT 7 = 1. DEFAULT = 210
8. BUS PRIORITY 1:
USED WHEN ENVIRONMENT MODE BIT 7 = 1. DEFAULT = 5
9. INTERRUPT VECTOR 2:
NOT USED

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10. BUS PRIORITY 2:
NOT USED

11. BASE ADDRESS:
USED WHEN ENVIRONMENT MODE BIT 7 = 1. DEFAULT = 177440

12. DEVICE MAP:
USED WHEN ENVIRONMENT MODE BIT 7 = 1. EACH BIT
SET TO 1 IN BITS 0-7 WILL SELECT THE CORRESPONDING
DRIVE TO BE TESTED. BITS 8-15 ARE NOT USED.

13. CONTROLLER DESCRIPTOR WORDS:
NOT USED

14. DEVICE DESCRIPTOR CODES (IN WORDS):
NOT USED

3.4 DUAL ACCESS

THIS PROGRAM WILL NOT TEST OR SUPPORT DUAL-ACCESS. A DRIVE
EQUIPPED WITH DUAL ACCESS MUST BE SWITCHED TO THE PORT UNDER
TEST TO PREVENT CONTENTION WITH THE OTHER PORT.

DUAL ACCESS TESTS WILL BE INCORPORATED IN A SEPARATE PROGRAM
AT A LATER DATE.

3.5 MEMORY MANAGEMENT

MEMORY MANAGEMENT NOT USED

3.6 PARITY CHECK ENABLED

IF THE MEMORY PARITY CHECK OPTION IS AVAILABLE ON THE SYSTEM,
THE PROGRAM WILL RUN WITH MEMORY CHECK ENABLED.

3.7 BAD SECTOR

THE PROGRAM WILL COMPARE DATA ERRORS WITH THE BAD SECTOR
INFORMATION CONTAINED ON CYL 410, HEAD 2. PRINTOUTS
OF DATA ERRORS DUE TO BAD SECTORS/TRACKS WILL BE MASKED OUT.

3.8 EXECUTION TIME

THE EXECUTION TIMES SHOWN BELOW ARE BASED ON THE PDP 11/50.

TOTAL TIME: 5 MIN. 30 SEC

A BREAKDOWN OF THE MORE LENGTHY TESTS ARE SHOWN BELOW:

TEST 16 STATIC CYL ADDRESS & DIFF REGS-PART 2: 2 MIN. 15 SEC
TEST 36 FORMAT PACK : 1 MIN
TEST 41 SEEK FROM CYL 0 TO ALL CYLS : 40 SEC

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TEST 42 SEEK FROM CYL 410 TO ALL CYLS : 40 SEC

3.9 FAULT ISOLATION
TO BE DETERMINED.

3.10 ERROR CORRECTION AND FAILURE RATE ANALYSIS
THIS PROGRAM WILL NOT DO ERROR CORRECTION OR FAILURE RATE ANALYSIS.

3.11 DEFAULT UNIBUS ADDRESSES & VECTORS
THE FOLLOWING IS A LIST OF ALL DEFAULT ADDRESSES & VECTORS OF ALL HARDWARE TO BE USED & THEIR MEMORY ADDRESSES WHERE THEY CAN BE CHANGED.

	LOCATION	DEFAULT CONTENTS
RK06 BUSS ADDRESS	1264	177440
CONTROLLER INTERRUPT VECTOR	1314	210
CONTROLLER PRIORITY	1316	240
P-CLOCK STATUS REG	1320	172540
P-CLOCK SET BUFFER	1322	172542
P-CLOCK READ BUFFER	1324	172544
L-CLOCK STATUS REG	1326	177546
L-CLOCK INTERRUPT VECTOR	1330	100
P-CLOCK INTERRUPT VECTOR	1332	104
TTY KB STATUS REG	1144	177560
TTY KB BUFFER	1146	177562
TTY PRINTER STATUS REG	1150	177564
TTY PRINTER BUFFER	1152	177566

4.0 OPERATING PROCEDURE & CONTROL FUNCTIONS

4.1 PROGRAM LOADING

THE PROGRAM CAN BE LOADED FROM PAPER TAPE USING STANDARD PROCEDURE FOR ABSOLUTE LOADER TAPES; OR FROM ANY MEDIA SUPPORTED BY XXDP.

4.1.1 LOAD THE STARTING ADDRESS (SEE SEC 4.2).

4.1.2 SET SWITCH REGISTERS AS DESIRED (SEE SEC 4.3).

4.1.3 SET DRIVES TO BE TESTED IN THE 'LOAD' CONDITION & WITH THE APPROPRIATE PORT SELECTED & WRITE LOCK DISABLED. DRIVES NOT TO BE TESTED MUST HAVE BOTH PORTS DESELECTED.

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NOTE: THE DRIVE WILL NOT RESPOND TO THE 'START SPINDLE'
CMD IF THE RUN/STOP SWITCH IS IN THE 'STOP'
POSITION.

4.1.4 PRESS 'START'

THE PROGRAM WILL IDENTIFY ITSELF AND WILL BEGIN A
DIALOGUE WITH THE OPERATOR TO DETERMINE DRIVES TO BE TESTED
(SEE SEC 4.5).

THE PROGRAM BEGINS TESTING ONLY THOSE DRIVES SPECIFIED BY
THE INPUT DIALOGUE. IF A SPECIFIED DRIVE CANNOT BE FOUND BY
THE PROGRAM IT WILL BE FLAGGED AS AN ERROR THAT THE DRIVE
WAS NOT AVAILABLE. THEN BEGINNING WITH THE LOWEST NUMERICAL
DRIVE AND PROCEEDING IN SEQUENTIAL ORDER, ALL VALID DRIVES
WILL BE TESTED. ONE PASS THROUGH THE TEST SEQUENCE WILL BE
PERFORMED ON EACH DRIVE BEFORE MOVING TO THE NEXT DRIVE
IN SEQUENCE. THE DRIVE TO BE TESTED WILL BE TYPED AT THE
BEGINNING OF EACH PASS. "END OF PASS" WILL BE TYPED AFTER
TESTING ALL DRIVES.

4.2 STARTING LOCATIONS

LOCATION 200 - STARTING ADDRESS TO DEFAULT THE BUSS
ADDRESS & THE CONTROLLER INTERRUPT VECTOR
& TEST ALL DRIVES IN THE 'DRIVE PRESENT'
CONDITION.

NOTE: THE DRIVE PRESENT CONDITION IS:

- A. HEADS MANUALLY LOADED
- B. CORRECT PORT SELECTED
- C. WRITE LOCK DISABLED
- D. DRIVE READY INDICATOR ON

LOCATION 204 - SAME AS 200 START BUT BYPASS TEST 16 (N SQUARE)

LOCATION 220 - STARTING ADDRESS TO INPUT TESTING PARAMETERS
VIA THE INPUT DIALOGUE. BUSS ADDRESS &
CONT. INTERRUPT VECTOR INPUTTED ONLY ON
1ST PASS.

LOCATION 230 - SAME AS 220 START BUT BYPASS TEST 16 (N SQUARE)

LOCATION 260 - RUN MODULE TEST ...DEFAULT MODE ONLY.
THIS SKIPS OVER THE FOLLOWING TESTS:

- 1. TEST 35 FORMAT PACK
- 2. TEST 36 DECREMENT FROM CYL 410 TO 0 & READ HEADERS
- 3. TEST 40 SEEK FROM CYL 0 TO ALL
- 4. TEST 41 SEEK FROM CYL 410 TO ALL

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THE PURPOSE OF BYPASSING IS TO PROVIDE
A QUICK MODULE TEST

LOCATION 270 - SAME AS 260 START BUT BYPASS TEST 16 ALSO.

IMPORTANT: FOR VARIATIONS OF THE ABOVE, SEE XXDP, ACT/APT
CONSIDERATIONS IN SECTIONS 3.2 & 3.3.

4.3 SWITCH REGISTER

THE SWITCHES ARE USED TO PROVIDE CONTROL FUNCTIONS.

SWITCH	FUNCTION
15	HALT ON ERROR
14	LOOP ON TEST
13	INHIBIT ERROR TYPEOUT
12	BYPASS DRIVE AFTER 20 ERRORS
11	INHIBIT ITERATION
10	BELL ON ERROR
9	LOOP ON ERROR
8	LOOP ON TEST IN SW<07:00>

4.3.1 SW<15>

THE PROGRAM HALTS ON ENCOUNTERING AN ERROR, AFTER TYPING OUT
THE ERROR MSG AND PERTINENT INFORMATION, IF SW13=0.
PRESSING "CONTINUE" RESTORES NORMAL OPERATION OF THE PROGRAM.

4.3.2 SW<14>

THE PROGRAM LOOPS ON THE TEST THAT IS BEING EXECUTED WHEN
THE SWITCH IS PUT ON. THIS SWITCH IS NORMALLY USED ALONG
WITH SW15.

4.3.3 SW<13>

THIS SWITCH INHIBITS ALL ERROR MSGS. NORMALLY USED WHEN
LOOPING ON TEST (SW14) OR LOOPING ON ERROR (SW9).

4.3.4 SW<12>

THIS SWITCH BYPASSES A GIVEN DRIVE AFTER 20 ERRORS HAVE
BEEN DETECTED.

4.3.5 SW<11>

EACH TEST WILL BE EXECUTED ONLY ONCE. NORMALLY AFTER THE FIRST PASS, EACH SUBTEST IS ITERATED A NUMBER OF TIMES (USUALLY 50. 5 IN SOME CASES). SETTING THIS SWITCH INHIBITS ITERATIONS, SO THAT QUICK PASSES CAN BE MADE.

4.3.6 SW<10>

RINGS A BELL ON ERROR. USEFUL WHEN ERROR TYPEOUT IS INHIBITED.

4.3.7 SW<09>

THIS SWITCH PROVIDES THE TIGHTEST POSSIBLE SCOPE LOOP FOR ERRORS. IF THE PROGRAM DETECTS AN ERROR, IT WILL LOOP BACK TO THE BEGINNING OF TEST.

4.3.8 SW<08>

THIS SWITCH IS USED TO SELECT A PARTICULAR TEST (AS PER SW<00-7>) FOR EXECUTION AND SUBSEQUENT LOOPING. THUS IF TEST 15 IS TO BE SELECTED THE SWITCH SETTING WOULD BE 000415. IT SHOULD BE NOTED THAT BEFORE SELECTING TEST 15, ALL THE PREVIOUS TESTS (1-14) WILL BE EXECUTED.

4.4 'SOFTWARE' SWITCH REGISTER

IF THE PROGRAM IS BEING RUN ON A SWITCHLESS PROCESSOR (I.E. AN 11/04 OR 11/34) THE PROGRAM WILL DETERMINE THAT THE HARDWARE SWITCH REGISTER IS NOT PRESENT AND WILL USE A 'SOFTWARE' SWITCH REGISTER. THE 'SOFTWARE' SWITCH REGISTER IS LOCATED AT LOCATION 176 (8). THE SETTINGS OF THE "SOFTWARE" SWITCHES ARE CONTROLLED THROUGH A KEYBOARD ROUTINE WHICH IS CALLED BY TYPING A 'CONTROL G'. THE PROGRAM WILL RECOGNIZE THE 'CONTROL G' AT ANY TIME EXCEPT WHEN THE PROGRAM IS AT A HIGHER PRIORITY PROCESSING AN RK06 INTERRUPT. THE 'SOFTWARE' SWITCH VALUES ARE ENTERED AS AN OCTAL NUMBER IN RESPONSE TO THE PROMPT FROM THE SWITCH ENTRY ROUTINE:

< SWR = NNNNNN NEW =

EACH TIME SWITCH SETTING ARE ENTERED, THE ENTIRE SWITCH REGISTER IMAGE MUST BE ENTERED. LEADING ZEROS ARE NOT REQUIRED. 'RUBOUT' AND 'CONTROL U' FUNCTIONS MAY BE USED TO CORRECT TYPING ERRORS DURING SWITCH ENTRY.

ON PROCESSORS WITH HARDWARE SWITCH REGISTERS, THE 'SOFTWARE' SWITCH REGISTER MAY BE USED. IF THE PROGRAM FINDS ALL 16 SWITCHES IN THE 'UP' POSITION, ALL SWITCH REGISTER REFERENCES WILL BE TO THE 'SOFTWARE' REGISTER AND THE PROCEDURES DESCRIBED ABOVE MUST BE FOLLOWED.

4.5 INPUT DIALOGUE

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538 THE DIALOGUE WILL BE DONE INTERACTIVELY. THE PROGRAM WILL
539 REQUEST A PARAMETER BY CONSOLE TYPEOUT. THE PARAMETER MAY
540 THEN BE ENTERED AS SPECIFIED BELOW OR ALLOWED TO DEFAULT
541 BY A CARRIAGE RETURN. UNRECOGNIZED OR ILLEGAL RESPONSES WILL
542 BE ECHOED BACK FOLLOWED BY "". THE PROPER RESPONSE MAY
543 THEN BE ENTERED.
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551 IMPORTANT: FOR VARIATIONS OF THE ABOVE, SEE XXDP, ACT/APT
552 CONSIDERATIONS IN SECTIONS 3.2 & 3.3.
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4.5.1 DRIVE SELECTION

555 THE REQUEST WILL BE:

556 DRIVES TO BE TESTED:

557 THE DEFAULT RESPONSE IS CARRIAGE RETURN TO TEST ALL DRIVES
558 IN THE 'DRIVE PRESENT' CONDITION.
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561 THE OPERATOR CAN ALSO TYPE IN THE SPECIFIC DRIVE NUMBERS
562 TO BE TESTED, SEPARATED BY COMMAS & TERMINATED BY A CARRIAGE
563 RETURN.
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565 E.G. DRIVES TO BE TESTED: 1,2,4,6

566 IMPORTANT: FOR VARIATIONS OF THE ABOVE, SEE XXDP, ACT/APT
567 CONSIDERATIONS IN SECTIONS 3.2 & 3.3.
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4.5.2 BUS ADDRESS

570 THE REQUEST WILL BE:

571 TYPE IN BUSS ADDRESS IF NOT 177440

572 THE DEFAULT IS A CARRIAGE RETURN
573
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4.5.3 CONTROLLER INTERRUPT VECTOR

575 THE REQUEST WILL BE:

576 TYPE IN CONTROLLER INTERRUPT VECTOR IF NOT 210

577 THE DEFAULT IS A CARRIAGE RETURN.
578
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4.5.4 EXAMPLE OF PROGRAM DIALOGUE

580 THE EXAMPLE SHOWN IS FOR A PROGRAM STARTED AT ADDRESS 220.
581 ALL OPERATOR RESPONSES ARE UNDERLINED.
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584 UNIBUS RK06 DRIVE DIAGNOSTIC
585 PART 1
586 MAINDEC-11-DZR6H-C-PB
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DRIVES TO BE TESTED: 1,3<CR>

TYPE IN BUSS ADDRESS IF NOT 177440 <CR>

TYPE IN CONTROLLER INTERRUPT VECTOR IF NOT 210 <CR>

WILL TEST DRIVES:

1
3

DRIVE 1

(THE REST IS IDENTICAL TO THE EXAMPLE SHOWN IN 4.6 BELOW)

4.6 PROGRAM EXAMPLE

THE FOLLOWING IS AN EXAMPLE OF A PROGRAM STARTED AT THE
DEFAULT ADDRESS (200) & WITH 2 DRIVES ON THE LINE.

UNIBUS RK06 DRIVE DIAGNOSTIC

PART 1

MAINDEC-11-DZR6H-C-PB

WILL TEST DRIVES:

0
1

DRIVE 0

DRIVE SERIAL NO. AAA

CARTRIDGE SERIAL NO. BBB

DRIVE 1

DRIVE SERIAL NO. CCC

CARTRIDGE SERIAL NO. DDD

END PASS #1

WILL TEST DRIVES:

0
1

DRIVE 0

DRIVE SERIAL NO. AAA

CARTRIDGE SERIAL NO. BBB

DRIVE 1

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DRIVE SERIAL NO. CCC
CARTRIDGE SERIAL NO. CCC

END PASS # 2

(ETC)

THE ABOVE ASSUMES NO ERRORS DETECTED.
THE NUMBER OF PASSES IS DETERMINED BY ACT/APT/XXDP

IMPORTANT: FOR VARIATIONS OF THE ABOVE, SEE XXDP, ACT/APT
CONSIDERATIONS IN SECTIONS 3.2 & 3.3.

4.7 HALTING THE PROGRAM

THE PROGRAM PROVIDES A METHOD OF HALTING ITSELF SUCH THAT
THE CARTRIDGE AND/OR DRIVE IS NOT LEFT IN AN UNDETERMINED
STATE; IE: HEADS UNLOADED OR INVALID FORMAT.

TO PROPERLY HALT, TYPE CONTROL-C (↑C) ON THE CONSOLE.

IF HEADS ARE LOADED & FORMATTING IS VALID,
THE PROGRAM WILL:

1. ECHO ↑C
2. TYPE "CPU HALTED"
3. HALT THE PROGRAM

IF HEADS ARE NOT LOADED AND/OR FORMATTING IS INVALID,
THE PROGRAM WILL:

1. ECHO ↑C
2. TYPE 'HALT PENDING, PLEASE WAIT'
3. DO THE TEST(S) THAT LOADS HEADS AND/OR FORMATS
THE INVALID CYLS
4. TYPE 'CPU HALTED'
5. HALT THE PROGRAM

NOTES:

1. THE ABOVE EXAMPLE IS FOR THE PROGRAM RUNNING IN DUMP
MODE (MANUAL). IF THE PROGRAM IS RUNNING IN CHAIN/AUTO
MODE VIA XXDP, ACT, APT; IT WILL FIRST LOAD HEADS
AND/OR FORMAT CORRECTLY. IF RE: D, THEN IT WILL
JUMP ON TO THE MONITOR WHERE THE NEXT PROGRAM CAN BE
CALLED IN.

THE TYPEOUTS WILL BE "ABORT PENDING - PLEASE WAIT"
& "PROGRAM ABORTING"

2. OPERATING THE 'CONTINUE' SWITCH ON THE CPU CONSOLE WILL RETURN THE
PROGRAM TO TEST 1 WHERE TESTING WILL BEGIN WITH THE 1ST DRIVE AGAIN.

5.0 DRIVE DIAGNOSTIC FUNCTIONAL DESCRIPTION

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5.1 GENERAL

A. BASIC CONTROLLER TESTS, SIZING & SETUP

THESE TESTS DO BASIC CONTROLLER REGISTER REFERENCE TESTS, CHECKS OPERATOR INPUTS AGAINST DRIVES SEEN ON THE LINE OR DEFAULTS TO TEST ALL THE DRIVES SEEN ON THE LINE. IT CHECKS THE EXISTENCE OF AN L OR P CLOCKS FOR USE IN THE TIMING TESTS.

B. STATIC & CYCLE UP TESTS

THESE TESTS CHECK OUT THE ABILITY TO SELECT & DESELECT THE DRIVE; TO DETECT PARITY, UNSAFE, AND FAULT CONDITIONS WITH THE DRIVE READY TO OPERATE BUT WITHOUT THE SPINDLE ON.

THE ENTIRE POWER UP SEQUENCE IS TESTED BY VERIFYING ALL STATUS BITS SET/RESET IN PROPER SEQUENCE: THE BRUSH CYCLE, INNER-OUTER LIMIT DETECTION, FORWARD, REVERSE, PIP...ETC STATUS BITS ARE CHECKED.

C. SEEK, WRITE HEADER, READ HEADER TESTS

THESE TESTS CHECK THE ABILITY OF THE DRIVE TO DO SEEKS, HEADER OPERATIONS & 20, 22 SECTOR FORMATTING.

5.2 TEST DESCRIPTIONS

BASIC CONTROLLER TESTS, SIZING & SETUP

TEST 1 REFERENCE ALL CONTROLLER REGISTERS

THIS TEST VERIFIES THAT ALL THE CONTROLLER REGISTERS CAN BE ACCESSED. THE INABILITY TO BE ACCESSED WILL RESULT IN A TIMEOUT TRAP WITH AN ERROR MSG. ANY ERROR IN THIS TEST WILL RESULT IN ABORTING ALL OTHER TESTS AND JUMPING TO 'END OF PASS'

TEST 2 SIZE THE BUSS

THIS TEST IS ENTERED ONLY IF 'DRIVE SELECTION' IS DEFAULTED EITHER BY RUNNING IN THE AUTO MODE OR A 200 START IN THE MANUAL MODE.
EVERY DRIVE FROM 0 THRU 7 IS ADDRESSED.
CONTROLLER ERROR (CERR) IS EXAMINED AND IF NOT SET, THE DRIVE WILL BE TESTED. IF SET, THE PROGRAM WILL BYPASS TESTING THAT DRIVE ONLY IF THE ERROR WAS A RESULT OF MDS, UFE OR NED BEING SET; OR BOTH NED & DRA RESET INDICATING THE OTHER PORT IS ACCESSED.

TEST 3 VERIFY OPERATOR DRIVE SELECTIONS

THIS TEST IS ENTERED ONLY IF DRIVE SELECTION IS NOT
DEFAULTED. EVERY DRIVE FROM 0 TO 7 IS ADDRESSED &

CONTROLLER ERROR (CERR) IS EXAMINED. IF NOT SET, THE
PROGRAM WILL ASSUME THE DRIVE IS PRESENT. IT WILL THEN CHECK
TO SEE THAT THE DRIVE WAS INPUTTED FOR TESTING. IF NOT, IT WILL
BE AN ERROR. IF CERR WAS SET, THAT DRIVE WILL BE BYPASSED
ONLY IF THE ERROR WAS A RESULT OF MDS OR UFE SET OR BOTH
NED & DRA RESET (WRONG PORT). IF CERR IS A RESULT OF
NED ONLY, IT IS CHECKED AGAIN THE INPUTTED INFOR TO
VERIFY IT WAS NOT SPECIFIED.

TEST 4 FIND NEXT DRIVE TO BE TESTED

THIS TEST FINDS THE NEXT DRIVE PRESENT & PUTS THAT
ADDRESS IN 'DRVAD'.
THROUGHOUT THE FOLLOWING TESTS, THE DRIVE TESTED IS
THE DRIVE WHOSE ADDRESS IS IN 'DRVAD'.

TEST 5 UNLOAD DRIVE TO BE TESTED

THIS TEST UNLOADS THE DRIVE TO BE TESTED NEXT.
WAITS FOR ATTN & VERIFIES IT CAME FROM THE CORRECT DRIVE.
IT THEN WAITS FOR SPEED OK TO GO LOW BEFORE
PROCEEDING TO THE NEXT TEST.

STATIC & CYCLE UP TESTS

TEST 6 REFERENCE & CHECK ALL STATUS BYTES IN RKMR2 & RKMR3

CHECKS THE ABILITY TO REFERENCE ALL
DRIVE REGISTERS AND THAT THEY CONTAIN CORRECT STATUS.

TEST 7 PRINT DRIVE SERIAL NUMBER

THIS TEST READS & PRINTS THE DRIVE SERIAL # FROM MSG A, WORD 11
IN DECIMAL & IS PERFORMED ON THE 1ST PASS ONLY

TEST 10 SET VV WITH PACK CMD

IF VV IS RESET, THE PACK CMD IS USED TO SET IT.

TEST 11 RELEASE DRIVE

TESTS THE ABILITY TO RECOGNIZE THE RLS BIT AND NOT FAISE SACK

TEST 12 DRIVE TYPE TEST

THIS TEST COMPARES DRIVE TYPE IN MSG A AGAINST 'DDT' IN PKDS.
WRONG CDT IN RKCS1 IS SENT & ERRORS ARE VERIFIED.

TEST 13 C-D PARITY ERROR DETECTION

TESTS THE ABILITY OF THE DRIVE TO DETECT EVEN PARITY SENT BY
THE CONTROLLER BY SETTING 'PAT' ON RKMRI.
THE DRIVE SHOULD RESPOND WITH 'C-D PARITY ERROR'
THE DRIVE STILL SENDS ODD PARITY TO THE CONTROLLER WHICH IS NOW
CHECKING FOR EVEN PARITY THEREFORE THE CONTROLLER SHOULD DETECT
AN ERROR AND SET SPAR.
THE ERROR CONDITION IS RESET WITH THE CLEAR CMD

TEST 14 VERIFY START SPINDLE CMD

THE PROGRAM CHECKS THE ENTIRE STARTUP SEQUENCE, IE:
BRUSH CYCLE, HEADS HOME, FWD, REV ETC.
BY VERIFYING ALL APPROPRIATE STATUS BITS FOR PROPER SEQUENCING.
THE CYL ADDRESS & CYL DIFFERENCE REGS ARE CHECKED
TO BE ZERO AT THE END OF THE SEQUENCE.

SEEK/READ HEADER/WRITE HEADER TESTS

TEST 15 STATIC CYL DIFF AND CYL ADDR REG TEST; PART 1

THIS TEST CHECKS EACH BIT OF THE CYL DIFFERENCE
AND CYL ADDRESS REGISTERS BY PERFORMING SEEKS TO ALL
MAJOR CYLS (0,1,2,4,8,16,32,64,128,256) WITH EVEN PARITY SET.
THIS FREEZES THE INFORMATION IN THE ABOVE REGISTERS & ALLOWS FOR CHECKIN
THIS TEST VERIFIES C-D PARITY ERROR BIT SET, THAT HEADS DID
NOT MOVE & ALL OTHER APPLICABLE STATUS BITS & REGS.

TEST 16 STATIC CYL DIFF & CYL ADDR REG TEST-PART 2

THIS TEST CHECKS THE ABILITY OF THE DRIVE TO PROPERLY SET THE CYL
DIFF. & CYL ADDR REGS FOR ALL COMBINATIONS BY SEEKING TO
ALL CYLS FROM EVERY OTHER CYL. (N SQUARE SEEKS).
IT IS PERFORMED IN THE SAME MANNER AS THE ABOVE TEST.

TEST 17 HEAD REGISTER TEST

THIS TEST CHECKS THE ABILITY TO SELECT ALL HEADS (0,1,2)
VIA RKDA & READING BACK FROM MSG B3 BY THE SELECT DRIVE CMD.

HEAD 3 IS CHECKED TO PRODUCE INV. ADDR.

SINCE CHANGING HEAD ADDRESSES ARE TIED TO SEEK CMDs,
SELECTING HEAD 3 MUST RESULT IN A SEEK INCOMPLETE ALONG WITH
ILLEGAL ADDRESS. IF NOT, THIS MEANS THAT CHANGING HEAD ADDRESSES
ARE NOT TIED TO SEEK CMDs

TEST 20 SEEK TO CYL 0

TESTS THE ABILITY TO DO A SEEK CMD.
VERIFIES THERE WAS NO MOVEMENT BY CHECKING ALL APPROPRIATE
STATUS BITS. VERIFIES CMD COMPLETION BETWEEN 10-15USEC.
READ HEADER IS NOT PERFORMED AS THE PACK MAY NOT BE FORMATTED.

TEST 21 TEST SECTOR COUNT REG. FOR 22 & 20 SECTOR FORMAT

TEST 22 DETECT OUTER LIMIT

THIS TEST VERIFIES THAT THE ABOVE TEST DID ACTUALLY POSITION ON CYL 0
BY DETECTING OUTER LIMIT AS THE ADJACENT CYL.
AN ERROR IN THIS TEST INDICATES:

A. HEADS WERE NOT ON CYL 0
AND/OR B. COULD NOT SEEK IN REVERSE DIRECTION.

TEST 23 READ HEADERS, ALL TRACKS, CYL 0

THIS TEST DOES NOT CHECK THE HEADERS, BUT ONLY THE FACT
THAT HEADERS CAN BE READ CORRECTLY BY CHECKING CERR & DTE.

THIS TEST IS VALID ONLY IF THE PACK HAS NOT BEEN ZERO'D OUT.

TEST 24 BASIC WRITE/READ HEADER & HEAD SWITCHING TEST

THIS TEST CHECKS HEAD SWITCHING BY WRITING UNIQUE HEADERS
ON EACH TRACK OF CYL 0, READING BACK & VERIFYING THEY REMAINED
UNIQUE. 22 SECTOR FORMAT IS USED

I.E. TRACK 0: ALL 0'S FOR ALL SECTOR HEADERS
TRACK 1: 0101 FOR ALL SECTOR HEADERS
TRACK 2: ALL 1'S FOR ALL SECTOR HEADERS

TEST 25 BASIC WRITE/READ HEADER TEST; ALL 1'S, 20 SECTORS

USING HEAD 0, WRITE & READ 20 SECTOR HEADERS BY WRITING ALL
1'S AS HEADERS. ATTEMPT TO FIND SECTORS 20 & 21. VERIFY
THEY ARE NO LONGER THERE BY READING 22 SECTORS AND NOT
FINDING 0'S AS DATA FROM THE PREVIOUS TEST.

0004
0005
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TEST 26 WRITE & READ HEADERS CYL 0, HEAD 0

TEST 27 SEEK FROM CYL 0 TO 1 & READ HEADERS

THIS TEST CHECKS MSG A & B WORDS 0, 1, 2 FOR CORRECT STATUS AFTER RDY IS RECEIVED FROM A SEEK CMD TO DETERMINE THAT THE HEADS ARE ACTUALLY MOVING & THE CYL DIFF IS 1. AFTER ATTN IS RECEIVED, CERR IS EXAMINED FOR ANY ERRORS. CYL DIFFERENCE IN MSG A2 IS VERIFIED TO BE 0 & CYL ADDR IN MSG B2 IS VERIFIED TO BE 1.

HEADERS ARE READ FROM 1 SECTOR, HEAD 0 & VERIFIED THAT THEY ARE DIFFERENT FROM CYL 0 TO SHOW THAT THE HEADS DID ACTUALLY MOVE.

TEST 30 WRITE & READ HEADERS CYL 1, HEAD 0

TEST 31 TEST RECALIBRATE CMD & READ HEADERS

THIS TEST DOES A RECALIBRATE & READS HEADERS. IT VERIFIES THAT WRITING HEADERS ON CYL 1 FROM THE PREVIOUS TEST DID NOT OVERWRITE CYL 0 HEADERS.

AN ERROR IN THIS TEST INDICATES THAT HEADS:

OR A. MOVED TO A CYL OTHER THAN 1
 B. DID NOT GET BACK TO CYL 0

TEST 32 SINGLE INCREMENT SEEKS TO CYL 410

THIS TEST DOES SINGLE INCREMENT SEEKS OUT TO CYL 410 WITHOUT ANY WRITING OR READING SO AS NOT TO INADVERTENTLY DESTROY DATA.

TEST 33 READ & SAVE BAD SECTOR INFO & TYPE PACK SERIAL #

THIS TEST VERIFIES THAT CYL 410, TRACK 2 CAN BE READ. THIS AREA CONTAINS BAD SECTOR INFO WHICH IS WRITTEN BY THE FACTORY DURING MANF. ALL BAD SECTOR INFO (BSE) WILL BE STORED AT THIS TIME TO MASK FUTURE READ HEADER OR DATA ERROR PRINTOUTS. IF BSE INFO CANNOT BE READ, OR IF AFTER READING THE BSE INFO IT IS DETERMINED THAT AN ALIGNMENT CARTRIDGE IS USED, A MSG WILL BE TYPED INDICATING THAT ALL FUTURE FORMAT AND READ-WRITE TESTS WILL BE BYPASSED. THIS IS DONE SO AS NOT TO DESTROY BSE INFO OR AN ALIGNMENT PACK BY WRITING THE PACK SERIAL # IS TYPED IN OCTAL & FOR THE FIRST PASS ONLY. THIS IS THE FIRST TEST WHERE THE READ DATA CMD IS PERFORMED

930
931
932
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985

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TEST 34 DETECT INNER LIMIT

THIS TEST VERIFIES THAT THE LAST CYL IN THE ABOVE
 TEST WAS 410 BY DETECTING INNER LIMIT AS THE ADJACENT CYL.
 IF THIS TEST FAILS, IT INDICATES THAT HEADS WERE NOT ON CYL 410
 & THAT BSE INFO IS NOT VALID. THE FORMAT PACK TEST
 & ALL READ-WRITE TESTS ARE BYPASSED
 TO AVOID DESTROYING BSE INFO OR AN ALIGNMENT CARTRIDGE
 SINCE THERE IS A SEEKING OR LIMIT DETECTION PROBLEM.

TEST 35 FORMAT PACK

THIS TEST FORMATS THE ENTIRE PACK IN 22 SECTOR FORMAT BY
 DOING 1 CYL INCREMENTAL SEEKS
 FROM 0 TO 410 WITH WRITE HEADER CMDS (ALL TRACKS).
 HEADERS WILL BE READ IN THE NEXT TEST

TEST 36 DECREMENT FROM CYL 410 TO 0 & READ HEADERS

THIS TEST VERIFIES MOTION IN THE NEGATIVE DIRECTION BY
 SINGLE CYL INCREMENTAL SEEKS.

TEST 37 SEEK FROM CYL 0 TO ALL MAJOR CYLS & READ HEADERS

THIS TEST SEEKS FROM CYL 0 TO ALL THE MAJOR CYLS & READS HEADERS.
 IT THEN SEEKS CYL 0 & READS HEADERS.

MAJOR CYLS ARE: 1 (DECIMAL) = 1 (OCTAL)

2	2
4	4
8	10
16	20
32	40
64	100
128	200
256	400

TEST 40 SEEK TO ALL CYLS FROM 0 & READ HEADERS

TEST 41 SEEK TO ALL CYLS FROM CYL 410 & READ HEADERS

TEST 42 SEEK TO ALL KEY INVALID CYLS

THIS TEST VERIFIES THAT 'INV ADDR' & 'SEEK INCOMPLETE' IS
 PRODUCED & THAT HEADS DO NOT MOVE OR UNLOAD IF AN ILLEGAL
 CYL IS SPECIFIED IN A SEEK.

INVALID CYLS ARE 411 THRU 511 (10) IE. 633 THRU 777 (8)

THIS TEST CHECKS KEY INVALID CYLS 411, 412, 416, 448 & 480

FOR A FULL LOGIC TEST

THE PROGRAM DOES NOT REQUIRE FORMATTED PACKS AS FORMATTING IS PERFORMED IN ANY CASE.

ANY TEST THAT MODIFIES STANDARD FORMATTING IS FOLLOWED BY A 'CLEAN UP' TEST TO PUT THOSE CYLS BACK TO STANDARD FORMAT.

6.0 ERROR REPORTING

6.1 ERROR INTERPRETATION

WHENEVER AN ERROR MSG IS PRINTED OUT, ALL REGISTERS AND OTHER DATA PERTAINING TO THE ERROR ARE ALSO GIVEN. MSG A(00), MSG B(01), RKER, RKBA...ETC, INDICATE THE CONTENTS OF THE CORRESPONDING REGISTERS AT THE TIME OF ERROR.

EVERY ERROR MSG CONTAINS A PC. THIS PC INDICATES THE POSITION IN PROGRAM WHERE THE ERROR CALL IS LOCATED. THE ERROR MSG, BECAUSE OF PRACTICAL CONSIDERATIONS IS MADE SHORT AND MEANINGFUL. THE USER IS ADVISED TO LOOK UP THE PC IN THE PROGRAM LISTING, WHERE HE WILL FIND MORE INFORMATION ABOUT THE ERROR. IN MANY INSTANCES, A SINGLE FAULT WILL GIVE RISE TO MORE THAN ONE ERROR REPORT. A LITTLE DELIBERATION AND CAREFUL EXAMINATION OF THE DATA GIVEN WILL BE CERTAINLY VERY HELPFUL IN PINPOINTING THE FAULT. A BRIEF EXPLANATION OF WHAT IS BEING CHECKED IN THE TEST IS GIVEN AT THE BEGINNING OF EVERY TEST. ALL THE NUMBERS GIVEN WITH ERROR MSGS ARE IN OCTAL.

NOTE

NO ERROR LOGGING OR OPERATION HISTORY IS PROVIDED.

6.2 ERROR PRINTOUT EXAMPLES:

EXAMPLE #1:

MSG A0 ERROR
AFTER START SPINDLE CMD & FWD SET

TEST NO. PC						
000014 016530						
EXPECT	EXPECT	EXPECT	EXPECT	EXPECT	EXPECT	EXPECT
A0	B0	A1	B1	A2	B2	B3
030144	100000	013704	000001			
ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL
A0	B0	A1	B1	A2	B2	B3

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SEG 002:

1098
1099
1100
1101
1102
1103
1104
1105
1106
1107
1108
1109
1110
1111
1112
1113
1114
1115
1116
1117
1118
1119
1120
1121
1122
1123
1124
1125

140144 100000 101744 000001
RKCS1 RKCS2 RKASOF RKER RKDS RKDC
040200 000100 010000 000000 000000 000000

THE ABOVE EXAMPLE SHOWS EXPECTED & ACTUAL DATA FOR
MSG REGISTERS A0, B0, A1 & B1.

MSGs A2, B2 & B3 WILL BE TYPED OUT ONLY AS
REQUIRED IF THE CYL DIFFERENCE/OFFSET, CYL
ADDRESS & HEAD & SECTOR INFORMATION IS A VARIABLE PARAMETER
OF THE TEST.

EXAMPLE #2:

NO ATTN IN RKASOF
AFTER UNLOAD CMD

TEST NO. PC
000003 014330
RKMR2 RKMR3 RKER RKDS RKCS1 RKCS2 RKASOF
000144 100000 000000 100101 000206 000104 000000

[END OF DOCUMENT]

%

```

1126
1127
1128
1129      .NLIST  CND.MC.MD
1130      .LIST   ME
1131      .ENABL  ABS,AMA

```

```

1132      :DEFINE SYSMAC MACROS

```

```

1135      167400
1136      000001

```

```

1135      $SWR= 167400
1136      $TN= 1

```

```

      :DEFINE SWITCHES 15,14,13,11,10,9,8
      ;SET FIRST TEST NO. TO 1

```

```

1140      .TITLE  UNIBUS RK06 DRIVE DIAGNOSTIC PART 1

```

```

1141      :*COPYRIGHT (C) 1976
1142      :*DIGITAL EQUIPMENT CORP.
1143      :*MAYNARD, MASS. 01754

```

```

1144      :*
1145      :*PROGRAM BY GARY PAPAIZIAN

```

```

1146      :*
1147      :*THIS PROGRAM WAS ASSEMBLED USING THE PDP-11 MAINDEC SYSMAC
1148      :*PACKAGE (MAINDEC-11-DZQAC-C2), SEPT 14, 1976.
1149      :*

```

```

1152      .SBTTL  OPERATIONAL SWITCH SETTINGS

```

```

1153      :*
1154      :*      SWITCH      USE
1155      :*      -----
1156      :*      15      HALT ON ERROR
1157      :*      14      LOOP ON TEST
1158      :*      13      INHIBIT ERROR TYPEOUTS
1159      :*      12      ABORT DRIVE AFTER 20 ERRORS
1160      :*      11      INHIBIT ITERATIONS
1161      :*      10      BELL ON ERROR
1162      :*      9       LOOP ON ERROR
1163      :*      8       LOOP ON TEST IN SWR<7:0>

```

```

1166      .SBTTL  SUMMARY OF STARTING LOCATIONS

```

```

1167      :*
1168      :*
1169      :*      200      DEFAULT PARAMETERS
1170      :*      204      DEFAULT PARAMETERS & BYPASS TEST 16
1171      :*      220      INPUT PARAMETERS
1172      :*      230      INPUT PARAMETERS & BYPASS TEST 16
1173      :*      260      RUN MODULE TEST VERSION-DEFAULT MODE ONLY BYPASS
1174      :*      :*      TESTS 35,36,40 & 41
1175      :*      270      SAME AS 260 START BUT BYPASS TEST 16 ALSO
1176      :*

```

.SBTTL BASIC DEFINITIONS

;*INITIAL ADDRESS OF THE STACK POINTER *** 1100 ***

STACK= 1100

.EQUIV EMT.ERROR

::BASIC DEFINITION OF ERROR CALL

.EQUIV IOT,SCOPE

::BASIC DEFINITION OF SCOPE CALL

;*MISCELLANEOUS DEFINITIONS

HT= 11

::CODE FOR HORIZONTAL TAB

LF= 12

::CODE FOR LINE FEED

CR= 15

::CODE FOR CARRIAGE RETURN

CRLF= 200

::CODE FOR CARRIAGE RETURN-LINE FEED

PS= 177776

::PROCESSOR STATUS WORD

.EQUIV PS,PSW

STKLMT= 177774

::STACK LIMIT REGISTER

PIRQ= 177772

::PROGRAM INTERRUPT REQUEST REGISTER

DSWR= 177570

::HARDWARE SWITCH REGISTER

DDISP= 177570

::HARDWARE DISPLAY REGISTER

;*GENERAL PURPOSE REGISTER DEFINITIONS

R0= %0

::GENERAL REGISTER

R1= %1

::GENERAL REGISTER

R2= %2

::GENERAL REGISTER

R3= %3

::GENERAL REGISTER

R4= %4

::GENERAL REGISTER

R5= %5

::GENERAL REGISTER

R6= %6

::GENERAL REGISTER

R7= %7

::GENERAL REGISTER

SP= %6

::STACK POINTER

PC= %7

::PROGRAM COUNTER

;*PRIORITY LEVEL DEFINITIONS

PR0= 0

::PRIORITY LEVEL 0

PR1= 40

::PRIORITY LEVEL 1

PR2= 100

::PRIORITY LEVEL 2

PR3= 140

::PRIORITY LEVEL 3

PR4= 200

::PRIORITY LEVEL 4

PR5= 240

::PRIORITY LEVEL 5

PR6= 300

::PRIORITY LEVEL 6

PR7= 340

::PRIORITY LEVEL 7

;*SWITCH REGISTER SWITCH DEFINITIONS

SW15= 100000

SW14= 40000

SW13= 20000

SW12= 10000

SW11= 4000

SW10= 2000

SW09= 1000

SW08= 400

SW07= 200

SW06= 100

SW05= 40

SW04= 20

SW03= 10

SW02= 4

```

1233      000002      SW01= 2
1234      000001      SW00= 1
1235      .EQUIV      SW09,SW9
1236      .EQUIV      SW08,SW8
1237      .EQUIV      SW07,SW7
1238      .EQUIV      SW06,SW6
1239      .EQUIV      SW05,SW5
1240      .EQUIV      SW04,SW4
1241      .EQUIV      SW03,SW3
1242      .EQUIV      SW02,SW2
1243      .EQUIV      SW01,SW1
1244      .EQUIV      SW00,SW0
1245
1246      100000      ;*DATA BIT DEFINITIONS (BIT00 TO BIT15)
1247      040000      BIT15= 100000
1248      020000      BIT14= 40000
1249      010000      BIT13= 20000
1250      004000      BIT12= 10000
1251      002000      BIT11= 4000
1252      001000      BIT10= 2000
1253      000400      BIT09= 1000
1254      000200      BIT08= 400
1255      000100      BIT07= 200
1256      000040      BIT06= 100
1257      000020      BIT05= 40
1258      000010      BIT04= 20
1259      000004      BIT03= 10
1260      000002      BIT02= 4
1261      000001      BIT01= 2
1262      .EQUIV      BIT00,BIT0
1263      .EQUIV      BIT09,BIT9
1264      .EQUIV      BIT08,BIT8
1265      .EQUIV      BIT07,BIT7
1266      .EQUIV      BIT06,BIT6
1267      .EQUIV      BIT05,BIT5
1268      .EQUIV      BIT04,BIT4
1269      .EQUIV      BIT03,BIT3
1270      .EQUIV      BIT02,BIT2
1271      .EQUIV      BIT01,BIT1
1272      .EQUIV      BIT00,BIT0
1273
1274      000004      ;*BASIC "CPU" TRAP VECTOR ADDRESSES
1275      000010      ERRVEC= 4      ;; TIME OUT AND OTHER ERRORS
1276      000014      RESVEC= 10     ;; RESERVED AND ILLEGAL INSTRUCTIONS
1277      000014      TBITVEC= 14    ;; "T" BIT
1278      000014      TRTVEC= 14     ;; TRACE TRAP
1279      000014      BPTVEC= 14     ;; BREAKPOINT TRAP (BPT)
1280      000020      IOTVEC= 20      ;; INPUT/OUTPUT TRAP (IOT) **SCOPE**
1281      000024      PWRVEC= 24     ;; POWER FAIL
1282      000030      EMTVEC= 30     ;; EMULATOR TRAP (EMT) **ERROR**
1283      000034      TRAPVEC= 34    ;; "TRAP" TRAP
1284      000060      TKVEC= 60      ;; TTY KEYBOARD VECTOR
1285      000064      TPVEC= 64      ;; TTY PRINTER VECTOR
1286      000240      PIRQVEC= 240   ;; PROGRAM INTERRUPT REQUEST VECTOR
1287
1288      .SBTTL  RK06 CONTROLLER REGISTER DEFINITION

```

M02

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RK06 CONTROLLER REGISTER DEFINITION

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```

1289
1290
1291
1292      000000      RKCS1= 0      ;CONTROL AND STATUS REGISTER 1
1293      000002      RKWC= 2      ;WORD COUNT REGISTER
1294      000004      RKBA= 4      ;BUS ADDRESS REGISTER
1295      000006      RKDA= 6      ;DESIRED TRACK SECTOR REGISTER
1296      000010      RKCS2= 10     ;CONTROL AND STATUS REGISTER 2
1297      000012      RKDS= 12     ;DRIVE STATUS REGISTER
1298      000014      RKER= 14     ;ERROR REGISTER
1299      000016      RKASOF= 16    ;ATTENTION SUMMARY AND OFFSET REGISTER
1300      000020      RKDC= 20     ;DESIRED CYL REGISTER
1301      000024      RKDB= 24     ;DATA BUFFER
1302      000026      RKMR1= 26    ;MAINTENANCE REGISTER 1
1303      000034      RKMR2= 34    ;MAINTENANCE REGISTER 2 (MSG LINE 2)
1304      000036      RKMR3= 36    ;MAINTENANCE REGISTER 3 (MSG LINE 3)
1305      000030      RKECPS= 30   ;ECC POSITION INFORMATION
1306      000032      RKECPT= 32   ;ECC PATTERN INFORMATION
1307
1308      .SBTTL CONTROL AND STATUS REGISTER 1 BITS (RKCS1:0)
1309
1310      ; DRIVE CMDS
1311
1312      000001      SELDRV= 1      ;SELECT DRIVE (GET STATUS)
1313      000003      PACK= 3       ;PACK ACKNOWLEDGE
1314      000005      CLEAR= 5     ;DRIVE CLEAR
1315      000007      UNLOAD= 7    ;UNLOAD
1316      000011      SRTSPL= 11   ;START SPINDLE
1317      000013      RECAL= 13    ;RECALIBRATE
1318      000015      OFFSET= 15   ;OFFSET
1319      000017      SEEK= 17     ;SEEK
1320      000021      RDDATA= 21    ;READ DATA
1321      000023      WRDATA= 23    ;WRITE DATA
1322      000025      RDHEAD= 25   ;READ HEADER
1323      000027      WRHEAD= 27   ;WRITE HEADER AND DATA
1324      000031      WRTCHK= 31   ;WRITE CHECK
1325
1326      000001      GO= BIT0      ;GO BIT
1327      000100      IE= BIT6     ;INTERRUPT ENABLE
1328      000200      RDY= BIT7    ;CONTROLLER READY
1329      000400      BA16= BIT8   ;BUS ADDRESS BIT 16
1330      001000      BA17= BIT9   ;BUS ADDRESS BIT 17
1331      002000      CDT= BIT10   ;CONTROLLER DRIVE TYPE (0=RK06)
1332      004000      CTO= BIT11   ;CONTROLLER TIMEOUT
1333      010000      CFMT= BIT12  ;CONTROLLER DRIVE FORMAT (0=22 SECTOR, 1=20 SECTOR)
1334      020000      DCPAR= BIT13 ;SERCON PARITY ERROR DETECTED BY CONTROLLER
1335      040000      DI= BIT14   ;DRIVE INTERRUPT
1336      100000      CERR= BIT15  ;CONTROLLER ERROR
1337      100000      CCLR= BIT15  ;CONTROLLER CLEAR
1338
1339      .SBTTL CONTROL AND STATUS REGISTER 2 BITS (RKCS2:10)
1340
1341      000007      DRVMSK= 7      ;MASK FOR DRIVE SELECTION CODE
1342      000010      RLS= BIT3     ;DESELECT OR RELEASE DRIVE IN BITS 0-2
1343      000020      BAI= BIT4     ;BUS ADDRESS INCREMENT INHIBIT
1344      000040      SCLR= BIT5    ;SUBSYSTEM CLEAR CONTROLLER AND ALL DRIVES

```

1345 000100
1346 000200
1347 000400
1348 001000
1349 002000
1350 004000
1351 010000
1352 020000
1353 040000
1354 100000

IR= BIT6 : INPUT READY
OR= BIT7 : OUTPUT READY
UFE= BIT8 : UNIT FIELD ERROR
MDS= BIT9 : MULTIPLE DRIVE SELECT
PGE= BIT10 : PROGRAMMING ERROR
NEM= BIT11 : NON-EXISTENT MEMORY
NED= BIT12 : NON-EXISTENT DRIVE
UPE= BIT13 : UNIBUS PARITY ERROR
WCE= BIT14 : WRITE CHECK ERROR
DLT= BIT15 : DATA LATE ERROR

.SBTTL ERROR REGISTER BIT DEFINITION (RKER:14)

1355
1356
1357
1358 000001
1359 000002
1360 000004
1361 000010
1362 000020
1363 000040
1364 000100
1365 000200
1366 000400
1367 001000
1368 002000
1369 004000
1370 010000
1371 020000
1372 040000
1373 100000

ILF= BIT0 : ILLEGAL FUNCTION CODE
SKI= BIT1 : SEEK INCOMPLETE
NXF= BIT2 : NON-EXECUTABLE FUNCTION
DRPAR= BIT3 : DRIVE DETECTED SERCON PARITY ERROR
FMTE= BIT4 : FORMAT ERROR
DTYE= BIT5 : DRIVE TYPE ERROR
ECH= BIT6 : ECC HARD
BSE= BIT7 : BAD SECTOR ERROR
HVRC= BIT8 : HEADER VRC ERROR
COE= BIT9 : CYL ADDRESS OVERFLOW ERROR
IDAE= BIT10 : INVALID DISK ADDRESS ERROR: HEAD/CYL
WLE= BIT11 : WRITE LOCK ERROR
DTE= BIT12 : DRIVE TIMING ERROR
OPI= BIT13 : OPERATION (SEARCH) INCOMPLETE
UNS= BIT14 : DRIVE UNSAFE
DCK= BIT15 : DATA CHECK

.SBTTL STATUS REGISTER BIT DEFINITION (RKDS:12)

1374
1375
1376
1377 000001
1378
1379 000004
1380 000010
1381 000020
1382 000040
1383 000100
1384 000200
1385 000400
1386 004000
1387 020000
1388 040000
1389 100000

DRA= BIT0 : DRIVE AVAILABLE (CONTROLLER IS SET IF
: THIS BIT IS RESET)
OFST= BIT2 : DRIVE OFFSET
ACLO= BIT3 : AC LOW
DCLO= BIT4 : DC LOW
DROT= BIT5 : DRIVE OFF TRACK
VV= BIT6 : VOLUME VALID
DRDY= BIT7 : DRIVE READY
DDT= BIT8 : DRIVE TYPE (0=RK06)
WRL= BIT11 : WRITE LOCK
PIP= BIT13 : POSITIONING IN PROGRESS
DSC= BIT14 : DRIVE STATUS CHANGE
SVAL= BIT15 : STATUS VALID

.SBTTL MAINTENANCE REGISTER 1 BIT DEFINITION (RKMR1:22)

1390
1391
1392
1393 000017
1394 000020
1395 000040
1396 000100
1397 000200
1398 000400
1399 001000
1400 002000

MESMSK= 17 : MSG MASK
PAT= BIT4 : FORCE EVEN PARITY ON SERCON MSG LINES
DMD= BIT5 : DIAGNOSTIC MODE
MSP= BIT6 : MAINTENANCE SECTOR PULSE
MIND= BIT7 : MAINTENANCE INDEX
MCLK= BIT8 : MAINTENANCE CLOCK
MERD= BIT9 : MAINTENANCE ENCODED READ DATA
MEWD= BIT10 : MAINTENANCE ENCODED WRITE DATA

3. BUS RK06 DRIVE DIAGNOSTIC PART 1
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MAINTENANCE REGISTER 1 BIT DEFINITION (RKMR1:22)

SEG 0027

004000
010000
020000
040000
100000

PCA= BIT11 : PRECOMPENSATION ADVANCE
PCD= BIT12 : PRECOMPENSATION DELAY
ECCW= BIT13 : ECC WORD IS BEING READ OR WRITTEN
WRTGAT= BIT14 : WRITE GATE
RDGATE= BIT15 : READ GATE

.SBTTL DEFINITION OF DRIVE STATUS BYTE 00 MSG A (RKMR2:34)

000040
000100
000200
000400
001000
002000
004000
010000
020000
040000

D.DRA= BITS : DRIVE AVAILABLE
D.VV= BIT6 : VOLUME VALID
D.DRDY= BIT7 : DRIVE READY
D.DDT= BIT8 : DRIVE TYPE (0=RK06)
D.FORM= BIT9 : DRIVE FORMAT
D.OFF= BIT10 : OFFSET ON
D.WRL= BIT11 : WRITE LOCK
D.SPIN= BIT12 : SPINDLE ON
D.PIP= BIT13 : POSITIONING IN PROGRESS
D.DSC= BIT14 : DRIVE STATUS CHANGE

.SBTTL DEFINITION OF DRIVE STATUS BYTE 01 MSG A (RKMR2:34)

000020
000040
000100
000200
000400
001000
002000
004000
010000
020000
040000

D.SSP= BIT4 : SERVO SIG PRESENT
D.HDM= BIT5 : HEADS HOME
D.BRM= BIT6 : BRUSHES HOME
D.DOR= BIT7 : DOOR INTERLOCKED
D.CART= BIT8 : CARTRIDGE INTERLOCK
D.SPOK= BIT9 : SPEED OK
D.FWD= BIT10 : FORWARD
D.REV= BIT11 : REVERSE
D.LOAD= BIT12 : HEADS LOADING
D.RTZ= BIT13 : RETURN TO ZERO
D.UNLD= BIT14 : HEADS UNLOADING

.SBTTL DEFINITION OF DRIVE STATUS BYTE 00 MSG B (RKMR3:36)

000040
000100
000200
000400
001000
002000
004000
010000
020000
040000

D.IDAE= BITS : INVALID DISK ADDRESS ERROR:HEAD CYL
D.ACLO= BIT6 : AC LOW
D.FLT= BIT7 : DRIVE FAULT
D.ILF= BIT8 : ILLEGAL FUNCTION CODE
D.PAR= BIT9 : DRIVE DETECTED SERCON PARITY ERROR
D.SKI= BIT10 : SEEK INCOMPLETE
D.WLE= BIT11 : WRITE LOCK ERROR
D.SPLS= BIT12 : SPEED LOSS
D.DRCT= BIT13 : DRIVE OFF TRACK
D.UNS= BIT14 : R/W UNSAFE

.SBTTL DEFINITION OF DRIVE STATUS BYTE 01 MSG B (RKMR3:36)

000020
000040
000100
000200
000400
001000
002000
004000

D.SECT= BIT4 : SECTOR ERROR
D.WCUR= BIT5 : WRITE CURRENT AND NO WRITE GATE
D.WGAT= BIT6 : WRITE GATE AND NO TRANSISTIONS
D.WDFL= BIT7 : HEAD FAULT
D.MHD= BIT8 : MULTIPLE HEAD SELECT
D.XERROR= BIT9 : INDEX ERROR
D.TIB= BIT10 : TRIBIT ERROR
D.PLO= BIT11 : PLO ERROR

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 DEFINITION OF DRIVE STATUS BYTE 01 MSG B (RKMR3:36)

SEQ 0028

1457 010000
 1458 020000
 1459 040000

D.NMOV= BIT12 :SEEK AND NO MOTION
 D.LIMD= BIT13 :LIMIT DETECT ON SEEK
 D.SUNS= BIT14 :SERVO UNSAFE

.SBTTL COMMON MASKS AND OTHER BITS: MSG A (RKMR2:34)

1460
 1461
 1462 000007
 1463 017760
 1464 017760
 1465 017760
 1466 077770

M.DRV= 7 :DRIVE CODE, ALL BYTES
 M.CDIF= 17760 :CYL DIFF, BYTE 10
 M.OFST= 17760 :OFFSET VALUE, BYTE 10
 M.SER= 77770 :DRIVE SERIAL #, BYTE 11

.SBTTL COMMON MASKS AND OTHER BITS: MSG B (RKMR3:36)

1467 000003
 1468 017760
 1469 040000
 1470 000760
 1471 007000
 1472 100000

M.ID= 3 :BYTE ID, ALL BYTES
 M.CADD= 17760 :CYL ADDRESS, BYTE 10
 M.ALGN= BIT14 :ALIGN SIGN, BYTE 10
 M.SECT= 760 :SECTOR COUNT, BYTE 11
 M.HEAD= 7000 :HEAD DECODE, BYTE 11
 M.PAR= BIT15 :PARITY, MESS A/B, ALL BYTES

```

1476
1477
1478
1479      000000
1480
1481
1482
1483      000174
1484      000174 000000
1485      000176 000000
1486
1487      000200 000137 007132
1488      000204 000204
1489      000204 000137 007026
1490      000220 000220
1491      000220 000137 007006
1492      000230 000230
1493      000230 000137 007046
1494      000260 000260
1495      000260 000137 007070
1496      000270 000270
1497      000270 000137 007110
1498
1499
1500
1501
1502
1503      000274
1504      000046
1505      000046 043604
1506      000052 000052
1507      000052 100000
1508      000274
1509      001000
1510
1511
1512
1513
1514
1515      001000
1516      000024
1517      000024 000200
1518      000044 000044
1519      000044 001000
1520      001000
1521
1522
1523
1524
1525      001000
1526      001000 000000
1527      001002 001210
1528      001004 000430
1529      001006 001130
1530      001010 001130
1531      001012 000042

.SBTTL TRAP CATCHER
      =0
      ;*ALL UNUSED LOCATIONS FROM 4 - 776 CONTAIN A ".+2,HALT"
      ;*SEQUENCE TO CATCH ILLEGAL TRAPS AND INTERRUPTS
      ;*LOCATION 0 CONTAINS 0 TO CATCH IMPROPERLY LOADED VECTORS
      =174
DISPREG: .WORD 0      ;;SOFTWARE DISPLAY REGISTER
SWREG:   .WORD 0      ;;SOFTWARE SWITCH REGISTER
.SBTTL STARTING ADDRESS(ES)
      JMP 0*START ;;JUMP TO STARTING ADDRESS OF PROGRAM
      =204
      JMP BYT16      ;BYPASS N-SQUARE TEST IN DEFAULT MODE
      =220
      JMP PARSRT      ;INPUT ALL PARAMETERS & START TESTING
      =230
      JMP BYT16A      ;BYPASS N-SQUARE TEST IN PARAM MODE
      =260
      JMP MDTST        ;MODULE TESTS DEFAULT MODE ONLY
      =270
      JMP MDTSTA       ;BYPASS SEVERAL TESTS
                        ;SAME AS 260 & BYPASS N-SQUARE TEST ALSO

.SBTTL ACT11 HOOKS
      ;*****
      ;HOOKS REQUIRED BY ACT11
      $SVPC=          ;SAVE PC
      =46
      $ENDAD          ;;1)SET LOC.46 TO ADDRESS OF $ENDAD IN .SEOP
      =52
      .WORD 100000     ;;2)SET LOC.52 TO 100000
      =$$SVPC         ;; RESTORE PC
      =1000
.SBTTL APT PARAMETER BLOCK
      ;*****
      ;SET LOCATIONS 24 AND 44 AS REQUIRED FOR APT
      ;*****
      $X=             ;;SAVE CURRENT LOCATION
      =24             ;;SET POWER FAIL TO POINT TO START OF PROGRAM
      200             ;FOR APT START UP
      =44             ;POINT TO APT INDIRECT ADDRESS PNTR.
      $APTHDR         ;POINT TO APT HEADER BLOCK
      =.$X            ;RESET LOCATION COUNTER
      ;*****
      ;SETUP APT PARAMETER BLOCK AS DEFINED IN THE APT-PDP11 DIAGNOSTIC
      ;INTERFACE SPEC.
      $APTHD:
      $HIBTS: .WORD 0      ;;TWO HIGH BITS OF 18 BIT MAILBOX ADDR.
      $MBADR: .WORD $MAIL   ;;ADDRESS OF APT MAILBOX (BITS 0-15)
      $TSTM:  .WORD 280.    ;;RUN TIM OF LONGEST TEST
      $PASTM: .WORD 600.    ;;RUN TIME IN SECS. OF 1ST PASS ON 1 UNIT (QUICK VERIFY)
      $UNITM: .WORD 600.    ;;ADDITIONAL RUN TIME (SECS) OF A PASS FOR EACH ADDITIONAL UNIT
                        .WORD $ETEND-$MAIL/2 ;;LENGTH MAILBOX-ETABLE(WORDS)

```

.LIST MD

:USE LOOP X TO OMIT JSR PC, SUBCLR

: THIS MACRO FILLS EXPECTED MSG A0,B0,A1,B1,A2,B2 & B3 WITH STANDARD BITS SET
: A=D.DSC AFTER ATTN OR 0 AFTER DRIVE CLEAR OR ANY IMPLIED SEEKS
: NOTE: A CAN BE ANY BIT COMBINATION DESIRED: THIS MACRO ASSUMES DRIVE MSG A0,B0,A1,B1 WILL ALWAYS BE TESTED
: USE A,C,D,E FOR MSG A0,B0,A1,B1 ERROR NUMBERS RESP.
: USE G=T.A2 TO READ MSG A2 & PUT INFO INTO 'CYLDIF'
: H=T.B2 TO READ MSG B2 & PUT INFO INTO 'CYLADD'
: I=T.B3 TO READ MSG B3 & PUT INFO INTO 'SECTOR' & 'HEAD'

F= < ERROR DESCRIPTION>

: A=CYL DIFF/OFFSET ERROR #
: B=CYL ADDR ERROR #
: C= <ERROR DESCRIPTION>: SWR9 (LOOP ON ERROR) TEST A=BRANCH POINT TO RECONDITION DRIVE
: B=JMP POINT TO RE-ENTER MAIN LINE

: USE DRCLR X TO OMIT CHECKING MSG A0,B0,A1 & B1

: A=BLANK TO CHECK A0 THRU B2
: A=NON BLANK TO OMIT CHECKING A0 THRU B2
: D=BLANK TO CHECK A0 THRU B2 IN DRCLR
: D=NON-BLANK TO OMIT CHECKING A0 THRU B2 IN DRCLR

: IDAE IS CLEARED ONLY BY RECAL & DRIVE CLEAR

: A=C.FWD/D.REV

1588
1589
1590
1591
1592
1593
1594
1595
1596
1597
1598
1599
1600
1601
1602
1603
1604
1605
1606
1607
1608
1609
1610
1611
1612
1613
1614
1615
1616
1617
1618
1619
1620
1621
1622
1623
1624
1625
1626
1627
1628
1629
1630
1631
1632
1633
1634
1635
1636
1637
1638
1639
1640
1641
1642
1643

QUICK START SPINDLE.

QUICK SEEK. ENTER WITH CYL # IN RKDC

QUICK REPETITIVE SEEKS
A=INC/DEC CYL#
B=FINF VALUE OF CYL# BEFORE EXITING

QUICK UNLOAD
D=BLANK TO DO SUBCLR & LPCHK
D=NON-BLANK TO BYPASS

A=WRHEAD/(CFMT!WRHEAD)
USE WRHDR (A),X TO OMIT CHECKING AO,BO,A1,B1

A=RDHEAD/(CFMT!RDHEAD)
USE RDHDR (A),X TO OMIT CHECKING AO,BO,A1,B1

A=TOCYL/FRCYL
B=310 FOR TOCYL/311 FOR FRCYL

A=TOCYL/FRCYL , B=HEAD#, C = 0 FOR 22 SECTOR, 1 FOR 20 SECTOR

USE FSECA FS022,RDSEC,22 FOR 22 SECTOR FORMAT
USE FSECA FS020,R20SEC,20 FOR 20 SECTOR FORMAT.

USE FSECB FNS22,RDSEC,22 FOR 22 SECTOR FORMAT
USE FSECB FNS20,R20SEC,20 FOR 20 SECTOR FORMAT

USE SECTST FS022,FNS22,RDSEC FOR 22 SECTOR FORMAT
USE SECTST FS020,FNS20,R20SEC FOR 20 SECTOR FORMAT

G03

SECRET

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AF+ PARAMETER BLOCK

SEG 0032

```

:DETECT OUTER LIMIT: 100.D.REV.OUTER
:DETECT INNER LIMIT: 409.410.D.FWD INNER

```

H03

UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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APT PARAMETER BLOCK

SEQ 0033

1650
1651
1652
1653
1654
1655
1656
1657
1658
1659
1660
1661
1662
1663
1664
1665

:
: A=CYL#, B=HEAD#
:

:
: SEEK TO MAJOR CYL: 0.1, TEMP3, TEMP4, D.FWD, D.REV, ASL, 400, DEC, 0
: SEEK 0 TO ALL CYL: 0.1, TEMP3, TEMP4, D.FWD, D.REV, INC, 410, DEC, 0
: SEEK 410 TO ALL CYL: 410., 409., TEMP4, TEMP3, D.REV, D.FWD, DEC, 0, INC, 410.
:

.NLIST MD

.SBTTL COMMON TAGS

```

*****
*THIS TABLE CONTAINS VARIOUS COMMON STORAGE LOCATIONS
*USED IN THE PROGRAM.

```

```

1666
1667
1668
1669
1670
1671
1672
1673 001100 001100
1674 001100 000000
1675 001102 000
1676 001103 000
1677 001104 000000
1678 001106 000000
1679 001110 000000
1680 001112 000000
1681 001114 000
1682 001115 001
1683 001116 000000
1684 001120 000000
1685 001122 000000
1686 001124 000000
1687 001126 000000
1688 001130 000000
1689 001132 000000
1690 001134 000
1691 001135 000
1692 001136 000000
1693 001140 177570
1694 001142 177570
1695 001144 177560
1696 001146 177562
1697 001150 177564
1698 001152 177566
1699 001154 000
1700 001155 002
1701 001156 012
1702 001157 000
1703 001160 000000
1704 001162 000000
1705 001164 000000
1706 001166 000000
1707 001170 000000
1708 001172 000000
1709 001174 000000
1710 001176 000000
1711 001200 177607 000377
1712 001204 077
1713 001205 015
1714 001206 000012
1715
1716
1717
1718
1719
1720 001210
1721 001210 000000

```

.SMTAG: .S1100

```

$CMTAG: .WORD 0
$STNM: .BYTE 0
$ERFLG: .BYTE 0
$ICNT: .WORD 0
$LPADR: .WORD 0
$LPERR: .WORD 0
$ERTTL: .WORD 0
$ITEMB: .BYTE 0
$ERMAX: .BYTE 1
$ERRPC: .WORD 0
$GDADR: .WORD 0
$BDADR: .WORD 0
$GDDAT: .WORD 0
$BDDAT: .WORD 0
$AUTOB: .BYTE 0
$INTAG: .BYTE 0
$SWR: .WORD 0SWR
$DISP: .WORD 0DISP
$TKS: 177560
$TKB: 177562
$TPS: 177564
$TPB: 177566
$NULL: .BYTE 0
$FILLS: .BYTE 2
$FILLC: .BYTE 12
$TPFLG: .BYTE 0
$TMP0: .WORD 0
$TMP1: .WORD 0
$TMP2: .WORD 0
$TMP3: .WORD 0
$TMP4: .WORD 0
$TMP5: .WORD 0
$TIMES: 0
$ESCAPE: 0
$BELL: .ASCIIZ <207><377><377>
$QUES: .ASCII /?/
$CRLF: .ASCII <15>
$LF: .ASCIIZ <12>

```

;;START OF COMMON TAGS

```

;;CONTAINS THE TEST NUMBER
;;CONTAINS ERROR FLAG
;;CONTAINS SUBTEST ITERATION COUNT
;;CONTAINS SCOPE LOOP ADDRESS
;;CONTAINS SCOPE RETURN FOR ERRORS
;;CONTAINS TOTAL ERRORS DETECTED
;;CONTAINS ITEM CONTROL BYTE
;;CONTAINS MAX. ERRORS PER TEST
;;CONTAINS PC OF LAST ERROR INSTRUCTION
;;CONTAINS ADDRESS OF 'GOOD' DATA
;;CONTAINS ADDRESS OF 'BAD' DATA
;;CONTAINS 'GOOD' DATA
;;CONTAINS 'BAD' DATA
;;RESERVED--NOT TO BE USED

```

```

;;AUTOMATIC MODE INDICATOR
;;INTERRUPT MODE INDICATOR

```

```

;;ADDRESS OF SWITCH REGISTER
;;ADDRESS OF DISPLAY REGISTER
;;TTY KBD STATUS
;;TTY KBD BUFFER
;;TTY PRINTER STATUS REG. ADDRESS
;;TTY PRINTER BUFFER REG. ADDRESS
;;CONTAINS NULL CHARACTER FOR FILLS
;;CONTAINS # OF FILLER CHARACTERS REQUIRED
;;INSERT FILL CHARS. AFTER A "LINE FEED"
;;"TERMINAL AVAILABLE" FLAG (BIT<07>=0=YES)
;;USER DEFINED
;;USER DEFINED
;;USER DEFINED
;;USER DEFINED
;;USER DEFINED
;;USER DEFINED
;;MAX. NUMBER OF ITERATIONS
;;ESCAPE ON ERROR ADDRESS
;;CODE FOR BELL
;;QUESTION MARK
;;CARRIAGE RETURN
;;LINE FEED

```

.SBTTL APT MAILBOX-ETABLE

```

*****
.EVEN
$MAIL:
$MSGTY: .WORD AMSGTY ;;APT MAILBOX
;;MESSAGE TYPE CODE

```

J03

1722 001212 000000
1723 001214 000000
1724 001216 000000
1725 001220 000000
1726 001222 000000
1727 001224 000000
1728 001226 000000
1729 001230 000000
1730 001230 000
1731 001231 000
1732 001232 000000
1733 001234 000000
1734 001236 000000
1735
1736
1737
1738
1739
1740
1741 001240 000
1742 001241 000
1743
1744
1745
1746
1747 001242 000000
1748
1749 001244 000
1750 001245 000
1751 001246 000000
1752 001250 000
1753 001251 000
1754 001252 000000
1755 001254 000
1756 001255 000
1757 001256 000000
1758 001260 000000
1759 001262 000000
1760 001264 177440
1761 001266 000000
1762 001270 000000
1763 001272 000000
1764 001274 000000
1765 001276 000000
1766 001300 000000
1767 001302 000000
1768 001304 000000
1769 001306 000000
1770 001310 000000
1771 001312 000000
1772 001314
1773
1774 001314 177440
1775 001316 000210
1776 001316 000240
1777 001320 172540

\$FATAL: .WORD AFATAL
\$TESTN: .WORD ATESTN
\$PASS: .WORD APASS
\$DEVCT: .WORD ADEVCT
\$UNIT: .WORD AUNIT
\$MSGAD: .WORD AMSGAD
\$MSGLG: .WORD AMSGLG
\$ETABLE:
\$ENV: .BYTE AENV
\$ENVN: .BYTE AENVN
\$SWREG: .WORD ASWREG
\$USWR: .WORD AUSWR
\$CPUOP: .WORD ACPUOP
*
*
*
*
*
*
\$MAMS1: .BYTE AMAMS1
\$MTYP1: .BYTE AMTYP1
*
*
*
*
\$MADR1: .WORD AMADR1
*
\$MAMS2: .BYTE AMAMS2
\$MTYP2: .BYTE AMTYP2
\$MADR2: .WORD AMADR2
\$MAMS3: .BYTE AMAMS3
\$MTYP3: .BYTE AMTYP3
\$MADR3: .WORD AMADR3
\$MAMS4: .BYTE AMAMS4
\$MTYP4: .BYTE AMTYP4
\$MADR4: .WORD AMADR4
\$VECT1: .WORD AVECT1
\$VECT2: .WORD AVECT2
\$BASE: .WORD ABASE
\$DEVN: .WORD ADEVN
\$CDW1: .WORD ACDW1
\$CDW2: .WORD ACDW2
\$DDW0: .WORD ADDW0
\$DDW1: .WORD ADDW1
\$DDW2: .WORD ADDW2
\$DDW3: .WORD ADDW3
\$DDW4: .WORD ADDW4
\$DDW5: .WORD ADDW5
\$DDW6: .WORD ADDW6
\$DDW7: .WORD ADDW7
\$ETEND:
\$MEXIT
ABASE= 177440
RKVEC: 210
RKPRI: PR5
PKS: 172540

;; FATAL ERROR NUMBER
;; TEST NUMBER
;; PASS COUNT
;; DEVICE COUNT
;; I/O UNIT NUMBER
;; MESSAGE ADDRESS
;; MESSAGE LENGTH
;; APT ENVIRONMENT TABLE
;; ENVIRONMENT BYTE
;; ENVIRONMENT MODE BITS
;; APT SWITCH REGISTER
;; USER SWITCHES
;; CPU TYPE, OPTIONS
BITS 15-11=CPU TYPE
11/04=01, 11/05=02, 11/20=03, 11/40=04, 11/45=05
11/70=06, PDQ=07, Q=10
BIT 10=REAL TIME CLOCK
BIT 9=FLOATING POINT PROCESSOR
BIT 8=MEMORY MANAGEMENT
;; HIGH ADDRESS, M.S. BYTE
;; MEM. TYPE, BLK#1
MEM. TYPE BYTE -- (HIGH BYTE)
900 NSEC CORE=001
300 NSEC BIPOLAR=002
500 NSEC MOS=003
;; HIGH ADDRESS, BLK#1
MEM. LAST ADDR.=3 BYTES, THIS WORD AND LOW OF "TYPE" ABOVE
;; HIGH ADDRESS, M.S. BYTE
;; MEM. TYPE, BLK#2
;; MEM. LAST ADDRESS, BLK#2
;; HIGH ADDRESS, M.S. BYTE
;; MEM. TYPE, BLK#3
;; MEM. LAST ADDRESS, BLK#3
;; HIGH ADDRESS, M.S. BYTE
;; MEM. TYPE, BLK#4
;; MEM. LAST ADDRESS, BLK#4
;; INTERRUPT VECTOR#1, BUS PRIORITY#1
;; INTERRUPT VECTOR#2, BUS PRIORITY#2
;; BASE ADDRESS OF EQUIPMENT UNDER TEST
;; DEVICE MAP
;; CONTROLLER DESCRIPTION WORD#1
;; CONTROLLER DESCRIPTION WORD#2
;; DEVICE DESCRIPTOR WORD#0
;; DEVICE DESCRIPTOR WORD#1
;; DEVICE DESCRIPTOR WORD#2
;; DEVICE DESCRIPTOR WORD#3
;; DEVICE DESCRIPTOR WORD#4
;; DEVICE DESCRIPTOR WORD#5
;; DEVICE DESCRIPTOR WORD#6
;; DEVICE DESCRIPTOR WORD#7
;; DEFAULT BUSS ADDRESS
;; DEFAULT CONTROLLER INTERRUPT VECTOR
;; PRIORITY
;; P-CLOCK STATUS REG

K03

UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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APT MAILBOX-ETABLE

SEG 0036

1778	001322	172542	PKSB:	172542	;P-CLOCK SET BUFFER
1779	001324	172544	PKRB:	172544	;P-CLOCK READ BUFFER
1780	001326	177546	LKS:	177546	;L-CLOCK STATUS REG.
1781					
1782	001330	000100	LCVEC:	100	;L-CLOCK INTERRUPT VECTOR
1783	001332	000104	PCVEC:	104	;P-CLOCK INTERRUPT VECTOR.
1784					
1785		000114	MEMVEC=	114	;MEMORY PARITY VECTOR
1786		172100	MEMBAS=	172100	;MEMORY PARITY OPTION CSR START ADDR
1787	001334	000000	TRAPPC:	0	;PC FOR MEMORY CHECK ENABLE TRAP
1788					
1789	001336	000000	PARAM:	0	;1 FOR 220 OR 230 START, NO DEFAULT
1790	001340	000000	BYPT16:	0	;1 FOR 210, 230, 270 START
1791	001342	000000	MODTST:	0	;1 FOR 260 OR 270 START
1792	001344	000000	FTITLE:	0	;FLAG FOR PRINTING OUT 1ST PROGRAM TITLE
1793					
1794	001346	000000	DRVPTR:	0	;CONTAINS THE POINTER TO THE DRIVE FLAG
1795					; (DRIVO-DRIV7) OF THE DRIVE TO BE CHECKED NEXT.
1796	001350	000000	FRCYL:	0	;FROM CYL
1797	001352	000000	TOCYL:	0	;TO CYL
1798	001354	000000	CCYL:	0	;CURRENT CYL, USED IN N SQUARE TEST
1799	001356	000000	PCYL:	0	;PREV CYL., USED IN N SQUARE TEST
1800	001360	000000	CALDIF:	0	;CALC CYL DIFF USED IN N SQUARE TEST
1801	001362	000000	CYLDIF:	0	;CYL DIFF, RIGHT JUSTIFIED FROM RKMR3
1802	001364	000000	CYLADD:	0	;CYL ADDR, RIGHT JUSTIFIED FROM RKMR3
1803	001366	000000	CALADD:	0	;CYL ADDR, USED IN FHD TAB ROUTINE
1804					
1805	001370	000074	HZ:	60.	;60 FOR 60 CPS
1806					;50 FOR 50 CPS
1807	001372	000000	COUNT:	0	;LOADED TO 50 OR 60 TO COUNT TO 1 SEC
1808					;OR ANY OTHER NUMBER TO COUNT OFF FRACTIONAL SECOND
1809	001374	000000	SEC:	0	;SECOND COUNTER
1810	001376	000000	TIMUP:	0	;FLAG TO INDICATE TIME IS UP
1811	001400	000000	SECNT:	0	;SECTOR COUNT
1812	001402	000000	PSEC:	0	;PREVIOUS SECTOR
1813	001404	000000	ESEC:	0	;EXPECTED SECTOR
1814	001406	000000	SECTOR:	0	;SECTOR COUNT, RIGHT JUSTIFIED FROM RKMR3
1815					
1816	001410	000000	LPFLG:	0	;SET TO 0 TO RETURN TO \$LPADR
1817					;IF SW14 OR SW8 SET
1818					;SET TO 1 TO RETURN TO \$LPERR
1819					;IF SW9 SET
1820	001412	000001	T1:	1	;TIMEOUT CONSTANTS
1821	001414	000012	T10:	10.	
1822	001416	000144	T100:	100.	
1823	001420	000764	T500:	500.	
1824	001422	004704	T2500:	2500.	
1825	001424	011610	T5000:	5000.	
1826	001426	141520	T50000:	50000.	
1827					
1828	001430	000000	HEAD:	0	;HEAD NUMBER
1829	001432	000000	HEAD#:	0	;HEAD # FROM H.B3 RIGHT JUSTIFIED
1830	001434	000000	HD1:	0	;SHIFTED HEAD# FOR FORMATTER ROUTINE
1831	001436	000000	FORMAT:	0	;FORMAT TYPE
1832	001440	000000	FMT1:	0	;SHIFTED FORMAT FOR FORMATTER ROUTINE
1833	001442	000000	WDCNT:	0	;WORD COUNT

[illegible]

1890 003340 000000
 1891 003342 000000
 1892 003344 000000
 1893 003346 000000
 1894 003350 000000
 1895 003352 000000
 1896 003354 000000
 1897 003356 000000
 1898 003360 000000
 1899 003362 000000
 1900 003364 000000
 1901 003366 000000
 1902 003370 000000

HWC: 0
 HBA: 0
 HCA: 0
 HDS: 0
 HER: 0
 HASOF: 0
 HDC: 0
 HDB: 0
 HMR1: 0
 HMR2: 0
 HMR3: 0
 HPOS: 0
 HPAT: 0

;HOLD RKWC
 ;ETC.

1904 003372 000000
 1905 003374 000000
 1906 003376 000000
 1907 003400 000000
 1908 003402 000000

TEMP1: 0
 TEMP2: 0
 TEMP3: 0
 TEMP4: 0
 TEMP5: 0

;TEMPORARY STORAGE.

1909
 1910
 1911
 1912 003404 000000
 1913 003406 000000
 1914 003410 000000
 1915 003412 000000
 1916 003414 000000
 1917 003416 000000
 1918 003420 000000
 1919 003422 000000

; THE FOLLOWING ARE HOLDING REGISTERS FOR MSG A (0-3) & MSG B (0-3)

H.A0: 0
 H.B0: 0
 H.A1: 0
 H.B1: 0
 H.A2: 0
 H.B2: 0
 H.A3: 0
 H.B3: 0

1920
 1921
 1922
 1923 003424 000000
 1924 003426 000000
 1925 003430 000000
 1926 003432 000000
 1927 003434 000000
 1928 003436 000000
 1929 003440 000000
 1930 003442 000000

; THE FOLLOWING ARE 'EXPECTED' REGISTER FOR THE ABOVE

E.A0: 0
 E.B0: 0
 E.A1: 0
 E.B1: 0
 E.A2: 0
 E.B2: 0
 E.A3: 0
 E.B3: 0

1931
 1932
 1933
 1934
 1935 000001
 1936 000002
 1937 000004

; THE FOLLOWING ARE IDENTITIES FOR DRIVE MSG WORDS TO BE TESTED

T.A2=BIT0
 T.B2=BIT1
 T.B3=BIT2
 ;TEST MSG A2 IF SET

1938
 1939
 1940
 1941
 1942
 1943 003444 000000
 1944 003446 000000
 1945 003450 000000

; ALL THE FLAGS BELOW ARE CLEARED INITIALLY BY THE CLRFLG ROUTINE.

DDUMP: 0
 DCPCH: 0
 ACT11: 0
 ;FLAG - SET WHEN IN DDP DUMP MODE
 ;FLAG - SET WHEN IN DDP CHAIN MODE
 ;FLAG - SET WHEN IN ACT11 MODE OF OPERATION

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APT MAILBOX-ETABLE

SEQ 0039

1946	003452	000000	PPTP: 0	:FLAG - SET WHEN PROGRAM LOADED BY PAPER TAPE
1947	003454	000000	DRVS: 0	:CONTAINS THE NUMBER OF DRIVES PRESENT
1948				
1949				
1950				:THE FLAGS BELOW ARE SET TO 1 TO INDICATE THAT A PARTICULAR DRIVE
1951				:IS PRESENT AND IS TO BE TESTED.
1952	003456	000000	DRIV0: 0	:FLAG SET TO 1 WHEN DRIVE 0 PRESENT
1953	003460	000000	DRIV1: 0	:FOR DRIVE 1
1954	003462	000000	DRIV2: 0	:FOR DRIVE 2
1955	003464	000000	DRIV3: 0	:FOR DRIVE 3
1956	003466	000000	DRIV4: 0	:FOR DRIVE 4
1957	003470	000000	DRIV5: 0	:FOR DRIVE 5
1958	003472	000000	DRIV6: 0	:FOR DRIVE 6
1959	003474	000000	DRIV7: 0	:FOR DRIVE 7
1960				
1961	003476	000000	LCLKF: 0	:L-CLOCK FLAG PRESENT FLAG
1962	003500	000000	PCLKF: 0	:P-CLOCK FLAG PRESENT FLAG
1963	003502	000000	DOTIM: 0	:SET IF EITHER CLOCK PRESENT FOR TIMING TESTS.
1964	003504	000000	SIZFLG: 0	:SET IF DEFAULT DO SIZING IN TEST 1

.SBTTL ERROR POINTER TABLE

: * THIS TABLE CONTAINS THE INFORMATION FOR EACH ERROR THAT CAN OCCUR.
 : * THE INFORMATION IS OBTAINED BY USING THE INDEX NUMBER FOUND IN
 : * LOCATION \$ITEMB. THIS NUMBER INDICATES WHICH ITEM IN THE TABLE IS PERTINENT.
 : * NOTE1: IF \$ITEMB IS 0 THE ONLY PERTINENT DATA IS (\$ERRPC).
 : * NOTE2: EACH ITEM IN THE TABLE CONTAINS 4 POINTERS EXPLAINED AS FOLLOWS:

: *	EM	:: POINTS TO THE ERROR MESSAGE
: *	DH	:: POINTS TO THE DATA HEADER
: *	DT	:: POINTS TO THE DATA
: *	DF	:: POINTS TO THE DATA FORMAT

:ERRTR:

:ERROR 1

EM2
 DH1
 DT1
 DF1

:DR # IN RK0S2 CANNOT BE READ BACK CORRECTLY IN RKMR2

:ERROR 2

EM5
 DH1
 DT1
 DF1

:DETECTED MOS

:ERROR 3

EM6
 DH1
 DT1
 DF1

:DETECTED LIFE

:ERROR 4

EM7
 DH1
 DT1
 DF1

:DETECTED DRA & NED RESET (WRONG PORT SELECTED?)

:ERROR 5

EM8
 DH1
 DT1
 DF1

:DR PRESENT BUT NOT SPECIFIED BY OPERATOR

:ERROR 6

EM9
 DH1
 DT1
 DF1

:DR NOT PRESENT BUT SPECIFIED BY OPERATOR

:ERROR 7

EM10
 DH1
 DT1
 DF1

:ABORT TEST, COULD NOT REFERENCE CONTROLLER REGISTER

003506
 003506 057327
 003510 064066
 003512 066606
 003514 067240
 003516 057464
 003520 064066
 003522 066606
 003524 067240
 003526 057505
 003530 064066
 003532 066606
 003534 067240
 003536 057526
 003540 064066
 003542 066606
 003544 067240
 003546 057615
 003550 064066
 003552 066606
 003554 067240
 003556 057665
 003560 064066
 003562 066606
 003564 067240
 003566 057735
 003570 064066
 003572 066606
 003574 067240

2021			:ERROR 10	
2022			EM11	:DRA & NED BOTH SET
2023	003576	060000	DH1	
2024	003600	064066	DT1	
2025	003602	066606	DF1	
2026	003604	067240		
2027				
2028			:ERROR 11	
2029	003506	060044	EM12	:CONTROLLER NOT READY
2030	003610	064754	DH18	:AFTER UNLOAD CMD.
2031	003612	066606	DT1	
2032	003614	067334	DF10	
2033				
2034			:ERROR 12	
2035	003616	060075	EM13	:NO ATTN
2036	003620	064754	DH18	:AFTER UNLOAD CMD
2037	003622	066606	DT1	
2038	003624	067334	DF10	
2039			:ERROR 13	
2040	003626	060117	EM14	:WRONG ATTN
2041	003630	064754	DH18	
2042	003632	066606	DT1	
2043	003634	067334	DF10	
2044			:ERROR 14	
2045	003636	060144	EM15	:DRDY NOT CLEARED
2046	003640	064754	DH18	
2047	003642	066606	DT1	
2048	003644	067334	DF10	
2049			:ERROR 15	
2050	003646	060176	EM16	:DSC NOT SET
2051	003650	064754	DH18	
2052	003652	066606	DT1	
2053	003654	067334	DF10	
2054			:ERROR 16	
2055	003656	060223	EM17	:MSG A0 ERROR
2056	003660	064354	DH8	:IN UNLD
2057	003662	067054	DT13	
2058	003664	067454	DF20	
2059			:ERROR 17	
2060	003666	060236	EM18	:MSG B0 ERROR
2061	003670	064354	DH8	:IN UNLD
2062	003672	067054	DT13	
2063	003674	067454	DF20	
2064			:ERROR 20	
2065	003676	060251	EM19	:MSG A1 ERROR
2066	003700	064354	DH8	:IN UNLD
2067	003702	067054	DT13	
2068	003704	067454	DF20	
2069			:ERROR 21	
2070	003706	060264	EM20	:MSG B1 ERROR
2071	003710	064354	DH8	:IN UNLD
2072	003712	067054	DT13	
2073	003714	067454	DF20	
2074			:ERROR 22	
2075	003716	061614	EM46	:MSG A2 ERROR
2076	003720	064354	DH8	:IN UNLD

2077	003722	067114	DT14	
2078	003724	067520	DF22	
2079			:ERROR 23	
2080	003726	061627	EM47	:MSG B2 ERROR
2081	003730	064354	DH8	:IN UNLD
2082	003732	067114	DT14	
2083	003734	067520	DF22	
2084				
2085			:ERROR 24	
2086	003736	060277	EM21	:CERR SET
2087	003740	065043	DH21	:AFTER SCLR
2088	003742	066606	DT1	
2089	003744	067334	DF10	
2090			:ERROR 25	
2091	003746	060321	EM22	:RLS DID NOT SET CERR
2092	003750	064066	DH1	
2093	003752	066606	DT1	
2094	003754	067240	DF1	
2095				
2096			:ERROR 26	
2097	003756	060360	EM23	:SACK SET AFTER RLS SENT
2098	003760	064066	DH1	
2099	003762	066606	DT1	
2100	003764	067240	DF1	
2101				
2102			:ERROR 27	
2103	003766	060440	EM24	:VCL VALID NOT SET
2104	003770	064775	DH19	:AFTER PACK CMD
2105	003772	066606	DT1	
2106	003774	067334	DF10	
2107			:ERROR 30	
2108	003776	060464	EM25	:DRIVE TYPE SET IN MR2
2109	004000	064066	DH1	
2110	004002	066606	DT1	
2111	004004	067240	DF1	
2112			:ERROR 31	
2113	004006	060512	EM26	:DDT SET IN RKDS
2114	004010	064066	DH1	
2115	004012	066606	DT1	
2116	004014	067240	DF1	
2117			:ERROR 32	
2118	004016	060532	EM27	:DTYE SET IN RKER
2119	004020	064066	DH1	
2120	004022	066606	DT1	
2121	004024	067240	DF1	
2122			:ERROR 33	
2123	004026	060553	EM28	:DTYE NOT SET IN RKER
2124	004030	064066	DH1	
2125	004032	066606	DT1	
2126	004034	067240	DF1	
2127			:ERROR 34	
2128	004036	060600	EM29	:DTYE DID NOT SET CERR
2129	004040	064066	DH1	
2130	004042	066606	DT1	
2131	004044	067240	DF1	
2132			:ERROR 35	

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 ERROR POINTER TABLE

SEQ 0043

2133	004046	060647	EM30	:C-D PARITY ERROR SET IN MR3
2134	004050	064066	DH1	
2135	004052	066606	DT1	
2136	004054	067240	DF1	
2137			:ERROR 36	
2138	004056	060700	EM31	:D-C PARITY SET IN CS1
2139	004060	064066	DH1	
2140	004062	066606	DT1	
2141	004064	067240	DF1	
2142			:ERROR 37	
2143	004066	060725	EM32	:FAULT NOT SET IN MR3
2144	004070	064066	DH1	
2145	004072	066606	DT1	
2146	004074	067240	DF1	
2147			:ERROR 40	
2148	004076	060752	EM33	:C-D PARITY ERROR NOT SET IN MR3
2149	004100	064066	DH1	
2150	004102	066606	DT1	
2151	004104	067240	DF1	
2152			:ERROR 41	
2153	004106	061007	EM34	:D-C PARITY NOT SET IN CS1
2154	004110	064066	DH1	
2155	004112	066606	DT1	
2156	004114	067240	DF1	
2157			:ERROR 42	
2158	004116	061040	EM35	:DCPAR DID NOT SET CERR
2159	004120	064066	DH1	
2160	004122	066606	DT1	
2161	004124	067240	DF1	
2162			:ERROR 43	
2163	004126	061113	EM36	:CYL ADDR IN B2 NOT = RKDC
2164	004130	064642	DH14	:AFTER SEEK WITH BAD PARITY
2165	004132	067114	DT14	
2166	004134	067520	DF22	
2167			:ERROR 44	
2168	004136	061153	EM37	:CYL DIFF IN A2 NOT=RKDC
2169	004140	064642	DH14	
2170	004142	067114	DT14	
2171	004144	067520	DF22	
2172			:ERROR 45	
2173	004146	061113	EM36	:CYL ADDR IN RKMR3 NOT=RKDC
2174	004150	064642	DH14	
2175	004152	066652	DT4	
2176	004154	067320	DF6	
2177			:ERROR 46	
2178	004156	061213	EM38	:CYL DIFF IN RKMR2 NOT=CALDIF
2179	004160	064642	DH14	
2180	004162	066652	DT4	
2181	004164	067320	DF6	
2182			:ERROR 47	
2183	004166	061264	EM39	:CYL DIFF/OFFSET IN RKMR2 NOT CLEARED
2184	004170	064734	DH17	:AFTER RECAL CMD
2185	004172	067114	DT14	
2186	004174	067520	DF22	
2187			:ERROR 50	
2188	004176	061321	EM40	:CYL ADDR IN RKMR3 NOT CLEARED

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ERROR POINTER TABLE

SEG 0044

2189	004200	064734	DH17	:AFTER .RECAL CMD
2190	004202	067114	DT14	
2191	004204	067520	DF22	
2192			:ERROR 51	
2193	004206	060223	EM17	:AO ERROR
2194	004210	065157	DH26	:AFTER READ DATA CMD
2195	004212	067054	DT13	
2196	004214	067454	DF20	
2197			:ERROR 52	
2198	004216	060236	EM18	:BO ERROR
2199	004220	065157	DH26	
2200	004222	067054	DT13	
2201	004224	067454	DF20	
2202			:ERROR 53	
2203	004226	061410	EM43	:HEAD DECODE IN B3 NOT CLEARED
2204	004230	064734	DH17	:AFTER RECAL CMD
2205	004232	067164	DT15	
2206	004234	067554	DF23	
2207			:ERROR 54	
2208	004236	061437	EM44	:B3 HEAD DECODE INCORRECT
2209	004240	064672	DH16	
2210	004242	067164	DT15	
2211	004244	067554	DF23	
2212			:ERROR 55	
2213	004246	060075	EM13	:NO ATTN
2214	004250	064734	DH17	:AFTER RECAL CMD
2215	004252	066606	DT1	
2216	004254	067334	DF10	
2217			:ERROR 56	
2218	004256	062561	EM64	:MSG B3 HEAD REG NOT CLEARED
2219	004260	064354	DH8	:IN UNLOAD
2220	004262	067164	DT15	
2221	004264	067554	DF23	
2222			:ERROR 57	
2223	004266	060223	EM17	:MSG AO ERROR
2224	004270	064400	DH9	:AFTER START SPINDLE CMD REC'D BY DRIVE
2225	004272	067054	DT13	
2226	004274	067454	DF20	
2227			:ERROR 60	
2228	004276	060236	EM18	:MSG BO ERROR
2229	004300	064400	DH9	
2230	004302	067054	DT13	
2231	004304	067454	DF20	
2232			:ERROR 61	
2233	004306	060251	EM19	:MSG A1 ERROR
2234	004310	064400	DH9	
2235	004312	067054	DT13	
2236	004314	067454	DF20	
2237			:ERROR 62	
2238	004316	060264	EM20	:MSG B1 ERROR
2239	004320	064400	DH9	
2240	004322	067054	DT13	
2241	004324	067454	DF20	
2242			:ERROR 63	
2243	004326	060223	EM17	
2244	004330	064444	DH10	:AT END OF HEAD LOADING

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JNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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ERROR POINTER TABLE

SEG 0045

2245	004332	067054	DT13
2246	004334	067454	DF20
2247			;ERROR 64
2248	004336	060236	EM18
2249	004340	064444	DH10
2250	004342	067054	DT13
2251	004344	067454	DF20
2252			;ERROR 65
2253	004346	060251	EM19
2254	004350	064444	DH10
2255	004352	067054	DT13
2256	004354	067454	DF20
2257			;ERROR 66
2258	004356	060264	EM20
2259	004360	064444	DH10
2260	004362	067054	DT13
2261	004364	067454	DF20
2262			;ERROR 67
2263	004366	060075	EM13
2264	004370	064444	DH10
2265	004372	066606	DT1
2266	004374	067334	DF10
2267			;ERROR 70
2268	004376	061743	EM50
2269	004400	064066	DH1
2270	004402	066606	DT1
2271	004404	067240	DF1
2272			;ERROR 71
2273	004406	060223	EM17
2274	004410	064473	DH11
2275	004412	067054	DT13
2276	004414	067454	DF20
2277			;ERROR 72
2278	004416	060236	EM18
2279	004420	064473	DH11
2280	004422	067054	DT13
2281	004424	067454	DF20
2282			;ERROR 73
2283	004426	060251	EM19
2284	004430	064473	DH11
2285	004432	067054	DT13
2286	004434	067454	DF20
2287			;ERROR 74
2288	004436	060264	EM20
2289	004440	064473	DH11
2290	004442	067054	DT13
2291	004444	067454	DF20
2292			;ERROR 75
2293	004446	062014	EM51
2294	004450	064066	DH1
2295	004452	066606	DT1
2296	004454	067240	DF1
2297			;ERROR 76
2298	004456	060223	EM17
2299	004460	064532	DH12
2300	004462	067054	DT13

;NO ATTN
;AT END OF HEAD LOADING.;FWD NOT SET WITHIN 60 SEC FROM
;START SPINDLE CMD.

;AFTER START SPINDLE CMD & FWD SET.

;FWD NOT CLEARED WITHIN 5 SEC OF MOTION
;FROM START SPINDLE CMD.

;AT INNER LIMIT FROM START SPINDLE CMD.

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UNIBUS RKO6 DRIVE DIAGNOSTIC PART 1
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ERROR POINTER TABLE

SEG 0046

2301	004464	067454	DF20
2302			:ERROR 77
2303	004466	060236	EM18
2304	004470	064532	DH12
2305	004472	067054	DT13
2306	004474	067454	DF20
2307			:ERROR 100
2308	004476	060251	EM19
2309	004500	064532	DH12
2310	004502	067054	DT13
2311	004504	067454	DF20
2312			:ERROR 101
2313	004506	060264	EM20
2314	004510	064532	DH12
2315	004512	067054	DT13
2316	004514	067454	DF20
2317			:ERROR 102
2318	004516	061655	EM49
2319	004520	064066	DH1
2320	004522	066606	DT1
2321	004524	067240	DF1
2322			:ERROR 103
2323	004526	060223	EM17
2324	004530	064573	DH13
2325	004532	067054	DT13
2326	004534	067454	DF20
2327			:ERROR 104
2328	004536	060236	EM18
2329	004540	064573	DH13
2330	004542	067054	DT13
2331	004544	067454	DF20
2332			:ERROR 105
2333	004546	060251	EM19
2334	004550	064573	DH13
2335	004552	067054	DT13
2336	004554	067454	DF20
2337			:ERROR 106
2338	004556	060264	EM20
2339	004560	064573	DH13
2340	004562	067054	DT13
2341	004564	067454	DF20
2342			:ERROR 107
2343	004566	061473	EM45
2344	004570	064066	DH1
2345	004572	066606	DT1
2346	004574	067240	DF1
2347			:ERROR 110
2348	004576	060223	EM17
2349	004600	064642	DH14
2350	004602	067114	DT14
2351	004604	067520	DF22
2352			:ERROR 111
2353	004606	060236	EM18
2354	004610	064642	DH14
2355	004612	067114	DT14
2356	004614	067520	DF22

:FWD NOT SET WITHIN 4 SEC IN RTZ PORTION
:OF START SPIN CMD.

:FROM OUTER LIMIT TO CYL 0 DURING LOADING

:DRIVE READY NOT SET WITHIN 1 SEC
:FROM FWD IN RTZ PORTION OF START SPIN CMD.

:MSG A0 ERROR
:AFTER SEEK WITH BAD PARITY

:MSG B0 ERROR
:AFTER SEEK WITH BAD PARITY

2357			:ERROR 112	
2358	004616	060251	EM19	:A1 ERROR
2359	004620	065157	DH26	:AFTER READ DATA CMD
2360	004622	067054	DT13	
2361	004624	067454	DF20	
2362			:ERROR 113	
2363	004626	060264	EM20	:B1 ERROR
2364	004630	065157	DH26	
2365	004632	067054	DT13	
2366	004634	067454	DF20	
2367			:ERROR 114	
2368	004636	060223	EM17	
2369	004640	064672	DH16	:AFTER LOADING HEAD REGISTER & SEEK CMD
2370	004642	067054	DT13	
2371	004644	067454	DF20	
2372			:ERROR 115	
2373	004646	060236	EM18	
2374	004650	064672	DH16	
2375	004652	067054	DT13	
2376	004654	067454	DF20	
2377			:ERROR 116	
2378	004656	060044	EM12	:CONT NOT RDY
2379	004660	064775	DH19	:AFTER PACK CMD
2380	004662	066606	DT1	
2381	004664	067334	DF10	
2382			:ERROR 117	
2383	004666	060044	EM12	:CONT NOT RDY
2384	004670	065014	DH20	:AFTER SEL DR CMD
2385	004672	066606	DT1	
2386	004674	067334	DF10	
2387			:ERROR 120	
2388	004676	060044	EM12	
2389	004700	065043	DH21	:AFTER SUBSYS CLEAR
2390	004702	066606	DT1	
2391	004704	067334	DF10	
2392			:ERROR 121	
2393	004706	060044	EM12	
2394	004710	064400	DH9	:AFTER START SPINDLE CMD
2395	004712	066606	DT1	
2396	004714	067334	DF10	
2397			:ERROR 122	
2398	004716	060044	EM12	
2399	004720	064642	DH14	:AFTER SEEK WITH BAD PARITY
2400	004722	066606	DT1	
2401	004724	067334	DF10	
2402			:ERROR 123	
2403	004726	063672	EM88	:NO DRIVES FOUND
2404	004730	064066	DH1	
2405	004732	066606	DT1	
2406	004734	067240	DF1	
2407			:ERROR 124	
2408	004736	060044	EM12	
2409	004740	064734	DH17	:AFTER RECAL CMD
2410	004742	066606	DT1	
2411	004744	067334	DF10	
2412			:ERROR 125	

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ERROR POINTER TABLE

SEQ 0048

2413	004746	060075	EM13	;NO ATTN
2414	004750	064642	DH14	;FROM SEEK WITH BAD PARITY
2415	004752	066606	DT1	
2416	004754	067334	DF10	
2417			:ERROR 126	
2418	004756	063763	EM89	;NO DRVS FOUND IN DEVICE MAP
2419	004760	064066	DH1	
2420	004762	066606	DT1	
2421	004764	067240	DF1	
2422			:ERROR 127	
2423	004766	061264	EM39	;CYL DIFF/OFFSET IN RKMR2 NOT CLEARED
2424	004770	065043	DH21	;AFTER SCLR
2425	004772	066606	DT1	
2426	004774	067334	DF10	
2427			:ERROR 130	
2428	004776	061321	EM40	;CYL ADDR IN RKMR3 NOT CLEARED
2429	005000	065043	DH21	
2430	005002	066606	DT1	
2431	005004	067334	DF10	
2432			:ERROR 131	
2433	005006	060044	EM12	;NO RDY
2434	005010	065140	DH25	;AFTER SEEK CMD
2435	005012	066606	DT1	
2436	005014	067334	DF10	
2437			:ERROR 132	
2438	005016	060075	EM13	;NO ATTN
2439	005020	065140	DH25	
2440	005022	066606	DT1	
2441	005024	067334	DF10	
2442			:ERROR 133	
2443	005026	060223	EM17	;MSG A0 ERROR
2444	005030	065140	DH25	
2445	005032	067054	DT13	
2446	005034	067454	DF20	
2447			:ERROR 134	
2448	005036	060236	EM18	;MSG B0 ERROR
2449	005040	065140	DH25	
2450	005042	067054	DT13	
2451	005044	067454	DF20	
2452			:ERROR 135	
2453	005046	060251	EM19	;MSG A1 ERROR
2454	005050	065140	DH25	
2455	005052	067054	DT13	
2456	005054	067454	DF20	
2457			:ERROR 136	
2458	005056	060264	EM20	;MSG B1 ERROR.
2459	005060	065140	DH25	
2460	005062	067054	DT13	
2461	005064	067454	DF20	
2462			:ERROR 137	
2463	005066	061264	EM39	;CYL DIFF/OFFSET IN A2 NOT CLEARED
2464	005070	065140	DH25	
2465	005072	067114	DT14	
2466	005074	067520	DF22	
2467			:ERROR 140	
2468	005076	061321	EM40	;CYL ADDR IN B2 NOT CLEARED

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ERROR POINTER TABLE

SEG 0049

2469	005100	065140	DH25	
2470	005102	067114	DT14	
2471	005104	067520	DF22	
2472			:ERROR 141	
2473	005106	062114	EM52	;20 SECTOR FORMAT NOT SET IN RKMR2
2474	005110	064066	DH1	
2475	005112	066606	DT1	
2476	005114	067240	DF1	
2477			:ERROR 142	
2478	005116	062153	EM53	;SECTOR 0 NOT FOUND WITHIN 50 MS
2479	005120	064066	DH1	
2480	005122	066606	DT1	
2481	005124	067240	DF1	
2482			:ERROR 143	
2483	005126	062204	EM54	;DIFF SECTOR NOT FOUND WITHIN 3MS
2484	005130	064066	DH1	
2485	005132	066606	DT1	
2486	005134	067240	DF1	
2487			:ERROR 144	
2488	005136	061644	EM48	;MSG B3 ERROR
2489	005140	065532	DH34	;SECTOR REG UNSTABLE
2490	005142	066606	DT1	
2491	005144	067334	DF10	

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ERROR POINTER TABLE

SEG COSC

2492			;ERROR 145	
2493	005146	061642	EM48	
2494	005150	065526	DH35	;BETWEEN SECTOR COUNTS
2495	005152	066714	DT6	
2496	005154	067350	DF12	
2497			;ERROR 146	
2498	005156	060251	EM19	;MSG A1 ERROR
2499	005160	064642	DH14	;AFTER SEEK WITH BAD PARITY
2500	005162	067114	DT14	
2501	005164	067520	DF22	
2502			;ERROR 147	
2503	005166	060264	EM20	;MSG B1 ERROR
2504	005170	064642	DH14	
2505	005172	067114	DT14	
2506	005174	067520	DF22	
2507			;ERROR 150	
2508	005176	060251	EM19	;MSG A1 ERROR
2509	005200	065636	DH37	
2510	005202	066606	DT1	
2511	005204	067334	DF10	
2512			;ERROR 151	
2513	005206	060044	EM12	;NO RDY
2514	005210	065071	DH22	;AFTER CLEAR CMD
2515	005212	066606	DT1	
2516	005214	067334	DF10	
2517			;ERROR 152	
2518	005216	000000	0	
2519	005220	000000	0	
2520	005222	000000	0	
2521	005224	000000	0	
2522			;ERROR 153	
2523	005226	000000	0	
2524	005230	000000	0	
2525	005232	000000	0	
2526	005234	000000	0	
2527			;ERROR 154	
2528	005236	062237	EM55	;ATTN NOT CLEARED
2529	005240	065071	DH22	
2530	005242	066606	DT1	
2531	005244	067334	DF10	
2532			;ERROR 155	
2533	005246	063527	EM85	;IDAE NOT CLEARED
2534	005250	064734	DH17	;AFTER RECAL CMD
2535	005252	066606	DT1	
2536	005254	067334	DF10	
2537			;ERRCR 156	
2538	005256	060044	EM12	;CONT NOT READY
2539	005260	066436	DH51	;AFTER SEEK TO SELF
2540	005262	066606	DT1	
2541	005264	067334	DF10	
2542			;ERROR 157	
2543	005266	060075	EM13	;NO ATTN
2544	005270	066436	DH51	
2545	005272	066606	DT1	
2546	005274	067334	DF10	
2547			;ERROR 160	

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ERROR POINTER TABLE

SEQ 005!

2548	005276	062417	EM59	:LIMIT DETECT NOT FOUND
2549	005300	064066	DH1	
2550	005302	066606	DT1	
2551	005304	067243	DF1	
2552			:ERROR 161	
2553	005306	060223	EM17	:MSG A0 ERROR
2554	005310	065702	DH38	:AFTER LIMIT DETECT
2555	005312	067054	DT13	
2556	005314	067454	DF20	
2557			:ERROR 162	
2558	005316	060236	EM18	:MSG B0 ERROR
2559	005320	065702	DH38	
2560	005322	067054	DT13	
2561	005324	067454	DF20	
2562			:ERROR 163	
2563	005326	060251	EM19	:MSG A1 ERROR
2564	005330	065702	DH38	
2565	005332	067054	DT13	
2566	005334	067454	DF20	
2567			:ERROR 164	
2568	005336	060264	EM20	:MSG B1 ERROR
2569	005340	065702	DH38	
2570	005342	067054	DT13	
2571	005344	067454	DF20	
2572			:ERROR 165	
2573	005346	060075	EM13	:NO ATTN
2574	005350	065702	DH38	
2575	005352	066606	DT1	
2576	005354	067334	DF10	
2577			:ERROR 166	
2578	005356	062450	EM60	:HEADS HOME NOT FOUND
2579	005360	065702	DH38	
2580	005362	066606	DT1	
2581	005364	067334	DF10	
2582			:ERROR 167	
2583	005366	062504	EM61	:LOAD HEADS NOT FOUND
2584	005370	065702	DH38	
2585	005372	066606	DT1	
2586	005374	067334	DF10	
2587			:ERROR 170	
2588	005376	063036	EM72	:FORMAT TEST BYPASSED
2589	005400	066155	DH45	:LIMIT DETECT ERROR ON PREVIOUS TEST
2590	005402	066606	DT1	
2591	005404	067424	DF16	
2592			:ERROR 171	
2593	005406	060044	EM12	:NO RDY
2594	005410	065345	DH30	:AFTER READ HEADER CMD
2595	005412	066606	DT1	
2596	005414	067334	DF10	
2597			:ERROR 172	
2598	005416	061264	EM39	:CYL DIFF/OFFSET NOT CLEARED
2599	005420	065345	DH30	:AFTER READ HEADER CMD
2600	005422	067114	DT14	
2601	005424	067520	DF22	
2602			:ERROR 173	
2603	005426	062540	EM63	:DLT SET

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ERROR POINTER TABLE

SEQ 0052

2604	005430	065345
2605	005432	066672
2606	005434	067410
2607		
2608	005436	060277
2609	005440	065345
2610	005442	066672
2611	005444	067410
2612		
2613	005446	061264
2614	005450	064444

	DH30
	DT5
	DF15
:ERROR 174	
	EM21
	DH30
	DT5
	DF15
:ERROR 175	
	EM39
	DH10

;CERR SET

;CYL DIFF NOT CLEARED
;AT END OF HEAD LOADING

2615	005452	067114	DT14	
2616	005454	067520	DF22	
2617			:ERROR 176	
2618	005456	061321	EM40	:CYL ADDR NOT CLEARED.
2619	005460	064444	DH10	
2620	005462	067114	DT14	
2621	005464	067520	DF22	
2622			:ERROR 177	
2623	005466	063036	EM72	:FORMAT TEST BYPASSED
2624	005470	066231	DH46	:COULD NOT READ BSE INFO
2625	005472	066606	DT1	
2626	005474	067424	DF16	
2627			:ERROR 200	
2628	005476	060044	EM12	:NO RDY
2629	005500	065720	DH39	:AFTER WRITE HEADER CMD
2630	005502	066672	DT5	
2631	005504	067364	DF13	
2632			:ERROR 201	
2633	005506	060277	EM21	:CERR SET
2634	005510	065720	DH39	
2635	005512	066672	DT5	
2636	005514	067364	DF13	
2637			:ERROR 202	
2638	005516	062610	EM65	:READ HEADER ERROR
2639	005520	064066	DH1	
2640	005522	066734	DT7	
2641	005524	067400	DF14	
2642			:ERROR 203	
2643	005526	060223	EM17	:MSG AD ERROR
2644	005530	065462	DH33	:DURING SEEK CMD
2645	005532	067054	DT13	
2646	005534	067454	DF20	
2647			:ERROR 204	
2648	005536	060236	EM18	:MSG BC ERROR
2649	005540	065462	DH33	
2650	005542	067054	DT13	
2651	005544	067454	DF20	
2652			:ERROR 205	
2653	005546	060251	EM19	:MSG A1 ERROR
2654	005550	065462	DH33	
2655	005552	067054	DT13	
2656	005554	067454	DF20	
2657			:ERROR 206	
2658	005556	060264	EM20	:MSG B1 ERROR
2659	005560	065462	DH33	
2660	005562	067054	DT13	
2661	005564	067454	DF20	
2662			:ERROR 207	
2663	005566	061113	EM36	:CYL ADDR IN RKMR3 INCORRECT
2664	005570	065140	DH25	:AFTER SEEK CMD
2665	005572	066652	DT4	
2666	005574	067320	DF6	
2667			:ERROR 210	
2668	005576	060277	EM21	:CERR SET
2669	005600	065140	DH25	
2670	005602	066606	DT1	

2671	005604	067334	DF10	
2672			:ERROR 211	
2673	005606	062664	EM67	:READ CYL 0 HEADERS ON CYL 1
2674	005610	065140	DH25	
2675	005612	066606	DT1	
2676	005614	067334	DF10	
2677			:ERROR 212	
2678	005616	061213	EM38	:CYL DIFF IN RKMR2 NOT = CALDIF
2679	005620	065462	DH33	:DURING SEEK CMD
2680	005622	066652	DT4	
2681	005624	067320	DF6	
2682			:ERROR 213	
2683	005626	060223	EM17	:MSG A0 ERROR
2684	005630	066024	DH41	:DURING RECAL CMD
2685	005632	067054	DT13	
2686	005634	067454	DF20	
2687			:ERROR 214	
2688	005636	060236	EM18	:MSG B0 ERROR
2689	005640	06E024	DH41	
2690	005642	067054	DT13	
2691	005644	067454	DF20	
2692			:ERROR 215	
2693	005646	060251	EM19	:MSG A1 ERROR
2694	005650	066024	DH41	
2695	005652	067054	DT13	
2696	005654	067454	DF20	
2697			:ERROR 216	
2698	005656	060264	EM20	:MSG B1 ERROR
2699	005660	06E024	DH41	
2700	005662	067054	DT13	
2701	005664	067454	DF20	
2702			:ERROR 217	
2703	005666	061213	EM38	:CYL DIFF IN RKMR2 NOT=CALDIF
2704	005670	06E024	DH41	
2705	005672	066652	DT4	
2706	005674	067320	DF6	
2707			:ERROR 220	
2708	005676	060277	EM21	:CERR SET
2709	005700	064734	DH17	:AFTER RECAL CMD
2710	005702	066606	DT1	
2711	005704	067334	DF10	
2712			:ERROR 221	
2713	005706	060223	EM17	:MSG A0 ERROR
2714	005710	064734	DH17	
2715	005712	067054	DT13	
2716	005714	067454	DF20	
2717			:ERROR 222	
2718	005716	060251	EM19	:MSG A1 ERROR
2719	005720	064734	DH17	
2720	005722	067054	DT13	
2721	005724	067454	DF20	
2722			:ERROR 223	
2723	005726	061264	EM39	:CYL DIFF/OFFSET IN RKMR2 NOT CLEARED
2724	005730	064734	DH17	
2725	005732	066606	DT1	
2726	005734	067334	DF10	

2727			:ERROR 224	
2728	005736	062630	EM66	:CYL ADDR IN RkMR3 INCORRECT
2729	005740	064734	DH17	
2730	005742	066606	DT1	
2731	005744	067334	DF10	
2732			:ERROR 225	
2733	005746	062723	EM68	:READING CYL 1 HEADERS ON CYL 0
2734	005750	064734	DH17	
2735	005752	066606	DT1	
2736	005754	067334	DF10	
2737			:ERROR 226	
2738	005756	060044	EM12	:NO RDY
2739	005760	065157	DH26	:AFTER READ DATA CMD
2740	005762	066606	DT1	
2741	005764	067334	DF10	
2742			:ERROR 227	
2743	005766	060277	EM21	:CERR SET
2744	005770	065157	DH26	
2745	005772	066672	DT5	
2746	005774	067410	DF15	
2747			:ERROR 230	
2748	005776	063645	EM87	:CANT READ BSE INFO
2749	006000	066536	DH53	:ON SECT 10,12,14,16,18,20
2750	006002	066606	DT1	
2751	006004	067434	DF17	
2752			:ERROR 231	
2753	006006	000000	0	
2754	006010	000000	0	
2755	006012	000000	0	
2756	006014	000000	0	
2757			:ERROR 232	
2758	006016	061113	EM36	:CYL ADDR IN RkMR3 NOT=RKDC
2759	006020	065140	DH25	:AFTER SEEK CMD
2760	006022	066630	DT3	
2761	006024	067304	DF5	
2762			:ERROR 233	
2763	006026	063645	EM87	:CANNOT READ BSE INFO
2764	006030	066045	DH42	:ON SECT 0,2,4,6,8
2765	006032	066606	DT1	
2766	006034	067434	DF17	
2767			:ERROR 234	
2768	006036	000000	0	
2769	006040	000000	0	
2770	006042	000000	0	
2771	006044	000000	0	
2772			:ERROR 235	
2773	006046	062762	EM69	:ALIGN CARTRIDGE USED
2774	006050	066105	DH44	:WILL BYPASS FORMAT & ALL R/W TESTS
2775	006052	066606	DT1	
2776	006054	067334	DF10	
2777			:ERROR 236	
2778	006056	062272	EM56	:UNEXP MEM PARITY TRAP
2779	006060	065117	DH23	:TEST #, TRAP PC
2780	006062	067030	DT11	
2781	006064	067270	DF3	
2782			:ERROR 237	

2783	006066	063015	EM71	:DSC SET
2784	006070	065071	DH22	:AFTER DRIVE CLEAR CMD
2785	006072	066606	DT1	
2786	006074	067334	DF10	
2787			:ERROR 240	
2788	006076	062723	EM68	:READ CYL 1 HEADERS ON CYL 0
2789	006100	064734	DH17	:AFTER RECAL CMD
2790	006102	066606	DT1	
2791	006104	067334	DF10	
2792			:ERROR 241	
2793	006106	061113	EM36	:RKMR3 NOT = RKDC
2794	006110	064642	DH14	:AFTER SEEK WITH BAD PARITY
2795	006112	066754	DT8	
2796	006114	067320	DF6	
2797			:ERROR 242	
2798	006116	061213	EM38	:CYL DIFF IN RKMR2 INCORRECT
2799	006120	064642	DH14	
2800	006122	066754	DT8	
2801	006124	067320	DF6	
2802			:ERROR 243	
2803			EM36	:CYL ADDR IN RKMR3 INCORRECT
2804	006126	061113	DH25	:AFTER SEEK CMD
2805	006130	065140	DT8	
2806	006132	066754	DF6	
2807	006134	067320	:ERROR 244	
2808			EM74	:RTZ NOT SET
2809	006136	063104	DH41	:DURING RECAL CMD
2810	006140	066024	DT1	
2811	006142	066606	DF10	
2812	006144	067334	:ERROR 245	
2813			EM13	:NO ATTN
2814	006146	060075	DH48	:AFTER SEEK TO INVALID CYL
2815	006150	066330	DT1	
2816	006152	066606	DF10	
2817	006154	067334	:ERROR 246	
2818			EM75	:IDAE NOT SET
2819	006156	063131	DH48	
2820	006160	066330	DT4	
2821	006162	066652	DF6	
2822	006164	067320	:ERROR 247	
2823			EM32	:FAULT NOT SET
2824	006166	060725	DH48	
2825	006170	066330	DT4	
2826	006172	066652	DF6	
2827	006174	067320	:ERROR 250	
2828			EM76	:PIP SET
2829	006176	063157	DH48	
2830	006200	066330	DT4	
2831	006202	066652	DF6	
2832	006204	067320	:ERROR 251	
2833			EM16	:DSC NOT SET
2834	006206	060176	DH48	
2835	006210	066330	DT4	
2836	006212	066652	DF6	
2837	006214	067320	:ERROR 252	
2838				

2839	006216	060223	EM17	;MSG A0 ERROR
2840	006220	066330	DH48	
2841	006222	067054	DT13	
2842	006224	067454	DF20	
2843			;ERROR 253	
2844	006226	060236	EM18	;MSG B0 ERROR
2845	006230	066330	DH48	
2846	006232	067054	DT13	
2847	006234	067454	DF20	
2848			;ERROR 254	
2849	006236	060251	EM19	;MSG A1 ERROR
2850	006240	066330	DH48	
2851	006242	067054	DT13	
2852	006244	067454	DF20	
2853			;ERROR 255	
2854	006246	060264	EM20	;MSG B1 ERROR
2855	006250	066330	DH48	
2856	006252	067054	DT13	
2857	006254	067454	DF20	
2858			;ERROR 256	
2859	006256	061213	EM38	;CYL DIFF IN RKMR2 NOT='CYL DIF'
2860	006260	066330	DH48	
2861	006262	066652	DT4	
2862	006264	067320	DF6	
2863			;ERROR 257	
2864	006266	061113	EM36	;CYL ADDR IN RKMR3 NOT=RKDC
2865	006270	066330	DH48	
2866	006272	066652	DT4	
2867	006274	067320	DF6	
2868			;ERROR 260	
2869	006276	000000	0	
2870	006300	000000	0	
2871	006302	000000	0	
2872	006304	000000	0	
2873			;ERROR 261	
2874	006306	000000	0	
2875	006310	000000	0	
2876	006312	000000	0	
2877	006314	000000	0	
2878			;ERROR 262	
2879	006316	063200	EM77	;FAULT NOT CLEARED
2880	006320	065071	DH22	;AFTER DRIVE CLEAR CMD
2881	006322	066606	DT1	
2882	006324	067334	DF10	
2883			;ERROR 263	
2884	006326	063226	EM78	;CYL DIFF IN RKMR2 NOT=1 IN SEEK TO SELF
2885	006330	064642	DH14	;AFTER SEEK WITH BAD PARITY
2886	006332	066754	DT8	
2887	006334	067320	DF6	
2888			;ERROR 264	
2889	006336	061347	EM41	;CYL ADDR NOT CLEARED
2890	006340	065345	DH30	;AFTER READ HEADER CMD
2891	006342	067114	DT14	
2892	006344	067520	DF22	
2893			;ERROR 265	
2894	006346	060236	EM18	;MSG B0 ERROR

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UNIBUS RAC6 DRIVE DIAGNOSTIC PART 1
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ERROR POINTER TABLE

SEQ 0058

2895	006350	065071	DH22		
2896	006352	067054	DT13		
2897	006354	067454	DF20		
2898			:ERROR 266		
2899	006356	060264	EM20		;MSG B1 ERROR
2900	006360	065071	DH22		
2901	006362	067054	DT13		
2902	006364	067454	DF20		
2903			:ERROR 267		
2904	006366	060236	EM18		
2905	006370	065720	DH39		;AFTER WRITE HEADER CMD
2906	006372	067054	DT13		
2907	006374	067454	DF20		
2908			:ERROR 270		
2909	006376	060264	EM20		
2910	006400	065720	DH39		
2911	006402	067054	DT13		
2912	006404	067454	DF20		
2913			:ERROR 271		
2914	006406	060236	EM18		
2915	006410	065345	DH30		;AFTER READ HEADER CMD
2916	006412	067054	DT13		
2917	006414	067454	DF20		
2918			:ERROR 272		
2919	006416	060264	EM20		
2920	006420	065345	DH30		
2921	006422	067054	DT13		
2922	006424	067454	DF20		
2923			:ERROR 273		
2924	006426	060223	EM17		;MSG A0 ERROR
2925	006430	065071	DH22		;AFTER DRV CLR CMD
2926	006432	067054	DT13		
2927	006434	067454	DF20		
2928			:ERROR 274		
2929	006436	060251	EM19		;MSG A1 ERROR
2930	006440	065071	DH22		
2931	006442	067054	DT13		
2932	006444	067454	DF20		
2933			:ERROR 275		
2934	006446	060236	EM18		;MSG B0 ERROR
2935	006450	064734	DH17		;AFTER RECAL CMD
2936	006452	067054	DT13		
2937	006454	067454	DF20		
2938			:ERROR 276		
2939	006456	060264	EM20		;MSG B1 ERROR
2940	006460	064734	DH17		
2941	006462	067054	DT13		
2942	006464	067454	DF20		
2943			:ERROR 277		
2944	006466	060223	EM17		;MSG A0 ERROR
2945	006470	065720	DH39		;AFTER WRITE HEADER CMD
2946	006472	067054	DT13		
2947	006474	067454	DF20		
2948			:ERROR 300		
2949	006476	060251	EM19		;MSG A1 ERROR
2950	006500	065720	DH39		

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UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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ERROR POINTER TABLE

SEQ 0059

2951	006502	067054	DT13	
2952	006504	067454	DF20	
2953			;ERROR 301	
2954	006506	060223	EM17	
2955	006510	065345	DH30	;AFTER READ HEADER CMD
2956	006512	067054	DT13	
2957	006514	067454	DF20	
2958			;ERROR 302	
2959	006516	060251	EM19	
2960	006520	065345	DH30	
2961	006522	067054	DT13	
2962	006524	067454	DF20	
2963			;ERROR 303	
2964	006526	061264	EM39	;CYL DIFF/OFFSET NOT CLEARED
2965	006530	065720	DH39	;AFTER WRITE HEADER CMD
2966	006532	067114	DT14	
2967	006534	067520	DF22	
2968			;ERROR 304	
2969	006536	061347	EM41	;CYL ADDR NOT CLEARED
2970	006540	065720	DH39	
2971	006542	067114	DT14	
2972	006544	067520	DF22	
2973			;ERROR 305	
2974			EM80	;UNLD NOT SET
2975	006546	063334	DH38	;AFTER LIMIT DETECT
2976	006550	065732	DT1	
2977	006552	066606	DF10	
2978	006554	067334	;ERROR 306	
2979			EM81	;SPIN NOT SET
2980	006556	063364	DH9	;AFTER START SPIN CMD.
2981	006560	064400	DT1	
2982	006562	066606	DF10	
2983	006564	067334	;ERROR 307	
2984			EM82	;RTZ NOT SET
2985	006566	063412	DH41	;DURING RECAL CMD
2986	006570	066024	DT1	
2987	006572	066606	DF10	
2988	006574	067334	;ERROR 310	
2989			EM83	;READ HEADER ERROR
2990	006576	063437	DH1	
2991	006600	064066	DT9	
2992	006602	066774	DF21	
2993	006604	067510	;ERROR 311	
2994			EM83	
2995	006606	063437	DH1	
2996	006610	064066	DT10	
2997	006612	067012	DF21	
2998	006614	067510	;ERROR 312	
2999			EM84	;FORMAT NOT SET
3000	006616	063477	DH39	;AFTER WRITE HEADER CMD
3001	006620	065720	DT1	
3002	006622	066606	DF10	
3003	006624	067334	;ERROR 313	
3004			EM84	
3005	006626	063477	DH30	;AFTER READ HEADER CMD
3006	006630	065345		

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ERROR POINTER TABLE

SEQ 0060

3007	006632	066606	DT1	
3008	006634	067334	DF10	
3009			:ERROR 314	
3010	006636	062315	EM57	;WCE AT CYL 411,TRK 2,SEC 21
3011	006640	064066	DH1	
3012	006642	067034	DT12	
3013	006644	067274	DF4	
3014			:ERROR 315	
3015	006646	062351	EM58	;SPOK NOT CLEARED
3016	006650	064754	DH18	;AFTER UNLD CMD
3017	006652	066606	DT1	
3018	006654	067334	DF10	
3019			:ERROR 316	
3020	006656	063002	EM70	;UNEXP ATTN
3021	006660	064400	DH9	;AFTER START SPIN CMD
3022	006662	066606	DT1	
3023	006664	067334	DF10	
3024			:ERROR 317	
3025	006666	063002	EM70	
3026	006670	064473	DH11	;AFT SPIN CMD & FWD SET
3027	006672	066606	DT1	
3028	006674	067334	DF10	
3029			:ERROR 320	
3030	006676	063002	EM70	
3031	006700	064532	DH12	;AT INNER LIMIT FROM ST SPIN CMD
3032	006702	066606	DT1	
3033	006704	067334	DF10	
3034			:ERROR 321	
3035	006706	063002	EM70	
3036	006710	064573	DH13	;FROM OUTER LIM TO CYL 0 DURING LOADING
3037	006712	066606	DT1	
3038	006714	067334	DF10	
3039			:ERROR 322	
3040	006716	060251	EM19	;MSG A1 ERROR
3041	006720	064672	DH16	;AFT LD HEAD REG & SEEK
3042	006722	067054	DT13	
3043	006724	067454	DF20	
3044			:ERROR 323	
3045	006726	060264	EM20	;MSG B1 ERROR.
3046	006730	064672	DH16	
3047	006732	067054	DT13	
3048	006734	067454	DF20	
3049			:ERROR 324	
3050	006736	061614	EM46	;MSG A2 ERROR
3051	006740	064672	DH16	
3052	006742	067114	DT14	
3053	006744	067520	DF22	
3054			:ERROR 325	
3055	006746	061627	EM47	;MSG B2 ERROR
3056	006750	064672	DH16	
3057	006752	067114	DT14	
3058	006754	067520	DF22	
3059			:ERROR 326	
3060	006756	063063	EM73	;CTO SET
3061	006760	063560	EM86	;WHILE WAITING FOR OR REC'D CONTR RDY. MSG A&B BAD
3062	006762	066606	DT1	

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UNIBUS RKO6 DRIVE DIAGNOSTIC PART 1
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ERROR POINTER TABLE

SEQ 006:

3063	006764	067250		
3064			:ERROR 327	
3065	006766	063313		:MED SET
3066	006770	063560		
3067	006772	066606		
3068	006774	067250		
3069				
3070			:ERROR 330	
3071	006776	057464		:MDS SET
3072	007000	063560		
3073	007002	066606		
3074	007004	067250		

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3075
3076          .SBTTL  PROGRAM SETUP
3077
3078 007006 012737 000001 001336 PARERT: MOV    #1,PARAM      ;SET FLAG FOR 220 START
3079 007014 005037 001340          CLR    BYPT16
3080 007020 005037 001342          CLR    MODTST
3081 007024 000450          BR      PRGSRT      ;START PROGRAM
3082
3083 007026 005037 001336          BYT16: CLR    PARAM
3084 007032 012737 000001 001340          MOV    #1,BYPT16      ;SET FLAG TO BYPASS TEST 16
3085 007040 005037 001342          CLR    MODTST
3086 007044 000440          BR      PRGSRT
3087
3088 007046 012737 000001 001336 BYT16A: MOV    #1,PARAM
3089 007054 012737 000001 001340          MOV    #1,BYPT16
3090 007062 005037 001342          CLR    MODTST
3091 007066 000427          BR      PRGSRT
3092
3093 007070 005037 001336          MDTST: CLR    PARAM
3094 007074 005037 001340          CLR    BYPT16
3095 007100 012737 000001 001342          MOV    #1,MDTST
3096 007106 000417          BR      PRGSRT
3097
3098 007110 005037 001336          MDTSTA: CLR   PARAM
3099 007114 012737 000001 001340          MOV    #1,BYPT16
3100 007122 012737 000001 001342          MOV    #1,MDTST
3101 007130 000406          BR      PRGSRT
3102 007132 005037 001336          START: CLRB   PARAM      ;CLEAR FOR 200 START
3103 007136 005037 001340          CLR    BYPT16
3104 007142 005037 001342          CLR    MODTST
3105 007146 000005          PRGSRT: RESET      ;CLEAR ALL INT ENABLE & INIT
3106 007150 012706 001100          MOV    #STACK,SP      ;SETUP STACK POINTER
3107 007154 012746 000000          MOV    #PRD,-(SP)      ;PSW LOADED TO BE
3108 007160 012746 007166          MOV    #1$,-(SP)      ;LSI-11 COMPATABLE

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3109 007164 000002          RTI          ;ENABLE ALL INTERRUPTS
3110
3111 007166 004737 052556    1$: JSR      PC,$TKINT    ;SETUP KB VECTOR ADDR. PRIORITY 4
3112                                     ;& TURN ON KB INTERRUPT
3113
3114                                     ;*** CPU PRIORITY LEVEL NOW AT 0 ***
3115                                     ;*** ANY DEVICE WHICH SETS ITS ***
3116                                     ;*** INTERRUPT ENABLE BIT WILL ***
3117                                     ;*** SERVICED. ***
3118
3119                                     ;CLOCK INTERRUPTS WILL CHANGE CPU PRIORITY TO LEVEL 6 (IN 'STS')
3120                                     ;RK06 CONTROLLER INTERRUPTS WILL CHANGE CPU PRIORITY TO LEVEL 5 IN 'SETINT')
3121                                     ;KEYBOARD INTERRUPTS WILL CHANGE CPU PRIORITY TO LEVEL 4 (SEE ABOVE)
3122
3123                                     ;ALL 'SYSMAC' TRAPS WILL CHANGE CPU PRIORITY TO LEVEL 7 (SEE BELOW)
3124
3125                                     ;SYSMAC 'SETUP'
3126
3127 .SBTTL INITIALIZE THE COMMON TAGS
3128 ::CLEAR THE COMMON TAGS ($CMTAG) AREA
3129 007172 012706 001100      MOV      $CMTAG,R6      ;;FIRST LOCATION TO BE CLEARED
3130 007176 005026            CLR      (R6)+          ;;CLEAR MEMORY LOCATION
3131 007200 022706 001140      CMP      $SWR,R6      ;;DONE?
3132 007204 001374            BNE      -6             ;;LOOP BACK IF NO
3133 007206 012706 001100      MOV      $STACK,SP     ;;SETUP THE STACK POINTER
3134
3135 ::INITIALIZE A FEW VECTORS
3136 007212 012737 050664 000023 MOV      $$SCOPE,$IOTVEC ;;IOT VECTOR FOR SCOPE ROUTINE
3137 007220 012737 000340 000022 MOV      $340,$IOTVEC+2 ;;LEVEL 7
3138 007226 012737 051144 000030 MOV      $ERROR,$EMTVEC ;;EMT VECTOR FOR ERROR ROUTINE
3139 007234 012737 000340 000032 MOV      $340,$EMTVEC+2 ;;LEVEL 7
3140 007242 012737 054662 000034 MOV      $TRAP,$TRAPVEC ;;TRAP VECTOR FOR TRAP CALLS
3141 007250 012737 000340 000036 MOV      $340,$TRAPVEC+2 ;;LEVEL 7
3142 007256 012737 050576 000024 MOV      $SPWRDN,$PWRVEC ;;POWER FAILURE VECTOR
3143 007264 012737 000340 000026 MOV      $340,$PWRVEC+2 ;;LEVEL 7
3144 007272 013737 043552 043544 MOV      $ENDCT,$EOPCT ;;SETUP END-OF-PROGRAM COUNTER
3145 007300 005037 001174            CLR      $TIMES ;;INITIALIZE NUMBER OF ITERATIONS
3146 007304 005037 001176            CLR      $ESCAPE ;;CLEAR THE ESCAPE ON ERROR ADDRESS
3147 007310 112737 000001 001115 MOVB     #1,$ERMAX ;;ALLOW ONE ERROR PER TEST
3148 007316 012737 007316 001106 MOV      #,$SLPADR ;;INITIALIZE THE LOOP ADDRESS FOR SCOPE
3149 007324 012737 007324 001110 MOV      #,$SLPERR ;;SETUP THE ERROR LOOP ADDRESS
3150
3151 ::SIZE FOR A HARDWARE SWITCH REGISTER. IF NOT FOUND OR IT IS
3152 ::EQUAL TO A "-1", SETUP FOR A SOFTWARE SWITCH REGISTER.
3153 007332 013746 000004            MOV      $ERRVEC,-(SP) ;;SAVE ERROR VECTOR
3154 007336 012737 007372 000004 MOV      $64,$ERRVEC ;;SET UP ERROR VECTOR
3155 007344 012737 177570 001140 MOV      $DSWR,$SWR ;;SETUP FOR A HARDWARE SWICH REGISTER
3156 007352 012737 177570 001142 MOV      $DDISP,$DISPLAY ;;AND A HARDWARE DISPLAY REGISTER
3157 007360 022777 177777 171552 CMP      #-1,$SWR ;;TRY TO REFERENCE HARDWARE SWR
3158 007366 001012            BNE      66$ ;;BRANCH IF NO TIMEOUT TRAP OCCURRED
3159
3160 007370 000403            BR      65$ ;;AND THE HARDWARE SWR IS NOT = -1
3161 007372 012716 007400      64$: MOV      $65$,(SP) ;;BRANCH IF NO TIMEOUT
3162 007376 000002            RTI ;;SET UP FOR TRAP RETURN
3163 007400 012737 000176 001140 65$: MOV      $SWREG,$SWR ;;POINT TO SOFTWARE SWR
3164 007406 012737 000174 001142 MOV      $DISPREG,$DISPLAY
3165 007414 012637 000004      66$: MOV      (SP)+,$ERRVEC ;;RESTORE ERROR VECTOR

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JNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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 INITIALIZE THE COMMON TAGS

SEG 0064

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3165 007420 005037 001216          CLR      $PASS          ;: CLEAR PASS COUNT
3166 007424 132737 000200 001231    BITB     #APTSIZE,$ENVM ;: TEST USER SIZE UNDER APT
3167 007432 001403          BEQ      67$      ;: YES, USE NON-APT SWITCH
3168 007434 012737 001232 001140    MOV      #SSWREG,$SWR ;: NO, USE APT SWITCH REGISTER
3169 007442          67$:
3170 007442 012737 007506 000004    MEMPARG: MOV    #1$,$ERRVEC ;: SET TIMEOUT VECTOR
3171 007450 012737 000340 000006    MOV      #PR7,$ERRVEC+2
3172
3173 007456 012701 172100          MOV      #MEMBAS,$R1 ;: ADDR OF MEM CSR
3174 007462 005011          3$:      CLR      ($R1) ;: SEE IF CAN REFERENCE
3175 007464 012711 000001          MOV      #1,($R1) ;: SET ENABLE BIT IF YES
3176 007470 012737 050514 000114    MOV      #MEMERR,$MEMVEC ;: LOAD MEMORY CHECK VECTOR IF NO TIMEOUT
3177 007476 012737 000340 000116    MOV      #PR7,$MEMVEC+2
3178 007504 000401          BR        2$
3179
3180 007506 022626          1$:      CMP      ($SP)+,($SP)+ ;: ADJ STACK
3181 007510 062701 000002          2$:      ADD     #2,$R1 ;: TRY NEXT CSR
3182 007514 020127 172140          CMP      $R1,$MEMBAS+40 ;: SEE IF TRIED ALL
3183 007520 001360          BNE      3$      ;: BR IF NO
3184 007522 012737 000006 000004    MOV      #ERRVEC+2,$ERRVEC ;: RESTORE TRAP CATCHER
3185 007530 005037 000006
3186
3187 007534 004737 043640          JSR      PC,$CLRFLG ;: CLEAR DDUMP THRL SIZEFLG
3188 007540 005037 001220          CLR      $DEVCT
3189 007544 005037 001222          CLR      $UNIT
3190
3191
3192 ;: FIND OUT IF XXDP, ACT, APT; CHAIN OR DUMP MODE
3193 ;:
3194
3195 007550 005737 000042          START1: TST     42
3196 007554 001014          BNE      1$
3197 007556 004737 043660          JSR      PC,$TITLE ;: BR IF AUTO
3198 007562 123727 000041 000013    CMPB     41,$13 ;: MANUAL TYPE PROG ID
3199 007570 001010          BNE      2$      ;: 13=LOADED BY XXDP
3200 007572 005237 003444          INC      DDUMP ;: SET RK06 DUMP MODE FLAG
3201 007576 104401 056020          TYPE     MSG2 ;: REPLACE DRD PACK W/SCRATCH & DO<CR>
3202 007602 000137 007616          JMP      $T2
3203 007606 000137 007662          1$:      JMP      $T3
3204 007612 005237 003452          2$:      INC      PPTP ;: SET ACT/APT/PTP DUMP MODE FLAG
3205
3206 ;: CHECK IF ALL PARAMETERS DEFAULTED. IF NOT, BEGIN INPUT DIALOGUE
3207 ;: WITH OPERATOR. THE REPLY TO 'DRIVES TO BE TESTED' SHOULD BE
3208 ;: DRIVE NOS. SEPERATED BY COMMAS & TERMINATED BY <CR>
3209 ;: EX: DRIVES TO BE TESTED: 1,2,4<CR>
3210 ;:
3211 ;:
3212
3213 007616 005737 001336          ST2:   TST     PARAM
3214 007622 001002          BNE      1$
3215 007624 000137 007714          JMP      $T4 ;: BR IF 220 START
3216 007630 104401 056056          1$:      TYPE     MSG3 ;: 200 START, DEFAULT & SIZE THE BUSS
3217 007634 004737 043740          JSR      PC,$GDRVS ;: DRIVES TO BE TESTED
3218 007640 104401 056110          TYPE     MSG4 ;: GET DR NOS.
3219 007644 004737 044100          JSR      PC,$GBA ;: BUSS ADDR
3220 007650 104401 056136          TYPE     MSG5 ;: GET BA
;: CONT INT VECTOR

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UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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MACY11 27(1006) 06-OCT-76 23:23 PAGE 65
INITIALIZE THE COMMON TAGS

SEQ 0065

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3221 007654 004737 044126 JSR PC,GINT ;GET INT VECTOR
3222 007660 000427 BR ST5
3223
3224
3225
3226
3227
3228
3229
3230
3231 007662 123727 000041 000013 ST3: CMPB 41,#13 ;13=LOADED BY XXDP
3232 007670 001007 BNE 1$
3233 007672 005237 003476 INC DDPCH ;SET RK06 CHAIN MODE FLAG
3234 007676 004737 043660 JSR PC,TITLE
3235 007702 104401 056201 TYPE MSG7 ;DRO NOT TSTD
3236 007706 000402 BR ST4
3237 007710 005237 003450 1$: INC ACT11 ;SET ACT AUTO FLAG.
3238
3239 007714 012737 177440 001264 ST4: MOV #177440,$BASE ;DEFAULT VALUE
3240 007722 012737 000210 001314 MOV #210,RKVEC ;DEFAULT VALUE
3241 007730 004737 044160 JSR PC,SETINT
3242 007734 005237 003504 INC SIZFLG ;DO "SIZE THE BUSS" TEST
3243

```

Address	Hex	Label	Instruction	Comment
3244	007740	005037	003316	575: CLR UNLD ;INITIALIZE FLAGS
3245	007744	005037	003320	CLR BADHDR ;USED IN STOP ROUTINE
3246	007750	005037	003322	CLR HPEND ;FOR VALID PROGRAM HALTS
3247	007754	012737	003456	MOV @DRIVO,DRVPTR ;SETUP
3248	007762	005037	001220	CLR \$DEVCT ;NO. OF DRVS DONE
3249	007766	005037	001222	CLR \$UNIT ;CURRENT DRV UNDER TEST
3250	007772	012737	010040	MOV @1\$ ERRVEC ;SETUP TIMEOUT ERROR VECTOR
3251	010000	005777	171322	TST @LKS ;SEE IF L-CLOCK THERE
3252	010004	005237	003476	INC LCLKF ;PRESENT, SET FLAG.
3253	010010	013700	001330	MOV LCVEC,RO ;VECTOR ADDR
3254	010014	012737	010102	MOV @2\$ ERRVEC ;SEE IF P-CLOCK THERE
3255	010022	005777	171272	TST @PK\$;PRESENT, SET FLAG
3256	010026	005237	003500	INC PCLKF ;PRESENT, SET FLAG
3257	010032	013700	001332	MOV PCVEC,RO ;VECTOR ADDR
3258	010036	000412		BR 3\$
3259				
3260	010040	022626		1\$: CMP (SP)+,(SP)+ ;L-CLOCK NOT THERE, CLEAR STACK
3261	010042	012737	010106	MOV @4\$ ERRVEC
3262	010050	005777	171244	TST @PK\$;SEE IF P-CLOCK THERE
3263	010054	005237	003500	INC PCLKF ;PRESENT, SET FLAG
3264	010060	013700	001332	MOV PCVEC,RO ;VECTOR ADDR
3265	010064	005237	003502	3\$: INC DOTIM ;INDICATES TIMING TESTS CAN BE DONE
3266	010070	012720	047654	MOV @CLOCK,(RO)+ ;SERVICE ROUTINE FOR CLOCKS
3267	010074	012720	000300	MOV @PR6,(RO)
3268	010100	000407		BR TST1 ;GO TO NEXT TEST
3269				
3270	010102	022626		2\$: CMP (SP)+,(SP)+ ;P-CLOCK NOT THERE, CLEAR STACK
3271	010104	000767		BR 3\$
3272				
3273	010106	022626		4\$: CMP (SP)+,(SP)+ ;NEITHER CLOCK THERE, CLEAR STACK
3274	010110	005037	003502	CLR DOTIM ;TIMING TESTS CANNOT BE DONE.
3275	010114	104401	056440	TYPE ,MSG13 ;ALL TIMING TESTS BYPASSED

.SPTL BASIC CONTROLLER TESTS, SIZING & SETUP

 TEST 1 REFERENCE ALL CONTROLLER REGISTERS

THIS TEST VERIFIES THAT ALL THE CONTROLLER REGISTERS
 CAN BE ACCESSED. THE INABILITY TO BE ACCESSED WILL
 RESULT IN A TIMEOUT TRAP WITH AN ERROR MSG. ANY
 ERROR IN THIS TEST WILL RESULT IN ABORTING ALL OTHER
 TESTS AND JUMPING TO 'END OF PASS'

TEST1: SCOPE

MOV #1,STIMES ;DO 1 ITERATION
 MOV #STACK,SP ;RESTORE STK PTR

MOV #PRO,-(SP) ;RESET PSW TO PRIORITY 0
 MOV #SS,-(SP) ;& MAKE IT LSI COMPATABLE
 RTI

SS:

MOV #15,ERRVEC ;SETUP TIMEOUT ERROR VECTOR
 MOV \$BASE,R5 ;SETUP INDEX REG.
 TST RKCS1(R5) ;REFERENCE ALL THE
 TST RKCS2(R5) ;CONTROLLER REGISTERS

TST RKWC(R5)
 TST RKBA(R5)
 TST RKDA(R5)
 TST RKDS(R5)
 TST RKER(R5)
 TST RKASCF R5

;TIMEOUTS IN THIS SECTION
 ;INDICATE THAT THE CONTROLLER
 ;REGISTERS CANNOT BE READ.

3278
 3279
 3280
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010120	000004		
010122	012737	000001	001174
010130	012706	001100	
010134	012746	000000	
010140	012746	010146	
010144	000002		
010146			
010146	012737	010264	000004
010154	013705	001264	
010160	005765	000000	
010164	005765	000010	
010170	005765	000002	
010174	005765	000004	
010200	005765	000006	
010204	005765	000012	
010210	005765	000014	
010214	005765	000016	

D06

JMBUS R406 DRIVE DIAGNOSTIC PART 1
CIRCUIT.P11 06-OCT-76 18:09

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T1 REFERENCE ALL CONTROLLER REGISTERS

SEQ 0058

3309	010220	005765	000020		TST	RKDC(R5)	:TESTING SHOULD NOT PROCEED
3310	010224	005765	000024		TST	RKDB(R5)	:UNTIL THIS IS REMEDIED.
3311	010230	005765	000026		TST	RKMR1(R5)	
3312	010234	005765	000034		TST	RKMR2(R5)	
3313	010240	005765	000036		TST	RKMR3(R5)	
3314	010244	005765	000030		TST	RKECPS(R5)	
3315	010250	005765	000032		TST	RKECPT(R5)	
3316							
3317	010254	012737	050426	000004	MOV	#BADTMO,ERRVEC	:SETUP TIMEOUT HANDLER
3318	010262	000404			BR	TST2	:GO TO NEXT TEST
3319							
3320	010264	022626			18: CMP	(SP)+,(SP)+	:RESTORE STACK POINTER
3321	010266	104007			ERROR	7	:ABORT-COULD NOT REFERENCE CONTROLLER REGISTER
3322	010270	000137	043516		JMP	SECF1	

E06

UNIBUS RKO6 DRIVE DIAGNOSTIC PART 1
CZRMHC.P11 06-OCT-76 19:09

MACY11 27(1006) 06-OCT-76 23:23 PAGE 69
T1 REFERENCE ALL CONTROLLER REGISTERS

SEQ 0069

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3324
3325
3326
3327
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3331
3332
3333
3334
3335
3336
3337
3338
3339 010274 000004
3340 010276 012737 000001 001174
3341 010304 012706 001100
3342 010310 005237 001462
3343
3344 010314 132737 000200 001231
3345 010322 001002
3346 010324 000137 010440
3347
3348 010330 104401 056322
3349 010334 005037 003454
3350 010340 005000
3351 010342 012701 003456
3352 010346 013702 001266
3353
3354 010352 032702 000001
3355 010356 001410
3356 010360 005237 003454
3357 010364 005211
3358 010366 104401 001205
3359 010372 010046
3360
3361 010374 104403
3362 010376 001
3363 010377 000
3364
3365 010400 005721
3366 010402 005200
3367 010404 022700 000010
3368 010410 001402
3369
3370 010412 006002
3371 010414 000756
3372
3373 010416 005737 003454
3374 010422 001402
3375 010424 000137 011356
3376
3377 010430 104126
3378 010432 000000
3379 010434 000137 007740

```

TEST 2 SIZE THE BUSS

THIS TEST IS ENTERED ONLY IF 'DRIVE SELECTION' IS DEFAULTED
EITHER BY RUNNING IN THE AUTO MODE OR A 200 START IN THE
MANUAL MODE.
EVERY DRIVE FROM 0 THRU 7 IS ADDRESSED.
CONTROLLER ERROR (CERR) IS EXAMINED AND IF NOT SET, THE
DRIVE WILL BE TESTED. IF SET, THE PROGRAM WILL BYPASS
TESTING THAT DRIVE ONLY IF THE ERROR WAS A RESULT OF
MDS, UFE OR NED BEING SET; OR BOTH NED & DRA RESET IN-
DICATING THE OTHER PORT IS ACCESSED.

TST2: SCOPE
MOV #1,STIMES ;DO 1 ITERATION
MOV #STACK,SP ;RESTORE STK PTR
INC BYPCERR ;DO NOT TEST CERR IN 'FRDY'

BITB #BIT7,\$ENVM ;SEE IF USE APT SELECTED DRIVES
BNE 14\$;BR IF YES
JMP 12\$;ELSE DO NORM SIZING OR VERIFY

14\$: TYPE MSG10 ;WILL TEST DRIVES
CLR DRVS ;# OF DRIVES PRESENT
CLR RD ;DRV ADDR
MOV #DRVD,R1 ;DRV FLAG
MOV \$DEVMA,R2 ;APT DEVICE MAP

15\$: BIT #BIT0,R2 ;SEE IF DRV IN DEVICE MAP
BEQ 16\$;BR IF NO
INC DRVS ;ELSE INCR DRIVE COUNT
INC (R1) ;& SET DRIVE PRESENT FLAG
TYPE \$CRLF
MOV RD,-(SP) ;SAVE RD FOR TYPEOUT
;TYPE DRIVE #
;GO TYPE--OCTAL ASCII
;TYPE 1 DIGIT(S)
;SUPPRESS LEADING ZEROS

16\$: TST (R1)+ ;ADV POINTER TO NEXT FLAG
INC RD ;INC DRIVE #
CMP #8,RD ;ALL 8 TESTED?
BEQ 17\$;BR IF YES

ROR R2 ;ELSE GET NEXT BIT OFF DEVICE MAP
BR 15\$;& TRY AGAIN

17\$: TST DRVS ;SEE IF MORE DRIVES PRESENT
BEQ 18\$;BR IF NO
JMP NUDRV ;ELSE EXIT TEST

18\$: ERROR 126 ;NO DRIVES FOUND IN \$DEVMA
HALT ;SETUP CORRECTLY & PRESS 'CONTINUE'
JMP STS ;TO TRY AGAIN

```

3380
3381 010440 012765 000040 000010 12$: MOV #SCLR,RKCS2(R5) ;SUBSYSTEM CLEAR
3382 010446 013737 001414 003372 MOV T10,TEMP1
3383 010454 004737 044176 JSR PC,FRDY ;FIND RDY
3384 010460 104120 ERROR 120 ;RDY NOT SET BY END OF SCLR
3385 010462 005737 003504 TST SIZFLG
3386 010466 001562 BEQ TST3 ;:DO NOT SIZE, GOTO NEXT TEST
3387 010470 104401 056322 TYPE MSG10 ;WILL TEST DRIVES
3388 010474 005037 003454 CLR DRVS ;# OF DRIVES PRESENT
3389 010500 005000 CLR RD ;DRV ADDR
3390 010502 012701 003456 MOV #DRIVO,R1 ;DRV FLAG
3391 010506
3392 010506 104415 1$: SCOP1
3393 010510 012706 001100 MOV #STACK,SP ;RESTORE STK PTR
3394
3395 010514 012765 000040 000010 MOV #SCLR,RKCS2(R5) ;SUBSYS CLEAR
3396 010522 013737 001414 003372 MOV T10,TEMP1
3397 010530 004737 044176 JSR PC,FRDY ;FIND RDY
3398 010534 104120 ERROR 120 ;RDY NOT SET BY END OF SCLR
3399 010536 010065 000010 MOV RD,RKCS2(R5) ;SELECT THE DRIVE ADDR
3400 010542 012765 000001 000000 MOV #SELDRV,RKCS1(R5)
3401 010550 013737 001414 003372 MOV T10,TEMP1
3402 010556 004737 044176 JSR PC,FRDY ;FIND RDY
3403 010562 104117 ERROR 117 ;NO RDY AFTER SELECT DR. CMD
3404 010564 032737 100000 003334 BIT #CERR,HCS1
3405 010572 001046 BNE 2$
3406 010574 013737 003362 003372 MOV HMR2,TEMP1
3407 010602 042737 177770 003372 BIC #C<DRVMSK>,TEMP1
3408 010610 020037 003372 CMP RD,TEMP1 ;S/B SAME
3409 010614 001016 BNE 3$
3410 010616 005700 TST RD
3411 010620 001003 BNE 4$
3412 010622 005737 003446 TST DDPCH ;SEE IF XXDP CHAIN MODE
3413 010626 001014 BNE 5$
3414 010630 005237 003454 4$: INC DRVS ;INC DRIVE COUNT.
3415 010634 005211 INC (R1) ;SET DRIVE PRESENT FLAG
3416 010636 104401 001205 TYPE SCLF
3417 010642 010046 MOV RD,-(SP) ;:SAVE RD FOR TYPEOUT
3418
3419 010644 104403 TYP0S ;:TYPE DR #
3420 010646 001 .BYTE 1 ;:GO TYPE--OCTAL ASCII
3421 010647 000 .BYTE 0 ;:TYPE 1 DIGIT(S)
3422 010650 000403 BR 5$ ;:SUPPRESS LEADING ZEROS
3423
3424 010652 004737 044704 3$: JSR PC,BYP ;TYPE BYPASS DR #
3425 010656 104001 ERROR 1 ;SELECTED DR # DOES NOT MATCH RKMR2 DR #
3426
3427 010660 005721 5$: TST (R1)+ ;ADVANCE PTR TO NEXT DR. FLAG
3428 010662 005203 INC RD ;INC DR #
3429 010664 022700 000010 CMP #8.,RD
3430 010670 001306 BNE 1$ ;MORE LEFT.
3431 010672 005737 003454 TST DRVS
3432 010676 001054 BNE 10$
3433 010700 104123 ERROR 123 ;NO DRIVES FOUND
3434 010702 000000 HALT ;SETUP CORRECTLY
3435 010704 000137 007740 JMP STS ;& PRESS 'CONT'

```

G06

UNIBUS RKO6 DRIVE DIAGNOSTIC PART 1
C2R6HC.P11 06-OCT-76 18:09MACY11 27(1006) 06-OCT-76 23:23 PAGE 71
T2 SIZE THE BUSS

SEQ 0071

```

3436
3437 010710 032737 001000 003336 2$: BIT #MDS,HCS2
3438 010716 001015 BNE 6$
3439 010720 032737 000400 003336 BIT #UFE,HCS2
3440 010726 001015 BNE 7$
3441 010730 032737 000001 003346 BIT #DRA,HDS
3442 010736 001015 BNE 8$
3443 010740 032737 010000 003336 BIT #NED,HCS2
3444 010746 001424 BEQ 9$
3445 010750 000743 BR 5$
3446
3447 010752 004737 044704 6$: JSR PC,BYP ;TYPE BYP DR #
3448 010756 104002 ERROR 2 ;MDS DETECTED
3449 010760 000737 BR 5$
3450
3451 010762 004737 044704 7$: JSR PC,BYP
3452 010766 104003 ERROR 3 ;UFE DETECTED
3453 010770 000733 BR 5$
3454
3455 010772 032737 010000 003336 8$: BIT #NED,HCS2
3456 011000 001713 BEQ 4$
3457 011002 104401 056541 TYPE MSG15 ;DRV#
3458 011006 010046 MOV RO,-(SP) ;SAVE RO FOR TYPEOUT
3459
3460 011010 104403 TYP0S ;TYPE DR#
3461 011012 001 .BYTE 1 ;GO TYPE--OCTAL ASCII
3462 011013 000 .BYTE 0 ;TYPE 1 DIGIT(S)
3463 011014 104010 ERROR 10 ;SUPPRESS LEADING ZEROS
3464 011016 000720 BR 5$ ;DRA & NED BOTH SET
3465
3466 011020 004737 044704 9$: JSR PC,BYP
3467 011024 104004 ERROR 4 ;NO DRA & NO NED = OTHER PORT SELECTED
3468 011026 000714 BR 5$
3469 011030 000137 011356 10$: JMP NUDRV
3470
3471 ;*****
3472 ;*TEST 3 VERIFY OPERATOR DRIVE SELECTIONS
3473 ;*
3474 ;* THIS TEST IS ENTERED ONLY IF DRIVE SELECTION IS NOT
3475 ;* DEFAULTED. EVERY DRIVE FROM 0 TO 7 IS ADDRESSED &
3476 ;* CONTROLLER ERROR (CERR) IS EXAMINED. IF NOT SET, THE
3477 ;* PROGRAM WILL ASSUME THE DRIVE IS PRESENT. IT WILL THEN CHECK
3478 ;* TO SEE THAT THE DRIVE WAS INPUTTED FOR TESTING. IF NOT, IT WILL
3479 ;* BE AN ERROR. IF CERR WAS SET, THAT DRIVE WILL BE BYPASSED
3480 ;* ONLY IF THE ERROR WAS A RESULT OF MDS OR UFE SET OR BOTH
3481 ;* NED & DRA RESET (WRONG PORT). IF CERR IS A RESULT OF
3482 ;* NED ONLY, IT IS CHECKED AGAINST THE INPUTTED INFOR TO
3483 ;* VERIFY IT WAS NOT SPECIFIED.
3484 ;*
3485 ;*****
3486 011034 000004 1ST3: SCOPE
3487 011036 012737 000001 001174 MOV #1,STIMES ;DO 1 ITERATION
3488 011044 012706 001100 MOV #STACK,SP ;RESTORE STK PTR
3489 011050 005000 CLR RO ;DRIVE ADDR
3490 011052 012701 003456 MOV #DRIVO,R1 ;DRIVE FLAG
3491 011056

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H06

JNIBUS RK06 DRIVE DIAGNOSTIC PART 1
DZRBHC.P11 06-OCT-76 19:09

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T3 VERIFY OPERATOR DRIVE SELECTIONS

SEQ 0072

3492	011056	104415			SCOP1		
3493	011060	012706	001100		MOV	#STACK,SP	;RESTORE STK PTR
3494							
3495	011064	012765	000040	000010	MOV	#SCLR,RKCS2(R5)	
3496	011072	013737	001414	003372	MOV	T10,TEMP1	
3497	011100	004737	044176		JSR	PC,BYP	;FIND RDY
3498	011104	104120			ERROR	120	;NO RDY AFTER SCLR
3499	011106	010065	000010		MOV	RD,RKCS2(R5)	;DRV ADDR
3500	011112	012765	000001	000000	MOV	#SELDV,RKCS1(R5)	
3501	011120	013737	001414	003372	MOV	T10,TEMP1	
3502	011126	004737	044176		JSR	PC,BYP	;FIND RDY
3503	011132	104117			ERROR	117	;NO RDY AFTER SELDRV CMD
3504	011134	032737	100000	003334	BIT	#CERR,HCS1	
3505	011142	001036			BNE	25	
3506	011144	013737	003362	003372	MOV	HMR2,TEMP1	
3507	011152	042737	177770	003372	BIC	#1C<DRVMSK>,TEMP1	
3508	011160	020037	003372		CMP	RD,TEMP1	;S/B SAME
3509	011164	001010			BNE	35	
3510	011166	005711			TST	(R1)	
3511	011170	001417			BEQ	55	
3512	011172	005721			TST	(R1)+	;SHIFT PTR TO NEXT DR FLAG
3513	011174	005200			INC	RD	;INC DR#
3514	011176	022700	000010		CMP	#8.,RD	
3515	011202	001325			BNE	15	;MORE LEFT
3516	011204	000466			BR	TST4	;GO TO NEXT TEST
3517							
3518	011206	004737	044704		JSR	PC,BYP	;TRY BYPASS DRIVE#
3519	011212	104001			ERROR	1	;WRITTEN DR# DOES NOT MATCH PKMR2 DR#
3520	011214	005711			TST	(R1)	
3521	011216	001765			BEQ	45	;BRANCH IF NOT SPEC BY INPUT
3522	011220	005337	003454		DEC	DRVS	;DECREMENT TOTAL DRVS
3523	011224	005011			CLR	(R1)	;CLEAR DRIVE FLAG
3524	011226	000761			BR	45	
3525							
3526	011230	004737	044704		JSR	PC,BYP	
3527	011234	104005			ERROR	5	;DR PRESENT BUT NOT SPECIFIED BY OPERATOR
3528	011236	000755			BR	45	
3529							
3530	011240	032737	001000	003336	BIT	#MDS,HCS2	
3531	011246	001027			BNE	65	
3532	011250	032737	000400	003336	BIT	#UFE,HCS2	
3533	011256	001027			BNE	75	
3534	011260	032737	000001	003346	BIT	#DRA,HDS	
3535	011266	001005			BNE	85	
3536	011270	032737	010000	003336	BIT	#NED,HCS2	
3537	011276	001423			BEQ	95	
3538	011300	000404			BR	105	
3539	011302	032737	010000	003336	BIT	#NED,HCS2	
3540	011310	001726			BEQ	115	
3541	011312	005711			TST	(R1)	
3542	011314	001726			BEQ	45	
3543							
3544	011316	004737	044704		JSR	PC,BYP	;TYPE BYPASS DRIVE#
3545	011322	104006			ERROR	6	
3546	011324	000735			BR	125	
3547							

UNIBUS R406 DRIVE DIAGNOSTIC PART 1
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T3 VERIFY OPERATOR DRIVE SELECTIONS

SEQ 0073

3548 011326 004737 044704
3549 011332 104002
3550 011334 000762
3551
3552 011336 004737 044704
3553 011342 104003
3554 011344 000756
3555
3556 011346 004737 044704
3557 011352 104004
3558 011354 000752
3559
3560
3561
3562
3563
3564
3565
3566

6\$: JSR PC,BYP ;TYPE BYPASS DRIVE#
ERROR 2 ;MDS DETECTED
BR 8\$
7\$: JSR PC,BYP
ERROR 3 ;UFE DETECTED
BR 8\$
9\$: JSR PC,BYP
ERROR 4 ;DRA & NED RESET - OTHER PORT SELECTED
BR 8\$

THIS PART OF THE PROGRAM WILL BE REPEATED FOR EACH
DRIVE PRESENT

'SUNIT' CONTAINS THE ADDRESS OF THE DRIVE CURRENTLY
UNDER TEST

J06

 JNIBUS RK06 DRIVE DIAGNOSTIC PART 1
 DZRBHC.P11 06-OCT-76 18:09

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 T3 VERIFY OPERATOR DRIVE SELECTIONS

SEQ 0074

```

3567
3568 011356 005037 001462      NUDRV: CLR      BYPCERR      ;ENTER HERE FROM LAST TEST
3569                                     ;& TEST CERR IN 'FRDY'
3570
3571      ;*****
3572      ;*TEST 4      FIND NEXT DRIVE TO BE TESTED
3573      ;*
3574      ;*      THIS TEST FINDS THE NEXT DRIVE PRESENT & PUTS THAT
3575      ;*      ADDRESS IN '$UNIT'.
3576      ;*      THROUGHOUT THE FOLLOWING TESTS, THE DRIVE TESTED IS
3577      ;*      THE DRIVE WHOSE ADDRESS IS IN '$UNIT'.
3578      ;*
3579      ;*****
3580 011362 000004      ;ST4: SCOPE
3581 011364 012737 000001 001174      MOV      #1,$TIMES      ;;DO 1 ITERATION
3582 011372 012706 001100      MOV      #STACK,SP      ;RESTORE STK PTR
3583 011376 012737 000004 001214      MOV      #STN-1,$TESTN
3584 011404 012737 000004 001102      MOV      #STN-1,$TSTNM
3585
3586 011412 005737 003454      TST      DRVS      ;ANY DRIVES PRESENT?
3587 011416 001004      BNE      4$      ;YES BRANCH
3588 011420 104401 056642      TYPE     MSG19      ;ALL DRIVES TESTED
3589 011424 000137 043516      JMP      $EOP1      ;NO, GO TO END
3590
3591 011430 013701 001346      4$: MOV      DRVPTR,R1      ;ADDR OF NEXT DRIVE FLAG
3592 011434 005737 001220      TST      $DEVCT      ;IS FIRST DRIVE BEING CHECKED
3593 011440 001402      BEQ      2$      ;YES, BRANCH
3594 011442 005237 001222      1$: INC      $UNIT      ;INCR DRIVE ADDR TO NEXT DRIVE
3595 011446 005721      2$: TST      (R1)+      ;IS DRIVE PRESENT?
3596 011450 001774      BEQ      1$      ;NO, FIND NEXT DRIVE PRESENT
3597 011452 005737 003446      TST      DDPCH      ;DDP CHAIN MODE?
3598 011456 001403      BEQ      3$      ;NO, BRANCH
3599 011460 005737 001222      TST      $UNIT      ;YES, IS IT DRIVE 0?
3600 011464 001766      BEQ      1$      ;IF YES, DON'T TEST DR 0
3601 011466 010137 001346      3$: MOV      R1,DRVPTR      ;STORE POINTER TO THE NEXT DR. FLAG
3602 011472 104401 056541      TYPE     MSG15      ;"DRIVE"
3603 011476 013700 001222      MOV      $UNIT,R0
3604 011502 010046      MOV      R0,-($P)      ;;SAVE R0 FOR TYPEOUT
3605                                     ;;DRIVE #
3606 011504 104403      TYPOS      ;GO TYPE--OCTAL ASCII
3607 011506 001      .BYTE      1      ;TYPE 1 DIGIT(S)
3608 011507 000      .BYTE      0      ;SUPPRESS LEADING ZEROS
3609
3610 011510 104401 001205      TYPE     ,$CRLF
3611
3612      ;*****
3613      ;*TEST 5      UNLOAD DRIVE TO BE TESTED
3614      ;*
3615      ;*      THIS TEST UNLOADS THE DRIVE TO BE TESTED NEXT.
3616      ;*      WAITS FOR ATTN & VERIFIES IT CAME FROM THE CORRECT DRIVE.
3617      ;*      IT THEN WAITS FOR SPEED OK TO GO LOW BEFORE
3618      ;*      PROCEEDING TO THE NEXT TEST
3619      ;*
3620      ;*****
3621 011514 000004      ;ST5: SCOPE
3622 011516 012737 000001 001174      MOV      #1,$TIMES      ;;DO 1 ITERATION

```

K06

UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
DZR6MC.P11 06-OCT-76 18:09MACY11 27(1006) 06-OCT-76 23:23 PAGE 75
TS UNLOAD DRIVE TO BE TESTED

SEG 0075

```

3623 011524 012706 001100      MOV      #STACK,SP
3624
3625 011530 005237 003316      INC      UNLD          ;USED TO CHECK VALID HALT
3626
3627 011534 004737 046106      JSR      PC,SUBCLR
3628 011540 104024              ERROR    24          ;CERR AFTER SCLR
3629
3630 011542 012765 000007 000000      MOV      #UNLOAD,RKCS1(R5)          ;UNLOAD CMD
3631 011550 013737 001414 003372      MOV      T10,TEMP1
3632 011556 004737 044176      JSR      PC,FRDY          ;FIND RDY
3633 011562 104011              ERROR    11          ;RDY NOT SET AFTER UNLOAD CMD.
3634 011564 004737 044460      JSR      PC,TSTATN
3635 011570 104012              ERROR    12          ;NO ATTN AFTER UNLOAD CMD
3636
3637 011572 004737 046106      JSR      PC,SUBCLR
3638 011576 104024              ERROR    24          ;CERR AFTER SCLR
3639
3640 011600 012737 177777 001160      MOV      #-1,$TMP0          ;SETUP TIMEOUT. ALL 1'S
3641 011606 012765 100000 000000 64$:  MOV      #CCLR,RKCS1(R5)
3642 011614 012765 000001 000026      MOV      #1,RKMR1(R5)          ;SELECT WORD 1
3643 011622 004737 045534              JSR      PC,GSTAT
3644 011626 032737 001000 003362      BIT      #D.SP0K,HMR2          ;SEE IF SPEED OK GONE
3645 011634 001404              BEQ      65$          ;BR IF YES
3646 011636 005337 001160      DEC      $TMP0          ;ELSE TRY AGAIN IF TIME NOT UP
3647 011642 001361              BNE      64$
3648 011644 104315              ERROR    31$          ;SPEED NOT DOWN BY TIMEOUT
3649 011646
3650
3651
3652
3653
3654
3655 011646      PFSRT:          ;ENTER HERE FOR POWER FAIL RESTART
3656      .SBTTL STATIC & CYCLE UP TESTS
3657
3658      ;*****
3659      ;*TEST 6          REFERENCE & CHECK ALL STATUS BYTES IN RKMR2 & RKMR3
3660      ;*
3661      ;*          CHECKS THE ABILITY TO REFERENCE ALL
3662      ;*          DRIVE REGISTERS AND THAT THEY CONTAIN CORRECT STATUS.
3663      ;*
3664      ;*****
3665 011646 000004      TST6:  SCOPE
3666 011650 012737 000001 001174      MOV      #1,$TIMES          ;DO 1 ITERATION
3667 011656 012706 001100              MOV      #STACK,SP          ;RESTORE STK PTR
3668
3669 011662 004737 046106      JSR      PC,SUBCLR
3670 011666 104024              ERROR    24          ;CERR AFTER SCLR
3671
3672 011670 004737 045534              JSR      PC,GSTAT
3673 011674 032737 000100 003362      BIT      #D.VV,HMR2
3674 011702 001004              BNE      4$          ;BR IF VV SET
3675 011704 012737 000040 003424      MOV      #D.DRA,E.A0          ;LOAD EXPECTED VALUE FOR A0
3676 011712 000403              BR      5$
3677
3678 011714 012737 000140 003424 4$:  MOV      #<D.DRA!D.VV>,E.A0

```

L06

JNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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T6 REFERENCE & CHECK ALL STATUS BYTES IN RKMR2 & RKMR3

SEQ 0076

3679	011722	005037	003426		55:	CLR	E.B0	:EXPECTED MSG B0
3680	011726	012737	000740	003430		MOV	#D.HDMM!D.BRHM!D.DCOR!D.CART>,E.A1	:EXPECTED MSG A1
3681	011734	012737	000001	003432		MOV	#1,E.B1	:EXPECTED MSG B1
3682	011742	005037	003434			CLR	E.A2	:EXPECTED MSG A2
3683	011746	012737	000002	003436		MOV	#2,E.B2	:EXPECTED MSG B2
3684	011754	012737	000003	003442		MOV	#3,E.B3	:EXPECTED MSG B3
3685								
3686	011762	004737	044720			JSR	PC,CHKMSG	:CHECK MSGS A0,B0,A1,B1
3687	011766	000007				.WORD	T.A2!T.B2!T.B3	:& MSGS SPECIFIED HERE
3688	011770	104016				ERROR	16	:MSG A0 ERROR FOR DRIVE UNLOADED
3689	011772	104017				ERROR	17	:MSG B0 ERROR
3690	011774	104020				ERROR	20	:MSG A1 ERROR
3691	011776	104021				ERROR	21	:MSG B1 ERROR
3692								
3693	012000	005737	001362			TST	CYLDIF	:SEE IF MSG A2=0
3694	012004	001401				BEG	645	:BR IF YES
3695	012006	104022				ERROR	22	:MSG A2 NOT CLEARED FOR DRIVE UNLOADED
3696	012010	005737	001364		645:	TST	CYLADD	:SEE IF MSG B2=0
3697	012014	001401				BEG	655	:BR IF YES
3698	012016	104023				ERROR	23	:MSG B2 NOT CLEARED FOR DRIVE UNLOADED
3699	012020				655:			
3700	012020	023727	001432	000J01		CMP	HEAD0,#1	:FOR HEAD 0, B3=1
3701	012026	001401				BEG	TST7	:GO TO NXT TST IF YES
3702	012030	104056				ERROR	56	:HEAD REG IN B3 NOT 0 IN UNLOAD
3703								
3704								
3705								
3706								
3707								
3708								
3709								
3710								
3711								
3712								
3713	012032	000004						
3714	012034	012737	000001	001174		TST7:	SCOPE	
3715	012042	012706	001100			MOV	#1,\$TIMES	:DO 1 ITERATION
3716						MOV	#STACK,SP	:RESTORE STK PTR
3717	012046	005737	001216			TST	\$PASS	
3718	012052	001046				BNE	TST10	:GO TO NEXT IF NOT FIRST PASS
3719	012054	004737	046106			JSR	PC,SUBCLR	:DO SUBSYS CLEAR
3720	012060	104024				ERROR	24	:CERR AFTER SCLR
3721								
3722	012062	104401	056553			TYPE	MSG16	:DRIVE SERIAL NO.
3723	012066	012765	000003	000026		MOV	#3,RKMR1(R5)	:SELECT BYTE 3
3724	012074	004737	045534			JSR	PC,GSTAT	:GET STATUS
3725	012100	013701	003362			MOV	HMR2,R1	:GET SERIAL #
3726	012104	012704	054260			MOV	#SOCTVL,R4	:GET ADDR CHAR BUFF
3727	012110	010446				MOV	R4,-(SP)	:STORE ON STACK FOR \$SUPRS
3728	012112	012703	000003			MOV	#3,R3	:SETUP CHAR COUNT
3729	012116	006101				ROL	R1	:INITIALIZE BIT POSITIONS
3730	012120	006101				ROL	R1	
3731	012122	006101			15:	ROL	R1	:GET NEXT 4 BITS
3732	012124	006101				ROL	R1	
3733	012126	006101				ROL	R1	
3734	012130	006101				ROL	R1	

```

*****
*TEST 7      PRINT DRIVE SERIAL NUMBER
*
*      THIS TEST READS & PRINTS THE DRIVE SERIAL # FROM MSG A, WORD 11
*      IN BCD & IS PERFORMED ON THE 1ST PASS ONLY
*
*****

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T7 PRINT DRIVE SERIAL NUMBER

SEQ 0077

3735 012132 010100
3736 012134 042700 177760
3737 012140 052700 000060
3738 012144 110024
3739 012146 005303
3740 012150 001364
3741 012152 105014
3742 012154 004737 054526
3743 012160 104401 001205
3744 012164 104401 001205
3745
3746
3747
3748
3749
3750
3751

MOV R1,R0 ;GET WORKING COPY
BIC #177760,R0 ;CLEAR A. BUT LOW 4 BITS
BIS #60,R0 ;CONVERT TO ASCII DIGIT
MOVB R0,(R4)+ ;PUT ASCII DIGIT INTO CHAR BUFF
DEC R3
BNE !S ;BR IF ALL 3 CHARS NOT DONE
CLRB (R4) ;ELSE INSERT NULL TERMINATOR
JSR PC,\$SUPRS ;TYPE
TYPE ,SCLRF
TYPE ,SCLRF

*TEST 10 SET VV WITH PACK CMD
*
* IF VV IS RESET, THE PACK CMD IS USED TO SET IT.
*

3752 012170 000004
3753 012172 012737 000001 001174
3754 012200 012706 001100
3755
3756 012204 005065 000026
3757 012210 004737 045534
3758 012214 032737 000100 003362
3759 012222 001024
3760
3761 012224 104415
3762 012226 012706 001100
3763
3764 012232 004737 046106
3765 012236 104024
3766
3767 012240 012765 000003 000000
3768 012246 013737 001414 003372
3769 012254 004737 044176
3770 012260 104116
3771
3772 012262 032737 000100 003362
3773 012270 001001
3774 012272 104027
3775
3776
3777
3778
3779
3780
3781

ST10: SCOPE
MOV #1,\$TIMES ;DO 1 ITERATION
MOV #STACK,SP ;RESTORE STK PTR

CLR RKMRI(R5) ;SELECT BYTE 0
JSR PC,GSTAT ;GET STATUS
BIT #D.VV,HMR2
BNE TST11 ;GO TO NEXT TEST IF VV SET

SCOPI
MOV #STACK,SP ;RESTORE STK PTR

JSR PC,SUBCLR
ERROR 24 ;CERR AFTER SCLR

MOV #PACK,RKCS1(R5) ;CMD TO SET VV
MOV T10,TEMP1
JSR PC,FRDY ;FIND RDY
ERROR 116 ;RDY NOT SET AFTER PACK CMD

BIT #D.VV,HMR2
BNE TST11 ;GO TO NEXT TEST IF VV NOW SET
ERROR 27 ;PACK DID NOT SET V.V.

*TEST 11 RELEASE DRIVE
*
* TESTS THE ABILITY TO RECOGNIZE THE RLS BIT AND NOT RAISE SACK
*

3782 012274 000004
3783 012276 012737 000001 001174
3784 012304 012706 001100
3785
3786 012310 004737 046106
3787 012314 104024
3788 012316 032737 000400 003336
3789 012324 001401
3790 012326 104003

ST11: SCOPE
MOV #1,\$TIMES ;DO 1 ITERATION
MOV #STACK,SP ;RESTORE STK PTR

JSR PC,SUBCLR ;DO SUBSYS CLEAR & GET STATUS
ERROR 24 ;CONTR ERROR SET AFTER SCLR
BIT #UFE,HCS2
BEQ !S
ERROR 3 ;UFE SET AFTER SCLR

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T11 RELEASE DRIVE

SEQ 0078

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3791
3792 012330
3793 012330 104415
3794 012332 012706 001100
3795
3796 012336 004737 046106
3797 012342 104024
3798
3799 012344 062765 000010 000010
3800 012352 004737 045534
3801
3802 012356 032737 100000 003334
3803 012364 001401
3804 012366 104025
3805 012370 032737 000400 003336
3806 012376 001401
3807 012400 104026
3808
3809
3810
3811
3812
3813
3814
3815
3816 012402 000004
3817 012404 012737 000001 001174
3818 012412 012706 001100
3819
3820 012416 004737 046106
3821 012422 104024
3822 012424 032737 000400 003362
3823 012432 001401
3824 012434 104030
3825 012436 032737 000400 003346
3826 012444 001401
3827 012446 104031
3828 012450 032737 000040 003350
3829 012456 001401
3830 012460 104032
3831
3832 012462
3833 012462 104415
3834 012464 012706 001100
3835
3836 012470 004737 046106
3837 012474 104024
3838
3839 012476 012765 002001 000000
3840 012504 013737 001414 003372
3841 012512 004737 044176
3842 012516 104117
3843 012520 032737 000400 003362
3844 012526 001401
3845 012530 104030
3846 012532 032737 000400 002346

15:
SCOPI
MOV #STACK,SP ;RESTORE STK PTR

JSR PC,SUBCLR
ERROR 24 ;CERR AFTER SCLR

ADD #RLS,RKCS2(R5) ;ADD RELEASE BIT TO $UNIT
JSR PC,GSTAT ;GET STATUS

BIT #CERR,HCS1 ;CHECK FOR CONTR ERROR
BEQ 25
ERROR 25 ;RLS SET CERR
25: BIT #UFE,HCS2
BEQ TST12 ;GO TO NEXT TEST IF SET
ERROR 26 ;SACK SET AFTER RLS SENT

*****
*TEST 12 DRIVE TYPE TEST
*
* THIS TEST COMPARES DRIVE TYPE IN MSG A AGAINST 'DDT' IN RKDS.
* WRONG CDT IN RKCS1 IS SENT & ERRORS ARE VERIFIED.
*****
TST12: SCOPE
MOV #1,$TIMES ;DO 1 ITERATION
MOV #STACK,SP ;RESTORE STK PTR

JSR PC,SUBCLR ;SUBSYS CLEAR & GET STATUS
ERROR 24 ;CONT ERROR SET AFT SUBSYS CLEAR
BIT #D.DDT,HMR2
BEQ 25
ERROR 30 ;DR TYPE SET IN MR2
25: BIT #DDT,HDS
BEQ 35
ERROR 31 ;DDT SET IN RKDS
35: BIT #DTYE,HER
BEQ 45
ERROR 32 ;DTYE SET IN RKER

45:
SCOPI
MOV #STACK,SP ;RESTORE STK PTR

JSR PC,SUBCLR
ERROR 24 ;CERR AFTER SCLR

MOV #<CDT!SELDR/>,RKCS1(R5) ;GET STATUS WITH CDT SET
MOV T10,TEMP1
JSR PC,FRDY ;FIND RDY
ERROR 117 ;RDY NOT SET BY END OF SEL DRV CMD
BIT #C.DDT,HMR2
BEQ 55
ERROR 30 ;DR TYPE SET IN MR2
55: BIT #CDT,HDS

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 JMBUS RKC6 DRIVE DIAGNOSTIC PART 1
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 T12 DRIVE TYPE TEST

SEG 0079

3847	012540	001401				BEG	65	
3848	012542	104031				ERROR	31	:DDT SET IN RKDS
3849	012544	032737	000040	003350	65:	BIT	#DTYE,HER	:DTYE=DDT(NOT)*CDT
3850	012552	001001				BNE	75	
3851	012554	104033				ERROR	33	:DTYE NOT SET AFT WRITING CDT=1
3852	012556	032737	100000	003334	75:	BIT	#CERR,HCS1	
3853	012564	001001				BNE	TST13	:GO TO NEXT TEST
3854	012566	104034				ERROR	34	:CERR NOT SET AFT WRITING CDT=1
3855								
3856								
3857								
3858								
3859								
3860								
3861								
3862								
3863								
3864								
3865								
3866								
3867								
3868	012570	000004						
3869	012572	012737	000001	001174		TST13:	SCOPE	
3870	012600	012706	001100			MOV	#1,STIMES	:DO 1 ITERATION
3871						MOV	#STACK,SP	:RESTORE STK PTR
3872	012604	004737	046106			JSR	PC,SUBCLR	:SUBSYS CLEAR & GET STATUS
3873	012610	104024				ERROR	24	:CONT ERROR AFTER SUBSYS CLR
3874	012612	032737	001000	003364		BIT	#D.PAR,HMR3	
3875	012620	001401				BEG	25	
3876	012622	104035				ERROR	35	:C-D PARITY ERROR SET IN MR3
3877	012624	032737	020000	003334	25:	BIT	#DCPAR,HCS1	
3878	012632	001401				BEG	35	
3879	012634	104036				ERROR	36	:DCPAR SET IN CS1
3880								
3881	012636				35:			
3882	012636	104415				SCOPI		
3883	012640	012706	001100			MOV	#STACK,SP	:RESTORE STK PTR
3884								
3885	012644	004737	046106			JSR	PC,SUBCLR	
3886	012650	104024				ERROR	24	:CERR AFTER SCLR
3887								
3888	012652	012765	000020	000026		MOV	#PAT,RKMR1(R5)	:SELECT BYTE 0 & EVEN PARITY
3889	012660	004737	045534			JSR	PC,GSTAT	:GET STATUS
3890	012664	032737	000200	003364		BIT	#D.FLT,HMR3	
3891	012672	001001				BNE	45	
3892	012674	104037				ERROR	37	:FAULT NOT SET IN MR3
3893	012676	032737	001000	003364	45:	BIT	#D.PAR,HMR3	
3894	012704	001001				BNE	55	
3895	012706	104040				ERROR	40	:C-D PARITY ERROR NOT SET IN MR3
3896	012710	032737	020000	003334	55:	BIT	#DCPAR,HCS1	
3897	012716	001001				BNE	65	
3898	012720	104041				ERROR	41	:DCPAR NOT SET AFT WRITING PAT IN MR1
3899	012722	032737	100000	003334	65:	BIT	#CERR,HCS1	
3900	012730	001001				BNE	TST14	:GO TO NEXT TEST
3901	012732	104042				ERROR	42	:CERR NOT SET BY WRITING PAT IN MR1

C07

JNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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T14 VERIFY START SPINDLE CMD

SEG 0080

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3903 *****
3904 :TEST 14      VERIFY START SPINDLE CMD
3905 :
3906 :   THE PROGRAM CHECKS THE ENTIRE STARTUP SEQUENCE, IE:
3907 :   BRUSH CYCLE, HEADS HOME, FWD, REV ETC.
3908 :   BY VERIFYING ALL APPROPRIATE STATUS BITS FOR PROPER SEQUENCING.
3909 :   THE CYL ADDRESS & CYL DIFFERENCE REGS ARE CHECKED
3910 :   TO BE ZERO AT THE END OF THE SEQUENCE.
3911 :
3912 *****
3913 TST14: SCOPE
3914 MOV      #1,STIMES      ;DO 1 ITERATION
3915 MOV      #STACK,SP      ;RESTORE STK PTR
3916
3917 JSR      PC,SUBCLR      ;SUBSYS CLEAR & GET STATUS
3918 ERROR    24             ;CERR AFTER SCLR
3919
3920 MOV      #SRTSPL,RKCS1(R5) ;START SPINDLE CMD
3921 MOV      T10,TEMP1      ;SETUP TIMEOUT
3922 JSR      PC,FRDY
3923 ERROR    121            ;RDY NOT SET AFTER START SPIN CMD
3924
3925 JSR      PC,GSTAT      ;WORD 0
3926 BIT      #D.SPIN,HMR2
3927 BNE      13$
3928 ERROR    306            ;SPIN NOT SET AFTER START SPIN CMD
3929
3930 MOV      #25$,SESCAPE
3931 JSR      PC,TSTATN      ;TEST FOR ATTN
3932 BR       15$
3933 ERROR    316
3934 MOV      #<D.SPIN!D.VV!D.DRA>,E.A0      ;LOAD IN EXPECTED VALUES
3935 CLR      E.B0
3936 MOV      #<D.CART!D.DOOR!D.HDWM!D.BRHM>,E.A1
3937 MOV      #1,E.B1
3938
3939 JSR      PC,CHKMSG      ;CHECK MSGS A0,B0,A1,B1
3940 .WORD    0!0!0          ;8 MSGS SPECIFIED HERE
3941 ERROR    57             ;MSG A0 ERROR AFTER START SPIN CMD REC'D BY DRIVE
3942 ERROR    60             ;MSG B0 ERROR
3943 ERROR    61             ;MSG A1 ERROR
3944 ERROR    62             ;MSG B1 ERROR
3945 TST      DOTIM
3946 BNE      3$
3947 MOV      #30$,SESCAPE
3948 MOV      #CCLR,RKCS1(R5)
3949 MOV      T100,TEMP2     ;SETUP TIMEOUT
3950 JSR      PC,FATT1       ;FIND ATTN
3951 ERROR    67             ;NO ATTN AFTER HEAD LOADING
3952
3953 2$:
3954 MOV      #<D.DSC!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0 ;EXPECTED MSG A0
3955 CLR      E.B0           ;EXPECTED MSG B0
3956 MOV      #<D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1 ;EXPECTED A1
3957 MOV      #1,E.B1        ;MSG ID FOR EXPECTED MSG B1
3958 CLR      E.A2           ;EXPECTED MSG A2

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UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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T14 VERIFY START SPINDLE CMD

SEG 008:

3959	013170	012737	000002	003436	MOV	#2,E.B2	;MSG ID FOR EXPECTED MSG B2
3960	013176	012737	000003	003442	MOV	#3,E.B3	;MSG ID FOR EXPECTED MSG B3
3961							
3962	013204	004737	044720		JSR	PC,CHKMSG	;CHECK MSGS A0,B0,A1,B1
3963	013210	000003			.WORD	T.A2!T.B2!0	; & MSGS SPECIFIED HERE
3964	013212	104063			ERROR	63	;MSG A0 ERROR AT END OF HEAD LOAD
3965	013214	104064			ERROR	64	;MSG B0 ERROR
3966	013216	104065			ERROR	65	;MSG A1 ERROR
3967	013220	104066			ERROR	66	;MSG B1 ERROR
3968							
3969	013222	005737	001362		TST	CYLDF	;SEE IF MSG A2=0
3970	013226	001401			BEQ	64\$	;BR IF YES
3971	013230	104175			ERROR	175	;MSG A2 NOT CLEARED AT END OF HEAD LOAD
3972	013232	005737	001364		TST	CYLADD	;SEE IF MSG B2=0
3973	013236	001401			BEQ	65\$	;BR IF YES
3974	013240	104176			ERROR	176	;MSG B2 NOT CLEARED AT END OF HEAD LOAD
3975	013242						
3976							
3977	013242	012765	100000	000000	MOV	#CLR,RKCS1(R5)	
3978	013250	013765	001222	000010	MOV	\$UNIT,RKCS2(R5)	;DRIVE#
3979	013256	012765	000005	000000	MOV	#CLR,RKCS1(R5)	;DRIVE CLEAR CMD
3980	013264	013737	001414	003372	MOV	T10,TEMP1	
3981	013272	004737	044176		JSR	PC,FRDY	;FIND RDY
3982	013276	104151			ERROR	151	;NO RDY AFTER DRIVE CLEAR CMD
3983	013300	004737	044460		JSR	PC,TSTATN	;TEST FOR ATTN
3984	013304	000401			BR	66\$	
3985	013306	104154			ERROR	154	;ATTN NOT CLEARED AFTER DRIVE CLEAR CMD
3986	013310						
3987							
3988	013310	012737	010340	003424	MOV	#<0!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0	;EXPECTED MSG A0
3989	013316	005037	003426		CLR	E.B0	;EXPECTED MSG B0
3990	013322	012737	001720	003430	MOV	#<D.SPOK!D.CART!D.DOOR!D.BRM!D.SSP>,E.A1	;EXPECTED A1
3991	013330	012737	000001	003432	MOV	#1,E.B1	;MSG ID FOR EXPECTED MSG B1
3992	013336	005037	003434		CLR	E.A2	;EXPECTED MSG A2
3993	013342	012737	000002	003436	MOV	#2,E.B2	;MSG ID FOR EXPECTED MSG B2
3994	013350	012737	000003	003442	MOV	#3,E.B3	;MSG ID FOR EXPECTED MSG B3
3995							
3996	013356	004737	044720		JSR	PC,CHKMSG	;CHECK MSGS A0,B0,A1,B1
3997	013362	000003			.WORD	T.A2!T.B2!0	; & MSGS SPECIFIED HERE
3998	013364	104273			ERROR	273	;MSG A0 ERROR AFTER DRIVE CLEAR CMD
3999	013366	104265			ERROR	265	;MSG B0 ERROR
4000	013370	104274			ERROR	274	;MSG A1 ERROR
4001	013372	104266			ERROR	266	;MSG B1 ERROR
4002							
4003	013374	000137	014140		JMP	12\$	
4004							
4005	013400	012765	100000	000000	MOV	#CLR,RKCS1(R5)	
4006	013406	013737	001370	001372	MOV	H2,COUNT	
4007	013414	012737	000074	001374	MOV	#60,.SEC	
4008	013422	004737	047614		JSR	PC,CLKON	;TURN CLK INTR ON FOR 60 SEC MAX
4009	013426	012765	000001	000026	MOV	#1,RKMR1(R5)	;SELECT WORD 1
4010	013434	004737	045534		JSR	PC,GSTAT	
4011	013440	032737	002000	003362	BIT	#D.FWD,HMR2	
4012	013446	001004			BNE	5\$	
4013	013450	005737	001376		TST	TIMUP	;IS 60 SEC DELAY UP?
4014	013454	001767			BEQ	4\$	;BRANCH IF NO & REPEAT

E07

UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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T14 VERIFY START SPINDLE CMD

SEQ 0092

4015	013456	104070			ERROR	70		:FWD NOT SET WITHIN 60 SEC FROM
4016								:START SPINDLE CMD
4017	013460	004737	047710		55:	JSR	PC,CLKOF	:TURN OFF CLOCK INTERRUPT
4018	013464	012765	100000	000000		MOV	#0CLR,RKCS:(R5)	
4019	013472	012737	011610	003372		MOV	#5000.,TEMP1	
4020	013500	004737	044666			JSR	PC,DLY	:WAIT APPROX 100MS FOR PIP
4021	013504	004737	044460			JSR	PC,TSTATN	:TEST FOR ATTN
4022	013510	000401				BR	16\$	
4023	013512	104317				ERROR	317	:UNEXP ATTN AFTER ST SPIN & FWD DETECTED
4024	013514	012737	030140	003424	16\$:	MOV	#<D.PIP!D.SPIN!D.VV!D.DRA>,E.A0	:EXPECTED A0
4025	013522	005037	003426			CLR	E.B0	
4026	013526	012737	013700	003430		MOV	#<D.LOAD!D.FWD!D.SPOK!D.CART!D.DOOR!D.BRHM>,E.A1	
4027	013534	012737	000001	003432		MOV	#1,E.B1	
4028								
4029	013542	004737	044720			JSR	PC,CHKMSG	:CHECK MSGS A0,B0,A1,B1
4030	013546	000000				.WORD	0!0!0	:& MSGS SPECIFIED HERE
4031	013550	104071				ERROR	71	:MSG A0 ERROR AFTER START SPIN & FWD DETECTED
4032	013552	104072				ERROR	72	:MSG B0 ERROR
4033	013554	104073				ERROR	73	:MSG A1 ERROR
4034	013556	104074				ERROR	74	:MSG B1 ERROR
4035								
4036	013560	013737	001370	001372		MOV	HZ,COUNT	
4037	013566	012737	000005	001374		MOV	#5,SEC	
4038	013574	004737	047614			JSR	PC,CLKON	:TURN CLK INTR ON FOR 5 SEC MAX
4039	013600	012765	000001	000026	6\$:	MOV	#1,RKMR1(R5)	:WORD 1
4040	013606	004737	045534			JSR	PC,GSTAT	
4041	013612	032737	002000	003362		BIT	#D.FWD,HMR2	
4042	013620	001404				BEQ	7\$	
4043	013622	005737	001376			TST	TIMUP	
4044	013626	001764				BEQ	6\$	
4045	013630	104075				ERROR	75	:FWD NOT CLEARED WITHIN 5 SEC OF MOTION
4046								:FROM START SPINDLE CMD.
4047	013632	004737	047710		7\$:	JSR	PC,CLKOF	:TURN OFF CLK INTERRUPT
4048	013636	004737	044460			JSR	PC,TSTATN	:TEST FOR ATTN
4049	013642	000401				BR	17\$	
4050	013644	104320				ERROR	320	:UNEXP ATTN AFTER INNER LIM DETECT
4051	013646	012737	030140	003424	17\$:	MOV	#<D.PIP!D.SPIN!D.VV!D.DRA>,E.A0	:EXPECTED A0
4052	013654	005037	003426			CLR	E.B0	
4053	013660	012737	025720	003430		MOV	#<D.RTZ!D.REV!D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1	
4054	013666	012737	000001	003432		MOV	#1,E.B1	
4055								
4056	013674	004737	044720			JSR	PC,CHKMSG	:CHECK MSGS A0,B0,A1,B1
4057	013700	000000				.WORD	0!0!0	:& MSGS SPECIFIED HERE
4058	013702	104076				ERROR	76	:MSG A0 ERROR AT INNER LIMIT DETECT
4059	013704	104077				ERROR	77	:MSG B0 ERROR
4060	013706	104100				ERROR	100	:MSG A1 ERROR
4061	013710	104101				ERROR	101	:MSG B1 ERROR
4062								
4063	013712	013737	001370	001372		MOV	HZ,COUNT	
4064	013720	012737	000004	001374		MOV	#4,SEC	
4065	013726	004737	047614			JSR	PC,CLKON	:TURN CLK INTR ON FOR 4 SEC MAX
4066	013732	012765	000001	000026	8\$:	MOV	#1,RKMR1(R5)	:WORD 1
4067	013740	004737	045534			JSR	PC,GSTAT	
4068	013744	032737	002000	003362		BIT	#D.FWD,HMR2	
4069	013752	001004				BNE	9\$	
4070	013754	005737	001376			TST	TIMUP	

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UNIBUS Rk06 DRIVE DIAGNOSTIC PART 1
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T14 VERIFY START SPINDLE CMD

SEQ 0093

4071	013760	001764			BEQ	85	
4072	013762	104102			ERROR	102	;FWD NOT DETECTED WITHIN 4 SEC IN RTZ PORTION OF
4073							;START SPINDLE CMD.
4074	013764	004737	047710	95:	JSR	PC,CLKOF	;TURN CLOCK INTR OFF.
4075	013770	004737	044460		JSR	PC,TSTATN	;TEST FOR ATTN
4076	013774	000401			BR	185	
4077	013776	104321			ERROR	321	;UNEXP ATTN AFTER OUTER LIM TO CYL 0
4078	014000	012737	030140	003424	MCV	#<D.PIP!D.SPIN!D.VV!D.DRA>,E.A0	;EXPECTED AD
4079	014006	005037	003426	185:	CLR	E.B0	
4080	014012	012737	023720	003430	MCV	#<D.RTZ!D.FWD!D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1	
4081	014020	012737	000001	003432	MOV	#1,E.B1	
4082							
4083	014026	004737	044720		JSR	PC,CHKMSG	;CHECK MSGS A0,B0,A1,B1
4084	014032	000000			.WORD	0!0!0	;3 MSGS SPECIFIED HERE
4085	014034	104103			ERROR	103	;MSG A0 ERROR FROM OUT LIM TO CYL 0 DURING LOAD
4086	014036	104104			ERROR	104	;MSG B0 ERROR
4087	014040	104105			ERROR	105	;MSG A1 ERROR
4088	014042	104106			ERROR	106	;MSG B1 ERROR
4089	014044	012737	001370	001372	MOV	HZ,COUNT	
4090	014052	012737	000001	001374	MOV	#1,SEC	
4091	014060	004737	047614		JSR	PC,CLKON	;TURN CLK INTR ON FOR 1 SEC MAX
4092	014064	005065	000026	105:	CLR	RKMR1(R5)	;WORD 0
4093	014070	004737	045534		JSR	PC,GSTAT	
4094	014074	032737	000200	003362	BIT	#D.DRDY,HMR2	;SEE IF DRIVE READY
4095	014102	001004			BNE	115	
4096	014104	005737	001376		TST	TIMUP	
4097	014110	001765			BEQ	105	
4098	014112	104107			ERROR	107	;DRIVE READY NOT SET WITHIN 1 SEC FROM
4099							;FWD IN RTZ PORTION OF START SPIN CMD
4100	014114	004737	047710	115:	JSR	PC,CLKOF	;TURN CLOCKS OFF
4101	014120	004737	044460		JSR	PC,TSTATN	;TEST ATTN
4102	014124	104067			ERROR	67	;NO ATTN AFTER START SPIN CMD
4103	014126	012737	014404	001176	MOV	#305,\$ESCAPE	
4104	014134	000137	013136		JMP	25	;CHECK RKMR 2 & 3 WORDS 0 & 1
4105							
4106	014140	005037	001176	125:	CLR	\$ESCAPE	
4107	014144	012765	100000	000000	MOV	#CCLR,RKCS1(R5)	
4108	014152	005065	000026		CLR	RKMR1(R5)	
4109	014156	004737	045534		JSR	PC,GSTAT	
4110	014162	032737	010000	003362	BIT	#D.SPIN,HMR2	
4111	014170	001003			BNE	145	
4112	014172	104306			ERROR	306	;SPIN NOT SET AFTER ST. SPIN CMD
4113	014174	000137	043470		JMP	\$EOP	;ABORT DRIVE
4114	014200	005037	003316	145:	CLR	UNLD	;USED FOR VALID HALT
4115	014204	004737	050036		JSR	PC,SWTST	;SEE IF SW 14 OR 8 IS SET
4116	014210	000507			BR	TST15	;GO TO NEXT TEST
4117							;RETURN HERE IF SW 14 IS SET OR
4118							;SW 8 WITH SWR <7:0> APPLY
4119	014212	005237	003316	205:	INC	UNLD	
4120							
4121	014216	004737	046106		JSR	PC,SUBCLR	
4122	014222	104024			ERROR	24	;CERR AFTER SCLR
4123							
4124	014224	012765	000007	000000	MOV	#UNLOAD,RKCS1(R5)	;UNLOAD CMD
4125	014232	013737	001414	003372	MOV	T10,TEMP1	
4126	014240	004737	044176		JSR	PC,FRDY	;FIND RDY

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UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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T14 VERIFY START SPINDLE CMD

SEG 0094

4127	014244	104011		ERROR	11		:RDY NOT SET AFTER UNLOAD CMD.
4128	014246	004737	044460	JSR	PC,TSTATN		
4129	014252	104012		ERROR	12		:NO ATTN AFTER UNLOAD CMD
4130							
4131	014254	004737	046106	JSR	PC,SUBCLR		
4132	014260	104024		ERROR	24		:CERR AFTER SCLR
4133							
4134	014262	012737	177777	MOV	#-1,\$TMPD		:SETUP TIMEOUT, ALL 1'S
4135	014270	012765	100000	MOV	#CCLR,RKCS1(R5)		
4136	014276	012765	000001	MOV	#1,RKMR1(R5)		:SELECT WORD 1
4137	014304	004737	045534	JSR	PC,GSTAT		
4138	014310	032737	001000	BIT	#D.SPOK,HMR2		:SEE IF SPEED OK GONE
4139	014316	001404		BEG	68\$		:BR IF YES
4140	014320	005337	001160	DEC	\$TMPD		:ELSE TRY AGAIN IF TIME NOT UP
4141	014324	001361		BNE	67\$		
4142	014326	104315		ERROR	315		:SPEED NOT DOWN BY TIMEOUT
4143	014330						
4144							
4145	014330	004737	046106	JSR	PC,SUBCLR		
4146	014334	104024		ERROR	24		:CERR AFTER SCLR
4147							
4148	014336	005037	00117b	CLR	\$ESCAPE		
4149	014342	005737	001410	TST	LPFLG		
4150	014346	001402		BEG	69\$		
4151	014350	000177	164534	JMP	\$SLPERR		:SW 9 WAS SET.
4152	014354	000177	164526	JMP	\$SLPADR		:SW 14 OR 8 WAS SET
4153							
4154							
4155							

4156	014360	004737	047710	25\$:	JSR	PC,CLKOF	
4157	014364	005237	001410		INC	LPFLG	
4158	014370	032777	001000	164542	BIT	#SW9,\$SWR	:LOOP ON ERROR?
4159	014376	001305			BNE	20\$	:YES, RECONDITION DRIVE
4160	014400	000137	013106		JMP	1\$	:RETURN TO MAINLINE
4161	014404	004737	047710	30\$:	JSR	PC,CLKOF	
4162	014410	005237	001410		INC	LPFLG	
4163	014414	032777	001000	164516	BIT	#SW9,\$SWR	:LOOP ON ERROR?
4164	014422	001273			BNE	20\$	:YES, RECONDITION DRIVE
4165	014424	000137	014140		JMP	12\$	:RETURN TO MAINLINE

.SBTTL SEEK/READ HEADER/WRITE HEADER TESTS

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:TEST 15      STATIC CYL DIFF AND CYL ADDR REG TEST: PART 1
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:      THIS TEST CHECKS EACH BIT OF THE CYL DIFFERENCE
:      AND CYL ADDRESS REGISTERS BY PERFORMING SEEKS TO ALL
:      MAJOR CYLS (0,1,2,4,8,16,32,64,128,256) WITH EVEN PARITY SET.
:      THIS FREEZES THE INFORMATION IN THE ABOVE REGISTERS & ALLOWS FOR CHECKING.
:      THIS TEST VERIFIES C-D PARITY ERROR BIT SET, THAT HEADS DID
:      NOT MOVE & ALL OTHER APPLICABLE STATUS BITS & REGS.
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4178				TST15:	SCOPE		
4179	014430	000004			MOV	#1,\$TIMES	:DO 1 ITERATION
4180	014432	012737	000001	001174	MOV	#STACK,SP	:RESTORE STK PTP
4181	014440	012706	001100				
4182							

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UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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T15 STATIC CYL DIFF AND CYL ADDR REG TEST; PART :

SEG 0095

4183	014444	005000			CLR	RC	:CYL # REGISTER
4184	014446	012737	100000	003402	MOV	#BIT15,TEMP5	
4185							
4186	014454				13:		
4187	014454	104415			SCOP1		
4188	014456	012706	001100		MOV	#STACK,SP	;RESTORE STK PTR
4189							
4190	014462	004737	046106		JSR	PC,SUBCLR	
4191	014466	104024			ERROR	24	;CERR AFTER SCLR
4192							
4193							
4194	014470	012765	100000	000000	MOV	#CCLR,RKCS1(R5)	
4195	014476	013765	001222	000010	MOV	#UNIT,RKCS2(R5)	
4196	014504	012765	000013	000000	MOV	#RECAL,RKCS1(R5)	;RECAL CMD
4197							;RESET CYL DIFF/OFFSET & CYL ADDR REG
4198							;IN RKMR2 & RKMR3 RESP.
4199	014512	013737	001414	003372	MOV	T10,TEMP1	
4200	014520	004737	044176		JSR	PC,FRDY	;FIND RDY
4201	014524	104124			ERROR	124	;RDY NOT SET AFTER RECAL CMD
4202							
4203	014526	012765	000001	000026	MOV	#1,RKMR1(R5)	;SELECT WORD 1
4204	014534	004737	045534		JSR	PC,GSTAT	
4205	014540	032737	020000	003362	BIT	#D.RTZ,HMR2	
4206	014546	001001			BNE	645	
4207	014550	104244			ERROR	244	;RTZ NOT SET DURING RECAL CMD
4208	014552	013737	001412	003374	MOV	T1,TEMP2	;SETUP TIMEOUT
4209	014560	004737	044512		JSR	PC,FATT1	;FIND ATTN
4210	014564	104055			ERROR	55	;NO ATTN AFTER RECAL CMD
4211							
4212	014566	012737	050340	003424	MOV	#<D.DSC!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0	;EXPECTED MSG A0
4213	014574	005037	003426		CLR	E.B0	;EXPECTED MSG B0
4214	014600	012737	001720	003430	MOV	#<D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1	;EXPECTED A1
4215	014606	012737	000001	003432	MOV	#1,E.B1	;MSG ID FOR EXPECTED MSG B1
4216	014614	005037	003434		CLR	E.A2	;EXPECTED MSG A2
4217	014620	012737	000002	003436	MOV	#2,E.B2	;MSG ID FOR EXPECTED MSG B2
4218	014626	012737	000003	003442	MOV	#3,E.B3	;MSG ID FOR EXPECTED MSG B3
4219							
4220	014634	004737	044720		JSR	PC,CHKMSG	;CHECK MSGS A0,B0,A1,B1
4221	014640	000007			.WORD	T.A2!T.B2!T.B3	;8 MSGS SPECIFIED HERE
4222	014642	104221			ERROR	221	;MSG A0 ERROR AFTER RECAL CMD
4223	014644	104275			ERROR	275	;MSG B0 ERROR
4224	014646	104222			ERROR	222	;MSG A1 ERROR
4225	014650	104276			ERROR	276	;MSG B1 ERROR
4226							
4227	014652	005737	001362		TST	CYLDIF	;SEE IF MSG A2=0
4228	014656	001401			BEQ	655	;BR IF YES
4229	014660	104047			ERROR	47	;MSG A2 NOT CLEARED AFTER RECAL CMD
4230	014662	005737	001364		TST	CYLADD	;SEE IF MSG B2=0
4231	014666	001401			BEQ	665	;BR IF YES
4232	014670	104050			ERROR	50	;MSG B2 NOT CLEARED AFTER RECAL CMD
4233	014672						
4234							
4235	014672	012765	100000	000000	MOV	#CCLR,RKCS1(R5)	
4236	014700	013765	001222	000010	MOV	#UNIT,RKCS2(R5)	;DRIVE#
4237	014706	012765	000005	000000	MOV	#CLEAR,RKCS1(R5)	;DRIVE CLEAR CMD
4238	014714	013737	001414	003372	MOV	T10,TEMP1	

UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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T15 STATIC CYL DIFF AND CYL ADDR REG TEST; PART 1

SEQ 0086

4239	014722	004737	044176	JSR	PC,FRDY	;FIND RDY
4240	014726	104151		ERROR	151	;NO RDY AFTER DRIVE CLEAR CMD
4241	014730	004737	044460	JSR	PC,TSTATN	;TEST FOR ATTN
4242	014734	000401		BR	67\$	
4243	014736	104154		ERROR	154	;ATTN NOT CLEARED AFTER DRIVE CLEAR CMD
4244	014740					
4245						
4246	014740	012737	010340	MOV	#<D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0	;EXPECTED MSG A0
4247	014746	005037	003426	CLR	E.B0	;EXPECTED MSG B0
4248	014752	012737	001720	MOV	#<D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1	;EXPECTED A1
4249	014760	012737	000001	MOV	#1,E.B1	;MSG ID FOR EXPECTED MSG B1
4250	014766	005037	003434	CLR	E.A2	;EXPECTED MSG A2
4251	014772	012737	000002	MOV	#2,E.B2	;MSG ID FOR EXPECTED MSG B2
4252	015000	012737	000003	MOV	#3,E.B3	;MSG ID FOR EXPECTED MSG B3
4253						
4254	015006	004737	044720	JSR	PC,CHKMSG	;CHECK MSGS A0,B0,A1,B1
4255	015012	000003		WORD	T.A2!T.B2!0	; & MSGS SPECIFIED HERE
4256	015014	104273		ERROR	273	;MSG A0 ERROR AFTER DRIVE CLEAR CMD
4257	015016	104265		ERROR	265	;MSG B0 ERROR
4258	015020	104274		ERROR	274	;MSG A1 ERROR
4259	015022	104266		ERROR	266	;MSG B1 ERROR
4260						
4261						
4262	015024	104415		SCOP1		
4263	015026	012706	001100	MOV	#STACK,SP	;RESTORE STK PTR
4264						
4265	015032	004737	046106	JSR	PC,SUBCLR	
4266	015036	104024		ERROR	24	;CERR AFTER SCLR
4267						
4268	015040	005237	001462	INC	BYPCERR	;DO NOT TEST CERR IN GSTAT1
4269	015044	012765	000020	MOV	#PAT,RKMR1(R5)	;EVEN PARITY
4270	015052	010065	000020	MOV	RD,RKDC(R5)	;CYL ADDR
4271	015056	012765	000017	MOV	#SEEK,RKCS1(R5)	;SEEK CMD.
4272	015064	013737	001414	MOV	T10,TEMP1	
4273	015072	004737	044176	JSR	PC,FRDY	;FIND RDY
4274	015076	104122		ERROR	122	;NO RDY FROM SEEK WITH BAD PARITY
4275	015100	004737	044460	JSR	PC,TSTATN	;TEST FOR ATTN
4276	015104	104125		ERROR	125	;NO ATTN FROM SEEK & BAD PARITY
4277	015106	012737	050340	MOV	#<D.DSC!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0	;EXPECTED A0
4278	015114	012737	001200	MOV	#<D.FLT!D.PAR>,E.B0	
4279	015122	012737	001720	MOV	#<D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1	
4280	015130	012737	000001	MOV	#1,E.B1	
4281	015136	010037	003434	MOV	RD,E.A2	
4282	015142	010037	003436	MOV	RD,E.B2	
4283	015146	052737	000002	BIS	#2,E.B2	;ADD MSG ID
4284						
4285	015154	004737	044720	JSR	PC,CHKMSG	;CHECK MSGS A0,B0,A1,B1
4286	015160	000003		WORD	T.A2!T.B2!0	; & MSGS SPECIFIED HERE
4287	015162	104110		ERROR	110	;MSG A0 ERROR AFTER SEEK WITH BAD PARITY
4288	015164	104111		ERROR	111	;MSG B0 ERROR
4289	015166	104146		ERROR	146	;MSG A1 ERROR
4290	015170	104147		ERROR	147	;MSG B1 ERROR
4291						
4292	015172	020037	001364	CMP	RD,CYLADD	
4293	015176	001401		BEO	2\$	
4294	015200	104043		ERROR	43	;CYL ADDR IN B2 NOT=RKDC

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UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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T15 STATIC CYL DIFF AND CYL ADDR REG TEST; PART 1

SEG 0097

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4295
4296 015202 020037 001362      2$:  CMP      RD,CYLDIF
4297 015206 001401              BEQ       3$
4298 015210 104044              ERROR    44          ;CYL DIFF IN A2 NOT=RKDC
4299
4300 015212 005037 001462      3$:  CLR       BYPCERR          ;ALLOW CHECKING FOR ANY CERR IN GSTAT1
4301 015216 006137 003402      ROL       TEMP5          ;SET CARRY ONLY ONCE
4302 015222 006100              ROL       RD              ;SELECT NEXT MAJOR CYL
4303 015224 020027 001000      CMP       RD,#1000        ;ALL MAJOR CYL DONE?
4304 015230 001001              BNE       4$          ;BRANCH IF NO
4305 015232 000402              BR        TST16         ;GO TO NEXT TST
4306 015234 000137 014454      4$:  JMP       1$
4307
4308
4309
4310
4311
4312
4313
4314
4315
4316
4317 015240 000004
4318 015242 012737 000001 001174
4319 015250 012706 001100
4320
4321 015254 005737 001340
4322 015260 001404
4323 015262 104401 056274
4324 015266 000137 016530
4325
4326 015272 104401 056236      13$: TYPE      ,MSG8          ;PLEASE WAIT, LONG TEST
4327
4328 015276 005037 001350      CLR       FROM CYL        ;FROM CYL
4329 015302 005037 001352      CLR       TO CYL          ;TO CYL
4330 015306 005037 001354      CLR       CCYL          ;CURRENT CYL
4331 015312 005037 001356      CLR       PCYL          ;PREV CYL
4332
4333 015316 104415
4334 015320 012706 001100      SCOP1
4335
4336 015324 004737 046106      MOV       #STACK,SP        ;RESTORE STK PTR
4337 015330 104024
4338
4339
4340 015332 012765 100000 000000      MOV       #CCLR,RKCS1(R5)
4341 015340 013765 001222 000010      MOV       $UNIT,RKCS2(R5)
4342 015346 012765 000013 000000      MOV       #RECAL,RKCS1(R5)          ;RECAL CMD
4343
4344
4345 015354 013737 001414 003372      MOV       T10,TEMP1
4346 015362 004737 044176      JSR       PC,FRDY          ;FIND RDY
4347 015366 104124              ERROR    124          ;RDY NOT SET AFTER RECAL CMD
4348
4349 015370 012765 000001 000026      MOV       #1,RKMR1(R5)        ;SELECT WORD 1
4350 015376 004737 045534      JSR       PC,GSTAT

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JNIBJS RK06 DRIVE DIAGNOSTIC PART 1
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T16 STATIC CYL DIFF & CYL ADDR REG TEST-PART 2

SEG 0098

4351	015402	032737	020000	003362	BIT	#D.RTZ.HMP2	
4352	015410	001001			BNE	64\$	
4353	015412	104244			ERROR	244	;RTZ NOT SET DURING RECAL CMD
4354	015414	013737	001412	003374	MOV	T1,TEMP2	;SETUP TIMEOUT
4355	015422	004737	044512		JSR	PC,FATT1	;FIND ATTN
4356	015426	104055			ERROR	55	;NO ATTN AFTER RECAL CMD
4357							
4358	015430	012737	050340	003424	MOV	#<D.DSC!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0	;EXPECTED MSG A0
4359	015436	005037	003426		CLR	E.B0	;EXPECTED MSG B0
4360	015442	012737	001720	003430	MOV	#<D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1	;EXPECTED A1
4361	015450	012737	000001	003432	MOV	#1,E.B1	;MSG ID FOR EXPECTED MSG B1
4362	015456	005037	003434		CLR	E.A2	;EXPECTED MSG A2
4363	015462	012737	000002	003436	MOV	#2,E.B2	;MSG ID FOR EXPECTED MSG B2
4364	015470	012737	000003	003442	MOV	#3,E.B3	;MSG ID FOR EXPECTED MSG B3
4365							
4366	015476	004737	044720		JSR	PC,CHKMSG	;CHECK MSGS A0,B0,A1,B1
4367	015502	000007			.WORD	T.A2!T.B2!T.B3	; & MSGS SPECIFIED HERE
4368	015504	104221			ERROR	221	;MSG A0 ERROR AFTER RECAL CMD
4369	015506	104275			ERROR	275	;MSG B0 ERROR
4370	015510	104222			ERROR	222	;MSG A1 ERROR
4371	015512	104276			ERROR	276	;MSG B1 ERROR
4372							
4373	015514	005737	001362		TST	CYLDIF	;SEE IF MSG A2=0
4374	015520	001401			BEQ	65\$	;BR IF YES
4375	015522	104047			ERROR	47	;MSG A2 NOT CLEARED AFTER RECAL CMD
4376	015524	005737	001364		TST	CYLADD	;SEE IF MSG B2=0
4377	015530	001401			BEQ	66\$	;BR IF YES
4378	015532	104050			ERROR	50	;MSG B2 NOT CLEARED AFTER RECAL CMD
4379	015534						
4380							
4381	015534	012765	100000	000000	MOV	#CLR,RKCS1(R5)	
4382	015542	013765	001222	000010	MOV	SUNIT,RKCS2(R5)	;DRIVE#
4383	015550	012765	000005	000000	MOV	#CLR,RKCS1(R5)	;DRIVE CLEAR CMD
4384	015556	013737	001414	003372	MOV	T10,TEMP1	
4385	015564	004737	044176		JSR	PC,FRDY	;FIND RDY
4386	015570	104151			ERROR	151	;NO RDY AFTER DRIVE CLEAR CMD
4387	015572	004737	044460		JSR	PC,TSTATN	;TEST FOR ATTN
4388	015576	000401			BR	67\$	
4389	015600	104154			ERROR	154	;ATTN NOT CLEARED AFTER DRIVE CLEAR CMD
4390	015602						
4391							
4392	015602	012737	010340	003424	MOV	#<D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0	;EXPECTED MSG A0
4393	015610	005037	003426		CLR	E.B0	;EXPECTED MSG B0
4394	015614	012737	001720	003430	MOV	#<D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1	;EXPECTED A1
4395	015622	012737	000001	003432	MOV	#1,E.B1	;MSG ID FOR EXPECTED MSG B1
4396	015630	005037	003434		CLR	E.A2	;EXPECTED MSG A2
4397	015634	012737	000002	003436	MOV	#2,E.B2	;MSG ID FOR EXPECTED MSG B2
4398	015642	012737	000003	003442	MOV	#3,E.B3	;MSG ID FOR EXPECTED MSG B3
4399							
4400	015650	004737	044720		JSR	PC,CHKMSG	;CHECK MSGS A0,B0,A1,B1
4401	015654	000003			.WORD	T.A2!T.B2!0	; & MSGS SPECIFIED HERE
4402	015656	104273			ERROR	273	;MSG A0 ERROR AFTER DRIVE CLEAR CMD
4403	015660	104265			ERROR	265	;MSG B0 ERROR
4404	015662	104274			ERROR	274	;MSG A1 ERROR
4405	015664	104266			ERROR	266	;MSG B1 ERROR
4406							

4407							
4408	015666	104415			SCOP1		
4409	015670	012706	001100		MOV	#STACK, SP	;RESTORE STK PTR
4410							
4411	015674	004737	046106		JSR	PC, SUBCLR	
4412	015700	104024			ERROR	24	;CERR AFTER SCLR
4413							
4414							
4415	015702	012765	000020	000026	1S:	MOV	#PAT, RKMR1(R5) ;EVEN PARITY
4416	015710	013765	001352	000020		MOV	TOCYL, RKDC(R5) ;SET TO CYL ADDR
4417	015716	013737	001352	001354		MOV	TCYCL, CCYL ;CURRENT CYL
4418	015724	013737	001354	003376		MOV	CCYL, TEMP3
4419	015732	013737	001356	003400		MOV	PCYL, TEMP4 ;PREV CYL
4420	015740	163737	003376	003400		SUB	TEMP3, TEMP4
4421	015746	100002				BPL	2S ;BR IF TEMP4 IS POS
4422	015750	005437	003400			NEG	TEMP4
4423	015754	013737	003400	001360	2S:	MOV	TEMP4, CALDIF
4424	015762	013737	001354	001356		MOV	CCYL, PCYL
4425	015770	012765	000017	000000		MOV	#SEEK, RKCS1(R5) ;SEEK CMD.
4426	015776	013737	001414	003372		MOV	T10, TEMP1
4427	016004	004737	044176			JSR	PC, FRDY ;FIND RDY
4428	016010	104122				ERROR	122 ;NO RDY AFTER SEEK WITH BAD PARITY
4429	016012	004737	044460			JSR	PC, TSTATN ;TEST FOR ATTN
4430	016016	104125				ERROR	125 ;NO ATTN FROM SEEK & BAD PARITY
4431	016020	012765	100000	000000		MOV	#CCLR, RKCS1(R5) ;CLEAR ERROR
4432	016026	013765	001352	000020		MOV	TOCYL, RKDC(R5) ;RESTOR RKDC AFT CCLR
4433	016034	004737	046476			JSR	PC, RDCYLA ;READ CYL ADDR
4434	016040	023737	001352	001364		CMP	TOCYL, CYLADD ;SEE IF TO CYL ECHOED OK
4435	016046	001401				BEQ	3S
4436	016050	104045				ERROR	45 ;MR3 NOT=RKDC
4437							
4438	016052	004737	046412		3S:	JSR	PC, RDCYLD ;READ CYL DIFF
4439	016056	023737	001360	001362		CMP	CALDIF, CYLDIF ;SEE IF CYL DIFF CORRECT
4440	016064	001401				BEQ	4S
4441	016066	104046				ERROR	46 ;CYL DIFF IN RKMR2 INCORRECT
4442							
4443	016070				4S:		
4444							
4445	016070	012765	100000	000000		MOV	#CCLR, RKCS1(R5)
4446	016076	013765	001222	000010		MOV	\$UNIT, RKCS2(R5) ;DRIVE#
4447	016104	012765	000005	000000		MOV	#CLEAR, RKCS1(R5) ;DRIVE CLEAR CMD
4448	016112	013737	001414	003372		MOV	T10, TEMP1
4449	016120	004737	044176			JSR	PC, FRDY ;FIND RDY
4450	016124	104151				ERROR	151 ;NO RDY AFTER DRIVE CLEAR CMD
4451	016126	004737	044460			JSR	PC, TSTATN ;TEST FOR ATTN
4452	016132	000401				BR	68S
4453	016134	104154				ERROR	154 ;ATTN NOT CLEARED AFTER DRIVE CLEAR CMD
4454	016136				68S:		
4455							
4456							
4457	016136	104415			SCOP1		
4458	016140	012706	001100		MOV	#STACK, SP	;RESTORE STK PTR
4459							
4460	016144	004737	046106		JSR	PC, SUBCLR	
4461	016150	104024			ERROR	24	;CERR AFTER SCLP
4462							

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T16 STATIC CYL DIFF & CYL ADDR REG TEST-PART 2

SEC 0090

Address	Hex	Hex	Hex	Hex	Label	Assembly	Comments
4463	016152	012765	000020	000026		MOV #PAT,RKMR1(R5)	;EVEN PARITY
4464	016160	013765	001350	000020		MOV FRCYL,RKDC(R5)	;SET RETURN CYL ADDR
4465	016166	013737	001350	001354		MOV FRCYL,CCYL	
4466	016174	013737	001354	003376		MOV CCYL,TEMP3	
4467	016202	013737	001356	003400		MOV PCYL,TEMP4	
4468	016210	163737	003376	003400		SUB TEMP3,TEMP4	
4469	016216	100002				BPL SS	;BR IF TEMP4 IS POS
4470	016220	005437	003400			NEG TEMP4	
4471	016224	013737	003400	001360	5\$:	MOV TEMP4,CALDIF	
4472	016232	013737	001354	001356		MOV CCYL,PCYL	
4473	016240	012765	000017	000000		MOV #SEEK,RKCS1(R5)	;SEEK CMD
4474	016246	013737	001414	003372		MOV T10,TEMP1	
4475	016254	004737	044176			JSR PC,FRDY	;FIND RDY
4476	016260	104122				ERROR 122	;NO RDY AFTER SEEK WITH BAD PARITY
4477	016262	004737	044460			JSR PC,TSTATN	;TEST FOR ATTN
4478	016266	104125				ERROR 125	;NO ATTN FROM SEEK & BAD PARITY
4479	016270	012765	100000	000000		MOV #CCLR,RKCS1(R5)	;CLEAR ERROR
4480	016276	013765	001350	000020		MOV FRCYL,RKDC(R5)	;RESTOR RKDC AFT CCLR
4481	016304	004737	046476			JSR PC,RDCYLA	;READ CYL ADDR
4482	016310	023737	001350	001364		CMP FRCYL,CYLADD	;SEE IF RETURN CYL ECHOED OK
4483	016316	001401				BEQ 6\$	
4484	016320	104241				ERROR 241	;MR3 NOT=RKDC
4485							
4486	016322	023737	001352	001350	6\$:	CMP TOCYL,FRCYL	;SEE IF TO=FROM
4487	016330	001022				BNE 10\$	;DO NORMAL TEST IF NO
4488	016332	005737	001352			TST TOCYL	;SEE IF=0
4489	016336	001007				BNE 9\$	
4490	016340	004737	046412			JSR PC,RDCYLD	;CYL DIFF S/B 0 ON CYL 0
4491	016344	005737	001362			TST CYLDIF	
4492	016350	001421				BEQ 7\$	
4493	016352	104242				ERROR 242	;CYL DIFF IN RKMR2 INCORRECT
4494	016354	000417				BR 7\$	
4495							
4496	016356	004737	046412		9\$:	JSR PC,RDCYLD	;CYL DIFF/OFFSET SHOULD NOT
4497	016362	023727	001362	000001		CMP CYLDIF,#1	;CHANGE IN SEEK TO SELF
4498	016370	001411				BEQ 7\$	;SHOULD = 1 IN THIS TEST
4499	016372	104263				ERROR 263	;CYL DIFF IN RKMR2 DID NOT REMAIN = 0
4500	016374	000407				BR 7\$	
4501	016376	004737	046412		10\$:	JSR PC,RDCYLD	;READ CYL DIFF
4502	016402	023737	001360	001362		CMP CALDIF,CYLDIF	;SEE IF CYL DIFF OK
4503	016410	001401				BEQ 7\$	
4504	016412	104242				ERROR 242	;CYL DIFF IN RKMR2 INCORRECT
4505							
4506	016414				7\$:		
4507							
4508	016414	012765	100000	000000		MOV #CCLR,RKCS1(R5)	
4509	016422	013765	001222	000010		MOV \$UNIT,RKCS2(R5)	;DRIVE#
4510	016430	012765	000005	000000		MOV #CLEAR,RKCS1(R5)	;DRIVE CLEAR CMD
4511	016436	013737	001414	00337			

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UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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T16 STATIC CYL DIFF & CYL ADDR REG TEST-PART 2

SEQ 0091

4519								
4520	016462	005237	001352			INC	TOCYL	
4521	016466	023727	001352	000633		CMP	TOCYL, #411.	;SEE IF SCANNED ALL CYLS
4522	016474	001402				BEQ	8\$	;BR IF YES
4523	016476	000137	015702			JMP	1\$	;ELSE REPEAT
4524								
4525	016502	005237	001350		8\$:	INC	FRCYL	
4526	016506	023727	001350	000633		CMP	FRCYL, #411.	;SEE IF ALL DONE
4527	016514	001405				BEQ	TST17	;GO TO NEXT TST
4528	016516	013737	001350	001352		MOV	FRCYL, TOCYL	;FRCYL ALWAYS = OR > TOCYL
4529	016524	000137	015702			JMP	1\$	;ELSE REPEAT
4530	016530				12\$:			
4531								
4532								
4533								
4534								
4535								
4536								
4537								
4538								
4539								
4540								
4541								
4542								
4543								
4544								
4545								
4546	016530	000004						
4547	016532	012737	000001	001174		TST17:	SCOPE	
4548	016540	012706	001100			MOV	#1, \$TIMES	;DO 1 ITERATION
4549						MOV	#STACK, SP	;RESTORE STK PTR
4550	016544	005000				CLR	R0	;HEAD #
4551	016546				1\$:			
4552	016546	104415				SCOPI		
4553	016550	012706	001100			MOV	#STACK, SP	;RESTORE STK PTR
4554								
4555	016554	004737	046106			JSR	PC, SUBCLR	
4556	016560	104024				ERROR	24	;CERR AFTER SCLR
4557								
4558								
4559								
4560	016562	012765	100000	C00000		MOV	#CCLR, RKCS1(R5)	
4561	016570	013765	001222	000010		MOV	\$UNIT, RKCS2(R5)	
4562	016576	012765	000013	000000		MOV	#RECAL, RKCS1(R5)	;RECAL CMD
4563								;RESET CYL DIFF/OFFSET & CYL ADDR REG
4564								;IN RKMR2 & RKMR3 RESF.
4565	016604	013737	001414	003372		MOV	T10, TEMP1	
4566	016612	004737	044176			JSR	PC, FRDY	;FIND RDY
4567	016616	104124				ERROR	124	;RDY NOT SET AFTER RECAL CMD
4568								
4569	016620	012765	000001	000026		MOV	#1, RKMR1(R5)	;SELECT WORD 1
4570	016626	004737	045534			JSR	PC, GSTAT	
4571	016632	032737	020000	003362		BIT	#D, RTZ, HMR2	
4572	016640	001001				BNE	64\$	
4573	016642	104244				ERROR	244	;RTZ NOT SET DURING RECAL CMD
4574	016644	013737	001412	003374	64\$:	MOV	T1, TEMP2	;SETUP TIMEOUT

4575	016652	004737	044512	JSR	PC,FATT1	:FIND ATTN
4576	016656	104055		ERROR	55	:NO ATTN AFTER RECAL CMD
4577						
4578	016660	012737	050340	MOV	#<D.DSC!D.SPIN!D.DRDY!D.VV!D.DRA>.E.A0	:EXPECTED MSG A0
4579	016666	005037	003426	CLR	E.B0	:EXPECTED MSG B0
4580	016672	012737	001720	MOV	#<D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>.E.A1	:EXPECTED A1
4581	016700	012737	000001	MOV	#1.E.B1	:MSG ID FOR EXPECTED MSG B1
4582	016706	005037	003434	CLR	E.A2	:EXPECTED MSG A2
4583	016712	012737	000002	MOV	#2.E.B2	:MSG ID FOR EXPECTED MSG B2
4584	016720	012737	000003	MOV	#3.E.B3	:MSG ID FOR EXPECTED MSG B3
4585						
4586	016726	004737	044720	JSR	PC,CHKMSG	:CHECK MSGS A0,B0,A1,B1
4587	016732	000007		.WORD	T.A2!T.B2!T.B3	:8 MSGS SPECIFIED HERE
4588	016734	104221		ERROR	221	:MSG A0 ERROR AFTER RECAL CMD
4589	016736	104275		ERROR	275	:MSG B0 ERROR
4590	016740	104222		ERROR	222	:MSG A1 ERROR
4591	016742	104276		ERROR	276	:MSG B1 ERROR
4592						
4593	016744	005737	001362	TST	CYLDIF	:SEE IF MSG A2=0
4594	016750	001401		BEQ	655	:BR IF YES
4595	016752	104047		ERROR	47	:MSG A2 NOT CLEARED AFTER RECAL CMD
4596	016754	005737	001364	TST	CYLADD	:SEE IF MSG B2=0
4597	016760	001401		BEQ	665	:BR IF YES
4598	016762	104050		ERROR	50	:MSG B2 NOT CLEARED AFTER RECAL CMD
4599	016764					
4600						
4601	016764	012765	100000	MOV	#CLR,RKCS1(R5)	
4602	016772	013765	001222	MOV	\$UNIT,RKCS2(R5)	:DRIVE#
4603	017000	012765	000005	MOV	#CLR,RKCS1(R5)	:DRIVE CLEAR CMD
4604	017006	013737	001414	MOV	T10,TEMP1	
4605	017014	004737	044176	JSR	PC,FRDY	:FIND RDY
4606	017020	104151		ERROR	151	:NO RDY AFTER DRIVE CLEAR CMD
4607	017022	004737	044460	JSR	PC,TSTATN	:TEST FOR ATTN
4608	017026	000401		BR	675	
4609	017030	104154		ERROR	154	:ATTN NOT CLEARED AFTER DRIVE CLEAR CMD
4610	017032					
4611						
4612	017032	012737	010340	MOV	#<D.SPIN!D.DRDY!D.VV!D.DRA>.E.A0	:EXPECTED MSG A0
4613	017040	005037	003426	CLR	E.B0	:EXPECTED MSG B0
4614	017044	012737	001720	MOV	#<D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>.E.A1	:EXPECTED A1
4615	017052	012737	000001	MOV	#1.E.B1	:MSG ID FOR EXPECTED MSG B1
4616	017060	005037	003434	CLR	E.A2	:EXPECTED MSG A2
4617	017064	012737	000002	MOV	#2.E.B2	:MSG ID FOR EXPECTED MSG B2
4618	017072	012737	000003	MOV	#3.E.B3	:MSG ID FOR EXPECTED MSG B3
4619						
4620	017100	004737	044720	JSR	PC,CHKMSG	:CHECK MSGS A0,B0,A1,B1
4621	017104	000003		.WORD	T.A2!T.B2!0	:8 MSGS SPECIFIED HERE
4622	017106	104273		ERROR	273	:MSG A0 ERROR AFTER DRIVE CLEAR CMD
4623	017110	104265		ERROR	265	:MSG B0 ERROR
4624	017112	104274		ERROR	274	:MSG A1 ERROR
4625	017114	104266		ERROR	266	:MSG B1 ERROR
4626						
4627						
4628	017116	023727	001432	CMP	HEAD0,#1	:FOR HEAD 0, B3=1
4629	017124	001401		BEQ	35	
4630	017126	104053		ERROR	53	:RECAL DID NOT RESET HEAD REG IN B3.

4631				3\$:		
4632	017130				SCOP1	
4633	017130	104415			MOV	*STACK, SP ;RESTORE STK PTR
4634	017132	012706	001100			
4635						
4636	017136	004737	046106		JSR	PC, SUBCLR
4637	017142	104024			ERROR	24 ;CERR AFTER SCLR
4638						
4639	017144	000300			SWAB	RO
4640	017146	010065	000006		MOV	RO, RKDA(R5) ;HEAD *
4641	017152	000300			SWAB	RO
4642						
4643	017154	012765	000017	000000	MOV	*SEEK, RKCS1(R5) ;SEEK CMD
4644	017162	013737	001414	003372	MOV	T10, TEMP1
4645	017170	004737	044176		JSR	PC, FRDY ;FIND RDY
4646	017174	104156			ERROR	156 ;NO RDY AFTER SEEK TO SELF
4647	017176	004737	044460		JSR	PC, TSTATN
4648	017202	104157			ERROR	157 ;NO ATTN AFTER SEEK TO SELF
4649	017204	012737	050340	003424	MOV	*(<D.DSC!D.SPIN!D.DRDY!D.VV!D.DRA>, E.A0) ;EXPECTED AC
4650	017212	020027	000003		CMP	RO, #3
4651	017216	001403			BEQ	4\$;BR FOR HEAD 3
4652	017220	005037	003426		CLR	E.B0 ;FOR HEADS 0,1,2
4653	017224	000403			BR	5\$
4654	017226	012737	002240	003426	4\$: MOV	*(<D.SKI!D.FLT!D.IDAE>, E.B0) ;FOR HEAD 3
4655	017234	012737	001720	003430	5\$: MOV	*(<D.SPC!D.CART!D.DOOR!D.BRM!D.SSP>, E.A1)
4656	017242	012737	000001	003432	MOV	#1, E.B1
4657	017250	005037	003434		CLR	E.A2
4658	017254	012737	000002	003436	MOV	#2, E.B2
4659	017262	005700			TST	RO ;SEE IF HEAD 0
4660	017264	001004			BNE	6\$;BR IF NO
4661	017266	012737	001003	003442	MOV	*(<BIT9!3>, E.B3) ;LOAD EXPECTED B3 FOR HEAD 0 & MSG ID
4662	017274	000412			BR	8\$
4663	017276	020027	000001		6\$: CMP	RO, #1 ;SEE IF HEAD 1
4664	017302	001004			BNE	7\$;BR IF NO
4665	017304	012737	002003	003442	MOV	*(<BIT10!3>, E.B3) ;B3 FOR HEAD 1
4666	017312	000403			BR	8\$
4667	017314	012737	004003	003442	7\$: MOV	*(<BIT11!3>, E.B3) ;B3 FOR HEAD 2
4668	017322			8\$:		
4669						
4670	017322	004737	044720		JSR	PC, CHKMSG ;CHECK MSGS A0, B0, A1, B1
4671	017326	000007			.WORD	T.A2!T.B2!T.B3 ;& MSGS SPECIFIED HERE
4672	017330	104114			ERROR	114 ;MSG A0 ERROR AFTER LOAD HEAD REG & SEEK CMD
4673	017332	104115			ERROR	115 ;MSG B0 ERROR
4674	017334	104322			ERROR	322 ;MSG A1 ERROR
4675	017336	104323			ERROR	323 ;MSG B1 ERROR
4676						
4677	017340	005737	001362		TST	CYLDIF ;SEE IF MSG A2=0
4678	017344	001401			BEQ	68\$;BR IF YES
4679	017346	104324			ERROR	324 ;MSG A2 NOT CLEARED AFTER LOAD HEAD REG & SEEK CMD
4680	017350	005737	001364		68\$: TST	CYLADD ;SEE IF MSG B2=0
4681	017354	001401			BEQ	69\$;BR IF YES
4682	017356	104325			ERR0P	325 ;MSG B2 NOT CLEARED AFTER LOAD HEAD REG & SEEK CMD
4683	017360			69\$:		
4684						
4685	017360	020027	000003		CMP	RO, #3
4686	017364	001412			BEQ	9\$;BR IF HEAD 3

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4687
4688 017366 005037 003372 CLR TEMP1
4689 017372 116337 003324 003372 MOVB ATTN(RO),TEMP1
4690 017400 023737 003372 001432 CMP TEMP1,HEAD0 ;FOR RKDA=HEAD 0, HEAD=1 IN B3
4691 ;FOR RKDA=HEAD 1, HEAD=2 IN B3
4692 ;FOR RKDA=HEAD 2, HEAD=4 IN B3
4693 017406 001401 BEQ 95
4694 017410 104054 ERROR 54 ;HEAD DECODE IN B3 INCORRECT
4695
4696
4697 017412 005200 95: INC RO
4698 017414 023027 000004 CMP RO,R4 ;0 THRU 3 DONE?
4699 017420 001402 BEQ 105 ;BR IF YES
4700 017422 000137 016546 JMP 15 ;ELSE REPEAT
4701
4702 017426 105:
4703
4704 017426 012765 100000 000000 MOV #CCLR,RKCS1(R5)
4705 017434 013765 001222 000010 MOV $UNIT,RKCS2(R5)
4706 017442 012765 000013 000000 MOV #RECAL,RKCS1(R5) ;RECAL CMD
4707 017450 013737 001414 003372 MOV T10,TEMP1
4708 017456 004737 044176 JSR PC,FRDY ;FIND RDY
4709 017462 104124 ERROR 124 ;RDY NOT FOUND AFTER RECAL CMD
4710
4711 017464 012765 100000 000000 MOV #CCLR,RKCS1(R5)
4712 017472 013765 001222 000010 MOV $UNIT,RKCS2(R5) ;DRIVE#
4713 017500 012765 000005 000000 MOV #CLEAR,RKCS1(R5) ;DRIVE CLEAR CMD
4714 017506 013737 001414 003372 MOV T10,TEMP1
4715 017514 004737 044176 JSR PC,FRDY ;FIND RDY
4716 017520 104151 ERROR 151 ;NO RDY AFTER DRIVE CLEAR CMD
4717 017522 004737 044460 JSR PC,TSTATN ;TEST FOR ATTN
4718 017526 000401 BR 715
4719 017530 104154 ERROR 154 ;ATTN NOT CLEARED AFTER DRIVE CLEAR CMD
4720 017532 715:
4721
4722
4723 017532 004737 045534 JSR PC,GSTAT
4724 017536 032737 000040 003364 BIT #D.IDAE,HMR3 ;SEE IF IDAE IS CLEARED
4725 017544 001401 BEQ 705 ;BR IF YES
4726 017546 104155 ERROR 155 ;IDAE NOT CLEARED AFTER RECAL CMD
4727
4728 017550 012765 100000 000000 705: MOV #CCLR,RKCS1(R5)
4729 017556 013737 001412 003374 MOV T1,TEMP2 ;LOOK FOR ATTN FROM RECAL
4730 017564 004737 044512 JSR PC,FATT1
4731 017570 104055 ERROR 55 ;NO ATTN AFTER RECAL CMD
4732
4733
4734
4735 *****
4736 *TEST 20 SEEK TO CYL 0
4737 *
4738 * TESTS THE ABILITY TO DO A SEEK CMD.
4739 * VERIFIES THERE WAS NO MOVEMENT BY CHECKING ALL APPROPRIATE
4740 * STATUS BITS. VERIFIES CMD COMPLETION BETWEEN 10-15USEC.
4741 * READ HEADER IS NOT PERFORMED AS THE PACK MAY NOT BE FORMATTED.
4742 *
4743 *****

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E08

JNIBUS RK06 DRIVE DIAGNOSTIC PART 1
C2R64C.P11 06-OCT-76 19:09MACY11 27(1006) 06-OCT-76 23:23 PAGE 95
T20 SEEK TO CYL 0

SE2 0095

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4743 017572 000004          TS*20: SCOPE
4744 017574 012737 000001 001174 MOV      #1,STIMES      ;DC 1 ITERATION
4745 017602 012706 001100 MOV      #STACK,SP      ;RESTORE STK PTR
4746
4747 017606 004737 046106 JSR      PC,SUBCLR      ;SUBSYS CLEAR & GET STATUS
4748 017612 104024 ERROR    24      ;CERR AFTER SCLR
4749 017614 004737 046476 JSR      PC,RDCYLA      ;READ CYL ADDR IN RKMR3
4750 017620 005737 001364 TST      CYLADD
4751 017624 001401 BEQ      15
4752 017626 104130 ERROR    130      ;CYL ADDR NOT CLEARED AFTER SCLR
4753
4754 017630 134415          15: SCOP1
4755 017632 012706 001100 MOV      #STACK,SP      ;RESTORE STK PTR
4756
4757 017636 004737 046106 JSR      PC,SUBCLR
4758 017642 104024 ERROR    24      ;CERR AFTER SCLR
4759
4760 017644 012765 000017 00000C MOV      #SEEK,RKCS1(R5) ;SEEK CMD: SEEK TO SELF
4761 017652 012737 000005 003372 MOV      #5,TEMP1      ;SETUP 100US TIMEOUT
4762 017660 004737 044176 JSR      PC,FRDY      ;FIND RDY & GET STATUS
4763 017664 104131 ERROR    131      ;RDY NOT SET AFTER SEEK CMD
4764 017666 012737 000005 003372 MOV      #5,TEMP1      ;SETUP 100US TIMEOUT
4765
4766 017674 004737 044606 JSR      PC,FATT2      ;FIND ATTN
4767 017700 104132 ERROR    132      ;NO ATTN AFTER SEEK CMD
4768 017702 032737 10000C 003334 BIT      #CERR,HCS1
4769 017710 001401 BEQ      64$
4770 017712 104210 ERROR    210      ;CERR AFTER SEEK CMD
4771
4772          64$:
4773 017714 012737 050340 003424 MOV      #<D.DSC!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0 ;EXPECTED MSG A0
4774 017722 005037 003426 CLR      E.B0      ;EXPECTED MSG B0
4775 017726 012737 001720 00343C MOV      #<D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1 ;EXPECTED A1
4776 017734 012737 000001 003432 MOV      #1,E.B1      ;MSG ID FOR EXPECTED MSG B1
4777 017742 005037 003434 CLR      E.A2      ;EXPECTED MSG A2
4778 017746 012737 000002 003436 MOV      #2,E.B2      ;MSG ID FOR EXPECTED MSG B2
4779 017754 012737 000003 003442 MOV      #3,E.B3      ;MSG ID FOR EXPECTED MSG B3
4780
4781 017762 004737 044720 JSR      PC,CHKMSG      ;CHECK MSGS A0,B0,A1,B1
4782 017766 000003 .WORD    T.A2:T.B2:0 ;& MSGS SPECIFIED HERE
4783 017770 104133 ERROR    133      ;MSG A0 ERROR AFTER SEEK CMD
4784 017772 104134 ERROR    134      ;MSG B0 ERROR
4785 017774 104135 ERROR    135      ;MSG A1 ERROR
4786 017776 104136 ERROR    136      ;MSG B1 ERROR
4787 020000 005737 001362 TST      CYLDIF
4788 020004 001401 BEQ      65$
4789 020006 104137 ERROR    137      ;CYL DIFF NOT CLEARED AFTER SEEK CMD
4790
4791          65$:
4792
4793 020010 012765 100000 000000 MOV      #CLR,RKCS1(R5)
4794 020016 013765 001222 000010 MOV      $UNIT,RKCS2(R5) ;DRIVE#
4795 020024 012765 000005 000000 MOV      #CLEAR,RKCS1(R5) ;DRIVE CLEAR CMD
4796 020032 013737 001414 003372 MOV      T10,TEMP1
4797 020040 004737 044176 JSR      PC,FRDY      ;FIND RDY
4798 020044 104151 ERROR    151      ;NO RDY AFTER DRIVE CLEAR CMD

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F08

UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
DZRMHC.P11 06-OCT-76 18:09MACY11 27(1006) 06-OCT-76 23:23 PAGE 96
T20 SEEK TO CYL 0

SEG 0096

```

4799 020046 004737 044460 JSR PC,TSTATN ;TEST FOR ATTN
4800 020052 000401 BR 66$
4801 020054 104154 ERROR 154 ;ATTN NOT CLEARED AFTER DRIVE CLEAR CMD
4802 020056 66$:
4803
4804 020056 012737 010340 003424 MOV #<0!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0 ;EXPECTED MSG A0
4805 020064 005037 003426 CLR E.B0 ;EXPECTED MSG B0
4806 020070 012737 001720 003430 MOV #<0.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1 ;EXPECTED A1
4807 020076 012737 000001 003432 MOV #1,E.B1 ;MSG ID FOR EXPECTED MSG B1
4808 020104 005037 003434 CLR E.A2 ;EXPECTED MSG A2
4809 020110 012737 000002 003436 MOV #2,E.B2 ;MSG ID FOR EXPECTED MSG B2
4810 020116 012737 000003 003442 MOV #3,E.B3 ;MSG ID FOR EXPECTED MSG B3
4811
4812 020124 004737 044720 JSR PC,CHKMSG ;CHECK MSGS A0,B0,A1,B1
4813 020130 000003 .WORD T.A2!T.B2!0 ;8 MSGS SPECIFIED HERE
4814 020132 104273 ERROR 273 ;MSG A0 ERROR AFTER DRIVE CLEAR CMD
4815 020134 104265 ERROR 265 ;MSG B0 ERROR
4816 020136 104274 ERROR 274 ;MSG A1 ERROR
4817 020140 104266 ERROR 266 ;MSG B1 ERROR
4818
4819 020142 005737 001354 TST CYLADD
4820 020146 001401 BEQ TST21 ;GO TO NEXT TEST
4821 020150 104140 ERROR 140 ;CYL ADDR IN B2 NOT CLEARED AFT SEEK CMD.
4822
4823 ;*****
4824 ;*TEST 21 TEST SECTOR COUNT REG. IN MSG B3
4825 ;*****
4826 020152 000004 TST21: SCOPE
4827 020154 012737 000001 001174 MOV #1,$TIMES ;DO 1 ITERATION
4828 020162 012706 001100 MOV #STACK,SP ;RESTORE STK PTR
4829
4830 020166 004737 046106 JSR PC,SUBCLR ;SUBSYS CLEAR & GET STATUS
4831 020172 104024 ERROR 24 ;CERR AFTER SCLR
4832 020174 012737 020324 001176 MOV #2$, $ESCAPE ;GO TO NEXT TEST IF ANY ERROR DETECTED
4833
4834 020202 012737 000025 001400 MOV #21.,SECNT ;22 SECTOR FORMAT TEST
4835
4836 020210 004737 046236 JSR PC,F5022 ;FIND SECTOR 0
4837 020214 104142 ERROR 142 ;SECTOR 0 NOT FOUND BY TIMEOUT
4838
4839 020216 005037 001402 CLR PSEC ;PREVIOUS SECTOR
4840 020222 004737 046322 64$: JSR PC,FNS22 ;FIND NEXT SECTOR
4841 020226 104143 ERROR 143 ;DIFFERENT SECTOR NOT FOUND BY TIMEOUT
4842 020230 013737 001402 001404 MOV PSEC,ESEC
4843 020236 062737 000001 001404 ADD #1,ESEC ;SETUP EXPECTED SECTOR
4844 020244 013737 001406 001402 MOV SECTOR,PSEC ;UPDATE PREV SECTOR
4845 020252 004737 046166 JSR PC,RDSEC ;READ SECTOR
4846 020256 023737 001406 001402 CMP SECTOR,PSEC
4847 020264 001407 BEQ 65$ ;BR IF READ SAME TWICE
4848 020266 004737 046166 JSR PC,RDSEC
4849 020272 023737 001406 001402 CMP SECTOR,PSEC
4850 020300 001401 BEQ 65$ ;TRY 1 MORE TIME
4851 020302 104144 ERROR 144 ;MSG B3 ERROR, SECTOR REG UNSTABLE
4852 ;MAY BE DURING SECTOR PULSE TIME
4853 020304 023737 001406 001404 65$: CMP SECTOR,ESEC
4854 020312 001401 BEQ 66$

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G08

UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
CZR6HC.F11 06-OCT-76 18:09

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T21 TEST SECTOR COUNT REG. IN MSG B3

SEG 0097

4855 020314 104145
4856 020316 005337 001400
4857 020322 001337

665: ERROR 145 ;MSG B3 ERROR BETWEEN SECTOR COUNTS
DEC SECNT
BNE 645 ;BR IF SECTOR COUNT NOT DONE

4858
4859
4860 020324 005037 001176
4861
4862

25: CLR \$ESCAPE

:TEST 22 DETECT OUTER LIMIT

THIS TEST VERIFIES THAT THE ABOVE TEST DID ACTUALLY POSITION ON CYL 0
BY DETECTING OUTER LIMIT AS THE ADJACENT CYL.
AN ERROR IN THIS TEST INDICATES:

A. HEADS WERE NOT ON CYL 0
AND/OR B. COULD NOT SEEK IN REVERSE DIRECTION.

TST22: SCOPE

4873 020330 000004
4874 020332 012737 000001 001174
4875 020340 012706 001100

MOV #1,\$TIMES ;DO 1 ITERATION
MOV #STACK,SP ;RESTORE STK PTR

4876
4877 020344 004737 046106
4878 020350 104024
4879

JSR PC,SUBCLR ;SUBSYS CLEAR & GET STATUS
ERROR 24 ;CERR AFTER SCLR

4880 020352 005037 001410
4881 020356 005237 001462
4882 020362 005237 003316
4883

CLR LPFLG
INC BYPCERR ;BYPASS CHECKING FOR ANY CERR IN GSTAT1
INC UNLD ;USED FOR VALID HALT

4884 020366 012765 000020 000026
4885 020374 012765 000001 000020
4886 020402 012765 000017 000000
4887 020410 013737 001414 003372
4888 020416 004737 044176

MOV #PAT,RKMR1(R5) ;PARITY & WORD 0
MOV #1,RKDC(R5) ;CYL 1
MOV #SEEK,RKCS1(R5) ;SEEK CMD
MOV T10,TEMP1
JSR PC,FRDY ;FIND RDY
ERROR 122 ;NO RDY FROM SEEK WITH BAD PARITY
JSR PC,TSTATN ;TEST FOR ATTN
ERROR 125 ;NO ATTN FROM SEEK WITH BAD PARITY
MOV #<D.DSC!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0 ;EXPECTED AD
MOV #<D.FLT!D.PAR>,E.B0
MOV #<D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1
MOV #1,E.B1

4896
4897 020462 004737 044720
4898 020466 000000
4899 020470 104110
4900 020472 104111
4901 020474 104146
4902 020476 104147
4903

JSR PC,CHKMSG ;CHECK MSGS A0,B0,A1,B1
WORD 0!0!0 ;& MSGS SPECIFIED HERE
ERROR 110 ;MSG A0 ERROR AFTER SEEK WITH BAD PARITY
ERROR 111 ;MSG B0 ERROR
ERROR 146 ;MSG A1 ERROR
ERROR 147 ;MSG B1 ERROR

4904 020500 012765 100000 000000
4905 020506 013765 001222 000010
4906 020514 012765 000005 000000
4907 020522 013737 001414 003372
4908 020530 004737 044176
4909 020534 104151
4910 020536 004737 044460

MOV #CCLR,RKCS1(R5)
MOV \$UNIT,RKCS2(R5) ;DRIVE#
MOV #CLEAR,RKCS1(R5) ;DRIVE CLEAR CMD
MOV T10,TEMP1
JSR PC,FRDY ;FIND RDY
ERROR 151 ;NO RDY AFTER DRIVE CLEAR CMD
JSR PC,TSTATN ;TEST FOR ATTN

H08

 JNIBUS RK06 DRIVE DIAGNOSTIC PART 1
 CZR6HC.P11 06-OCT-76 18:09

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 T22 DETECT OUTER LIMIT

SEQ 0098

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4911 020542 000401          BR      645
4912 020544 104154          ERROR    154          ;ATTN NO. CLEARED AFTER DRIVE CLEAR CMD
4913 020546
4914
4915 020546 012737 010340 003424      MOV      #<0!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0      ;EXPECTED MSG AC
4916 020554 005037 003426          CLR      E.B0      ;EXPECTED MSG B0
4917 020560 012737 001720 003430      MOV      #<D.SPOK!D.CART!D.DOOR!D.BRM!D.SSP>,E.A1      ;EXPECTED A1
4918 020566 012737 000001 003432      MOV      #1,E.B1      ;MSG ID FOR EXPECTED MSG B1
4919 020574 005037 003434          CLR      E.A2      ;EXPECTED MSG A2
4920 020600 012737 000002 003436      MOV      #2,E.B2      ;MSG ID FOR EXPECTED MSG B2
4921 020606 012737 000003 003442      MOV      #3,E.B3      ;MSG ID FOR EXPECTED MSG B3
4922
4923 020614 004737 044720          JSR      PC,CHKMSG      ;CHECK MSGS A0,B0,A1,B1
4924 020620 000003          .WORD    T.A2!T.B2!0      ;& MSGS SPECIFIED HERE
4925 020622 104273          ERROR    273      ;MSG A0 ERROR AFTER DRIVE CLEAR CMD
4926 020624 104265          ERROR    265      ;MSG B0 ERROR
4927 020626 104274          ERROR    274      ;MSG A1 ERROR
4928 020630 104266          ERROR    266      ;MSG B1 ERROR
4929
4930
4931
4932 020632 012765 000000 000020      MOV      #0,RKDC(R5)      ;CYL 0
4933 020640 012765 000017 000000      MOV      #SEEK,RKCS1(R5) ;SEEK TO CYL 0
4934 020646 013737 001414 003372      MOV      T10,TEMP1
4935 020654 004737 044176          JSR      PC,FRDY      ;FIND RDY
4936 020660 104131          ERROR    131      ;NO RDY AFTER SEEK CMD
4937 020662 012765 100000 000000      MOV      #CCLR,RKCS1(R5)
4938 020670 004737 045534          JSR      PC,GSTAT
4939 020674 004737 046742          JSR      PC,FLIM      ;FIND LIMIT DETECT
4940 020700 104160          ERROR    160      ;LIMIT DETECT NOT FOUND BEFORE TIMEOUT
4941
4942
4943 020702 032737 040000 003362      BIT      #D.UNLD,HMR2
4944 020710 001003          BNE      15
4945 020712 104305          ERROR    305      ;DRIVE NOT UNLOADING AFTER LIMIT DETECT
4946 020714 000137 021422          JMP      305      ;BYPASS REST OF TEST
4947
4948
4949
4950
4951
4952
4953
4954
4955
4956
4957
4958
4959
4960
4961
4962
4963
4964 020720 012737 021336 001176      IS:      MOV      #205,$ESCAPE      ;MUST ESCAPE TO CYCLE UP DRIVE & TEST SWR
4965 020726 012737 070140 003424      MOV      #<D.DSC!D.PIP!D.SPIN!D.VV!D.DRA>,E.A0      ;EXPECTED A0
4966 020734 012737 002200 003426      MOV      #<D.SKI!D.FLT>,E.B0

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4967	020742	012737	045720	003430	MOV	#<D.UNLD!D.REV!D.SPOK!D.CART!D.DOOR!D.BRM!D.SSP>,E.A1	
4968	020750	012737	030001	003432	MOV	#<D.LIM!D.NMOV!1>,E.B1	
4969							
4970	020756	004737	044720		JSR	PC,CHKMSG	;CHECK MSGS A0,B0,A1,B1
4971	020762	000000			.WORD	0!0!0	;8 MSGS SPECIFIED HERE
4972	020764	104161			ERROR	161	;MSG A0 ERROR AFTER OUTER LIMIT DETECT
4973	020766	104162			ERROR	162	;MSG B0 ERROR
4974	020770	104163			ERROR	163	;MSG A1 ERROR
4975	020772	104164			ERROR	164	;MSG B1 ERROR
4976							
4977	020774	004737	044460		JSR	PC,TSTATN	
4978	021000	104165			ERROR	165	;NO ATTN AFTER OUTER LIMIT DETECT
4979	021002	005037	001462		CLR	BYPCERR	;ALLOW CHECKING CERR IN GSTAT1
4980							
4981	021006	004737	046106		JSR	PC,SUBCLR	;SUBSYS CLR
4982	021012	104024			ERROR	24	;CERR AFTER SCLR
4983	021014	013737	001414	003374	MOV	T10,TEMP2	;SET UP TIMEOUT
4984	021022	004737	047020		JSR	PC,FHDHM	;FIND HEAD HOME
4985	021026	104166			ERROR	166	;HEAD HOME NOT FOUND BEFORE TIMEOUT
4986	021030	004737	047074		JSR	PC,FLOAD	;FIND LOAD HEADS
4987	021034	104167			ERROR	167	;LOAD HEADS NOT FOUND BEFORE TIMEOUT
4988	021036	013737	001414	003374	MOV	T10,TEMP2	;SETUP TIMEOUT
4989	021044	004737	044512		JSR	PC,FATT1	;FIND ATTN
4990	021050	104067			ERROR	67	;ATTN NOT FOUND BEFORE TIMEOUT
4991	021052	005037	001176	25:	CLR	\$ESCAPE	
4992							
4993	021056	012737	050340	003424	MOV	#<D.DSC!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0	;EXPECTED MSG A0
4994	021064	005037	003426		CLR	E.B0	;EXPECTED MSG B0
4995	021070	012737	001720	003430	MOV	#<D.SPOK!D.CART!D.DOOR!D.BRM!D.SSP>,E.A1	;EXPECTED A1
4996	021076	012737	000001	003432	MOV	#1,E.B1	;MSG ID FOR EXPECTED MSG B1
4997	021104	005037	003434		CLR	E.A2	;EXPECTED MSG A2
4998	021110	012737	000002	003436	MOV	#2,E.B2	;MSG ID FOR EXPECTED MSG B2
4999	021116	012737	000003	003442	MOV	#3,E.B3	;MSG ID FOR EXPECTED MSG B3
5000							
5001	021124	004737	044720		JSR	PC,CHKMSG	;CHECK MSGS A0,B0,A1,B1
5002	021130	000003			.WORD	T.A2!T.B2!0	;8 MSGS SPECIFIED HERE
5003	021132	104063			ERROR	63	;MSG A0 ERROR AT END OF HEAD LOADING
5004	021134	104064			ERROR	64	;MSG B0 ERROR
5005	021136	104065			ERROR	65	;MSG A1 ERROR
5006	021140	104066			ERROR	66	;MSG B1 ERROR
5007							
5008	021142	005737	001362		TST	CYLDIF	;SEE IF MSG A2=0
5009	021146	001401			BEQ	655	;BR IF YES
5010	021150	104175			ERROR	175	;MSG A2 NOT CLEARED AT END OF HEAD LOADING
5011	021152	005737	001364	655:	TST	CYLADD	;SEE IF MSG B2=0
5012	021156	001401			BEQ	665	;BR IF YES
5013	021160	104176			ERROR	176	;MSG B2 NOT CLEARED AT END OF HEAD LOADING
5014	021162			665:			
5015							
5016	021162	012765	100000	000000	MOV	#CLR,RKCS1(R5)	
5017	021170	013765	001222	000010	MOV	\$UNIT,RKCS2(R5)	;DRIVE#
5018	021176	012765	000005	000000	MOV	#CLR,RKCS1(R5)	;DRIVE CLEAR CMD
5019	021204	013737	001414	003372	MOV	T10,TEMP1	
5020	021212	004737	044176		JSR	PC,FRDY	;FIND RDY
5021	021216	104151			ERROR	151	;NO RDY AFTER DRIVE CLEAR CMD
5022	021220	004737	044460		JSR	PC,TSTATN	;TEST FOR ATTN

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5023 021224 000401          BR      578
5024 021226 104154          ERROR   154          ;ATTN NOT CLEARED AFTER DRIVE CLEAR CMD
5025 021230          678:
5026
5027 021230 012737 010340 003424      MOV      #<0!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0          ;EXPECTED MSG A0
5028 021236 005037 003426          CLR      E.B0          ;EXPECTED MSG B0
5029 021242 012737 001720 003430      MOV      #<D.SPOK!D.CART!D.DCOR!D.BRHM!D.SSP>,E.A1          ;EXPECTED A1
5030 021250 012737 000001 003432      MOV      #1,E.B1          ;MSG ID FOR EXPECTED MSG B1
5031 021256 005037 003434          CLR      E.A2          ;EXPECTED MSG A2
5032 021262 012737 000002 003436      MOV      #2,E.B2          ;MSG ID FOR EXPECTED MSG B2
5033 021270 012737 000003 003442      MOV      #3,E.B3          ;MSG ID FOR EXPECTED MSG B3
5034
5035 021276 004737 044720          JSR      PC,CHKMSG          ;CHECK MSGS A0,B0,A1,B1
5036 021302 000003          .WORD   T.A2!T.B2!0          ;& MSGS SPECIFIED HERE
5037 021304 104273          ERROR   273          ;MSG A0 ERROR AFTER DRIVE CLEAR CMD
5038 021306 104265          ERROR   265          ;MSG B0 ERROR
5039 021310 104274          ERROR   274          ;MSG A1 ERROR
5040 021312 104266          ERROR   266          ;MSG B1 ERROR
5041
5042 021314 005037 003316          CLR      UNLD          ;USED FOR VALID HALT
5043 021320 004737 050036          JSR      PC,SWTST          ;SEE IF SW 14 OR 8 IS SET
5044 021324 000436          BR      TST23          ;GO TO NEXT TEST
5045
5046          ;RETURN HERE IF SW 14 IS SET OR
5047          ;SW 8 WITH SWR <7:0> APPLY
5048
5049 021326 005037 001176          108:  CLR      $ESCAPE
5050 021332 000177 157550          JMP      $SLPADR
5051 021336          208:
5052
5053 021336 004737 046106          JSR      PC,SUBCLR
5054 021342 104024          ERROR   24          ;CERR AFTER SCLR
5055
5056 021344 012765 000011 000000      MOV      #SRTSPL,RKCS1(R5)          ;START SPINDLE CMD
5057 021352 013737 001414 003372      MOV      T10,TEMP1          ;SET TIMEOUT
5058 021360 004737 044176          JSR      PC,FRDY          ;FIND RDY
5059 021364 104121          ERROR   121          ;RDY NOT FOUND AFTER ST SPIN CMD.
5060
5061 021366 013737 001416 003374      MOV      T100,TEMP2          ;SETUP TIMEOUT
5062 021374 004737 044512          JSR      PC,FATT1          ;FIND ATTN
5063 021400 104067          ERROR   67          ;NO ATTN AFTER ST SPIN CMD.
5064 021402 005237 001410          INC      LPFLG
5065 021406 032777 001000 157524      BIT      #SW9,$SWR          ;LOOP ON ERROR?
5066 021414 001344          BNE      108          ;YES, RECONDITION DRIVE
5067 021416 000137 021052          JMP      28          ;RETURN TO MAINLINE
5068 021422          308:
5069
5070
5071
5072 *****
5073 *TEST 23      READ HEADERS, ALL TRACKS, CYL 0
5074 *
5075 *      THIS TEST DOES NOT CHECK THE HEADERS, BUT ONLY THE FACT
5076 *      THAT HEADERS CAN BE READ CORRECTLY BY CHECKING CERR & DTE.
5077 *
5078 *      THIS TEST IS VALID ONLY IF THE PACK HAS NOT BEEN ZERO'D OUT.

```

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K08

UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
C2R6MC.P11 06-OCT-76 18:09

MACY11 27(1006) 06-OCT-76 23:23 PAGE 101
T23 READ HEADERS, ALL TRACKS, CYL 0

SEQ 010:

```

5079
5080
5081 021422 000004
5082 021424 012737 000001 001174
5083 021432 012706 001100
5084
5085 021436 005037 001430
5086
5087 021442
5088 021442 104415
5089 021444 012706 001100
5090
5091 021450 004737 046106
5092 021454 104024
5093
5094 021456 000337 001430
5095 021462 013765 001430 000006
5096 021470 000337 001430
5097
5098 021474 012700 001674
5099 021500 012765 000025 000000
5100 021506 013737 001426 003372
5101 021514 004737 044176
5102 021520 104171
5103 021522 032737 100000 003334
5104 021530 001405
5105 021532 104174
5106 021534 104401 056606
5107 021540 000137 043470
5108
5109 021544 016520 000024
5110 021550 016520 000024
5111 021554 016520 000024
5112
5113
5114 021560 032765 100000 000010
5115 021566 001407
5116 021570 004737 045534
5117 021574 104173
5118 021576 104401 056606
5119 021602 000137 043470
5120 021606
5121
5122 021606 012737 010340 003424
5123 021614 005037 003426
5124 021620 012737 001720 003430
5125 021626 012737 000001 003432
5126 021634 005037 003434
5127 021640 012737 000002 003436
5128 021646 012737 000003 003442
5129
5130 021654 004737 044720
5131 021660 000003
5132 021662 104301
5133 021664 104271
5134 021666 104302

;*****
;T23: SCOPE
;MOV #1,STIMES ;DO 1 ITERATION
;MOV #STACK,SP ;RESTORE STK PTR
;CLR HEAD ;HEAD COUNTER
;
;15:
;SCOPI
;MOV #STACK,SP ;RESTORE STK PTR
;JSR PC,SUBCLR
;ERROR 24 ;CERR AFTER SCLR
;
;SWAB HEAD
;MOV HEAD,RKDA(R5) ;LOAD HEAD REG
;SWAB HEAD
;
;MOV #RHTAB,R0
;MOV #<RDHEAD>,RKCS1(R5) ;READ HEADER CMD
;MOV T50000,TEMP1 ;SETUP TIMEOUT
;JSR PC,FRDY ;FIND RDY
;ERROR 171 ;NO RDY AFTER READ HEADER CMD
;BIT #CERR,HCS1
;BEQ 64$
;ERROR 174 ;CERR AFTER READ HEADER CMD
;TYPE MSG18 ;ABORT BALANCE OF TESTS
;JMP $EOP ;ABORT DRIVE
;
;64$:
;MOV RKDB(R5),(R0)+ ;1'ST WORD FROM SILO TO RHTAB
;MOV RKDB(R5),(R0)+ ;2'ND WORD
;MOV RKDB(R5),(R0)+ ;3'RD WORD
;
;
;BIT #DLT,RKCS2(R5)
;BEQ 65$
;JSR PC,GSTAT
;ERROR 173 ;DLT AFTER READ HEADER CMD
;TYPE MSG18 ;ABORTING BALANCE OF TESTS
;JMP $EOP ;ABORT DRIVE
;
;65$:
;MOV #<D!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0 ;EXPECTED MSG A0
;CLR E.B0 ;EXPECTED MSG B0
;MOV #<D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1 ;EXPECTED A1
;MOV #1,E.B1 ;MSG ID FOR EXPECTED MSG B1
;CLR E.A2 ;EXPECTED MSG A2
;MOV #2,E.B2 ;MSG ID FOR EXPECTED MSG B2
;MOV #3,E.B3 ;MSG ID FOR EXPECTED MSG B3
;
;JSR PC,CHKMSG ;CHECK MSGS A0,B0,A1,B1
;WORD T.A2!T.B2!0 ;8 MSGS SPECIFIED HERE
;ERROR 301 ;MSG A0 ERROR AFTER READ HEADER CMD
;ERROR 271 ;MSG B0 ERROR
;ERROR 302 ;MSG A1 ERROR

```

L08

UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
CZRS6HC.P11 06-007-76 18:09MACY11 27(1006) 06-007-76 23:23 PAGE 102
T23 READ HEADERS, ALL TRACKS, CYL 0

SEQ 0102

5135	021670	104272			ERROR	272		;MSG B1 ERROR
5136								
5137								
5138	021672	005737	001362		TST	CYLDIF		;SEE IF MSG A2=0
5139	021676	001401			BEQ	665		;B= IF YES
5140	021700	104172			ERROR	172		;MSG A2 NOT CLEARED AFTER READ HEADER CMD
5141	021702	005737	001364	665:	TST	CYLADD		;SEE IF MSG B2=0
5142	021706	001401			BEQ	675		;BR IF YES
5143	021710	104264			ERROR	264		;MSG B2 NOT CLEARED AFTER READ HEADER CMD
5144	021712			675:				
5145	021712	005237	001430		INC	HEAD		
5146	021716	023727	001430	000003	CMP	HEAD, #3		;ALL HEADS DONE?
5147	021724	001246			BNE	15		;REPEAT IF NO
5148								
5149								
5150								
5151								
5152								
5153								
5154								
5155								
5156								
5157								
5158								
5159								
5160								
5161								
5162	021726	000004						
5163	021730	012737	000001	001174	ST24:	SCOPE		
5164	021736	012706	001100		MOV	#1,STIMES		;DO 1 ITERATION
5165					MOV	#STACK,SP		;RESTORE STK PTR
5166	021742	005237	003320		INC	BADHDR		;USED FOR VALID HALT
5167	021746	005037	001430		CLR	HEAD		;HEAD CTR
5168								
5169	021752	104415			SCOP1			
5170	021754	012706	001100		MOV	#STACK,SP		;RESTORE STK PTR
5171								
5172	021760	004737	046106		JSR	PC,SUBCLR		
5173	021764	104024			ERROR	24		;CERR AFTER SCLR
5174								
5175	021766	052765	000020	000010	15:	BIS	#BAI,RKCS2(R5)	;SET BUSS ADDR INCR INHIBIT
5176	021774	012765	001470	000004	MOV	#HDTAB,RKBA(R5)		;HEADER WORD TABLE
5177	022002	012765	177676	000002	MOV	#-66.,RKWC(R5)		;WORD COUNT.
5178	022010	000337	001430		SWAB	HEAD		
5179	022014	013765	001430	000006	MOV	HEAD,RKDA(R5)		;SETUP HEAD ADDR
5180	022022	000337	001430		SWAB	HEAD		
5181								
5182	022026	013700	001430		MOV	HEAD,RO		
5183	022032	006300			ASL	RO		;DOUBLE RO
5184	022034	016037	001444	001470	MOV	DATA0(RO),HDTAB		;SETUP HEADER WORD FOR RKBA
5185								
5186	022042	012765	000027	000000	MOV	#<WRHEAD>,RKCS1(R5)		;WRITE HEADER CMD
5187	022050	013737	001426	003372	MOV	T50000,TEMP1		;SETUP TIMEOUT
5188	022056	004737	044176		JSR	PC,FRDY		;FIND RDY
5189	022062	104200			ERROR	200		;NO RDY AFTER WRITE HEADER CMD
5190	022064	004737	045534		JSR	PC,GSTAT		;GET FRESH STATUS

```

*****
*TEST 24      BASIC WRITE/READ HEADER & HEAD SWITCHING TEST
*
*   THIS TEST CHECKS HEAD SWITCHING BY WRITING UNIQUE HEADERS
*   ON EACH TRACK OF CYL 0, READING BACK & VERIFYING THEY REMAINED
*   UNIQUE. 22 SECTOR FORMAT IS USED
*
*   I.E.  TRACK 0: ALL 0'S FOR ALL SECTOR HEADERS
*          TRACK 1: 0101 FOR ALL SECTOR HEADERS
*          TRACK 2: ALL 1'S FOR ALL SECTOR HEADERS
*****

```

M08

JUNIBUS RK06 DRIVE DIAGNOSTIC PART 1
0296HC.F11 06-OCT-76 18:09MACY11 27(1006) 06-OCT-76 23:23 PAGE 103
T24 BASIC WRITE/READ HEADER & HEAD SWITCHING TEST

SEQ 0103

5191	022070	032737	100000	003334	BIT	#CERR,HCS1	
5192	022076	001405			BEQ	64\$	
5193	022100	104201			ERROR	201	;CERR AFTER WRITE HEADER CMD
5194	022102	104401	056606		TYPE	MSG18	;ABORTING BALANCE OF TESTS
5195	022106	000137	043470		JMP	\$EOP	;ABORT DRIVE
5196	022112						
5197				64\$:			
5198	022112	012737	010340	003424	MOV	#<D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0	;EXPECTED MSG A0
5199	022120	005037	003426		CLR	E.B0	;EXPECTED MSG B0
5200	022124	012737	001720	003430	MOV	#<D.SPOK!D.CART!D.DOOR!D.BRM!D.SSP>,E.A1	;EXPECTED A1
5201	022132	012737	000001	003432	MOV	#1,E.B1	;MSG ID FOR EXPECTED MSG B1
5202	022140	005037	003434		CLR	E.A2	;EXPECTED MSG A2
5203	022144	012737	000002	003436	MOV	#2,E.B2	;MSG ID FOR EXPECTED MSG B2
5204	022152	012737	000003	003442	MOV	#3,E.B3	;MSG ID FOR EXPECTED MSG B3
5205							
5206	022160	004737	044720		JSR	PC,CHKMSG	;CHECK MSGS A0,B0,A1,B1
5207	022164	000003			.WORD	T.A2!T.B2!0	;8 MSGS SPECIFIED HERE
5208	022166	104277			ERROR	277	;MSG A0 ERROR AFTER WRITE HEADER CMD
5209	022170	104267			ERROR	267	;MSG B0 ERROR
5210	022172	104300			ERROR	300	;MSG A1 ERROR
5211	022174	104270			ERROR	270	;MSG B1 ERROR
5212							
5213							
5214	022176	005737	001362		TST	CYLDIF	;SEE IF MSG A2=0
5215	022202	001401			BEQ	65\$	;BR IF YES
5216	022204	104303			ERROR	303	;MSG A2 NOT CLEARED AFTER WRITE HEADER CMD
5217	022206	005737	001364		TST	CYLADD	;SEE IF MSG B2=0
5218	022212	001401			BEQ	66\$	;BR IF YES
5219	022214	104304			ERROR	304	;MSG B2 NOT CLEARED AFTER WRITE HEADER CMD
5220	0222						
5221				66\$:			
5222	022216	005237	001430		INC	HEAD	
5223	022222	023727	001430	000003	CMP	HEAD,#3	
5224	022230	001256			BNE	1\$	
5225							
5226	022232	005037	001430		CLR	HEAD	;HEAD CTR
5227	022236	104415			SCOP1		
5228	022240	012706	001100		MOV	#STACK,SP	;RESTORE STACK PTR
5229							
5230	022244	004737	046106		JSR	PC,SUBCLR	
5231	022250	104024			ERROR	24	;CERR AFTER SCLR
5232							
5233							
5234							
5235	022252	000337	001430		SWAB	HEAD	
5236	022256	013765	001430	000006	MOV	HEAD,RKDA(R5)	;SETUP HEAD ADDR
5237	022264	000337	001430		SWAB	HEAD	
5238							
5239	022270	012700	001674		MOV	#RHTAB,R0	
5240	022274	012765	000025	000000	MOV	#<RDHEAD>,RKCS1(R5)	;READ HEADER CMD
5241	022302	013737	001426	003372	MOV	T50000,TEMP1	;SETUP TIMEOUT
5242	022310	004737	044176		JSR	PC,FRDY	;FIND RDY
5243	022314	104171			ERROR	171	;NO RDY AFTER READ HEADER CMD
5244	022316	032737	100000	003334	BIT	#CERR,HCS1	
5245	022324	001405			BEQ	67\$	
5246	022326	104174			ERROR	174	;CERR AFTER READ HEADER CMD

N08

UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
DZRGHC.P11 06-OCT-76 18:09

MACY11 27(1006) 06-OCT-76 23:23 PAGE 104
T24 BASIC WRITE/READ HEADER & HEAD SWITCHING TEST

SEQ 0104

5247	022330	104401	056606		TYPE	MSG18	:ABORT BALANCE OF TESTS
5248	022334	000137	043470		JMP	\$EOP	:ABORT DRIVE
5250	022340	016520	000024	67\$:	MOV	RKDB(R5),(R0)+	:1'ST WORD FROM SILO TO RHTAB
5251	022344	016520	000024		MOV	RKDB(R5),(R0)+	:2'ND WORD
5252	022350	016520	000024		MOV	RKDB(R5),(R0)+	:3'RD WORD
5255	022354	032765	100000	000010	BIT	#DLT,RKCS2(R5)	
5256	022362	001407			BEQ	69\$	
5257	022364	004737	045534		JSR	PC,GSTAT	
5258	022370	104173			ERROR	173	:DLT AFTER READ HEADER CMD
5259	022372	104401	056606		TYPE	MSG18	:ABORTING BALANCE OF TESTS
5260	022376	000137	043470		JMP	\$EOP	:ABORT DRIVE
5261	022402			68\$:			
5263	022402	012737	010340	003424	MOV	#<0!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0	:EXPECTED MSG A0
5264	022410	005037	003426		CLR	E.B0	:EXPECTED MSG B0
5265	022414	012737	001720	003430	MOV	#<D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1	:EXPECTED A1
5266	022422	012737	000001	003432	MOV	#1,E.B1	:MSG ID FOR EXPECTED MSG B1
5267	022430	005037	003434		CLR	E.A2	:EXPECTED MSG A2
5268	022434	012737	000002	003436	MOV	#2,E.B2	:MSG ID FOR EXPECTED MSG B2
5269	022442	012737	000003	003442	MOV	#3,E.B3	:MSG ID FOR EXPECTED MSG B3
5271	022450	004737	044720		JSR	PC,CHKMSG	:CHECK MSGS A0,B0,A1,B1
5272	022454	000003			.WORD	T.A2!T.B2!0	:& MSGS SPECIFIED HERE
5273	022456	104301			ERROR	301	:MSG A0 ERROR AFTER READ HEADER CMD
5274	022460	104271			ERROR	271	:MSG B0 ERROR
5275	022462	104302			ERROR	302	:MSG A1 ERROR
5276	022464	104272			ERROR	272	:MSG B1 ERROR
5279	022466	005737	001362		TST	CYLDIF	:SEE IF MSG A2=0
5280	022472	001401			BEQ	69\$	:BR IF YES
5281	022474	104172			ERROR	172	:MSG A2 NOT CLEARED AFTER READ HEADER CMD
5282	022476	005737	001364	69\$:	TST	CYLADD	:SEE IF MSG B2=0
5283	022502	001401			BEQ	70\$	:BR IF YES
5284	022504	104264			ERROR	264	:MSG B2 NOT CLEARED AFTER READ HEADER CMD
5285	022506			70\$:			
5286	022506	000337	001430		SWAB	HEAD	
5287	022512	013765	001430	000006	MOV	HEAD,RKDA(R5)	:RESTORE RKDA
5288	022520	000337	001430		SWAB	HEAD	
5290	022524	012701	001674		MOV	#RHTAB,R1	
5292	022530	005037	001442		CLR	WDCNT	:HEADER WORD COUNT
5293	022534	013700	001430		MOV	HEAD,R0	
5294	022540	006300			ASL	R0	:DOUBLE R0
5295	022542	016037	001444	003372	MOV	DATA0(R0),TEMP1	:GET THE 'SHOULD BE' DATA
5296	022550	012137	001454	3\$:	MOV	(R1)+,HDWD	:READ HEADER WORD
5297	022554	023737	001454	003372	CMP	HDWD,TEMP1	
5298	022562	001401			BEQ	4\$	
5299	022564	104202			ERROR	202	:READ HEADER MISMATCH
5300	022566	005237	001442	4\$:	INC	WDCNT	
5301	022572	023727	001442	000003	CMP	WDCNT,#3	:DO ONLY 1 SECTOR
5302	022600	001363			BNE	3\$	

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5303 022602 005237 001430 INC HEAD
5304 022606 023727 001430 000003 CMP HEAD, #3 ;ALL 3 HEADS DONE?
5305 022614 001402 BEQ TST25 ;GO TO NXT TST IF YES
5306 022616 000137 022252 JMP 25 ;ELSE REPEAT
5307
5308
5309 *****
5310 *TEST 25 BASIC WRITE/READ HEADER TEST; ALL 1'S, 20 SECTORS
5311 *
5312 * USING HEAD 0, WRITE & READ 20 SECTOR HEADERS BY WRITING ALL
5313 * 1'S AS HEADERS. ATTEMPT TO FIND SECTORS 20 & 21. VERIFY
5314 * THEY ARE NO LONGER THERE BY READING 22 SECTORS AND NOT
5315 * FINDING 0'S AS DATA FROM THE PREVIOUS TEST.
5316 *
5317 *****
5318 TST25: SCOPE
5319 022622 000004 MOV #1,STIMES ;DO 1 ITERATION
5320 022624 012737 000001 001174 MOV #STACK,SP ;RESTORE STK PTR
5321 022632 012706 001100
5322
5323 022636 004737 046106 JSR PC,SUBCLR
5324 022642 104024 ERROR 24 ;CERR AFTER SCLR
5325 022644 052765 000020 000010 BIS #BA1,RKCS2(R5) ;SET BUSS ADDR INCR INHIBIT
5326 022652 012765 001450 000004 MOV #DATA1,RKBA(R5) ;XFER 1'S ONLY
5327 022660 012765 177704 000002 MOV #60.,RKWC(R5) ;WORD COUNT
5328
5329 022666 012765 010027 000000 MOV #<CFMT!WRHEAD>,RKCS1(R5) ;WRITE HEADER CMD
5330 022674 013737 001426 003372 MOV T5000,TEMP1 ;SETUP TIMEOUT
5331 022702 004737 044176 JSR PC,FRDY ;FIND RDY
5332 022706 104200 ERROR 200 ;NO RDY AFTER WRITE HEADER CMD
5333 022710 004737 045534 JSR PC,GSTAT ;GET FRESH STATUS
5334 022714 032737 100000 003334 BIT #CERR,HCS1
5335 022722 001405 BEQ 645
5336 022724 104201 ERROR 201 ;CERR AFTER WRITE HEADER CMD
5337 022726 104401 056606 TYPE MSG18 ;ABORTING BALANCE OF TESTS
5338 022732 000137 043470 JMP $EOP ;ABORT DRIVE
5339
5340 645:
5341 022736 012765 010001 000000 MOV #<CFMT!SELDV>,RKCS1(R5) ;GET 20 SECTOR STATUS
5342 022744 013737 001414 003372 MOV T10,TEMP1
5343 022752 004737 044176 JSR PC,FRDY ;FIND RDY
5344 022756 104117 ERROR 117 ;NO RDY AFTER SELDRV CMD
5345 022760 032737 001000 003362 BIT #D.FORM,HMR2
5346 022766 001001 BNE 15
5347 022770 104312 ERROR 312 ;FORMAT NOT SET AFTER WRITE HDR CMD
5348
5349 15:
5350 022772
5351 022772 012737 010340 003424 MOV #<0!D.SPIN!D.DRDY!D.VV!D.DRA>,.E.A0 ;EXPECTED MSG A0
5352 023000 005037 003426 CLR E.B0 ;EXPECTED MSG B0
5353 023004 012737 001720 003430 MOV #<0.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,.E.A1 ;EXPECTED A1
5354 023012 012737 000001 003432 MOV #1,E.B1 ;MSG ID FOR EXPECTED MSG B1
5355 023020 005037 003434 CLR E.A2 ;EXPECTED MSG A2
5356 023024 012737 000002 003436 MOV #2,E.B2 ;MSG ID FOR EXPECTED MSG B2
5357 023032 012737 000003 003442 MOV #3,E.B3 ;MSG ID FOR EXPECTED MSG B3
5358

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JTBLS RK06 DRIVE DIAGNOSTIC PART 1
 029640.P11 06-007-76 18:09

MACY11 27.1006) 06-007-76 23:23 PAGE 106
 T25 BASIC WRITE/READ HEADER TEST; ALL 1'S, 20 SECTORS

SEQ 0106

5359	023040	004737	044720		JSR	PC,CHKMSG	:CHECK MSGS AO,BO,A1,B1
5360	023044	000000			.WORD	0:0:0	:8 MSGS SPECIFIED HERE
5361	023046	104277			ERROR	277	:MSG AO ERROR AFTER WRITE HEADER CMD
5362	023050	104267			ERROR	267	:MSG BO ERROR
5363	023052	104300			ERROR	300	:MSG A1 ERROR
5364	023054	104270			ERROR	270	:MSG B1 ERROR
5365							
5366	023056	005037	001400		CLR	SECNT	:SECTOR COUNT
5367	023062			25:			
5368	023062	104415			SCOP1		
5369	023064	012706	001100		MOV	#STACK.SP	:RESTORE STK PTR
5370							
5371	023070	004737	046106		JSR	PC,SUBCLR	
5372	023074	104024			ERROR	24	:CERR AFTER SOLR
5373							
5374							
5375	023076	012700	001674		MOV	#RHTAB,R0	
5376	023102	012765	010025	000000	MOV	#(CFMT!RDHEAD),RKCS1(R5)	:READ HEADER CMD
5377	023110	013737	001426	003372	MOV	T50000,TEMP1	:SETUP TIMEOUT
5378	023116	004737	044176		JSR	PC,FRDY	:FIND RDY
5379	023122	104171			ERROR	171	:NO RDY AFTER READ HEADER CMD
5380	023124	032737	100000	003334	BIT	#CERR,HCS1	
5381	023132	001405			BEQ	655	
5382	023134	104174			ERROR	174	:CERR AFTER READ HEADER CMD
5383	023136	104401	056606		TYPE	MSG18	:ABORT BALANCE OF TESTS
5384	023142	000137	043470		JMP	\$EOP	:ABORT DRIVE
5385							
5386	023146	016520	000024		MOV	RKDB(R5),(R0)+	:1'ST WORD FROM SILO TO RHTAB
5387	023152	016520	000024		MOV	RKDB(R5),(R0)+	:2'ND WORD
5388	023156	016520	000024		MOV	RKDB(R5),(R0)+	:3'RD WORD
5389							
5390							
5391	023162	032765	100000	000010	BIT	#DLT,RKCS2(R5)	
5392	023170	001407			BEQ	665	
5393	023172	004737	045534		JSR	PC,GSTAT	
5394	023176	104173			ERROR	173	:DLT AFTER READ HEADER CMD
5395	023200	104401	056606		TYPE	MSG18	:ABORTING BALANCE OF TESTS
5396	023204	000137	043470		JMP	\$EOP	:ABORT DRIVE
5397	023210			665:			
5398							
5399	023210	012765	010001	000000	MOV	#(CFMT!SELDRV),RKCS1(R5)	
5400	023216	013737	001414	003372	MOV	T10,TEMP1	
5401	023224	004737	044176		JSR	PC,FRDY	:FIND RDY
5402	023230	104117			ERROR	117	:NO RDY AFTER SELDRV CMD
5403	023232	032737	001000	003362	BIT	#D.FORM,HMR2	
5404	023240	001001			BNE	65	
5405	023242	104313			ERROR	313	:FORMAT NOT SET AFTER READ HDR CMD
5406							
5407	023244			65:			
5408							
5409	023244	012737	010340	003424	MOV	#(0!D.SPIN!D.DRDY!D.VV!D.DRA),E.A0	:EXPECTED MSG AO
5410	023252	005037	003426		CLR	E.B0	:EXPECTED MSG BO
5411	023256	012737	001720	003430	MOV	#(D.SP0K!D.CART!D.DOOR!D.BRM!D.SSP),E.A1	:EXPECTED A1
5412	023264	012737	000001	003432	MOV	#1,E.B1	:MSG ID FOR EXPECTED MSG B1
5413	023272	005037	003434		CLR	E.A2	:EXPECTED MSG A2
5414	023276	012737	000002	003436	MOV	#2,E.B2	:MSG ID FOR EXPECTED MSG B2

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415 023304 012737 000003 003442      MOV      #3,E.B3      ;MSG ID FOR EXPECTED MSG B3
416
417 023312 004737 044720      JSR      PC,CHKMSG    ;CHECK MSGS A0,B0,A1,B1
418 023316 000003              .WORD      T.A2!T.B2!0      ;& MSGS SPECIFIED HERE
419 023320 104301      ERROR    301      ;MSG A0 ERROR AFTER READ HEADER CMD
420 023322 104271      ERROR    271      ;MSG B0 ERROR
421 023324 104302      ERROR    302      ;MSG A1 ERROR
422 023326 104272      ERROR    272      ;MSG B1 ERROR
423
424 023330 005737 001362      TST      CYLDIF      ;SEE IF MSG A2=0
425 023334 001401      BEQ      67$      ;BR IF YES
426 023336 104172      ERROR    172      ;MSG A2 NOT CLEARED AFTER READ HEADER CMD
427 023340 005737 001364      67$:    TST      CYLADD      ;SEE IF MSG B2=0
428 023344 001401      BEQ      68$      ;BR IF YES
429 023346 104264      ERROR    264      ;MSG B2 NOT CLEARED AFTER READ HEADER CMD
430 023350
431 023350 012701 001674      MOV      #RHTAB,R1
432
433 023354 005037 001442      3$:    CLR      WDCNT      ;HEADER WORD COUNT
434 023360 013737 001450 003372      MOV      DATA1,TEMP1 ;GET 'SHOULD BE' DATA
435 023366 012137 001454      4$:    MOV      (R1)+,HDWD ;READ HEADER WORD
436 023372 023737 001454 003372      CMP      HDWD,TEMP1 ;MATCH OK?
437 023400 001401      BEQ      5$      ;BR IF YES
438 023402 104202      ERROR    202      ;READ HEADER MISMATCH
439 023404 005237 001442      5$:    INC      WDCNT
440 023410 023727 001442 000003      CMP      WDCNT,#3 ;JUST 1 SECTOR AND 1 HEAD
441 023416 001363      BNE      4$
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449 023420 000004
450 023422 012737 000001 001174      *TEST 26      WRITE & READ HEADERS CYL 0, HEAD 0
451 023430 012706 001100      *****
452
453 023434 004737 046106      TST26:  SCOPE
454 023440 104024      MOV      #1,STIMES ;DO 1 ITERATION
455
456 023442 005237 001464      MOV      #STACK,SP ;RESTORE STK PTR
457
458 023446 012765 001470 000004      JSR      PC,SUBCLR ;CERR AFTER SCLR
459 023454 012765 177676 000002      ERROR    24
460 023462 012737 000000 001352      INC      BYPFMT ;SET BIT 14 & 15 IN HEADER
461
462 023470 013737 001352 001366      MOV      #HDTAB,RKBA(R5) ;HEADER WORD TABLE
463 023476 012737 000000 001430      MOV      #-66,RKWC(R5) ;WORD COUNT.
464 023504 012737 000000 001436      MOV      #0,TOCYL
465 023512 004737 047142      MOV      TOCYL,CALADD ;SETUP
466
467 023516 012765 000000 000020      MOV      #0,HEAD ;TO FILL
468
469 023524 012765 000027 000000      MOV      #0,FORMAT ;HEADER
470 023532 013737 001426 003372      JSR      PC,FHDTAB ;TABLE
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E09

 17: BUS R06 DRIVE DIAGNOSTIC PART 1
 02:00:00.000 06-00-76 19:09

 MACY11 27:10061 06-OCT-76 23:23 PAGE 108
 T26 WRITE & READ HEADERS CYL 0, HEAD 0

SEG 0108

023540	004737	044176		JSR	PC,FRDY	:FIND RDY
023544	004737	044200		ERRPR	200	:NO RDY AFTER WRITE HEADER CMD
023546	004737	045534		JSR	PC,GSTAT	:GET FRESH STATUS
023552	032737	100000	003334	BIT	#CERR,HCS1	
023556	001405			BEQ	64\$	
023560	104201			ERROR	201	:CERR AFTER WRITE HEADER CMD
023564	104401	056606		TYPE	MSG18	:ABORTING BALANCE OF TESTS
023570	000137	043470		JMP	\$EOP	:ABORT DRIVE
023574			64\$:			
023602	012737	010340	003424	MOV	#0!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0	:EXPECTED MSG A0
023606	035037	003426		CLR	E.B0	:EXPECTED MSG B0
023614	012737	001720	003430	MOV	#D.SPOK!D.CART!D.DOOR!D.BRM!D.SSP>,E.A1	:EXPECTED A1
023622	035037	003434		MOV	#1,E.B1	:MSG ID FOR EXPECTED MSG B1
023626	012737	000002	003436	CLR	E.A2	:EXPECTED MSG A2
023634	012737	000003	003442	MOV	#2,E.B2	:MSG ID FOR EXPECTED MSG B2
				MOV	#3,E.B3	:MSG ID FOR EXPECTED MSG B3
023642	004737	044720		JSR	PC,CHKMSG	:CHECK MSGS A0,B0,A1,B1
023646	000003			.WORD	T.A2!T.B2!0	:8 MSGS SPECIFIED HERE
023650	104277			ERROR	277	:MSG A0 ERROR AFTER WRITE HEADER CMD
023652	104267			ERRPR	267	:MSG B0 ERROR
023654	104300			ERROR	300	:MSG A1 ERROR
023656	104270			ERROR	270	:MSG B1 ERROR
023660	005037	001400		CLR	SECNT	:SECTOR COUNT
023664	104415			SCOP1		
023666	012706	001100		MOV	#STACK,SP	:RESTORE STK PTR
023672	004737	046106		JSR	PC,SUBCLR	
023676	104024			ERROR	24	:CERR AFTER SCLR
023700	012765	000000	000020	MOV	#0,RKDC(R5)	:CYL #
023706	012700	001674		MOV	#RHTAB,R0	
023712	012765	000025	000000	MOV	#RDHEAD,RKCS1(R5)	:READ HEADER CMD
023720	013737	001420	003372	MOV	T500,TEMP1	:SETUP TIMEOUT
023726	004737	044176		JSR	PC,FRDY	:FIND RDY
023732	104171			ERROR	171	:NO RDY AFTER READ HEADER CMD
023734	032737	100000	003334	BIT	#CERR,HCS1	
023742	001405			BEQ	66\$	
023744	104174			ERROR	174	:CERR AFTER READ HEADER CMD
023746	104401	056606		TYPE	MSG18	:ABORTING BALANCE OF TESTS
023752	000137	043470		JMP	\$EOP	:ABORT DRIVE
023756	016520	000024		MOV	RKDB(R5),(R0)+	:1'ST WORD FROM SILO TO RHTAB
023762	016520	000024		MOV	RKDB(R5),(R0)+	:2'ND WORD
023766	016520	000024		MOV	RKDB(R5),(R0)+	:3'RD WORD
023772	032765	100000	000010	BIT	#DLT,RKCS2(R5)	:SEE IF DATA LATE
024000	001407			BEQ	67\$	
024002	004737	045534		JSR	PC,GSTAT	
024006	104173			ERROR	173	:DATA LATE ON READ HEADER
024010	104401	056606		TYPE	MSG18	:ABORT BALANCE OF TESTS
024014	000137	043470		JMP	\$EOP	:ABORT DRIVE

F09

UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
D2R6HC.P11 06-OCT-76 18:09MACY11 27.1006, 06-OCT-76 23:23 PAGE 109
T26 WRITE & READ HEADERS CYL 0, HEAD 0

SEQ 0109

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5527
5528 024020 020027 002100      67$:  CMP      RC, #RHTAB+132.  ;ALL 66 WORDS DONE?
5529 024024 001332                BNE      65$      ;BR IF NO
5530
5531 024026 004737 047464                JSR      PC, SORT      ;SORT RHTAB INTO SRTTAB SO THAT IT
5532                                ;BEGINS WITH SECTOR 0
5533 024032 005037 001442                CLR      WDCNT      ;WORD COUNT
5534 024036 012700 002100                MOV      #SRTTAB, RO  ;ACTUAL HEADER TABLE
5535 024042 012701 001470                MOV      #HDTAB, R1  ;CALC HEADER TABLE
5536
5537 024046 012037 001454      68$:  MOV      (RO)+, HDWD
5538 024052 012137 003372                MOV      (R1)+, TEMP1
5539 024056 023737 001454 003372        CMP      HDWD, TEMP1  ;COMPARE ACTUAL WITH CALCULATED WORD
5540 024064 001401                BEQ      69$      ;BR IF COMPARE
5541 024066 104202                ERROR  202      ;READ HEADER MISMATCH
5542
5543 024070 005237 001442      69$:  INC      WDCNT
5544 024074 023727 001442 000102        CMP      WDCNT, #66.  ;ALL WORDS DONE?
5545 024102 001361                BNE      68$      ;BR IF NO
5546
5547
5548 024104 005037 001464                CLR      BYPFMT      ;ALLOW CORRECT FORMATTING
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G09

UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
D2R6HC.P11 06-OCT-76 19:09MACY11 27(1006) 06-OCT-76 23:23 PAGE 110
T26 WRITE & READ HEADERS CYL 0, HEAD 0

SEQ 0110

:TEST 27 SEEK FROM CYL 0 TO 1 & READ HEADERS

: THIS TEST CHECKS MSG A & B WORDS 0,1,2 FOR CORRECT STATUS AFTER RDY

: IS RECEIVED FROM A SEEK CMD TO DETERMINE
: THAT THE HEADS ARE ACTUALLY MOVING & THE CYL DIFF IS 1.
: AFTER ATTN IS RECEIVED, CERR IS EXAMINED FOR ANY ERRORS.
: CYL DIFFERENCE IN MSG A2 IS VERIFIED TO BE 0 & CYL ADDR
: IN MSG B2 IS VERIFIED TO BE 1.: HEADERS ARE READ FROM 1 SECTOR, HEAD 0 & VERIFIED THAT THEY ARE
: DIFFERENT FROM CYL 0 TO SHOW THAT THE HEADS DID ACTUALLY MOVE.

TST27: SCOPE
MOV #1,STIMES ;DO 1 ITERATION
MOV #STACK,SP ;RESTORE STK PTR
JSR PC,SUBCLR
ERROR 24 ;CERR AFTER SCLR
CLR FRCYL
MOV #1,TOCYL
MOV #1,CALDIF
MOV #1,RKDC(R5) ;SET FOR CYL 1
MOV #10\$,SESCAPE

MOV #SEEK,RKCS1(R5) ;SEEK CMD
MOV T10,TEMP1 ;SETUP TIMEOUT
JSR PC,FRDY ;FIND RDY
ERROR 131 ;NO RDY AFTER SEEK CMD
MOV #<D.PIP!D.SPIN!D.VV!D.DRA>,E.A0 ;EXPECTED A0
CLR E.B0
MOV #<D.FWD!D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1
MOV #1,E.B1JSR PC,CHKMSG ;CHECK MSGS A0,B0,A1,B1
.WORD T.A2!T.B2!0 ;& MSGS SPECIFIED HERE
ERROR 203 ;MSG A0 ERROR DURING SEEK CMD
ERROR 204 ;MSG B0 ERROR
ERROR 205 ;MSG A1 ERROR
ERROR 206 ;MSG B1 ERRORCMP CYLDIF,#1
BEQ 15
ERROR 212 ;CYL DIFF INCORRECT DURING SEEK CMD.15: MOV #12\$,SESCAPE
MOV T2500,TEMP1 ;SETUP TIMEOUT5552
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5573 024110 003004
5574 024112 012737 000001 004174
5575 024120 012706 001100
5576 024124 004737 046106
5577 024130 104024
5578 024132 005037 001350
5579 024136 012737 000001 001352
5580 024144 012737 000001 001360
5581 024152 012765 000001 000020
5582 024160 012737 025160 001176
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5584 024166 012765 000017 000000
5585 024174 013737 001414 003372
5586 024202 004737 044176
5587 024206 104131
5588 024210 012737 030140 003424
5589 024216 005037 003426
5590 024222 012737 003720 003430
5591 024230 012737 000001 003432
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5593 024236 004737 044720
5594 024242 000003
5595 024244 104203
5596 024246 104204
5597 024250 104205
5598 024252 104206
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5600 024254 023727 001362 000001
5601 024262 001401
5602 024264 104212
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5605 024266 012737 025200 001176 15:
5606 024274 013737 001422 003372
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H09

 JAMES RYCE DRIVE DIAGNOSTIC PART 1
 02460.F11 06-007-76 18:09

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 T27 SEEK FROM CYL 0 TO 1 & READ HEADERS

SEG 011:

5608								
5609	024302	004737	044606		JSR	PC FATT2		:FIND ATTN
5610	024306	104132			ERROR	132		:NO ATTN AFTER SEEK CMD
5611	024310	032737	100000	003334	BIT	#CERR,HCS1		
5612	024316	001401			BEQ	648		
5613	024320	104210			ERROR	210		:CERR AFTER SEEK CMD
5614	024322							
5615								
5616	024322	012737	050340	003424	MOV	#(D.DSC!D.SPIN!D.DRDY!D.VV!D.DRA),E.A0		:EXPECTED MSG A0
5617	024330	005037	003426		CLR	E.B0		:EXPECTED MSG B0
5618	024334	012737	001720	003430	MOV	#(D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP),E.A1		:EXPECTED A1
5619	024342	012737	000001	003432	MOV	#1,E.B1		:MSG ID FOR EXPECTED MSG B1
5620	024350	005037	003434		CLR	E.A2		:EXPECTED MSG A2
5621	024354	012737	000002	003436	MOV	#2,E.B2		:MSG ID FOR EXPECTED MSG B2
5622	024362	012737	000003	003442	MOV	#3,E.B3		:MSG ID FOR EXPECTED MSG B3
5623								
5624	024370	004737	044720		JSR	PC CHKMSG		:CHECK MSGS A0,B0,A1,B1
5625	024374	000003			.WORD	T.A2!T.B2!0		:& MSGS SPECIFIED HERE
5626	024376	104133			ERROR	133		:MSG A0 ERROR AFTER SEEK CMD
5627	024400	104134			ERROR	134		:MSG B0 ERROR
5628	024402	104135			ERROR	135		:MSG A1 ERROR
5629	024404	104136			ERROR	136		:MSG B1 ERROR
5630	024406	005737	001362		TST	CYLDIF		
5631	024412	001401			BEQ	658		
5632	024414	104137			ERROR	137		:CYL DIFF NOT CLEARED AFTER SEEK CMD
5633								
5634	024416							
5635								
5636	024416	012765	100000	000000	MOV	#CLR,RKCS1(R5)		
5637	024424	013765	001222	000010	MOV	#UNIT,RKCS2(R5)		:DRIVE#
5638	024432	012765	000005	000000	MOV	#CLEAR,RKCS1(R5)		:DRIVE CLEAR CMD
5639	024440	013737	001414	003372	MOV	T10,TEMP1		
5640	024446	004737	044176		JSR	PC FRDY		:FIND RDY
5641	024452	104151			ERROR	151		:NO RDY AFTER DRIVE CLEAR CMD
5642	024454	004737	044460		JSR	PC TSTATN		:TEST FOR ATTN
5643	024460	000401			BR	668		
5644	024462	104154			ERROR	154		:ATTN NOT CLEARED AFTER DRIVE CLEAR CMD
5645	024464							
5646								
5647	024464	012737	010340	003424	MOV	#(D.D.SPIN!D.DRDY!D.VV!D.DRA),E.A0		:EXPECTED MSG A0
5648	024472	005037	003426		CLR	E.B0		:EXPECTED MSG B0
5649	024476	012737	001720	003430	MOV	#(D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP),E.A1		:EXPECTED A1
5650	024504	012737	000001	003432	MOV	#1,E.B1		:MSG ID FOR EXPECTED MSG B1
5651	024512	005037	003434		CLR	E.A2		:EXPECTED MSG A2
5652	024516	012737	000002	003436	MOV	#2,E.B2		:MSG ID FOR EXPECTED MSG B2
5653	024524	012737	000003	003442	MOV	#3,E.B3		:MSG ID FOR EXPECTED MSG B3
5654								
5655	024532	004737	044720		JSR	PC CHKMSG		:CHECK MSGS A0,B0,A1,B1
5656	024536	000003			.WORD	T.A2!T.B2!0		:& MSGS SPECIFIED HERE
5657	024540	104273			ERROR	273		:MSG A0 ERROR AFTER DRIVE CLEAR CMD
5658	024542	104265			ERROR	265		:MSG B0 ERROR
5659	024544	104274			ERROR	274		:MSG A1 ERROR
5660	024546	104266			ERROR	266		:MSG B1 ERROR
5661								
5662	024550	005737	001364		TST	CYLOAD		
5663	024554	023727	001364	000001	CMP	CYLOAD,#1		

UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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T27 SEEK FROM CYL 0 TO 1 & READ HEADERS

SEG 0112

5664	024562	001401			BEQ	25	
5665	024564	104207			ERROR	207	;CYL ADDR INCORRECT AFTER SEEK CMD
5666							
5667							
5668	024566			25:	SCOP1		
5669	024566	104415			MOV	#STACK,SP	;RESTORE STK PTR
5670	024570	012706	001100				
5671							
5672	024574	004737	046106		JSR	PC,SUBCLR	
5673	024600	104024			ERROR	24	;CERR AFTER SCLR
5674							
5675	024602	005037	001176		CLR	\$ESCAPE	
5676	024606	012765	000001	000020	MOV	#1,RKDC(R5)	;CYL #
5677							
5678	024614	012700	001674		MOV	#RHTAB,RO	
5679	024620	012765	000025	000000	MOV	#(RDHEAD),RKCS1(R5)	;READ HEADER CMD
5680	024626	013737	001426	003372	MOV	T50000,TEMP1	;SETUP TIMEOUT
5681	024634	004737	044176		JSR	PC,FRDY	;FIND RDY
5682	024640	104171			ERROR	171	;NO RDY AFTER READ HEADER CMD
5683	024642	032737	100000	003334	BIT	#CERR,HCS1	
5684	024650	001405			BEQ	675	
5685	024652	104174			ERROR	174	;CERR AFTER READ HEADER CMD
5686	024654	104401	056606		TYPE	MSG18	;ABORT BALANCE OF TESTS
5687	024660	000137	043470		JMP	\$EOP	;ABORT DRIVE
5688							
5689	024664	016520	000024		MOV	RKDB(R5),(RO)+	;1'ST WORD FROM SILO TO RHTAB
5690	024670	016520	000024		MOV	RKDB(R5),(RO)+	;2'ND WORD
5691	024674	016520	000024		MOV	RKDB(R5),(RO)+	;3'RD WORD
5692							
5693							
5694	024700	032765	100000	000010	BIT	#DLT,RKCS2(R5)	
5695	024706	001407			BEQ	685	
5696	024710	004737	045534		JSR	PC,GSTAT	
5697	024714	104173			ERROR	173	;DLT AFTER READ HEADER CMD
5698	024716	104401	056606		TYPE	MSG18	;ABORTING BALANCE OF TESTS
5699	024722	000137	043470		JMP	\$EOP	;ABORT DRIVE
5700	024726						
5701							
5702							
5703	024726	005737	001674		TST	RHTAB	;CHECK 1'ST WORD ONLY:CYL#
5704	024732	001001			BNE	35	
5705	024734	104211			ERROR	211	;CYL 0 HEADER ON CYL 1
5706							
5707	024736	023727	001674	000001	CMP	RHTAB,#1	
5708	024744	001401			BEQ	45	
5709	024746	104202			ERROR	202	;READ CYL WORD HEADER ERROR
5710	024750						
5711	024750	004737	050036		JSR	PC,SWTST	;SEE IF SW 14 OR 8 IS SET
5712	024754	000521			BR	T5130	;GO TO NEXT TEST
5713							;RETURN HERE IF SW 14 IS SET OR
5714							;SW 8 WITH SWR <7:0> APPLY
5715	024756	004737	046106		JSR	PC,SUBCLR	
5716	024762	104024			ERROR	24	;CERR AFTER SCLR
5717							
5718	024764	012765	000017	000000	MOV	#SEEK,RKCS1(R5)	;SEEK CMD TO RECONDITION DRIVE.
5719	024772	013737	001414	003372	MOV	T10,TEMP1	;SETUP TIMEOUT

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T27 SEEK FROM CYL 0 TO 1 & READ HEADERS

SEQ 0113

5720	025000	004737	044176		JSR	PC,FRDY	:FIND RDY
5721	025004	104131			ERROR	131	:NO RDY AFTER SEEK CMD.
5722							
5723	025006	013737	001424	003372	MOV	T5000,TEMP:	
5724	025014	004737	044606		JSR	PC,FAT:2	:FIND ATTN
5725	025020	104132			ERROR	132	:NO ATTN AFTER SEEK CMD
5726	025022	032737	100000	003334	BIT	#CERR,HCS1	
5727	025030	001401			BEQ	69\$	
5728	025032	104210			ERROR	210	:CERR AFTER SEEK CMD.
5729							
5730	025034	004737	046106		JSR	PC,SUBCLR	
5731	025040	104024		69\$:	ERROR	24	:CERR AFTER SCLR
5732							
5733							
5734	025042	012737	050340	003424	MOV	#(D.DSC!D.SPIN!D.DRDY!D.VV!D.DRA),E.A0	:EXPECTED MSG A0
5735	025050	005037	003426		CLR	E.B0	:EXPECTED MSG B0
5736	025054	012737	001720	003430	MOV	#(D.SPOK!D.CART!D.DOOR!D.BRM!D.SSP),E.A1	:EXPECTED A1
5737	025062	012737	000001	003432	MOV	#1,E.B1	:MSG ID FOR EXPECTED MSG B1
5738	025070	005037	003434		CLR	E.A2	:EXPECTED MSG A2
5739	025074	012737	000002	003436	MOV	#2,E.B2	:MSG ID FOR EXPECTED MSG B2
5740	025102	012737	000003	003442	MOV	#3,E.B3	:MSG ID FOR EXPECTED MSG B3
5741							
5742	025110	004737	044720		JSR	PC,CHKMSG	:CHECK MSGS A0 B0 A1 B1
5743	025114	000003			.WORD	T.A2!T.B2!0	:& MSGS SPECIFIED HERE
5744	025116	104133			ERROR	133	:MSG A0 ERROR AFTER SEEK CMD
5745	025120	104134			ERROR	134	:MSG B0 ERROR
5746	025122	104135			ERROR	135	:MSG A1 ERROR
5747	025124	104136			ERROR	136	:MSG B1 ERROR
5748	025126	005737	001364		TST	CYLADD	
5749	025132	001401			BEQ	7\$	
5750	025134	104043			ERROR	43	:CYL ADDR IN RKMR3 NOT=RKDC
5751							
5752	025136			7\$:			
5753	025136	005037	001176		CLR	\$ESCAPE	
5754	025142	005737	001410		TST	LPFLG	
5755	025146	001402			BEQ	70\$	
5756	025150	000177	153734		JMP	\$SLPERR	:SW 9 WAS SET.
5757	025154	000177	153726	70\$:	JMP	\$SLPADR	:SW 14 OR 8 WAS SET
5758							
5759	025160			10\$:			
5760	025160	005237	001410		INC	LPFLG	
5761	025164	032777	001000	153746	BIT	#SW9,\$SWR	:LOOP ON ERROR?
5762	025172	001271			BNE	6\$	:YES, RECONDITION DRIVE
5763	025174	000137	024266		JMP	1\$	:RETURN TO MAINLINE
5764	025200			12\$:			
5765	025200	005237	001410		INC	LPFLG	
5766	025204	032777	001000	153726	BIT	#SW9,\$SWR	:LOOP ON ERROR?
5767	025212	001261			BNE	6\$	:YES, RECONDITION DRIVE
5768	025214	000137	024566		JMP	2\$	:RETURN TO MAINLINE
5769							
5770							
5771							
5772							
5773							
5774							
5775							

:TEST 30 WRITE & READ HEADERS CYL 1, HEAD 0

K09

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T30 WRITE & READ HEADERS CYL 1, HEAD 0

SEG 0114

5776	025220	000004			TST30: SCOPE	
5777	025222	012737	000001	001174	MOV #1,STIMES	::DC 1 ITERATION
5778	025230	012706	001100		MOV #STACK,SP	:RESTORE STK PTR
5779						
5780	025234	004737	046106		JSR PC,SUBCLR	
5781	025240	104024			ERROR 24	:CERR AFTER SCLR
5782						
5783	025242	005237	001464		INC BYPFMT	:SET BIT 14 & 15 IN HEADER
5784						
5785	025246	012765	001470	000004	MOV #HDTAB,RKBA(R5)	:HEADER WORD TABLE
5786	025254	012765	177676	000002	MOV #-66,RKWC(R5)	:WORD COUNT.
5787	025262	012737	000001	001352	MOV #1,TOCYL	
5788						
5789	025270	013737	001352	001366	MOV TOCYL,CALADD	:SETUP
5790	025276	012737	000000	001430	MOV #0,HEAD	:TO FILL
5791	025304	012737	000000	001436	MOV #0,FORMAT	:HEADER
5792	025312	004737	047142		JSR PC,FHDTAB	:TABLE
5793						
5794	025316	012765	000001	000020	MOV #1,RKDC(R5)	:CYL#
5795						
5796	025324	012765	000027	000000	MOV #<WRHEAD>,RKCS1(R5)	:WRITE HEADER CMD
5797	025332	013737	001426	003372	MOV T50000,TEMP1	:SETUP TIMEOUT
5798	025340	004737	044176		JSR PC,FRDY	:FIND RDY
5799	025344	104200			ERROR 200	:NO RDY AFTER WRITE HEADER CMD
5800	025346	004737	045534		JSR PC,GSTAT	:GET FRESH STATUS
5801	025352	032737	100000	003334	BIT #CERR,HCS1	
5802	025360	001405			BEQ 64\$	
5803	025362	104201			ERROR 201	:CERR AFTER WRITE HEADER CMD
5804	025364	104401	056606		TYPE MSG18	:ABORTING BALANCE OF TESTS
5805	025370	000137	043470		JMP \$EOP	:ABORT DRIVE
5806	025374					
5807					64\$:	
5808	025374	012737	010340	003424	MOV #<0!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0	:EXPECTED MSG A0
5809	025402	005037	003426		CLR E.B0	:EXPECTED MSG B0
5810	025406	012737	001720	003430	MOV #<D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1	:EXPECTED A1
5811	025414	012737	000001	003432	MOV #1,E.B1	:MSG ID FOR EXPECTED MSG B1
5812	025422	005037	003434		CLR E.A2	:EXPECTED MSG A2
5813	025426	012737	000002	003436	MOV #2,E.B2	:MSG ID FOR EXPECTED MSG B2
5814	025434	012737	000003	003442	MOV #3,E.B3	:MSG ID FOR EXPECTED MSG B3
5815						
5816	025442	004737	044720		JSR PC,CHKMSG	:CHECK MSGS A0,B0,A1,B1
5817	025446	000003			.WORD T.A2!T.B2!0	:& MSGS SPECIFIED HERE
5818	025450	104277			ERROR 277	:MSG A0 ERROR AFTER WRITE HEADER CMD
5819	025452	104267			ERROR 267	:MSG B0 ERROR
5820	025454	104300			ERROR 300	:MSG A1 ERROR
5821	025456	104270			ERROR 270	:MSG B1 ERROR
5822						
5823	025460	005037	001400		CLR SECNT	:SECTOR COUNT
5824	025464	104415			SCOP1	
5825	025466	012706	001100		MOV #STACK,SP	:RESTORE STK PTR
5826						
5827	025472	004737	046106		JSR PC,SUBCLR	
5828	025476	104024			ERROR 24	:CERR AFTER SCLR
5829						
5830	025500	012765	000001	000020	MOV #1,RKDC(R5)	:CYL #
5831						

```

5832 025506 012700 001674      MOV      #RHTAB,RO
5833
5834 025512 012765 000025 000000 65$:  MOV      #RDHEAD,RKCS1(R5)      ;READ HEADER CMD
5835 025520 013737 001420 C03372      MOV      T500,TEMP1      ;SETUP TIMEOUT
5836 025526 004737 044176      JSR      PC,FRDY      ;FIND RDY
5837 025532 104171      ERROR    171      ;NO RDY AFTER READ HEADER CMD
5838 025534 032737 100000 003334      BIT      #CERR,HCS1
5839 025542 001405      BEQ      66$
5840 025544 104174      ERROR    174      ;CERR AFTER READ HEADER CMD
5841 025546 104401 056606      TYPE     MSG18      ;ABORTING BALANCE OF TESTS
5842 025552 000137 043470      JMP      $EOP      ;ABORT DRIVE
5843
5844 025556 016520 000024      66$:  MOV      RKDB(R5),(R0)+      ;1ST WORD FROM SILO TO RHTAB
5845 025562 016520 000024      MOV      RKDB(R5),(R0)+      ;2ND WORD
5846 025566 016520 000024      MOV      RKDB(R5),(R0)+      ;3RD WORD
5847
5848 025572 032765 100000 000010      BIT      #DLT,RKCS2(R5)      ;SEE IF DATA LATE
5849 025600 001407      BEQ      67$
5850 025602 004737 045534      JSR      PC,GSTAT
5851 025606 104173      ERROR    173      ;DATA LATE ON READ HEADER
5852 025610 104401 056606      TYPE     MSG18      ;ABORT BALANCE OF TESTS
5853 025614 000137 043470      JMP      $EOP      ;ABORT DRIVE
5854
5855 025620 020027 002100      67$:  CMP      RO,#RHTAB+132.      ;ALL 66 WORDS DONE?
5856 025624 001332      BNE      65$      ;BR IF NO
5857
5858 025626 004737 047464      JSR      PC, SORT      ;SORT RHTAB INTO SRTTAB SO THAT IT
5859      ;BEGINS WITH SECTOR 0
5860 025632 005037 001442      CLR      WDCNT      ;WORD COUNT
5861 025636 012700 002100      MOV      #SRTTAB,RO      ;ACTUAL HEADER TABLE
5862 025642 012701 001470      MOV      #HDTAB,R1      ;CALC HEADER TABLE
5863
5864 025646 012037 001454      68$:  MOV      (R0)+,HDWD
5865 025652 012137 003372      MOV      (R1)+,TEMP1
5866 025656 023737 001454 003372      CMP      HDWD,TEMP1      ;COMPARE ACTUAL WITH CALCULATED WORD
5867 025664 001401      BEQ      69$      ;BR IF COMPARE
5868 025666 104202      ERROR    202      ;READ HEADER MISMATCH
5869
5870 025670 005237 001442      69$:  INC      WDCNT
5871 025674 023727 001442 000102      CMP      WDCNT,#66.      ;ALL WORDS DONE?
5872 025702 001361      BNE      68$      ;BR IF NO
5873
5874
5875 025704 005037 001464      CLR      BYPFMT      ;ALLOW CORRECT FORMATTING
5876
5877
5878
5879
5880 *****
5881 *TEST 31      TEST RECALIBRATE CMD & READ HEADERS
5882 *
5883 *      THIS TEST DOES A RECALIBRATE & READS HEADERS.
5884 *      IT VERIFIES THAT WRITING HEADERS ON CYL 1 FROM THE PREVIOUS
5885 *      TEST DID NOT OVERWRITE CYL 0 HEADERS.
5886 *      AN ERROR IN THIS TEST INDICATES THAT HEADS:
5887 *

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M09

UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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T31 TEST RECALIBRATE CMD & READ HEADERS

SEG 0116

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5888
5889
5890
5891
5892 025710 000004
5893 025712 012737 000001 001174
5894 025720 012706 001100
5895
5896 025724 004737 046106
5897 025730 104024
5898 025732 012737 000001 001350
5899 025740 005037 001352
5900 025744 012737 000001 001360
5901 025752 012737 026776 001176
5902 025760 012765 000013 000000
5903 025766 013737 001414 003372
5904 025774 004737 044176
5905 026000 104124
5906 026002 012765 100000 000000
5907 026010 012765 000001 000026
5908 026016 004737 045534
5909 026022 032737 020000 003362
5910 026030 001001
5911 026032 104307
5912
5913 026034 012737 030140 003424 1$:
5914 026042 005037 003426
5915 026046 012737 025720 003430
5916 026054 012737 000001 003432
5917
5918 026062 004737 044720
5919 026066 000001
5920 026070 104213
5921 026072 104214
5922 026074 104215
5923 026076 104216
5924 026100 005737 001362
5925 026104 001401
5926 026106 104217
5927
5928 026110 012737 027016 001176 2$:
5929 026116 012737 177777 003372
5930 026124 004737 044606
5931 026130 104055
5932 026132 032737 100000 003334
5933 026140 001401
5934 026142 104220
5935 026144
5936
5937 026144 012737 050340 003424
5938 026152 005037 003426
5939 026156 012737 001720 003430
5940 026164 012737 000001 003432
5941 026172 005037 003434
5942 026176 012737 000002 003436
5943 026204 012737 000003 003442

; * OR A. MOVED TO A CYL OTHER THAN 1
; * B. DID NOT GET BACK TO CYL 0
; *
; *****
TST31: SCOPE
MOV #1,$TIMES ;DO 1 ITERATION
MOV #STACK,SP ;RESTORE STK PTR

JSR PC,SUBCLR
ERROR 24 ;CERR AFTER SCLR
MOV #1,FRCYL ;PARAMETERS
CLR TOCYL ;FOR
MOV #1,CALDIF ;ERROR TYPEOUTS
MOV #10,$$ESCAPE
MOV #RECAL,RKCS1(R5) ;RECAL CMD
MOV T10,TEMP1 ;SETUP TIMEOUT
JSR PC,FRDY ;FIND RDY
ERROR 124 ;NO RDY AFTER RECAL CMD
MOV #CCLR,RKCS1(R5)
MOV #1,RKMR1(R5) ;SELECT WORD 1
JSR PC,GSTAT
BIT #D.RTZ,HMR2
BNE 1$
ERROR 307 ;RTZ NOT SET DURING RECAL CMD

1$: MOV #<D.PIP!D.SPIN!D.VV!D.DRA>,E.A0 ;EXPECTED A0
CLR E.B0
MOV #<D.RTZ!D.REV!D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1
MOV #1,E.B1

JSR PC,CHKMSG ;CHECK MSGS A0,B0,A1,B1
WORD T.A2!0!0 ;& MSGS SPECIFIED HERE
ERROR 213 ;MSG A0 ERROR DURING RECAL CMD
ERROR 214 ;MSG B0 ERROR
ERROR 215 ;MSG A1 ERROR
ERROR 216 ;MSG B1 ERROR
TST CYLDIF
BEQ 2$
ERROR 217 ;CYL DIFF INCORRECT DURING RECAL CMD.

2$: MOV #12,$$ESCAPE
MOV #-1,TEMP1 ;SETUP TIMEOUT
JSR PC,FATT2 ;FIND ATTN
ERROR 55 ;NO ATTN AFTER RECAL CMD
BIT #CERR,HCS1
BEQ 3$
ERROR 220 ;CERR AFTER RECAL CMD

3$: MOV #<D.DSC!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0 ;EXPECTED MSG A0
CLR E.B0 ;EXPECTED MSG B0
MOV #<D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1 ;EXPECTED A1
MOV #1,E.B1 ;MSG ID FOR EXPECTED MSG B1
CLR E.A2 ;EXPECTED MSG A2
MOV #2,E.B2 ;MSG ID FOR EXPECTED MSG B2
MOV #3,E.B3 ;MSG ID FOR EXPECTED MSG B3

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N09

JNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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T31 TEST RECALIBRATE CMD & READ HEADERS

SEQ 0117

5944											
5945	026212	004737	044720		JSR	PC,CHKMSG		:CHECK MSGS A0,B0,A1,B1			
5946	026216	000303			.WORD	T.A2!T.B2!0		:& MSGS SPECIFIED HERE			
5947	026220	104221			ERROR	221		:MSG A0 ERROR AFTER RECAL CMD			
5948	026222	104275			ERROR	275		:MSG B0 ERROR			
5949	026224	104222			ERROR	222		:MSG A1 ERROR			
5950	026226	104276			ERROR	276		:MSG B1 ERROR			
5951											
5952	026230	005737	001362		TST	CYLDIF		:SEE IF MSG A2=0			
5953	026234	001401			BEQ	64\$		:BR IF YES			
5954	026236	104047			ERROR	47		:MSG A2 NOT CLEARED AFTER RECAL CMD			
5955	026240	005737	001364	64\$:	TST	CYLADD		:SEE IF MSG B2=0			
5956	026244	001401			BEQ	65\$		:BR IF YES			
5957	026246	104050			ERROR	50		:MSG B2 NOT CLEARED AFTER RECAL CMD			
5958	026250			65\$:							
5959											
5960	026250	012765	100000	000000	MOV	#CCLR,RKCS1(R5)					
5961	026256	013765	001222	000010	MOV	\$UNIT,RKCS2(R5)	;DRIVE#				
5962	026264	012765	000005	000000	MOV	#CLEAR,RKCS1(R5)	;DRIVE CLEAR CMD				
5963	026272	013737	001414	003372	MOV	T10,TEMP1					
5964	026300	004737	044176		JSR	PC,FRDY		:FIND RDY			
5965	026304	104151			ERROR	151		:NO RDY AFTER DRIVE CLEAR CMD			
5966	026306	004737	044460		JSR	PC,TSTATN		:TEST FOR ATTN			
5967	026312	000401			BR	66\$					
5968	026314	104154			ERROR	154		:ATTN NOT CLEARED AFTER DRIVE CLEAR CMD			
5969	026316			66\$:							
5970											
5971	026316	012737	010340	003424	MOV	#<0!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0		:EXPECTED MSG A0			
5972	026324	005037	003426		CLR	E.B0		:EXPECTED MSG B0			
5973	026330	012737	001720	003430	MOV	#<D.SPOK!D.CART!D.DOOR!D.BRM!D.SSP>,E.A1		:EXPECTED A1			
5974	026336	012737	000001	003432	MOV	#1,E.B1		:MSG ID FOR EXPECTED MSG B1			
5975	026344	005037	003434		CLR	E.A2		:EXPECTED MSG A2			
5976	026350	012737	000002	003436	MOV	#2,E.B2		:MSG ID FOR EXPECTED MSG B2			
5977	026356	012737	000003	003442	MOV	#3,E.B3		:MSG ID FOR EXPECTED MSG B3			
5978											
5979	026364	004737	044720		JSR	PC,CHKMSG		:CHECK MSGS A0,B0,A1,B1			
5980	026370	000003			.WORD	T.A2!T.B2!0		:& MSGS SPECIFIED HERE			
5981	026372	104273			ERROR	273		:MSG A0 ERROR AFTER DRIVE CLEAR CMD			
5982	026374	104265			ERROR	265		:MSG B0 ERROR			
5983	026376	104274			ERROR	274		:MSG A1 ERROR			
5984	026400	104266			ERROR	266		:MSG B1 ERROR			
5985											
5986	026402	004737	046106		JSR	PC,SUBCLR					
5987	026406	104024		4\$:	ERROR	24		:CERR AFTER SCLR			
5988											
5989	026410	005037	001176		CLR	\$ESCAPE					
5990											
5991	026414	012700	001674		MOV	#RHTAB,RO					
5992	026420	012765	000025	000000	MOV	#<RDHEAD>,RKCS1(R5)	:READ HEADER CMD				
5993	026426	013737	001426	003372	MOV	T50000,TEMP1	:SETUP TIMEOUT				
5994	026434	004737	044176		JSR	PC,FRDY		:FIND RDY			
5995	026440	104171			ERROR	171		:NO RDY AFTER READ HEADER CMD			
5996	026442	032737	100000	003334	BIT	#CERR,HCS1					
5997	026450	001405			BEQ	67\$					
5998	026452	104174			ERROR	174		:CERR AFTER READ HEADER CMD			
5999	026454	104401	056606		TYPE	,MSG18		:ABORT BALANCE OF TESTS			

B10

 J:BUS R:06 DRIVE DIAGNOSTIC PART 1
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 T31 TEST RECALIBRATE CMC & READ HEADERS

SEG C118

6000	026460	000137	043470		JMP	SEOP	:ABORT DRIVE
6001							
6002	026464	016520	000024	675:	MOV	RKDB(R5), (R0)+	:1ST WORD FROM SILO TO RHTAB
6003	026470	016520	000024		MOV	RKDB(R5), (R0)+	:2ND WORD
6004	026474	016520	000024		MOV	RKDB(R5), (R0)+	:3RD WORD
6005							
6006							
6007	026500	032765	100000	000010	BIT	#DLT, RKCS2(R5)	
6008	026506	001401			BEQ	685	
6009	026510	004737	045534		JSR	PC, GSTAT-	
6010	026514	104173			ERROR	173	:DLT AFTER READ HEADER AND
6011	026516	104401	056606		TYPE	MSG18	:ABORTING BALANCE OF TESTS
6012	026522	000137	043470		JMP	SEOP	:ABORT DRIVE
6013	026526			685:			
6014							
6015	026526	023727	001674	000001	CMR	RHTAB, #1	:CHECK WORD 0, CYL # ONLY
6016	026534	001001			BNE	55	
6017	026536	104240			ERROR	240	:CYL 1 HEADERS ON CYL 0
6018							
6019	026540	005737	001674		TST	RHTAB	
6020	026544	001401		55:	BEQ	65	
6021	026546	104202			ERROR	202	:READ CYL WORD HEADER ERROR
6022	026550			65:			
6023	026550	004737	050036		JSR	PC, SWTST	:SEE IF SW 14 OR 8 IS SET
6024	026554	000530			BR	TS132	:GO TO NEXT TEST
6025							:RETURN HERE IF SW 14 IS SET OR
6026							:SW 8 WITH SWR <7:0> APPLY
6027	026556	004737	046106		JSR	PC, SUBCLR	
6028	026562	104024		85:	ERROR	24	:CERR AFTER SCLR
6029	026564	012765	000001	000020	MOV	#1, RKDC(R5)	:RECONDITION BACK TO CYL 1
6030							
6031	026572	012765	000017	000000	MOV	#SEEK, RKCS1(R5)	:SEEK CMD TO RECONDITION DRIVE.
6032	026600	013737	001414	003372	MOV	T10, TEMP1	:SETUP TIMEOUT
6033	026606	004737	044176		JSR	PC, FRDY	:FIND RDY
6034	026612	104131			ERROR	131	:NO RDY AFTER SEEK CMD.
6035							
6036	026614	013737	001424	003372	MOV	T5000, TEMP1	
6037	026622	004737	044606		JSR	PC, FATT2	:FIND ATTN
6038	026626	104132			ERROR	132	:NO ATTN AFTER SEEK CMD
6039	026630	032737	100000	003334	BIT	#CERR, HCS1	
6040	026636	001401			BEQ	695	
6041	026640	104210			ERROR	210	:CERR AFTER SEEK CMD.
6042							
6043	026642	004737	046106		JSR	PC, SUBCLR	
6044	026646	104024		695:	ERROR	24	:CERR AFTER SCLR
6045							
6046							
6047							
6048	026650	012737	010340	003424	MOV	#(0!D.SPIN!D.DRDY!D.VV!D.DRA).E.A0	:EXPECTED MSG A0
6049	026656	005037	003426		CLR	E.B0	:EXPECTED MSG B0
6050	026662	012737	001720	003430	MOV	#(D.SPOK!D.CART!D.DOOR!D.BRM!D.SSP).E.A1	:EXPECTED A1
6051	026670	012737	000001	003432	MOV	#1.E.B1	:MSG ID FOR EXPECTED MSG B1
6052	026676	005037	003434		CLR	E.A2	:EXPECTED MSG A2
6053	026702	012737	000002	003436	MOV	#2.E.B2	:MSG ID FOR EXPECTED MSG B2
6054	026710	012737	000003	003442	MOV	#3.E.B3	:MSG ID FOR EXPECTED MSG B3
6055	026716	012737	000022	003436	MOV	#(BIT4!2).E.B2	:EXPECTED MSG B2 & ID FOR CYL 1

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6056 026724 004737 044720 JSR PC,CHKMSG ;CHECK MSGS AO,BO,AI,BI
6057 026730 000003 .WORD T.A2!T.B2!C ;8 MSGS SPECIFIED HERE
6058 026732 104133 ERROR 133 ;MSG AO ERROR AFTER SEEK CMD
6059 026734 104134 ERROR 134 ;MSG BO ERROR
6060 026736 104135 ERROR 135 ;MSG AI ERROR
6061 026740 104136 ERROR 136 ;MSG BI ERROR
6062 026742 023727 001364 000001 CMP CYLADD,#1
6063 026750 001401 BEQ 95
6064 026752 104043 ERROR 43 ;CYL ADDR IN RKMR3 NOT=RKDC
6065 026754 005037 001176 95: CLR $ESCAPE
6066 026760 005737 001410 TST LPFLG
6067 026764 001402 BEQ 705
6068 026766 000177 152116 JMP $SLPERR ;SW 9 WAS SET.
6069 026772 000177 152110 705: JMP $SLPADR ;SW 14 OR 8 WAS SET
6070 026776 005237 001410 105: INC LPFLG
6071 027002 032777 001000 152130 BIT $SW9,$SWR ;LOOP ON ERROR?
6072 027010 001262 BNE 95 ;YES, RECONDITION DRIVE
6073 027012 000137 026110 JMP 25 ;RETURN TO MAINLINE
6074 027016 005237 001410 125: INC LPFLG
6075 027022 032777 001000 152110 BIT $SW9,$SWR ;LOOP ON ERROR?
6076 027030 001252 BNE 85 ;YES, RECONDITION DRIVE
6077 027032 000137 026402 JMP 45 ;RETURN TO MAINLINE
6078 *****
6079 TEST 32 SINGLE INCREMENT SEEKS TO CYL 410
6080 *
6081 * THIS TEST DOES SINGLE INCREMENT SEEKS OUT TO CYL 410
6082 * WITHOUT ANY WRITING OR READING SO AS NOT TO INADVERTENTLY
6083 * DESTROY DATA.
6084 *
6085 *****
6086 ST32: SCOPE
6087 027036 000004 MOV #1,$TIMES ;DO 1 ITERATION
6088 027040 012737 000001 001174 MOV #STACK,SP ;RESTORE STK PTR
6089 027046 012706 001100
6090 027052 004737 044106 JSR PC,SUBCLR
6091 027056 104024 ERROR 24 ;CERR AFTER SCLR
6092 027060 005037 001350 CLR FRCYL ;FROM CYL
6093 027064 012737 000011 001352 MOV #1,$TOCYL ;TO CYL
6094 027072 012737 000001 001360 MOV #1,CALCIF ;CALCULATED DIFF.
6095 15: SCOP1
6096 027100 104415 MOV #STACK,SP ;RESTORE STK PTR
6097 027102 012706 001100
6098 027106 004737 044106 JSR PC,SUBCLR
6099 027112 104024 ERROR 24 ;CERR AFTER SCLR
6100 027114 012737 027720 001176 MOV #105,$ESCAPE
6101 027122 013765 001352 000020 MOV $TOCYL,RKDC(R5) ;CYL TO SEEK TO
6102 027130 012765 000017 000000 MOV #SEEK,RKCS1(R5) ;SEEK CMD
6103 027136 013737 001414 003372 MOV T10,TMP1 ;SETUP TIMEOUT

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D10

 JMBUS RK06 DRIVE DIAGNOSTIC PART 1
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 T32 SINGLE INCREMENT SEEKS TO CYL 410

SEG 0120

6112	027144	004737	044176		JSR	PC,FRDY	:FIND RDY
6113	027150	104131			ERROR	131	:NO RDY AFTER SEEK CMD
6114	027152	012737	030140	003424	MOV	#<D.PIP!D.SPIN!D.VV!D.DRA>,E.A0	:EXPECTED A0
6115	027160	005037	003426		CLR	E.B0	
6116	027164	012737	003720	003430	MOV	#<D.FWD!D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1	
6117	027172	012737	000001	003432	MOV	#1,E.B1	
6118							
6119	027200	004737	044720		JSR	PC,CHKMSG	:CHECK MSGS A0,B0,A1,B1
6120	027204	000003			.WORD	T.A2!T.B2!0	:8 MSGS SPECIFIED HERE
6121	027206	104203			ERROR	203	:MSG A0 ERROR DURING SEEK CMD
6122	027210	104204			ERROR	204	:MSG B0 ERROR
6123	027212	104205			ERROR	205	:MSG A1 ERROR
6124	027214	104206			ERROR	206	:MSG B1 ERROR
6125							
6126	027216	023727	001362	000001	CMP	CYLDIF,#1	
6127	027224	001401			BEQ	25	
6128	027226	104212			ERROR	212	:CYL DIFF INCORRECT DURING SEEK
6129							
6130	027230	012737	027740	001176	MOV	#125,SESCAPE	
6131	027236	013737	001422	003372	MOV	T2500,TEMP1	:SETUP TIMEOUT
6132							
6133	027244	004737	044606		JSR	PC,FATT2	:FIND ATTN
6134	027250	104132			ERROR	132	:NO ATTN AFTER SEEK CMD
6135	027252	032737	100000	003334	BIT	#CERR,HCS1	
6136	027260	001401			BEQ	645	
6137	027262	104210			ERROR	210	:CERR AFTER SEEK CMD
6138	027264						
6139							
6140	027264	012737	050340	003424	MOV	#<D.DSC!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0	:EXPECTED MSG A0
6141	027272	005037	003426		CLR	E.B0	:EXPECTED MSG B0
6142	027276	012737	001720	003430	MOV	#<D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1	:EXPECTED A1
6143	027304	012737	000001	003432	MOV	#1,E.B1	:MSG ID FOR EXPECTED MSG B1
6144	027312	005037	000034		CLR	E.A2	:EXPECTED MSG A2
6145	027316	012737	000002	003436	MOV	#2,E.B2	:MSG ID FOR EXPECTED MSG B2
6146	027324	012737	000003	003442	MOV	#3,E.B3	:MSG ID FOR EXPECTED MSG B3
6147							
6148	027332	004737	044720		JSR	PC,CHKMSG	:CHECK MSGS A0,B0,A1,B1
6149	027336	000003			.WORD	T.A2!T.B2!0	:8 MSGS SPECIFIED HERE
6150	027340	104133			ERROR	133	:MSG A0 ERROR AFTER SEEK CMD
6151	027342	104134			ERROR	134	:MSG B0 ERROR
6152	027344	104135			ERROR	135	:MSG A1 ERROR
6153	027346	104136			ERROR	136	:MSG B1 ERROR
6154	027350	005737	001362		TST	CYLDIF	
6155	027354	001401			BEQ	655	
6156	027356	104137			ERROR	137	:CYL DIFF NOT CLEARED AFTER SEEK CMD
6157							
6158	027360						
6159							
6160	027360	012765	100000	000000	MOV	#CLR,RKCS1(R5)	
6161	027366	013765	001222	000010	MOV	#UNIT,RKCS2(R5)	:DRIVE#
6162	027374	012765	000005	000000	MOV	#CLEAR,RKCS1(R5)	:DRIVE CLEAR CMD
6163	027402	013737	001414	003372	MOV	T10,TEMP1	
6164	027410	004737	044176		JSR	PC,FRDY	:FIND RDY
6165	027414	104151			ERROR	151	:NO RDY AFTER DRIVE CLEAR CMD
6166	027416	004737	044460		JSR	PC,TSTATN	:TEST FOR ATTN
6167	027422	000401			BR	665	

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T32 SINGLE INCREMENT SEEKS TO CYL 410

SEQ 0121

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6168 027424 104154
6169 027426
6170
6171 027426 012737 010340 003424 MOV #0!D.SPIN!D.DRDY!D.VV!D.DRA>.E.A0 ;EXPECTED MSG A0
6172 027434 005037 003426 CLR E.B0 ;EXPECTED MSG B0
6173 027440 012737 001720 003430 MOV #0!D.SPOK!D.CART!D.DOOR!D.BRM!D.SSP>.E.A1 ;EXPECTED A1
6174 027446 012737 000001 003432 MOV #1.E.B1 ;MSG ID FOR EXPECTED MSG B1
6175 027454 005037 003434 CLR E.A2 ;EXPECTED MSG A2
6176 027460 012737 000002 003436 MOV #2.E.B2 ;MSG ID FOR EXPECTED MSG B2
6177 027466 012737 000003 003442 MOV #3.E.B3 ;MSG ID FOR EXPECTED MSG B3
6178
6179 027474 024737 044720 JSR PC,C4KMSG ;CHECK MSGS A0,B0,A1,B1
6180 027500 000003 .WORD T.A2!T.B2!0 ;8 MSGS SPECIFIED HERE
6181 027502 104273 ERROR 273 ;MSG A0 ERROR AFTER DRIVE CLEAR CMD
6182 027504 104265 ERROR 265 ;SG B0 ERROR
6183 027506 104274 ERROR 274 ;MSG A1 ERROR
6184 027510 104266 ERROR 266 ;MSG B1 ERROR
6185
6186 027512 023737 001364 001352 CMP CYLADD,TOCYL
6187 027520 001401 BEQ 35
6188 027522 104207 ERROR 207 ;CYL ADDR IN RkMR2 NOT=RKDC
6189
6190 027524 023727 001352 000632 35: CMP TOCYL,#410. ;ALL CYL DONE?
6191 027532 001407 BEQ 45 ;BR IF YES
6192 027534 005237 001350 INC FRCYL ;ELSE DO ANOTHER
6193 027540 005237 001352 INC TOCYL
6194 027544 001402 BEQ 45 ;BR IF YES
6195 027546 000137 027100 JMP 15
6196
6197 027552
6198 027552 004737 050036 45: JSR PC,SWTST ;SEE IF SW 14 OR 8 IS SET
6199 027556 000500 BR TST33 ;GO TO NEXT TEST
6200 ;RETURN HERE IF SW 14 IS SET OR
6201 ;SW 8 WITH SWR (7:0) APPLY
6202
6203
6204
6205 027560
6206
6207 027560 004737 046106 JSR PC,SUBCLR
6208 027564 104024 ERROR 24 ;CERR AFTER SCRL
6209
6210 027566 013765 001352 000020 65: MOV TOCYL,RKDC(R5) ;CYL#
6211
6212 027574 012765 000017 000000 MOV #SEEK,RKCS1(R5) ;SEEK CMD TO RECONDITION DRIVE.
6213 027602 013737 001414 003372 MOV T10,TEMP1 ;SETUP TIMEOUT
6214 027610 004737 044175 JSR PC,FRDY ;FIND RDY
6215 027614 104131 ERROR 131 ;NO RDY AFTER SEEK CMD.
6216
6217 027616 013737 001424 003372 MOV T5000,TEMP1
6218 027624 004737 044606 JSR PC,FATT2 ;FIND ATTN
6219 027630 104132 ERROR 132 ;NO ATTN AFTER SEEK CMD
6220 027632 032737 100000 003334 BIT #CERR,HCS1
6221 027640 001401 BEQ 695
6222 027642 104210 ERROR 210 ;CERR AFTER SEEK CMD.
6223

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F10

UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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T32 SINGLE INCREMENT SEEKS TO CYL 410

SEQ 0122

6224	027644	004737	046106	695:	JSR	PC,SUBCLR	
6225	027650	104024			ERROR	24	;CERR AFTER SCLR
6226							
6227	027652	023727	001352 000000		CMP	TOCYL,#0	;ALL CYL DONE?
6228	027660	001403			BEG	685	;BR IF YES
6229	027662	005337	001352		DEC	TOCYL	;ELSE DO ANOTHER
6230	027666	000737			BR	675	
6231							
6232	027670	004737	046106	685:	JSR	PC,SUBCLR	
6233	027674	104024			ERROR	24	;CERR AFTER SCLR
6234							
6235	027676	005037	001176		CLR	\$ESCAPE	
6236	027702	005737	001410		TST	LPFLG	
6237	027706	001402			BEG	705	
6238	027710	000177	151174		JMP	\$SLPERR	;SW 9 WAS SET.
6239	027714	000177	151166	705:	JMP	\$SLPADR	;SW 14 OR 8 WAS SET
6240							
6241							
6242							
6243	027720			105:	INC	LPFLG	
6244	027720	005237	001410		BIT	\$SW9,\$SWR	;LOOP ON ERROR?
6245	027724	032777	001000 151206		BNE	65	;YES, RECONDITION DRIVE
6246	027732	001312			JMP	25	;RETURN TO MAINLINE
6247	027734	000137	027230				
6248							
6249	027740			125:	INC	LPFLG	
6250	027740	005237	001410		BIT	\$SW9,\$SWR	;LOOP ON ERROR?
6251	027744	032777	001000 151166		BNE	65	;YES, RECONDITION DRIVE
6252	027752	001302			JMP	45	;RETURN TO MAINLINE
6253	027754	000137	027552				
6254							
6255							
6256							
6257							
6258							
6259							
6260							
6261							
6262							
6263							
6264							
6265							
6266							
6267							
6268							
6269							
6270							
6271							
6272							
6273							
6274							
6275							
6276							
6277	027760	000004		TST33:	SCOPE		
6278	027762	012737	000001 001174		MOV	\$1,STIMES	;DO 1 ITERATION
6279	027770	012706	001100		MOV	\$STACK,SP	;RESTORE STK PTR

*TEST 33 READ & SAVE BAD SECTOR INFO & TYPE PACK SERIAL *

THIS TEST VERIFIES THAT CYL 410, TRACK 2 CAN BE READ.
THIS AREA CONTAINS BAD SECTOR INFO WHICH IS WRITTEN BY THE
FACTORY DURING MANF. ALL BAD SECTOR INFO (BSE) WILL BE STORED
AT THIS TIME TO MASK FUTURE READ HEADER OR DATA ERROR PRINTOUTS.

SECTORS 0,2,4,6,8 CONTAIN IDENTICAL INFO FOR 22 SECTOR HARDWARE DETECTED FOR BAD
SECTORS 10,12,14,16,18,20 CONTAIN IDENTICAL INFO FOR 22 SECTOR SOFTWARE DETECTED

IF BSE INFO CANNOT BE READ, OR IF AFTER READING THE BSE INFO
IT IS DETERMINED THAT AN ALIGNMENT CARTRIDGE IS USED,
A MSG WILL BE TYPED INDICATING THAT ALL
FUTURE FORMAT AND READ-WRITE TESTS WILL BE BYPASSED.

THIS IS DONE SO AS NOT TO DESTROY BSE INFO OR AN ALIGNMENT PACK BY WRITING

THE PACK SERIAL * IS TYPED IN OCTAL & FOR THE FIRST PASS ONLY.

THIS IS THE FIRST TEST WHERE THE READ DATA CMD IS PERFORMED

SEQ 0123

6280							
6281	027774	004737	046106		JSR	PC,SUBCLR	
6282	030000	104024			ERROR	24	:CERR AFTER SCLR
6283	030002	005037	003374		CLR	TEMP2	:SECTOR CTR
6284	030006	005037	003376		CLR	TEMP3	:J=22 SECTOR HARDWARE DETECTED TABLE
6285							:I=22 SECTOR SOFTWARE DETECTED TABLE
6286							:J=2=2 DONE
6287	030012	012737	002304	003400	MOV	#BSE22H,TEMP4	:STORE 22 SECTOR HARDWARE BSE INFO
6288	030020	013765	003400	000004	MOV	TEMP4,RKBA(R5)	
6289	030026	012737	001000	003402	MOV	#100C,TEMP5	:TRACK 2, SECTOR 0
6290	030034	013765	003402	000006	MOV	TEMP5,RKDA(R5)	
6291							
6292	030042	012765	000632	000020	1\$: MOV	#410.,RKDC(R5)	:CYL 410
6293	030050	012765	177400	000002	MOV	#-256.,RKWC(R5)	:LOAD WORD CT
6294	030056	012765	000021	000000	MOV	#RDATA,RKCS1(R5)	:READ DATA CMD
6295	030064	013737	001426	003372	MOV	T50000,TEMP1	:SETUP TIMEOUT
6296	030072	004737	044176		JSR	PC,FRDY	:FIND RDY
6297	030076	104226			ERROR	226	:NO RDY AFTER READ DATA CMD
6298	030100	004737	045534		JSR	PC,GSTAT	:GET FRESH STATUS
6299	030104	032737	100000	003334	BIT	#CERR,HCS1	
6300	030112	001470			BEQ	B\$	
6301	030114	104227			ERROR	227	:CERR AFTER READ DATA CMD
6302							
6303	030116	012737	010340	003424	MOV	#<O!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0	:EXPECTED MSG A0
6304	030124	005037	003426		CLR	E.B0	:EXPECTED MSG B0
6305	030130	012737	001720	003430	MOV	#<D.SPOK!D.CART!D.DOOR!D.BRMH!D.SSP>,E.A1	:EXPECTED A1
6306	030136	012737	000001	003432	MOV	#1,E.B1	:MSG ID FOR EXPECTED MSG B1
6307	030144	005037	003434		CLR	E.A2	:EXPECTED MSG A2
6308	030150	012737	000002	003436	MOV	#2,E.B2	:MSG ID FOR EXPECTED MSG B2
6309	030156	012737	000003	003442	MOV	#3,E.B3	:MSG ID FOR EXPECTED MSG B3
6310							
6311	030164	004737	044720		JSR	PC,CHKMSG	:CHECK MSGS A0,B0,A1,B1
6312	030170	000000			.WORD	O!O!O	:8 MSGS SPECIFIED HERE
6313	030172	104051			ERROR	51	:MSG A0 ERROR AFTER READ DATA CMD
6314	030174	104052			ERROR	52	:MSG B0 ERROR
6315	030176	104112			ERROR	112	:MSG A1 ERROR
6316	030200	104113			ERROR	113	:MSG B1 ERROR
6317							
6318	030202	004737	046106		JSR	PC,SUBCLR	
6319	030206	104024			ERROR	24	:CERR AFTER SUBCLR
6320							
6321	030210	005237	003374		INC	TEMP2	
6322	030214	023727	003374	000005	CMP	TEMP2,#5	:READ ALL 5 SECTORS?
6323	030222	001007			BNE	5\$	
6324	030224	005737	003376		TST	TEMP3	
6325	030230	001002			BNE	2\$	
6326	030232	104233			ERROR	233	:CANT READ SECTORS 0,2,4,6,8
6327	030234	000414			BR	3\$	
6328	030236	104230			ERROR	230	:CANT READ SECTORS 10,12,14,16,18,20
6329	030240	000412			BR	3\$	
6330							
6331	030242	013765	003400	000004	5\$: MOV	TEMP4,RKBA(R5)	:RESTORE TABLE ADDR
6332	030250	062737	000002	003402	ADD	#2,TEMP5	:SETUP TO READ 2 SECTORS FROM LAST
6333	030256	013765	003402	000006	MOV	TEMP5,RKDA(R5)	
6334	030264	000666			BR	1\$	
6335							

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JNIBUS RMO6 DRIVE DIAGNOSTIC PART 1
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T33 READ & SAVE BAD SECTOR INFO & TYPE PACK SERIAL *

SEG 0124

6336	030266	005237	001456	35:	INC	BSERR	:SET BSE FLAG
6337	030272	000454			BR	TST34	::GO TO NEXT TEST
6338							
6339	030274	005737	002312	93:	TST	BSE22H+6	:TEST CARTRIDGE TYPE
6340	030300	001404			BEG	93	:BRANCH IF DATA CARTRIDGE
6341	030302	104235			ERROR	235	:ALIGNMENT CARTRIDGE USED
6342	030304	005237	001456		INC	BSERR	:SET BSE ERROR FLAG
6343	030310	000426			BR	105	
6344							
6345	030312	005237	003376	95:	INC	TEMP3	
6346	030316	023727	003376		OMP	TEMP3, #1	
6347	030324	001020			BNE	105	
6348	030326	005037	003374		CLR	TEMP2	
6349	030332	012737	054752	003400	MOV	#BSE225, TEMP4	:STORE 22 SECTOR SOFTWARE BSE ADDR
6350	030340	013765	003400	000004	MOV	TEMP4, RKBA(R5)	
6351	030346	012737	001012	003402	MOV	#1012, TEMP5	:TRACK 2, SECTOR 12
6352	030354	013765	003402	000006	MOV	TEMP5, RKDA(R5)	
6353	030362	000137	030042		JMP	15	:REPEAT
6354							
6355	030366	005737	001216	105:	TST	\$PASS	
6356	030372	001014			BNE	TST34	::GO TO NEXT TST IF NOT 1'ST PASS
6357	030374	104401	056571		TYPE	,MSG17	:CART SERIAL *
6358	030400	012746	002304		MOV	#BSE22H, -(SP)	
6359	030404	004737	054156		JSR	PC, \$D820	:CONVERT DBL BINARY WORD TO OCTAL
6360	030410	004737	054526		JSR	PC, \$SUPRS	:TYPE SERIAL *
6361	030414	104401	001205		TYPE	, \$CRLF	
6362	030420	104401	001205		TYPE	, \$CRLF	
6363							
6364							
6365							
6366							
6367							
6368							
6369							
6370							
6371							
6372							
6373							
6374							
6375							
6376	030424	000004			TST34:	SCOPE	
6377	030426	012737	000001	001174	MOV	#1, \$TIMES	:DO 1 ITERATION
6378	030434	012706	001100		MOV	#STACK, SP	:RESTORE STK PTR
6379							
6380	030440	004737	046106		JSR	PC, SUBCLR	:SUBSYS CLEAR & GET STATUS
6381	030444	104024			ERROR	24	:CERR AFTER SCLR
6382							
6383	030446	005037	001410		CLR	LPFLG	
6384	030452	005237	001462		INC	BYPCERR	:BYPASS CHECKING FOR ANY CERR IN GSTAT1
6385	030456	005237	003316		INC	UNLD	:USED FOR VALID HALT
6386							
6387	030462	012765	000020	000026	MOV	#PAT, RKMR1(R5)	:PARITY & WORD 0
6388	030470	012765	000631	000020	MOV	#409, RKDC(R5)	:CYL 409.
6389	030476	012765	000017	000000	MOV	#SEEK, RKCS1(R5)	:SEEK CMD
6390	030504	013737	001414	003372	MOV	T10, TEMP1	
6391	030512	004737	044176		JSR	PC, FRDY	:FIND RDY

 *TEST 34 DETECT INNER LIMIT
 *

THIS TEST VERIFIES THAT THE LAST CYL IN THE ABOVE
 TEST WAS 410 BY DETECTING INNER LIMIT AS THE ADJACENT CYL.
 IF THIS TEST FAILS, IT INDICATES THAT HEADS WERE NOT ON CYL 410
 & THAT BSE INFO IS NOT VALID. THE FORMAT PACK TEST
 & ALL READ-WRITE TESTS ARE BYPASSED
 TO AVOID DESTROYING BSE INFO OR AN ALIGNMENT CARTRIDGE
 SINCE THERE IS A SEEKING OR LIMIT DETECTION PROBLEM.

6392	030516	104122			ERROR	122	;NO RDY FROM SEEK WITH BAD PARITY
6393	030520	004737	044460		JSP	PC,TSTATN	;TEST FOR ATTN
6394	030524	104125			ERROR	125	;NO ATTN FROM SEEK WITH BAD PARITY
6395	030526	012737	050340	003424	MOV	#<D.DSC!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0	;EXPECTED A0
6396	030534	012737	001200	003426	MOV	#<D.FLT!D.PAR>,E.B0	
6397	030542	012737	001720	003430	MOV	#<D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1	
6398	030550	012737	000001	003432	MOV	#1,E.B1	
6399							
6400	030556	004737	044720		JSR	PC,CHKMSG	;CHECK MSGS A0,B0,A1,B1
6401	030562	000000			.WORD	0!0!0	;# MSGS SPECIFIED HERE
6402	030564	104110			ERROR	110	;MSG A0 ERROR AFTER SEEK WITH BAD PARITY
6403	030566	104111			ERROR	111	;MSG B0 ERROR
6404	030570	104146			ERROR	146	;MSG A1 ERROR
6405	030572	104147			ERROR	147	;MSG B1 ERROR
6406							
6407	030574	012765	100000	000000	MOV	#CLR,RKCS1(R5)	
6408	030602	013765	001222	000010	MOV	\$UNIT,RKCS2(R5)	;DRIVE#
6409	030610	012765	000005	000000	MOV	#CLEAR,RKCS1(R5)	;DRIVE CLEAR CMD
6410	030616	013737	001414	003372	MOV	T10,TEMP1	
6411	030624	004737	044176		JSR	PC,FRDY	;FIND RDY
6412	030630	104151			ERROR	151	;NO RDY AFTER DRIVE CLEAR CMD
6413	030632	004737	044460		JSR	PC,TSTATN	;TEST FOR ATTN
6414	030636	000401			BR	645	
6415	030640	104154			ERROR	154	;ATTN NOT CLEARED AFTER DRIVE CLEAR CMD
6416	030642						
6417							
6418	030642	012737	010340	003424	MOV	#<0!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0	;EXPECTED MSG A0
6419	030650	005037	003426		CLR	E.B0	;EXPECTED MSG B0
6420	030654	012737	001720	003430	MOV	#<D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1	;EXPECTED A1
6421	030662	012737	000001	003432	MOV	#1,E.B1	;MSG ID FOR EXPECTED MSG B1
6422	030670	005037	003434		CLR	E.A2	;EXPECTED MSG A2
6423	030674	012737	000002	003436	MOV	#2,E.B2	;MSG ID FOR EXPECTED MSG B2
6424	030702	012737	000003	003442	MOV	#3,E.B3	;MSG ID FOR EXPECTED MSG B3
6425							
6426	030710	004737	044720		JSR	PC,CHKMSG	;CHECK MSGS A0,B0,A1,B1
6427	030714	000003			.WORD	T.A2!T.B2!0	;# MSGS SPECIFIED HERE
6428	030716	104273			ERROR	273	;MSG A0 ERROR AFTER DRIVE CLEAR CMD
6429	030720	104265			ERROR	265	;MSG B0 ERROR
6430	030722	104274			ERROR	274	;MSG A1 ERROR
6431	030724	104266			ERROR	266	;MSG B1 ERROR
6432							
6433							
6434							
6435	030726	012765	000632	000020	MOV	#410.,RKDC(R5)	;CYL 410.
6436	030734	012765	000017	000000	MOV	#SEEK,RKCS1(R5)	;SEEK TO CYL 410.
6437	030742	013737	001414	003372	MOV	T10,TEMP1	
6438	030750	004737	044176		JSR	PC,FRDY	;FIND RDY
6439	030754	104131			ERROR	131	;NO RDY AFTER SEEK CMD
6440	030756	012765	100000	000000	MOV	#CLR,RKCS1(R5)	
6441	030764	004737	045534		JSR	PC,GSTAT	
6442	030770	004737	046742		JSR	PC,FLIM	;FIND LIMIT DETECT
6443	030774	104160			ERROR	160	;LIMIT DETECT NOT FOUND BEFORE TIMEOUT
6444							
6445							
6446	030776	032737	040000	003362	BIT	#D.UNLD,HMR2	
6447	031004	001003			BNE	15	

645:

J10

JNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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T34 DETECT INNER LIMIT

SEQ 0126

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6448 031006 104305          ERROR 305          :DRIVE NOT UNLOADING AFTER LIMIT DETECT
6449 031010 000137 031646      JMP      305          :BYPASS REST OF TEST
6450
6451
6452
6453
6454
6455
6456
6457
6458
6459
6460
6461
6462
6463
6464
6465
6466
6467 031014 012737 031562 001176 15:      MOV      #205,$ESCAPE      :MUST ESCAPE TO CYCLE UP DRIVE & TEST SWP
6468 031022 012737 070140 003424      MOV      #<D.DSC!D.PIP!D.SPIN!D.VV!D.DRA>,E.A0      ;EXPECTED A0
6469 031030 012737 002200 003426      MOV      #<D.SKI!D.FLT>,E.B0
6470 031036 012737 045720 003430      MOV      #<D.UNLD!D.REV!D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1
6471 031044 012737 030001 003432      MOV      #<D.LIMD!D.NMOV!1>,E.B1
6472
6473 031052 004737 044720          JSR      PC,CHKMSG      ;CHECK MSGS A0,B0,A1,B1
6474 031056 000000          .WORD      0!0!0      ;3 MSGS SPECIFIED HERE
6475 031060 104161          ERROR      161      ;MSG A0 ERROR AFTER INNER LIMIT DETECT
6476 031062 104162          ERROR      162      ;MSG B0 ERROR
6477 031064 104163          ERROR      163      ;MSG A1 ERROR
6478 031066 104164          ERROR      164      ;MSG B1 ERROR
6479
6480 031070 004737 044460          JSR      PC,TSTATN
6481 031074 104165          ERROR      165      ;NO ATTN AFTER INNER LIMIT DETECT
6482 031076 005037 001462          CLR      BYPCERR      ;ALLOW CHECKING CERR IN GSTAT1
6483
6484 031102 004737 046106          JSR      PC,SUBCLR      ;SUBSYS CLR
6485 031106 104024          ERROR      24      ;CERR AFTER SCLR
6486 031110 013737 001414 003374      MOV      T10,TEMP2      ;SET UP TIMEOUT
6487 031116 004737 047020          JSR      PC,FHDHM      ;FIND HEAD HOME
6488 031122 104166          ERROR      166      ;HEAD HOME NOT FOUND BEFORE TIMEOUT
6489 031124 004737 047074          JSR      PC,FLOAD      ;FIND LOAD HEADS
6490 031130 104167          ERROR      167      ;LOAD HEADS NOT FOUND BEFORE TIMEOUT
6491 031132 013737 001414 003374      MOV      T10,TEMP2      ;SETUP TIMEOUT
6492 031140 004737 044512          JSR      PC,FATT1      ;FIND ATTN
6493 031144 104067          ERROR      67      ;ATTN NOT FOUND BEFORE TIMEOUT
6494 031146 005037 001176          CLR      $ESCAPE      25:
6495
6496 031152 012737 050340 003424      MOV      #<D.DSC!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0      ;EXPECTED MSG A0
6497 031160 005037 003426          CLR      E.B0      ;EXPECTED MSG B0
6498 031164 012737 001720 003430      MOV      #<D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1      ;EXPECTED A1
6499 031172 012737 000001 003432      MOV      #1,E.B1      ;MSG ID FOR EXPECTED MSG B1
6500 031200 005037 003434          CLR      E.A2      ;EXPECTED MSG A2
6501 031204 012737 000002 003436      MOV      #2,E.B2      ;MSG ID FOR EXPECTED MSG B2
6502 031212 012737 000003 003442      MOV      #3,E.B3      ;MSG ID FOR EXPECTED MSG B3
6503

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K10

UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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T34 DETECT INNER LIMIT

SEG 0127

6504	031220	004737	044720		JSR	PC,CHKMSG	;CHECK MSGS A0,B0,A1,B1
6505	031224	000003			.WORD	T.A2!T.B2!0	;8 MSGS SPECIFIED HERE
6506	031226	104063			ERROR	63	;MSG A0 ERROR AT END OF HEAD LOADING
6507	031230	104064			ERROR	64	;MSG B0 ERROR
6508	031232	104065			ERROR	65	;MSG A1 ERROR
6509	031234	104066			ERROR	66	;MSG B1 ERROR
6510							
6511	031236	005737	001362		TST	CYLDIF	;SEE IF MSG A2=0
6512	031242	001401			BEQ	65\$	;BR IF YES
6513	031244	104175			ERROR	175	;MSG A2 NOT CLEARED AT END OF HEAD LOADING
6514	031246	005737	001364	65\$:	TST	CYLADD	;SEE IF MSG B2=0
6515	031252	001401			BEQ	66\$	;BR IF YES
6516	031254	104176			ERROR	176	;MSG B2 NOT CLEARED AT END OF HEAD LOADING
6517	031256			66\$:			
6518							
6519	031256	012765	100000	000000	MOV	#CLR,RKCS1(R5)	
6520	031264	013765	001222	000010	MOV	\$UNIT,RKCS2(R5)	;DRIVE#
6521	031272	012765	000005	000000	MOV	#CLR,RKCS1(R5)	;DRIVE CLEAR CMD
6522	031300	013737	001414	003372	MOV	T10,TEMP1	
6523	031306	004737	044176		JSR	PC,FRDY	;FIND RDY
6524	031312	104151			ERROR	151	;NO RDY AFTER DRIVE CLEAR CMD
6525	031314	004737	044460		JSR	PC,TSTATN	;TEST FOR ATTN
6526	031320	000401			BR	67\$	
6527	031322	104154			ERROR	154	;ATTN NOT CLEARED AFTER DRIVE CLEAR CMD
6528	031324			67\$:			
6529							
6530	031324	012737	010340	003424	MOV	#(0!D.SPIN!D.DRDY!D.VV!D.DRA),E.A0	;EXPECTED MSG A0
6531	031332	005037	003426		CLR	E.B0	;EXPECTED MSG B0
6532	031336	012737	001720	003430	MOV	#(0.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP),E.A1	;EXPECTED A1
6533	031344	012737	000001	003432	MOV	#1,E.B1	;MSG ID FOR EXPECTED MSG B1
6534	031352	005037	003434		CLR	E.A2	;EXPECTED MSG A2
6535	031356	012737	000002	003436	MOV	#2,E.B2	;MSG ID FOR EXPECTED MSG B2
6536	031364	012737	000003	003442	MOV	#3,E.B3	;MSG ID FOR EXPECTED MSG B3
6537							
6538	031372	004737	044720		JSR	PC,CHKMSG	;CHECK MSGS A0,B0,A1,B1
6539	031376	000003			.WORD	T.A2!T.B2!0	;8 MSGS SPECIFIED HERE
6540	031400	104273			ERROR	273	;MSG A0 ERROR AFTER DRIVE CLEAR CMD
6541	031402	104265			ERROR	265	;MSG B0 ERROR
6542	031404	104274			ERROR	274	;MSG A1 ERROR
6543	031406	104266			ERROR	266	;MSG B1 ERROR
6544							
6545	031410	005037	003316		CLR	UNLD	;USED FOR VALID HALT
6546	031414	004737	050036		JSR	PC,SWTST	;SEE IF SW 14 OR 8 IS SET
6547	031420	000512			BR	T\$T35	;GO TO NEXT TEST
6548							;RETURN HERE IF SW 14 IS SET OR
6549							;SW 8 WITH SWR <7:0> APPLY
6550							
6551							
6552	031422			10\$:			
6553							
6554	031422	004737	046106		JSR	PC,SUBCLR	
6555	031426	104024			ERROR	24	;CERR AFTER SCRL
6556							
6557	031430	013765	001352	000020	68\$:	MOV	T0CYL,RKDC(R5) ;CYL#
6558							
6559	031436	012765	000017	000000	MOV	#SEEK,RKCS1(R5)	;SEEK CMD TO RECONDITION DRIVE.

L10

UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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T34 DETECT INNER LIMIT

SEG 0128

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6560 031444 013737 001414 003372      MOV      T10,TEMP1      ;SETUP TIMEOUT
6561 031452 004737 044176                JSR      PC,FRDY        ;FIND RDY
6562 031456 104131                ERROR    131          ;NO RDY AFTER SEEK CMD.
6563
6564 031460 013737 001424 003372      MOV      T5000,TEMP1
6565 031466 004737 044606                JSR      PC,FATT2        ;FIND ATTN
6566 031472 104132                ERROR    132          ;NO ATTN AFTER SEEK CMD
6567 031474 032737 100000 003334      BIT      #CERR,HCS1
6568 031502 001401                BEQ      70$
6569 031504 104210                ERROR    210          ;CERR AFTER SEEK CMD.
6570
6571 031506 004737 046106                70$: JSR      PC,SUBCLR
6572 031512 104024                ERROR    24          ;CERR AFTER SCLR
6573
6574 031514 023727 001352 000632      CMP      TOCYL,#410.    ;ALL CYL DONE?
6575 031522 001403                BEQ      69$            ;BR IF YES
6576 031524 005237 001352                INC      TOCYL          ;ELSE DO ANOTHER
6577 031530 000737                BR       68$
6578
6579 031532 004737 046106                69$: JSR      PC,SUBCLR
6580 031536 104024                ERROR    24          ;CERR AFTER SCLR
6581
6582 031540 005037 001176                CLR      $ESCAPE
6583 031544 005737 001410                TST      LPFLG
6584 031550 001402                BEQ      71$
6585 031552 000177 147332                JMP      $SLPERR        ;SW 9 WAS SET.
6586 031556 000177 147324                71$: JMP      $SLPADR        ;SW 14 OR 8 WAS SET
6587
6588 031562                20$:
6589
6590 031562 004737 046106                JSR      PC,SUBCLR
6591 031566 104024                ERROR    24          ;CERR AFTER SCLR
6592
6593 031570 012765 000311 000000      MOV      #SRTSPL,RKCS1(R5) ;START SPINDLE CMD
6594 031576 013737 001414 003372      MOV      T10,TEMP1      ;SET TIMEOUT
6595 031604 004737 044176                JSR      PC,FRDY        ;FIND RDY
6596 031610 104121                ERROR    121          ;RDY NOT FOUND AFTER ST SPIN CMD.
6597
6598 031612 013737 001416 003374      MOV      T100,TEMP2     ;SETUP TIMEOUT
6599 031620 004737 044512                JSR      PC,FATT1        ;FIND ATTN
6600 031624 104067                ERROR    67          ;NO ATTN AFTER ST SPIN CMD.
6601 031626 005237 001410                INC      LPFLG
6602 031632 032777 001000 147300      BIT      #SW9,$SWR      ;LOOP ON ERROR?
6603 031640 001270                BNE      10$            ;YES, RECONDITION DRIVE
6604 031642 000137 031146                JMP      2$             ;RETURN TO MAINLINE
6605 031646                30$:
6606
6607 031646      FORM:
6608      ;*****
6609      ;*TEST 35      FORMAT PACK
6610      ;*
6611      ;*      THIS TEST FORMATS THE ENTIRE PACK IN 22 SECTOR FORMAT BY
6612      ;*      DOING 1 CYL INCREMENTAL SEEKS
6613      ;*      FROM 0 TO 410 WITH WRITE HEADER CMDS (ALL TRACKS).
6614      ;*      HEADERS WILL BE READ IN THE NEXT TEST
6615      ;*

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M10

 JN78J5 R*06 DRIVE DIAGNOSTIC PART 1
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 T35 FORMAT PACK

SEQ 0129

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6616
6617 031646 000004
6618 031650 012737 000001 001174
6619
6620
6621 031656 012706 001100
6622 031662 005737 001342
6623 031666 001402
6624 031670 104401 056672
6625
6626 031674 005737 001460
6627 031700 001403
6628 031702 104170
6629 031704 000137 033750
6630 031710 005737 001456
6631 031714 001403
6632 031716 104177
6633 031720 000137 033750
6634
6635 031724 004737 046106
6636 031730 104024
6637
6638 031732 104401 056407
6639
6640 031736 005037 001352
6641
6642 031742 013737 001352 001366
6643 031750 012737 000000 001430
6644 031756 012737 000000 001436
6645 031764 004737 047142
6646
6647
6648 031770 012765 001470 000004
6649 031776 012765 177676 000002
6650 032004 000337 001430
6651 032010 013765 001430 000006
6652 032016 000337 001430
6653
6654 032022 012765 000027 000000
6655 032030 013737 001426 003372
6656 032036 004737 044176
6657 032042 104200
6658 032044 004737 045534
6659 032050 032737 100000 003334
6660 032056 001405
6661 032060 104201
6662 032062 104401 056606
6663 032066 000137 043470
6664 032072
6665
6666 032072 005237 001430
6667 032076 023727 001430 000003
6668 032104 001403
6669
6670 032106 004737 047142
6671 032112 000726

*****
T35: SCOPE
MOV #1.5 TIMES ;;DO 1 ITERATION

MOV #STACK.SP ;RESTORE STK PTR
TST MODTST ;SEE IF MODULE TESTING
BEQ 22$ ;BR IF NO
TYPE .MSG20 ;RUNNING MODIFIED VERSION OF TEST

22$: TST LIMERROR ;CHECK IF FOUND LIMIT DETECT ERROR
BEQ 1$
ERROR 170 ;FORMAT TEST BYPASSED, LIMIT DETECT ERROR
JMP 13$

1$: TST BSERR ;CHECK IF FOUND BSE INFO OK
BEQ 2$
ERROR 177 ;FORMAT TEST BYPASSED-BSE ERROR
JMP 13$

2$: JSR PC.SUBCLR
ERROR 24 ;CERR AFTER SCLR
TYPE .MSG12 ;FORMATTING PACK, PLEASE WAIT
CLR TOCYL

MOV TOCYL,CALADD ;SETUP
MOV #0,HEAD ;TO FILL
MOV #0,FORMAT ;HEADER
JSR PC,FHDTAB ;TABLE

9$: MOV #HDTAB,RKBA(R5) ;THIS SECTION
MOV #-66.,RKWC(R5) ;OF CODE
SWAB HEAD ;IS TO RESTORE STANDARD FORMAT
MOV HEAD,RKDA(R5) ;TO CYL 0
SWAB HEAD ;HEAD 0,1 & 2

MOV #<WRHEAD>,RKCS1(R5) ;WRITE HEADER CMD
MOV T50000,TEMP1 ;SETUP TIMEOUT
JSR PC,FRDY ;FIND RDY
ERROR 200 ;NO RDY AFTER WRITE HEADER CMD
JSR PC,GSTAT ;GET FRESH STATUS
BIT #CERR,HCS1
BEQ 64$
ERROR 201 ;CERR AFTER WRITE HEADER CMD
TYPE .MSG18 ;ABORTING BALANCE OF TESTS
JMP $EOP ;ABORT DRIVE

64$:

INC HEAD
CMP HEAD,#3
BEQ 11$ ;BR IF ALL HEADS DONE

JSR PC,FHDTAB
BR 9$

```

N10

JN18JS RK06 DRIVE DIAGNOSTIC PART 1
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T35 FORMAT PACK

SEG 0130

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6672
6673 032114 012737 000001 001366 11$: MOV #1,CALADD ;SETUP
6674 032122 005037 001430 CLR HEAD ;FOR
6675 032126 005037 001436 CLR FORMAT ;FMTAB ROUTINE
6676
6677 032132 012737 000001 001360 MOV #1,CALDIF ;SETUP
6678 032140 005037 001350 CLR FRCYL ;FOR
6679 032144 012737 000001 001352 MOV #1,TOCYL ;ERROR REPORT
6680 ;START FORMATTING CYL 1 TO 410 HERE
6681
6682
6683 032152 3$: SCOP1
6684 032152 104415 MOV #STACK,SP ;RESTORE STK PTR
6685 032154 012706 001100
6686
6687 032160 004737 046106 JSR PC,SUBCLR
6688 032164 104024 ERROR 24 ;CERR AFTER SOLR
6689
6690 032166 005737 001342 TST MODTST ;SEE IF MODULE TESTING
6691 032172 001404 BEQ 18$ ;BR IF NO
6692 032174 012737 033710 001176 MOV #16$,SESCAPE
6693 032202 000403 BR 19$
6694 032204 012737 033410 001176 18$: MOV #10$,SESCAPE
6695 032212 013765 001366 000020 19$: MOV CALADD,RKDC(R5) ;CYL #
6696 032220 000337 001430 SWAB HEAD
6697 032224 013765 001430 000006 MOV HEAD,RKDA(R5) ;HEAD #
6698 032232 000337 001430 SWAB HEAD
6699
6700 032236 012765 000017 000000 MOV #SEEK,RKCS1(R5) ;SEEK CMD
6701 032244 013737 001414 003372 MOV T10,TEMP1 ;SETUP TIMEOUT
6702 032252 004737 044176 JSR PC,FRDY ;FIND RDY
6703 032256 104131 ERROR 131 ;NO RDY AFTER SEEK CMD
6704 032260 012737 030140 003424 MOV #<D.PIP!D.SPIN!D.VV!D.DRA>,E.A0 ;EXPECTED A0
6705 032266 005037 003426 CLR E.B0
6706 032272 012737 003720 003430 MOV #<D.FWD!D.SPOK!D.CART!D.DOOR!D.BRM!D.SSP>,E.A1
6707 032300 012737 000001 003432 MOV #1,E.B1
6708
6709 032306 004737 044720 JSR PC,CHKMSG ;CHECK MSGS A0,B0,A1,B1
6710 032312 000003 .WORD T.A2!T.B2!0 ;& MSGS SPECIFIED HERE
6711 032314 104203 ERROR 203 ;MSG A0 ERROR DURING SEEK CMD
6712 032316 104204 ERROR 204 ;MSG B0 ERROR
6713 032320 104205 ERROR 205 ;MSG A1 ERROR
6714 032322 104206 ERROR 206 ;MSG B1 ERROR
6715
6716 032324 023727 001362 000001 CMP CYLDIF,#1
6717 032332 001401 BEQ 4$
6718 032334 104212 ERROR 212 ;CYL DIFF INCORRECT DURING SEEK
6719
6720 032336 005737 001342 4$: TST MODTST ;SEE IF MODULE TESTING
6721 032342 001404 BEQ 20$ ;BR IF NO
6722 032344 012737 033730 001176 MOV #17$,SESCAPE
6723 032352 000403 BR 21$
6724
6725 032354 012737 033430 001176 20$: MOV #12$,SESCAPE
6726 032362 012737 004704 003372 21$: MOV #2500.,TEMP1 ;SETUP TIMEOUT
6727

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B11

UNIBUS RAO6 DRIVE DIAGNOSTIC PART I
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SEQ 013:

6728	032370	004737	044606		JSR	PC,FATT2	:FIND ATTN
6729	032374	104132			ERROR	132	:NO ATTN AFTER SEEK CMD
6730	032376	032737	100000	003334	BIT	#CERR,HCS1	
6731	032404	001401			BEQ	655	
6732	032406	104210			ERROR	210	:CERR AFTER SEEK CMD
6733	032410				655:		
6735	032410	012737	050340	003424	MOV	#<D.DSC!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0	:EXPECTED MSG A0
6736	032416	005037	003426		CLR	E.B0	:EXPECTED MSG B0
6737	032422	012737	001720	003430	MOV	#<D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1	:EXPECTED A1
6738	032430	012737	000001	003432	MOV	#1,E.B1	:MSG ID FOR EXPECTED MSG B1
6739	032436	005037	003434		CLR	E.A2	:EXPECTED MSG A2
6740	032442	012737	000002	003436	MOV	#2,E.B2	:MSG ID FOR EXPECTED MSG B2
6741	032450	012737	000003	003442	MOV	#3,E.B3	:MSG ID FOR EXPECTED MSG B3
6743	032456	004737	044720		JSR	PC,CHKMSG	:CHECK MSGS A0,B0,A1,B1
6744	032462	000003			.WORD	T.A2!T.B2!0	:8 MSGS SPECIFIED HERE
6745	032464	104133			ERROR	133	:MSG A0 ERROR AFTER SEEK CMD
6746	032466	104134			ERROR	134	:MSG B0 ERROR
6747	032470	104135			ERROR	135	:MSG A1 ERROR
6748	032472	104136			ERROR	136	:MSG B1 ERROR
6749	032474	005737	001362		TST	CYLDIF	
6750	032500	001401			BEQ	655	
6751	032502	104137			ERROR	137	:CYL DIFF NOT CLEARED AFTER SEEK CMD
6752							
6753	032504				665:		
6754							
6755	032504	012765	100000	000000	MOV	#CLR,RKCS1(R5)	
6756	032512	013765	001222	000010	MOV	\$UNIT,RKCS2(R5)	:DRIVE#
6757	032520	012765	000005	000000	MOV	#CLEAR,RKCS1(R5)	:DRIVE CLEAR CMD
6758	032526	013737	001414	003372	MOV	T10,TEMP1	
6759	032534	004737	044176		JSR	PC,FRDY	:FIND RDY
6760	032540	104151			ERROR	151	:NO RDY AFTER DRIVE CLEAR CMD
6761	032542	004737	044460		JSR	PC,TSTATN	:TEST FOR ATTN
6762	032546	000401			BR	675	
6763	032550	104154			ERROR	154	:ATTN NOT CLEARED AFTER DRIVE CLEAR CMD
6764	032552				675:		
6765							
6766	032552	012737	010340	003424	MOV	#<D!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0	:EXPECTED MSG A0
6767	032560	005037	003426		CLR	E.B0	:EXPECTED MSG B0
6768	032564	012737	001720	003430	MOV	#<D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1	:EXPECTED A1
6769	032572	012737	000001	003432	MOV	#1,E.B1	:MSG ID FOR EXPECTED MSG B1
6770	032600	005037	003434		CLR	E.A2	:EXPECTED MSG A2
6771	032604	012737	000002	003436	MOV	#2,E.B2	:MSG ID FOR EXPECTED MSG B2
6772	032612	012737	000003	003442	MOV	#3,E.B3	:MSG ID FOR EXPECTED MSG B3
6773							
6774	032620	004737	044720		JSR	PC,CHKMSG	:CHECK MSGS A0,B0,A1,B1
6775	032624	000003			.WORD	T.A2!T.B2!0	:8 MSGS SPECIFIED HERE
6776	032626	104273			ERROR	273	:MSG A0 ERROR AFTER DRIVE CLEAR CMD
6777	032630	104265			ERROR	265	:MSG B0 ERROR
6778	032632	104274			ERROR	274	:MSG A1 ERROR
6779	032634	104266			ERROR	266	:MSG B1 ERROR
6780							
6781	032636	023737	001364	001366	CMP	CYLADD,CALADD	
6782	032644	001401			BEQ	55	
6783	032646	104232			ERROR	232	:CYL ADDR IN RKMR2 NOT=RKDC

6784						
6785	032650				55:	SCOP1
6786	032650	104415				MOV
6787	032652	012706	001100			#STACK,SP ;RESTORE STK PTR
6788						
6789	032656	004737	046106			JSR
6790	032662	104024				PC,SUBCLR ;CERR AFTER SCLR
6791						24
6792	032664	005037	001176			CLR
6793	032670	004737	047142			\$ESCAPE ;FILL HEADER TABLE
6794	032674	000337	001430			JSR
6795	032700	013765	001430	000006		PC,FHDTAB
6796	032706	000337	001430			SWAB
6797	032712	012765	001470	000004		HEAD ;SET TRACK #
6798	032720	012765	177676	000002		MOV
6799	032726	013765	001366	000020		HEAD,RKDA(R5) ;HEADER WORD TABLE
6800						MOV
6801						#HDTAB,RKBA(R5) ;WORD CT
6802	032734	012765	000027	000000		MOV
6803	032742	013737	001426	003372		#-66,RKWC(R5) ;CYL #
6804	032750	004737	044176			MOV
6805	032754	104200				#(WRHEAD),RKCS1(R5) ;WRITE HEADER CMD
6806	032756	004737	045534			TS0000,TEMP1 ;SETUP TIMEOUT
6807	032762	032737	000000	003334		JSR
6808	032770	001405				PC,FROY ;FIND RDY
6809	032772	104201				ERROR
6810	032774	104401	056606			200 ;NO RDY AFTER WRITE HEADER CMD
6811	033000	000137	043470			JSR
6812	033004					PC,GSTAT ;GET FRESH STATUS
6813						BIT
6814	033004	012737	010340	003424		#CERR,HCS1
6815	033012	005037	003426			BEQ
6816	033016	012737	001720	003430		685
6817	033024	012737	000301	003432		ERROR
6818	033032	005037	003434			201 ;CERR AFTER WRITE HEADER CMD
6819	033036	012737	000002	003436		TYPE
6820	033044	012737	000003	003442		MSG18 ;ABORTING BALANCE OF TESTS
6821						JMP
6822	033052	004737	044720			\$EOP ;ABORT DRIVE
6823	033056	000003				
6824	033060	104277				
6825	033062	104267				
6826	033064	104300				
6827	033066	104270				
6828						
6829						
6830	033070	005737	001342			
6831	033074	001402				
6832	033076	000137	033450			
6833						
6834	033102	005237	001430			
6835	033106	023727	001430	000002	235:	INC
6836	033114	001006				HEAD
6837	033116	023727	001366	000632		HEAD,#2
6838	033124	001002				BNE
6839	033126	000137	033360			65
						CALADD,#410. ;HEAD 2, SEE IF CYL 410
						65 ;DO NOT WRITE ON CYL 410 HEAD 2
						75

6840									
6841	033132	023727	001430	000003	65:	CMP	HEAD, #3		: ALL HEADS DONE?
6842	033140	001243				BNE	55		: BR IF NO
6843	033142	005037	001430			CLR	HEAD		: ALL HEADS ON CYL DONE
6844	033146	005237	001366			INC	CALADD		: GO TO NEXT CYL
6845	033152	005237	001350			INC	FRCYL		: FOR ERROR REPORT
6846	033156	005237	001352			INC	TOCYL		: FOR ERROR REPORT
6847	033162	005737	003322			TST	HPEND		: SEE IF HALT PENDING
6848	033166	001002				BNE	245		: BR IF YES
6849	033170	000137	032152			JMP	35		: ELSE KEEP FORMATTING
6850									
6851	033174	005037	003322		245:	CLR	HPEND		: CLEAR FOR FUTURE FORMATTING
6852	033200	005037	003320			CLR	BADHDR		: HEADERS NOW OK
6853	033204	000137	050106			JMP	STOP		: GO & HALT THE CPU
6854									
6855	033210	005037	001366		85:	CLR	CALADD		
6856	033214	005037	001350			CLR	FRCYL		
6857									
6858	033220	004737	046106			JSR	PC, SUBCLR		
6859	033224	104024				ERROR	24		: CERR AFTER SCLR
6860									
6861	033226	013765	001352	000020	695:	MOV	TOCYL, RKDC(R5)		: CYL#
6862									
6863	033234	012765	000017	000000		MOV	#SEEK, RKCS1(R5)		: SEEK CMD TO RECONDITION DRIVE.
6864	033242	013737	001414	003372		MOV	T10, TEMP1		: SETUP TIMEOUT
6865	033250	004737	044176			JSR	PC, FRDY		: FIND RDY
6866	033254	104131				ERROR	131		: NO RDY AFTER SEEK CMD.
6867									
6868	033256	013737	001424	003372		MOV	T5000, TEMP1		
6869	033264	004737	044606			JSR	PC, FATT2		: FIND ATTN
6870	033270	104132				ERROR	132		: NO ATTN AFTER SEEK CMD
6871	033272	032737	100000	003334		BIT	#CERR, HCS1		
6872	033300	001401				BEG	715		
6873	033302	104210				ERROR	210		: CERR AFTER SEEK CMD.
6874									
6875	033304	004737	046106		715:	JSR	PC, SUBCLR		
6876	033310	104024				ERROR	24		: CERR AFTER SCLR
6877									
6878	033312	023727	001352	000000		CMP	TOCYL, #0		: ALL CYL DONE?
6879	033320	001403				BEG	705		: BR IF YES
6880	033322	005337	001352			DEC	TOCYL		: ELSE DO ANOTHER
6881	033326	000737				BR	695		
6882									
6883	033330	004737	046106		705:	JSR	PC, SUBCLR		
6884	033334	104024				ERROR	24		: CERR AFTER SCLR
6885									
6886	033336	005037	001176			CLR	SESCAPE		
6887	033342	005737	001410			TST	LPFLG		
6888	033346	001402				BEG	725		
6889	033350	000177	145534			JMP	25LPERR		: SW 9 WAS SET.
6890	033354	000177	145526		725:	JMP	25LPADR		: SW 14 OR 8 WAS SET
6891									
6892									
6893	033360				75:				
6894	033360	004737	050036			JSR	PC, SWTST		: SEE IF SW 14 OR 8 IS SET
6895	033364	000571				BR	TST36		: GO TO NEXT TEST

E11

JNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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SEQ 0134

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6896                                     :RETURN HERE IF SW 14 IS SET OR
6897                                     :SW 8 WITH SWR (7:0) APPLY
6898 033366 005037 001176          CLR      $ESCAPE
6899 033372 005737 001410          TST      LPFLG
6900 033376 001402                BEQ      73$
6901 033400 000177 145504          JMP      $SLPERR
6902 033404 000177 145476          JMP      $SLPADR
6903                                     :SW 9 WAS SET.
6904                                     :SW 14 OR 8 WAS SET
6905 033410 005237 001410          INC      LPFLG
6906 033414 032777 001000 145516  BIT      $SW9,$SWR
6907 033422 031272                BNE      8$
6908 033424 000137 032336          JMP      4$
6909                                     :LOOP ON ERROR?
6910                                     :YES, RECONDITION DRIVE
6911                                     :RETURN TO MAINLINE
6912 033430 005237 001410          INC      LPFLG
6913 033434 032777 001000 145476  BIT      $SW9,$SWR
6914 033442 001262                BNE      8$
6915 033444 000137 032650          JMP      5$
6916                                     :LOOP ON ERROR?
6917                                     :YES, RECONDITION DRIVE
6918                                     :RETURN TO MAINLINE
6919 033450 005237 001430          INC      HEAD
6920 033454 023727 001430 000003  CMP      HEAD,$3
6921 033462 001402                BEQ      15$
6922 033464 000137 032650          JMP      5$
6923                                     :SEE IF ALL HEADS DONE
6924                                     :BR IF YES TO GO BACK TO CYL 0
6925                                     :ELSE REPEAT FOR NEXT HEAD
6926 033470 005065 000006          CLR      RKDA(R5)
6927 033474 005037 001352          CLR      TCCYL
6928                                     :SEEK TO CYL 0 & READ HEADERS
6929                                     :TO RECONDITION DRIVE
6930 033500 012765 000017 000000  MOV      $SEEK,RKCS1(R5)
6931 033506 013737 001414 003372  MOV      T10,TEMP1
6932 033514 004737 044176          JSR      PC,FRDY
6933 033520 104131                ERROR    131
6934                                     :SEEK CMD TO RECONDITION DRIVE.
6935                                     :SETUP TIMEOUT
6936                                     :FIND RDY
6937                                     :NO RDY AFTER SEEK CMD.
6938 033522 013737 001424 003372  MOV      T5000,TEMP1
6939 033530 004737 044606          JSR      PC,FATT2
6940                                     :FIND ATTN
6941                                     :NO ATTN AFTER SEEK CMD
6942 033534 104132                ERROR    132
6943 033536 032737 100000 003334  BIT      $CERR,HCS1
6944 033544 001401                BEQ      74$
6945 033546 104210                ERROR    210
6946                                     :CERR AFTER SEEK CMD.
6947 033550 004737 046106          JSR      PC,SUBCLR
6948 033554 104024                ERROR    24
6949                                     :CERR AFTER SCLR
6950 033556 012700 001674          MOV      $RHTAB,RO
6951 033562 012765 000025 000000  MOV      $<RDHEAD>,RKCS1(R5)
6952 033570 013737 001426 003372  MOV      T5000,TEMP1
6953 033576 004737 044176          JSR      PC,FRDY
6954 033602 104171                ERROR    171
6955 033604 032737 100000 003334  BIT      $CERR,HCS1
6956 033612 001405                BEQ      76$
6957 033614 104174                ERROR    174
6958 033616 104401 056606          TYPE     MSG18
6959 033622 000137 043470          JMP      $EOP
6960                                     :CERR AFTER READ HEADER CMD
6961                                     :ABORT BALANCE OF TESTS
6962                                     :ABORT DRIVE

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6952
6953 033626 016520 000024      76$: MOV    RKDB(R5), (R0)+ ;1ST WORD FROM SILO TO RHTAB
6954 033632 016520 000024      MOV    RKDB(R5), (R0)+ ;2ND WORD
6955 033636 016520 000024      MOV    RKDB(R5), (R0)+ ;3RD WORD
6956
6957
6958 033642 032765 100000 000010      BIT     #DLT, RKCS2(R5)
6959 033650 001407              BEQ     77$
6960 033652 004737 045534              JSR     PC, GSTAT
6961 033656 104173              ERROR   17$ ;DLT AFTER READ HEADER CMD
6962 033660 104401 056606              TYPE   MSG18 ;ABORTING BALANCE OF TESTS
6963 033664 000137 043470              JMP     $EOP ;ABORT DRIVE
6964 033670
6965
6966 033670 023737 001674 0C1352      CMP     RHTAB, TOCYL ;CHECK WORD 0 (CYL#) ONLY
6967 033676 001401              BEQ     75$ ;BR IF SAME
6968 033700 104310              ERROR   310 ;READ CYL WORD HEADER ERROR
6969 033702
6970
6971 033702 004737 050036              JSR     PC, SWTST ;SEE IF SW 14 OR 8 IS SET
6972 033706 000420              BR      TST36 ;GO TO NEXT TEST
6973
6974
6975
6976 033710
6977 033710 005237 001410      16$: INC     LPFLG ;LOOP ON ERROR?
6978 033714 032777 001000 145216      BIT     #SW9, 2SWR ;YES, RECONDITION DRIVE
6979 033722 001262              BNE     15$ ;RETURN TO MAINLINE
6980 033724 000137 032336              JMP     4$
6981 033730
6982 033730 005237 001410      17$: INC     LPFLG ;LOOP ON ERROR?
6983 033734 032777 001000 145176      BIT     #SW9, 2SWR ;YES, RECONDITION DRIVE
6984 033742 001252              BNE     15$ ;RETURN TO MAINLINE
6985 033744 000137 032650              JMP     5$
6986
6987 033750      13$:
6988
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6997
6998 033750 000004
6999 033752 012737 000001 001174      TST36: SCOPE
7000 033760 012706 001100      MOV     #1, $TIMES ;DO 1 ITERATION
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 JNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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 T36 DECREMENT FROM CYL 410 TO 0 & READ HEADERS

SEG 0136

7008	034014	012737	000631	001352	MOV	#409.,TOCYL	;TO CYL
7009							
7010	034022				15:		
7011	034022	104415			SCOP1		
7012	034024	012706	001100		MOV	#STACK,SP	;RESTORE STK PTR
7013							
7014	034030	004737	046106		JSR	PC,SUBCLR	
7015	034034	124024			ERROR	24	;CERR AFTER SCLR
7016							
7017	034036	012737	035004	001176	MOV	#105,\$ESCAPE	
7018	034044	013765	001352	000020	MOV	TOCYL,RKDC(R5)	;CYL #
7019							
7020	034052	012765	000017	000000	MOV	#SEEK,RKCSI(R5)	;SEEK CMD
7021	034060	013737	001414	003372	MOV	T10,TEMP1	;SETUP TIMEOUT
7022	034066	004737	044176		JSR	PC,FRDY	;FIND RDY
7023	034072	104131			ERROR	131	;NO RDY AFTER SEEK CMD
7024	034074	012737	030140	003424	MOV	#<D.PIP!D.SPIN!D.VV!D.DRA>,E.A0	;EXPECTED A0
7025	034102	005037	003426		CLR	E.B0	
7026	034106	012737	005720	003430	MOV	#<D.REV!D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1	
7027	034114	012737	000001	003432	MOV	#1,E.B1	
7028							
7029	034122	004737	044720		JSR	PC,CHKMSG	;CHECK MSGS A0,B0,A1,B1
7030	034126	000003			.WORD	T.A2!T.B2!0	; & MSGS SPECIFIED HERE
7031	034130	104203			ERROR	203	;MSG A0 ERROR DURING SEEK CMD
7032	034132	104204			ERROR	204	;MSG B0 ERROR
7033	034134	104205			ERROR	205	;MSG A1 ERROR
7034	034136	104206			ERROR	206	;MSG B1 ERROR
7035							
7036	034140	023727	001362	000001	CMP	CYLDIF,#1	
7037	034146	001401			BEQ	25	
7038	034150	104212			ERROR	212	;CYL DIFF INCORRECT DURING SEEK
7039							
7040	034152	012737	035024	001176	25:	MOV	#125,\$ESCAPE
7041	034160	012737	004704	003372	MOV	#2500.,TEMP1	;SETUP TIMEOUT
7042							
7043	034166	004737	044606		JSR	PC,FATT2	;FIND ATTN
7044	034172	104132			ERROR	132	;NO ATTN AFTER SEEK CMD
7045	034174	032737	100000	003334	BIT	#CERR,HCS1	
7046	034202	001401			BEQ	645	
7047	034204	104210			ERROR	210	;CERR AFTER SEEK CMD
7048	034206				645:		
7049							
7050	034206	012737	050340	003424	MOV	#<D.DSC!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0	;EXPECTED MSG A0
7051	034214	005037	003426		CLR	E.B0	;EXPECTED MSG B0
7052	034220	012737	001720	003430	MOV	#<D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1	;EXPECTED A1
7053	034226	012737	000001	003432	MOV	#1,E.B1	;MSG ID FOR EXPECTED MSG B1
7054	034234	005037	003434		CLR	E.A2	;EXPECTED MSG A2
7055	034240	012737	000002	003436	MOV	#2,E.B2	;MSG ID FOR EXPECTED MSG B2
7056	034246	012737	000003	003442	MOV	#3,E.B3	;MSG ID FOR EXPECTED MSG B3
7057							
7058	034254	004737	044720		JSR	PC,CHKMSG	;CHECK MSGS A0,B0,A1,B1
7059	034260	000003			.WORD	T.A2!T.B2!0	; & MSGS SPECIFIED HERE
7060	034262	104133			ERROR	133	;MSG A0 ERROR AFTER SEEK CMD
7061	034264	104134			ERROR	134	;MSG B0 ERROR
7062	034266	104135			ERROR	135	;MSG A1 ERROR
7063	034270	104136			ERROR	136	;MSG B1 ERROR

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UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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T36 DECREMENT FROM CYL 410 TO 0 & READ HEADERS

SEQ 0137

7064	034272	005737	001362	TST	CYLDIF	
7065	034276	001401		BEG	65\$	
7066	034300	104137		ERROR	137	;CYL DIFF NOT CLEARED AFTER SEEK CMD
7067						
7068	034302			65\$:		
7069						
7070	034302	012765	100000	MOV	#CLR,RKCS1(R5)	
7071	034310	013765	001222	MOV	\$UNIT,RKCS2(R5);DRIVE#	
7072	034316	012765	000005	MOV	#CLR,RKCS1(R5);DRIVE CLEAR CMD	
7073	034324	013737	001414	MOV	T10,TEMP1	
7074	034332	004737	044176	JSR	PC,FRDY	;FIND RDY
7075	034336	104151		ERROR	151	;NO RDY AFTER DRIVE CLEAR CMD
7076	034340	004737	044460	JSR	PC,TSTATN	;TEST FOR ATTN
7077	034344	000401		BR	66\$	
7078	034346	104154		ERROR	154	;ATTN NOT CLEARED AFTER DRIVE CLEAR CMD
7079	034350			66\$:		
7080						
7081	034350	012737	010340	MOV	#(0!D.SPIN!D.DRDY!D.VV!D.DRA),E.A0	;EXPECTED MSG A0
7082	034356	005037	003426	CLR	E.B0	;EXPECTED MSG B0
7083	034362	012737	001720	MOV	#(0.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP),E.A1	;EXPECTED A1
7084	034370	012737	000001	MOV	#1,E.B1	;MSG ID FOR EXPECTED MSG B1
7085	034376	005037	003434	CLR	E.A2	;EXPECTED MSG A2
7086	034402	012737	000002	MOV	#2,E.B2	;MSG ID FOR EXPECTED MSG B2
7087	034410	012737	000003	MOV	#3,E.B3	;MSG ID FOR EXPECTED MSG B3
7088						
7089	034416	004737	044720	JSR	PC,CHKMSG	;CHECK MSGS A0,B0,A1,B1
7090	034422	000003		.WORD	T.A2!T.B2!0	;8 MSGS SPECIFIED HERE
7091	034424	104273		ERROR	273	;MSG A0 ERROR AFTER DRIVE CLEAR CMD
7092	034426	104265		ERROR	265	;MSG B0 ERROR
7093	034430	104274		ERROR	274	;MSG A1 ERROR
7094	034432	104266		ERROR	266	;MSG B1 ERROR
7095						
7096	034434	023737	001364	CMP	CYLADD,TOCYL	
7097	034442	001401		BEG	3\$	
7098	034444	104207		ERROR	207	;CYL ADDR IN RKMR3 NOT = RKDC
7099						
7100	034446			3\$:		
7101	034446	104415		SCOP1		
7102	034450	012706	001100	MOV	#STACK,SP	;RESTORE STK PTR
7103						
7104	034454	004737	046106	JSR	PC,SUBCLR	
7105	034460	104024		ERROR	24	;CERR AFTER SCLR
7106						
7107	034462	005037	001176	CLR	\$ESCAPE	
7108						
7109	034466	013765	001352	MOV	TOCYL,RKDC(R5);CYL #	
7110						
7111						
7112	034474	012700	001674	MOV	#RHTAB,RO	
7113	034500	012765	000025	MOV	#(RDHEAD),RKCS1(R5);READ HEADER CMD	
7114	034506	013737	001426	MOV	T50000,TEMP1	;SETUP TIMEOUT
7115	034514	004737	044176	JSR	PC,FRDY	;FIND RDY
7116	034520	104171		ERROR	171	;NO RDY AFTER READ HEADER CMD
7117	034522	032737	100000	BIT	#CERR,HCS1	
7118	034530	001405		BEG	68\$	
7119	034532	104174		ERROR	174	;CERR AFTER READ HEADER CMD

UNIBUS Rk06 DRIVE DIAGNOSTIC PART 1
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T36 DECREMENT FROM CYL 410 TO C & READ HEADERS

SEQ 0138

7120	034534	104401	056606		TYPE	MSG18	:ABORT BALANCE OF TESTS
7121	034540	000137	043470		JMP	\$EOP	:ABORT DRIVE
7122							
7123	034544	016520	000024	68\$:	MOV	RKDB(R5),(R0)+	:1'ST WORD FROM SILO TO RHTAB
7124	034550	016520	000024		MOV	RKDB(R5),(R0)+	:2'ND WORD
7125	034554	016520	000024		MOV	RKDB(R5),(R0)+	:3'RD WORD
7126							
7127							
7128	034560	032765	100000	000010	BIT	#DLT,RKCS2(R5)	
7129	034566	001407			BEQ	69\$	
7130	034570	004737	045534		JSR	PC,GSTAT	
7131	034574	104173			ERROR	173	:DLT AFTER READ HEADER CMD
7132	034576	104401	056606		TYPE	MSG18	:ABORTING BALANCE OF TESTS
7133	034602	000137	043470		JMP	\$EOP	:ABORT DRIVE
7134	034606			69\$:			
7135							
7136	034606	023737	001674	001352	CMP	RHTAB,TOCYL	:CHECK WORD 0 (CYL#) ONLY
7137	034614	001401			BEQ	67\$	:BR IF SAME
7138	034616	104310			ERROR	310	:READ CYL WORD HEADER ERROR
7139	034620			67\$:			
7140							
7141	034620	005337	001350		DEC	FRCYL	
7142	034624	001404			BEQ	4\$	
7143	034626	005337	001352		DEC	TOCYL	
7144	034632	000137	034022		JMP	1\$	
7145							
7146	034636			4\$:			
7147	034636	004737	050036		JSR	PC,SW*ST	:SEE IF SW 14 OR 8 IS SET
7148	034642	000500			BR	TST37	:GO TO NEXT TEST
7149							:RETURN HERE IF SW 14 IS SET OR
7150							:SW 8 WITH SWR (7:0) APPLY
7151							
7152							
7153	034644			6\$:			
7154							
7155	034644	004737	046106		JSR	PC,SUBCLR	
7156	034650	104024			ERROR	24	:CERR AFTER SCRL
7157							
7158	034652	013765	001352	000020	70\$:	MOV	TOCYL,RKDC(R5) ;CYL#
7159							
7160	034660	012765	000017	000000	MOV	#SEEK,RKCS1(R5)	:SEEK CMD TO RECONDITION DRIVE.
7161	034666	013737	001414	003372	MOV	T10,TEMP1	:SETUP TIMEOUT
7162	034674	004737	044176		JSR	PC,FRDY	:FIND RDY
7163	034700	104131			ERROR	131	:NO RDY AFTER SEEK CMD.
7164							
7165	034702	013737	001424	003372	MOV	T5000,TEMP1	
7166	034710	004737	044606		JSR	PC,FATT2	:FIND ATTN
7167	034714	104132			ERROR	132	:NO ATTN AFTER SEEK CMD
7168	034716	032737	100000	003334	BIT	#CERR,HCS1	
7169	034724	001401			BEQ	72\$	
7170	034726	104210			ERROR	210	:CERR AFTER SEEK CMD.
7171							
7172	034730	004737	046106	72\$:	JSR	PC,SUBCLR	
7173	034734	104024			ERROR	24	:CERR AFTER SCLR
7174							
7175	034736	023727	001352	000632	CMP	TOCYL,#410.	:ALL CYL DONE

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*****
↑ST37:  SCOPE
        MOV     #1,STIMES           ;;DO 1 ITERATION
        MOV     #STACK,SP          ;;RESTORE STK PTR

        MOV     #0,FRCYL            ;;SETUP FROM CYL
        MOV     #1,TOCYL            ;;SETUP TO CYL

1S:
        SCOP1

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K11

UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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T37 SEEK FROM CYL 0 TO ALL MAJOR CYLS & READ HEADERS

SEQ 0140

7232	035076	012706	001100		MOV	#STACK,SP	:RESTORE STK PTR
7233							
7234	035102	004737	046106		JSR	PC,SUBCLR	
7235	035106	104024			ERROR	24	:CERR AFTER SCLR
7236							
7237	035110	012737	036670	001176	MOV	#10\$,SESCAPE	
7238	035116	013737	001350	003376	MOV	FRCYL,TEMP3	:SETUP
7239	035124	013737	001352	003400	MOV	TOCYL,TEMP4	:CYL DIFF
7240	035132	163737	003376	003400	SUB	TEMP3,TEMP4	:FOR
7241	035140	013737	003400	001360	MOV	TEMP4,CALDIF	:ERROR PRINTOUT
7242							
7243	035146	013765	001352	000020	MOV	TOCYL,RKDC(R5)	:GO TO CYL #
7244							
7245	035154	012765	000017	000000	MOV	#SEEK,RKCS1(R5)	:SEEK CMD
7246	035162	013737	001414	003372	MOV	T10,TEMP1	:SETUP TIMEOUT
7247	035170	004737	044176		JSR	PC,FRDY	:FIND RDY
7248	035174	104131			ERROR	131	:NO RDY AFTER SEEK CMD
7249	035176	012737	030140	003424	MOV	#<D.PIP!D.SPIN!D.VV!D.DRA>,E.A0	:EXPECTED A0
7250	035204	005037	003426		CLR	E.B0	
7251	035210	012737	003720	003430	MOV	#<D.FWD!D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1	
7252	035216	012737	000001	003432	MOV	#1,E.B1	
7253							
7254	035224	004737	044720		JSR	PC,CHKMSG	:CHECK MSGS A0,B0,A1,B1
7255	035230	000003			.WORD	T.A2!T.B2!0	:& MSGS SPECIFIED HERE
7256	035232	104203			ERROR	203	:MSG A0 ERROR DURING SEEK CMD
7257	035234	104204			ERROR	204	:MSG B0 ERROR
7258	035236	104205			ERROR	205	:MSG A1 ERROR
7259	035240	104206			ERROR	206	:MSG B1 ERROR
7260							
7261	035242	012737	036710	001176	MOV	#12\$,SESCAPE	
7262	035250	013737	001424	003372	MOV	T5000,TEMP1	:SETUP TIMEOUT
7263							
7264	035256	004737	044606		JSR	PC,FATT2	:FIND ATTN
7265	035262	104132			ERROR	132	:NO ATTN AFTER SEEK CMD
7266	035264	032737	100000	003334	BIT	#CERR,HCS1	
7267	035272	001401			BEG	64\$	
7268	035274	104210			ERROR	210	:CERR AFTER SEEK CMD
7269	035276						
7270							
7271	035276	012737	050340	003424	MOV	#<D.DSC!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0	:EXPECTED MSG A0
7272	035304	005037	003426		CLR	E.B0	:EXPECTED MSG B0
7273	035310	012737	001720	003430	MOV	#<D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1	:EXPECTED A1
7274	035316	012737	000001	003432	MOV	#1,E.B1	:MSG ID FOR EXPECTED MSG B1
7275	035324	005037	003434		CLR	E.A2	:EXPECTED MSG A2
7276	035330	012737	000002	003436	MOV	#2,E.B2	:MSG ID FOR EXPECTED MSG B2
7277	035336	012737	000003	003442	MOV	#3,E.B3	:MSG ID FOR EXPECTED MSG B3
7278							
7279	035344	004737	044720		JSR	PC,CHKMSG	:CHECK MSGS A0,B0,A1,B1
7280	035350	000003			.WORD	T.A2!T.B2!0	:& MSGS SPECIFIED HERE
7281	035352	104133			ERROR	133	:MSG A0 ERROR AFTER SEEK CMD
7282	035354	104134			ERROR	134	:MSG B0 ERROR
7283	035356	104135			ERROR	135	:MSG A1 ERROR
7284	035360	104136			ERROR	136	:MSG B1 ERROR
7285	035362	005737	001362		TST	CYLDIF	
7286	035366	001401			BEG	65\$	
7287	035370	104137			ERROR	137	:CYL DIFF NOT CLEARED AFTER SEEK CMD

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7288
7289 035372 65$:
7290
7291 035372 012765 100000 000000 MOV #CCLR,RKCS1(R5)
7292 035400 013765 001222 000010 MOV $UNIT,RKCS2(R5) ;DRIVE#
7293 035406 012765 000005 000000 MOV #CLEAR,RKCS1(R5) ;DRIVE CLEAR CMD
7294 035414 013737 001414 003372 MOV T10,TEMP1
7295 035422 004737 044176 JSR PC,FRDY ;FIND RDY
7296 035426 104151 ERROR 151 ;NO RDY AFTER DRIVE CLEAR CMD
7297 035430 004737 044460 JSR PC,TSTATN ;TEST FOR ATTN
7298 035434 000401 BR 66$
7299 035436 104154 ERROR 154 ;ATTN NOT CLEARED AFTER DRIVE CLEAR CMD
7300 035440 66$:
7301
7302 035440 012737 010340 003424 MOV #<D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0 ;EXPECTED MSG A0
7303 035446 005037 003426 CLR E.B0 ;EXPECTED MSG B0
7304 035452 012737 001720 00343C MOV #<D.SPOK!D.CART!D.DOOR!D.BRM!D.SSP>,E.A1 ;EXPECTED A1
7305 035460 012737 000001 003432 MOV #1,E.B1 ;MSG ID FOR EXPECTED MSG B1
7306 035466 005037 003434 CLR E.A2 ;EXPECTED MSG A2
7307 035472 012737 000002 003436 MOV #2,E.B2 ;MSG ID FOR EXPECTED MSG B2
7308 035500 012737 000C03 003442 MOV #3,E.B3 ;MSG ID FOR EXPECTED MSG B3
7309
7310 035506 004737 044720 JSR PC,CHKMSG ;CHECK MSGS A0,B0,A1,B1
7311 035512 000003 .WORD T.A2!T.B2!0 ;& MSGS SPECIFIED HERE
7312 035514 104273 ERROR 273 ;MSG A0 ERROR AFTER DRIVE CLEAR CMD
7313 035516 104265 ERROR 265 ;MSG B0 ERROR
7314 035520 104274 ERROR 274 ;MSG A1 ERROR
7315 035522 104266 ERROR 266 ;MSG B1 ERROR
7316
7317 035524 023737 001364 001352 CMP CYLADD,TOCYL
7318 035532 001401 BEQ 3$
7319 035534 104207 ERROR 207 ;CYL ADDR IN RKMR3 NOT=RKDC
7320
7321 035536 3$:
7322 035536 104415 SCOP1
7323 035540 012706 001100 MOV #STACK,SP ;RESTORE STK PTR
7324
7325 035544 004737 046106 JSR PC,SUBCLR
7326 035550 104024 ERROR 24 ;CERR AFTER SCLR
7327
7328 035552 005037 001176 CLR $ESCAPE
7329 035556 013765 001352 000020 MOV TOCYL,RKDC(R5) ;CYL #
7330
7331
7332 035564 012700 001674 MOV #RHTAB,RO
7333 035570 012765 000025 000000 MOV #<RDHEAD>,RKCS1(R5) ;READ HEADER CMD
7334 035576 013737 001426 003372 MOV T50000,TEMP1 ;SETUP TIMEOUT
7335 035604 004737 044176 JSR PC,FRDY ;FIND RDY
7336 035610 104171 ERROR 171 ;NO RDY AFTER READ HEADER CMD
7337 035612 032737 100000 003334 BIT #CERR,HCS1
7338 035620 001405 BEQ 68$
7339 035622 104174 ERROR 174 ;CERR AFTER READ HEADER CMD
7340 035624 104401 TYPE MSG18 ;ABORT BALANCE OF TESTS
7341 035630 000137 043470 JMP $EOP ;ABORT DRIVE
7342
7343 035634 016520 000024 68$: MOV RKDB(R5),(RO)+ ;1'ST WORD FROM SILO TO RHTAB

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M11

UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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T37 SEEK FROM CYL 0 TO ALL MAJOR CYLS & READ HEADERS

SEQ 0142

7344	035640	016520	000024		MOV	RKDB(R5).(RD)+	:2'ND WORD
7345	035644	016520	000024		MOV	RKDB(R5).(RD)+	:3'RD WORD
7346							
7347							
7348	035650	032765	100000	000010	BIT	#DLT,RKCS2(R5)	
7349	035656	001407			BEQ	69\$	
7350	035660	004737	045534		JSR	PC,GSTAT	
7351	035664	104173			ERROR	173	:DLT AFTER READ HEADER CMD
7352	035666	104401	056606		TYPE	MSG18	:ABORTING BALANCE OF TESTS
7353	035672	000137	043470		JMP	\$EOP	:ABORT DRIVE
7354	035676						
7355							
7356	035676	023737	001674	001352	CMP	RHTAB,TOCYL	:CHECK WORD 0 (CYL#) ONLY
7357	035704	001401			BEQ	67\$	:BR IF SAME
7358	035706	104310			ERROR	310	:READ CYL WORD HEADER ERROR
7359	035710						
7360							
7361							
7362	035710	104415			SCOP1		
7363	035712	012706	001100		MOV	#STACK,SP	:RESTORE STK PTR
7364							
7365	035716	004737	046106		JSR	PC,SUBCLR	
7366	035722	104024			ERROR	24	:CERR AFTER SCLR
7367							
7368	035724	012737	036730	001176	MOV	#14\$,SESCAPE	
7369	035732	013765	001350	000020	MOV	FRCYL,RKDC(R5)	:RETURN TO CYL #
7370	035740	013737	001350	001354	MOV	FRCYL,CCYL	:CURRENT CYL FOR TRJERROR ROUTINE
7371							
7372	035746	012765	000017	000000	MOV	#SEEK,RKCS1(R5)	:SEEK CMD
7373	035754	013737	001414	003372	MOV	T10,TEMP1	:SETUP TIMEOUT
7374	035762	004737	044176		JSR	PC,FRDY	:FIND RDY
7375	035766	104131			ERROR	131	:NO RDY AFTER SEEK CMD
7376	035770	012737	030140	003424	MOV	#<D.PIP!D.SPIN!D.VV!D.DRA>,E.A0	:EXPECTED A0
7377	035776	005037	003426		CLR	E.B0	
7378	036002	012737	005720	003430	MOV	#<D.REV!D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1	
7379	036010	012737	000001	003432	MOV	#1,E.B1	
7380							
7381	036016	004737	044720		JSR	PC,CHKMSG	:CHECK MSGS A0,B0,A1,B1
7382	036022	000003			.WORD	T.A2!T.B2!0	:& MSGS SPECIFIED HERE
7383	036024	104203			ERROR	203	:MSG A0 ERROR DURING SEEK CMD
7384	036026	104204			ERROR	204	:MSG B0 ERROR
7385	036030	104205			ERROR	205	:MSG A1 ERROR
7386	036032	194206			ERROR	206	:MSG B1 ERROR
7387							
7388							
7389	036034	012737	036750	001176	4\$: MOV	#16\$,SESCAPE	
7390	036042	013737	001424	003372	MOV	T5000,TEMP1	:SETUP TIMEOUT
7391							
7392	036050	004737	044606		JSR	PC,FATT2	:FIND ATTN
7393	036054	104132			ERROR	132	:NO ATTN -- 2 SEEK CMD
7394	036056	032737	100000	003334	BIT	#CERR,HCS1	
7395	036064	001401			BEQ	70\$	
7396	036066	104210			ERROR	210	:CERR AFTER SEEK CMD
7397	036070						
7398							
7399	036070	012737	050340	003424	MOV	#<D.DSC!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0	:EXPECTED MSG A0

350 0142

7400	036076	005037	003426		CLR	E.B0	;EXPECTED MSG B0	
7401	036102	012737	001720	003430	MOV	#<D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1		;EXPECTED A1
7402	036110	012737	000001	003432	MOV	#1,E.B1	;MSG ID FOR EXPECTED MSG B1	
7403	036116	005037	003434		CLR	E.A2	;EXPECTED MSG A2	
7404	036122	012737	000002	003436	MOV	#2,E.B2	;MSG ID FOR EXPECTED MSG B2	
7405	036130	012737	000003	003442	MOV	#3,E.B3	;MSG ID FOR EXPECTED MSG B3	
7406								
7407	036136	004737	044720		JSR	PC,CHKMSG	;CHECK MSGS A0,B0,A1,B1	
7408	036142	000003			.WORD	T.A2!T.B2!0	;8 MSGS SPECIFIED HERE	
7409	036144	104133			ERROR	133	;MSG A0 ERROR AFTER SEEK CMD	
7410	036146	104134			ERROR	134	;MSG B0 ERROR	
7411	036150	104135			ERROR	135	;MSG A1 ERROR	
7412	036152	104136			ERROR	136	;MSG B1 ERROR	
7413	036154	005737	001362		TST	CYLDIF		
7414	036160	001401			BEG	71\$		
7415	036162	104137			ERROR	137	;CYL DIFF NOT CLEARED AFTER SEEK CMD	
7416								
7417	036164					71\$:		
7418								
7419	036164	012765	100000	000000	MOV	#CCLR,RKCS1(R5)		
7420	036172	013765	001222	000010	MOV	\$UNIT,RKCS2(R5)	;DRIVE#	
7421	036200	012765	000005	000000	MOV	#CLEAR,RKCS1(R5)	;DRIVE CLEAR CMD	
7422	036206	013737	001414	003372	MOV	T10,TEMP1		
7423	036214	004737	044176		JSR	PC,FRDY	;FIND RDY	
7424	036220	104151			ERROR	151	;NO RDY AFTER DRIVE CLEAR CMD	
7425	036222	004737	044460		JSR	PC,TSTATN	;TEST FOR ATTN	
7426	036226	000401			BR	72\$		
7427	036230	104154			ERROR	154	;ATTN NOT CLEARED AFTER DRIVE CLEAR CMD	
7428	036232					72\$:		
7429								
7430	036232	012737	010340	003424	MOV	#<0!D.SPIN!D.DRDY!D.VV!C.DRA>,E.A0	;EXPECTED MSG A0	
7431	036240	005037	003426		CLR	E.B0	;EXPECTED MSG B0	
7432	036244	012737	001720	003430	MOV	#<D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1		;EXPECTED A1
7433	036252	012737	000001	003432	MOV	#1,E.B1	;MSG ID FOR EXPECTED MSG B1	
7434	036260	005037	003434		CLR	E.A2	;EXPECTED MSG A2	
7435	036264	012737	000002	003436	MOV	#2,E.B2	;MSG ID FOR EXPECTED MSG B2	
7436	036272	012737	000003	003442	MOV	#3,E.B3	;MSG ID FOR EXPECTED MSG B3	
7437								
7438	036300	004737	044720		JSR	PC,CHKMSG	;CHECK MSGS A0,B0,A1,B1	
7439	036304	000003			.WORD	T.A2!T.B2!0	;8 MSGS SPECIFIED HERE	
7440	036306	104273			ERROR	273	;MSG A0 ERROR AFTER DRIVE CLEAR CMD	
7441	036310	104265			ERROR	265	;MSG B0 ERROR	
7442	036312	104274			ERROR	274	;MSG A1 ERROR	
7443	036314	104266			ERROR	266	;MSG B1 ERROR	
7444								
7445	036316	023737	001364	001350	CMP	CYLADD,FRCYL		
7446	036324	001401			BEG	5\$		
7447	036326	104243			ERROR	243	;CYL ADDR IN RKMR3 NOT=RKDC	
7448								
7449	036330					5\$:		
7450	036330	104415			SCOP1			
7451	036332	012706	001100		MOV	#STACK,SP	;RESTORE STK PTR	
7452								
7453	036336	004737	046106		JSR	PC,SUBCLR		
7454	036342	104024			ERROR	24	;CERR AFTER SCLP	
7455			</					

JY18US R006 DRIVE DIAGNOSTIC PART 1
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 T37 SEEK FROM CYL 0 TO ALL MAJOR CYLS & READ HEADERS

SEG 0144

7456	036344	005037	001176		CLR	\$ESCAPE	
7457	036350	013765	001350	000020	MOV	FRCYL,RKDC(R5)	:CYL #
7458							
7459							
7460	036356	012700	001674		MOV	\$RHTAB,R0	
7461	036362	012765	000025	000000	MOV	\$R0HEAD,RKCS1(R5)	:READ HEADER CMD
7462	036370	013737	001426	003372	MOV	T50000,TEMP1	:SETUP TIMEOUT
7463	036376	004737	044176		JSR	PC,FRDY	:FIND RDY
7464	036402	104171			ERROR	171	:NO RDY AFTER READ HEADER CMD
7465	036404	032737	100000	003334	BIT	\$CERR,HCS1	
7466	036412	001405			BEG	748	
7467	036414	104174			ERROR	174	:CERR AFTER READ HEADER CMD
7468	036416	104401	056606		TYPE	MSG18	:ABORT BALANCE OF TESTS
7469	036422	000137	043470		JMP	\$EOP	:ABORT DRIVE
7470							
7471	036426	016520	000024		MOV	RKDB(R5),(R0)+	:1ST WORD FROM SILO TO RHTAB
7472	036432	016520	000024		MOV	RKDB(R5),(R0)+	:2ND WORD
7473	036436	016520	000024		MOV	RKDB(R5),(R0)+	:3RD WORD
7474							
7475							
7476	036442	032765	100000	000010	BIT	\$DLT,RKCS2(R5)	
7477	036450	001407			BEG	755	
7478	036452	004737	045534		JSR	PC,GSTAT	
7479	036456	104173			ERROR	173	:DLT AFTER READ HEADER CMD
7480	036460	104401	056606		TYPE	MSG18	:ABORTING BALANCE OF TESTS
7481	036464	000137	043470		JMP	\$EOP	:ABORT DRIVE
7482	036470						
7483							
7484	036470	022737	001674	001350	CMP	RHTAB,FRCYL	:CHECK WORD 0 (CYL#) ONLY
7485	036476	001401			BEG	735	:BR IF SAME
7486	036500	104311			ERROR	311	:READ CYL WORD HEADER ERROR
7487	036502						
7488							
7489							
7490	036502	022727	001352	000400	CMP	T0CYL,#400	:ALL CYL DONE?
7491	036510	001404			BEG	65	:BR IF YES
7492	036512	006337	001352		ASL	T0CYL	:ELSE DO ANOTHER
7493	036516	000137	035074		JMP	15	
7494	036522						
7495	036522	004737	050036		JSR	PC,SWTST	:SEE IF SW 14 OR 8 IS SET
7496	036526	000520			BR	T5+40	:GO TO NEXT TEST
7497							:RETURN HERE IF SW 14 IS SET OR
7498							:SW 8 WITH SWR (7:0) APPLY
7499	036530						
7500							
7501	036530	004737	046106		JSR	PC,SUBCLR	
7502	036534	104024			ERROR	24	:CERR AFTER SCRL
7503							
7504	036536	013765	001352	000020	MOV	T0CYL,RKDC(R5)	:CYL#
7505							
7506	036544	012765	000017	000000	MOV	\$SEEK,RKCS1(R5)	:SEEK CMD TO RECONDITION DRIVE.
7507	036552	013737	001414	003372	MOV	T10,TEMP1	:SETUP TIMEOUT
7508	036560	004737	044176		JSR	PC,FRDY	:FIND RDY
7509	036564	104131			ERROR	131	:NO RDY AFTER SEEK CMD.
7510							
7511	036566	013737	001424	003372	MOV	T5000,TEMP1	

7512	036574	004737	044606		JSR	PC,FATT2	:FIND ATTN
7513	036600	104132			ERROR	132	:NO ATTN AFTER SEEK CMD
7514	036602	032737	100000	003334	BIT	#CERR,HCS:	
7515	036610	001401			BEQ	785	
7516	036612	104210			ERROR	210	:CERR AFTER SEEK CMD.
7517							
7518	036614	004737	046106		795:	JSR	PC,SUBCLR
7519	036620	104024			ERROR	24	:CERR AFTER SCLR
7520							
7521	036622	023727	001352	000000	CMP	TOCYL,#0	:ALL CYL DONE?
7522	036630	001403			BEQ	775	:BR IF YES
7523	036632	035337	001352		DEC	TOCYL	:ELSE DO ANOTHER
7524	036636	000737			BR	765	
7525							
7526	036640	004737	046106		775:	JSR	PC,SUBCLR
7527	036644	104024			ERROR	24	:CERR AFTER SCLR
7528							
7529	036646	005037	001176		CLR	SESCAPE	
7530	036652	005737	001410		TST	LPFLG	
7531	036656	001402			BEQ	795	
7532	036660	000177	142224		JMP	2SLPERR	:SW 9 WAS SET.
7533	036664	000177	142216		795:	JMP	2SLPADR
7534							:SW 14 OR 8 WAS SET
7535	036670				105:		
7536	036670	005237	001410		INC	LPFLG	
7537	036674	032777	001000	142236	BIT	#SW9,2SWR	:LOOP ON ERROR?
7538	036702	001312			BNE	85	:YES, RECONDITION DRIVE
7539	036704	000137	035242		JMP	25	:RETURN TO MAINLINE
7540	036710				125:		
7541	036710	005237	001410		INC	LPFLG	
7542	036714	032777	001000	142216	BIT	#SW9,2SWR	:LOOP ON ERROR?
7543	036722	001302			BNE	85	:YES, RECONDITION DRIVE
7544	036724	000137	035536		JMP	35	:RETURN TO MAINLINE
7545	036730				145:		
7546	036730	005237	001410		INC	LPFLG	
7547	036734	032777	001000	142176	BIT	#SW9,2SWR	:LOOP ON ERROR?
7548	036742	001272			BNE	85	:YES, RECONDITION DRIVE
7549	036744	000137	036034		JMP	45	:RETURN TO MAINLINE
7550	036750				165:		
7551	036750	005237	001410		INC	LPFLG	
7552	036754	032777	001000	142156	BIT	#SW9,2SWR	:LOOP ON ERROR?
7553	036762	001262			BNE	85	:YES, RECONDITION DRIVE
7554	036764	000137	036330		JMP	55	:RETURN TO MAINLINE
7555							
7556							
7557							
7558							
7559							
7560							
7561	036770	000004			TST40:	SCOPE	
7562	036772	012737	000001	001174	MOV	#1,STIMES	:DO 1 ITERATION
7563	037000	012706	001100		MOV	#STACK,SP	:RESTORE STK PTR
7564							
7565	037004	005737	001342		TST	MODTST	:SEE IF MODULE TESTING
7566	037010	001402			BEQ	DOSEEK	:BR IF NO
7567	037012	000137	042744		JMP	CYLINV	:ELSE BYPASS TESTS 40 & 41

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*****
:TEST 40      SEEK TO ALL CYLS FROM 0 & READ HEADERS
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7568 037016 DOSEEK:
7569
7570 037016 012737 000000 001350 MOV #0,FRCYL ;SETUP FROM CYL
7571 037024 012737 000001 001352 MOV #1,TOCYL ;SETUP TO CYL
7572
7573 037032 15: SCOP1
7574 037032 104415 MOV #STACK,SP ;RESTORE STK PTR
7575 037034 012706 001100
7576
7577 037040 004737 046106 JSR PC,SUBCLR
7578 037044 104024 ERROR 24 ;CERR AFTER SCLR
7579
7580 037046 012737 040626 001176 MOV #105,SESCAPE
7581 037054 013737 001350 003376 MOV FRCYL,TEMP3 ;SETUP
7582 037062 013737 001352 003400 MOV TOCYL,TEMP4 ;CYL DIFF
7583 037070 163737 003376 003400 SUB TEMP3,TEMP4 ;FOR
7584 037076 013737 003400 001360 MOV TEMP4,CALDIF ;ERROR PRINTOUT
7585
7586 037104 013765 001352 000020 MOV TOCYL,RKDC(R5) ;GO TO CYL #
7587
7588 037112 012765 000017 000000 MOV #SEEK,RKCS1(R5) ;SEEK CMD
7589 037120 013737 001414 003372 MOV T10,TEMP1 ;SETUP TIMEOUT
7590 037126 004737 044176 JSR PC,FRDY ;FIND RDY
7591 037132 104131 ERROR 131 ;NO RDY AFTER SEEK CMD
7592 037134 012737 030140 003424 MOV #<D.PIP!D.SPIN!D.VV!D.DRA>,E.A0 ;EXPECTED A0
7593 037142 005037 003426 CLR E.B0
7594 037146 012737 003720 003430 MOV #<D.FWD!D.SPOK!D.CART!D.DOOR!D.BRM!D.SSP>,E.A1
7595 037154 012737 000001 003432 MOV #1,E.B1
7596
7597 037162 004737 044720 JSR PC,CHKMSG ;CHECK MSGS A0,B0,A1,B1
7598 037166 000003 .WORD T.A2!T.B2!0 ;& MSGS SPECIFIED HERE
7599 037170 104203 ERROR 203 ;MSG A0 ERROR DURING SEEK CMD
7600 037172 104204 ERROR 204 ;MSG B0 ERROR
7601 037174 104205 ERROR 205 ;MSG A1 ERROR
7602 037176 104206 ERROR 206 ;MSG B1 ERROR
7603
7604 037200 012737 040646 001176 25: MOV #125,SESCAPE
7605 037206 013737 001424 003372 MOV T5000,TEMP1 ;SETUP TIMEOUT
7606
7607 037214 004737 044606 JSR PC,FATT2 ;FIND ATTN
7608 037220 104132 ERROR 132 ;NO ATTN AFTER SEEK CMD
7609 037222 032737 100000 003334 BIT #CERR,HCS1
7610 037230 001401 BEQ 645
7611 037232 104210 ERROR 210 ;CERR AFTER SEEK CMD
7612 037234 645:
7613
7614 037234 012737 050340 003424 MOV #<D.DSC!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0 ;EXPECTED MSG A0
7615 037242 005037 003426 CLR E.B0 ;EXPECTED MSG B0
7616 037246 012737 001720 003430 MOV #<D.SPOK!D.CART!D.DOOR!D.BRM!D.SSP>,E.A1 ;EXPECTED A1
7617 037254 012737 000001 003432 MOV #1,E.B1 ;MSG ID FOR EXPECTED MSG B1
7618 037262 005037 003434 CLR E.A2 ;EXPECTED MSG A2
7619 037266 012737 000002 003436 MOV #2,E.B2 ;MSG ID FOR EXPECTED MSG B2
7620 037274 012737 000003 003442 MOV #3,E.B3 ;MSG ID FOR EXPECTED MSG B3
7621
7622 037302 004737 044720 JSR PC,CHKMSG ;CHECK MSGS A0,B0,A1,B1
7623 037306 000003 .WORD T.A2!T.B2!0 ;& MSGS SPECIFIED HERE

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 JNIBUS RAO6 DRIVE DIAGNOSTIC PART 1
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 T4C SEEK TO ALL CYLS FROM 0 3 READ HEADERS

SEG 0147

7624	037310	104133		ERROR	133	:MSG A0 ERROR AFTER SEEK CMD
7625	037312	104134		ERROR	134	:MSG B0 ERROR
7626	037314	104135		ERROR	135	:MSG A1 ERROR
7627	037316	104136		ERROR	136	:MSG B1 ERROR
7628	037320	005737	001362	TST	CYLDIF	
7629	037324	001401		BEG	655	
7630	037326	104137		ERROR	137	:CYL DIFF NOT CLEARED AFTER SEEK CMD
7631						
7632	037330			655:		
7633						
7634	037330	012765	100000	MOV	#CLR,RKCS1(R5)	
7635	037336	013765	001222	MOV	SUNIT,RKCS2(R5)	:DRIVE#
7636	037344	012765	000005	MOV	#CLR,RKCS1(R5)	:DRIVE CLEAR CMD
7637	037352	013737	001414	MOV	T10,TEMP1	
7638	037360	004737	044176	JSR	PC,FRDY	:FIND RDY
7639	037364	104151		ERROR	151	:NC RDY AFTER DRIVE CLEAR CMD
7640	037366	004737	044460	JSR	PC,TSTATN	:TEST FOR ATTN
7641	037372	000401		BR	665	
7642	037374	104154		ERROR	154	:ATTN NOT CLEARED AFTER DRIVE CLEAR CMD
7643	037376			665:		
7644						
7645	037376	012737	010340	MOV	#<D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0	:EXPECTED MSG A0
7646	037404	005037	003426	CLR	E.B0	:EXPECTED MSG B0
7647	037410	012737	001720	MOV	#<D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1	:EXPECTED A1
7648	037416	012737	000001	MOV	#1,E.B1	:MSG IC FOR EXPECTED MSG B1
7649	037424	005037	003434	CLR	E.A2	:EXPECTED MSG A2
7650	037430	012737	000002	MOV	#2,E.B2	:MSG ID FOR EXPECTED MSG B2
7651	037436	012737	000003	MOV	#3,E.B3	:MSG ID FOR EXPECTED MSG B3
7652						
7653	037444	004737	044720	JSR	PC,CHKMSG	:CHECK MSGS A0,B0,A1,B1
7654	037450	000003		.WORD	T.A2!T.B2!0	:8 MSGS SPECIFIED HERE
7655	037452	104273		ERROR	273	:MSG A0 ERROR AFTER DRIVE CLEAR CMD
7656	037454	104265		ERROR	265	:MSG B0 ERROR
7657	037456	104274		ERROR	274	:MSG A1 ERROR
7658	037460	104266		ERROR	266	:MSG B1 ERROR
7659						
7660	037462	023737	001364	CMP	CYLADD,TOCYL	
7661	037470	001401	001352	BEQ	35	
7662	037472	104207		ERROR	207	:CYL ADDR IN RKMR3 NOT=RKDC
7663						
7664	037474			35:		
7665	037474	104415		SCOP1		
7666	037476	012706	001100	MOV	#STACK,SP	:RESTORE STK PTR
7667						
7668	037502	004737	046106	JSR	PC,SUBCLR	
7669	037506	104024		ERROR	24	:CERR AFTER SCLR
7670						
7671	037510	005037	001176	CLR	\$ESCAPE	
7672	037514	013765	001352	MOV	TOCYL,RKDC(R5)	:CYL #
7673						
7674						
7675	037522	012700	001674	MOV	#PHTAB,RO	
7676	037526	012765	000025	MOV	#<RDHEAD>,RKCS1(R5)	:READ HEADER CMD
7677	037534	013737	001426	MOV	T5000,TEMP1	:SETUP TIMEOUT
7678	037542	004737	044176	JSR	PC,FRDY	:FIND RDY
7679	037546	104171		ERROR	171	:NO RDY AFTER READ HEADER CMD

F12

 JNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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 T40 SEEK TO ALL CYLS FROM 0 3 READ HEADERS

SEG 0148

7680	037550	032737	100000	003334	BIT	#CERR,HCS1	
7681	037556	001405			BEQ	685	
7682	037560	104174			ERROR	174	:CERR AFTER READ HEADER CMD
7683	037562	104401	056606		TYPE	MSG18	:ABORT BALANCE OF TESTS
7684	037566	000137	043470		JMP	\$EOP	:ABORT DRIVE
7685							
7686	037572	016520	000024		685:	MOV	RKDB(R5),(R0)+ :1ST WORD FROM SILO TO RHTAB
7687	037576	016520	000024			MOV	RKDB(R5),(R0)+ :2ND WORD
7688	037602	016520	000024			MOV	RKDB(R5),(R0)+ :3RD WORD
7689							
7690							
7691	037606	032765	100000	000010	BIT	#DLT,RKCS2(R5)	
7692	037614	001407			BEQ	695	
7693	037616	004737	045534		JSR	PC,GSTAT	
7694	037622	104173			ERROR	173	:DLT AFTER READ HEADER CMD
7695	037624	104401	056606		TYPE	MSG18	:ABORTING BALANCE OF TESTS
7696	037630	000137	043470		JMP	\$EOP	:ABORT DRIVE
7697	037634				695:		
7698							
7699	037634	023737	001674	001352	CMP	RHTAB,TOCYL	:CHECK WORD 0 (CYL#) ONLY
7700	037642	001401			BEQ	675	:BR IF SAME
7701	037644	104310			ERROR	310	:READ CYL WORD HEADER ERROR
7702	037646				675:		
7703							
7704							
7705	037646	104415			SCOP1		
7706	037650	012706	001100		MOV	#STACK,SP	:RESTORE STK PTR
7707							
7708	037654	004737	046106		JSR	PC,SUBCLR	
7709	037660	104024			ERROR	24	:CERR AFTER SOLR
7710							
7711	037662	012737	040666	001176	MOV	#145,\$ESCAPE	
7712	037670	013765	001350	000020	MOV	FRCYL,RKDC(R5)	:RETURN TO CYL #
7713	037676	013737	001350	001354	MOV	FRCYL,CCYL	:CURRENT CYL FOR TRUERROR ROUTINE
7714							
7715	037704	012765	000017	000000	MOV	#SEEK,RKCS1(R5)	:SEEK CMD
7716	037712	013737	001414	003372	MOV	T10,TEMP1	:SETUP TIMEOUT
7717	037720	004737	044176		JSR	PC,FRDY	:FIND RDY
7718	037724	104131			ERROR	131	:NO RDY AFTER SEEK CMD
7719	037726	012737	030140	003424	MOV	#<D.PIP!D.SPIN!D.VV!D.DRA>.E.A0	:EXPECTED AD
7720	037734	005037	003426		CLR	E.B0	
7721	037740	012737	005720	003430	MOV	#<D.REV!D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>.E.A1	
7722	037746	012737	000001	003432	MOV	#1,E.B1	
7723							
7724	037754	004737	044720		JSR	PC,CHKMSG	:CHECK MSGS A0,B0,A1,B1
7725	037760	000003			.WORD	T.A2!T.B2!0	:8 MSGS SPECIFIED HERE
7726	037762	104203			ERROR	203	:MSG A0 ERROR DURING SEEK CMD
7727	037764	104204			ERROR	204	:MSG B0 ERROR
7728	037766	104205			ERROR	205	:MSG A1 ERROR
7729	037770	104206			ERROR	206	:MSG B1 ERROR
7730							
7731							
7732	037772	012737	040706	001176	45:	MOV	#165,\$ESCAPE
7733	040000	013737	001424	003372		MOV	T5000,TEMP1 :SETUP TIMEOUT
7734							
7735	040006	004737	044606		JSR	PC,FATT2	:FIND ATTN

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UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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T40 SEEK TO ALL CYLS FROM 0 & READ HEADERS

SEQ 0149

7736	040012	104132			ERROR	132	;NO ATTN AFTER SEEK CMD
7737	040014	032737	100000	003334	BIT	#ERR,HCS1	
7738	040022	001401			BEQ	705	
7739	040024	104210			ERROR	210	;CERR AFTER SEEK CMD
7740	040026				705:		
7741							
7742	040026	012737	050340	003424	MOV	#(D.DSC!D.SPIN!D.DRDY!D.VV!D.DRA),E.A0	;EXPECTED MSG A0
7743	040034	005037	003426		CLR	E.B0	;EXPECTED MSG B0
7744	040040	012737	001720	003430	MOV	#(D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP),E.A1	;EXPECTED A1
7745	040046	012737	000001	003432	MOV	#1,E.B1	;MSG ID FOR EXPECTED MSG B1
7746	040054	005037	003434		CLR	E.A2	;EXPECTED MSG A2
7747	040060	012737	000002	003436	MOV	#2,E.B2	;MSG ID FOR EXPECTED MSG B2
7748	040066	012737	000003	003442	MOV	#3,E.B3	;MSG ID FOR EXPECTED MSG B3
7749							
7750	040074	004737	044720		JSR	PC,CHKMSG	;CHECK MSGS A0,B0,A1,B1
7751	040100	000003			.WORD	T.A2!T.B2!0	;8 MSGS SPECIFIED HERE
7752	040102	104133			ERROR	133	;MSG A0 ERROR AFTER SEEK CMD
7753	040104	104134			ERROR	134	;MSG B0 ERROR
7754	040106	104135			ERROR	135	;MSG A1 ERROR
7755	040110	104136			ERROR	136	;MSG B1 ERROR
7756	040112	005737	001362		TST	CYLDIF	
7757	040116	001401			BEQ	715	
7758	040120	104137			ERROR	137	;CYL DIFF NOT CLEARED AFTER SEEK CMD
7759							
7760	040122				715:		
7761							
7762	040122	012765	100000	000000	MOV	#CLR,RKCS1(R5)	
7763	040130	013765	001222	000010	MOV	\$UNIT,RKCS2(R5)	;DRIVE#
7764	040136	012765	000005	000000	MOV	#CLR,RKCS1(R5)	;DRIVE CLEAR CMD
7765	040144	013737	001414	003372	MOV	T10,TEMP1	
7766	040152	004737	044176		JSR	PC,FRDY	;FIND RDY
7767	040156	104151			ERROR	151	;NO RDY AFTER DRIVE CLEAR CMD
7768	040160	004737	044460		JSR	PC,TSTATN	;TEST FOR ATTN
7769	040164	000401			BR	725	
7770	040166	104154			ERROR	154	;ATTN NOT CLEARED AFTER DRIVE CLEAR CMD
7771	040170				725:		
7772							
7773	040170	012737	010340	003424	MOV	#(D.D.SPIN!D.DRDY!D.VV!D.DRA),E.A0	;EXPECTED MSG A0
7774	040176	005037	003426		CLR	E.B0	;EXPECTED MSG B0
7775	040202	012737	001720	003430	MOV	#(D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP),E.A1	;EXPECTED A1
7776	040210	012737	000001	003432	MOV	#1,E.B1	;MSG ID FOR EXPECTED MSG B1
7777	040216	005037	003434		CLR	E.A2	;EXPECTED MSG A2
7778	040222	012737	000002	003436	MOV	#2,E.B2	;MSG ID FOR EXPECTED MSG B2
7779	040230	012737	000003	003442	MOV	#3,E.B3	;MSG ID FOR EXPECTED MSG B3
7780							
7781	040236	004737	044720		JSR	PC,CHKMSG	;CHECK MSGS A0,B0,A1,B1
7782	040242	000003			.WORD	T.A2!T.B2!0	;8 MSGS SPECIFIED HERE
7783	040244	104273			ERROR	273	;MSG A0 ERROR AFTER DRIVE CLEAR CMD
7784	040246	104265			ERROR	265	;MSG B0 ERROR
7785	040250	104274			ERROR	274	;MSG A1 ERROR
7786	040252	104266			ERROR	266	;MSG B1 ERROR
7787							
7788	040254	023737	001364	001350	CMP	CYLADD,FRCYL	
7789	040262	001401			BEQ	55	
7790	040264	104243			ERROR	243	;CYL ADDR IN RKMR3 NOT=RKDC
7791							

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T40 SEEK TO ALL CYLS FROM 0 & READ HEADERS

SEQ 0150

7792	040266				55:	SCOP1		
7793	040266	104415				MOV	#STACK,SP	;RESTORE STK PTR
7794	040270	012706	001100					
7795								
7796	040274	004737	046106			JSR	PC,SUBCLR	
7797	040300	104024				ERROR	24	;CERR AFTER SCLR
7798								
7799	040302	005037	001176			CLR	\$ESCAPE	
7800	040306	013765	001350	000020		MOV	FRCYL,RKDC(R5)	;CYL #
7801								
7802								
7803	040314	012700	001674			MOV	#RHTAB,RO	
7804	040320	012765	000025	000000		MOV	#RDHEAD,RKCS1(R5)	;READ HEADER CMD
7805	040326	013737	001426	003372		MOV	T50000,TEMP1	;SETUP TIMEOUT
7806	040334	004737	044176			JSR	PC,FRDY	;FIND RDY
7807	040340	104171				ERROR	171	;NO RDY AFTER READ HEADER CMD
7808	040342	032737	100000	003334		BIT	#CERR,HCS1	
7809	040350	001405				BEQ	745	
7810	040352	104174				ERROR	174	;CERR AFTER READ HEADER CMD
7811	040354	104401	056606			TYPE	MSG18	;ABORT BALANCE OF TESTS
7812	040360	000137	043470			JMP	\$EOP	;ABORT DRIVE
7813								
7814	040364	016520	000024		745:	MOV	RKDB(R5),(RO)+	;1'ST WORD FROM SILO TO RHTAB
7815	040370	016520	000024			MOV	RKDB(R5),(RO)+	;2'ND WORD
7816	040374	016520	000024			MOV	RKDB(R5),(RO)+	;3'RD WORD
7817								
7818								
7819	040400	032765	100000	000010		BIT	#DLT,RKCS2(R5)	
7820	040406	001407				BEQ	755	
7821	040410	004737	045534			JSR	PC,GSTAT	
7822	040414	104173				ERROR	173	;DLT AFTER READ HEADER CMD
7823	040416	104401	056606			TYPE	MSG18	;ABORTING BALANCE OF TESTS
7824	040422	000137	043470			JMP	\$EOP	;ABORT DRIVE
7825	040426				755:			
7826								
7827	040426	023737	001674	001350		CMP	RHTAB,FRCYL	;CHECK WORD 0 (CYL#) ONLY
7828	040434	001401				BEQ	735	;BR IF SAME
7829	040436	104311				ERROR	311	;READ CYL WORD HEADER ERROR
7830	040440				735:			
7831								
7832								
7833	040440	023727	001352	000632		CMP	TOCYL,#410.	;ALL CYL DONE?
7834	040446	001404				BEQ	65	;BR IF YES
7835	040450	005237	001352			INC	TOCYL	;ELSE DO ANOTHER
7836	040454	000137	037032			JMP	15	
7837	040460				65:			
7838	040460	004737	050036			JSR	PC,SWTST	;SEE IF SW 14 OR 8 IS SET
7839	040464	000520				BR	TST41	;GO TO NEXT TEST
7840								;RETURN HERE IF SW 14 IS SET OR
7841								;SW 8 WITH SWR <7:0> APPLY
7842	040466				85:			
7843								
7844	040466	004737	046106			JSR	PC,SUBCLR	
7845	040472	104024				ERROR	24	;CERR AFTER SCRL
7846								
7847	040474	013765	001352	000020	765:	MOV	TOCYL,RKDC(R5)	;CYL #

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7848
7849 040502 012765 000017 000000      MOV      #SEEK,RKCS1(R5) ;SEEK CMD TO RECONDITION DRIVE.
7850 040510 013737 001414 003372      MOV      T10,TEMP1      ;SETUP TIMEOUT
7851 040516 004737 044176                JSR      PC,FRDY        ;FIND RDY
7852 040522 104131                ERROR    131          ;NO RDY AFTER SEEK CMD.
7853
7854 040524 013737 001424 003372      MOV      T5000,TEMP1
7855 040532 004737 044606                JSR      PC,FAIT2      ;FIND ATTN
7856 040536 104132                ERROR    132          ;NO ATTN AFTER SEEK CMD
7857 040540 032737 100000 003334      BIT      #CERR,HCS1
7858 040546 001401                BEQ      7858
7859 040550 104210                ERROR    210          ;CERR AFTER SEEK CMD.
7860
7861 040552 004737 046106                JSR      PC,SUBCLR
7862 040556 104024                ERROR    24          ;CERR AFTER SCLR
7863
7864 040560 023727 001352 000000      CMP      TOCYL,#0      ;ALL CYL DONE?
7865 040566 001403                BEQ      77$           ;BR IF YES
7866 040570 005337 001352                DEC      TOCYL        ;ELSE DO ANOTHER
7867 040574 000737                BR       76$
7868
7869 040576 004737 046106                JSR      PC,SUBCLR
7870 040602 104024                ERROR    24          ;CERR AFTER SCLR
7871
7872 040604 005037 001176                CLR      $ESCAPE
7873 040610 005737 001410                TST      LPFLG
7874 040614 001402                BEQ      79$
7875 040616 000177 140266                JMP      $SLPERR      ;SW 9 WAS SET.
7876 040622 000177 140260                JMP      $SLPADR      ;SW 14 OR 8 WAS SET
7877
7878 040626                10$:
7879 040626 005237 001410                INC      LPFLG
7880 040632 032777 001000 140300      BIT      #SW9,$SWR      ;LOOP ON ERROR?
7881 040640 001312                BNE      8$           ;YES, RECONDITION DRIVE
7882 040642 000137 037200                JMP      2$           ;RETURN TO MAINLINE
7883 040646                12$:
7884 040646 005237 001410                INC      LPFLG
7885 040652 032777 001000 140260      BIT      #SW9,$SWR      ;LOOP ON ERROR?
7886 040660 001302                BNE      8$           ;YES, RECONDITION DRIVE
7887 040662 000137 037474                JMP      3$           ;RETURN TO MAINLINE
7888 040666                14$:
7889 040666 005237 001410                INC      LPFLG
7890 040672 032777 001000 140240      BIT      #SW9,$SWR      ;LOOP ON ERROR?
7891 040700 001272                BNE      8$           ;YES, RECONDITION DRIVE
7892 040702 000137 037772                JMP      4$           ;RETURN TO MAINLINE
7893 040706                16$:
7894 040706 005237 001410                INC      LPFLG
7895 040712 032777 001000 140220      BIT      #SW9,$SWR      ;LOOP ON ERROR?
7896 040720 001262                BNE      8$           ;YES, RECONDITION DRIVE
7897 040722 000137 040266                JMP      5$           ;RETURN TO MAINLINE
7898
7899
7900 ;*****
7901 ;*TEST 41      SEEK TO ALL CYLS FROM CYL 410 & READ HEADERS
7902 ;*****
7903 TST41: SCOPE
7904      MOV      #1,$TIMES      ;:DO 1 ITERATION

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 T41 SEEK TO ALL CYLS FROM CYL 410 & READ HEADERS

SEQ 0152

7904	040736	012706	001100		MOV	#STACK,SP	;RESTORE STK PTR
7905							
7906							
7907	040742	004737	046106		JSR	PC,SUBCLR	
7908	040746	104024			ERROR	24	;CERR AFTER SCLR
7909							
7910	040750	012765	000632	000020	MOV	#410.,RKDC(R5)	;QUICK SEEK TO CYL 410
7911							
7912	040756	012765	000017	000000	MOV	#SEEK,RKCS1(R5)	;SEEK CMD TO RECONDITION DRIVE.
7913	040764	013737	001414	003372	MOV	T10,TEMP1	;SETUP TIMEOUT
7914	040772	004737	044176		JSR	PC,FRDY	;FIND RDY
7915	040776	104131			ERROR	131	;NO RDY AFTER SEEK CMD.
7916							
7917	041000	013737	001424	003372	MOV	T5000,TEMP1	
7918	041006	004737	044606		JSR	PC,FATT2	;FIND ATTN
7919	041012	104132			ERROR	132	;NO ATTN AFTER SEEK CMD
7920	041014	032737	100000	003334	BIT	#CERR,HCS1	
7921	041022	001401			BEQ	645	
7922	041024	104210			ERROR	210	;CERR AFTER SEEK CMD.
7923							
7924	041026	004737	046106		JSR	PC,SUBCLR	
7925	041032	104024			ERROR	24	;CERR AFTER SCLR
7926							
7927							
7928	041034	012737	000632	001350	MOV	#410.,FRCYL	;SETUP FROM CYL
7929	041042	012737	000631	001352	MOV	#409.,TOCYL	;SETUP TO CYL
7930							
7931	041050						
7932	041050	104415			SCOP1		
7933	041052	012706	001100		MOV	#STACK,SP	;RESTORE STK PTR
7934							
7935	041056	004737	046106		JSR	PC,SUBCLR	
7936	041062	104024			ERROR	24	;CERR AFTER SCLR
7937							
7938	041064	012737	042644	001176	MOV	#10\$,SESCAPE	
7939	041072	013737	001350	003376	MOV	FRCYL,TEMP3	;SETUP
7940	041100	013737	001352	003400	MOV	TOCYL,TEMP4	;CYL DIFF
7941	041106	163737	003400	003376	SUB	TEMP4,TEMP3	;FOR
7942	041114	013737	003376	001360	MOV	TEMP3,CALDIF	;ERROR PRINTOUT
7943							
7944	041122	013765	001352	000020	MOV	TOCYL,RKDC(R5)	;GO TO CYL #
7945							
7946	041130	012765	000017	000000	MOV	#SEEK,RKCS1(R5)	;SEEK CMD
7947	041136	013737	001414	003372	MOV	T10,TEMP1	;SETUP TIMEOUT
7948	041144	004737	044176		JSR	PC,FRDY	;FIND RDY
7949	041150	104131			ERROR	131	;NO RDY AFTER SEEK CMD
7950	041152	012737	030140	003424	MOV	#<D.PIP!D.SPIN!D.VV!D.DRA>,E.A0	;EXPECTED A0
7951	041160	005037	003426		CLR	E.B0	
7952	041164	012737	005720	003430	MOV	#<D.REV!D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1	
7953	041172	012737	000001	003432	MOV	#1,E.B1	
7954							
7955	041200	004737	044720		JSR	PC,CHKMSG	;CHECK MSGS A0,B0,A1,B1
7956	041204	000003			.WORD	T.A2!T.B2!0	; & MSGS SPECIFIED HERE
7957	041206	104203			ERROR	203	;MSG A0 ERROR DURING SEEK CMD
7958	041210	104204			ERROR	204	;MSG B0 ERROR
7959	041212	104205			ERROR	205	;MSG A1 ERROR

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T41 SEEK TO ALL CYLS FROM CYL 410 & READ HEADERS

SEG 0153

7960	041214	104206		ERROR	206	;MSG B1 ERROR
7961						
7962	041216	012737	042664	001176	25:	MOV #125,\$ESCAPE
7963	041224	013737	001424	003372		MOV T5000,TEMP1 ;SETUP TIMEOUT
7964						
7965	041232	004737	044606			JSR PC,FATT2 ;FIND ATTN
7966	041236	104132				ERROR 132 ;NO ATTN AFTER SEEK CMD
7967	041240	032737	100000	003334		BIT #CERR,HCS1
7968	041246	001401				BEQ 65\$
7969	041250	104210				ERROR 210 ;CERR AFTER SEEK CMD
7970	041252				65\$:	
7971						
7972	041252	012737	050340	003424		MOV #<D.DSC!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0 ;EXPECTED MSG A0
7973	041260	005037	003426			CLR E.B0 ;EXPECTED MSG B0
7974	041264	012737	001720	003430		MOV #<D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1 ;EXPECTED A1
7975	041272	012737	000001	003432		MOV #1,E.B1 ;MSG ID FOR EXPECTED MSG B1
7976	041300	005037	003434			CLR E.A2 ;EXPECTED MSG A2
7977	041304	012737	000002	003436		MOV #2,E.B2 ;MSG ID FOR EXPECTED MSG B2
7978	041312	012737	000003	003442		MOV #3,E.B3 ;MSG ID FOR EXPECTED MSG B3
7979						
7980	041320	004737	044720			JSR PC,CHKMSG ;CHECK MSGS A0,B0,A1,B1
7981	041324	000003				.WORD T.A2!T.B2!0 ;& MSGS SPECIFIED HERE
7982	041326	104133				ERROR 133 ;MSG A0 ERROR AFTER SEEK CMD
7983	041330	104134				ERROR 134 ;MSG B0 ERROR
7984	041332	104135				ERROR 135 ;MSG A1 ERROR
7985	041334	104136				ERROR 136 ;MSG B1 ERROR
7986	041336	005737	001362			TST CYLDIF
7987	041342	001401				BEQ 66\$
7988	041344	104137				ERROR 137 ;CYL DIFF NOT CLEARED AFTER SEEK CMD
7989						
7990	041346				66\$:	
7991						
7992	041346	012765	100000	000000		MOV #CCLR,RKCS1(R5)
7993	041354	013765	001222	000010		MOV \$UNIT,RKCS2(R5) ;DRIVE#
7994	041362	012765	000005	000000		MOV #CLEAR,RKCS1(R5) ;DRIVE CLEAR CMD
7995	041370	013737	001414	003372		MOV T10,TEMP1
7996	041376	004737	044176			JSR PC,FRDY ;FIND RDY
7997	041402	104151				ERROR 151 ;NO RDY AFTER DRIVE CLEAR CMD
7998	041404	004737	044460			JSR PC,TSTATN ;TEST FOR ATTN
7999	041410	000401				BF 67\$
8000	041412	104154				ERROR 154 ;ATTN NOT CLEARED AFTER DRIVE CLEAR CMD
8001	041414				67\$:	
8002						
8003	041414	012737	010340	003424		MOV #<D!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0 ;EXPECTED MSG A0
8004	041422	005037	003426			CLR E.B0 ;EXPECTED MSG B0
8005	041426	012737	001720	003430		MOV #<D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1 ;EXPECTED A1
8006	041434	012737	000001	003432		MOV #1,E.B1 ;MSG ID FOR EXPECTED MSG B1
8007	041442	005037	003434			CLR E.A2 ;EXPECTED MSG A2
8008	041446	012737	000002	003436		MOV #2,E.B2 ;MSG ID FOR EXPECTED MSG B2
8009	041454	012737	000003	003442		MOV #3,E.B3 ;MSG ID FOR EXPECTED MSG B3
8010						
8011	041462	004737	044720			JSR PC,CHKMSG ;CHECK MSGS A0,B0,A1,B1
8012	041466	000003				.WORD T.A2!T.B2!0 ;& MSGS SPECIFIED HERE
8013	041470	104273				ERROR 273 ;MSG A0 ERROR AFTER DRIVE CLEAR CMD
8014	041472	104265				ERROR 265 ;MSG B0 ERROR
8015	041474	104274				ERROR 274 ;MSG A1 ERROR

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T41 SEEK TO ALL CYLS FROM CYL 410 & READ HEADERS

SEG 0154

8016	041476	104266			ERROR	266		;MSG B1 ERROR
8017								
8018	041500	023737	001364	001352	CMP		CYLADD, TOCYL	
8019	041506	001401			BEQ	35		
8020	041510	104207			ERROR	207		;CYL ADDR IN RKMR3 NOT=RKDC
8021								
8022	041512							
8023	041512	104415			35:			
8024	041514	012706	001100		SCOP1			
8025					MOV		#STACK, SP	;RESTORE STK PTR
8026	041520	004737	046106		JSR		PC, SUBCLR	
8027	041524	104024			ERROR	24		;CERR AFTER SCLR
8028								
8029	041526	005037	001176		CLR		\$ESCAPE	
8030	041532	013765	001352	000020	MOV		TOCYL, RKDC(R5)	;CYL #
8031								
8032								
8033	041540	012700	001674		MOV		#RHTAB, R0	
8034	041544	012765	000025	000000	MOV		#<RDHEAD>, RKCS1(R5)	;READ HEADER CMD
8035	041552	013737	001426	003372	MOV		T50000, TEMP1	;SETUP TIMEOUT
8036	041560	004737	044176		JSR		PC, FRDY	;FIND RDY
8037	041564	104171			ERROR	171		;NO RDY AFTER READ HEADER CMD
8038	041566	032737	100000	003334	BIT		#CERR, HCS1	
8039	041574	001405			BEQ	695		
8040	041576	104174			ERROR	174		;CERR AFTER READ HEADER CMD
8041	041600	104401	056606		TYPE		MSG18	;ABORT BALANCE OF TESTS
8042	041604	000137	043470		JMP		\$EOP	;ABORT DRIVE
8043								
8044	041610	016520	000024		695:		MOV	RKDB(R5), (R0)+ ;1'ST WORD FROM SILO TO RHTAB
8045	041614	016520	000024				MOV	RKDB(R5), (R0)+ ;2'ND WORD
8046	041620	016520	000024				MOV	RKDB(R5), (R0)+ ;3'RD WORD
8047								
8048								
8049	041624	032765	100000	000010	BIT		#DLT, RKCS2(R5)	
8050	041632	001407			BEQ	705		
8051	041634	004737	045534		JSR		PC, GSTAT	
8052	041640	104173			ERROR	173		;DLT AFTER READ HEADER CMD
8053	041642	104401	056606		TYPE		MSG18	;ABORTING BALANCE OF TESTS
8054	041646	000137	043470		JMP		\$EOP	;ABORT DRIVE
8055	041652				705:			
8056								
8057	041652	023737	001674	001352	CMP		RHTAB, TOCYL	;CHECK WORD 0 (CYL#) ONLY
8058	041660	001401			BEQ	685		;BR IF SAME
8059	041662	104310			ERROR	310		;READ CYL WORD HEADER ERROR
8060	041664				685:			
8061								
8062								
8063	041664	104415			SCOP1			
8064	041666	012706	001100		MOV		#STACK, SP	;RESTORE STK PTR
8065								
8066	041672	004737	046106		JSR		PC, SUBCLR	
8067	041676	104024			ERROR	24		;CERR AFTER SCLR
8068								
8069	041700	012737	042704	001176	MOV		#145, \$ESCAPE	
8070	041706	013765	001350	000020	MOV		FRCYL, RKDC(R5)	;RETURN TO CYL #
8071	041714	013737	001350	001354	MOV		FRCYL, CCYL	;CURRENT CYL FOR TRUEERROR ROUTINE

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T41 SEEK TO ALL CYLS FROM CYL 410 & READ HEADERS

SEQ 0155

8072											
8073	041722	012765	000017	000000		MOV	#SEEK,RKCS1(R5)	:SEEK CMD			
8074	041730	013737	001414	003372		MOV	T10,TEMP1	:SETUP TIMEOUT			
8075	041736	004737	044176			JSR	PC,FRDY	:FIND RDY			
8076	041742	104131				ERROR	131	:NO RDY AFTER SEEK CMD			
8077	041744	012737	030140	003424		MOV	#<D.PIP!D.SPIN!D.VV!D.DRA>,E.A0	:EXPECTED A0			
8078	041752	005037	003426			CLR	E.B0				
8079	041756	012737	003720	003430		MOV	#<D.FWD!D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1				
8080	041764	012737	000001	003432		MOV	#1,E.B1				
8081											
8082	041772	004737	044720			JSR	PC,CHKMSG	:CHECK MSGS A0,B0,A1,B1			
8083	041776	000003				.WORD	T.A2!T.B2!0	:& MSGS SPECIFIED HERE			
8084	042000	104203				ERROR	203	:MSG A0 ERROR DURING SEEK CMD			
8085	042002	104204				ERROR	204	:MSG B0 ERROR			
8086	042004	104205				ERROR	205	:MSG A1 ERROR			
8087	042006	104206				ERROR	206	:MSG B1 ERROR			
8088											
8089											
8090	042010	012737	042724	001176	4\$:	MOV	#16\$,SESCAPE				
8091	042016	013737	001424	003372		MOV	T5000,TEMP1	:SETUP TIMEOUT			
8092											
8093	042024	004737	044606			JSR	PC,FATT2	:FIND ATTN			
8094	042030	104132				ERROR	132	:NO ATTN AFTER SEEK CMD			
8095	042032	032737	100000	003334		BIT	#CERR,HCS1				
8096	042040	001401				BEQ	71\$				
8097	042042	104210				ERROR	210	:CERR AFTER SEEK CMD			
8098	042044				71\$:						
8099											
8100	042044	012737	050340	003424		MOV	#<D.DSC!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0	:EXPECTED MSG A0			
8101	042052	005037	003426			CLR	E.B0	:EXPECTED MSG B0			
8102	042056	012737	001720	003430		MOV	#<D.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1	:EXPECTED A1			
8103	042064	012737	000001	003432		MOV	#1,E.B1	:MSG ID FOR EXPECTED MSG B1			
8104	042072	005037	003434			CLR	E.A2	:EXPECTED MSG A2			
8105	042076	012737	000002	003436		MOV	#2,E.B2	:MSG ID FOR EXPECTED MSG B2			
8106	042104	012737	000003	003442		MOV	#3,E.B3	:MSG ID FOR EXPECTED MSG B3			
8107											
8108	042112	004737	044720			JSR	PC,CHKMSG	:CHECK MSGS A0,B0,A1,B1			
8109	042116	000003				.WORD	T.A2!T.B2!0	:& MSGS SPECIFIED HERE			
8110	042120	104133				ERROR	133	:MSG A0 ERROR AFTER SEEK CMD			
8111	042122	104134				ERROR	134	:MSG B0 ERROR			
8112	042124	104135				ERROR	135	:MSG A1 ERROR			
8113	042126	104136				ERROR	136	:MSG B1 ERROR			
8114	042130	005737	001362			TST	CYLDIF				
8115	042134	001401				BEQ	72\$				
8116	042136	104137				ERROR	137	:CYL DIFF NOT CLEARED AFTER SEEK CMD			
8117											
8118	042140				72\$:						
8119											
8120	042140	012765	100000	000000		MOV	#CLR,RKCS1(R5)				
8121	042146	013765	001222	000010		MOV	\$UNIT,RKCS2(R5)	:DRIVE#			
8122	042154	012765	000005	000000		MOV	#CLEAR,RKCS1(R5)	:DRIVE CLEAR CMD			
8123	042162	013737	001414	003372		MOV	T10,TEMP1				
8124	042170	004737	044176			JSR	PC,FRDY	:FIND RDY			
8125	042174	104151				ERROR	151	:NO RDY AFTER DRIVE CLEAR CMD			
8126	042176	004737	044460			JSR	PC,TSTATN	:TEST FOR ATTN			
8127	042202	000401				BR	73\$				

N12

JNIBJS RK06 DRIVE DIAGNOSTIC PART 1
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T41 SEEK TO ALL CYLS FROM CYL 410 & READ HEADERS

SEQ C156

```

8128 042204 104154          ERROR 154          :ATTN NOT CLEARED AFTER DRIVE CLEAR CMD
8129 042206          73$:
8130
8131 042206 012737 010340 003424      MOV      #<0!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0      :EXPECTED MSG A0
8132 042214 005037 003426          CLR      E.B0          :EXPECTED MSG B0
8133 042220 012737 001720 003430      MOV      #<0.SPOK!D.CART!D.DOOR!D.BRHM!D.SSP>,E.A1      :EXPECTED A1
8134 042226 012737 000001 003432      MOV      #1,E.B1          :MSG ID FOR EXPECTED MSG B1
8135 042234 005037 003434          CLR      E.A2          :EXPECTED MSG A2
8136 042240 012737 000002 003436      MOV      #2,E.B2          :MSG ID FOR EXPECTED MSG B2
8137 042246 012737 000003 003442      MOV      #3,E.B3          :MSG ID FOR EXPECTED MSG B3
8138
8139 042254 004737 044720          JSR      PC,CHKMSG          :CHECK MSGS A0,B0,A1,B1
8140 042260 000003          .WORD      T.A2!T.B2!0          :& MSGS SPECIFIED HERE
8141 042262 104273          ERROR      273          :MSG A0 ERROR AFTER DRIVE CLEAR CMD
8142 042264 104265          ERROR      265          :MSG B0 ERROR
8143 042266 104274          ERROR      274          :MSG A1 ERROR
8144 042270 104266          ERROR      266          :MSG B1 ERROR
8145
8146 042272 023737 001364 001350      CMP      CYLADD,FRCYL
8147 042300 001401          BEQ      5$
8148 042302 104243          ERROR      243          :CYL ADDR IN RKMR3 NOT=RKDC
8149
8150 042304          5$:
8151 042304 104415          SCOP1
8152 042306 012706 001100          MOV      #STACK,SP          :RESTORE STK PTR
8153
8154 042312 004737 046106          JSR      PC,SUBCLR
8155 042316 104024          ERROR      24          :CERR AFTER SCLR
8156
8157 042320 005037 001176          CLR      $ESCAPE
8158 042324 013765 001350 000020      MOV      FRCYL,RKDC(R5) ;CYL #
8159
8160
8161 042332 012700 001674          MOV      #RHTAB,R0
8162 042336 012765 000025 000000      MOV      #<RDHEAD>,RKCS1(R5) ;READ HEADER CMD
8163 042344 013737 001426 003372      MOV      T50000,TEMP1 ;SETUP TIMEOUT
8164 042352 004737 044176          JSR      PC,FRDY          :FIND RDY
8165 042356 104171          ERROR      171          :NO RDY AFTER READ HEADER CMD
8166 042360 032737 100000 003334      BIT      #CERR,HCS1
8167 042366 001405          BEQ      75$
8168 042370 104174          ERROR      174          :CERR AFTER READ HEADER CMD
8169 042372 104401 056606          TYPE      MSG18          :ABORT BALANCE OF TESTS
8170 042376 000137 043470          JMP      $EOP          :ABORT DRIVE
8171
8172 042402 016520 000024          75$: MOV      RKDB(R5),(R0)+ ;1'ST WORD FROM SILO TO RHTAB
8173 042406 016520 000024          MOV      RKDB(R5),(R0)+ ;2'ND WORD
8174 042412 016520 000024          MOV      RKDB(R5),(R0)+ ;3'RD WORD
8175
8176
8177 042416 032765 100000 000010      BIT      #DLT,RKCS2(R5)
8178 042424 001407          BEQ      76$
8179 042426 004737 045534          JSR      PC,GSTAT
8180 042432 104173          ERROR      173          :DLT AFTER READ HEADER CMD
8181 042434 104401 056606          TYPE      MSG18          :ABORTING BALANCE OF TESTS
8182 042440 000137 043470          JMP      $EOP          :ABORT DRIVE
8183 042444          76$:

```

B13

JNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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T41 SEEK TO ALL CYLS FROM CYL 410 & READ HEADERS

SEG 0157

00185	042444	023737	001674	001350		CMP	RHTAB.FRCYL	:CHECK WORD 0 (CYL#) ONLY
00186	042452	001401				BEG	745	:BR IF SAME
00187	042454	104311				ERROR	311	:READ CYL WORD HEADER ERROR
00188	042456				745:			
00189								
00190								
00191	042456	023727	001352	000000		CMP	TOCYL, #0	:ALL CYL DONE?
00192	042464	001404				BEG	65	:BR IF YES
00193	042466	005337	001352			DEC	TOCYL	:ELSE DO ANOTHER
00194	042472	000137	041050			JMP	15	
00195	042476				65:			
00196	042476	004737	050036			JSR	PC,SWTST	:SEE IF SW 14 OR 8 IS SET
00197	042502	000520				BR	TST42	:GO TO NEXT TEST
00198								:RETURN HERE IF SW 14 IS SET OR
00199								:SW 8 WITH SWR (7:0) APPLY
00200	042504				85:			
00201								
00202	042504	004737	046106			JSR	PC, SUBCLR	
00203	042510	104024				ERROR	24	:CERR AFTER SCRL
00204								
00205	042512	013765	001352	000020	775:	MOV	TOCYL, RKDC(R5)	:CYL#
00206								
00207	042520	012765	000017	000000		MOV	#SEEK, RKCS1(R5)	:SEEK CMD TO RECONDITION DRIVE.
00208	042526	013737	001414	003372		MOV	T10, TEMP1	:SETUP TIMEOUT
00209	042534	004737	044176			JSR	PC, FRDY	:FIND RDY
00210	042540	104131				ERROR	131	:NO RDY AFTER SEEK CMD.
00211								
00212	042542	013737	001424	003372		MOV	T5000, TEMP1	
00213	042550	004737	044606			JSR	PC, FATT2	:FIND ATTN
00214	042554	104132				ERROR	132	:NO ATTN AFTER SEEK CMD
00215	042556	032737	100000	003334		BIT	#CERR, HCS1	
00216	042564	001401				BEG	795	
00217	042566	104210				ERROR	210	:CERR AFTER SEEK CMD.
00218								
00219	042570	004737	046106		795:	JSR	PC, SUBCLR	
00220	042574	104024				ERROR	24	:CERR AFTER SCRL
00221								
00222	042576	023727	001352	000632		CMP	TOCYL, #410.	:ALL CYL DONE?
00223	042604	001403				BEG	785	:BR IF YES
00224	042606	005237	001352			INC	TOCYL	:ELSE DO ANOTHER
00225	042612	000737				BR	775	
00226								
00227	042614	004737	046106		785:	JSR	PC, SUBCLR	
00228	042620	104024				ERROR	24	:CERR AFTER SCRL
00229								
00230	042622	005037	001176			CLR	SESCAPE	
00231	042626	005737	001410			TST	LPFLG	
00232	042632	001402				BEG	805	
00233	042634	000177	136250			JMP	2SLPERP	:SW 9 WAS SET.
00234	042640	000177	136242		805:	JMP	2SLPADR	:SW 14 OR 8 WAS SET
00235								
00236	042644				105:			
00237	042644	005237	001410			INC	LPFLG	
00238	042650	032777	001000	136262		BIT	#SW9, JSWR	:LOOP ON ERROR?
00239	042656	001312				BNE	85	:YES, RECONDITION DRIVE

ATLAS RAC6 DRIVE DIAGNOSTIC PART 1
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 T41 SEEK TO ALL CYLS FROM CYL 410 & READ HEADERS

SEQ 0158

0240	042660	000137	041216		JMP	25	:RETURN TO MAINLINE
0241	042664			125:	INC	LPFLG	
0242	042664	005237	001410		BIT	#SW9,25..R	:LOOP ON ERROR?
0243	042670	032777	001000	136242	BNE	85	:YES, RECONDITION DRIVE
0244	042676	001302			JMP	35	:RETURN TO MAINLINE
0245	042700	000137	041512				
0246	042704			145:	INC	LPFLG	
0247	042704	005237	001410		BIT	#SW9,2SWR	:LOOP ON ERROR?
0248	042710	032777	001000	136222	BNE	85	:YES, RECONDITION DRIVE
0249	042716	001272			JMP	45	:RETURN TO MAINLINE
0250	042720	000137	042010				
0251	042724			165:	INC	LPFLG	
0252	042724	005237	001410		BIT	#SW9,2SWR	:LOOP ON ERROR?
0253	042730	032777	001000	136202	BNE	85	:YES, RECONDITION DRIVE
0254	042736	001262			JMP	55	:RETURN TO MAINLINE
0255	042740	000137	042304				

042744

CYLINV:

```

*****
*TEST 42      SEEK TO ALL KEY INVALID CYLS
*
*   THIS TEST VERIFIES THAT 'INV ADDR' & 'SEEK INCOMPLETE' IS
*   PRODUCED & THAT HEADS DO NOT MOVE OR UNLOAD IF AN ILLEGAL
*   CYL IS SPECIFIED IN A SEEK.
*
*   INVALID CYLS ARE 411 THRU 511 (10)  IE. 633 THRU 777 (8)
*
*   THIS TEST CHECKS KEY INVALID CYLS 411,412,416,448 & 480
*   FOR A FULL LOGIC TEST
*****

```

0273	042744	000004			ST42: SCOPE		
0274	042746	012737	000001	001174	MOV	#1,STIMES	:DO 1 ITERATION
0275	042754	012706	001100		MOV	#STACK,SP	:RESTORE STK PTR
0276							
0277	042760	004737	046106		JSR	PC,SUBCLR	
0278	042764	104024			ERROR	24	:CERR AFTER SCLR
0279							
0280	042766	012765	000017	000000	MOV	#SEEK,RKCS1(R5)	:SEEK CMD TO RECONDITION DRIVE.
0281	042774	013737	001414	003372	MOV	T10,TEMP1	:SETUP TIMEOUT
0282	043002	004737	044176		JSR	PC,FRDY	:FIND RDY
0283	043006	104131			ERROR	131	:NO RDY AFTER SEEK CMD.
0284							
0285	043010	013737	001424	003372	MOV	T5000,TEMP1	
0286	043016	004737	044606		JSR	PC,FATT2	:FIND ATTN
0287	043022	104132			ERROR	132	:NO ATTN AFTER SEEK CMD
0288	043024	032737	100000	003334	BIT	#CERR,HCS1	
0289	043032	001401			BEQ	645	
0290	043034	104210			ERROR	210	:CERR AFTER SEEK CMD.
0291							
0292	043036	004737	046106		JSR	PC,SUBCLR	
0293	043042	104024			ERROR	24	:CERR AFTER SCLR
0294							
0295	043044	005000			CLR	RC	

D13

UNIBUS R406 DRIVE DIAGNOSTIC PART 1
02R64C.P11 06-00-76 18:09MACY11 27(1006) 06-OCT-76 23:23 PAGE 159
T42 SEEK TO ALL KEY INVALID CILS

SEQ 0159

8296	043046	005037	001350		CLR	FRCYL	;FROM CYL 0
8297							
8298	043052			15:	SCOP1		
8299	043052	104415			MOV	#STACK,SP	;RESTORE STK PTR
8300	043054	012706	001100				
8301							
8302	043060	004737	046106		JSR	PC,SUBCLR	
8303	043064	104024			ERROR	24	;CERR AFTER SCLR
8304							
8305	043066	016037	003304	001352	MOV	INVCYL(R0),TOCYL	;GET INVALID CYL ADDR
8306	043074	013737	001352	001360	MOV	TOCYL,CALDIF	
8307	043102	013765	001352	000020	MOV	TOCYL,RKDC(R5)	
8308	043110	012765	000017	000000	MOV	#SEEK,RKCS1(R5)	;SEEK CMD
8309	043116	012737	000005	003372	MOV	#5,TEMP1	;SETUP 100US TIMEOUT
8310	043124	004737	044176		JSR	PC,FRDY	;FIND RDY
8311	043130	104131			ERROR	131	;NO RDY AFTER SEEK CMD
8312	043132	004737	044460		JSR	PC,TSTATN	
8313	043136	104245			ERROR	245	;NO ATTN AFTER SEEK TO INV CYL
8314							
8315	043140	032737	000040	003364	BIT	#D.IDAE,HMR3	
8316	043146	001001			BNE	25	
8317	043150	104246			ERROR	246	;IDAE NOT SET AFTER SEEK TO INVALID ADDR
8318	043152	032737	000200	003364	25:	BIT	#D.FLT,HMR3
8319	043160	001001			BNE	45	
8320	043162	104247			ERROR	247	;FLT NOT SET AFTER SEEK TO INV ADDR
8321	043164	032737	020000	003362	45:	BIT	#D.PIP,HMR2
8322	043172	001401			BEQ	55	
8323	043174	104250			ERROR	250	;PIP SET AFTER SEEK TO INV ADDR
8324	043176	032737	040000	003362	55:	BIT	#D.DSC,HMR2
8325	043204	001001			BNE	65	
8326	043206	104251			ERROR	251	;DSC NOT SET AFTER SEEK TO INV ADDR
8327							
8328	043210	005237	001462		65:	INC	BYPCERR
8329	043214	012737	050340	003424	MOV	#<D.DSC!D.SPIN!D.DRDY!D.VV!D.DRA>,E.A0	;BYPASS CHECKING FOR CERR IN GSTAT1
8330	043222	012737	002240	003426	MOV	#<D.SKI!D.FLT!D.IDAE>,E.B0	;EXPECTED A0
8331	043230	012737	001720	003430	MOV	#<D.SPOK!D.CART!D.DOR!D.BRHM!D.SSP>,E.A1	
8332	043236	012737	000001	003432	MOV	#1,E.B1	
8333							
8334	043244	004737	044720		JSR	PC,CHKMSG	;CHECK MSGS A0,B0,A1,B1
8335	043250	000003			.WORD	T.A2!T.B2!0	;8 MSGS SPECIFIED HERE
8336	043252	104252			ERROR	252	;MSG A0 ERROR AFTER SEEK TO INV CYL
8337	043254	104253			ERROR	253	;MSG B0 ERROR
8338	043256	104254			ERROR	254	;MSG A1 ERROR
8339	043260	104255			ERROR	255	;MSG B1 ERROR
8340	043262	023737	001362	001352	CMP	CYLDIF,TOCYL	
8341	043270	001401			BEQ	75	
8342	043272	104256			ERROR	256	;CYL DIFF IN RKMR2 NOT=CYL DIF
8343	043274	023737	001364	001352	75:	CMP	CYLADD,TOCYL
8344	043302	001401			BEQ	85	
8345	043304	104257			ERROR	257	;CYL ADDR IN RKMR3 NOT=RKDC
8346							
8347	043306				85:		
8348							
8349	043306	012765	100000	000000	MOV	#CCLR,RKCS1(R5)	
8350	043314	013765	001222	000010	MOV	#UNIT,RKCS2(R5)	
8351	043322	012765	000013	000000	MOV	#RECAL,RKCS1(R5)	;RECAL CMD

E13

JNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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T42 SEEK TO ALL KEY INVALID CYLS

SEQ 0150

8352	043330	013737	001414	003372	MOV	T10,TEMP1	
8353	043336	004737	044176		JSR	PC,FRDY	;FIND RDY
8354	043342	104124			ERROR	124	;RDY NOT FOUND AFTER RECAL CMD
8355							
8356	043344	012765	100000	000000	MOV	#CCLR,RKCS1(R5)	
8357	043352	013765	001222	000010	MOV	\$UNIT,RKCS2(R5)	;DRIVE#
8358	043360	012765	000005	000000	MOV	#CLEAR,RKCS1(R5)	;DRIVE CLEAR CMD
8359	043366	013737	001414	003372	MOV	T10,TEMP1	
8360	043374	004737	044176		JSR	PC,FRDY	;FIND RDY
8361	043400	104151			ERROR	151	;NO RDY AFTER DRIVE CLEAR CMD
8362	043402	004737	044460		JSR	PC,TSTATN	;TEST FOR ATTN
8363	043406	000401			BR	66\$	
8364	043410	104154			ERROR	154	;ATTN NOT CLEARED AFTER DRIVE CLEAR CMD
8365	043412						
8366							
8367							
8368	043412	004737	045534		JSR	PC,GSTAT	
8369	043416	032737	000040	003364	BIT	#D.IDAE,HMR3	;SEE IF IDAE IS CLEARED
8370	043424	001401			BEQ	65\$	;BR IF YES
8371	043426	104155			ERROR	155	;IDAE NOT CLEARED AFTER RECAL CMD
8372							
8373	043430	012765	100000	000000	MOV	#CCLR,RKCS1(R5)	
8374	043436	013737	001412	003374	MOV	T1,TEMP2	;LOOK FOR ATTN FROM RECAL
8375	043444	004737	044512		JSR	PC,FATT1	
8376	043450	104055			ERROR	55	;NO ATTN AFTER RECAL CMD
8377							
8378							
8379	043452	062700	000002		ADD	#2,R0	
8380	043456	020027	000012		CMP	R0,#10.	
8381	043462	001402			BEQ	SEOP	
8382	043464	000137	043052		JMP	1\$	
8383							
8384							

.SETTL END OF PASS ROUTINE

```

*****
; INCREMENT THE PASS NUMBER ($PASS)
; TYPE "END PASS #XXXXX" (WHERE XXXXX IS A DECIMAL NUMBER)
; IF THERES A MONITOR GO TO IT
; IF THERE ISN'T JUMP TO STS

```

SEOP:

```

SCOPE
MOV #STACK, SP
INC $DEVCT      ; INCR COUNT FOR # OF DRIVES THAT ARE CHECKED
CMP DRVS, $DEVCT ; ARE ALL DRIVES PRESENT TESTED?
BEQ SEOP1+2     ; BR IF YES
JMP NUDRV      ; IF NOT, TEST NEXT DRIVE PRESENT

SEOP1: SCOPE
CLR $STNM      ; ZERO THE TEST NUMBER
CLR $TIMES     ; ZERO THE NUMBER OF ITERATIONS
INC $PASS      ; INCREMENT THE PASS NUMBER
BIC #100000, $PASS ; DON'T ALLOW A NEG. NUMBER
DEC (PC)+      ; LOOP?

SEOPCT: .WORD 1
BGT $DOAGN     ; YES
MOV (PC)+, 2(PC)+ ; RESTORE COUNTER

SENDCT: .WORD 1
SEOPCT
TYPE $ENDMG    ; TYPE "END PASS #"
MOV $PASS, -(SP) ; SAVE $PASS FOR TYPEOUT
TYPDS         ; GO TYPE--DECIMAL ASCII WITH SIGN
TYPE $ENULL    ; TYPE A NULL CHARACTER
$GET42: MOV 2#42, R0 ; GET MONITOR ADDRESS
BEQ $DOAGN     ; BRANCH IF NO MONITOR
RESET         ; CLEAR THE WORLD
SENDAD: JSR PC, (R0) ; GO TO MONITOR
NOP           ; SAVE ROOM
NOP           ; FOR
NOP           ; ACT11

$DOAGN: JMP 2(PC)+ ; RETURN

$RTNAD: .WORD STS
$ENULL: .BYTE -1, -1, 0 ; NULL CHARACTER STRING
$ENDMG: .ASCIIZ <15><12>/END PASS #/

```

```

8385 043470 000004
8386 043470 012706 001100
8387 043470 005237 001220
8388 043502 023737 003454 001220
8389 043510 001403
8390 043512 000137 011356
8391 043516 000004
8392 043520 005037 001102
8393 043524 005037 001174
8394 043530 005237 001216
8395 043534 042737 100000 001216
8396 043542 005327
8397 043544 000001
8398 043546 003022
8399 043550 012737
8400 043552 000001
8401 043554 043544
8402 043556 104401 043623
8403 043562 013746 001216
8404 043566 104405
8405 043570 104401 043620
8406 043574 013700 000042
8407 043600 001405
8408 043602 000005
8409 043604 004710
8410 043606 000240
8411 043610 000240
8412 043612 000240
8413 043614
8414 043614 000137
8415 043616 007740
8416 043620 377 377 000
8417 043623 015 042412 042116
8418 043630 050040 051501 020123
8419 043636 000043

```

.SBTTL SUBROUTINES

:SUBROUTINE TO CLEAR ALL FLAGS FROM DDUMP THRU DOTIM

```

CLRFLG: MOV    #DDUMP,R0
          MOV    #-17.,R1
1$:      CLR    (R0)+
          INC    R1
          BNE    1$
          RTS    PC

```

:TYPE PROGRAM ID IF FTITLE=0

```

TITLE:   TST     FTITLE
          BNE     1$
          INC     FTITLE
          TYPE    MSG1
.SBTTL   GET VALUE FOR SOFTWARE SWITCH REGISTER
          TST     #42
          BNE     64$
          CMPB    $ENV,#1
          BEQ     64$
          CMP     SWR,#SWREG
          BNE     65$
          GTSWR
          BR      65$
          BR      65$
          MOVB    #1,$AUTOB
1$:      RTS     PC

```

```

:ROUTINE TO INPUT DRIVE NOS. TYPED IN & SET
:DRIVS, DRIVO-DRIV7 REGISTERS APPROPRIATELY
:

```

```

GDRVS:   RDLIN
          MOV     (SP)+,R0
          MOV     #-8.,R1
          MOV     (R0)+,R2
          BIC     #177400,R2
          MOV     #DRIVO,R3
          MOV     #60,R4
          CMP     R4,R2
          BEQ     3$
          TST     (R3)+
          INC     R4
          CMP     R4,#70
          BNE     2$
          TST     R2
          BNE     4$
          CMP     R1,#-8.
          BEQ     6$
          ;GET STARTING ADDR OF ASCII STRING
          ;SET UP COUNT
          ;GET ASCII CHAR
          ;MASK HI BYTE
          ;DRIVE FLAG ADDR
          ;WAS TYPED CHAR 0 THRU 7?
          ;BRANCH IF YES
          ;NO, INCREMENT DR FLAG ADDR
          ;S/B 0-7 OR TERMINATOR
          ;DEFAULT ALL DRIVES

```

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8430
8431
8432
8433
8434
8435 043640 012700 003444
8436 043644 012701 177757
8437 043650 005020
8438 043652 005201
8439 043654 001375
8440 043656 000207
8441
8442
8443
8444
8445
8446 043660 005737 001344
8447 043664 001024
8448 043666 005237 001344
8449 043672 104401 055116
8450
8451 043676 005737 000042
8452 043702 001012
8453 043704 123727 001230 000001
8454 043712 001406
8455 043714 023727 001140 000176
8456 043722 001005
8457 043724 104406
8458 043726 000403
8459 043730 112737 000001 001134
8460 043736
8461 043736 000207
8462
8463
8464
8465
8466
8467
8468 043740 104411
8469 043742 012600
8470 043744 012701 177770
8471 043750 112002
8472 043752 042702 177400
8473 043756 012703 003456
8474 043762 012704 000060
8475
8476 043766 020402
8477 043770 001415
8478 043772 005723
8479 043774 005204
8480 043776 020427 000070
8481 044002 001371
8482 044004 005702
8483 044006 001022
8484 044010 020127 177770
8485 044014 001426

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H13

JNIBUS RAO6 DRIVE DIAGNOSTIC PART 1
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GET VALUE FOR SOFTWARE SWITCH REGISTER

SEQ 0163

8486	044016	005037	003504	75:	CLR	SIZFLG	;BYPASS TEST 1 (SIZING)
8487	044022	000207			RTS	PC	;FOUND TERMINATOR, EXIT
8488				35:	INC	DR3	;SET UP FLAG FOR THE DRIVE
8489	044024	005213			INC	DRIVS	;INCREMENT TOTAL # DRIVES TO BE TESTED
8490	044026	005237	003454		MOVB	(R0)+,R2	;GET NEXT ASCII CHAR.
8491	044032	112002			BIC	#177400,R2	;MASK
8492	044034	042702	177400		CMP	#54,R2	;IS IT A COMMA?
8493	044040	022702	000054		BEQ	55	;YES, GO TO NEXT WORD.
8494	044044	001407			TST	R2	;NO, IS IT A TERMINATOR?
8495	044046	005702			BNE	45	;IF NOT, SOMETHING WRONG.
8496	044050	001001			BR	75	;FOUND TERMINATOR, EXIT
8497	044052	000761					
8498				45:	TYPE	EMI	;ONLY 0-7 ALLOWED.
8499	044054	104401	057255		JMP	PRGSRT	;START ALL OVER
8500	044060	000137	007146				
8501				55:	INC	R1	;S/B NO MORE THAN 8 DIFF
8502	044064	005201			BNE	15	;DRIVES TYPED IN.
8503	044066	001330			BR	45	;IF MORE, HAVE ERROR.
8504	044070	000771					
8505				65:	INC	SIZFLG	;DO TEST 1 (SIZING)
8506	044072	005237	003504		RTS	PC	;EXIT.
8507	044076	000207					
8508							
8509							
8510							
8511							
8512							
8513	044100	104412		GBA:	RDOCT		
8514	044102	012600			MOV	(SP)+,R0	;GET LOW ORDER FROM STACK
8515	044104	005700			TST	R0	
8516	044106	001403			BEQ	15	;BRANCH IF DEFAULT.
8517	044110	010037	001264		MOV	R0,\$BASE	
8518	044114	000207			RTS	PC	
8519	044116	012737	177440 001264	15:	MOV	#177440,\$BASE	;DEFAULT VALUE
8520	044124	000207			RTS	PC	
8521							
8522							
8523							
8524							
8525							
8526	044126	104412		GINT:	RDOCT		
8527	044130	012600			MOV	(SP)+,R0	;GET LOW ORDER FROM STACK
8528	044132	005700			TST	R0	
8529	044134	001405			BEQ	15	;BRANCH IF DEFAULT
8530	044136	010037	001314		MOV	R0,RKVEC	
8531	044142	004737	044160	25:	JSR	PC,SETINT	
8532	044146	000207			RTS	PC	
8533	044150	012737	000210 001314	15:	MOV	#210,RKVEC	;DEFAULT VALUE
8534	044156	000771			BR	25	
8535							
8536							
8537							
8538							
8539							
8540	044160	013700	001314	SETINT:	MOV	RKVEC,R0	
8541	044164	012720	050556		MOV	#INTER,(R0)+	;INTER ADDR TO RKVEC

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8542 044170 013710 001316      MOV      RKPRI,(R0)      ;PRS TO RKVEC+2
8543 044174 000207      RTS      PC
8544
8545
8546
8547      ;ROUTINE TO FIND CONTROLLER READY (RDY) DURING A DELAY
8548      ;ENTER WITH A COUNT IN TEMP1
8549      ;RETURN IF RDY NOT PRESENT (ERROR CONDITION)
8550      ;RETURN +2 IF RDY PRESENT (SKIP OVER ERROR)
8551      ;STATUS IS OBTAINED BEFORE THE RETURN FOR EITHER CASE
8552
8553 044176 032765 000200 000000  FRDY:  BIT      #RDY,RKCS1(R5)
8554 044204 001310      BNE      1$
8555 044206 005337 003372      DEC      TEMP1
8556 044212 001371      BNE      FRDY
8557 044214 004737 044332      JSR      PC,HOLD      ;STORE ALL RK611 REGS IN HOLDING REGS.
8558 044220 004737 045452      JSR      PC,CKCERR      ;CHECK FOR SPECIAL CERR
8559 044224 000207      RTS      PC      ;NO RDY, EXIT
8560 044226 062716 000002      1$:  ADD      #2,(SP)      ;SKIP OVER ERROR
8561 044232 004737 044332      JSR      PC,HOLD
8562 044236 004737 045452      JSR      PC,CKCERR      ;CHECK FOR SPECIAL CERR
8563 044242 000207      RTS      PC
8564
8565
8566      ;ROUTINE TO FIND CONTROLLER READY & STORE DRIVE REGS ONLY
8567
8568 044244 032765 000200 000000  FRDY1: BIT      #RDY,RKCS1(R5)
8569 044252 001014      BNE      1$
8570 044254 005337 003372      DEC      TEMP1
8571 044260 001371      BNE      FRDY1
8572 044262 016537 000034 003362  MOV      RKMR2(R5),HMR2
8573 044270 016537 000036 003364  MOV      RKMR3(R5),HMR3
8574 044276 004737 045452      JSR      PC,CKCERR      ;CHECK FOR SPECIAL CERR CONDITIONS
8575 044302 000207      RTS      PC      ;NO RDY, EXIT
8576 044304 062716 000002      1$:  ADD      #2,(SP)      ;SKIP OVER ERROR
8577 044310 016537 000034 003362  MOV      RKMR2(R5),HMR2
8578 044316 016537 000036 003364  MOV      RKMR3(R5),HMR3
8579 044324 004737 045452      JSR      PC,CKCERR      ;CHECK FOR SPECIAL CERR CONDITIONS
8580 044330 000207      RTS      PC
8581
8582      ;STORE ALL RK611 REGISTERS IN HOLDING REGS
8583
8584
8585 044332 016537 000000 003334  HOLD:  MOV      RKCS1(R5),HCS1
8586 044340 016537 000010 003336  MOV      RKCS2(R5),HCS2
8587 044346 016537 000002 003340  MOV      RKWC(R5),HWC
8588 044354 016537 000004 003342  MOV      RKBA(R5),HBA
8589 044362 016537 000006 003344  MOV      RKDA(R5),HDA
8590 044370 016537 000012 003346  MOV      RKDS(R5),HDS
8591 044376 016537 000014 003350  MOV      RKER(R5),HER
8592 044404 016537 000016 003352  MOV      RKASOF(R5),HASOF
8593 044412 016537 000020 003354  MOV      RKDC(R5),HDC
8594 044420 016537 000026 003360  MOV      RKMR1(R5),HMR1
8595 044426 016537 000034 003362  MOV      RKMR2(R5),HMR2
8596 044434 016537 000036 003364  MOV      RKMR3(R5),HMR3
8597 044442 016537 000030 003366  MOV      RKECPS(R5),HPOS

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8598 044450 016537 000032 003370      MOV      RKECPT(R5),HPAT
8599 044456 000207      RTS        PC
8600
8601
8602      ; ROUTINE TO CHECK FOR CORRECT ATTN
8603      ; RETURN IF ATTN NOT PRESENT (ERROR CONDITION)
8604      ; RETURN +2 IF ATTN PRESENT (SKIP OVER ERROR)
8605
8606 044460 010446      ;STATN: MOV      R4,-(SP)          ;SAV R4
8607 044462 013704 001222      MOV      $UNIT,R4
8608 044466 136437 003324 003353      BITB     ATTN(R4),HASOF+1
8609 044474 001404      BEQ       1$          ;BRANCH IF ATTN NOT PRESENT
8610 044476 012604      MOV      (SP)+,R4      ;RESTOR R4
8611 044500 062716 000002      ADD      #2,(SP)      ;INCR RET ADDR TO JUMP OVER ERROR.
8612 044504 000207      RTS        PC
8613 044506 012604      1$: MOV      (SP)+,R4      ;RESTOR R4
8614 044510 000207      RTS        PC
8615
8616
8617      ; ROUTINE TO FIND ATTN WITHIN TIMES GREATER THAN 1 SEC
8618      ; ENTER WITH TIME IN SECONDS IN TEMP2
8619      ; RETURN IF NO ATTN (ERROR CONDITION)
8620      ; RETURN +2 IF ATTN FOUND
8621      ; STATUS IS OBTAINED BEFORE THE RETURN FOR EITHER CASE
8622
8623
8624 044512 010446      FATT1: MOV      R4,-(SP)          ;SAV R4
8625 044514 012737 177777 003372      3$: MOV      #-1,TEMP1
8626 044522 013704 001222      MOV      $UNIT,R4
8627 044526 136465 003324 000017      1$: BITB     ATTN(R4),RKASOF+1(R5) ;FIND CORRECT ATTN
8628 044534 001014      BNE       2$
8629 044536 005337 003372      DEC      TEMP1
8630 044542 001371      BNE       1$
8631 044544 005337 003374      DEC      TEMP2
8632 044550 001361      BNE       3$
8633 044552 005065 000026      CLR      RKMR1(R5)      ;SELECT WORD 0
8634 044556 004737 045534      JSR      PC,GSTAT      ;GET LATEST STATUS
8635 044562 012604      MOV      (SP)+,R4      ;RESTOR R4
8636 044564 000207      RTS        PC
8637 044566 005065 000026      2$: CLR      RKMR1(R5)
8638 044572 004737 045534      JSR      PC,GSTAT      ;GET STATUS AFTER ATTN SEEN
8639 044576 012604      MOV      (SP)+,R4      ;RESTOR R4
8640 044600 062716 000002      ADD      #2,(SP)      ;SKIP OVER ERROR
8641 044604 000207      RTS        PC
8642
8643
8644      ; ROUTINE TO FIND ATTN WITHIN 1 SEC
8645      ; ENTER WITH COUNT IN TEMP1
8646      ; RETURN IF NO ATTN (ERROR)
8647      ; RETURN +2 IF ATTN FOUND
8648      ; STATUS IS OBTAINED BEFORE THE RETURN FOR EITHER CASE
8649
8650
8651 044606 010446      FATT2: MOV      R4,-(SP)          ;SAV R4
8652 044610 013704 001222      2$: MOV      $UNIT,R4
8653 044614 136465 003324 000017      BITB     ATTN(R4),RKASOF+1(R5) ;FIND CORRECT ATTN

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K13

UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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GET VALUE FOR SOFTWARE SWITCH REGISTER

SEQ 0166

8654	044622	001011		BNE	15	
8655	044624	005337	003372	DEC	TEMP1	
8656	044630	001367		BNE	25	
8657	044632	005065	000026	CLR	RKMRI(R5)	;SELECT WORD 0
8658	044636	004737	045534	JSR	PC,GSTAT	;GET LATEST STATUS.
8659	044642	012604		MOV	(SP)+,R4	;RESTOR R4
8660	044644	000207		RTS	PC	
8661	044646	005065	000026	15: CLR	RKMRI(R5)	
8662	044652	004737	045534	JSR	PC,GSTAT	
8663	044656	012604		MOV	(SP)+,R4	;RESTOR R4
8664	044660	062716	000002	ADD	#2,(SP)	;SKIP OVER ERROR
8665	044664	000207		RTS	PC	
8666						
8667						
8668						
8669						
8670						
8671	044666	005737	003372	DLY: TST	TEMP1	:5.6 US
8672	044672	001403		BEQ	15	:2.5 US
8673	044674	005337	003372	DEC	TEMP1	:6.8 US
8674	044700	000772		BR	DLY	:2.5 US
8675	044702	000207		15: RTS	PC	:3.8 US
8676						
8677						
8678						
8679						
8680	044704	104401	056516	BYP: TYPE	MSG14	;BYPASS DRIVE
8681	044710	010046		MOV	RO,-(SP)	;SAVE RO FOR TYPEOUT
8682						;TYPE DR#
8683	044712	104403		TYPOS		;GO TYPE--OCTAL ASCII
8684	044714	001		.BYTE	1	;TYPE 1 DIGIT(S)
8685	044715	000		.BYTE	0	;SUPPRESS LEADING ZEROS
8686	044716	000207		RTS	PC	
8687						
8688						
8689						
8690	044720	017637	000000 001466	CHKMSG: MOV	2(SP),CHKFLG	;PASS MSGS TO BE TESTED
8691	044726	062716	000002	ADD	#2,(SP)	;BUMP RETURN ADDR TO 1ST ERROR
8692	044732	004737	045576	JSR	PC,GSTAT1	;GET ALL ACTUAL DRIVE & CONTR STATUS
8693						
8694	044736	053737	001222 003424	BIS	\$UNIT,E.A0	;SET UNIT #
8695	044744	053737	001222 003430	BIS	\$UNIT,E.A1	
8696	044752	053737	001222 003434	BIS	\$UNIT,E.A2	
8697	044760	053737	001222 003440	BIS	\$UNIT,E.A3	
8698						
8699	044766	013746	003372	MOV	TEMP1,-(SP)	;SAVE TEMP 1
8700						
8701	044772	013737	003424 003372	MOV	E.A0,TEMP1	
8702	045000	004737	047732	JSR	PC,SBPAR	;GET PARITY FOR MSG A0
8703	045004	013737	003372 003424	MOV	TEMP1,E.A0	
8704						
8705	045012	013737	003430 003372	MOV	E.A1,TEMP1	
8706	045020	004737	047732	JSR	PC,SBPAR	;GET PARITY FOR MSG A1
8707	045024	013737	003372 003430	MOV	TEMP1,E.A1	
8708						
8709	045032	013737	003434 003372	MOV	E.A2,TEMP1	

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UNIBUS Rk06 DRIVE DIAGNOSTIC PART 1
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SEQ 0167

8710	045040	004737	047732		JSR	PC,SBPAR	;GET PARITY FOR MSG A2
8711	045044	013737	003372	003434	MOV	TEMP1,E.A2	
8712							
8713	045052	013737	003426	003372	MOV	E.B0,TEMP1	
8714	045060	004737	047732		JSR	PC,SBPAR	;GET PARITY FOR MSG B0
8715	045064	013737	003372	003426	MOV	TEMP1,E.B0	
8716							
8717	045072	013737	003432	003372	MOV	E.B1,TEMP1	
8718	045100	004737	047732		JSR	PC,SBPAR	;GET PARITY FOR MSG B1
8719	045104	013737	003372	003432	MOV	TEMP1,E.B1	
8720							
8721	045112	013737	003436	003372	MOV	E.B2,TEMP1	
8722	045120	004737	047732		JSR	PC,SBPAR	;GET PARITY FOR MSG B2
8723	045124	013737	003372	003436	MOV	TEMP1,E.B2	
8724							
8725	045132	013737	003442	003372	MOV	E.B3,TEMP1	
8726	045140	004737	047732		JSR	PC,SBPAR	;GET PARITY FOR MSG B3
8727	045144	013737	003372	003442	MOV	TEMP1,E.B3	
8728							
8729	045152	012637	003372		MOV	(SP)+,TEMP1	;RESTORE TEMP 1
8730	045156	013737	001176	001172	MOV	\$ESCAPE,\$TMP5	;SAVE ESCAPE
8731							
8732	045164	023737	003404	003424	CMP	H.A0,E.A0	;TEST MSG A0
8733	045172	001411			BEG	2\$	;BR IF OK
8734	045174	012737	045206	001176	MOV	#1\$, \$ESCAPE	;ELSE SETUP ESCAPE
8735	045202	011646			MOV	(SP),-(SP)	;COPY RET ADDR
8736	045204	000207			RTS	PC	; & RETURN TO MAINLINE ERROR
8737							
8738	045206	032777	001000	133724	1\$: BIT	#SW9,\$SWR	;RET HERE FROM MAINLINE ERROR
8739	045214	001107			BNE	20\$	; & BR IF LOOP ON ERROR
8740	045216	062716	000002		2\$: ADD	#2,(SP)	;BUMP RET ADDR TO NEXT ERROR
8741							
8742	045222	023737	003406	003426	CMP	H.B0,E.B0	;TEST MSG B0
8743	045230	001411			BEG	5\$	;BR IF OK
8744	045232	012737	045244	001176	MOV	#4\$, \$ESCAPE	;ELSE SETUP ESCAPE
8745	045240	011646			MOV	(SP),-(SP)	;COPY RET ADDR
8746	045242	000207			RTS	PC	; & RETURN TO MAINLINE ERROR
8747							
8748	045244	032777	001000	133666	4\$: BIT	#SW9,\$SWR	;RETURN HERE FROM MAINLINE ERROR
8749	045252	001070			BNE	20\$	; & BR IF LOOP ON ERROR
8750	045254	062716	000002		5\$: ADD	#2,(SP)	;BUMP RET ADDR TO NEXT ERROR
8751							
8752	045260	023737	003410	003430	CMP	H.A1,E.A1	;TEST MSG A1
8753	045266	001411			BEG	8\$	;BR IF OK
8754	045270	012737	045302	001176	MOV	#7\$, \$ESCAPE	
8755	045276	011646			MOV	(SP),-(SP)	
8756	045300	000207			RTS	PC	
8757							
8758	045302	032777	001000	133630	7\$: BIT	#SW9,\$SWR	
8759	045310	001051			BNE	20\$	
8760	045312	062716	000002		8\$: ADD	#2,(SP)	
8761							
8762	045316	023737	003412	003432	CMP	H.B1,E.B1	;TEST MSG B1
8763	045324	001411			BEG	11\$	;BR IF OK
8764	045326	012737	045340	001176	MOV	#10\$, \$ESCAPE	
8765	045334	011646			MOV	(SP),-(SP)	

M13

UNIBUS RKO6 DRIVE DIAGNOSTIC PART 1
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SEQ 0168

8766	045336	000207				RTS	PC	
8767								
8768	045340	032777	001000	133572	10\$:	BIT	#SW9,JSWR	
8769	045346	001032				BNE	20\$	
8770	045350	062716	000002		11\$:	ADD	#2,(SP)	
8771								
8772	045354	032737	000001	001466	12\$:	BIT	#T.A2,CHKFLG	;TEST MSG A2?
8773	045362	001402				BEQ	13\$	;BR IF NO
8774	045364	004737	046546			JSR	PC,RCYLD	;PUT INFO IN CYLDIF, DO NOT CHECK
8775								
8776	045370	032737	000002	001466	13\$:	BIT	#T.B2,CHKFLG	;TEST MSG B2?
8777	045376	001402				BEQ	14\$	;BR IF NO
8778	045400	004737	046620			JSR	PC,RCYLA	;PUT INFO IN CYLADD, DO NOT CHECK
8779								
8780	045404	032737	000004	001466	14\$:	BIT	#T.B3,CHKFLG	;TEST MSG B3?
8781	045412	001404				BEQ	15\$	
8782	045414	004737	046656			JSR	PC,RSEC	;PUT INFO IN SECTOR, DO NOT CHECK
8783	045420	004737	046714			JSR	PC,RHEAD	;PUT INFO IN HEAD, DO NOT CHECK
8784								
8785	045424	013737	001172	001176	15\$:	MOV	\$TMP5,\$ESCAPE	;RESTORE ESCAPE
8786	045432	000207				RTS	PC	
8787								
8788	045434	012706	001100		20\$:	MOV	#STACK,SP	;RESET STACK PTR
8789	045440	013737	001172	001176		MOV	\$TMP5,\$ESCAPE	;RESTORE ESCAPE
8790	045446	000177	133436			JMP	\$SLPERR	

N13

UNIBUS RKO6 DRIVE DIAGNOSTIC PART 1
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SEQ 0169

8791

B14

UNIBUS RND6 DRIVE DIAGNOSTIC PART 1
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GET VALUE FOR SOFTWARE SWITCH REGISTER

SEQ 0170

8792
8793

: THIS ROUTINE CHECKS FOR CERTAIN ERROR CONDITIONS ONLY

C14

UNIBUS RAO6 DRIVE DIAGNOSTIC PART 1
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GET VALUE FOR SOFTWARE SWITCH REGISTER

SEQ 017:

0794
0795
0796
0797
0798

045452 005737 001462
045456 001025
045460 032737 100000 003334

; IE: IF NED, CTO OR MDS SET, MSG A&B ARE INVALID

CKCERR: TST BYPCERR
3NE 48
BIT #CERR.HCS:

D14

UNIBUS RAO6 DRIVE DIAGNOSTIC PART 1
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SEG C172

8799	045466	001001				BNE	18		:BR IF CERR
8800	045470	000207				RTS	PC		
8801									
8802	045472	032737	004000	003334	18:	BIT	#CT0,HCS1		
8803	045500	001402				BEQ	28		:BR IF NOT CTO
8804	045502	104326				ERROR	326		:CTO ERROR. MSG A&B INVALID
8805	045504	000207				RTS	PC		
8806									
8807	045506	032737	010000	003336	28:	BIT	#NED,HCS2		

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SEG 0173

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0008 045514 001401 BEQ 35 :BR IF NOT NED
0009 045516 104327 ERROR 327 :NED ERROR, MSG A&B INVALID
0010
0011 045520 032737 001000 003336 35: BIT #MDS,HCS2
0012 045526 001401 SEQ 45
0013 045530 104330 ERROR 030 :MDS ERROR, MSG A&B INVALID
0014
0015 045532 000207 45: RTS PC
0016
0017
0018 :THIS ROUTINE DOES THE SELECT DRIVE CMD TO GET STATUS
0019 :IT THEN WAITS FOR CONTROLLER READY.
0020 :IF RDY NOT RECEIVED BY A TIMEOUT, AN ERROR IS FLAGGED
0021
0022 GSTAT: MOV TEMP1,-(SP) :SAVE TEMP1
0023 045534 013746 003372 MOV $UNIT,RKCS2(R5) :CURRENT DRIVE #
0024 045540 013755 001222 000010 MOV #SELDV,RKCS1(R5) ;GET STATUS WITH SELECT DRIVE CMD
0025 045546 012765 000001 000000 MOV T10,TEMP1
0026 045554 013737 001414 003372 JSR PC,FRDY :FIND RDY
0027 045562 004737 044176 ERROR 117 :RDY NOT SET BY END OF SELECT DRIVE CMD
0028 045566 104117 MOV (SP)+,TEMP1 :RESTOR TEMP1
0029 045570 012637 003372 RTS
0030 045574 000207 PC
0031

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F14

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SEG 0174

8831
8832
8833

:
: THIS ROUTINE GETS STATUS OF ALL DRIVE REGISTERS (MSG A0-A3, B0-B3,
: & ALL CONTROLLER REGISTERS

G14

UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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SEQ 0175

8834						
8835	045576	013746	003372		STAT1: MOV	TEMP1, -(SP) ;SAVE TEMP 1
8836	045602	004737	044332		JSR	PC, HOLD ;GET ALL CONTR REGS
8837	045606	012765	100000	000000	MOV	#CLR, RKCS1(R5) ;CLEAR CONTR
8838	045614	013765	001222	000010	MOV	\$UNIT, RKCS2(R5) ;CURRENT DRIVE #
8839	045622	012765	000003	000026	MOV	#3, RKMR1(R5) ;SELECT WORD 3
8840	045630	012765	000001	000000	MOV	#SELDRV, RKCS1(R5) ;GET STATUS
8841	045636	013737	001414	003372	MOV	T10, TEMP1
8842	045644	004737	044244		JSR	PC, FRDY1 ;FIND RDY & STORE DRIVE REGS ONLY
8843	045650	104117			ERROR	117 ;RDY NOT SET BY END OF SELECT DRV CMD
8844	045652	013737	003362	003420	MOV	HMR2, H.A3 ;STORE MSG A3
8845	045660	013737	003364	003422	MOV	HMR3, H.B3 ;STORE MSG B3
8846						
8847	045666	012765	100000	000000	MOV	#CLR, RKCS1(R5)
8848	045674	013765	001222	000010	MOV	\$UNIT, RKCS2(R5)
8849	045702	012765	000002	000026	MOV	#2, RKMR1(R5) ;SELECT WORD 2
8850	045710	012765	000001	000000	MOV	#SELDRV, RKCS1(R5)
8851	045716	013737	001414	003372	MOV	T10, TEMP1
8852	045724	004737	044244		JSR	PC, FRDY1 ;FIND RDY & STORE DRIVE REGS ONLY
8853	045730	104117			ERROR	117 ;RDY NOT SET BY END OF SELECT DRV CMD
8854	045732	013737	003362	003414	MOV	HMR2, H.A2 ;STORE MSG A2
8855	045740	013737	003364	003416	MOV	HMR3, H.B2 ;STORE MSG B2
8856						
8857	045746	012765	100000	000000	MOV	#CLR, RKCS1(R5)
8858	045754	013765	001222	000010	MOV	\$UNIT, RKCS2(R5)
8859	045762	012765	000001	000026	MOV	#1, RKMR1(R5) ;SELECT WORD 1
8860	045770	012765	000001	000000	MOV	#SELDRV, RKCS1(R5)
8861	045776	013737	001414	003372	MOV	T10, TEMP1
8862	046004	004737	044244		JSR	PC, FRDY1 ;FIND RDY & STORE DRIVE REGS ONLY
8863	046010	104117			ERROR	117 ;RDY NOT SET BY END OF SELECT DRV CMD
8864	046012	013737	003362	003410	MOV	HMR2, H.A1 ;STORE MSG A1
8865	046020	013737	003364	003412	MOV	HMR3, H.B1 ;STORE MSG B1
8866						
8867	046026	012765	100000	000000	MOV	#CLR, RKCS1(R5)
8868	046034	013765	001222	000010	MOV	\$UNIT, RKCS2(R5)
8869	046042	012765	000001	000000	MOV	#SELDRV, RKCS1(R5) ;SELECT WORD 0
8870	046050	013737	001414	003372	MOV	T10, TEMP1
8871	046056	004737	044244		JSR	PC, FRDY1 ;FIND RDY & STORE DRIVE REGS ONLY
8872	046062	104117			ERROR	117 ;RDY NOT SET BY END OF SEL DRV CMD
8873	046064	013737	003362	003404	MOV	HMR2, H.A0 ;STORE MSG A0
8874	046072	013737	003364	003406	MOV	HMR3, H.B0 ;STORE MSG B0
8875						
8876	046100	012637	003372		MOV	(SP)+, TEMP1 ;RESTORE TEMP1
8877	046104	000207			RTS	PC
8878						
8879						
8880						
8881						
8882						
8883						
8884						
8885						
8886	046106	012765	000040	000010	SUBCLR: MOV	#SCLR, RKCS2(R5) ;SUBSYS CLEAR
8887	046114	013737	001414	003372	MOV	T10, TEMP1
8888	046122	004737	044176		JSR	PC, FRDY ;FIND RDY
8889	046126	104120			ERROR	120 ;RDY NOT SET BY END OF SCLR

; THIS ROUTINE DOES A SUBSYSTEM CLEAR & WAITS FOR CONTROLLER READY
 ; IF RDY IS NOT RECEIVED BY THE END OF THE TIMEOUT, AN ERROR IS FLAGGED.
 ; THE ROUTINE THEN GETS CURRENT STATUS & CHECKS FOR CONTROLLER ERROR (CERR)
 ; RETURN IF CERR SET
 ; RETURN +2 IF CERR CLEAR

H14

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SEQ 0176

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8890 046130 013765 001222 000010      MOV    $UNIT,RKCS2(R5) ;CURRENT DRIVE #
8891 046136 005065 000026      CLR    RKMR1(R5)      ;SELECT WORD 0
8892 046142 004737 045534      JSR    PC,GSTAT      ;GET STATUS
8893 046146 032737 100000 003334      BIT    #CERR,HCS1    ;CHECK FOR CONT ERROR
8894 046154 001401      BEQ    1$
8895 046156 000207      RTS    PC
8896 046160 062716 000002      1$:    ADD    #2,(SP)      ;SKIP OVER ERROR
8897 046164 000207      RTS    PC
8898
8899
8900      ;READ THE SECTOR COUNT IN RKMR3, RIGHT JUSTIFY IT & STORE IT IN 'SECTOR'
8901
8902 046166 012765 000003 000026  RDSEC:  MOV    #3,RKMR1(R5) ;WORD 3
8903 046174 004737 045534      JSR    PC,GSTAT
8904 046200 013737 003364 001406      MOV    HMR3,SECTOR
8905 046206 042737 177017 001406      BIC    #C<M.SECT>,SECTOR
8906 046214 006237 001406      ASR    SECTOR      ;RIGHT JUSTIFY
8907 046220 006237 001406      ASR    SECTOR      ;SECTOR
8908 046224 006237 001406      ASR    SECTOR      ;INFO
8909 046230 006237 001406      ASR    SECTOR
8910 046234 000207      RTS    PC
8911
8912
8913
8914      ;FIND SECTOR 0 IN 22 SECTOR FORMAT.
8915      ;ERROR FLAGGED IF NOT FOUND BY TIMEOUT
8916
8917 046236 013746 003372      FS022: MOV    TEMP1,-(SP) ;SAVE TEMP1
8918 046242 013737 001424 003372      MOV    T5000,TEMP1 ;SETUP TIMEOUT
8919 046250 004737 046166      1$:    JSR    PC,RDSEC    ;READ SECTOR
8920 046254 005737 001406      TST    SECTOR      ;LOOK FOR SECTOR 0
8921 046260 001005      BNE    2$
8922 046262 004737 046166      JSR    PC,RDSEC
8923 046266 005737 001406      TST    SECTOR
8924 046272 001406      BEQ    3$          ;BR IF SAME TWICE
8925 046274 005337 003372      2$:    DEC    TEMP1
8926 046300 001363      BNE    1$          ;TRY AGAIN IF TIMEOUT NOT UP
8927 046302 012637 003372      MOV    (SP)+,TEMP1 ;ELSE RESTORE TEMP1
8928 046306 000207      RTS    PC          ;EXIT
8929 046310 012637 003372      3$:    MOV    (SP)+,TEMP1
8930 046314 062716 000002      ADD    #2,(SP)      ;SKIP OVER ERROR
8931 046320 000207      RTS    PC
8932
8933
8934      ;FIND NEXT SECTOR IN 22 SECTOR FORMAT
8935      ;ERROR FLAGGED IF NOT FOUND BY TIMEOUT
8936
8937 046322 013746 003372      FNS22: MOV    TEMP1,-(SP) ;SAVE TEMP 1
8938 046326 013737 001420 003372      MOV    T500,TEMP1 ;SETUP TIMEOUT
8939 046334 004737 046166      1$:    JSR    PC,RDSEC    ;READ SECTOR
8940 046340 023737 001402 001406      CMP    PSEC,SECTOR
8941 046346 001406      BEQ    3$          ;BR IF SAME
8942 046350 004737 046166      JSR    PC,RDSEC    ;ELSE TRY READ DIFFERENT TWICE
8943 046354 023737 001402 001406      CMP    PSEC,SECTOR
8944 046362 001006      BNE    2$
8945 046364 005337 003372      3$:    DEC    TEMP1

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SEQ 0177

8946	046370	001361			BNE	15	
8947	046372	012637	003372		MOV	(SP)+,TEMP1	;RESTORE TEMP 1
8948	046376	000207			RTS	PC	
8949	046400	012637	003372		25: MOV	(SP)+,TEMP1	;RESTORE TEMP 1
8950	046404	062716	000002		ADD	#2,(SP)	;SKIP OVER ERROR
8951	046410	000207			RTS	PC	
8952							
8953							
8954							
8955	046412	012765	000002	000026	RD CYLD: MOV	#2,RKMR1(R5)	;WORD 2
8956	046420	004737	045534		JSR	PC,GSTAT	
8957	046424	013737	003362	001362	MOV	HMR2,CYLDIF	
8958	046432	042737	160017	001362	BIC	#1C<H.CDIF>,CYLDIF	
8959	046440	006237	001362		ASR	CYLDIF	;RIGHT JUSTIFY
8960	046444	006237	001362		ASR	CYLDIF	;CYL DIFF/OFFSET
8961	046450	006237	001362		ASR	CYLDIF	;INFO
8962	046454	006237	001362		ASR	CYLDIF	
8963	046460	023727	001362	000777	CMP	CYLDIF,#777	;CHK TO SEE IF RET IN COMPL. FORM
8964	046466	001002			BNE	15	;BR IF NOT
8965	046470	005037	001362		CLP	CYLDIF	;CLR IF YES

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8966 046474 000207 1S: RTS PC
8967
8968 ; READ THE CYL ADDR IN RKMR3, RIGHT JUSTIFY IT & STORE IT IN 'CYLADD'
8969
8970 046476 012765 000002 000026 RDCYLA: MOV #2,RKMR1(R5) ;WORD 2
8971 046504 004737 045534 JSR PC,GSTAT
8972 046510 013737 003364 001364 MOV HMR3,CYLADD
8973 046516 042737 160017 001364 BIC #1C<M.CADD>,CYLADD
8974 046524 006237 001364 ASR CYLADD ;RIGHT JUSTIFY
8975 046530 006237 001364 ASR CYLADD ;CYL ADDR
8976 046534 006237 001364 ASR CYLADD ;INFO
8977 046540 006237 001364 ASR CYLADD
8978 046544 000207 RTS PC
8979
8980 ; READ THE CYL DIFF/OFFSET IN H.A2, RIGHT JUSTIFY IT & STORE IT IN 'CYLDIF'
8981
8982 046546 013737 003414 001362 RCYLD: MOV H.A2,CYLDIF
8983 046554 042737 160017 001362 BIC #1C<M.CDIF>,CYLDIF ;CLEAR UNWANTED INFO
8984 046562 006237 001362 ASR CYLDIF ;RIGHT JUSTIFY
8985 046566 006237 001362 ASR CYLDIF
8986 046572 006237 001362 ASR CYLDIF
8987 046576 006237 001362 ASR CYLDIF
8988 046602 023727 001362 000777 CMP CYLDIF,#777 ;CHK TO SEE IF RET IN COMPL. FORM
8989 046610 001002 BNE 1S ;BR IF NO
8990 046612 005037 001362 CLR CYLDIF ;ELSE CLEAR
8991 046616 000207 1S: RTS PC
8992
8993 ; READ THE CYL ADDR IN H.B2, RIGHT JUSTIFY IT & STORE IT IN 'CYLADD'
8994
8995 046620 013737 003416 001364 RCYLA: MOV H.B2,CYLADD
8996 046626 042737 160017 001364 BIC #1C<M.CADD>,CYLADD ;CLEAR UNWANTED INFO
8997 046634 006237 001364 ASR CYLADD ;RIGHT JUSTIFY
8998 046640 006237 001364 ASR CYLADD
8999 046644 006237 001364 ASR CYLADD
9000 046650 006237 001364 ASR CYLADD
9001 046654 000207 RTS PC
9002
9003 ; READ THE SECTOR COUNT IN H.B3, RIGHT JUSTIFY IT & STORE IT IN 'SECTOR'
9004
9005 046656 013737 003422 001406 RSEC: MOV H.B3,SECTOR
9006 046664 042737 177017 001406 BIC #1C<M.SECT>,SECTOR ;CLEAR UNWANTED INFO
9007 046672 006237 001406 ASR SECTOR ;RIGHT JUSTIFY
9008 046676 006237 001406 ASR SECTOR
9009 046702 006237 001406 ASR SECTOR
9010 046706 006237 001406 ASR SECTOR
9011 046712 000207 RTS PC
9012
9013 ; READ THE HEAD ADDR IN H.B3, RIGHT IT & STORE IT IN 'HEADR'
9014
9015 046714 013737 003422 001432 RHEAD: MOV H.B3,HEADR
9016 046722 042737 170777 001432 BIC #1C<M.HEAD>,HEADR ;CLEAR UNWANTED INFO
9017 046730 006237 001432 ASR HEADR ;RIGHT JUSTIFY IT
9018 046734 000337 001432 SWAB HEADR
9019 046740 000207 RTS PC
9020
9021 ;FIND LIMIT DETECT ON SEEK IN RKMR3 BEFORE TIMEOUT

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9022      ;RETURN IF NOT FOUND: ERROR
9023      ;RETURN+2 IF FOUND: SKIP OVER ERROR
9024
9025      046742 005037 001460      FLIM: CLR      LIMERROR      ;LIMIT DETECT ERROR FLAG
9026      046746 012737 000764 003372  MOV      #500.,TEMP1      ;SETUP TIMEOUT
9027      046754 012765 000001 000026  MOV      #1,RKMR1(R5)      ;WORD 1
9028      046762 004737 045534      1$: JSR      PC,GSTAT
9029      046766 032737 020000 003364  BIT      #D.LIMD,HMR3
9030      046774 001006      BNE      2$      ;EXIT IF SET
9031      046776 005337 003372      DEC      TEMP1
9032      047002 001367      BNE      1$
9033      047004 005237 001460      INC      LIMERROR      ;SET LIMIT DETECT FLAG
9034      047010 000207      RTS      PC
9035      047012 062716 000002      2$: ADD      #2,(SP)      ;SKIP OVER ERROR
9036      047016 000207      RTS      PC
9037
9038      ;ROUTINE TO FIND HEADS HOME IN RKMR2 WORD 1 BEFORE TIMEOUT
9039      ;ENTER WITH TIME IN SECONDS IN TEMP2
9040      ;RETURN IF NOT FOUND
9041      ;RETURN+2 IF FOUND - SKIP OVER ERROR
9042
9043      047020 012737 177777 003372  FHDHM: MOV      #-1,TEMP1      ;ALL 1'S
9044      047026 012765 000001 000026  MOV      #1,RKMR1(R5)      ;WORD 1
9045      047034 004737 045534      1$: JSR      PC,GSTAT
9046      047040 032737 000040 003362  BIT      #D.HDHM,HMR2
9047      047046 001007      BNE      2$
9048      047050 005337 003372      DEC      TEMP1
9049      047054 001367      BNE      1$
9050      047056 005337 003374      DEC      TEMP2
9051      047062 001356      BNE      FHDHM
9052      047064 000207      RTS      PC
9053      047066 062716 000002      2$: ADD      #2,(SP)      ;SKIP OVER ERROR
9054      047072 000207      RTS      PC
9055
9056      ;ROUTINE TO FIND LOAD HEADS IN RKMR2 WORD 1 BEFORE TIMEOUT
9057      ;RETURN IF NOT FOUND
9058      ;RETURN+2 IF FOUND: SKIP OVER ERROR
9059
9060      047074 012737 177777 003372  FLOAD: MOV      #-1,TEMP1      ;SETUP TIMEOUT
9061      047102 012765 000001 000026  MOV      #1,RKMR1(R5)      ;WORD 1
9062      047110 004737 045534      1$: JSR      PC,GSTAT
9063      047114 032737 010000 003362  BIT      #D.LOAD,HMR2
9064      047122 001004      BNE      2$
9065      047124 005337 003372      DEC      TEMP1
9066      047130 001367      BNE      1$
9067      047132 000207      RTS      PC
9068      047134 062716 000002      2$: ADD      #2,(SP)      ;SKIP OVER ERROR
9069      047140 000207      RTS      PC
9070
9071      ;FILL HEADER TABLE WITH 66 WORDS OF VALID HEADERS
9072      ;ENTER WITH CYL # IN 'CALADD'
9073      ;ENTER WITH HEAD # IN 'HEAD'
9074      ;ENTER WITH FORMAT IN 'FORMAT'
9075
9076      047142 010046      FHDTAB: MOV      R0,-(SP)      ;SAV R0
9077      047144 010146      MOV      R1,-(SP)      ;SAV R1

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9078 047146 012700 001470      MOV      #HDTAB,R0      ;HEADER WORD TABLE ADDR
9079 047152 005001              CLR      R1              ;SECTOR COUNTER
9080 047154 013737 001430 001434  MOV      HEAD,H01
9081 047162 006337 001434      ASL      H01
9082 047166 006337 001434      ASL      H01
9083 047172 006337 001434      ASL      H01
9084 047176 006337 001434      ASL      H01
9085 047202 006337 001434      ASL      H01      ;SETUP HEAD # FOR WORD 2 OF HEADER
9086 047206 013737 001436 001440  MOV      FORMAT,FMT1
9087 047214 000337 001440      SWAB     FMT1
9088 047220 006337 001440      ASL      FMT1      ;SETUP FORMAT FOR WORD 2 OF HEADER
9089
9090 047224 013720 001366      1$:  MOV      CALADD,(R0)+      ;HEADER WORD 1-CYL ADDR
9091 047230 010110              MOV      R1,(R0)      ;HEADER WORD 2-SECTOR NO
9092 047232 053710 001434      BIS      H01,(R0)      ;
9093 047236 053710 001440      BIS      FMT1,(R0)      ;
9094 047242 005737 001464      TST      BYPFMT      ;
9095 047246 001403              BEQ      2$      ;BR IF TRUE FORMAT
9096 047250 052710 140000      BIS      #<BIT14!BIT15>,(R0)      ;SET GOOD SECTOR FLAGS
9097 047254 000402              BR       3$
9098 047256 004737 047236      2$:  JSR      PC,SECFLG      ;GET SECTOR FLAGS
9099
9100 047262 013737 001366 003372  3$:  MOV      CALADD,TEMP1
9101 047270 011037 003374      MOV      (R0),TEMP2
9102 047274 043737 001366 003374  BIC      CALADD,TEMP2
9103 047302 042037 003372      BIC      (R0)+,TEMP1
9104 047306 053737 003372 003374  BIS      TEMP1,TEMP2
9105 047314 013720 003374      MOV      TEMP2,(R0)+      ;HEADER WORD 3-HEADER CHECK
9106
9107 047320 005201              INC      R1      ;SECTOR CTR
9108 047322 020127 000026      CMP      R1,#22      ;ALL 22 SECTORS DONE? (66 WORDS)
9109 047326 001336              BNE      1$      ;BR IF NO
9110
9111 047330 012601              MOV      (SP)+,R1      ;RESTOR R1
9112 047332 012600              MOV      (SP)+,R0      ;RESTOR R0
9113 047334 000207              RTS      PC
9114
9115
9116      ; THIS ROUTINE GETS INFORMATION FROM THE BAD SECTOR TABLE FILLED BY A PREVIOUS TEST
9117      ; & SETS BITS 14 & 15 APPROPRIATELY.
9118
9119 047336 010246              SECFLG: MOV      R2,-(SP)      ;SAVE R2
9120 047340 005737 001436      TST      FORMAT
9121 047344 001016              BNE      1$      ;BR IF 20 SECTOR FORMAT
9122 047346 012702 002314      MOV      #BSE22H+8.,R2
9123 047352 004737 047406      JSR      PC,FLGTST      ;GET HARDWARE DETECTED FLAG
9124 047356 052710 100000      BIS      #BIT15,(R0)      ;RETURN HERE IF GOOD SECTOR
9125
9126 047362 012702 054762      MOV      #BSE22S+8.,R2      ;ELSE RETURN HERE
9127 047366 004737 047406      JSR      PC,FLGTST      ;GET SOFTWARE DETECTED FLAG
9128 047372 052710 040000      BIS      #BIT14,(R0)      ;RETURN HERE IF GOOD SECTOR
9129
9130 047376 012602              MOV      (SP)+,R2      ;ELSE RETURN HERE
9131 047400 000207              RTS      PC
9132
9133

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9134 047402 012602
9135 047404 000207
9136
9137
9138
9139
9140
9141
9142
9143 047406 010346
9144
9145 047410 021227 177777
9146 047414 001002
9147 047416 012603
9148 047420 000207
9149
9150 047422 022237 001366
9151 047426 001403
9152 047430 062702 000002
9153 047434 000765
9154
9155 047436 013703 001430
9156 047442 000303
9157 047444 050103
9158 047446 022203
9159 047450 001401
9160 047452 000756
9161
9162 047454 012603
9163 047456 062716 000004
9164 047462 000207
9165
9166
9167
9168
9169 047464 010046
9170 047466 010146
9171 047470 004737 046166
9172 047474 062737 000001 001406
9173 047502 004737 047572
9174
9175 047506 012700 000204
9176 047512 163700 001406
9177 047516 010037 001406
9178 047522 062737 001674 001406
9179
9180 047530 062700 001674
9181 047534 012701 002100
9182
9183 047540 012021
9184 047542 020027 002100
9185 047546 001374
9186
9187 047550 012700 001674
9188 047554 012021
9189 047556 020037 001406

1$:  MOV      (SP)+,R2      ;RESTORE R2
      RTS      PC

; THIS ROUTINE DOES THE ACTUAL SCANNING OF THE BAD SECTOR TABLES
; ENTER WITH THE ADDRESS OF TABLE (BSE22H, BSE22S, ETC) IN TEMP1
; RETURN IF NO COMPARE
; RETURN +4 IF COMPARE

FLGTST: MOV      R3,-(SP)      ;SAVE R3

1$:   CMP      (R2),*-1      ;SEE IF ALL 1'S
      BNE      2$           ;BR IF NO
      MOV      (SP)+,R3      ;RESTORE R3
      RTS      PC

2$:   CMP      (R2)+,CALADD    ;SEE IF = CYL #, & ADV PTR TO TRACK/SECTOR WORD
      BEQ      3$           ;GO TO NEXT CYL WORD IN TABLE
      ADD      #2,R2
      BR       1$

3$:   MOV      HEAD,R3        ;GET HEAD # FROM FHDTAB ROUTINE
      SWAB     R3
      BIS      R1,R3          ;ADD SECTOR # FROM FHDTAB ROUTINE
      CMP      (R2)+,R3      ;SECTOR/HEAD COMPARE? & INCR TO NEXT CYL WORD
      BEQ      4$           ;BR IF YES
      BR       1$           ;TRY NEXT CYL

4$:   MOV      (SP)+,R3      ;RESTORE R3
      ADD      #4,(SP)      ;INCREMENT RET ADDR
      RTS      PC

; THIS ROUTINE SORTS THE RHTAB TABLE FROM WHATEVER SECTOR IT BEGINS
; WITH AND RE-WITES THE INFO IN SRTTAB TABLE TO BEGIN WITH SECTOR 0

SORT:  MOV      R0,-(SP)      ;SAVE R0
      MOV      R1,-(SP)      ;SAVE R1
      JSR      PC,RDSEC
      ADD      #1,SECTOR
      JSR      PC,MULT6      ;MULT SECTOR BY 6

      MOV      #132,R0
      SUB      SECTOR,R0      ;R0-SECTOR TO R0 = INDEX
      MOV      R0,SECTOR
      ADD      #RHTAB,SECTOR  ;SAVE INDEX

      ADD      #RHTAB,R0      ;INDEX TO BOT HALF OF RHTAB
      MOV      #SRTTAB,R1     ;INDEX TO TOP HALF OF SRTTAB

1$:   MOV      (R0)+,(R1)+    ;PUT BOTTOM OF RHTAB TO TOP OF SRTTAB
      CMP      R0,#RHTAB+132
      BNE      1$

2$:   MOV      #RHTAB,R0      ;PUT TOP OF RHTAB TO BOT OF SRTTAB
      MOV      (R0)+,(R1)+
      CMP      R0,SECTOR

```

N14

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SEQ 0192

```

9190 047562 001374          BNE      2$
9191
9192 047564 012601          MOV      (SP)+,R1      ;RESTOR R1
9193 047566 012600          MOV      (SP)+,R0      ;RESTOR R0
9194 047570 000207          RTS      PC
9195
9196
9197          ;MULT BY 6. ENTER WITH DESIRED # IN 'SECTOR'
9198
9199 047572 006337 001406    MULT6:  ASL      SECTOR      ;2 X SECTOR
9200 047576 013746 001406    MOV      SECTOR,-(SP)
9201 047602 006337 001406    ASL      SECTOR      ;4 X SECTOR
9202 047606 062637 001406    ADD      (SP)+,SECTOR  ;(4 X S)+(2 X S) = 6 X SECTOR
9203 047612 000207          RTS      PC
9204
9205
9206          ;ROUTINE TO TURN L OR P CLOCK INTERRUPT ON
9207
9208 047614 005037 001376    CLKON:  CLR      TIMUP
9209 047620 005737 003500    TST      PCLKF
9210 047624 001004          BNE      1$      ;BRANCH IF P-CLOCK PRESENT
9211 047626 012777 000100 131472    MOV      #100,CLKS      ;L-CLOCK, ENABLE INT
9212 047634 000207          RTS      PC
9213 047636 012777 177777 131456    1$:  MOV      #-1,PKSB      ;P-CLOCK, ALL 1'S
9214 047644 012777 000135 131446    MOV      #135,PKS      ;ENABLE INT, CT UP, REP INT
9215 047652 000207          RTS      PC      ;LINE FREQ & RUN
9216
9217          ;KW11-L & KW11-P INTERRUPT HANDLER
9218
9219 047654 005037 001376    CLOCK:  CLR      TIMUP
9220 047660 005337 001372    DEC      COUNT
9221 047664 001010          BNE      1$
9222 047666 013737 001370 001372    MOV      HZ,COUNT
9223 047674 005337 001374    DEC      SEC
9224 047700 001002          BNE      1$
9225 047702 005237 001376    INC      TIMUP      ;SORRY, TIME IS UP
9226 047706 000002    1$:  RTI
9227
9228          ;ROUTINE TO TURN L OR P CLOCK INTERRUPT OFF
9229
9230 047710 005737 003500    CLKOF:  TST      PCLKF
9231 047714 001003          BNE      1$      ;BRACH IF P-CLOCK PRESENT
9232 047716 005077 131404    CLR      CLKS      ;L-CLOCK, CLEAR INTERRUPT
9233 047722 000207          RTS      PC
9234 047724 005077 131370    1$:  CLR      PKS      ;P-CLOCK, CLEAR INTERRUPT
9235 047730 000207          RTS      PC
9236
9237
9238          ;THIS ROUTINE GENERATES PARITY FOR THE EXPECTED MSGS
9239          ;ENTER WITH THE EXPECTED WORD IN TEMP1
9240          ;TEMP1 IS ROTATED LEFT 17 TIMES. EACH TIME THE CARRY BIT IS SET,
9241          ;R1 IS INCREMENTED. AT THE END OF 17 ROTATES (TEMP1 BACK TO ORIG).
9242          ;R1 BIT 0 IS EXAMINED. IF IT IS SET, INDICATING AN ODD # OF 1'S.
9243          ;THE PARITY BIT IS NOT SET IN B
9244          ;IF IT IS NOT SET, INDICATING AN EVEN # OF 1'S .THE PARITY BIT IS
9245          ;SET IN TEMP1

```

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9246 010046 000021 000021 000021
9247 010046 000021 000021 000021
9248 010046 000021 000021 000021
9249 010046 000021 000021 000021
9250 010046 000021 000021 000021
9251 010046 000021 000021 000021
9252 010046 000021 000021 000021
9253 010046 000021 000021 000021
9254 010046 000021 000021 000021
9255 010046 000021 000021 000021
9256 010046 000021 000021 000021
9257 010046 000021 000021 000021
9258 010046 000021 000021 000021
9259 010046 000021 000021 000021
9260 010046 000021 000021 000021
9261 010046 000021 000021 000021
9262 010046 000021 000021 000021
9263 010046 000021 000021 000021
9264 010046 000021 000021 000021
9265 010046 000021 000021 000021
9266 010046 000021 000021 000021
9267 010046 000021 000021 000021
9268 010046 000021 000021 000021
9269 010046 000021 000021 000021
9270 010046 000021 000021 000021
9271 050004 032777 001000 131126 SCOP15: BIT #SW9,SWR ;LOOP ON ERROR?
9272 050012 001406 001103 BEQ 15 ;BR IF NO
9273 050014 105737 001103 STB SERFLG ;HAD ERROR?
9274 050020 001403 001110 BEQ 15 ;BR IF NO
9275 050022 013716 001110 MOV SLPERR,(SP)
9276 050026 000002 RTI
9277
9278 050030 011637 001110 15: MOV (SP),SLPERR ;SET LOOP ADDR FOR TIGHT SCOPE LOOP
9279 050034 000002 RTI
9280
9281
9282 ;CHECK FOR SW14 (LOOP ON TEST) OR SW8 (LOOP ON SPECIFIC TEST)
9283
9284 ;RETURN IF NEITHER SET
9285 ;RETURN +2 IF EITHER SET
9286
9287 ;THIS SUBROUTINE IS USED AT THE END OF ANY TEST THAT REQUIRES
9288 ;RECONDITIONING OF THE DRIVE BEFORE LOOPING ON AN ERROR OR TEST
9289
9290 050036 005037 001176 SWTST: CLR $ESCAPE
9291 050042 005037 001410 CLR LPFLG
9292 050046 032777 040000 131064 BIT #SW14,SWR ;LOOP ON TEST?
9293 050054 001403 000002 BEQ 35 ;BR IF NO
9294 050056 062716 000002 15: ADD #2,(SP)
9295 050062 000207 000002 25: RTS PC
9296
9297 050064 032777 000400 131046 35: BIT #SW8,SWR ;LOOP ON SPECIFIC TEST?
9298 050072 001773 001102 BEQ 25 ;BR IF NO
9299 050074 127737 001102 CMPB #SWR,$STSTNM ;RIGHT TEST? SWR (7:0)
9300 050102 001765 BEQ 15 ;BR IF YES
9301 050104 000207 RTS PC

```

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SEG 0184

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93333
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050106 022626
050110 004737 046106
050114 104024
050116 005737 003316
050120 001432
050124 005737 000042
050130 001403
050132 104401 057151
050136 000402
050140 104401 057200
050144
050144 004737 046106
050150 104024
050152 012765 000011 000000
050160 013737 001414 003372
050166 004737 044176
050172 104121
050174 013737 001416 003374
050202 004737 044512
050206 104067
050210 005737 003320
050214 001466
050216 005237 003322
050222 012765 100000 000000
050230 013765 001222 000010
050236 012765 000013 000000
050244 013737 001414 003372
050252 004737 044176
050256 104124
050260 012765 000001 000026
050266 004737 045534
050272 032737 020000 003362
050300 001001
050302 104244
050304 013737 001412 003374
050312 004737 044512
050316 104055
050320 012765 100000 000000

; THIS ROUTINE IS ENTERED BY TYPING A CONTROL-C.
; IT IS USED TO ALLOW THE OPERATOR TO HALT THE CPU WHILE INSURING
; THAT HEADS ARE LOADED & FORMATTING IS VALID BEFORE ACTUALLY HALTING
; THE CPU.
STOP:  CMP      (SP)+,(SP)+      ;RESTORE STACK FROM INTERRUPT
      JSR      PC,SUBCLR
      ERROR    24                ;CERR AFTER
      TST      UNLD              ;SEE IF HEADS UNLOADED
      BEQ      38                ;BR IF NO
      TST      42                ;SEE IF MANUAL OR AUTO MODE
      BEQ      18                ;BR IF MANUAL MODE
      TYPE     MSG74             ;PGM ABORT PENDING
      BR       28
      TYPE     MSG75             ;HALT PENDING
38:
28:
      JSR      PC,SUBCLR
      ERROR    24                ;CERR AFTER SCLR
      MOV      #SRTSPL,RKCS1(R5) ;START SPINDLE CMD
      MOV      T10,TEMP1         ;SET TIMEOUT
      JSR      PC,FRDY           ;FIND RDY
      ERROR    121              ;RDY NOT FOUND AFTER ST SPIN CMD.
      MOV      T100,TEMP2        ;SETUP TIMEOUT
      JSR      PC,FATT1          ;FIND ATTN
      ERROR    67               ;NO ATTN AFTER ST SPIN CMD.
38:
      TST      BADHDR            ;SEE IF HEADERS VALID
      BEQ      48                ;BR IF YES
      INC      HPEND
      MOV      #CCLR,RKCS1(R5)
      MOV      #UNIT,RKCS2(R5)
      MOV      #RECAL,RKCS1(R5) ;RECAL CMD
      ;RESET CYL DIFF/OFFSET & CYL ADDR REG
      ;IN RKMR2 & RKMR3 RESP.
      MOV      T10,TEMP1
      JSR      PC,FRDY           ;FIND RDY
      ERROR    124              ;RDY NOT SET AFTER RECAL CMD
      MOV      #1,RKMR1(R5)      ;SELECT WORD 1
      JSR      PC,GSTAT
      BIT      #D.RTZ,HMR2
      BNE      648
      ERROR    244              ;RTZ NOT SET DURING RECAL CMD
      MOV      T1,TEMP2
      JSR      PC,FATT1          ;FIND ATTN
      ERROR    55               ;NO ATTN AFTER RECAL CMD
648:
      MOV      #CCLR,RKCS1(R5)

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```

9358 050326 013765 001222 000010      MOV      SUNIT,RKCS2(R5) ;DRIVE#
9359 050334 012765 000005 000000      MOV      #CLEAR,RKCS1(R5) ;DRIVE CLEAR CMD
9360 050342 013737 001414 003372      MOV      T10,TEMP1
9361 050350 004737 044176      JSR      PC,FRCY ;FIND RDY
9362 050354 104151      ERROR 151 ;NO RDY AFTER DRIVE CLEAR CMD
9363 050356 004737 044460      JSR      PC,TSTATN ;TEST FOR ATTN
9364 050362 000401      BR      655
9365 050364 104154      ERROR 154 ;ATTN NOT CLEARED AFTER DRIVE CLEAR CMD
9366 050366      655:
9367
9368
9369 050366 000137 031646      JMP      FORM ;WRITE VALID FORMATS
9370
9371 050372 005737 000042      45: TST      42 ;SEE IF MANUAL OR AUTO MODE
9372 050376 001406      BEQ      55 ;BR IF MANUAL MODE
9373 050400 104401 057222      TYPE     MSG76 ;PGM ABORTED
9374 050404 005037 043544      CLR      $EOPCT ;SET UP EOP TO EXIT TO MONITOR
9375 050410 000137 043470      JMP      $EOP
9376
9377 050414 104401 057240      55: TYPE     MSG77 ;CPU HALTED
9378 050420 000000      HALT
9379 050422 000137 007740      JMP      STS ;START OVER IF CONTINUE PRESSED
9380
9381      .SBTTL UNEXPECTED TIMEOUT HANDLER
9382
9383      ;
9384      ; THIS ROUTINE IS ENTERED IF THERE IS
9385      ; A. NON EXISTANT MEMORY (NO SSYN)
9386      ; B. BOUNDARY ERROR
9387      ; C. STACK OVERFLOW
9388      ;
9389
9390 050426 011600      BADTMO: MOV      (SP),RO ;SAVE PC WHERE TIMEOUT OCCURRED.
9391 050430 005740      TST      -(RO) ;GET PC BEFORE UPDATE
9392 050432 032777 020000 130500      BIT      #SW13,$SWR ;INHIBIT ERROR TYPOT?
9393 050440 001005      BNE      15 ;YES, DON'T TYPE
9394 050442 104401 057416      TYPE     EM3 ;ABORT TESTS,UNEXP T.O. & PC=
9395 050446 010046      MOV      RO,-(SP) ;SAVE RO FOR TYPEOUT
9396
9397 050450 104403      TYP05 ;TYPE PC
9398 050452 006 ;GO TYPE--OCTAL ASCII
9399 050453 000 ;TYPE 6 DIGIT(S)
9400 050454 032777 001000 130456 15: .BYTE 0 ;SUPPRESS LEADING ZEROS
9401 050462 001403      BIT      #SW9,$SWR ;LOOP ON ERROR?
9402 050464 022626      BEQ      25 ;NO BRANCH
9403 050466 000177 130414      CMP      (SP)+,(SP)+ ;YES, RESTORE STACK
9404
9405 050472 032777 040000 130440 25: JMP      $SLPADR ;GO TO STARTING ADDR OF TEST
9406
9407 050500 001401      BIT      #SW14,$SWR ;THAT GAVE BAD TIMEOUT
9408 050502 000002      BEQ      35 ;LOOP ON TEST?
9409
9410      RTI ;NO BRANCH
9411
9412      35: HALT ;YES
9413
9414      ; UNEXPECTED TIME OUT OCCURRED
9415      ; AS INDICATED. YOU CAN LOOP ON
9416      ; ERROR, LOOP ON TEST OR INHIBIT
9417      ; ERROR TYPEOUT BY SETTING THOSE
9418      ; SWITCHES.

```

```

9414
9415 050506 022626          CMP      (SP)+,(SP+      ;RESTORE STACK
9416 050510 000137 043516  JMP      $EOP1      ;ABORT TESTS
9417
9418          .SBTTL  MEMORY CHECK ENABLE TRAP
9419
9420 050514 012737 050530 001176 MEMERR: MOV      #15,$ESCAPE      ;LOAD ESCAPE
9421 050522 011637 001334      MOV      (SP),TRAPPC      ;STORE PC
9422 050526 104236      ERROR 236      ;UNEXP MEM PARITY TRAP
9423
9424 050530 005037 001176      1$:  CLR      $ESCAPE
9425 050534 032777 001000 130376      BIT      #SW9,$SWR      ;CHECK IF LOOP ON ERROR
9426 050542 001001      BNE      2$      ;YES, FORCE STACK AND TRY AGAIN
9427 050544 000002      RTI      ;ELSE RETURN
9428
9429 050546 012706 001100      2$:  MOV      #STACK,SP      ;INIT STACK
9430 050552 000177 130332      JMP      $SLPERR      ;LOOP ON ERROR
9431
9432          .SBTTL  RK06 INTERRUPT HANDLER
9433
9434 050556 011600      INTER: MOV      (SP),RO      ;SAVE PC WHERE INT OCCURRED.
9435 050560 005740      TST      -(RO)      ;GET PC BEFORE UPDATE.
9436 050562 104401 056163      TYPE      MSG6      ;INT AT PC=
9437 050566 010046      MOV      RO,-(SP)      ;SAVE RO FOR TYPEOUT
9438      ;TYPE PC
9439 050570 104403      TYPOS      ;GO TYPE--OCTAL ASCII
9440 050572      .BYTE      6      ;TYPE 6 DIGIT(S)
9441 050573      .BYTE      0      ;SUPPRESS LEADING ZEROS
9442 050574 000002      RTI
9443
9444          .SBTTL  POWER DOWN AND UP ROUTINES
9445
9446          ;POWER DOWN ROUTINE
9447
9448 050576 012737 050610 000024 $PWRDN: MOV      #PWRUP,PWRVEC      ;SET UP VECTOR
9449 050604 000000      HALT
9450 050606 000776      BR      -2      ;HANG UP.
9451
9452          ;POWER UP ROUTINE
9453
9454 050610 005037 050662      $PWRUP: CLR      $PWRCT      ;WAIT LOOP FOR TTY
9455 050614 005237 050662      1$:  INC      $PWRCT      ;WAIT FOR THE INCR
9456 050620 001375      BNE      1$      ;OF WORD
9457 050622 012737 050576 000024      MOV      #PWRDN,PWRVEC      ;SET POWER DOWN VECTOR
9458 050630 012737 000340 000026      MOV      #PR7,PWRVEC+2      ;PRIORITY 7
9459 050636 012737 000340 000036      MOV      #PR7,TRAPVEC+2      ;LOCKOUT ALL INTERRUPTS FOR TRAPS
9460 050644 012706 001100      MOV      #STACK,SP      ;INITIALIZE STACK
9461 050650 104401 056347      TYPE      ,MSG11      ;REPORT POWER FAIL
9462 050654 000005      RESET
9463 050656 000137 011646      JMP      PFSRT
9464
9465 050662 000000      $PWRCT: 0      ;WAIT COUNT FOR TTY
9466

```

```

:*****
:THIS ROUTINE CONTROLS THE LOOPING OF SUBTESTS. IT WILL INCREMENT
:AND LOAD THE TEST NUMBER($TSTNM) INTO THE DISPLAY REG.(DISPLAY<7:0>)
:AND LOAD THE ERROR FLAG ($ERFLG) INTO DISPLAY<15:08>
:THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
:SW14=1      LOOP ON TEST
:SW11=1      INHIBIT ITERATIONS
:SW09=1      LOOP ON ERROR
:SW08=1      LOOP ON TEST IN SWR<7:0>
:CALL
:SCOPE      ::SCOPE=IOT

$SCOPE:
15:  CKSWR      ::TEST FOR CHANGE IN SOFT-SWR
      BIT      $BIT14,$SWR      ::LOOP ON PRESENT TEST?
      BNE      $OVER           ::YES IF SW14=1
:*****START OF CODE FOR THE XOR TESTER*****
$XTSTR: BR     65              ::IF RUNNING ON THE "XOR" TESTER CHANGE
                                THIS INSTRUCTION TO A "NOP" (NOP=240)
      MOV      2*$ERRVEC, -(SP)  ::SAVE THE CONTENTS OF THE ERROR VECTOR
      MOV      2*$ERRVEC      ::SET FOR TIMEOUT
      TST      2*$177060        ::TIME OUT ON XOR?
      MOV      (SP)+, 2*$ERRVEC  ::RESTORE THE ERROR VECTOR
      BR       $SVLAD           ::GO TO THE NEXT TEST
55:  CMP      (SP)+, (SP)+      ::CLEAR THE STACK AFTER A TIME OUT
      MOV      (SP)+, 2*$ERRVEC  ::RESTORE THE ERROR VECTOR
      BR       75              ::LOOP ON THE PRESENT TEST
65: ;*****END OF CODE FOR THE XOR TESTER*****
      BIT      $BIT08,$SWR      ::LOOP ON SPEC. TEST?
      BEQ      25              ::BR IF NO
      CMPB     $SWR,$TSTNM      ::ON THE RIGHT TEST? SWR<7:0>
      BEQ      $OVER           ::BR IF YES
25:  TSTB     $ERFLG            ::HAS AN ERROR OCCURRED?
      BEQ      35              ::BR IF NO
      CMPB     $ERMAX,$ERFLG    ::MAX. ERRORS FOR THIS TEST OCCURRED?
      BHI      35              ::BR IF NO
      BIT      $BIT09,$SWR      ::LOOP ON ERROR?
      BEQ      45              ::BR IF NO
75:  MOV      $LPERR,$LPADR      ::SET LOOP ADDRESS TO LAST SCOPE
      BR       $OVER
45:  CLRB     $ERFLG            ::ZERO THE ERROR FLAG
      CLR      $TIMES          ::CLEAR THE NUMBER OF ITERATIONS TO MAKE
      BR       15              ::ESCAPE TO THE NEXT TEST
35:  BIT      $BIT11,$SWR      ::INHIBIT ITERATIONS?
      BNE      15              ::BR IF YES
      TST      $PASS           ::IF FIRST PASS OF PROGRAM
      BEQ      15              ::INHIBIT ITERATIONS
      INC      $ICNT           ::INCREMENT ITERATION COUNT
      CMP      $TIMES,$ICNT     ::CHECK THE NUMBER OF ITERATIONS MADE
      BGE      $OVER           ::BR IF MORE ITERATION REQUIRED
15:  MOV      $1,$ICNT          ::REINITIALIZE THE ITERATION COUNTER
      MOV      $MXCNT,$TIMES    ::SET NUMBER OF ITERATIONS TO DO
$SVLAD: INCB     $TSTNM          ::COUNT TEST NUMBERS
      MOVB    $TSTNM,$TSTNM     ::SET TEST NUMBER IN APT MAILBOX

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```

9523 051104 011637 001106      MOV      (SP), $LPADR      ;; SAVE SCOPE LOOP ADDRESS
9524 051110 011637 001110      MOV      (SP), $LPERR      ;; SAVE ERROR LOOP ADDRESS
9525 051114 005037 001176      CLR      $ESCAPE        ;; CLEAR THE ESCAPE FROM ERROR ADDRESS
9526 051120 112737 000001 001115  SOVER:  MOV      #1, $ERMAX        ;; ONLY ALLOW ONE(1) ERROR ON NEXT TEST
9527 051126 013777 001102 130006      MOV      $STNM, @DISPLAY  ;; DISPLAY TEST NUMBER
9528 051134 013716 001106      MOV      $LPADR, (SP)    ;; FUDGE RETURN ADDRESS
9529 051140 000002          RTI          ;; FIXES PS
9530 051142 003720      SMXCN: 2000.        ;; MAX. NUMBER OF ITERATIONS
9531          .SBTTL  ERROR HANDLER ROUTINE
9532
9533      ;*****
9534      ;THIS ROUTINE WILL INCREMENT THE ERROR FLAG AND THE ERROR COUNT,
9535      ;SAVE THE ERROR ITEM NUMBER AND THE ADDRESS OF THE ERROR CALL
9536      ;AND GO TO TYPERR ON ERROR
9537      ;THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
9538      ;SW15=1      HALT ON ERROR
9539      ;SW13=1      INHIBIT ERROR TYPEOUTS
9540      ;SW10=1      BELL ON ERROR
9541      ;SW09=1      LOOP ON ERROR
9542      ;CALL
9543      ;*          ERROR      N      ;;ERROR=EMT AND N=ERROR ITEM NUMBER
9544
9545      SERROR:
9546      7$:      CKSWR          ;; TEST FOR CHANGE IN SOFT-SWR
9547      INCB          ;; SET THE ERROR FLAG
9548      BEQ      7$          ;; DON'T LET THE FLAG GO TO ZERO
9549      MOV      $STNM, @DISPLAY  ;; DISPLAY TEST NUMBER AND ERROR FLAG
9550      BIT      #BIT10, @SWR    ;; BELL ON ERROR?
9551      BEQ      1$          ;; NO - SKIP
9552      TYPE      $BELL        ;; RING BELL
9553      INC      $ERTTL        ;; COUNT THE NUMBER OF ERRORS
9554      MOV      (SP), $ERRPC    ;; GET ADDRESS OF ERROR INSTRUCTION
9555      SUB      #2, $ERRPC
9556      MOV      @ $ERRPC, $ITEMB  ;; STRIP AND SAVE THE ERROR ITEM CODE
9557      BIT      #BIT13, @SWR    ;; SKIP TYPEOUT IF SET
9558      BNE      20$          ;; SKIP TYPEOUTS
9559      JSR      PC, TYPERR      ;; GO TO USER ERROR ROUTINE
9560      TYPE      $SCRLF
9561      20$:
9562      CMPB      #APTENV, $ENV    ;; RUNNING IN APT MODE
9563      BNE      2$          ;; NO SKIP APT ERROR REPORT
9564      MOV      $ITEMB, 21$      ;; SET ITEM NUMBER AS ERROR NUMBER
9565      JSR      PC, $ATY4        ;; REPORT FATAL ERROR TO APT
9566      .BYTE      0
9567      .BYTE      0
9568      BR      22$
9569      22$:      BR      22$      ;; APT ERROR LOOP
9570      2$:      TST      @SWR    ;; HALT ON ERROR
9571      BPL      3$          ;; SKIP IF CONTINUE
9572      HALT      ;; HALT ON ERROR!
9573      CKSWR          ;; TEST FOR CHANGE IN SOFT-SWR
9574      BIT      #BIT09, @SWR    ;; LOOP ON ERROR SWITCH SET?
9575      BEQ      4$          ;; BR IF NO
9576      MOV      $LPERR, (SP)    ;; FUDGE RETURN FOR LOOPING
9577      TST      $ESCAPE        ;; CHECK FOR AN ESCAPE ADDRESS
9578      BEQ      5$          ;; BR IF NONE
9579      MOV      $ESCAPE, (SP)   ;; FUDGE RETURN ADDRESS FOR ESCAPE

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H15

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ERROR HANDLER ROUTINE

SEG 0189

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9579 051330
9580 051330 022737 043604 000042
9581 051336 001001
9582 051340 000000
9583 051342
9584 051342 000002
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9587
9588
9589
9590
9591
9592
9593
9594
9595
9596
9597
9598
9599
9600
9601
9602 051344 105737 001157
9603 051350 100002
9604 051352 000000
9605 051354 000430
9606 051356 010046
9607 051360 017600 000002
9608 051364 122737 000001 001230
9609 051372 001011
9610 051374 132737 000100 001231
9611 051402 001405
9612 051404 010037 051414
9613 051410 004737 052060
9614 051414 000000
9615 051416 132737 000040 001231
9616 051424 001003
9617 051426 112046
9618 051430 001005
9619 051432 005726
9620 051434 012600
9621 051436 062716 000002
9622 051442 000002
9623 051444 122716 000011
9624 051450 001430
9625 051452 122716 000200
9626 051456 001006
9627 051460 005726
9628 051462 104401
9629 051464 001205
9630 051466 105037 051622
9631 051472 000755
9632 051474 004737 051556
9633 051500 123726 001156
9634 051504 001350

SS:      CMP      $SENDAD,0#42      ;;ACT-11 AUTO-ACCEPT?
          BNE      6$                ;;BRANCH IF NO
          HALT                     ;;YES

SS:      RTI                          ;;RETURN
.SBTTL   TYPE ROUTINE

*****
*ROUTINE TO TYPE ASCIZ MESSAGE. MESSAGE MUST TERMINATE WITH A 0 BYTE.
*THE ROUTINE WILL INSERT A NUMBER OF NULL CHARACTERS AFTER A LINE FEED.
*NOTE1:      $NULL CONTAINS THE CHARACTER TO BE USED AS THE FILLER CHARACTER.
*NOTE2:      $FILLS CONTAINS THE NUMBER OF FILLER CHARACTERS REQUIRED.
*NOTE3:      $FILLC CONTAINS THE CHARACTER TO FILL AFTER.
*
*CALL:
*1) USING A TRAP INSTRUCTION
*      TYPE      ,MESADR      ;;MESADR IS FIRST ADDRESS OF AN ASCIZ STRING
*OR
*      TYPE
*      MESADR
*
$TYPE:   TSTB      $TFPLG      ;;IS THERE A TERMINAL?
          BPL      1$          ;;BR IF YES
          HALT      HERE IF NO TERMINAL
          BR      3$          ;;LEAVE
1$:      MOV      RO,-(SP)      ;;SAVE RO
          MOV      02(SP),RO    ;;GET ADDRESS OF ASCIZ STRING
          CMPB     $APTENV,$ENV  ;;RUNNING IN APT MODE
          BNE      62$         ;;NO,GO CHECK FOR APT CONSOLE
          BITB     $APTSPOOL,$ENVM ;;SPOOL MESSAGE TO APT
          BEQ      62$         ;;NO,GO CHECK FOR CONSOLE
          MOV      RO,61$      ;;SETUP MESSAGE ADDRESS FOR APT
          JSR      PC,$ATY3    ;;SPOOL MESSAGE TO APT
          .WORD    0           ;;MESSAGE ADDRESS
          BITB     $APTCSUP,$ENVM ;;APT CONSOLE SUPPRESSED
          BNE      60$         ;;YES,SKIP TYPE OUT
          MOVB     (RO)+,-(SP)  ;;PUSH CHARACTER TO BE TYPED ONTO STACK
          BNE      4$          ;;BR IF IT ISN'T THE TERMINATOR
          TST      (SP)+       ;;IF TERMINATOR POP IT OFF THE STACK
          MOV      (SP)+,RO    ;;RESTORE RO
          ADD      #2,(SP)     ;;ADJUST RETURN PC
          RTI                  ;;RETURN
          CMPB     $HT,(SP)    ;;BRANCH IF <HT>
          BEQ      8$          ;;BRANCH IF NOT <CRLF>
          CMPB     $CRLF,(SP)
          BNE      5$          ;;POP <CR><LF> EQUIV
          TST      (SP)+       ;;TYPE A CR AND LF
          TYPE     $CRLF
          CLRB     $CHARCNT    ;;CLEAR CHARACTER COUNT
          BR      2$          ;;GET NEXT CHARACTER
          JSR      PC,$TYPEC    ;;GO TYPE THIS CHARACTER
          CMPB     $FILLC,(SP)+ ;;IS IT TIME FOR FILLER CHARS.?
          BNE      2$          ;;IF NO GO GET NEXT CHAR.

```

```

9635 051506 013746 001154      MOV      $NULL,-(SP)      ;;GET # OF FILLER CHARS. NEEDED
9636                                     ;;AND THE NULL CHAR.
9637 051512 105366 000001 75:  DECB      1(SP)      ;;DOES A NULL NEED TO BE TYPED?
9638 051516 002770          BLT      6$      ;;BR IF NO--GO POP THE NULL OFF OF STACK
9639 051520 004737 051556      JSR      PC,$TYPEC      ;;GO TYPE A NULL
9640 051524 105337 051622      DECB      $CHARCNT      ;;DO NOT COUNT AS A COUNT
9641 051530 000770          BR      7$      ;;LOOP
9642
9643                                     ;HORIZONTAL TAB PROCESSOR
9644
9645 051532 112716 000040 85:  MOVVB     #' -(SP)      ;;REPLACE TAB WITH SPACE
9646 051536 004737 051556 95:  JSR      PC,$TYPEC      ;;TYPE A SPACE
9647 051542 132737 000007 051622 BITB     #',$CHARCNT      ;;BRANCH IF NOT AT
9648 051550 001372          BNE     9$      ;;TAB STOP
9649 051552 005726          TST      (SP)+      ;;POP SPACE OFF STACK
9650 051554 000724          BR      2$      ;;GET NEXT CHARACTER
9651 051556 105777 127366 $TYPEC: TSTB     2$TPS      ;;WAIT UNTIL PRINTER IS READY
9652 051562 100375          BPL      $TYPEC      ;;
9653 051564 116677 000002 127360 MOVVB     2(SP),2$TPB      ;;LOAD CHAR TO BE TYPED INTO DATA REG.
9654 051572 122766 000015 000002 CMPB     #'CR,2(SP)      ;;IS CHARACTER A CARRIAGE RETURN?
9655 051600 001003          BNE     1$      ;;BRANCH IF NO
9656 051602 105037 051622      CLRB     $CHARCNT      ;;YES--CLEAR CHARACTER COUNT
9657 051606 000406          BR      $TYPEX      ;;EXIT
9658 051610 122766 000012 000002 1$:  CMPB     #'LF,2(SP)      ;;IS CHARACTER A LINE FEED?
9659 051616 001402          BEQ      $TYPEX      ;;BRANCH IF YES
9660 051620 105227          INCB     (PC)+      ;;COUNT THE CHARACTER
9661 051622 000000          $CHARCNT: .WORD 0      ;;CHARACTER COUNT STORAGE
9662 051624 000207          $TYPEX: RTS      PC
9663
9664                                     .SBTTL CONVERT BINARY TO DECIMAL AND TYPE ROUTINE
9665
9666                                     ;*****
9667                                     ;THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 5-DIGIT
9668                                     ;SIGNED DECIMAL (ASCII) NUMBER AND TYPE IT. DEPENDING ON WHETHER THE
9669                                     ;NUMBER IS POSITIVE OR NEGATIVE A SPACE OR A MINUS SIGN WILL BE TYPED
9670                                     ;BEFORE THE FIRST DIGIT OF THE NUMBER. LEADING ZEROS WILL ALWAYS BE
9671                                     ;REPLACED WITH SPACES.
9672                                     ;CALL:
9673                                     ;*      MOV      NUM,-(SP)      ;;PUT THE BINARY NUMBER ON THE STACK
9674                                     ;*      TYPDS      ;;GO TO THE ROUTINE
9675
9676 $TYPDS:
9677 051626 010046      MOV      R0,-(SP)      ;;PUSH R0 ON STACK
9678 051630 010146      MOV      R1,-(SP)      ;;PUSH R1 ON STACK
9679 051632 010246      MOV      R2,-(SP)      ;;PUSH R2 ON STACK
9680 051634 010346      MOV      R3,-(SP)      ;;PUSH R3 ON STACK
9681 051636 010546      MOV      R5,-(SP)      ;;PUSH R5 ON STACK
9682 051640 012746 020200      MOV      #20200,-(SP)      ;;SET BLANK SWITCH AND SIGN
9683 051644 016605 000020      MOV      20(SP),R5      ;;GET THE INPUT NUMBER
9684 051650 100004          BPL      1$      ;;BR IF INPUT IS POS.
9685 051652 005405          NEG      R5      ;;MAKE THE BINARY NUMBER POS.
9686 051654 112766 000055 000001      MOVVB     #'-,1(SP)      ;;MAKE THE ASCII NUMBER NEG.
9687 051662 005000          CLR      R0      ;;ZERO THE CONSTANTS INDEX
9688 051664 012703 052042      MOV      #5DBLK,R3      ;;SETUP THE OUTPUT POINTER
9689 051670 112723 000040      MOVVB     #' ,(R3)+      ;;SET THE FIRST CHARACTER TO A BLANK
9690 051674 005002          2$:  CLR      R2      ;;CLEAR THE BCD NUMBER

```

9691	051676	016001	052032		MOV	\$DTBL(R0),R1	::GET THE CONSTANT
9692	051702	160105		35:	SUB	R1,R5	::FORM THIS BCD DIGIT
9693	051704	002402			BLT	45	::BR IF DONE
9694	051706	005202			INC	R2	::INCREASE THE BCD DIGIT BY 1
9695	051710	000774			BR	35	
9696	051712	060105		45:	ADD	R1,R5	::ADD BACK THE CONSTANT
9697	051714	005702			TST	R2	::CHECK IF BCD DIGIT=0
9698	051716	001002			BNE	55	::FALL THROUGH IF 0
9699	051720	105716			TSTB	(SP)	::STILL DOING LEADING 0'S
9700	051722	100407			BMI	75	::BR IF YES
9701	051724	106316		55:	ASLB	(SP)	::MSD?
9702	051726	103003			BCC	65	::BR IF NO
9703	051730	116663	000001	177777	MOVB	1(SP),-1(R3)	::YES--SET THE SIGN
9704	051736	052702	000360		BIS	0,R2	::MAKE THE BCD DIGIT ASCII
9705	051742	052702	000340		BIS	0,R2	::MAKE IT A SPACE IF NOT ALREADY A DIGIT
9706	051746	110223			MOVB	R2(R3)+	::PUT THIS CHARACTER IN THE OUTPUT BUFFER
9707	051750	005720			TST	(R0)+	::JUST INCREMENTING
9708	051752	020027	000010		CMP	R0,#10	::CHECK THE TABLE INDEX
9709	051756	002746			BLT	25	::GO DO THE NEXT DIGIT
9710	051760	003002			BGT	85	::GO TO EXIT
9711	051762	010502			MOV	R5,R2	::GET THE LSD
9712	051764	000764			BR	65	::GO CHANGE TO ASCII
9713	051766	105726		85:	TSTB	(SP)+	::WAS THE LSD THE FIRST NON-ZERO?
9714	051770	100003			BPL	95	::BR IF NO
9715	051772	116663	177777	177776	MOVB	-1(SP),-2(R3)	::YES--SET THE SIGN FOR TYPING
9716	052000	105013		95:	CLRB	(R3)	::SET THE TERMINATOR
9717	052002	012605			MOV	(SP)+,R5	::POP STACK INTO R5
9718	052004	012603			MOV	(SP)+,R3	::POP STACK INTO R3
9719	052006	012602			MOV	(SP)+,R2	::POP STACK INTO R2
9720	052010	012601			MOV	(SP)+,R1	::POP STACK INTO R1
9721	052012	012600			MOV	(SP)+,R0	::POP STACK INTO R0
9722	052014	104401	052042		TYPE	\$DBLK	::NOW TYPE THE NUMBER
9723	052020	016666	000002	000004	MOV	2(SP),4(SP)	::ADJUST THE STACK
9724	052026	012616			MOV	(SP)+,(SP)	
9725	052030	000002			RTI		::RETURN TO USER
9726	052032	023420			\$DTBL:	10000.	
9727	052034	001750				1000.	
9728	052036	000144				100.	
9729	052040	000012				10.	
9730	052042	000004			\$DBLK:	.BLKW 4	
9731					.SBTTL	APT COMMUNICATIONS ROUTINE	
9732							
9733							
9734	052052	112737	000001	052316	\$ATY1:	MOVB #1,\$FFLG	::TO REPORT FATAL ERROR
9735	052060	112737	000001	052314	\$ATY3:	MOVB #1,\$MFLG	::TO TYPE A MESSAGE
9736	052066	000403			BR	\$ATYC	
9737	052070	112737	000001	052316	\$ATY4:	MOVB #1,\$FFLG	::TO ONLY REPORT FATAL ERROR
9738	052076				\$ATYC:		
9739	052076	010046			MOV	R0,-(SP)	::PUSH R0 ON STACK
9740	052100	010146			MOV	R1,-(SP)	::PUSH R1 ON STACK
9741	052102	105737	052314		TSTB	\$MFLG	::SHOULD TYPE A MESSAGE?
9742	052106	001450			BEQ	55	::IF NOT: BR
9743	052110	122737	000001	001230	CMPB	\$APTENV,\$ENV	::OPERATING UNDER APT?
9744	052116	001031			BNE	35	::IF NOT: BR
9745	052120	132737	000100	001231	BITB	\$APTPOOL,\$ENV	::SHOULD SPOOL MESSAGES?
9746	052126	001425			BEQ	35	::IF NOT: BR

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UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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APT COMMUNICATIONS ROUTINE

SEC 0132

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9747 052130 017600 000004      MOV      24(SP),R0      ;;GET MESSAGE ADDR.
9748 052134 062766 000002 000004  ADD      #2,4(SP)      ;;BUMP RET. BY ADDR
9749 052142 005737 001210 15:  TST      MSG+TYPE      ;;SEE IF DONE W/ LAST MESSAGE
9750 052146 001375      BNE      15      ;;IF NOT: WAIT
9751 052150 010037 001224      MOV      R0,MSGAD      ;;PUT ADDR IN MAILBOX
9752 052154 105720 25:  TSTB      (R0)+      ;;FIND END OF MESSAGE
9753 052156 001376      BNE      25
9754 052160 163700 001224      SUB      MSGAD,R0      ;;SUB START OF MESSAGE
9755 052164 006200      ASR      PC      ;;GET MESSAGE LGTH IN WORDS
9756 052166 010037 001226      MOV      R0,MSGGLT      ;;PUT LENGTH IN MAILBOX
9757 052172 012737 000004 001210  MOV      #4,MSGTYPE      ;;TELL APT TO TAKE MSG.
9758 052200 000413      BR       55
9759 052202 017637 000004 052226 35:  MOV      24(SP),45      ;;PUT MSG ADDR IN JSR LINKAGE
9760 052210 062766 000002 000004  ADD      #2,4(SP)      ;;BUMP RETURN ADDRESS
9761 052216 013746 177776      MOV      177776,-(SP)      ;;PUSH 177776 ON STACK
9762 052222 004737 051344      JSR      PC,STYPE      ;;CALL TYPE MACRO
9763 052226 000000 45:  .WORD      0
9764 052230 55:
9765 052230 105737 052316 105:  TSTB      $FFLG      ;;SHOULD REPORT FATAL ERROR?
9766 052234 001416      BEQ      125      ;;IF NOT: BR
9767 052236 005737 001230      TST      $ENV      ;;RUNNING UNDER APT?
9768 052242 001413      BEQ      125      ;;IF NOT: BR
9769 052244 005737 001210 115:  TST      MSGTYPE      ;;FINISHED LAST MESSAGE?
9770 052250 001375      BNE      115      ;;IF NOT: WAIT
9771 052252 017637 000004 001212  MOV      24(SP),$FATAL      ;;GET ERROR #
9772 052260 062766 000002 000004  ADD      #2,4(SP)      ;;BUMP RETURN ADDR.
9773 052266 005237 001210 125:  INC      MSGTYPE      ;;TELL APT TO TAKE ERROR
9774 052272 105037 052316      CLRB      $FFLG      ;;CLEAR FATAL FLAG
9775 052276 105037 052315      CLRB      $LFLG      ;;CLEAR LOG FLAG
9776 052302 105037 052314      CLRB      $MFLG      ;;CLEAR MESSAGE FLAG
9777 052306 012601      MOV      (SP)+,R1      ;;POP STACK INTO R1
9778 052310 012600      MOV      (SP)+,R0      ;;POP STACK INTO R0
9779 052312 000207      RTS      PC      ;;RETURN
9780 052314      000      $MFLG: .BYTE      0      ;;MESSG. FLAG
9781 052315      000      $LFLG: .BYTE      0      ;;LOG FLAG
9782 052316      000      $FFLG: .BYTE      0      ;;FATAL FLAG
9783      052320      .EVEN
9784      000200  APTSIZE=200
9785      000001  APTENV=001
9786      000100  APTSPool=100
9787      000040  APTCSUP=040
9788      .SBTTL  BINARY TO OCTAL (ASCII) AND TYPE
9789
9790      ;;*****
9791      ;;THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 6-DIGIT
9792      ;;OCTAL (ASCII) NUMBER AND TYPE IT.
9793      ;;$TYPOS---ENTER HERE TO SETUP SUPPRESS ZEROS AND NUMBER OF DIGITS TO TYPE
9794      ;;CALL:
9795      ;;      MOV      NUM,-(SP)      ;;NUMBER TO BE TYPED
9796      ;;      TYPOS      ;;CALL FOR TYPEOUT
9797      ;;      .BYTE      N      ;;N=1 TO 6 FOR NUMBER OF DIGITS TO TYPE
9798      ;;      .BYTE      M      ;;M=1 OR 0
9799      ;;      ;;1=TYPE LEADING ZEROS
9800      ;;      ;;0=SUPPRESS LEADING ZEROS
9801
9802      ;;$TYPON---ENTER HERE TO TYPE OUT WITH THE SAME PARAMETERS AS THE LAST

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9803      ;*STYPOS OR STYPOC
9804      ;*CALL:
9805      ;*      MOV      NUM,-(SP)      ;;NUMBER TO BE TYPED
9806      ;*      TYPON      ;;CALL FOR TYPEOUT
9807      ;*
9808      ;*STYPOC---ENTER HERE FOR TYPEOUT OF A 16 BIT NUMBER
9809      ;*CALL:
9810      ;*      MOV      NUM,-(SP)      ;;NUMBER TO BE TYPED
9811      ;*      TYPOC      ;;CALL FOR TYPEOUT
9812      ;*
9813      052320 017646 000000      C52543 STYPOS: MOV      2(SP),-(SP)      ;;PICKUP THE MODE
9814      052324 116637 000001      MOV      1(SP),%0FILL      ;;LOAD ZERO FILL SWITCH
9815      052332 112637 052545      MOV      (SP)+,%0MODE+1      ;;NUMBER OF DIGITS TO TYPE
9816      052336 062716 000002      ADD      #2,(SP)      ;;ADJUST RETURN ADDRESS
9817      052342 000406      BR      STYPOC
9818      052344 112737 000001 052543 STYPOC: MOV      #1,%0FILL      ;;SET THE ZERO FILL SWITCH
9819      052352 112737 000006 052545      MOV      #6,%0MODE+1      ;;SET FOR SIX(6) DIGITS
9820      052360 112737 000005 052542 STYPOC: MOV      #5,%0CNT      ;;SET THE ITERATION COUNT
9821      052366 010346      MOV      R3,-(SP)      ;;SAVE R3
9822      052370 010446      MOV      R4,-(SP)      ;;SAVE R4
9823      052372 010546      MOV      R5,-(SP)      ;;SAVE R5
9824      052374 113704 052545      MOV      %0MODE+1,R4      ;;GET THE NUMBER OF DIGITS TO TYPE
9825      052400 005404      NEG      R4
9826      052402 062704 000006      ADD      #6,R4      ;;SUBTRACT IT FOR MAX. ALLOWED
9827      052406 110437 052544      MOV      R4,%0MODE      ;;SAVE IT FOR USE
9828      052412 113704 052543      MOV      %0FILL,R4      ;;GET THE ZERO FILL SWITCH
9829      052416 016605 000012      MOV      12(SP),R5      ;;PICKUP THE INPUT NUMBER
9830      052422 005003      CLR      R3      ;;CLEAR THE OUTPUT WORD
9831      052424 006105      1$: ROL      R5      ;;ROTATE MSB INTO "C"
9832      052426 000404      BR      3$      ;;GO DO MSB
9833      052430 006105      2$: ROL      R5      ;;FORM THIS DIGIT
9834      052432 006105      ROL      R5
9835      052434 006105      ROL      R5
9836      052436 010503      MOV      R5,R3
9837      052440 006103      3$: ROL      R3      ;;GET LSB OF THIS DIGIT
9838      052442 105337 052544      DECB      %0MODE      ;;TYPE THIS DIGIT?
9839      052446 100016      BPL      7$      ;;BR IF NO
9840      052450 042703 177770      BIC      #177770,R3      ;;GET RID OF JUNK
9841      052454 001002      BNE      4$      ;;TEST FOR 0
9842      052456 005704      TST      R4      ;;SUPPRESS THIS 0?
9843      052460 001403      BEQ      5$      ;;BR IF YES
9844      052462 005204      4$: INC      R4      ;;DON'T SUPPRESS ANYMORE 0'S
9845      052464 052703 000060      BIS      #'0,R3      ;;MAKE THIS DIGIT ASCII
9846      052470 052703 000040      5$: BIS      #'',R3      ;;MAKE ASCII IF NOT ALREADY
9847      052474 110337 052540      MOV      R3,%$      ;;SAVE FOR TYPING
9848      052500 104401 052540      TYPE      8$      ;;GO TYPE THIS DIGIT
9849      052504 105337 052542      7$: DECB      %0CNT      ;;COUNT BY 1
9850      052510 003347      BGT      2$      ;;BR IF MORE TO DO
9851      052512 002402      BLT      6$      ;;BR IF DONE
9852      052514 005204      INC      R4      ;;INSURE LAST DIGIT ISN'T A BLANK.
9853      052516 000744      BR      2$      ;;GO DO THE LAST DIGIT
9854      052520 012605      6$: MOV      (SP)+,R5      ;;RESTORE R5
9855      052522 012604      MOV      (SP)+,R4      ;;RESTORE R4
9856      052524 012603      MOV      (SP)+,R3      ;;RESTORE R3
9857      052526 016666 000002 000004      MOV      2(SP),4(SP)      ;;SET THE STACK FOR RETURNING
9858      052534 012616      MOV      (SP)+,(SP)

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JNIBUS R406 DRIVE DIAGNOSTIC PART 1
DZ96HC.F11 06-OCT-76 18:09

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BINARY TO OCTAL (ASCII) AND TYPE

SEG 0194

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9859 052536 000002      RTI                ::RETURN
9860 052540          000      BS:          .BYTE 0      ::STORAGE FOR ASCII DIGIT
9861 052541          000      .BYTE 0      ::TERMINATOR FOR TYPE ROUTINE
9862 052542          000      SOCNT:       .BYTE 0      ::OCTAL DIGIT COUNTER
9863 052543          000      SOFILL:      .BYTE 0      ::ZERO FILL SWITCH
9864 052544 000000      SOMODE:       .WORD 0      ::NUMBER OF DIGITS TO TYPE
9865                                     .SETTL TTY INPUT ROUTINE
9866
9867 ::*****
9868 .ENABL LSB
9869 052546 000000      $TKCNT: .WORD 0      ::NUMBER OF ITEMS IN QUEUE
9870 052550 000000      $TKQIN: .WORD 0      ::INPUT POINTER
9871 052552 000000      $TKQOUT: .WORD 0     ::OUTPUT POINTER
9872 052554 000001      $TKQSRV: .BLKB 1     ::TTY KEYBOARD QUEUE
9873                                     $TKQEND=.
9874                                     .EVEN
9875
9876 ::*TK INITIALIZE ROUTINE
9877 ::*THIS ROUTINE WILL INITIALIZE THE TTY KEYBOARD INPUT QUEUE
9878 ::*SETUP THE INTERRUPT VECTOR AND TURN ON THE KEYBOARD INTERRUPT
9879
9880 ::*CALL:
9881 ::*      JSR      PC,$TKINT
9882 ::*      RETURN
9883
9884 052556 005037 052546      $TKINT: CLR      $TKCNT      ::CLEAR COUNT OF ITEMS IN QUEUE
9885 052562 012737 052554 052550      MOV      $TKQSRV,$TKQIN  ::MOVE THE STARTING ADDRESS OF THE
9886 052570 013737 052550 052552      MOV      $TKQIN,$TKQOUT  ::QUEUE INTO THE INPUT & OUTPUT POINTERS.
9887 052576 012737 052566 000060      MOV      $TKSRV,$TKVEC  ::INITIALIZE THE KEYBOARD VECTOR
9888 052604 012737 000200 000062      MOV      #200,$TKVEC+2  ::"BR" LEVEL 4
9889 052612 005777 126330      TST      $TKB      ::CLEAR DONE FLAG
9890 052616 012777 000100 126320      MOV      #100,$TKS      ::ENABLE TTY KEYBOARD INTERRUPT
9891 052624 000207      RTS      PC      ::RETURN TO CALLER
9892
9893 ::*TK SERVICE ROUTINE
9894 ::*THIS ROUTINE WILL SERVICE THE TTY KEYBOARD INTERRUPT
9895 ::*BY READING THE CHARACTER FROM THE INPUT BUFFER AND PUTTING
9896 ::*IT IN THE QUEUE.
9897 ::*IF THE CHARACTER IS A "CONTROL-C" (1C) $TKINT IS CALLED AND
9898 ::*UPON RETURN EXIT IS MADE TO THE "CONTROL-C" RESTART ADDRESS (STOP)
9899
9900 052626 117746 126314      $TKSRV: MOVB     $TKB,-(SP)    ::PICKUP THE CHARACTER
9901 052632 042716 177600      BIC      #1C177,(SP)    ::STRIP THE JUNK
9902 052636 021627 000003      CMP      (SP),#3      ::IS IT A CONTROL C?
9903 052642 001007      BNE      1$      ::BRANCH IF NO
9904 052644 104401 053754      TYPE     $CNTLC      ::TYPE A CONTROL-C (1C)
9905 052650 004737 052556      JSR      PC,$TKINT    ::INIT THE KEYBOARD
9906 052654 005726      TST      (SP)+      ::CLEAN UP STACK
9907 052656 000137 050106      JMP      STOP      ::CONTROL C RESTART
9908 052662 021627 000007      1$:      CMP      (SP),#7      ::IS IT A CONTROL G?
9909 052666 001004      BNE      2$      ::BRANCH IF NO
9910 052670 022737 000176 001140      CMP      $SWREG,$SWR    ::IS SOFT-SWR SELECTED?
9911 052676 001500      BEQ      6$      ::GO TO SWR CHANGE
9912
9913 052700
9914 052700 022737 000001 052546      2$:      CMP      #1,$TKCNT  ::IS THE QUEUE FULL?

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```

9915 052706 001004      BNE      3$          ;;BRANCH IF NO
9916 052710 104401 001200  TYPE      ,SBELL      ;;RING THE TTY BELL
9917 052714 005726      TST      (SP)+        ;;CLEAN CHARACTER OFF OF STACK
9918 052716 000451      BR       5$          ;;EXIT
9919 052720 021627 000023 3$:      CMP      (SP),#23      ;;IS IT A CONTROL-S?
9920 052724 001021      BNE      32$         ;;BRANCH IF NO
9921 052726 005077 126212  CLR      2$TKS      ;;DISABLE TTY KEYBOARD INTERRUPTS
9922 052732 005726      TST      (SP)+        ;;CLEAN CHAR OFF STACK
9923 052734 105777 126234 31$:     TSTB     2$TKS      ;;WAIT FOR A CHAR
9924 052740 100375      BPL      31$         ;;LOOP UNTIL ITS THERE
9925 052742 117746 126200  MOVB     2$TKB, -(SP)    ;;GET THE CHARACTER
9926 052746 042716 177600  BIC      #1C177, (SP)  ;;MAKE IT 7-BIT ASCII
9927 052752 022627 000021  CMP      (SP)+, #21    ;;IS IT A CONTROL-Q?
9928 052756 001366      BNE      31$         ;;BRANCH IF NO
9929 052760 012777 000100 126156  MOV     #100, 2$TKS    ;;REENABLE TTY KEYBOARD INTERRUPTS
9930 052766 000002      RTI                     ;;RETURN
9931 052770 005237 052546 32$:     INC      $TKCNT      ;;COUNT THIS CHARACTER
9932 052774 021627 000140  CMP      (SP), #140    ;;IS IT UPPER CASE?
9933 053000 002405      BLT      4$          ;;BRANCH IF YES
9934 053002 021627 000175  CMP      (SP), #175    ;;IS IT A SPECIAL CHAR?
9935 053006 003002      BGT      4$          ;;BRANCH IF YES
9936 053010 042716 000040  BIC      #40, (SP)    ;;MAKE IT UPPER CASE
9937 053014 112677 177530 4$:     MOVB     (SP)+, 2$TKQIN  ;;AND PUT IT IN QUEUE
9938 053020 005237 052550  INC      $TKQIN      ;;UPDATE THE POINTER
9939 053024 023727 052550 052555  CMP      $TKQIN, $STKGEND ;;GO OFF THE END?
9940 053032 001003      BNE      5$          ;;BRANCH IF NO
9941 053034 012737 052554 052550  MOV     $STKQSR, $TKQIN ;;RESET THE POINTER
9942 053042 000002 5$:      RTI                     ;;RETURN
9943
9944 *****
9945 *SOFTWARE SWITCH REGISTER CHANGE ROUTINE.
9946 *ROUTINE IS ENTERED FROM THE TRAP HANDLER, AND WILL
9947 *SERVICE THE TEST FOR CHANGE IN SOFTWARE SWITCH REGISTER TRAP
9948 *CALL WHEN OPERATING IN TTY INTERRUPT MODE.
9949 053044 022737 000176 001140 $CKSWR: CMP      $SWREG, SWR      ;;IS THE SOFT-SWR SELECTED
9950 053052 001124      BNE      15$         ;;EXIT IF NOT
9951 053054 105777 126064  TSTB     2$TKS      ;;IS A CHAR WAITING?
9952 053060 100121      BPL      15$         ;;IF NOT, EXIT
9953 053062 117746 126060  MOVB     2$TKB, -(SP)    ;;YES
9954 053066 042716 177600  BIC      #1C177, (SP)  ;;MAKE IT 7-BIT ASCII
9955 053072 021627 000007  CMP      (SP), #7      ;;IS IT A CONTROL-G?
9956 053076 001300      BNE      2$          ;;IF NOT, PUT IT IN THE TTY QUEUE
9957
9958
9959 *****
9960 *CONTROL IS PASSED TO THIS POINT FROM EITHER THE TTY INTERRUPT SERVICE
9961 *ROUTINE OR FROM THE SOFTWARE SWITCH REGISTER TRAP CALL, AS A RESULT OF A
9962 *CONTROL-G BEING TYPED, AND THE SOFTWARE SWITCH REGISTER BEING SELECTED.
9963 053100 123727 001134 000001 6$:     CMPB     $AUTOB, #1    ;;ARE WE RUNNING IN AUTO-MODE?
9964 053106 001674      BEQ      2$          ;;BRANCH IF YES
9965 053110 005726      TST      (SP)+        ;;CLEAR CONTROL-G OFF STACK
9966 053112 004737 052556  JSR      PC, $TKINT    ;;FLUSH THE TTY INPUT QUEUE
9967 053116 005077 126022  CLR      2$TKS      ;;DISABLE TTY KEYBOARD INTERRUPTS
9968 053122 112737 000001 001135  MOVB     #1, $INTAG    ;;SET INTERRUPT MODE INDICATOR
9969
9970 053130 104401 053766      TYPE      , $CNTLG      ;;ECHO THE CONTROL-G (1G)

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9971	053134	104401	053773		SGT SWR:	TYPE	SMSWR	:: TYPE CURRENT CONTENTS
9972	053140	013746	000176			MOV	SWREG,-(SP)	:: SAVE SWREG FOR TYPEOUT
9973	053144	104402				TYPOC		:: GO TYPE--OCTAL ASCII(ALL DIGITS)
9974	053146	104401	054004			TYPE	,SMNEW	:: PROMPT FOR NEW SWR
9975	053152	005046			19\$:	CLR	-(SP)	:: CLEAR COUNTER
9976	053154	005046				CLR	-(SP)	:: THE NEW SWR
9977	053156	105777	125762		7\$:	TSTB	2\$TKS	:: CHAR THERE?
9978	053162	100375				BPL	7\$	:: IF NOT TRY AGAIN
9979								
9980	053164	117746	125756			MOVB	2\$TKB,-(SP)	:: PICK UP CHAR
9981	053170	042716	177600			BIC	#1C177,(SP)	:: MAKE IT 7-BIT ASCII
9982								
9983	053174	021627	000003			CMP	(SP),#3	:: IS IT A CONTROL-C?
9984	053200	001015				BNE	9\$	:: BRANCH IF NOT
9985	053202	104401	053754			TYPE	,SCNTLC	:: YES, ECHO CONTROL-C (+C)
9986	053206	062706	000006			ADD	#6,SP	:: CLEAN UP STACK
9987	053212	123727	001135	000001		CMPB	\$INTAG,#1	:: REENABLE TTY KEYBOARD INTERRUPTS?
9988	053220	001003				BNE	8\$	:: BRANCH IF NO
9989	053222	012777	000100	125714		MOV	#100,2\$TKS	:: ALLOW TTY KEYBOARD INTERRUPTS
9990	053230	000137	050106		8\$:	JMP	STOP	:: CONTROL-C RESTART
9991								
9992								
9993	053234	021627	000025		9\$:	CMP	(SP),#25	:: IS IT A CONTROL-U?
9994	053240	001005				BNE	10\$	:: BRANCH IF NOT
9995	053242	104401	053761			TYPE	,SCNTLU	:: YES, ECHO CONTROL-U (+U)
9996	053246	062706	000006		20\$:	ADD	#6,SP	:: IGNORE PREVIOUS INPUT
9997	053252	000737				BR	19\$	:: LET'S TRY IT AGAIN
9998								
9999								
0000	053254	021627	000015		10\$:	CMP	(SP),#15	:: IS IT A <CR>?
0001	053260	001022				BNE	16\$	:: BRANCH IF NO
0002	053262	005766	000004			TST	4(SP)	:: YES, IS IT THE FIRST CHAR?
0003	053266	001403				BEQ	11\$	:: BRANCH IF YES
0004	053270	016677	000002	125642		MOV	2(SP),2\$SWR	:: SAVE NEW SWR
0005	053276	062706	000006		11\$:	ADD	#6,SP	:: CLEAN UP STACK
0006	053302	104401	001205		14\$:	TYPE	,SCRLF	:: ECHO <CR> AND <LF>
0007	053306	123727	001135	000001		CMPB	\$INTAG,#1	:: RE-ENABLE TTY KBD INTERRUPTS?
0008	053314	001003				BNE	15\$	:: BRANCH IF NOT
0009	053316	012777	000100	125620		MOV	#100,2\$TKS	:: RE-ENABLE TTY KBD INTERRUPTS
0010	053324	000002			15\$:	RTI		:: RETURN
0011	053326	004737	051556		16\$:	JSR	PC,\$TYPEC	:: ECHO CHAR
0012	053332	021627	000060			CMP	(SP),#60	:: CHAR < 0?
0013	053336	002420				BLT	18\$	:: BRANCH IF YES
0014	053340	021627	000067			CMP	(SP),#67	:: CHAR > 7?
0015	053344	003015				BGT	18\$	:: BRANCH IF YES
0016	053346	042726	000060			BIC	#60,(SP)+	:: STRIP-OFF ASCII
0017	053352	005766	000002			TST	2(SP)	:: IS THIS THE FIRST CHAR
0018	053356	001403				BEQ	17\$	:: BRANCH IF YES
0019	053360	006316				ASL	(SP)	:: NO, SHIFT PRESENT
0020	053362	006316				ASL	(SP)	:: CHAR OVER TO MAKE
0021	053364	006316				ASL	(SP)	:: ROOM FOR NEW ONE.
0022	053366	005266	000002		17\$:	INC	2(SP)	:: KEEP COUNT OF CHAR
0023	053372	056616	177776			BIS	-2(SP),(SP)	:: SET IN NEW CHAR
0024	053376	000667				BR	7\$	:: GET THE NEXT ONE
0025	053400	104401	0012					

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SPDLIN:  MOV      R3, -(SP)          ;;SAVE R3
          CLR      -(SP)             ;;CLEAR THE RUBOUT KEY
15:      MOV      #STTYIN,R3         ;;GET ADDRESS
25:      CMP      #STTYIN+22,R3      ;;BUFFER FULL?
          BLOS     45                ;;BR IF YES
          RDOCHR                ;;GO READ ONE CHARACTER FROM THE TTY
          MOVB     (SP)+,(R3)        ;;GET CHARACTER
105:     CMPB     #177,(R3)          ;;IS IT A RUBOUT
          BNE      55                ;;BR IF NO
          TST      (SP)              ;;IS THIS THE FIRST RUBOUT?
          BNE      65                ;;BR IF NO
          MOVB     #'\\,95          ;;TYPE A BACK SLASH
          TYPE     ,95
          MOV      1-1,(SP)          ;;SET THE RUBOUT KEY
65:      DEC      R3                  ;;BACKUP BY ONE
          CMP      R3,#STTYIN        ;;STACK EMPTY?
          BLO      45                ;;BR IF YES
          MOVB     (R3),95           ;;SETUP TO TYPEOUT THE DELETED CHAR.
          TYPE     ,95
          BR       25                ;;GO TYPE
          BR       25                ;;GO READ ANOTHER CHAR.
55:      TST      (SP)              ;;RUBOUT KEY SET?
          BEQ      75                ;;BR IF NO
          BEQ      75

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10083 053576 112737 000134 053730      MOV8      8'\,9$      ::TYPE A BACK SLASH
10084 053604 104401 053730      TYPE      9$
10085 053610 005016      CLR      (SP)      ::CLEAR THE RUBOUT KEY
10086 053612 122713 000025      CMPB      825.(R3)  ::IS CHARACTER A CTRL U?
10087 053616 001003      BNE      8$      ::BR IF NO
10088 053620 104401 053761      TYPE      $CNTLU    ::TYPE A CONTROL "U"
10089 053624 000726      BR      1$      ::GO START OVER
10090 053626 122713 000022      CMPB      822.(R3)  ::IS CHARACTER A "1R"?
10091 053632 001011      BNE      3$      ::BRANCH IF NO
10092 053634 105013      CLRB      (R3)      ::CLEAR THE CHARACTER
10093 053636 104401 001205      TYPE      $CRLF     ::TYPE A "CR" & "LF"
10094 053642 104401 053732      TYPE      $TTYIN    ::TYPE THE INPUT STRING
10095 053646 000717      BR      2$      ::GO PICKUP ANOTHER CHACTER
10096 053650 104401 001204      TYPE      $QUES     ::TYPE A "?"
10097 053654 000712      BR      1$      ::CLEAR THE BUFFER AND LOOP
10098 053656 111337 053730      MOV8      (R3),9$    ::ECHO THE CHARACTER
10099 053662 104401 053730      TYPE      9$
10100 053666 122723 000015      CMPB      815.(R3)+ ::CHECK FOR RETURN
10101 053672 001305      BNE      2$      ::LOOP IF NOT RETURN
10102 053674 105063 177777      CLRB      -1(R3)    ::CLEAR RETURN (THE 15)
10103 053700 104401 001206      TYPE      $LF      ::TYPE A LINE FEED
10104 053704 005726      TST      (SP)+     ::CLEAN RUBOUT KEY FROM THE STACK
10105 053706 012603      MOV      (SP)+,R3  ::RESTORE R3
10106 053710 011646      MOV      (SP)-,(SP) ::ADJUST THE STACK AND PUT ADDRESS OF THE
10107 053712 016666 000004 000002      MOV      4(SP),2(SP) ::FIRST ASCII CHARACTER ON IT
10108 053720 012766 053732 000004      MOV      $TTYIN,4(SP)
10109 053726 000002      RTI      ::RETURN
10110 053730      000      9$: .BYTE      0      ::STORAGE FOR ASCII CHAR. TO TYPE
10111 053731      000      .BYTE      0      ::TERMINATOR
10112 053732 000022      $TTYIN: .BLKB      22      ::RESERVE 22 BYTES FOR TTY INPUT
10113 053754 041536 005015      $CNTLC: .ASCIZ /10<15><12> ::CONTROL "C"
10114 053761      136 006525 000012      $CNTLU: .ASCIZ /1U<15><12> ::CONTROL "U"
10115 053766 043536 005015      $CNTLG: .ASCIZ /1G<15><12> ::CONTROL "G"
10116 053773      015 051412 051127      $MSWR: .ASCIZ <15><12>/SWR = /
10117 054000 036440 000040
10118 054004 020040 042516 020127      $MNEW: .ASCIZ / NEW = /
10119 054012 020075      000
10120 054016
10121
10122
10123
10124
10125
10126
10127
10128
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10133
10134
10135 054016 011646      000004 000002      $RDOCT: MOV      (SP)-,(SP)  ::PROVIDE SPACE FOR THE
10136 054020 016666      MOV      4(SP),2(SP)  ::INPUT NUMBER
10137 054026 010046      MOV      R0,-(SP)  ::PUSH R0 ON STACK
10138 054030 010146      MOV      R1,-(SP)  ::PUSH R1 ON STACK

```

.EVEN
 .SBTTL READ AN OCTAL NUMBER FROM THE TTY

 *THIS ROUTINE WILL READ AN OCTAL (ASCII) NUMBER FROM THE TTY AND
 *CHANGE IT TO BINARY.
 *THE INPUT CHARACTERS WILL BE CHECKED TO INSURED THEY ARE LEGAL
 *OCTAL DIGITS. IF AN ILLEGAL CHARACTER IS READ A "?" WILL BE TYPED
 *FOLLOWED BY A CARRIAGE RETURN-LINE FEED. THE COMPLETE NUMBER MUST
 *THEN BE RETYPED. THE INPUT IS TERMINATED BY TYPING A CARRIAGE RETURN.
 *CALL:

* RDOCT ::READ AN OCTAL NUMBER
 * RETURN HERE ::LOW ORDER BITS ARE ON TOP OF THE STACK
 * ::HIGH ORDER BITS ARE IN \$HIOCT

10139	054032	010246			MOV	R2,-(SP)	::PUSH R2 ON STACK
10140	054034	104411			15: RDLIN		::READ AN ASCII LINE
10141	054036	012600			MOV	(SP)+,R0	::GET ADDRESS OF 1ST CHARACTER
10142	054040	010037	054144		MOV	R0,55	::AND SAVE IT
10143	054044	005001			CLR	R1	::CLEAR DATA WORD
10144	054046	005002			CLR	R2	
10145	054050	112046			25: MOV9	(R0)+,-(SP)	::PICKUP THIS CHARACTER
10146	054052	001420			BEG	35	::IF ZERO GET OUT
10147	054054	122716	000060		CMPB	#'0,(SP)	::MAKE SURE THIS CHARACTER
10148	054060	003026			BGT	45	::IS AN OCTAL DIGIT
10149	054062	122716	000067		CMPB	#'7,(SP)	
10150	054066	002423			BLT	45	
10151	054070	006301			ASL	R1	::*2
10152	054072	006102			ROL	R2	
10153	054074	006301			ASL	R1	::*4
10154	054076	006102			ROL	R2	
10155	054100	006301			ASL	R1	::*8
10156	054102	006102			ROL	R2	
10157	054104	042716	177770		BIC	#107,(SP)	::STRIP THE ASCII JUNK
10158	054110	062601			ADD	(SP)+,R1	::ADD IN THIS DIGIT
10159	054112	000756			BR	25	::LOOP
10160	054114	005726			35: TST	(SP)+	::CLEAN TERMINATOR FROM STACK
10161	054116	010166	000012		MOV	R1,12(SP)	::SAVE THE RESULT
10162	054122	010237	054154		MOV	R2,\$HI OCT	
10163	054126	012602			MOV	(SP)+,R2	::POP STACK INTO R2
10164	054130	012601			MOV	(SP)+,R1	::POP STACK INTO R1
10165	054132	012600			MOV	(SP)+,R0	::POP STACK INTO R0
10166	054134	000002			RTI		::RETURN
10167	054136	005726			45: TST	(SP)+	::CLEAN PARTIAL FROM STACK
10168	054140	105010			CLRB	(R0)	::SET A TERMINATOR
10169	054142	104401			TYPE		::TYPE UP THRU THE BAD CHAR.
10170	054144	003000			55: .WORD	0	
10171	054146	104401	001204		TYPE	\$QUES	::"? "CR" & "LF"
10172	054152	000730			BR	15	::TRY AGAIN
10173	054154	000000			\$HI OCT: .WORD	0	::HIGH ORDER BITS GO HERE
10174					.SBTTL	DOUBLE LENGTH BINARY TO OCTAL ASCII CONVERT ROUTINE	
10175					*****		
10176					*THIS ROUTINE WILL CONVERT A 32-BIT UNSIGNED BINARY NUMBER TO AN		
10177					*UNSIGNED OCTAL ASCII NUMBER.		
10178					*CALL		
10179					* MOV	#PNTR,-(SP)	::POINTER TO LOW WORD OF BINARY NUMBER
10180					* JSR	PC,\$SDB20	::CALL THE ROUTINE
10181					* RETURN		::THE ADDRESS OF THE FIRST ASCII CHAR. IS ON THE STACK
10182							
10183							
10184							
10185	054156	104413			\$SDB20: SAVREG		::SAVE ALL REGISTERS
10186	054160	016601	000002		MOV	2(SP),R1	::PICKUP THE POINTER TO LOW WORD
10187	054164	012705	054275		MOV	#SOCTVL+13.,R5	::POINTER TO DATA TABLE
10188	054170	012704	000014		MOV	#12.,R4	::DO ELEVEN CHARACTERS
10189	054174	012703	177770		MOV	#107,R3	::MASK
10190	054200	012100			MOV	(R1)+,R0	::LOWER WORD
10191	054202	012101			MOV	(R1)+,R1	::HIGH WORD
10192	054204	005002			CLR	R2	::TERMINATOR
10193	054206	110245			15: MOV9	R2,-(R5)	::PUT CHARACTER IN DATA TABLE
10194	054210	010002			MOV	RC,R2	::GET THIS DIGIT

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DOUBLE LENGTH BINARY TO OCTAL ASCII CONVERT ROUTINE

SEQ 0200

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10209 054272 0135304      DEC      R4      ;; COUNT THIS CHARACTER
10210 054273 0135307      BEQ      R5      ;; BR IF NOT THE LAST DIGIT
10211 054274 001405      BEQ      R5      ;; BR IF IT IS THE LAST DIGIT
10212 054275 005205      INC      R5      ;; ALL DIGITS DONE-ADJUST POINTER FOR FIRST
10213 054276 013556      MOV      RS,2(SP)  ;; ASCII CHAR. & PUT IT ON THE STACK
10214 054277 104414      RESREG      ;; RESTORE ALL REGISTERS
10215 054278 000207      RTS      PC      ;; RETURN TO USER
10216 054279 006203      25:  ASR      R3      ;; POSITION THE MASK FOR THE LAST DIGIT
10217 054280 006001      35:  RCR      R1      ;; POSITION THE BINARY NUMBER FOR
10218 054281 006000      RCR      R0      ;; THE NEXT OCTAL DIGIT
10219 054282 006001      RCR      R1
10220 054283 006000      RCR      R0
10221 054284 006001      RCR      R1
10222 054285 006000      RCR      R0
10223 054286 006001      RCR      R1
10224 054287 006000      RCR      R0
10225 054288 006001      RCR      R1
10226 054289 006000      RCR      R0
10227 054290 040302      BIC      R3,R2      ;; MASK OUT ALL JUNK
10228 054291 062702      ADD      #0,R2      ;; MAKE THIS CHAR. ASCII
10229 054292 000753      BR      15      ;; GO PUT IT IN THE DATA TABLE
10230 054293 000016      15:  BR      14      ;; RESERVE DATA TABLE
10231 054294 000016      14:  .BLKB      14      ;;
10232 054295 000016      .SBTTL      SINGLE LENGTH BINARY TO DECIMAL ASCII ROUTINE
10233 054296 000016
10234 054297
10235 054298
10236 054299
10237 054300
10238 054301
10239 054302
10240 054303
10241 054304
10242 054305
10243 054306
10244 054307
10245 054308
10246 054309
10247 054310
10248 054311
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10256 054319
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10268 054331
10269 054332
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05:08.6 R006 DRIVE DIAGNOSTIC PART 1
029640.P11 06-OCT-76 18:09

MACY11 27(1006) 06-OCT-76 23:23 PAGE 201
DOUBLE LENGTH BINARY TO DECIMAL ASCII CONVERT ROUTINE

SEQ 0201

```

10251 054362 012704 054442      MOV      #STNPWR,R4      ;;ADDRESS OF TEN POWER
10252 054366 012705 054444      MOV      #STNPWR+2,R5
10253 054372 005503 18:      CLR      R3      ;;CLEAR PARTIAL
10254 054374 161401 28:      SUB      (R4),R1      ;;SUBTRACT TEN POWER
10255 054376 005602      SBC      R2
10256 054400 161502      SUB      (R5),R2
10257 054402 002402      BLT      3$      ;;BR IF TEN POWER TOO LARGE
10258 054404 005203      INC      R3      ;;ADD 1 TO PARTIAL
10259 054406 000772      BR      2$      ;;COP
10260 054410 062401 3$:      ADD      (R4)+,R1      ;;RESTORE SUBTRACTED VALUE
10261 054412 005502      ADC      R2
10262 054414 062402      ADD      (R4)+,R2
10263 054416 022525      CMP      (R5)+,(R5)+      ;;MOVE TO NEXT TEN POWER
10264 054420 052703 00036C      BIS      #0,R3      ;;CHANGE PARTIAL TO ASCII
10265 054424 110320      MOVB     R3,(R0)+      ;;SAVE IT
10266 054426 005327      DEC      (PC)+      ;;DONE?
10267 054430 000000 4$:      .WORD    0
10268 054432 001357      BNE      1$      ;;BR IF NO
10269 054434 105020      CLRB     (R0)+      ;;TERMINATOR
10270 054436 104414      RESREG   ;;RESTORE REGISTERS
10271 054440 000207      RTS      PC      ;;RETURN
10272 054442 145000 STNPWR:      145000      ;;1.0E09
10273 054444 035632      35632
10274 054446 160400      160400      ;;1.0E08
10275 054450 002765      2765
10276 054452 113200      113200      ;;1.0E07
10277 054454 000230      230
10278 054456 041100      041100      ;;1.0E06
10279 054460 000017      17
10280 054462 103240      103240      ;;1.0E05
10281 054464 000001      1
10282 054466 023420      23420      ;;1.0E04
10283 054470 000000      0
10284 054472 001750      1750      ;;1.0E03
10285 054474 000000      0
10286 054476 000144      144      ;;1.0E02
10287 054500 000000      0
10288 054502 000012      12      ;;1.0E01
10289 054504 000000      0
10290 054506 000001      1      ;;1.0E00
10291 054510 000000      0
10292 054512 000014 SDECVL: .BLKB 12      ;;RESERVE STORAGE FOR ASCII STRING
10293 .SBTTL TYPE NUMERICAL ASCII STRING SUPPRESS LEADING ZEROS
10294
10295 ;*****
10296 ;*THIS ROUTINE IS USED TO TYPE AN ASCII NUMBER SUPPRESSING THE
10297 ;*LEADING NUMBERS.
10298 ;*CALL
10299 ;*      MOV      #NUMADR,-(SP)      ;;FIRST ADDRESS OF ASCII STRING
10300 ;*      JSR      PC,2*$$SUPRS
10301
10302
10303 $$SUPRS: MOV      R0,-(SP)      ;;SAVE R0
10304          MOV      4(SP),R0      ;;PICKUP THE POINTER
10305 1$:      TSTB     (R0)      ;;TERMINATOR?
10306          BEQ      2$      ;;BR IF YES

```

H16

UNIBUS RKO6 DRIVE DIAGNOSTIC PART 1
 02-864C.P11 06-007-76 18:09

MACY11 27,1006) 06-007-76 23:23 PAGE 202
 TYPE NUMERICAL ASCII STRING SUPPRESS LEADING ZEROS

350 0002

```

10307 054540 122720 000060
10308 054541 001773
10309 054546 005300
10310 054550 010037 054556
10311 054554 104401
10312 054556 000000
10313 054560 012603
10314 054562 012616
10315 054564 000207
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10334 054566 010046
10335 054570 010046
10336 054572 010246
10337 054574 010346
10338 054576 010446
10339 054600 010546
10340 054602 016646 000022
10341 054606 016646 000022
10342 054612 016646 000022
10343 054616 016646 000022
10344 054622 000002
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10350 054624 012666 000022
10351 054630 012666 000022
10352 054634 012666 000022
10353 054640 012666 000022
10354 054644 012605
10355 054646 012604
10356 054650 012603
10357 054652 012602
10358 054654 012601
10359 054656 012600
10360 054660 000002
10361
10362
  
```

```

      CMPB  #0,(RO)+      :: IS THIS AN ASCII "0" ?
      BEQ   1$            :: BR IF YES
2$:   DEC   RO             :: BACKUP BY "1"
      MOV   RO,3$         :: SAVE FOR TYPING
      TYPE  C              :: GO TYPE
3$:   .WORD C             :: ASCII POINTER GOES HERE
      MOV   (SP)+,RO       :: RESTORE RO
      MOV   (SP)+,(SP)     :: RESTORE THE STACK
      RTS   PC            :: RETURN
.SBTL  SAVE AND RESTORE RO-R5 ROUTINES
  
```

```

*****
*SAVE RO-R5
*CALL:
*   SAVREG
*UPON RETURN FROM $SAVREG THE STACK WILL LOOK LIKE:
*
*TOP---(+16)
*+2---(+18)
*+4---R5
*+6---R4
*+8---R3
*+10---R2
*+12---R1
*+14---R0
  
```

```

$SAVREG:
      MOV   RO,-(SP)      :: PUSH RO ON STACK
      MOV   R1,-(SP)      :: PUSH R1 ON STACK
      MOV   R2,-(SP)      :: PUSH R2 ON STACK
      MOV   R3,-(SP)      :: PUSH R3 ON STACK
      MOV   R4,-(SP)      :: PUSH R4 ON STACK
      MOV   R5,-(SP)      :: PUSH R5 ON STACK
      MOV   22(SP),-(SP)  :: SAVE PS OF MAIN FLOW
      MOV   22(SP),-(SP)  :: SAVE PC OF MAIN FLOW
      MOV   22(SP),-(SP)  :: SAVE PS OF CALL
      MOV   22(SP),-(SP)  :: SAVE PC OF CALL
      RTI
  
```

```

*RESTORE RO-R5
*CALL:
*   RESREG
$RESREG:
      MOV   (SP)+,22(SP)  :: RESTORE PC OF CALL
      MOV   (SP)+,22(SP)  :: RESTORE PS OF CALL
      MOV   (SP)+,22(SP)  :: RESTORE PC OF MAIN FLOW
      MOV   (SP)+,22(SP)  :: RESTORE PS OF MAIN FLOW
      MOV   (SP)+,R5      :: POP STACK INTO R5
      MOV   (SP)+,R4      :: POP STACK INTO R4
      MOV   (SP)+,R3      :: POP STACK INTO R3
      MOV   (SP)+,R2      :: POP STACK INTO R2
      MOV   (SP)+,R1      :: POP STACK INTO R1
      MOV   (SP)+,RO      :: POP STACK INTO RO
      RTI
.SBTL  TRAP DECODER
  
```

```

*****
*THIS ROUTINE WILL PICKUP THE LOWER BYTE OF THE "TRAP" INSTRUCTION
*AND USE IT TO INDEX THROUGH THE TRAP TABLE FOR THE STARTING ADDRESS
*OF THE DESIRED ROUTINE. THEN USING THE ADDRESS OBTAINED IT WILL
*GO TO THAT ROUTINE.

```

```

$TRAP:  MOV    RC, -(SP)      ;; SAVE RC
        MOV    2(SP), RC     ;; GET TRAP ADDRESS
        TST    -(RC)         ;; BACKUP BY 2
        MOVB   (RC), RC      ;; GET RIGHT BYTE OF TRAP
        ASL    RC            ;; POSITION FOR INDEXING
        MOV    $TRAPD(RC), RC ;; INDEX TO TABLE
        RTS    RC            ;; GO TO ROUTINE

```

```

;; THIS IS USE TO HANDLE THE "GETPRI" MACRO

```

```

$TRAP2:  MOV    (SP), -(SP)   ;; MOVE THE PC DOWN
        MOV    4(SP), 2(SP)  ;; MOVE THE PSW DOWN
        RTI                     ;; RESTORE THE PSW

```

```

.SBTL TRAP TABLE

```

```

*THIS TABLE CONTAINS THE STARTING ADDRESSES OF THE ROUTINES CALLED
*BY THE "TRAP" INSTRUCTION.

```

	ROUTINE		
\$TRAPD:	.WORD	\$TRAP2	
\$TYPE	::CALL=TYPE	TRAP+1(104401)	TTY TYPEOUT ROUTINE
\$TYPOC	::CALL=TYPOC	TRAP+2(104402)	TYPE OCTAL NUMBER (WITH LEADING ZEROS)
\$TYPOS	::CALL=TYPOS	TRAP+3(104403)	TYPE OCTAL NUMBER (NO LEADING ZEROS)
\$TYPON	::CALL=TYPON	TRAP+4(104404)	TYPE OCTAL NUMBER (AS PER LAST CALL)
\$TYPDS	::CALL=TYPDS	TRAP+5(104405)	TYPE DECIMAL NUMBER (WITH SIGN)
\$GTSWR	::CALL=GTSWR	TRAP+6(104406)	GET SOFT-SWR SETTING
\$CKSWR	::CALL=CKSWR	TRAP+7(104407)	TEST FOR CHANGE IN SOFT-SWR
\$RDCHR	::CALL=RDCHR	TRAP+10(104410)	TTY TYPEIN CHARACTER ROUTINE
\$RDLIN	::CALL=RDLIN	TRAP+11(104411)	TTY TYPEIN STRING ROUTINE
\$RDOCT	::CALL=RDOCT	TRAP+12(104412)	READ AN OCTAL NUMBER FROM TTY
\$SAVREG	::CALL=SAVREG	TRAP+13(104413)	SAVE R0-R5 ROUTINE
\$RESREG	::CALL=RESREG	TRAP+14(104414)	RESTORE R0-R5 ROUTINE
\$SCOPI	::CALL=SCOPI	TRAP+15(104415)	INTERNAL LOOP ON ERROR

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TRAP TABLE

SEQ 0204

.SB*TL SERVICE MSGS

.EVEN

BSE225: .BLKW 50.

;22 SECTOR SOFTWARE INFO

MSG1: .ASCII (CR)(LF) UNIBUS RY06 DRIVE DIAGNOSTIC/

.ASCII (CR)(LF) PART 1 /

.ASCII (CR)(LF) MAINDEC-11-DZRH-C-PB/(CR)(LF)

.ASCII (CR)(LF) *** CAUTION ***/(CR)(LF)

.ASCII (CR)(LF) THIS PROGRAM SHOULD BE HALTED ONLY BY TYPING CONTROL-C/

.ASCII (CR)(LF) OTHERWISE, CARTRIDGE FORMATTING AND/OR THE DRIVE/

.ASCII (CR)(LF) MAY BE LEFT IN AN UNDETERMINED STATE/(CR)(LF)

.ASCII (CR)(LF) INITIALLY, DRIVES TO BE TESTED SHOULD HAVE:/(CR)(LF)

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MSG1: 27.1006) 06-OCT-76 23:23 PAGE 205
SERVICE MSGS

SEQ 0205

.ASCII (CR)(LF)/A. HEADS MANUALLY LOADED/

.ASCII (CR)(LF)/B. CORRECT PORT SELECTED/

.ASCII (CR)(LF)/C. WRITE LOCK DISABLED/

.ASCII (CR)(LF)/D. DRIVE READY INDICATOR ON/(CR)(LF)

.ASCII (CR)(LF)/DRIVES NOT TO BE TESTED MUST HAVE BOTH/

.ASCIIZ (CR)(LF)/PORTS DESELECTED/(CR)(LF)

MSG2: .ASCIIZ (CR)(LF)/PUT SCRATCH PACK IN DRIVE 0/

MSG3: .ASCIIZ (CR)(LF)/DRIVE(S) TO BE TESTED: /

MSG4: .ASCIIZ (CR)(LF)/BUS ADDR (177440): /

MSG5: .ASCIIZ (CR)(LF)/CONTR ADDR (210): /

MSG6: .ASCIIZ (CR)(LF)/INTR AT PC=/

L16

UNIT 15 RK06 DRIVE DIAGNOSTIC PART 1
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SERVICE MSGS

SEQ 0206

10520	056176	036503	000		
10521	056201	015	042012	044522	MSG7: .ASCIZ <CR><LF>/DRIVE 0 WILL NOT BE TESTED/
10522	056206	042526	030040	053440	
10523	056214	046111	020114	047516	
10524	056222	020124	042502	052040	
10525	056230	051505	042524	000104	
10526	056236	035015	042524	052123	MSG8: .ASCIZ <CR><LF>/TEST 16 TAKES 2 TO 4 MIN./<CR><LF>
10527	056244	030440	020066	040524	
10528	056252	042513	020123	020062	
10529	056260	047524	032040	046440	
10530	056266	047111	006456	000012	
10531	056274	035015	054502	040520	MSG9: .ASCIZ <CR><LF>/BYPASSING TEST 16/<CR><LF>
10532	056302	051523	047111	020107	
10533	056310	042524	052123	030440	
10534	056316	006466	000012		
10535	056322	005015	053412	046111	MSG10: .ASCIZ <CR><LF><LF>/WILL TEST DRIVES:/
10536	056330	020114	042524	052123	
10537	056336	042040	044522	042526	
10538	056344	035123	000		
10539	056347	015	005012	047520	MSG11: .ASCIZ <CR><LF><LF>/POWER UP RESTART TO TEST 1/<CR><LF>
10540	056354	042527	020122	050125	
10541	056362	051040	051505	040524	
10542	056370	052122	052040	020117	
10543	056376	042524	052123	030440	
10544	056404	005015	000		
10545	056407	015	050012	041501	MSG12: .ASCIZ <CR><LF>/PACK BEING FORMATTED/<CR><LF>
10546	056414	020113	042502	047111	
10547	056422	020107	047506	046522	
10548	056430	052101	042524	006504	
10549	056436	000012			
10550	056440	005015	047516	046040	MSG13: .ASCII <CR><LF>/NO L OR P CLOCKS/
10551	056446	047440	020122	020120	
10552	056454	046103	041517	051513	
10553	056462	005015	046101	020114	.ASCIZ <CR><LF>/ALL TIMING TESTS BYPASSED/
10554	056470	044524	044515	043516	
10555	056476	052040	051505	051524	
10556	056504	041040	050131	051501	
10557	056512	042523	000104		
10558	056516	005015	054502	040520	MSG14: .ASCIZ <CR><LF>/BYPASSING DRIVE /
10559	056524	051523	047111	020107	
10560	056532	051104	053111	020105	
10561	056540	000			
10562	056541	015	005012	051104	MSG15: .ASCIZ <CR><LF><LF>/DRIVE /
10563	056546	053111	020105	000	
10564	056553	015	042012	044522	MSG16: .ASCIZ <CR><LF>/DRIVE SER #/
10565	056560	042526	051440	051105	
10566	056566	021440	000		
10567	056571	015	041412	051101	MSG17: .ASCIZ <CR><LF>/CART SER #/
10568	056576	020124	042523	020122	
10569	056604	000043			
10570	056606	005015	040412	047502	MSG18: .ASCIZ <CR><LF><LF>/ABORTING BAL OF TESTS/<CR><LF><LF>
10571	056614	052122	047111	020107	
10572	056622	040502	020114	043117	
10573	056630	052040	051505	051524	
10574	056636	005015	000012		
10575	056642	005015	040412	046114	MSG19: .ASCIZ <CR><LF><LF>/ALL DRIVES TESTED/<CR><LF><LF>

M16

UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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SERVICE MSGS

SEG 0207

10576	056650	042040	044522	042526
10577	056656	020123	042524	052123
10578	056664	042105	005015	000012
10579	056672	005015	047515	044504
10580	056700	044506	042105	053040
10581	056706	051105	044523	047117
10582	056714	047440	020106	047506
10583	056722	046522	052101	050040
10584	056730	041501	020113	042524
10585	056736	052123	043040	051117
10586	056744	046440	042117	046125
10587	056752	020105	042524	052123
10588	056760	047111	107	
10589	056763	015	052012	020117
10590	056770	042522	052123	051117
10591	056776	020105	042510	042101
10592	057004	051105	020123	047117
10593	057012	041440	046131	030040
10594	057020	023040	030440	020054
10595	057026	046101	020114	051124
10596	057034	041501	051513	000
10597	057041	015	041012	050131
10598	057046	051501	044523	043516
10599	057054	052040	051505	051524
10600	057062	031440	026066	030064
10601	057070	032054	020061	047506
10602	057076	020122	047515	052504
10603	057104	042514	052040	051505
10604	057112	044524	043516	005015
10605	057120	000		
10606	057121	015	043012	051117
10607	057126	040515	052124	047111
10608	057134	020107	044506	044516
10609	057142	044123	042105	005015
10610	057150	000		
10611				
10612	057151	015	050012	046507
10613	057156	040440	047502	052122
10614	057164	050040	047105	044504
10615	057172	043516	027056	000056
10616	057200	005015	040510	052114
10617	057206	050040	047105	044504
10618	057214	043516	027056	000056
10619	057222	005015	043520	020115
10620	057230	041101	051117	042524
10621	057236	000104		
10622	057240	005015	050103	020125
10623	057246	040510	052114	042105
10624	057254	000		
10625				
10626				
10627				
10628				
10629	057255	015	042412	051122
10630	057262	020054	047117	054514
10631	057270	030040	052040	051110

MSG20: .ASCII <CR><LF>/MODIFIED VERSION OF FORMAT PACK TEST FOR MODULE TESTING/

.ASCIIZ <CR><LF>/TO RESTORE HEADERS ON CYL 0 & 1, ALL TRACKS/

MSG21: .ASCIIZ <CR><LF>/BYPASSING TESTS 36,40,41 FOR MODULE TESTING/<CR><LF>

MSG22: .ASCIIZ <CR><LF>/FORMATTING FINISHED/<CR><LF>

MSG74: .ASCIIZ <CR><LF>/PGM ABORT PENDING.../

MSG75: .ASCIIZ <CR><LF>/HALT PENDING.../

MSG76: .ASCIIZ <CR><LF>/PGM ABORTED/

MSG77: .ASCIIZ <CR><LF>/CPU HALTED/

.SBTTL ERR MSGS

EM1: .ASCIIZ <CR><LF>/ERR, ONLY 0 THRU 7 ALLOWED, TRY AGAIN/<CR><LF>

B01

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ERR MSGS

SEG 0209

0630	057000	020125	020067	046101
0631	057000	020125	020067	046101
0632	057000	020125	020067	046101
0633	057000	020125	020067	046101
0634	057000	020125	020067	046101
0635	057000	020125	020067	046101
0636	057000	020125	020067	046101
0637	057000	020125	020067	046101
0638	057000	020125	020067	046101
0639	057000	020125	020067	046101
0640	057000	020125	020067	046101
0641	057000	020125	020067	046101
0642	057000	020125	020067	046101
0643	057000	020125	020067	046101
0644	057000	020125	020067	046101
0645	057000	020125	020067	046101
0646	057000	020125	020067	046101
0647	057000	020125	020067	046101
0648	057000	020125	020067	046101
0649	057000	020125	020067	046101
0650	057000	020125	020067	046101
0651	057000	020125	020067	046101
0652	057000	020125	020067	046101
0653	057000	020125	020067	046101
0654	057000	020125	020067	046101
0655	057000	020125	020067	046101
0656	057000	020125	020067	046101
0657	057000	020125	020067	046101
0658	057000	020125	020067	046101
0659	057000	020125	020067	046101
0660	057000	020125	020067	046101
0661	057000	020125	020067	046101
0662	057000	020125	020067	046101
0663	057000	020125	020067	046101
0664	057000	020125	020067	046101
0665	057000	020125	020067	046101
0666	057000	020125	020067	046101
0667	057000	020125	020067	046101
0668	057000	020125	020067	046101
0669	057000	020125	020067	046101
0670	057000	020125	020067	046101
0671	057000	020125	020067	046101
0672	057000	020125	020067	046101
0673	057000	020125	020067	046101
0674	057000	020125	020067	046101
0675	057000	020125	020067	046101
0676	057000	020125	020067	046101
0677	057000	020125	020067	046101
0678	057000	020125	020067	046101
0679	057000	020125	020067	046101
0680	057000	020125	020067	046101
0681	057000	020125	020067	046101
0682	057000	020125	020067	046101
0683	057000	020125	020067	046101
0684	057000	020125	020067	046101
0685	057000	020125	020067	046101
0686	057000	020125	020067	046101
0687	057000	020125	020067	046101

EM2: .ASCIZ SELECTED DRIVE # IN RKCS2 CANNOT BE READ BACK IN RMR2/

EM3: .ASCIZ (CR)(LF)/ABORT TESTS...UNEXP TIME OUT AT PC=/

EM5: .ASCIZ /MOS SET IN RKCS2/

EM6: .ASCIZ /UFE SET IN RKCS2/

EM7: .ASCIZ /DRA IN RKDS & NED IN RKCS2 RESET; WRONG PORT SELECTED/

EM8: .ASCIZ DRIVE PRESENT BUT NOT TYPED BY OPERATOR/

EM9: .ASCIZ /DRIVE NOT PRESENT BUT TYPED BY OPERATOR/

EM10: .ASCIZ /ABORT TESTS...CANNOT REF CONTR REG/

CO1

JNIBUS RK06 DRIVE DIAGNOSTIC PART 1
ERR MSGS

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ERR MSGS

SEQ 0209

10688	057764	020106	047503	052116	
10689	057772	020122	042522	000107	
10690	060000	051104	020101	047111	EM11: .ASCIZ /DRA IN RKDS & NED IN RKCS2 BOTH SET/
10691	060006	051340	042113	020123	
10692	060014	020046	042516	020104	
10693	060022	047111	051040	041513	
10694	060030	031123	041040	052117	
10695	060036	020110	042523	000124	
10696	060044	047503	052116	020122	EM12: .ASCIZ /CONTR NOT READY IN RKCS1/
10697	060052	047516	020124	042522	
10698	060060	042101	020131	047111	
10699	060066	051040	041513	030523	
10700	060074	000			
10701	060075	0116	020117	052101	EM13: .ASCIZ NO ATTN IN RKASOF/
10702	060102	047124	044440	020116	
10703	060110	045522	051501	043117	
10704	060116	000			
10705	060117	127	047522	043516	EM14: .ASCIZ /WRONG ATTN IN RKASOF/
10706	060124	040440	052124	020116	
10707	060132	047111	051040	040513	
10708	060140	047523	000106		
10709	060144	051104	054504	047040	EM15: .ASCIZ /DRDY NOT CLEARED IN RKMR2/
10710	060152	052117	041440	042514	
10711	060160	051101	042105	044440	
10712	060166	020116	045522	051115	
10713	060174	000062			
10714	060176	051504	020103	047516	EM16: .ASCIZ /DSC NOT SET IN RKMR2/
10715	060204	020124	042523	020124	
10716	060212	047111	051040	046513	
10717	060220	031122	000		
10718	060223	115	043523	040440	EM17: .ASCIZ /MSG A0 ERR/
10719	060230	020060	051105	000122	
10720	060236	051515	020107	030102	EM18: .ASCIZ /MSG B0 ERR/
10721	060244	042440	051122	000	
10722	060251	115	043523	040440	EM19: .ASCIZ /MSG A1 ERR/
10723	060256	020061	051105	000122	
10724	060264	051515	020107	030502	EM20: .ASCIZ /MSG B1 ERR/
10725	060272	042440	051122	000	
10726	060277	103	051105	020122	EM21: .ASCIZ /CERR SET IN RKCS1/
10727	060304	042523	020124	047111	
10728	060312	051040	041513	030523	
10729	060320	000			
10730	060321	122	051514	044440	EM22: .ASCIZ /RLS IN RKCS2 SET CERR IN RKCS1/
10731	060326	020116	045522	051503	
10732	060334	020062	042523	020124	
10733	060342	042503	051122	044440	
10734	060350	020116	045522	051503	
10735	060356	000061			
10736	060360	043125	020105	047111	EM23: .ASCIZ /UFE IN RKCS2 SET (SACK) AFTER RLS IN RKCS2 SENT/
10737	060366	051040	041513	031123	
10738	060374	051440	052105	024040	
10739	060402	040523	045503	020051	
10740	060410	043101	042524	020122	
10741	060416	046122	020123	047111	
10742	060424	051040	041513	031123	
10743	060432	051440	047105	000124	

001

UNIBUS R06 DRIVE DIAGNOSTIC PART 1
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ERR MSGS

SEG 0210

10744	060440	053126	047040	052117	EM24:	.ASCIZ	/VV NOT SET IN RKMR2/
10745	060446	051440	052105	044440			
10746	060454	020116	045522	051115			
10747	060462	000062					
10748	060464	051104	020126	054524	EM25:	.ASCIZ	.DRV TYPE SET IN RKMR2/
10749	060472	042520	051440	052105			
10750	060500	044440	020116	045522			
10751	060506	051115	000062				
10752	060512	042104	020124	042523	EM26:	.ASCIZ	.DOT SET IN RKDS/
10753	060520	020124	047111	051040			
10754	060526	042113	000123				
10755	060532	052104	042531	051440	EM27:	.ASCIZ	.DTYE SET IN RKER/
10756	060540	052105	044440	020116			
10757	060546	045522	051105	000			
10758	060553	104	054524	020105	EM28:	.ASCIZ	.DTYE NOT SET IN RKER/
10759	060550	047516	020124	042523			
10760	060556	020124	047111	051040			
10761	060574	042513	000122				
10762	060600	052104	042531	044440	EM29:	.ASCIZ	.DTYE IN RKER DID NOT SET CERR IN RKCS1/
10763	060606	020116	045522	051105			
10764	060614	042040	042111	047040			
10765	060622	052117	051440	052105			
10766	060630	041440	051105	020122			
10767	060636	047111	051040	041513			
10768	060644	030523	000				
10769	060647	103	042055	050040	EM30:	.ASCIZ	/C-D PAR ERR SET IN RKMR3/
10770	060654	051101	042440	051122			
10771	060662	051440	052105	044440			
10772	060670	020116	045522	051115			
10773	060676	000063					
10774	060700	026504	020103	040520	EM31:	.ASCIZ	/D-C PAR SET IN RKCS1.
10775	060706	020122	042523	020124			
10776	060714	047111	051040	041513			
10777	060722	030523	000				
10778	060725	106	052114	047040	EM32:	.ASCIZ	/FLT NOT SET IN RKMR3/
10779	060732	052117	051440	052105			
10780	060740	044440	020116	045522			
10781	060746	051115	000063				
10782	060752	026503	020104	040520	EM33:	.ASCIZ	.C-D PAR ERR NOT SET IN RKMR3/
10783	060760	020122	051105	020122			
10784	060766	047516	020124	042523			
10785	060774	020124	047111	051040			
10786	061002	046513	031522	000			
10787	061007	104	041455	050040	EM34:	.ASCIZ	/D-C PAR NOT SET IN RKCS1/
10788	061014	051101	047040	052117			
10789	061022	051440	052105	044440			
10790	061030	020116	045522	051503			
10791	061036	000061					
10792	061040	026504	020103	040520	EM35:	.ASCIZ	/D-C PAR IN RKCS1 DID NOT SET CERR IN RKCS1/
10793	061046	020122	047111	051040			
10794	061054	041513	030523	042040			
10795	061062	042111	047040	052117			
10796	061070	051440	052105	041440			
10797	061076	051105	020122	047111			
10798	061104	051040	041513	030523			
10799	061112	000					

E01

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 ERR MSGS

SEG 0211

10800	061113	103	046131	040440	EM36: .ASCIZ /CYL ADDR IN B2 NOT SAME AS RKDC/
10801	061123	042104	020122	047111	
10802	061126	041040	020062	047516	
10803	061134	020124	040523	042515	
10804	061142	040440	020123	045522	
10805	061150	041504	000		
10806	061153	103	046131	042040	EM37: .ASCIZ /CYL DIFF IN A2 NOT SAME AS RKDC/
10807	061160	043111	020106	047111	
10808	061166	040440	020062	047516	
10809	061174	020124	040523	042515	
10810	061202	040440	020123	045522	
10811	061210	041504	000		
10812	061213	103	046131	042040	EM38: .ASCIZ /CYL DIFF IN RKMR2 NOT SAME AS 'CYL DIFF'/
10813	061220	043111	020106	047111	
10814	061226	051040	046513	031122	
10815	061234	047040	052117	051440	
10816	061242	046501	020105	051501	
10817	061250	023440	054503	020114	
10818	061256	044504	043106	000047	
10819	061264	054503	020114	044504	EM39: .ASCIZ /CYL DIFF & OFST IN A2 NOT =0/
10820	061272	043106	023040	047440	
10821	061300	051506	020124	047111	
10822	061306	040440	020062	047516	
10823	061314	020124	030075	000	
10824	061321	103	046131	040440	EM40: .ASCIZ /CYL ADDR IN B2 NOT =0/
10825	061326	042104	020122	047111	
10826	061334	041040	020062	047516	
10827	061342	020124	030075	000	
10828	061347	103	046131	040440	EM41: .ASCIZ /CYL ADDR IN B2 DID NOT REMAIN =0/
10829	061354	042104	020122	047111	
10830	061362	041040	020062	044504	
10831	061370	020104	047516	020124	
10832	061376	042522	040515	047111	
10833	061404	036440	000060		
10834	061410	042510	042101	040440	EM43: .ASCIZ /HEAD ADDR IN B3 NOT =0/
10835	061416	042104	020122	047111	
10836	061424	041040	020063	047516	
10837	061432	020124	030075	000	
10838	061437	110	040505	020104	EM44: .ASCIZ /HEAD DECODE IN B3 INCORRECT/
10839	061444	042504	047503	042504	
10840	061452	044440	020116	031502	
10841	061460	044440	041516	051117	
10842	061466	042522	052103	000	
10843	061473	104	044522	042526	EM45: .ASCIZ /DRIVE READY IN RKMR2 NOT SET BY 1 SEC FROM FWD/
10844	061500	051040	040505	054504	
10845	061506	044440	020116	045522	
10846	061514	051115	020062	047516	
10847	061522	020124	042523	020124	
10848	061530	054502	030440	051440	
10849	061536	041505	041040	047522	
10850	061544	020115	053506	104	
10851	061551	015	044412	020116	.ASCIZ <CR><LF>/IN RTZ PORTION OF START SPIN CMD
10852	061556	052122	020132	047520	
10853	061564	052122	047511	020116	
10854	061572	043117	051440	040524	
10855	061600	052122	051440	044520	

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ERR MSGS

SEG 0212

10856	061606	020116	046503	000104	
10857	061614	051515	020107	031101	EM46: .ASCIZ /MSG A2 ERR/
10858	061622	042440	051122	000	
10859	061627	115	043523	041040	EM47: .ASCIZ /MSG B2 ERR/
10860	061634	020062	051105	000122	
10861	061642	051515	020107	031502	EM48: .ASCIZ /MSG B3 ERR/
10862	061650	042440	051122	000	
10863	061655	106	042127	047040	EM49: .ASCIZ /FWD NOT SET IN RKMR2 IN RTZ PORTION OF START SPIN CMD/
10864	061662	052117	051440	052105	
10865	061670	044440	020116	045522	
10866	061676	051115	020062	047111	
10867	061704	051040	055124	050040	
10868	061712	051117	044524	047117	
10869	061720	047440	020106	052123	
10870	061726	051101	020124	050123	
10871	061734	047111	041440	042115	
10872	061742	000			
10873	061743	106	042127	047040	EMS0: .ASCIZ /FWD NOT SET IN RKMR2 FROM START SPIN CMD/
10874	061750	052117	051440	052105	
10875	061756	044440	020116	045522	
10876	061764	051115	020062	051106	
10877	061772	046517	051440	040524	
10878	062000	052122	051440	044520	
10879	062006	020116	046503	000104	
10880	062014	053506	020104	047516	EMS1: .ASCIZ /FWD NOT CLEARED IN RKMR2 BY 5 SEC OF MOTION FROM START SPIN CMD/
10881	062022	020124	046103	040505	
10882	062030	042522	020104	047111	
10883	062036	051040	046513	031122	
10884	062044	041040	020131	020065	
10885	062052	042523	020103	043117	
10886	062060	046440	052117	047511	
10887	062066	020116	051106	046517	
10888	062074	051440	040524	051122	
10889	062102	051440	044520	020116	
10890	062110	046503	000104		
10891	062114	030062	051440	041505	EMS2: .ASCIZ /20 SEC FORMAT NOT SET IN RKMR2/
10892	062122	043040	051117	040515	
10893	062130	020124	047516	020124	
10894	062136	042523	020124	047111	
10895	062144	051040	046513	031122	
10896	062152	000			
10897	062153	123	041505	030040	EMS3: .ASCIZ /SEC 0 NOT FOUND BY 50 MS/
10898	062160	047040	052117	043040	
10899	062166	052517	042116	041040	
10900	062174	020131	030065	046440	
10901	062202	000123			
10902	062204	044504	043106	051440	EMS4: .ASCIZ /DIFF SEC NOT FOUND BY 3 MS/
10903	062212	041505	047040	052117	
10904	062220	043040	052517	042116	
10905	062226	041040	020131	020063	
10906	062234	051515	000		
10907	062237	101	052124	020116	EMS5: .ASCIZ /ATTN NOT CLEARED IN RKASOF/
10908	062244	047516	020124	046103	
10909	062252	040505	042522	020104	
10910	062260	047111	051040	040513	
10911	062266	047523	000106		

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SEQ 0213

10912	062272	047125	054105	020120	EM56:	.ASCIZ	/UNEXP MEM PAR TRAP/
10913	062300	042515	020115	040520			
10914	062306	020122	051124	050101			
10915	062314	000					
10916	062315	127	042503	040040	EM57:	.ASCIZ	/WCE 2 CYL 411. TRK 2, SEC 2/
10917	062322	041440	046131	032040			
10918	062330	030461	020054	051124			
10919	062336	020113	026062	051440			
10920	062344	041505	031040	000			
10921	062351	015	051412	042520	EM58:	.ASCIZ	(CR)(LF)/SPEED OK IN RKMR2 NOT =0 BY TIMEOUT/
10922	062356	042105	047440	020113			
10923	062364	047111	051040	046513			
10924	062372	031122	047040	052117			
10925	062400	036440	020060	054502			
10926	062406	052040	046511	047505			
10927	062414	052125	000				
10928	062417	114	046511	042040	EM59:	.ASCIZ	/LIM DET NOT SET IN RKMR3/
10929	062424	052105	047040	052117			
10930	062432	051440	052105	044440			
10931	062440	020116	045522	051115			
10932	062446	030063					
10933	062450	042510	042101	020123	EM60:	.ASCIZ	/HEADS HOME NOT SET IN RKMR2/
10934	062456	047510	042515	047040			
10935	062464	052117	051440	052105			
10936	062472	044440	020116	045522			
10937	062500	051115	000062				
10938	062504	047514	042101	044040	EM61:	.ASCIZ	/LOAD HEADS NOT SET IN RKMR2/
10939	062512	040505	051504	047040			
10940	062520	052117	051440	052105			
10941	062526	044440	020116	045522			
10942	062534	051115	000062				
10943	062540	046104	020124	042523	EM63:	.ASCIZ	/DLT SET IN RKCS2/
10944	062546	020124	047111	051040			
10945	062554	041513	031123	000			
10946	062561	115	043523	041040	EM64:	.ASCIZ	/MSG B3 HEAD REG NOT =0/
10947	062566	020063	042510	042101			
10948	062574	051040	043505	047040			
10949	062602	052117	036440	000060			
10950	062610	042522	042101	044040	EM65:	.ASCIZ	/READ HEADER ERR/
10951	062616	040505	042504	020122			
10952	062624	051105	000122				
10953	062630	054503	020114	042101	EM66:	.ASCIZ	/CYL ADDR IN RKMR3 INCORRECT/
10954	062636	051104	044440	020116			
10955	062644	045522	051115	020063			
10956	062652	047111	047503	051122			
10957	062660	041505	000124				
10958	062664	042522	042101	047111	EM67:	.ASCIZ	/READING CYL 0 HEADERS ON CYL 1/
10959	062672	020107	054503	020114			
10960	062700	020060	042510	042101			
10961	062706	051105	020123	047117			
10962	062714	041440	046131	030440			
10963	062722	000					
10964	062723	122	040505	044514	EM68:	.ASCIZ	/READING CYL 1 HEADERS ON CYL 0/
10965	062730	043516	041440	046131			
10966	062736	030440	044040	040505			
10967	062744	042504	051522	047440			

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ERR MSGS

SEQ 0214

10968	062752	020116	054503	020114		
10969	062760	000060				
10970	062762	046101	043511	020116	EM69:	.ASCIZ /ALIGN CART USED/
10971	062770	040503	052122	052440		
10972	062776	042523	000104			
10973	063002	047125	054105	020120	EM70:	.ASCIZ /UNEXP ATTN/
10974	063010	052101	047124	000		
10975	063015	104	041523	051440	EM71:	.ASCIZ /DSC SET IN RKMR2/
10976	063022	052105	044440	020116		
10977	063030	045522	051115	000062		
10978	063036	047506	046522	052101	EM72:	.ASCIZ /FORMAT TEST BYPASSED/
10979	063044	052040	051505	020124		
10980	063052	054502	040520	051523		
10981	063060	042105	000			
10982	063063	103	047524	051440	EM73:	.ASCIZ /CTO SET IN RKCS1/
10983	063070	052105	044440	020116		
10984	063076	045522	051503	000061		
10985	063104	052122	020132	047516	EM74:	.ASCIZ /RTZ NOT SET IN RKMR2/
10986	063112	020124	042523	020124		
10987	063120	047111	051040	046513		
10988	063126	031122	000			
10989	063131	111	040504	020105	EM75:	.ASCIZ /IDAE NOT SET IN RKMR3/
10990	063136	047516	020124	042523		
10991	063144	020124	047111	051040		
10992	063152	046513	031522	000		
10993	063157	120	050111	051440	EM76:	.ASCIZ /PIP SET IN RKMR2/
10994	063164	052105	044440	020116		
10995	063172	045522	051115	000062		
10996	063200	040506	046125	020124	EM77:	.ASCIZ /FAULT NOT =0 IN RKMR3/
10997	063206	047516	020124	030075		
10998	063214	044440	020116	045522		
10999	063222	051115	000063			
11000	063226	054503	020114	044504	EM78:	.ASCIZ /CYL DIFF IN RKMR2 DID NOT REMAIN = 1 IN SEEK TO SELF/
11001	063234	043126	044440	020116		
11002	063242	045522	051115	020062		
11003	063250	044504	020104	047516		
11004	063256	020124	042522	040515		
11005	063264	047111	036440	030440		
11006	063272	044440	020116	042523		
11007	063300	045505	052040	020117		
11008	063306	042523	043114	000		
11009	063313	116	042105	051440	EM79:	.ASCIZ /NED SET IN RKCS2/
11010	063320	052105	044440	020116		
11011	063326	045522	051503	000062		
11012	063334	047125	047514	042101	EM80:	.ASCIZ /UNLOAD NOT SET IN RKMR2/
11013	063342	047040	052117	051440		
11014	063350	052105	044440	020116		
11015	063356	045522	051115	000062		
11016	063364	050123	047111	047040	EM81:	.ASCIZ /SPIN NOT SET IN RKMR2/
11017	063372	052117	051440	052105		
11018	063400	044440	020116	045522		
11019	063406	051115	000062			
11020	063412	052122	020132	047516	EM82:	.ASCIZ /RTZ NOT SET IN RKMR2/
11021	063420	020124	042523	020124		
11022	063426	047111	051040	046513		
11023	063434	031122	000			

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SEG 0215

11024	063437	122	040505	020104	EM83: .ASCIZ /READ HEADER ERR WORD 0 (CYL0)/
11025	063444	042510	042101	051105	
11026	063452	042440	051122	020040	
11027	063460	053440	051117	020104	
11028	063466	020060	041450	046131	
11029	063474	024443	000		
11030	063477	106	051117	040315	EM84: .ASCIZ /FORMAT IN RKMR3 NOT SET/
11031	063504	020124	047111	051040	
11032	063512	046513	031522	047040	
11033	063520	052117	051440	052105	
11034	063526	000			
11035	063527	111	046114	040440	EM85: .ASCIZ ILL ADDR IN RKMR3 NOT =0/
11036	063534	042104	020122	047111	
11037	063542	051040	046513	031522	
11038	063550	047040	052117	036440	
11039	063556	000060			
11040	063560	044127	046111	020105	EM86: .ASCIZ /WHILE WAITING FOR CONTR RDY OR AFTER CONTR RDY REC'D/
11041	063566	040527	052111	047111	
11042	063574	020107	047506	020122	
11043	063602	047503	052116	020122	
11044	063610	042122	020131	051117	
11045	063616	040440	052106	051105	
11046	063624	041440	047117	051124	
11047	063632	051040	054504	051040	
11048	063640	041505	042047	000	
11049	063645	103	047101	047516	EM87: .ASCIZ /CANNOT READ BSE INFO/
11050	063652	020124	042522	042101	
11051	063660	041040	042523	044440	
11052	063666	042116	000117		
11053	063672	047516	042040	044522	EM88: .ASCII /NO DRIVES FOUND ON BUS/<CR><LF>
11054	063700	042526	020123	047506	
11055	063706	047125	020104	047117	
11056	063714	041040	051525	005015	
11057	063722	042523	052524	020120	.ASCIZ /SETUP CORRECTLY & PRESS 'CONT'<CR><LF>
11058	063730	047503	051122	041505	
11059	063736	046124	020131	020046	
11060	063744	051120	051505	020123	
11061	063752	041447	047117	023524	
11062	063760	005015	000		
11063	063763	116	020117	051104	EM89: .ASCII /NO DRIVES FOUND IN DEVICE MAP (\$DEVM)/<CR><LF>
11064	063770	053111	051505	043040	
11065	063776	052517	042116	044440	
11066	064004	020116	042504	044526	
11067	064012	042503	046440	050101	
11068	064020	024040	042044	053105	
11069	064026	024515	005015		
11070	064032	042523	052524	020120	.ASCIZ /SETUP CORRECTLY & RESTART/<CR><LF>
11071	064040	047503	051122	041505	
11072	064046	046124	020131	020046	
11073	064054	042522	052123	051101	
11074	064062	006524	000012		
11075					
11076					.SBTTL DATA HEADERS
11077					
11078	064066	042524	052123	047040	DH1: .ASCIZ /TEST NO. PC/
11079	064074	027117	020040	041520	

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JTBUS R006 DATA DIAGNOSTIC PART 1
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DATA HEADERS

SEG 0217

11136	064570	042115	000		
11137	064573	052517	047522	020115	DH13: .ASCIZ /FROM OUTER LIM TO CYL 0 DURING LOADING/
11138	064600	044514	042524	020122	
11139	064606	041440	045131	047524	
11140	064614	042040	051125	047111	
11141	064622	020107	047514	042101	
11142	064630	047111	000107		
11143	064636	043101	042524	020122	DH14: .ASCIZ /AFTER SEEK WITH BAD PAR/
11144	064642	042523	045505	053440	
11145	064650	052111	020110	040502	
11146	064656	020104	040520	000122	
11147	064664	043101	042524	020122	DH16: .ASCIZ /AFTER LOADING HEAD REG 8 SEEK CMD/
11148	064672	047514	042101	047111	
11149	064700	020107	042510	042101	
11150	064706	051040	043505	023040	
11151	064714	051440	042505	020113	
11152	064722	046503	000104		
11153	064730	043101	042524	020122	DH17: .ASCIZ /AFTER RECAL CMD/
11154	064734	042523	040503	020114	
11155	064742	046503	000104		
11156	064750	043101	042524	020122	DH18: .ASCIZ /AFTER UNLOAD CMD/
11157	064754	047125	047514	042101	
11158	064762	041440	042115	000	
11159	064770	052106	051105	020113	DH19: .ASCIZ /AFTER PACK CMD/
11160	064775	050040	041501		
11161	065002	046503	000104		
11162	065010	043101	042524	020122	DH20: .ASCIZ /AFTER SELECT DRIVE CMD/
11163	065014	042523	042514	052103	
11164	065022	042040	044522	042526	
11165	065030	041440	042115	000	
11166	065036	101	052106	051105	DH21: .ASCIZ /AFTER SUBSYSTEM CLEAR/
11167	065043	051440	041125	054523	
11168	065050	052123	046505	041440	
11169	065056	042514	051101	000	
11170	065064	101	052106	051105	DH22: .ASCIZ /AFTER DRIVE CLEAR CMD/
11171	065071	042040	044522	042526	
11172	065076	041440	042514	051101	
11173	065104	041440	042115	000	
11174	065112	124	051505	020124	DH23: .ASCIZ /TEST NO. TRAP PC/
11175	065117	047516	004456	051124	
11176	065124	050101	050040	000103	
11177	065132	043101	042524	020122	DH25: .ASCIZ /AFTER SEEK CMD/
11178	065140	042523	045505	041440	
11179	065146	042115	000		
11180	065154	101	052106	051105	DH26: .ASCIZ /AFTER READ DATA CMD/
11181	065157	051040	040505	020104	
11182	065164	040504	040524	041440	
11183	065172	042115	000		
11184	065200	050130	041505		DH28: .ASCIZ .EXPECT EXPECT EXPECT EXPECT EXPECT EXPECT
11185	065203	004524	054105	042520	
11186	065210	052103	042411	050130	
11187	065216	041505	004524	054105	
11188	065224	042520	052103	042411	
11189	065232	050130	041505	004524	
11190	065240	054105	042520	052103	
11191	065246				

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Line	Address	Offset	Value	Label	Field 1	Field 2	Field 3	Field 4	Field 5	Field 6	Field 7	Field 8
11192	065254	042411	050130	041505								
11193	065262	000124										
11194	065264	041501	052524	046101	DH29:	.ASCIIZ	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL
11195	065272	040411	052103	040525								
11196	065300	004514	041501	052524								
11197	065306	046101	040411	052103								
11198	065314	040525	004514	041501								
11199	065322	052524	046101	040411								
11200	065330	052103	040525	004514								
11201	065336	041501	052524	046101								
11202	065344	000										
11203	065345	101	052106	051105	DH30:	.ASCIIZ	/AFTER READ HEADER CMD					
11204	065352	051040	040505	020104								
11205	065360	042510	042101	051105								
11206	065366	041440	042115	000								
11207	065373	122	046513	031122	DH31:	.ASCIIZ	RKMR2	RKMR3	RKCS1	RKCS2	RKDC	RKDA
11208	065400	051011	046513	031522								
11209	065406	051011	041513	030523								
11210	065414	051011	041513	031123								
11211	065422	051011	042113	004503								
11212	065430	045522	040504	000								
11213	065435	101	004460	030102	DH32:	.ASCIIZ	/AO	BC	B1	B2	B3	B3
11214	065442	040411	004461	030502								
11215	065450	040411	004462	031102								
11216	065456	041011	000063									
11217	065462	052504	044522	043516	DH33:	.ASCIIZ	/DURING SEEK CMD					
11218	065470	051440	042505	020113								
11219	065476	046503	000104									
11220	065502	042523	052103	051117	DH34:	.ASCIIZ	SECTOR REG UNSTABLE					
11221	065510	051040	043505	052440								
11222	065516	051516	040524	046102								
11223	065524	000105										
11224	065526	042502	053524	042505	DH35:	.ASCIIZ	BETWEEN SECTOR COUNTS					
11225	065534	020116	042523	052103								
11226	065542	051117	041440	052517								
11227	065550	052116	000123									
11228	065554	045522	051115	020062	DH36:	.ASCIIZ	/RKMR2	RKMR3	RKCS1	RKCS2	FROM SECT	TO SECT
11229	065562	020040	045522	051115								
11230	065570	020063	020040	045522								
11231	065576	051503	020061	020040								
11232	065604	045522	051503	020062								
11233	065612	043040	047522	020								

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SEQ 0219

11248	065734	042510	042101	051105	
11249	065742	041440	042115	000	
11250	065747	122	046513	031122	DH40: .ASCIZ /RKMR2 RKMR3 RKDA WORD8 HEADER WAS SHOULD BE/
11251	065754	051011	046513	031522	
11252	065762	051011	042113	004501	
11253	065770	047527	042122	004443	
11254	065776	042510	042101	051105	
11255	066004	053440	051501	020040	
11256	066012	044123	052517	042114	
11257	066020	041040	000105		
11258	066024	052504	044522	043516	DH41: .ASCIZ /DURING RECAL CMD/
11259	066032	051040	041505	046101	
11260	066040	041440	042115	000	
11261	066045	117	020116	042523	DH42: .ASCIZ /ON SEC 0,2,4,6,8 CYL 410 TRK 2/
11262	066052	020103	026060	026062	
11263	066060	026064	026066	020070	
11264	066066	041440	046131	032040	
11265	066074	030061	052040	045522	
11266	066102	031040	000		
11267	066105	106	051117	040515	DH44: .ASCIZ FORMAT & ALL R-W TESTS WILL BE BYPASSED/
11268	066112	020124	020046	046101	
11269	066120	020114	026522	020127	
11270	066126	042524	052123	020123	
11271	066134	044527	046114	041040	
11272	066142	020105	054502	040520	
11273	066150	051523	042105	000	
11274	066155	102	041505	052501	DH45: .ASCIZ /BECAUSE OF LIM DET ERR ON PREV TEST/
11275	066162	042523	047440	020106	
11276	066170	044514	020115	042504	
11277	066176	020124	051105	020122	
11278	066204	047117	050040	042522	
11279	066212	020126	042524	052123	
11280	066220	000			
11281	066221	103	052517	042114	DH46: .ASCIZ /COULD NOT READ BSE INFO ON PREV TEST/
11282	066226	047040	052117	051040	
11283	066234	040505	020104	051502	
11284	066242	020105	047111	047506	
11285	066250	047440	020116	051120	
11286	066256	052105	052040	051505	
11287	066264	000124			
11288	066266	045522	051503	004461	DH47: .ASCIZ /RKCS1 RKCS2 RKASOF RKER RKDS RKDC/
11289	066274	045522	051503	004462	
11290	066302	045522	051501	043117	
11291	066310	051011	042513	004522	
11292	066316	045522	051504	051011	
11293	066324	042113	000103		
11294	066330	043101	042524	020122	DH48: .ASCIZ /AFTER SEEK CMD TO INV CYL/
11295	066336	042523	045505	041440	
11296	066344	042115	052040	020117	
11297	066352	047111	020126	054503	
11298	066360	000114			
11299	066362	051515	020107	023101	DH49: .ASCIZ /MSG A&B IN RKMR2 & RKMR3 RESP., ARE INVALID/
11300	066370	020102	047111	051040	
11301	066376	046513	031122	023040	
11302	066404	051040	046513	031522	
11303	066412	051040	051505	027120	

NO1

JNIBUS RKO6 DRIVE DIAGNOSTIC PART 1
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DATA HEADERS

SEG 0220

11304	066420	020054	051101	020105	
11305	066426	047111	040526	044514	
11306	066434	000104			
11307	066436	043101	042524	020122	DH51: .ASCIZ /AFTER SEEK TO SELF CMD/
11308	066444	042523	045505	052040	
11309	066452	020117	042523	043114	
11310	066460	041440	042115	000	
11311	066465	122	046513	031122	DH52: .ASCIZ /RKMR2 RKMR3 RKDA EXP CYL# CYL HEADER WAS/
11312	066472	051011	046513	031522	
11313	066500	051011	042113	004501	
11314	066506	054105	020120	054503	
11315	066514	021514	041411	046131	
11316	066522	044040	040505	042504	
11317	066530	020122	040527	000123	
11318	066536	047117	051440	04157F	DH53: .ASCIZ /ON SEC 10,12,14,16,18,20 CYL 410 TRK 2/
11319	066544	030440	026060	031061	
11320	066552	030454	026064	033061	
11321	066560	030454	026070	030062	
11322	066566	041440	046131	032040	
11323	066574	030061	052040	045522	
11324	066602	031040	000		
11325					.SBTTL ERR OUTPUT DATA
11326					
11327		066606			.EVEN
11328	066606	001214	001116	003362	DT1: \$TESTN,\$ERRPC,HMR2,HMR3,HER,HDS,HCS1,HCS2,HASOF
11329	066614	003364	003350	003346	
11330	066622	003334	003336	003352	
11331	066630	001214	001116	003362	DT3: \$TESTN,\$ERRPC,HMR2,HMR3,HER,HDS,HDC,HCS1,HCS2
11332	066636	003364	003350	003346	
11333	066644	003354	003334	003336	
11334	066652	001214	001116	003362	DT4: \$TESTN,\$ERRPC,HMR2,HMR3,HDC,FRCYL,TOCYL,CALDIF
11335	066660	003364	003354	001350	
11336	066666	001352	001360		
11337	066672	001214	001116	003362	DT5: \$TESTN,\$ERRPC,HMR2,HMR3,HER,HDS,HDA,HCS1,HCS2
11338	066700	003364	003350	003346	
11339	066706	003344	003334	003336	
11340	066714	001214	001116	003362	DT6: \$TESTN,\$ERRPC,HMR2,HMR3,HCS1,HCS2,PSEC,ESEC
11341	066722	003364	003334	003336	
11342	066730	001402	001404		
11343	066734	001214	001116	003362	DT7: \$TESTN,\$ERRPC,HMR2,HMR3,HDA,WDCNT,HDWD,TEMP1
11344	066742	003364	003344	001442	
11345	066750	001454	003372		
11346	066754	001214	001116	003362	DT8: \$TESTN,\$ERRPC,HMR2,HMR3,HDC,TOCYL,FRCYL,CALDIF
11347	066762	003364	003354	001352	
11348	066770	001350	001360		
11349	066774	001214	001116	003362	DT9: \$TESTN,\$ERRPC,HMR2,HMR3,HDA,TOCYL,RHTAB
11350	067002	003364	003344	001352	
11351	067010	001674			
11352	067012	001214	001116	003362	DT10: \$TESTN,\$ERRPC,HMR2,HMR3,HDA,FRCYL,RHTAB
11353	067020	003364	003344	001350	
11354	067026	001674			
11355	067030	001214	001334		DT11: \$TESTN,TRAPPC
11356	067034	001214	001116	003362	DT12: \$TESTN,\$ERRPC,HMR2,HMR3,HCS1,HCS2,HDC,HDA
11357	067042	003364	003334	003336	
11358	067050	003354	003344		
11359	067054	001214	001116	003424	DT13: \$TESTN,\$ERRPC,E.A0,E.B0,E.A1,E.B1,H.A0,H.B0,H.A1,H.B1

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 ERR OUT PUT DATA

SEG 022:

11360	067062	003426	003430	003432	
11361	067070	003434	003436	003438	
11362	067076	003412			
11363	067100	003334	003336	003352	HCS1, HCS2, HASOF, HER, HDS, HDC
11364	067106	003350	003346	003354	
11365					
11366	067114	001214	001116	003424	CT14: STESTN, SERRPC, E.A0, E.B0, E.A1, E.B1, E.A2, E.B2
11367	067122	003426	003430	003432	
11368	067130	003434	003436		
11369	067134	003404	003406	003410	H.A0, H.B0, H.A1, H.B1, H.A2, H.B2
11370	067142	003412	003414	003416	
11371	067150	003334	003336	003352	HCS1, HCS2, HASOF, HER, HDS, HDC
11372	067156	003350	003346	003354	
11373					
11374	067164	001214	001116	003424	CT15: STESTN, SERRPC, E.A0, E.S0, E.A1, E.B1, E.A2, E.B2, E.B3
11375	067172	003426	003430	003432	
11376	067200	003434	003436	003442	
11377	067206	003404	003406	003410	H.A0, H.B0, H.A1, H.B1, H.A2, H.B2, H.B3
11378	067214	003412	003414	003416	
11379	067222	003422			
11380	067224	003334	003336	003352	HCS1, HCS2, HASOF, HER, HDS, HDC
11381	067232	003350	003346	003354	
11382					
11383					.SETTL ERR DATA FORMATS
11384					
11385	067240	000032			DF1: 2
11386	067242	002	000		.BYTE 2,0
11387	067244	064103			DH2
11388	067246	007	000		.BYTE 7,0
11389					
11390	067250	000004			DF2: 4
11391	067252	000	000		.BYTE 0,0
11392	067254	066362			DH49
11393	067256	000	000		.BYTE 0,0
11394	067260	064066			DH1
11395	067262	002	000		.BYTE 2,0
11396	067264	064103			DH2
11397	067266	007	000		.BYTE 7,0
11398					
11399	067270	000001			DF3: 1
11400	067272	002	000		.BYTE 2,0
11401	067274	000002			DF4: 2
11402	067276	002	000		.BYTE 2,0
11403	067300	065373			DH31
11404	067302	006	000		.BYTE 6,0
11405					
11406	067304	000003			DF5: 3
11407	067306	000	000		.BYTE 0,0
11408	067310	064066			DH1
11409	067312	002	000		.BYTE 2,0
11410	067314	064154			DH5
11411	067316	007	000		.BYTE 7,0
11412					
11413	067320	000003			DF6: 3
11414	067322	000	000		.BYTE 0,0
11415	067324	064066			DH1

11416	067326	002	000	.BYTE 2,0
11417	067330	064223		DH6
11418	067332	006	000	.BYTE 6,0
11419				
11420				
11421				
11422	067334	000003		DF10: 3
11423	067336	000	000	.BYTE 0,0
11424	067340	064066		DH1
11425	067342	002	000	.BYTE 2,0
11426	067344	064103		DH2
11427	067346	007	000	.BYTE 7,0
11428				
11429	067350	000003		DF12: 3
11430	067352	000	000	.BYTE 0,0
11431	067354	064066		DH1
11432	067356	002	000	.BYTE 2,0
11433	067360	065554		DH36
11434	067362	006	000	.BYTE 6,0
11435	067364	000003		DF13: 3
11436	067366	000	000	.BYTE 0,0
11437	067370	064066		DH1
11438	067372	002	000	.BYTE 2,0
11439	067374	064305		DH7
11440	067376	007	000	.BYTE 7,0
11441				
11442	067400	000002		DF14: 2
11443	067402	002	000	.BYTE 2,0
11444	067404	065747		DH40
11445	067406	006	000	.BYTE 6,0
11446				
11447				
11448	067410	000003		DF15: 3
11449	067412	000	000	.BYTE 0,0
11450	067414	064066		DH1
11451	067416	002	000	.BYTE 2,0
11452	067420	064305		DH7
11453	067422	007	000	.BYTE 7,0
11454				
11455	067424	000002		DF16: 2
11456	067426	000	000	.BYTE 0,0
11457	067430	064066		DH1
11458	067432	002	000	.BYTE 2,0
11459				
11460	067434	000004		DF17: 4
11461	067436	000	000	.BYTE 0,0
11462	067440	066105		DH44
11463	067442	000	000	.BYTE 0,0
11464	067444	064066		DH1
11465	067446	002	000	.BYTE 2,0
11466	067450	064103		DH2
11467	067452	007	000	.BYTE 7,0
11468	067454	000007		DF20: 7
11469	067456	000	000	.BYTE 0,0
11470	067460	064066		DH1
11471	067462	002	000	.BYTE 2,0

11472	067464	065203		DH28	
11473	067466	000	000	.BYTE	0.0
11474	067470	065435		DH32	
11475	067472	004	000	.BYTE	4.0
11476	067474	065264		DH29	
11477	067476	000	000	.BYTE	0.0
11478	067500	065435		DH32	
11479	067502	004	000	.BYTE	4.0
11480	067504	066266		DH47	
11481	067506	006	000	.BYTE	6.0
11482	067510	000002	DF21:	2	
11483	067512	002	000	.BYTE	2.0
11484	067514	066465		DH52	
11485	067516	005	000	.BYTE	5.0
11486	067520	000007	DF22:	7	
11487	067522	000	000	.BYTE	0.0
11488	067524	064066		DH1	
11489	067526	002	000	.BYTE	2.0
11490	067530	065203		DH28	
11491	067532	000	000	.BYTE	0.0
11492	067534	065435		DH32	
11493	067536	006	000	.BYTE	6.0
11494	067540	065264		DH29	
11495	067542	000	000	.BYTE	0.0
11496	067544	065435		DH32	
11497	067546	006	000	.BYTE	6.0
11498	067550	066266		DH47	
11499	067552	006	000	.BYTE	6.0
11500					
11501	067554	000007	DF23:	7	
11502	067556	000	000	.BYTE	0.0
11503	067560	064066		DH1	
11504	067562	002	000	.BYTE	2.0
11505	067564	065203		DH28	
11506	067566	000	000	.BYTE	0.0
11507	067570	065435		DH32	
11508	067572	007	000	.BYTE	7.0
11509	067574	065264		DH29	
11510	067576	000	000	.BYTE	0.0
11511	067600	065435		DH32	
11512	067602	007	000	.BYTE	7.0
11513	067604	066266		DH47	
11514	067606	006	000	.BYTE	6.0

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11515
11516
11517
11518
11519
11520
11521
11522
11523
11524
11525 067610 104413
11526 067612 113700 001114
11527 067616 042700 177400
11528 067622 005300
11529 067624 006300
11530 067626 006300
11531 067630 006300
11532 067632 062700 003506
11533 067636 012037 067652
11534 067642 001404
11535 067644 104401 001205
11536 067650 104401
11537 067652 000000
11538 067654 012037 067670
11539 067660 001404
11540 067662 104401 001205
11541 067666 104401
11542 067670 000000
11543 067672 012001
11544 067674 001455
11545 067676 005004
11546 067700 012000
11547 067702 012002
11548 067704 001446
11549 067706 005104

*****
:SBTTL TYPE ERR ROUTINE
:*ENTRY JSR PC TYP ERR
:*RETURN RTS PC
:*
:*THIS ROUTINE USES THE "ITEM CONTROL BYTE" ($ITEMB) TO DETERMINE WHICH
:*ERR IS TO BE REPORTED. IT THEN USES THE "ERR TABLE" ($ERRTB)
:*ENTRY TO DEFINE WHAT INFORMATION IS TO BE REPORTED CONCERNING
:*THE ERR.
*****
TYPERR: SAVREG
        MOVB $ITEMB,R0      :ENTER ERR NUMBER
        BIC  #177400,R0     :CLEAR SIGN EXTENSION
        DEC  R0              :FORM INDEX FOR ERR TABLE
        ASL  R0
        ASL  R0
        ASL  R0
1$:      ADD  #ERRTB,R0      :FORM ADDRESS OF ERR ENTRY
        MOV  (R0)+,2$       :GET EM POINTER
        BEQ  3$              :BRANCH IF THERE ISN'T ONE
        TYPE .$CRLF         :TYPE CARRIAGE RETURN LINE FEED
        TYPE TYPE           :TYPE ERR MSG (EM)
2$:      .WORD 0             :EM POINTER GOES HERE
3$:      MOV  (R0)+,4$       :GET DH POINTER
        BEQ  5$              :BRANCH IF THERE ISN'T ONE
        TYPE .$CRLF         :TYPE CR-LF
4$:      .WORD 0             :TYPE DATA HEADER
5$:      MOV  (R0)+,R1       :DH POINTER GOES HERE
        BEQ  20$             :GET DT POINTER
        CLR  R4              :BRANCH IF THERE ARE NONE
        MOV  (R0)+,R0       :SET INDENT SWITCH
        MOV  (R0)+,R2       :GET DF POINTER
        BEQ  17$             :STORE NUMBER OF DH'S
        COM  R4              :DH NUM IS 0-BRANCH
        :NO INDENT

```

11550	067710	104401	001205		TYPE	SCRLF	
11551	067714	112003		105:	MOVB	(R0)+,R3	:GET 3 STORE NUMBER OF DATA WORDS
11552	067716	105720			TSTB	(R0)+	:BUMP PAST FORMAT WORD
11553	067720	005703			TST	R3	:TEST IF ANY DATA FOR THIS HEADER
11554	067722	001407			BEQ	145	:NO - SKIP DATA PRINT
11555	067724	013146		115:	MOV	2(R1)+,--SP	:PUT FIRST DATA WORD ON STACK
11556	067726	104402			TYPEOC		:TYPE IT
11557	067730	005303			DEC	R3	:MORE DATA WORDS
11558	067732	001403			BEQ	145	:NO-BRANCH
11559	067734	104401	070064		TYPE	SPACE2	:TYPE SEPARATORS
11560	067740	000771			BR	115	:LOOP
11561	067742	005302		145:	DEC	R2	:MORE DH'S?
11562	067744	003431			BLE	205	:NO-BRANCH
11563	067746	104401	001205		TYPE	SCRLF	
11564	067752	005760	000002		TST	2(R0)	:ONLY A DH IN THIS REQUEST?
11565	067756	001404			BEQ	155	:YES-BRANCH BYPASS INDENT
11566	067760	005104			COM	R4	:INDENT?
11567	067762	001002			BNE	155	:NO-BRANCH
11568	067764	104401	070064		TYPE	SPACE2	:YES-TYPE SPACES
11569	067770	012037	067776	155:	MOV	(R0)+,165	:GET NEXT DH POINTER
11570	067774	104401			TYPE		:TYPE DH
11571	067776	000000		165:	WORD	0	:DH POINTER GOES HERE
11572	070000	105710			TSTB	(R0)	:TYPE A DT?
11573	070002	001003			BNE	215	:YES-BRANCH
11574	070004	062700	000002		ADD	#2,R0	:INCREMENT OF POINTER
11575	070010	000754			BR	145	:SEE IF END OF DF BLOCK
11576	070012	104401	001205	215:	TYPE	SCRLF	
11577	070016	005704			TST	R4	:INDENT?
11578	070020	001335			BNE	105	:NO-BRANCH
11579	070022	104401	070064	175:	TYPE	SPACE2	:YES-TYPE SPACES
11580	070026	000732			BR	105	:LOOP
11581	070030	104414		205:	RESREG		
11582							
11583	070032	032777	010000	111100	BIT	#SW12,2SWR	:ABORT DRV AFTER 20 ERRS
11584	070040	001410			BEQ	255	:BR IF NO
11585	070042	023727	001103	000024	CMP	\$ERFLG,#20	:ELSE SEE IF 20 ERRS
11586	070050	001004			BNE	255	:BR IF NO
11587	070052	012706	001100		MOV	#STACK,SP	:ELSE RESTORE STK
11588	070056	000137	043470		JMP	\$EOP	:AND DROP DRIVE
11589	070062	000207		255:	RTS	PC	
11590	070064	023040	000		SPACE2:	.ASCIZ	:2 SPACES

G02

UNIBUS RKO6 DRIVE DIAGNOSTIC PART 1
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TYPE ERR ROUTINE

SEG 3226

11591

000001

.END

H02

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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0227

ABASE =	177440	1719	1760	1774*
ACDW1 =	000000	1719	1762	
ACDW2 =	000000	1719	1763	
ACLO =	000010	1380*		
ACPUOP =	000000	1719	1734	
ACT11 =	003450	1945*	3237*	
ADOMO =	000000	1719	1764	
ACDW1 =	000000	1719	1765	
ACDW10 =	000000	1719		
ACDW11 =	000000	1719		
ACDW12 =	000000	1719		
ACDW13 =	000000	1719		
ACDW14 =	000000	1719		
ACDW15 =	000000	1719		
ACDW2 =	000000	1719	1766	
ACDW3 =	000000	1719	1767	
ACDW4 =	000000	1719	1768	
ACDW5 =	000000	1719	1769	
ACDW6 =	000000	1719	1770	
ACDW7 =	000000	1719	1771	
ACDW8 =	000000	1719		
ACDW9 =	000000	1719		
ADEVCT =	000000	1719	1725	
ADEVN =	000000	1719	1761	
GENV =	000000	1719	1730	
GENVM =	000000	1719	1731	
AFATAL =	000000	1719	1722	
AMADR1 =	000000	1719	1747	
AMADR2 =	000000	1719	1751	
AMADR3 =	000000	1719	1754	
AMADR4 =	000000	1719	1757	
AMAMS1 =	000000	1719	1741	
AMAMS2 =	000000	1719	1749	
AMAMS3 =	000000	1719	1752	
AMAMS4 =	000000	1719	1755	
AMSGAC =	000000	1719	1727	
AMSGLG =	000000	1719	1728	
AMSGTY =	000000	1719	1721	
AMTYP1 =	000000	1719	1742	
AMTYP2 =	000000	1719	1750	
AMTYP3 =	000000	1719	1753	
AMTYP4 =	000000	1719	1756	
APASS =	000000	1719	1724	
APRIOR =	000000	1719		
APTCSU =	000040	9615	9787*	
APTENV =	000001	9562	9608	9743 9785*
APTSIZ =	000200	3166	9784*	
APTSPO =	000100	9610	9745	9786*
ASWREG =	000000	1719	1732	
ATESTN =	000000	1719	1723	
ATTN =	003324	1877*	4689	8608 8627 8653
AUNIT =	000000	1719	1726	
AUSWR =	000000	1719	1733	
AVECT1 =	000000	1719	1758	
AVECT2 =	000000	1719	1759	
BACHDR =	003320	1868*	3245*	5166* 6852* 9335

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 CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0228

BADTMO	050426	3317	9390*															
BAI	= 000020	1343*	5175	5324														
BA16	= 000400	1329*																
BA17	= 001000	1330*																
BIT0	= 000001	1272*	1326	1358	1377	1935	3354	9259										
BIT00	= 000001	1262*	1272															
BIT01	= 000002	1261*	1271															
BIT02	= 000004	1260*	1270															
BIT03	= 000010	1259*	1269															
BIT04	= 000020	1258*	1268															
BIT05	= 000040	1257*	1267															
BIT06	= 000100	1256*	1266															
BIT07	= 000200	1255*	1265															
BIT08	= 000400	1254*	1264	9497														
BIT09	= 001000	1253*	1263	9505	9573													
BIT1	= 000002	1271*	1359	1936														
BIT10	= 002000	1252*	1331	1349	1368	1400	1414	1428	1441	1455	4665	9550						
BIT11	= 004000	1251*	1332	1350	1369	1386	1401	1415	1429	1442	1456	4667	9512					
BIT12	= 010000	1250*	1333	1351	1370	1402	1416	1430	1443	1457								
BIT13	= 020000	1249*	1334	1352	1371	1387	1403	1417	1431	1444	1458	9557						
BIT14	= 040000	1248*	1335	1353	1372	1388	1404	1418	1432	1445	1459	1472	9096	9128				
		9483																
BIT15	= 100000	1247*	1336	1337	1354	1373	1389	1405	1475	4184	9096	9124						
BIT2	= 000004	1270*	1360	1379	1937													
BIT3	= 000010	1269*	1342	1361	1380													
BIT4	= 000020	1268*	1343	1362	1381	1394	1422	1449	6055									
BIT5	= 000040	1267*	1344	1363	1382	1395	1409	1423	1436	1450								
BIT6	= 000100	1266*	1327	1345	1364	1383	1396	1410	1424	1437	1451							
BIT7	= 000200	1265*	1328	1346	1365	1384	1397	1411	1425	1438	1452	3344						
BIT8	= 000400	1264*	1329	1347	1366	1385	1398	1412	1426	1439	1453							
BIT9	= 001000	1263*	1330	1348	1367	1399	1413	1427	1440	1454	4661							
BPTVEC	= 000014	1279*																
BSE	= 000200	1365*																
BSERR	001456	1842*	6336*	6342*	6630													
BSE22H	002304	1855*	6287	6339	6359	9122												
BSE22S	054752	6249	9126	10411*														
BYP	044704	3424	3447	3451	3466	3518	3526	3544	3548	3552	3556	8680*						
BYPCER	001462	1845*	3342*	3568*	4268*	4300*	4381*	4979*	6384*	6492*	9328*	8796						
BYPFMT	001464	1846*	5456*	5548*	5793*	5875*	9094											
BYPT16	001340	1790*	3079*	3084*	3089*	3094*	3099*	3103*	4321*									
BYT16	007026	1489	3083*															
BYT16A	007046	1493	3088*															
CALADD	001366	1803*	5462*	5789*	6642*	6673*	6695	6781	6799	6837	6844*	6855*	9090	9100				
		9102	9150															
CALDIF	001360	1800*	4423*	4439	4471*	4502	5580*	5900*	6098*	6677*	7241*	7584*	7942*	8306*				
		11334	11346															
COLP	= 100000	1337*	3641	3948	3977	4005	4018	4107	4135	4194	4235	4340	4381	4431				
		4445	4479	4508	4560	4601	4704	4711	4728	4793	4904	4937	5016	5636				
		5906	5960	6160	6407	6440	6519	6755	7070	7291	7419	7634	7762	7992				
		8120	8349	8356	8373	8837	8847	8857	8867	9339	9357							
CCYL	001354	1798*	4330*	4417*	4418	4424	4465*	4466	4472	7370*	7713*	8071*						
CDT	= 002000	1331*	3839															
CERR	= 100000	1336*	3404	3504	3802	3852	3899	4768	5103	5191	5244	5334	5380	5474				
		5511	5611	5683	5726	5801	5838	5932	5996	6039	6135	6220	6299	6567				
		6659	6730	6807	6871	6933	6947	7045	7117	7168	7266	7337	7394	7465				
		7514	7609	7680	7737	7808	7857	7920	7967	8038	8095	8166	8215	8289				

SEC 0230

DF16	067424	2591	2626	11455#										
DF17	067434	2751	2766	11460#										
DF2	067250	3063	3068	3074	11390#									
DF20	067454	2058	2063	2068	2073	2196	2201	2226	2231	2236	2241	2246	2251	2256
		2261	2276	2281	2286	2291	2301	2306	2311	2316	2326	2331	2336	2341
		2361	2366	2371	2376	2446	2451	2456	2461	2556	2561	2566	2571	2646
		2651	2656	2661	2686	2691	2696	2701	2716	2721	2842	2847	2852	2857
		2897	2902	2907	2912	2917	2922	2927	2932	2937	2942	2947	2952	2957
		2962	3043	3048	11468#									
DF21	067510	2993	2998	11482#										
DF22	067520	2078	2083	2166	2171	2186	2191	2351	2356	2466	2471	2501	2506	2601
		2616	2621	2892	2967	2972	3053	3058	11486#					
DF23	067554	2206	2211	2221	11501#									
DF3	067270	2781	11399#											
DF4	067274	3013	11401#											
DF5	067304	2761	11406#											
DF6	067320	2176	2181	2666	2681	2706	2796	2801	2807	2822	2827	2832	2837	2862
		2867	2987	11413#										
DF1	064066	1983	1989	1995	2001	2006	2012	2018	2024	2092	2098	2109	2114	2119
		2124	2129	2134	2139	2144	2149	2154	2159	2269	2294	2319	2344	2404
		2419	2474	2479	2484	2549	2639	2991	2996	3011	11078#	11394	11408	11415
		11424	11431	11437	11450	11457	11464	11470	11488	11503				
DF10	064444	2244	2249	2254	2259	2264	2614	2619	11121#					
DF11	064473	2274	2279	2284	2289	3026	11125#							
DF12	064532	2299	2304	2309	2314	3031	11131#							
DF13	064573	2324	2329	2334	2339	3036	11137#							
DF14	064642	2164	2169	2174	2179	2349	2354	2399	2414	2499	2504	2794	2799	2885
		11144#												
DF16	064672	2209	2369	2374	3041	3046	3051	3056	11148#					
DF17	064734	2184	2189	2204	2214	2409	2534	2709	2714	2719	2724	2729	2734	2789
		2935	2940	11154#										
DF18	064754	2030	2036	2041	2046	2051	3016	11157#						
DF19	064775	2104	2379	11160#										
DF2	064103	11081#	11387	11396	11426	11466								
DF20	065014	2384	11163#											
DF21	065043	2087	2389	2424	2429	11167#								
DF22	065071	2514	2529	2784	2880	2895	2900	2925	2930	11171#				
DF23	065117	2779	11175#											
DF25	065140	2434	2439	2444	2449	2454	2459	2464	2469	2664	2669	2674	2759	2805
		11178#												
DF26	065157	2194	2199	2359	2364	2739	2744	11181#						
DF28	065203	11185#	11472	11490	11505									
DF29	065264	11194#	11476	11494	11509									
DF30	065345	2594	2599	2604	2609	2890	2915	2920	2955	2960	3006	11203#		
DF31	065373	11207#	11403											
DF32	065435	11213#	11474	11478	11492	11496	11507	11511						
DF33	065462	2644	2649	2654	2659	2679	11217#							
DF34	065502	2489	11220#											
DF35	065526	2494	11224#											
DF36	065554	11228#	11433											
DF37	065636	2509	11237#											
DF38	065702	2554	2559	2564	2569	2574	2579	2584	2976	11243#				
DF39	065720	2629	2634	2905	2910	2945	2950	2965	2970	3001	11246#			
DF40	065747	11250#	11444											
DF41	066024	2684	2689	2694	2699	2704	2810	2986	11258#					
DF42	066045	2764	11261#											

L02

 JTBUS R006 DRIVE DIAGNOSTIC PART 1
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 CROSS REFERENCE TABLE -- USER SYMBOLS

SEG 0231

0444	066106	2774	11267*	11462															
0445	066155	2589	11274*																
0446	066221	2624	11281*																
0447	066266	11288*	11480	11498	11513														
0448	066330	2815	2820	2825	2830	2835	2840	2845	2850	2855	2860	2865	11294*						
0449	066362	11299*	11392																
0450	064154	11088*	11410																
0451	066436	2539	2544	11307*															
0452	066465	11311*	11484																
0453	066536	2749	11319*																
0454	064223	11095*	11417																
0455	064305	11104*	11439	11452															
0456	064354	2056	2061	2066	2071	2076	2081	2219	11111*										
0457	064400	2224	2229	2234	2239	2394	2981	3021	11115*										
0458	040000	1335*																	
0459	000142	1694*	3154*	3162*	9527*	9549*													
0460	000174	1484*	3162																
DLT	= 100000	1354*	5114	5255	5391	5521	5694	5848	6007	6958	7128	7348	7476	7691					
		7819	8049	8177															
DLY	044666	4020	8671*	8674															
DMC	= 000040	1395*																	
DCSEEK	037016	7566	7568*																
DCTIM	003502	1963*	3265*	3274*	3945														
DRA	= 000001	1377*	3441	3534															
DRDY	= 000200	1384*																	
DRIVS	003454	1947*	3349*	3356*	3373	3388*	3414*	3431	3522*	3586	9398	9430*							
DRIVO	003456	1952*	3247	3351	3390	3490	8473												
DRIVI	003460	1953*																	
DRIV2	003462	1954*																	
DRIV3	003464	1955*																	
DRIV4	003466	1956*																	
DRIV5	003470	1957*																	
DRIV6	003472	1958*																	
DRIV7	003474	1959*																	
DRCT	= 000040	1382*																	
DRPAR	= 000010	1361*																	
DRVMSK	= 000007	1341*	3407	3507															
DRVPTR	001346	1794*	3247*	3591	3601*														
DSC	= 040000	1388*																	
DSMR	= 177570	1193*	1693	3153															
DTE	= 010000	1370*																	
DTYPE	= 000040	1363*	3828	3849															
DT1	066606	1984	1990	1996	2002	2007	2013	2019	2025	2031	2037	2042	2047	2052					
		2088	2093	2099	2105	2110	2115	2120	2125	2130	2135	2140	2145	2150					
		2155	2160	2215	2265	2270	2295	2320	2345	2380	2385	2390	2395	2400					
		2405	2410	2415	2420	2425	2430	2435	2440	2475	2480	2485	2490	2510					
		2515	2530	2535	2540	2545	2550	2575	2580	2585	2590	2595	2625	2670					
		2675	2710	2725	2730	2735	2740	2750	2765	2775	2785	2790	2811	2816					
		2881	2977	2982	2987	3002	3007	3017	3022	3027	3032	3037	3062	3067					
		3073	11328*																
DT10	067012	2997	11352*																
DT11	067030	2780	11355*																
DT12	067034	3012	11356*																
DT13	067054	2057	2062	2067	2072	2195	2200	2225	2230	2235	2240	2245	2250	2255					
		2260	2275	2280	2285	2290	2300	2305	2310	2315	2325	2330	2335	2340					
		2360	2365	2370	2375	2445	2450	2455	2460	2555	2560	2565	2570	2645					

SEC 0232

		2650 2906 2961 2077 2615	2655 2901 3042 2082 2620	2660 2906 3047 2165 2891	2685 2911 11359# 2170 2966	2690 2916 2921 2185 2971	2695 2921 3052 2190 3052	2700 2926 3057 2350 3057	2715 2931 11365# 2355 11365#	2720 2936 2465 2465 2465	2841 2941 2470 2470 2470	2846 2946 2500 2500 2500	2851 2951 2505 2505 2505	2856 2956 2600 2600 2600
DT14	067114	2205	2210	2220	11374#									
DT15	067164	2760	11331#											
DT3	066630	2175	2180	2665	2680	2705	2821	2826	2831	2836	2861	2866	11334#	
DT4	066652	2605	2610	2630	2635	2745	11337#							
DT5	066672	2495	11340#											
DT6	066714	2640	11343#											
DT7	066734	2795	2800	2806	2886	11346#								
DT8	066754	2992	11349#											
DT9	066774	1437#												
D.ACLD=	000100	1424#	3680	3936	3956	3990	4026	4053	4080	4214	4248	4279	4360	4394
D.BRHM=	000100	4580	4614	4655	4775	4806	4894	4917	4967	4995	5029	5124	5200	5265
		5353	5411	5483	5590	5618	5649	5736	5810	5915	5939	5973	6050	6116
		6142	6173	6305	6397	6420	6470	6498	6532	6706	6737	6768	6816	7026
		7052	7083	7251	7273	7304	7378	7401	7432	7594	7616	7647	7721	7744
		7775	7952	7974	8005	8079	8102	8133	8331					
D.CART=	000400	1426#	3680	3936	3956	3990	4026	4053	4080	4214	4248	4279	4360	4394
		4580	4614	4655	4775	4806	4894	4917	4967	4995	5029	5124	5200	5265
		5353	5411	5483	5590	5618	5649	5736	5810	5915	5939	5973	6050	6116
		6142	6173	6305	6397	6420	6470	6498	6532	6706	6737	6768	6816	7026
		7052	7083	7251	7273	7304	7378	7401	7432	7594	7616	7647	7721	7744
		7775	7952	7974	8005	8079	8102	8133	8331					
D.DOT =	000400	1412#	3822	3843										
D.DOCR=	000200	1425#	3680	3936	3956	3990	4026	4053	4080	4214	4248	4279	4360	4394
		4580	4614	4655	4775	4806	4894	4917	4967	4995	5029	5124	5200	5265
		5353	5411	5483	5590	5618	5649	5736	5810	5915	5939	5973	6050	6116
		6142	6173	6305	6397	6420	6470	6498	6532	6706	6737	6768	6816	7026
		7052	7083	7251	7273	7304	7378	7401	7432	7594	7616	7647	7721	7744
		7775	7952	7974	8005	8079	8102	8133	8331					
D.DRA =	000040	1409#	3675	3678	3934	3954	3989	4024	4051	4078	4212	4246	4277	4358
		4392	4578	4612	4649	4773	4804	4892	4915	4965	4993	5027	5122	5198
		5263	5351	5409	5481									

UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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[illegible]

C03

JRBUS PRO6 DEVE DIAGNOSTIC PART 1 MAC111 27,10061 06-OCT-76 23:23 PAGE 236
 228-1.F11 06-00-76 19:09 CROSS REFERENCE TABLE -- USER SYMBOLS

SEC 0235

[illegible]

003

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 MACY 11 27 10061
 CROSS REFERENCE TABLE -- USER SYMBOLS

SEG 0236

		7743*	7774*	7951*	7973*	8004*	8078*	8101*	8132*	8330*	8713	8715*	8742	11359
E.B1	003432	11366	11374	3937*	3957*	3991*	4027*	4054*	4081*	4215*	4249*	4280*	4361*	4395*
		4581*	4615*	4656*	4775*	4807*	4895*	4918*	4968*	4996*	5030*	5125*	5201*	5266*
		5354*	5412*	5484*	5591*	5619*	5650*	5737*	5811*	5916*	5940*	5974*	6051*	6117*
		6143*	6174*	6306*	6398*	6421*	6471*	6499*	6533*	6707*	6738*	6769*	6817*	7027*
		7053*	7084*	7252*	7274*	7305*	7379*	7402*	7433*	7595*	7617*	7648*	7722*	7745*
		7776*	7953*	7975*	8006*	8080*	8103*	8134*	8332*	8717	8719*	8762	11359	11366
E.B2	003436	11374	3683*	3959*	3993*	4217*	4251*	4282*	4283*	4363*	4397*	4583*	4617*	4658*
		4778*	4809*	4920*	4998*	5032*	5127*	5203*	5268*	5356*	5414*	5486*	5621*	5652*
		5739*	5813*	5942*	5976*	6053*	6055*	6145*	6176*	6308*	6423*	6501*	6535*	6740*
		6771*	6819*	7055*	7086*	7276*	7307*	7404*	7435*	7619*	7650*	7747*	7778*	7977*
E.B3	003442	8008*	8105*	8136*	8721	8723*	11366	11374						
		1930*	3684*	3960*	3994*	4218*	4252*	4364*	4398*	4584*	4618*	4661*	4665*	4667*
		4779*	4810*	4921*	4999*	5033*	5128*	5204*	5269*	5357*	5415*	5487*	5622*	5653*
		5740*	5814*	5943*	5977*	6054*	6146*	6177*	6309*	6424*	6502*	6536*	6741*	6772*
		6820*	7056*	7087*	7277*	7308*	7405*	7436*	7620*	7651*	7748*	7779*	7978*	8009*
FATT1	044512	8106*	8137*	8725	8727*	11374								
FATT2	044606	3950	4209	4355	4575	4730	4989	5062	6492	6599	8375	8624*	9332	9354
		4776	5609	5724	5930	6037	6133	6218	6565	6728	6869	6931	7043	7166
		7264	7392	7512	7607	7735	7855	7918	7965	8093	8213	9226	8651*	
FIDHM	047020	4984	6487	9043*	9051									
FIDTRB	047142	5465	5792	6645	6670	6793	9076*							
FLGTST	047406	9123	9127	9143*										
FLJN	046742	4939	6442	9025*										
FLJAO	047074	4986	6489	9060*										
FITE	= 000020	1362*												
FIT1	001440	1832*	9086*	9087*	9088*	9093								
F4522	046322	4840	8937*											
FORM	031646	6607*	9369											
FORMAT	001436	1831*	5464*	5791*	6644*	6675*	9086	9120						
FRDYL	001350	1796*	4328*	4464	4465	4490	4482	4486	4525*	4526	4528	5578*	5899*	6096*
		6192*	6678*	6845*	6856*	7007*	7141*	7227*	7238	7369	7370	7445	7457	7494
		7570*	7581	7712	7713	7788	7800	7827	7928*	7939	8070	8071	146	9158
FRDY	044176	8185	8296*	11334	11346	11352								
		3383	3397	3402	3497	3502	3632	3769	3841	3922	3981	4126	4200	4239
		4273	4346	4385	4427	4449	4475	4512	4566	4605	4645	4708	4715	4762
		4797	4888	4908	4935	5020	5058	5101	5188	5242	5331	5343	5378	5401
		5471	5509	5586	5640	5681	5720	5798	5836	5904	5964	5994	6033	6112
		6164	6214	6296	6391	6411	6438	5523	6561	6595	6656	6702	6759	6804
		6865	6927	6945	7022	7074	7115	7162	7247	7295	7335	7374	7423	7463
		7508	7590	7638	7678	7717	7766	7806	7851	7914	7948	7996	8035	8075
		8124	8164	8209	8282	8310	8353	8360	8553*	8556	8826	8888	9328	9345
		9361												
FRDY1	044244	8568*	8571	8842	8852	8862	8871							
F5022	046236	4836	8917*											
FTITLE	001344	1792*	8446	8448*										
GSA	044100	3219	8513*											
GPVS	043740	3217	8468*											
GINT	044126	3221	8526*											
GNS	= ***** U	1483	10392	10393	10394	10395	10396	10398	10400	10401	10402	10403	10404	10405
		10406												
GC	= 000001	1326*												
GSTAT	045534	3643	3672	3724	3757	3800	3889	3925	4010	4040	4067	4093	4109	4137
		4204	4350	4570	4723	4938	5116	5190	5257	5333	5393	5473	5523	5696

[illegible]

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CROSS REFERENCE TABLE -- USER SYMBOLS

		5800	5850	5908	6009	6298	6441	6658	6806	6962	7130	7350	7478	7693
		5821	5851	5919	6068	6334	6538	6658	6862	6922*	7130	7350	7478	7693
		9028	9045	9062	9349									
HSA	003332	8692*	8235*											
HSA	003333	8457*	10398*											
HSA	003334	1895*	8532*	8608	11328	11363	11371	11380						
HSA	003335	1891*	8528*											
HSA	003336	1889*	3404	3504	3802	3852	3877	3896	3899	4768	5103	5191	5244	5334
		5380	5474	5511	5611	5683	5726	5901	5938	5932	5996	6039	6135	6220
		6299	6567	6659	6730	6907	6871	6933	6947	7045	7117	7168	7266	7337
		7394	7465	7514	7609	7680	7737	7808	7857	7920	7967	8038	8095	8166
		8215	8298	8585*	8798	8802	8893	11328	11331	11337	11340	11356	11363	11371
HCS2	003336	1889*	3437	3439	3443	3455	3530	3532	3536	3533	3788	3805	8586*	8807
		8811	11328	11331	11337	11340	11356	11363	11371	11380				
HCA	003344	1892*	8589*	11337	11343	11349	11352	11356						
HCB	003356	1897*												
HCC	003354	1896*	8593*	11331	11334	11346	11356	11363	11371	11380				
HCS	003346	1893*	3441	3534	3825	3846	8590*	11328	11331	11337	11363	11371	11380	
HOTAB	001470	1852*	5176	5184*	5458	5535	5785	5862	6648	6797	9078			
HODC	001454	1840*	5296*	5297	5435*	5436	5537*	5539	5864*	5866	11343			
HCI	001434	1830*	9080*	9081*	9082*	9083*	9084*	9085*	9092					
HEAC	001430	1828*	5085*	5094*	5095	5096*	5145*	5146	5167*	5178*	5179	5180*	5182	5222*
		5223	5226*	5235*	5236	5237*	5286*	5287	5288*	5293	5304*	5305	5463*	5790*
		6643*	6650*	6651	6652*	6666*	6667	6674*	6696*	6697	6698*	6794*	6795	6796*
		6834*	6835	6841	6843*	6917*	6918	9080	9155					
HEAD4	001432	1829*	3700	4628	4690	9015*	9016*	9017*	9018*					
HEF	003350	1894*	3828	3849	8591*	11328	11331	11337	11363	11371	11380			
HFR1	003360	1898*	8594*											
HFR2	003362	1899*	3406	3506	3644	3673	3725	3758	3772	3822	3843	3926	4011	4041
		4068	4094	4110	4138	4205	4351	4571	4943	5345	5403	5909	6446	8321
		8324	8572*	8577*	8595*	8844	8854	8864	8873	8957	9046	9063	9350	11329
HFR3	003364	11331	11334	11337	11340	11343	11346	11349	11352	11356				
		1900*	3874	3890	3893	4724	8315	8318	8369	8573*	8578*	8596*	8845	8855
		8865	8874	8904	8972	9029	11328	11331	11334	11337	11340	11343	11346	11349

F03

JAIBUS R006 DRIVE DIAGNOSTIC PART 1
CTR6MC.P11 06-05-76 18:09

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CROSS REFERENCE TABLE -- USER SYMBOLS

SEC C238

[illegible]

G03

UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
DZR6HC.P11 06-OCT-76 18:09

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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 2239

[illegible]

H03

 UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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 CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0240

RODATA= 000021	1320*	6294												
ROGATE= 100000	1425*													
ROHEAD= 000025	1322*	5099	5240	5376	5507	5675	5834	5992	6943	7113	7333	7461	7676	
	7804*	8034	8162											
RDLIN = 104411	8468	10140	10402*											
RDOCT = 104412	8513	8526	10403*											
ROSEC = 046166	4845	4848	8902*	8919	8922	8939	8942	9171						
RDY = 000200	1328*	8553	8568											
RECAL = 000013	1317*	4196	4342	4562	4706	5902	8351	9341						
RESREG= 104414	10200	10270	10405*	11581										
RESVEC= 000010	1276*													
RHEAD = 046714	8783	9015*												
RHAB = 001674	1853*	5098	5239	5290	5375	5431	5505	5528	5678	5703	5707	5832	5855	
	5991	6015	6019	6942	6966	7112	7136	7332	7356	7460	7484	7675	7699	
	7803	7827	8033	8057	8161	8185	9178	9180	9184	9187	11349	11352		
RKASOF= 000016	1299*	3308	8592	8627	8653									
RKBA = 000004	1294*	3304	5176*	5325*	5458*	5785*	6298*	6331*	6350*	6648*	6797*	8588		
RKCS1 = 000000	1292*	3301	3400*	3500*	3630*	3641*	3767*	3839*	3920*	3948*	3977*	3979*	4005*	
	4018*	4107*	4124*	4135*	4194*	4196*	4235*	4237*	4271*	4340*	4342*	4381*	4383*	
	4425*	4431*	4445*	4447*	4473*	4479*	4508*	4510*	4560*	4562*	4601*	4603*	4643*	
	4704*	4706*	4711*	4713*	4728*	4760*	4793*	4795*	4886*	4904*	4906*	4933*	4937*	
	5016*	5018*	5056*	5099*	5186*	5240*	5329*	5341*	5376*	5399*	5469*	5507*	5584*	
	5636*	5638*	5679*	5718*	5796*	5834*	5902*	5906*	5960*	5962*	5992*	6031*	6110*	
	6160*	6162*	6212*	6294*	6389*	6407*	6409*	6436*	6440*	6519*	6521*	6559*	6593*	
	6654*	6700*	6755*	6757*	6802*	6863*	6925*	6943*	7020*	7070*	7072*	7113*	7160*	
	7245*	7291*	7293*	7333*	7372*	7419*	7421*	7461*	7506*	7588*	7634*	7636*	7676*	
	7715*	7762*	7764*	7804*	7849*	7912*	7946*	7992*	7994*	8034*	8073*	8120*	8122*	
	8162*	8207*	8280*	8308*	8349*	8351*	8356*	8358*	8373*	8553	8568	8585	8824*	
	8837*	8840*	8847*	8850*	8857*	8860*	8867*	8869*	9326*	9339*	9341*	9357*	9359*	
RKCS2 = 000010	1296*	3302	3381*	3395*	3399*	3495*	3499*	3799*	3978*	4195*	4236*	4341*	4382*	
	4446*	4509*	4561*	4602*	4705*	4712*	4794*	4905*	5017*	5114	5175*	5255	5324*	
	5391	5521	5637*	5694	5848	5961*	6007	6161*	6408*	6520*	6756*	6958	7071*	
	7128	7292*	7348	7420*	7476	7635*	7691	7763*	7819	7993*	8049	8121*	8177	
	8350*	8357*	8586	8923*	8838*	9848*	9858*	8968*	8886*	8890*	9340*	9358*		
RKDA = 000006	1295*	3305	4640*	5095*	5179*	5236*	5287*	6290*	6333*	6352*	6651*	6697*	6795*	
	6922*	8589												
RKDB = 000024	1301*	3310	5109	5110	5111	5250	5251	5252	5386	5387	5398	5517	5518	
	5519	5689	5690	5691	5844	5845	5846	6002	6003	6004	6953	6954	6955	
	7123	7124	7125	7343	7344	7345	7471	7472	7473	7686	7687	7688	7814	
	7815	7816	8044	8045	9046	8172	8173	8174						
RKDC = 000020	1300*	3309	4270*	4416*	4432*	4464*	4480*	4885*	4932*	5467*	5503*	5581*	5676*	
	5794*	5830*	6029*	6108*	6210*	6292*	6388*	6435*	6557*	6695*	6799*	6861*	7018*	
	7109*	7158*	7243*	7329*	7369*	7457*	7504*	7586*	7672*	7712*	7800*	7847*	7910*	
	7944*	8030*	8070*	8158*	8205*	8307*	8593							
RKDS = 000012	1297*	3306	8590											
RVECPS= 000030	1305*	3314	8597											
RVECPT= 000032	1306*	3315	8598											
RVER = 000014	1298*	3307	8591											
RKMR1 = 000026	1302*	3311	3642*	3723*	3756*	3888*	4009*	4039*	4066*	4092*	4108*	4136*	4203*	
	4269*	4349*	4415*	4463*	4569*	4884*	5907*	6387*	8594	8633*	8637*	9657*	8661*	
	8839*	8849*	8859*	8891*	8902*	8955*	8970*	9027*	9044*	9061*	9348*			
RKMR2 = 000034	1303*	3312	8572	8577	8595									
RKMR3 = 000036	1304*	3313	8573	8578	8596									
RKPRI = 001316	1776*	8542												
RKVEC = 001314	1775*	3240*	8530*	8533*	8540									
RKWC = 000002	1293*	3303	5177*	5326*	5459*	5786*	6293*	6649*	6798*	8587				

JNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ C24:

RLS = 000010	1342*	3799												
RSEC = 046656	8782	9005*												
SAVREG = 104413	10185	10244	10404*	11525										
SBPAR = 047732	8702	8706	8710	8714	8718	8722	8726	9247*						
SCLR = 000040	1344*	3381	3395	3495	8836									
SCOP1 = 104415	3392	3492	3761	3793	3833	3882	4187	4262	4333	4408	4457	4552	4633	
	4754	5088	5169	5227	5368	5497	5669	5824	6101	6684	6786	7011	7101	
	7231	7322	7362	7450	7574	7665	7705	7793	7932	8023	8063	8151	8299	
	10436*													
SCOP18 = 050004	9271*	10406												
SDC = 000000	1173	1494	10413	11591										
SEC = 001374	1809*	4007*	4037*	4064*	4090*	9223*								
SECF LG = 047336	9098	9119*												
SECNT = 001400	1811*	4834*	4856*	5366*	5496*	5823*								
SECTOR = 001406	1814*	4844	4846	4849	4853	8904*	8905*	8906*	8907*	8908*	8909*	8920	8923	
	8940	8943	9005*	9006*	9007*	9008*	9009*	9010*	9172*	9176	9177*	9179*	9189	
	9199*	9200	9201*	9202*										
SEEK = 000017	1319*	4271	4425	4473	4643	4760	4886	4933	5584	5718	6031	6110	6212	
	6389	6436	6559	6700	6863	6925	7020	7160	7245	7372	7506	7588	7715	
	7849	7912	7946	8073	8207	8280	8308							
	1312*	3400	3500	3839	5341	5399	8824	8840	8850	8860	8869			
SELD RV = 000001	3241	8531	8540*											
SETINT = 044160	1964*	3242*	3385	8486*	8506*									
SIZFLG = 003504	1359*													
SKI = 000002	5531	5858	9169*											
SORT = 047464	11559	11568	11579	11590*										
SPACE2 = 070064	1316*	3920	5056	6593	9326									
SRTSPL = 000011	1854*	5534	5861	9181										
SRTTAB = 002100	1180*	3106	3133	3292	3341	3393	3488	3493	3582	3623	3667	3715	3754	
STACK = 001100	3762	3784	3794	3818	3834	3870	3883	3915	4181	4188	4263	4319	4334	
	4409	4458	4548	4553	4634	4745	4755	4829	4875	5093	5089	5164	5170	
	5228	5320	5369	5451	5498	5575	5670	5778	5825	5894	6092	6102	6279	
	6378	6621	6685	6787	7000	7012	7102	7225	7232	7323	7363	7451	7563	
	7575	7666	7706	7794	7904	7933	8024	8064	8152	8275	8300	8396	8788	
	9429	9460	11587											
START = 007132	1487	3102*												
START1 = 007550	3195*													
STKLMT = 177774	1191*													
STOP = 050106	6853	9309*	9907	9990										
ST2 = 007616	3202	3213*												
ST3 = 007662	3203	3231*												
ST4 = 007714	3215	3236	3239*											
ST5 = 007740	3222	3244*	3379	3435	8425	9379								
SUBCLR = 046106	3627	3637	3669	3719	3764	3786	3796	3820	3836	3872	3885	3917	4121	
	4131	4145	4190	4265	4336	4411	4460	4555	4636	4747	4757	4830	4877	
	4981	5053	5091	5172	5230	5322	5371	5453	5500	5576	5672	5715	5730	
	5780	5827	5896	5986	6027	6043	6094	6104	6207	6224	6232	6281	6318	
	6380	6484	6554	6571	6579	6590	6635	6687	6789	6858	6875	6883	6937	
	7014	7104	7155	7172	7180	7234	7325	7365	7453	7501	7518	7526	7577	
	7668	7708	7796	7844	7861	7869	7907	7924	7935	8026	8066	8154	8202	
	8219	8227	8277	8292	8302	8886*	9311	9323						
	1389*													
SVAL = 100000	1693*	3131	3153*	3155	3161*	3168*	4158	4163	5065	5761	5766	6074	6079	
SWR = 001140	6245	6251	6602	6906	6912	6977	6982	7193	7199	7537	7542	7547	7552	
	7880	7885	7890	7895	8238	3	8248	8253	8455	8738	8748	8758	8769	
	9271	9292	9297	9299	9392	9400	9405	9425	9483	9497	9499	9505	9512	

J03

UNIBUS RxD6 DRIVE DIAGNOSTIC PART 1
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CROSS REFERENCE TABLE -- USER SYMBOLS

SEG 0242

SWREG	000176	9550	9557	9569	9573	9910	9949	10004*	11583					
SWTST	050036	1485*	3161	8455	9910	9949	9972							
SW0	= 000001	4115	5043	5711	6023	6198	6546	6894	6971	7147	7495	7938	8196	9290*
SW00	= 000001	1244*												
SW01	= 000002	1234*	1244											
SW02	= 000004	1233*	1243											
SW03	= 000010	1232*	1242											
SW04	= 000020	1231*	1241											
SW05	= 000040	1230*	1240											
SW06	= 000100	1229*	1239											
SW07	= 000200	1228*	1238											
SW08	= 000400	1227*	1237											
SW09	= 001000	1226*	1236											
SW1	= 000002	1225*	1235											
SW10	= 002000	1243*												
SW11	= 004000	1224*												
SW12	= 010000	1223*												
SW13	= 020000	1222*	11583											
SW14	= 040000	1221*	9392											
SW15	= 100000	1220*	9292	9405										
SW2	= 000004	1219*												
SW3	= 000010	1242*												
SW4	= 000020	1241*												
SW5	= 000040	1240*												
SW6	= 000100	1239*												
SW7	= 000200	1238*												
SW8	= 000400	1237*												
SW9	= 001000	1236*	9297											
		1235*	4158	4163	5065	5761	5766	6074	6079	6245	6251	6602	6906	6912
		6977	6982	7193	7199	7537	7542	7547	7552	7880	7885	7890	7895	8238
		8243	8248	8253	8738	8748	8758	8768	9271	9400	9425			
TEMP1	000014	1277*												
TEMP2	003372	1904*	3382*	3396*	3401*	3406*	3407*	3408	3496*	3501*	3506*	3507*	3508	3631*
		3768*	3840*	3921*	3930*	4019*	4125*	4199*	4238*	4272*	4345*	4384*	4426*	4448*
		4474*	4511*	4565*	4604*	4644*	4688*	4689*	4690	4707*	4714*	4761*	4764*	4796*
		4887*	4907*	4934*	5019*	5057*	5100*	5187*	5241*	5295*	5297	5330*	5342*	5377*
		5400*	5434*	5436	5470*	5508*	5538*	5539	5585*	5606*	5639*	5680*	5719*	5723*
		5797*	5835*	5865*	5866	5903*	5929*	5963*	5993*	6032*	6036*	6111*	6131*	6163*
		6213*	6217*	6295*	6390*	6410*	6437*	6522*	6560*	6564*	6594*	6655*	6701*	6726*
		6758*	6803*	6864*	6868*	6926*	6930*	6944*	7021*	7041*	7073*	7114*	7161*	7165*
		7246*	7262*	7294*	7334*	7373*	7390*	7422*	7462*	7507*	7511*	7589*	7605*	7637*
		7677*	7716*	7733*	7765*	7805*	7850*	7854*	7913*	7917*	7947*	7963*	7995*	8035*
		8074*	8091*	8123*	8163*	8208*	8212*	8281*	8285*	8309*	8352*	8359*	8555*	8570*
		8625*	8629*	8655*	8671	8673*	8699	8701*	8703	8705*	8707	8709*	8711	8713*
		8715	8717*	8719	8721*	8723	8725*	8727	8729*	8822	8825*	8829*	8835	8841*
		8851*	8861*	8870*	8876*	8887*	8917	8918*	8925*	8927*	8929*	8937	8938*	8945*
		8947*	8949*	9026*	9031*	9043*	9048*	9060*	9065*	9100*	9103*	9104	9253*	9261*
		9327*	9344*	9360*	11343									
TEMP3	003374	1905*	3949*	4208*	4354*	4574*	4729*	4983*	4988*	5061*	6283*	6321*	6322	6348*
		6486*	6491*	6598*	8374*	8631*	9050*	9101*	9102*	9104*	9105	9331*	9353*	
TEMP4	003376	1906*	4418*	4420	4466*	4468	6284*	6324	6345*	6346	7238*	7240	7581*	7583
		7939*	7941*	7942										
TEMP5	003400	1907*	4419*	4420*	4422*	4423	4467*	4468*	4470*	4471	6287*	6288	6331	6349*
		6350	7239*	7240*	7241	7582*	7583*	7584	7940*	7941				
TEMP6	003402	1908*	4184*	4301*	6289*	6290	6332*	6333	6351*	6352				
TEMP7	001376	1810*	4013	4043	4070	4096	9208*	9219*	9225*					

K03

UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0243

TITLE = 043660	3197	3234	8446*											
TKVEC = 000060	1284*	9997*	9888*											
TCCYL = 001352	1797*	4329*	4416	4417	4432	4434	4486	4488	4520*	4521	4528*	5460*	5462	
	5579*	5787*	5789	5899*	6097*	6108	6186	6190	6193*	6210	6227	6229*	6557	
	6574	6576*	6640*	6642	6679*	6846*	6861	6878	6880*	6923*	6966	7008*	7018	
	7096	7109	7136	7143*	7158	7175	7177*	7228*	7239	7243	7317	7329	7356	
	7490	7492*	7504	7521	7523*	7571*	7582	7586	7660	7672	7699	7833	7935*	
	7847	7864	7866*	7929*	7940	7944	8018	8030	8057	8191	8193*	8205	8222	
	8224*	8305*	8306	8307	8340	8343	11334	11346	11349					
TPVEC = 000064	1285*													
TRAPPC = 001334	1787*	9421*	11355											
TRAPVE = 000034	1283*	3139*	3140*	9459*										
TRIVEC = 000014	1278*													
TSTATN = 044460	3634	3931	3983	4021	4048	4075	4101	4128	4241	4275	4387	4429	4451	
	4477	4514	4607	4647	4717	4799	4890	4910	4977	5022	5642	5966	6166	
	6393	6413	6480	6525	6761	7076	7297	7425	7640	7768	7998	8126	8312	
	8362	8606*	9363											
TST1 = 010120	3268	3290*												
TST10 = 012170	3718	3752*												
TST11 = 012274	3759	3773	3782*											
TST12 = 012402	3806	3816*												
TST13 = 012570	3853	3868*												
TST14 = 012734	3900	3913*												
TST15 = 014430	4116	4179*												
TST16 = 015240	4305	4317*												
TST17 = 016530	4527	4546*												
TST2 = 010274	3318	3339*												
TST20 = 017572	4743*													
TST21 = 020152	4820	4826*												
TST22 = 020330	4873*													
TST23 = 021422	5044	5081*												
TST24 = 021726	5162*													
TST25 = 022622	5306	5318*												
TST26 = 023420	5449*													
TST27 = 024110	5573*													
TST3 = 011034	3386	3486*												
TST30 = 025220	5712	5776*												
TST31 = 025710	5892*													
TST32 = 027036	6024	6090*												
TST33 = 027760	6199	6277*												
TST34 = 030424	6337	6356	6376*											
TST35 = 031646	6547	6617*												
TST36 = 033750	6895	6972	6998*											
TST37 = 035044	7148	7223*												
TST4 = 011362	3516	7580*												
TST40 = 036770	7496	7561*												
TST41 = 040726	7839	7902*												
TST42 = 042744	8197	8273*												
TST5 = 011514	3621													
TST6 = 011646	3663*													
TST7 = 012032	3701	3713*												
TYPOS = 104405	8414	10396*												
TYPE = 104401	3201	3216	3218	3220	3235	3275	3348	3358	3387	3416	3457	3588	3602	
	3610	3722	3743	3744	4323	4326	5106	5118	5194	5247	5259	5337	5383	
	5395	5477	5514	5525	5686	5698	5804	5841	5852	5999	6011	6357	6361	
	6362	6624	6638	6662	6810	6950	6962	7002	7005	7120	7132	7340	7352	

JAYBUS RACE DRIVE DIAGNOSTIC PART 1
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CROSS REFERENCE TABLE -- USER SYMBOLS

SECRET

		7468	7480	7683	7695	7811	7823	8041	8053	8163	8181	8412	8415	8443
		8499	8680	9318	9320	9373	9377	9394	9436	9461	9552	9560	9623	9722
		9848	9904	9916	9970	9971	9974	9985	9995	10006	10025	10073	10079	10094
		10088	10093	10094	10095	10099	10103	10169	10171	10311	10392*	11535	11536	11540
		11541	11550	11559	11563	11568	11570	11576	11579					
TYPERR	067610	9559	11525*											
TYP0C	= 104402	9973	10393*	11556										
TYP0N	= 104404	10395*												
TYP0S	= 104403	3361	3419	3460	3606	8683	9397	9439	10394*					
T.A2	= 000001	1935*	3667	3963	3997	4221	4255	4286	4367	4401	4587	4621	4671	4782
		4813	4924	5002	5036	5131	5207	5272	5418	5490	5594	5625	5656	5743
		5817	5919	5946	5980	6058	6120	6149	6180	6427	6505	6539	6710	6744
		6775	6823	7030	7059	7090	7255	7280	7311	7382	7408	7439	7598	7623
		7654	7725	7751	7782	7956	7981	8012	8083	8109	8140	8335	8772	
T.B2	= 000002	1936*	3687	3963	3997	4221	4255	4286	4367	4401	4587	4621	4671	4782
		4813	4924	5002	5036	5131	5207	5272	5418	5490	5594	5625	5656	5743
		5817	5946	5980	6058	6120	6149	6180	6427	6505	6539	6710	6744	6775
		6823	7030	7059	7090	7255	7280	7311	7382	7408	7439	7598	7623	7654
		7725	7751	7782	7956	7981	8012	8083	8109	8140	8335	8776		
T.B3	= 000004	1937*	3687	4221	4367	4587	4671	8780						
T1	001412	1820*	4208	4354	4574	4729	8374	9353						
T10	001414	1821*	3382	3396	3401	3496	3501	3631	3768	3840	3921	3980	4125	4199
		4238	4272	4345	4384	4426	4448	4474	4511	4565	4604	4644	4707	4714
		4796	4887	4907	4934	4983	4988	5019	5057	5342	5400	5585	5639	5719
		5903	5963	6032	6111	6163	6213	6390	6410	6437	6486	6491	6522	6560
		6594	6701	6758	6864	6926	7021	7073	7161	7246	7294	7373	7422	7507
		7589	7637	7716	7765	7850	7913	7947	7995	8074	8123	8208	8281	8352
		8359	8825	8841	8851	8861	8870	8887	9327	9344	9360			
T100	001416	1822*	3949	5061	6598	9331								
T2500	001422	1824*	5606	6131										
T500	001420	1823*	5508	5835	8938									
T5000	001424	1825*	5723	6036	6217	6564	6868	6930	7165	7262	7390	7511	7605	7733
		7854	7917	7963	8091	8212	8285	8918						
T50000	001426	1826*	5100	5187	5241	5330	5377	5470	5680	5797	5993	6295	6655	6803
		6944	7114	7334	7462	7677	7805	8035	8163					
UFE	= 000400	1347*	3439	3532	3788	3805								
UNLD	003316	1866*	3244*	3625*	4114*	4119*	4882*	5042*	6385*	6545*	9314			
UNLOAD=	000007	1315*	3630	4124										
UNS	= 040000	1372*												
UPE	= 020000	1352*												
VV	= 000100	1383*												
WCE	= 040000	1353*												
W0CNT	001442	1833*	5292*	5300*	5301	5433*	5439*	5440	5533*	5543*	5544	5860*	5870*	5871
		11343												
WLE	= 004000	1369*												
WORD	001452	1839*												
WRDATA=	000023	1321*												
WRHEAD=	000027	1323*	5186	5329	5469	5796	6654	6802						
WRL	= 004000	1386*												
WRTCHK=	000031	1324*												
WRTGAT=	040000	1404*												
\$APTHC	001000	1519	1525*											
\$ASTAT=	***** U	9765	9780											
\$ATYC	052076	9736	9738*											
\$ATY1	052052	9734*												
\$ATY3	052060	9613	9735*											

M03

UNIBUS RK06 DRIVE DIAGNOSTIC PART 1
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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0245

\$ATY4	052070	9565	9737*															
\$AUTO8	001134	1690*	8459*	9963	10120													
\$BASE	001264	1760*	3239*	3300	8517*	8519*												
\$BDADR	001122	1685*																
\$BDADR	001126	1687*																
\$BELL	001200	1711*	9552	9585	9916	10113												
\$CCW1	001270	1762*																
\$CCW2	001272	1763*																
\$CHARC	051622	9630*	9640*	9647	9656*	9661*												
\$CKSWR	053044	9949*	10400															
\$CNTAG	001100	1673*	3128	3129	3137	3143	3144	3145										
\$CM3 =	000000	1703*																
\$CM4 =	000006	1703*	1704*	1705*	1706*	1707*	1708*	1709*										
\$CNTLC	053754	9904	9985	10113*														
\$CNTLC	053766	9970	10115*															
\$CNTLU	053761	9995	10088	10114*														
\$CPUOP	001236	1734*																
\$CRLF	001205	1713*	3358	3416	3610	3743	3744	6361	6362	9560	9585	9629	9664	10006				
		10093	10113	10174	11535	11540	11550	11563	11576									
		9688	9722	9730*														
\$DBLK	052042	10226	10244*															
\$DB20	054332	6359	10185*															
\$DB20	054156	1764*																
\$DDW0	001274	1765*																
\$DDW1	001276	1766*																
\$DDW2	001300	1767*																
\$DDW3	001302	1768*																
\$DDW4	001304	1769*																
\$DDW5	001306	1770*																
\$DDW6	001310	1771*																
\$DDW7	001312	10246	10292*															
\$DECVL	054512	1725*	3188*	3248*	3592	8397*	8398											
\$DEVCT	001220	1761*	3352															
\$DEVN	001266	8408	8417	8423*														
\$DOAGN	043614	9691	9726*															
\$DTBL	052032	1505	8419*	9580														
\$ENDAO	043604	3143	8410*															
\$ENDCT	043552	8412	8427*															
\$ENDMG	043623	8415	8426*															
\$ENULL	043620	1730*	8453	9562	9608	9743	9767											
\$ENV	001230	1731*	3166	3344	9610	9615	9745											
\$ENVN	001231	4113	5107	5119	5195	5248	5260	5338	5384	5396	5478	5515	5526	5687				
\$EOP	043470	5699	5805	5842	5853	6000	6012	6663	6811	6951	6963	7121	7133	7341				
		7353	7469	7481	7684	7696	7812	7824	8042	8054	8170	8182	8381	8393*				
		9375	11588															
\$EOPCT	043544	3143*	8407*	8411	9374*													
\$EOP1	043516	3322	3589	8399	8401*	9416												
\$ERFLG	001103	1676*	9273	9472	9501	9503	9509*	9531	9547*	9585	11585							
\$ERMAX	001115	1682*	3146*	9503	9526*	9531												
\$ERROR	051144	3137	9545*															
\$ERRPC	001116	1683*	9554*	9555*	9556	9585	11328	11331	11334	11337	11340	11343	11346	11349				
		11352	11356	11359	11366	11374												
		1979*	11532															
\$ERRTB	003506	1680*	9553*	9585														
\$ERTTL	001112	1710*	3145*	3930*	3947*	4103*	4106*	4148*	4832*	4860*	4964*	4991*	5049*	5582*				
\$ESCAP	001176	5605*	5675*	5753*	5901*	5928*	5989*	6067*	6107*	6130*	6235*	6467*	6494*	6582*				

N03

UNIBUS R006 DRIVE DIAGNOSTIC PART 1
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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0246

		6692*	6694*	6722*	6725*	6792*	6886*	6898*	7017*	7040*	7107*	7183*	7237*	7261*
		7328*	7368*	7389*	7456*	7529*	7590*	7604*	7671*	7711*	7732*	7799*	7872*	7938*
		7962*	8029*	8069*	8090*	8157*	8230*	8730	8734*	8744*	8754*	8764*	8785*	8799*
		9290*	9420*	9424*	9525*	9576	9578	9585						
SETABL	001230	1729*												
SETEND	001314	1531	1772*											
\$FATAL	001212	1722*	9771*											
\$FFLG	052316	9734*	9737*	9765	9774*	9782*								
\$FILLC	001156	1701*	9633	9664										
\$FILLS	001155	1700*	9664											
\$GDADR	001120	1684*												
\$GDDAT	001124	1686*												
\$GET42	043574	8416*												
\$GTSWR	053134	9971*	10398											
\$HD =	000000	1150												
\$HIBTS	001000	1526*												
\$HIOCT	054154	10162*	10173*											
\$ICNT	001104	1677*	9516*	9517	9519*	9530								
\$INTAG	001135	1691*	9968*	9987	10007	10120								
\$ITEMB	001114	1681*	9556*	9564	9585	11526								
\$LF	001206	1714*	9585	9664	10103	10113	10174							
\$LFLG	052315	9775*	9781*											
\$LPADR	001106	1678*	3147*	4152	5050	5757	6071	6239	6586	6890	6902	7187	7533	7876
		8234	9403	9507*	9523*	9528	9530							
\$LPERR	001110	1679*	3148*	4151	5756	6070	6238	6585	6889	6901	7186	7532	7875	8233
		8790	9275	9278*	9430	9507	9524*	9530	9575					
\$MADR1	001242	1747*												
\$MADR2	001246	1751*												
\$MADR3	001252	1754*												
\$MADR4	001256	1757*												
\$MAIL	001210	1527	1531	1720*	3165	8453	9522	9562	9608					
\$MAMS1	001240	1741*												
\$MAMS2	001244	1749*												
\$MAMS3	001250	1752*												
\$MAMS4	001254	1755*												
\$MBADR	001002	1527*												
\$MFLG	052314	9735*	9741	9776*	9780*									
\$MNEW	054004	9974	10118*											
\$MSGAD	001224	1727*	9751*	9754										
\$MSGLG	001226	1728*	9756*											
\$MSGTY	001210	1721*	9749	9757*	9769	9773*								
\$MSWR	053773	9971	10116*											
\$MTYP1	001241	1742*												
\$MTYP2	001245	1750*												
\$MTYP3	001251	1753*												
\$MTYP4	001255	1756*												
\$MXCNT	051142	9520	9530*											
\$NULL	001154	1699*	9635	9664										
\$NWTST=	000001	3280*	3282	3325*	3327	3471*	3473	3571*	3573	3612*	3614	3658*	3660	3706*
		3708	3746*	3748	3776*	3778	3909*	3811	3856*	3858	3903*	3905	4169*	4170
		4308*	4310	4533*	4535	4734*	4736	4823*	4862*	4864	5072*	5074	5150*	5152
		5309*	5311	5446*	5553*	5555	5773*	5879*	5981	6082*	6084	6255*	6257	6364*
		6366	6608*	6610	6991*	6993	7206*	7208	7558*	7899*	8260*	8262		
\$OCNT	052542	9820*	9849*	9862*										
\$OCTVL	054260	3726	10187	10212*										
\$OMODE	052544	9815*	9819*	9824	9827*	9838*	9864*							

[illegible]

C04

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CROSS REFERENCE TABLE -- USER SYMBOLS

SE 0248

3776	3783	3806	3809	3817	3853	3856	3869	3920	3923	3948
4180	4305	4308	4318	4527	4533	4547	4734	4744	4820	4823
4874	5044	5072	5082	5150	5153	5306	5309	5319	5446	5450
5112	5773	5777	5879	5893	6024	6082	6091	6199	6255	6278
6364	6377	6547	6608	6618	6895	6972	6991	6999	7148	7206
6558	6628	7839	7899	7903	8197	8260	8274			
10251	10252	10272								
1698	9653	9664								
1702	9602	9664								
1697	9651	9664								
3139	10369									
10380	10391									
10384	10393	10394	10395	10396	10397	10398	10399	10400	10401	10402
10405	10406	10407								
10374	10391									
1528										
1675	3584	8402	9299	9472	9499	9521	9522	9527	9531	9549
10063	10064	10076	10094	10108	10112					
10397										
9676	10396									
9602	9762	10384	10392							
9622	9639	9646	9651	9652	10011					
9657	9659	9662								
9818	10393									
9817	9820	10395								
9813	10394									
1726	3189	3249	3594	3599	3603	3978	4195	4236	4341	4382
4561	4602	4705	4712	4794	4905	5017	5637	5961	6161	6408
7071	7292	7420	7635	7763	7993	8121	8350	8357	8607	8626
8695	8696	8697	8823	8838	8848	8858	8868	8890	9340	9359
1530										
1733										
1758										
1759										
9486										
8416										
9814	9818	9828	9863							
9483	9559									
1479	1483	1488	1490	1492	1494	1496	1503	1504	1506	1508
1516	1518	1520	1672	1715	1852	1853	1854	1856	3132	3147
8430	9450	9530	9531	9585	9664	9730	9783	9868	9972	9973
10112	10120	10174	10212	10292	10411	11327				
9735	9738									
1515	1520									

S*APAC 054716
 S*STM 001004
 S*STM 001102
 S*TYIN 053732
 S*TYPN= *****
 S*TYPS 051626
 S*TYPE 051344
 S*TYPEC 051556
 S*TYPEX 051624
 S*TYPOC 052344
 S*TYPON 052360
 S*TYPOS 052320
 S*UNIT 001222

 S*UNIT 001010
 S*SWR 001234
 S*TECT1 001260
 S*TECT2 001262
 S*YSTR 050676
 S*SET4= 000000
 S*OFILL 052543
 S*OCRA= *****
 = 070067

 S*AS*H= *****
 S* = 001000

D04

 JNIBUS RxD6 DRIVE DIAGNOSTIC PART 1
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 CROSS REFERENCE TABLE -- MACRO NAMES

SEG 0249

CALIB	15798	4193	4339	4559	9238										
CHECK	15548	3695	3938	3961	3995	4028	4055	4082	4219	4253	4284	4365	4399	4585	4619
	4668	4780	4811	4896	4922	4969	5000	5034	5129	5205	5270	5356	5416	5488	5592
	5623	5654	5741	5815	5917	5944	5972	6056	6118	6147	6178	6310	6399	6425	6472
	6503	6527	6708	6742	6773	6821	7028	7057	7088	7253	7278	7309	7380	7406	7437
	7596	7621	7652	7723	7749	7780	7954	7979	8010	8081	8107	8138	8333		
CIDRE	15838	4702	8347												
COMEN	12878														
CMO2	15598	3692	3968	4226	4372	4592	4676	5007	5137	5213	5278	5423	5951	6510	
DRCLA	15718	3976	4234	4380	4443	4506	4600	4710	4791	4903	5015	5634	5959	6158	6406
	6518	6753	7068	7289	7417	7632	7760	7990	8118	8355	9356				
ENDCOM	12878														
ERROR	16648	8394													
	11818	3321	3377	3384	3398	3403	3425	3433	3448	3452	3463	3467	3498	3503	3519
	3527	3545	3549	3553	3557	3628	3633	3635	3638	3648	3670	3688	3699	3690	3691
	3695	3698	3702	3720	3765	3770	3774	3787	3790	3797	3804	3807	3821	3824	3827
	3830	3837	3842	3845	3848	3851	3854	3873	3876	3879	3886	3892	3895	3898	3901
	3918	3923	3928	3933	3941	3942	3943	3944	3951	3964	3965	3966	3967	3971	3974
	3982	3985	3998	3999	4000	4001	4015	4023	4031	4032	4033	4034	4045	4050	4058
	4059	4060	4061	4072	4077	4085	4086	4087	4088	4098	4102	4112	4122	4127	4129
	4132	4142	4146	4191	4201	4207	4210	4222	4223	4224	4225	4229	4232	4240	4243
	4256	4257	4258	4259	4266	4274	4276	4287	4288	4289	4290	4294	4298	4337	4347
	4353	4356	4368	4369	4370	4371	4375	4378	4386	4389	4402	4403	4404	4405	4412
	4428	4430	4436	4441	4450	4453	4461	4476	4478	4484	4493	4499	4504	4513	4516
	4556	4567	4573	4576	4588	4589	4590	4591	4595	4598	4606	4609	4622	4623	4624
	4625	4630	4637	4646	4648	4672	4673	4674	4675	4679	4682	4694	4703	4716	4719
	4726	4731	4748	4752	4758	4763	4767	4770	4783	4784	4795	4796	4799	4798	4801
	4814	4815	4816	4817	4821	4831	4837	4841	4851	4855	4878	4889	4891	4899	4900
	4901	4902	4909	4912	4925	4926	4927	4928	4936	4940	4945	4972	4973	4974	4975
	4978	4982	4985	4987	4990	5003	5004	5005	5006	5010	5013	5021	5024	5037	5038
	5039	5040	5054	5059	5063	5092	5102	5105	5117	5132	5133	5134	5135	5140	5143
	5173	5189	5193	5208	5209	5210	5211	5216	5219	5231	5243	5246	5258	5273	5274
	5275	5276	5281	5284	5299	5323	5332	5336	5344	5347	5361	5362	5363	5364	5372
	5379	5382	5394	5402	5405	5419	5420	5421	5422	5426	5429	5438	5454	5472	5476
	5491	5492	5493	5494	5501	5510	5513	5524	5541	5577	5587	5595	5596	5597	5598
	5602	5610	5613	5626	5627	5628	5629	5632	5641	5644	5657	5658	5659	5660	5665
	5673	5682	5685	5697	5705	5709	5716	5721	5725	5728	5731	5744	5745	5746	5747
	5750	5781	5799	5803	5818	5819	5820	5821	5828	5837	5840	5851	5868	5897	5905
	5911	5920	5921	5922	5923	5926	5931	5934	5947	5948	5949	5950	5954	5957	5965
	5968	5981	5982	5983	5984	5987	5995	5998	6010	6017	6021	6028	6034	6038	6041
	6044	6059	6060	6061	6062	6065	6095	6105	6113	6121	6122	6123	6124	6128	6134
	6137	6150	6151	6152	6153	6156	6165	6168	6181	6182	6183	6184	6188	6208	6215
	6219	6222	6225	6233	6282	6297	6301	6313	6314	6315	6316	6319	6326	6328	6341
	6381	6392	6394	6402	6403	6404	6405	6412	6415	6428	6429	6430	6431	6439	6443
	6448	6475	6476	6477	6478	6481	6485	6488	6490	6493	6506	6507	6508	6509	6513
	6516	6524	6527	6540	6541	6542	6543	6555	6562	6566	6569	6572	6580	6591	6596
	6600	6628	6632	6636	6657	6661	6688	6703	6711	6712	6713	6714	6718	6729	6732
	6745	6746	6747	6748	6751	6760	6763	6776	6777	6778	6779	6783	6790	6805	6809
	6824	6825	6826	6827	6859	6866	6870	6873	6876	6884	6928	6932	6935	6938	6946
	6949	6961	6968	7015	7023	7031	7032	7033	7034	7038	7044	7047	7060	7061	7062
	7063	7066	7075	7078	7091	7092	7093	7094	7098	7105	7116	7119	7131	7138	7156
	7163	7167	7170	7173	7181	7235	7248	7256	7257	7258	7259	7265	7268	7281	7282
	7283	7284	7287	7296	7299	7312	7313	7314	7315	7319	7326	7336	7339	7351	7358
	7366	7375	7383	7384	7385	7386	7393	7396	7409	7410	7411	7412	7415	7424	7427
	7440	7441	7442	7443	7447	7454	7464	7467	7479	7486	7502	7509	7513	7516	7519
	7527	7578	7591	7599	7600	7601	7602	7608	7611	7624	7625	7626	7627	7630	7639

SEC 0250

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	8287#	8290#	8293#	8303#	8311#	8313#	8317#	8320#	8323#	8326#	8336#	8337#	8338#	8339#	8342#
	8345#	8354#	8361#	8364#	8371#	8376#	8804#	8809#	8913#	8827#	8943#	8853#	8863#	8872#	8895#
	9312#	9324#	9329#	9333#	9346#	9352#	9355#	9362#	9365#	9422#					
ESCAPE	1287#														
FSECB	1635#	8912#													
FSECB	1639#	8932#													
F.FAB	1545#	3952#	3987#	4211#	4245#	4357#	4391#	4577#	4611#	4771#	4803#	4914#	4992#	5026#	5121#
	5197#	5262#	5349#	5407#	5480#	5614#	5646#	5733#	5907#	5935#	5970#	6047#	6138#	6170#	6302#
	6417#	6495#	6529#	6733#	6765#	6813#	7048#	7080#	7269#	7301#	7397#	7429#	7612#	7644#	7740#
	7772#	7970#	8002#	8098#	8130#										
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GETSMB	1287#	8450#													
HCHK3	1624#	6940#													
TOTBL	1631#	5461#	7110#	7330#	7458#	7673#	7801#	9031#	8159#						
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	7449#	7573#	5227#	5367#	5497#	5668#	5824#	6100#	6683#	6795#	7010#	7100#	7230#	7321#	7362#
	1561#	4148#	7705#	7792#	7931#	8022#	8063#	8150#	8298#						
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MULT	1287#														
NEWTST	1287#	3280#	3325#	3471#	3571#	3612#	3658#	3706#	3746#	3776#	3809#	3856#	3903#	4168#	4308#
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	6991#	7206#	7558#	7899#	8260#										
OWNTAG	1533#	1774#													
POP	1287#	9717#	9777#	9778#	10163#	10354#									
PUSH	1287#	9676#	9738#	9740#	9761#	10137#	10334#								
WRPSK	1602#	6205#	6552#	6857#	7153#	7499#	7842#	8200#							
WSEEK	1596#	5717#	6030#	6211#	6558#	6862#	6924#	7159#	7505#	7848#	7911#	8206#	8279#		
WSRT	1592#	5051#	6588#	9321#											
WJNLO	1608#	3626#	4120#												
WALLHO	1625#	5504#	5831#												
WCHOR	1618#	5097#	5238#	5374#	5677#	5990#	6941#	7111#	7331#	7459#	7674#	7802#	8032#	8160#	
REPORT	1287#														
SCOPE	1182#	3290#	3339#	3486#	3580#	3621#	3665#	3713#	3752#	3782#	3816#	3868#	3913#	4179#	4317#
	4546#	4743#	4826#	4873#	5081#	5162#	5318#	5449#	5573#	5776#	5892#	6090#	6277#	6376#	6617#
	6998#	7223#	7561#	7902#	8273#	8395#	8401#								
SECTST	1644#	4835#													
SETPRI	1287#	10041#													
SETPRA	10384#	10393#	10394#	10395#	10396#	10398#	10400#	10401#	10402#	10403#	10404#	10405#	10406#		
SETJF	1287#	3127#													
SKATH	1588#	4765#	5608#	6132#	6727#	7042#	7263#	7391#	7606#	7734#	7964#	8092#			
SKIP	1287#	3268#	3318#	3386#	3516#	3701#	3718#	3759#	3773#	3806#	3853#	3900#	4116#	4305#	4527#
	4820#	5044#	5306#	5712#	6024#	6199#	6337#	6356#	6547#	6895#	6972#	7148#	7496#	7839#	8197#
SVSEC	1662#	7226#	7569#	7927#											

SEQ 025:

[illegible]

G04

JNIBUS RK06 DRIVE DIAGNOSTIC PART 1 MACY11 27(1006) 06-OCT-76 23:23 PAGE 254
DZR6HC.P11 06-OCT-76 18:09 CROSS REFERENCE TABLE -- MACRO NAMES

SEQ 0252

.STYPE 11358 9585
.STYPO 11358 9788

.ABS. 070067 000

ERRORS DETECTED: 0
DEFAULT GLOBALS GENERATED: 0

DZR6HC,DZR6HC.SEO/SOL/NL:MC/EQ:SDC CRF NL:TOC DOC=DZR6HC.P11
RUN-TIME: 107 104 12 SECONDS
RUN-TIME RATIO: 458/224=2.0
CORE USED: 33K (65 PAGES)

DOCUMENT PAGES: 252

Spooler runtime 39 Seconds, 161 KCS, 1007 disk reads, 0 disk writes, 252 pages

Shooter runtime 39 seconds, 16 KCS, 100% disk read, 0 disk writes, 252 pages
 1975-01-04 17:01:49 Monitor ZPO-0 602 (400) success

[illegible]