

TEXT LISTING

068-001063-02

PROGRAM

ULMS RELIABILITY

TEXT TAPE

097-001063-01

ABSTRACT

THE SYNCHRONOUS ASYNCHRONOUS COMMUNICATIONS RELIABILITY PROGRAM IS A MAINTENANCE PROGRAM DESIGNED TO EXERCISE THE SAC BOARD. THE LINES ARE TESTED UNDER LOOPBACK MODE USING RANDOMLY GENERATED LINE CHARACTERISTICS AND CHARACTERS.


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17. PROGRAM DESCRIPTION/THEORY OF OPERATION:
18. THE PROGRAM IS IN FOUR BASIC PARTS: INITIALIZATION,
19. INTERRUPT ROUTINE, CHECK ROUTINE AND MONITOR ROUTINE.
20. THE OPERATION AND INTERACTION OF THESE ROUTINES IS
21. EXPLAINED BELOW.
22.
23. 17.1 INITIALIZATION- AT START THE PROGRAM RESETS THE ULMS
24. BOARD, TURNS ON ALL RECEIVER LINES AND WAITS FOR AN
25. INTERRUPT. THE OPERATOR IS EXPECTED TO HIT A KEY
26. ON THE CONSOLE TO IDENTIFY THE CONSOLE FOR THE PROGRAM.
27. IF THE FIRST INTERRUPT THAT COMES IN IS FROM ONE OF THE
28. ASYNC LINES, THE PROGRAM ASSIGNS THAT LINE FOR THE
29. CONSOLE. IF THE INTERRUPTING DEVICE CODE IS THAT OF
30. A TELETYPE, THE PROGRAM WILL USE THE NORMAL TELETYPE
31. I/O ROUTINES FOR THE CONSOLE.
32.
33. 17.2 AFTER IDENTIFYING THE CONSOLE, THE PROGRAM WILL ASK
34. A SERIES OF QUESTIONS TO THE OPERATOR AS DESCRIBED
35. IN SEC. 9. OPERATOR INPUTS DEFINE THE DEVICE CODE
36. OF ULMS BOARD, LINES AND MODEMS TO BE TESTED.
37. THE PROGRAM WILL THEN DEFINE THE LCR BLOCKS (SEE 11.2)
38. FOR ACTIVE LINES, ALLOCATE TRANSMIT AND RECEIVE BUFFERS,
39. CHOOSE RANDOM LINE CHARACTERISTICS AND BLOCK LENGTHS,
40. AND FILL THE TRANSMIT BUFFERS WITH RANDOM DATA. RANDOM
41. DLE WORDS SPECIFIC ALLOWABLE SYNC WORDS (SEE STABLE),
42. FORCED UNDERRUNS, ENTER AND LEAVE TRANSPARENCY AND
43. BREAK CHARACTERS ARE ALSO LOADED AT RANDOM INTERVALS IN
44. THE TRANSMIT TABLE. IF MODEM IS SELECTED, RANDOM CHANGE
45. SEQUENCES ARE SELECTED FOR SYNC LINES AND A SPECIFIC
46. ON/OFF SEQUENCE IS SELECTED FOR THE ASYNC LINES (SEE
47. GMOD AND GAMOD).
48.
49. 17.3 AFTER ALL INITIALIZATION IS COMPLETED, THE DMAIN
50. SUBROUTINE IS CALLED WHICH TURNS OFF AND INITIALIZES
51. ALL LINES (EXCEPT THE CONSOLE LINE IF APPLICABLE),
52. OUTPUTS LINE CHARACTERISTICS, TURNS ON ACTIVE TRANSMITTERS,
53. RECEIVERS AND MODEMS, AND OUTPUTS INITIAL MODEM STATES.
54. THIS STARTS THE ACTUAL PROGRAM OPERATION.
55.
56. 17.4 MONITOR ROUTINE (OR DMAN6)- THIS ROUTINE IS CALLED
57. PERIODICALLY AS A SUBROUTINE BY THE CHECK ROUTINE.
58. IT DETECTS WHEN A LINE HAS TRANSMITTED AND RECEIVED.
59. (VIA EDI CHARACTER) A FULL BLOCK OF DATA, THEN SHUTS
60. DOWN THE LINE AND SETS A BLOCK DONE BIT IN THE MCW
61. (BIT 10) FOR THE CHECK ROUTINE. IT ALSO OUTPUTS NEW
62. LINE CHARACTERISTICS AND RESTARTS A LINE IF BIT 1
63. OF THE MCW IS SET.
64.
65. 17.5 CHECK ROUTINE- THIS MONITORS THE LINE ACTIVITY, AND,
66. UPON RECEIPT OF THE BLOCK DONE BIT, COMPARES THE
67. TRANSMIT AND RECEIVE DATA AND RECORDS AND PRINTS OUT
68. ANY ERROR CONDITIONS. AFTER CHECKING ALL LINES, IF
69. THERE ARE NO ERRORS OR IF SWITCH 1 IS SET, IT LOADS
70. NEW LINE CHARACTERISTICS IN THE CONT WORD, GENERATES
71. A NEW BLOCK OF DATA IF USER SELECTED DATA WAS NOT LOADED,
72. AND SIGNALS THE MONITOR TO RESTART THE LINE BY SETTING
73. BIT 1 OF THE MCW WORD. THIS PROCESS IS REPEATED
74. CONTINUALLY FOR ALL LINES. MODEMS ARE HANDLED
75. IN A SIMILAR MANNER.
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S?WPD B
19. SWITCH SETTINGS
LOCATION "SWREG" IS USED TO SELECT THE PROGRAM OPTIONS
(NOT SYSTEM CONFIGURATION). WHILE RUNNING UNDER DTOS,
THIS LOCATION WILL BE LOADED BY THE MONITOR.
HOWEVER UNDER STAND ALONE AND PROGRAM LOAD MODES THIS
LOCATION WILL BE SET ACCORDING TO THE ANSWERS SUPPLIED
BY THE OPERATOR. IN ANY CASE THE OPTIONS CAN BE CHANGED
OR VERIFIED BY USING ONE OF THE COMMANDS GIVEN IN SEC.
8.2
SWITCH OPTIONS
DIFFERENT BITS AND THEIR INTERPRETATION AT LOCATION
"SWREG" IS AS FOLLOWS:
BIT OCTAL BINARY INERPRETATION
VALUE VALUE
1 40000 0 LOOP ON ERROR
1 40000 1 SKIP LOOPING ON ERROR
2 20000 0 PRINT TO CONSOLE
2 20000 1 ABORT PRINT OUT TO CONSOLE
3 10000 0 DO NOT PRINT % FAILURE
3 10000 1 PRINT % FAILURE
4 04000 0 ALLOW END OF PASS PRINT OUT
4 04000 1 SUPPRESS END OF PASS PRINT OUT
5 02000 0 DO NOT PRINT ON THE LINE PRINTER
5 02000 1 PRINT ON THE LINE PRINTER
6 01000 0 DO NOT HALT ON ERROR
6 01000 1 HALT ON ERROR
7 0 0 DO NOT PRINT SUMMARY AND/OR
PASSING OF EACH SUBTEST
PRINT SUMMARY AND/OR
00400 1 PASSING OF EACH SUBTEST
PRINT ONLY THE FIRST ERROR
0 0 PRINT EVERY ERROR
00200 1
SWITCH COMMANDS
ONCE THE PROGRAM STARTS EXECUTING THE STATE OF ANY OF
THE BITS CAN BE CHANGED BY HITTING KEYS 1-9, A-F. THE
PROGRAM WILL CONTINUE RUNNING AFTER UPDATING THE OPTIONS.
EACH KEY WILL COMPLEMENT THE STATE OF THE BIT AFFILIAT-
ED WITH IT, THUS BIT 4 CAN BE ALTERED BY HITTING KEY 4.
SETTING OF ANY BIT OF LOCATION "SWREG" WILL SET BIT 0.
(DEFAULT MODE IS DEFINED AS ALL BITS OF SWREG SET TO 0).
THE PROGRAM CAN BE LOCKED INTO SWITCH MODIFICATION MODE
BY TYPING A 0, IN WHICH CASE MORE THAN ONE BIT CAN BE
CHANGED BEFORE CONTROL IS ALLOWED TO RETURN TO THE
MAIN PROGRAM.

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DOC AC,MUX (CONTINUED)
BITS 0-1
10=LINE CHARACTERISTICS
SPECIFIES PARITY, STOP BITS,
LINE SPEED, CHAR CODE LEVEL, AND
LOOPBACK CONTROL.
BITS 2-5
NOT USED
BIT 6
SELECT ONE OF TWO POLYNOMIALS
(SYNC ONLY)
BITS 5-8
CLOCK SELECT (ASYNC ONLY)
0000 = 0 BAUD
0001 = 19200 BAUD
0010 = 50 BAUD
0011 = 75 BAUD
0100 = 134.5 BAUD
0101 = 200 BAUD
0110 = 600 BAUD
0111 = 2400 BAUD
1000 = 9600 BAUD
1001 = 4800 BAUD
1010 = 1800 BAUD
1011 = 1200 BAUD
1100 = 2400 BAUD
1101 = 300 BAUD
1110 = 150 BAUD
1111 = 110 BAUD
BITS 9-10
SPECIFY NUMBER OF STOP BITS
(ASYNC ONLY)
00 = 1 STOP BIT
01 = 2 STOP BITS IF NOT 5 LEVEL CODE
10 = 1.5 STOP BITS IF 5 LEVEL CODE
11 = RESERVED
BITS 11-12
SPECIFY CODE LEVEL
00 = 5 LEVEL CODE (ASYNC ONLY)
01 = 6 LEVEL CODE
10 = 7 LEVEL CODE
11 = 8 LEVEL CODE
BITS 13-14
PARITY SELECT
00 = NO PARITY
01 = ODD PARITY
10 = EVEN PARITY
11 = RESERVED
BIT 15
LOOPBACK CONTROL
0 = LOOPBACK OFF
1 = LOOPBACK ON

10012 .MAIN
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DIA AC,MUX
SPECIFIES IMPLICIT ADDRESS OF INT=
ERRUPING LINE, RECEIVE, MODEM, OR
TRANSMIT, AND FORCES A DOA AS EXPLICIT
ADDRESS FOR OUTPUTTING.
BITS 0-6
NOT USED
BITS 7-14
EXPLICIT ADDRESS
BIT 15
TRANSMIT OR RECV/MODEM CONTROL
0= RECEIVE OR MODEM INTERRUPT
1= TRANSMIT INTERRUPT
DIB AC,MUX
SPECIFIES RECEIVED DATA ON RECEIVE INT=
ERRUP.
BITS 0-7
NOT USED
BITS 8-15
RECEIVE DATA
DIC AC,MUX
SPECIFIES RECEIVER DONE/STATUS OR
MODEM DONE/STATUS
BITS 0-11
NOT USED
RECEIVER STATUS
BIT 12
FRAMING ERROR (ASYNC ONLY)
BIT 13
PARITY ERROR
BIT 14
OVERPRUN
BIT 15
0=RECEIVER STATUS

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DTC AC,MUX (CONTINUED)
MODEM STATUS
BIT 11
CD STATUS
1=CD IS ON
0=CD IS OFF
CTS STATUS
1=CTS ON
0=CTS OFF
BIT 13
DSR STATUS
1=DSR ON
0=DSR OFF
BIT 14
RING STATUS
1= RING ON
0= RING OFF
MODEM STATUS CONTROL
1= MODEM STATUS

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EFFECT OF 'BUSY' AND 'DONE' ON COMMUNICATIONS CONTROL

BUSY: BUSY IS SET ON THE ASYNC LINES ON AN I/O RESET OR START PULSE. THIS STARTS AN ICLR CYCLE WHICH CLEARS MODEM MEMORY AND PRESETS THE IMPLIED ADDRESS COUNTER. ON COMPLETION OF THE ICLR CYCLE, BUSY RESETS, AND THE BOARD IS PLACED IN THE 'DIAGNOSTIC' MODE. THERE IS NO 'BUSY' FLOP ON SYNC LINES.

DONE: DONE SETS ON BOTH SYNC AND ASYNC LINES WHEN ONE OF THE FOLLOWING EVENTS OCCURS:
1. CHARACTER RECEIVED.
2. TRANSMIT BUFFER EMPTY
3. MODEM STATUS HAS CHANGED.
INTERRUPTS OCCUR IN THE ABOVE ORDER OF PRIORITY, AND FROM LOWEST TO HIGHEST NUMBERED LINES. A 'NIOC MUX' WILL CLEAR DONE, AS WELL AS A 'NIOS MUX' AND 'IORST'.

IORESET: CLEARS LOGIC AND PLACES CONTROLLERS IN OFFLINE DIAGNOSTIC MODE. ALSO SETS 'BUSY' (ASYNCHRONOUS).

START: SAME AS IORESET (SELECTIVE ON PER CARD BASIS).

CLEAR: CLEARS 'DONE' AND INTERRUPT LOGIC AND PLACES CONTROLLERS IN ONLINE MODE.

IOPLS(MUX): STEPS INTERNAL CLOCKS IN 'DIAGNOSTIC' MODE.

IOPLS(CRC): STEPS TRANSMIT/RECEIVE CLOCK AND CRC CLOCK IN 'DIAGNOSTIC MODE' (SYNC ONLY).

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10015 .MAIN

11.2 FORMAT OF PROGRAM INTERNAL CONTROL WORDS (LCB BLOCKS)

MASTER CONTROL WORD (MCW)

BIT 0 LINE ACTIVE

BIT 1 LINE SHOULD BE STARTED

BITS 2-4 NOT USED

BITS 5-7 TIME OUT COUNTER FOR XMIT OR RECEIVE INTR.

BITS 8-12 NOT USED

BIT 13 SYNC LINE RECEIVER SHOULD BE STARTED

BIT 14 BLOCK IS READY FOR CHECKING (BLOCK DONE)

BIT 15 0=ASYNC LINE
1=SYNC LINE

CONTROL REGISTER (CONT)

BIT 0 ERROR OCCURRED

BIT 1 USER SELECTED DATA LOADED

BITS 2-4 NOT USED

BITS 5-8 CLOCK SELECT (ASYNC ONLY)

BIT 6 CRC POLYNOMIAL FOR THIS LINE (SYNC ONLY)

BIT 9 NOT USED

BIT 10 STOP BITS (ASYNC ONLY)

BITS 11-12 CODE LEVEL

BITS 13-14 PARITY

BIT 15 ANALOG LOOPBACK MODE

10016 .MAIN

MODEM OUTPUT REGISTER (MOD)

BIT 0 MODEM ACTIVE

BIT 1 OUTPUT NEW MODEM STATUS

BITS 2-13 NOT USED

BITS 14-15 NEW MODEM STATUS TO BE OUTPUTTED

MODEM REGISTER (MODS)

BIT 0 NEW MODEM STATUS HAS BEEN RECEIVED

BITS 1-3 NOT USED

BITS 4-7 OLD (PREVIOUS) MODEM STATUS

BITS 8-10 NOT USED

BITS 11-14 NEW (PRESENT) MODEM STATUS

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TRANSMIT TABLE POINTER (XTP)
BITS 0-15 STARTING ADDRESS OF TRANSMIT BLOCK
FOR THIS LINE
TRANSMIT TABLE SIZE (XTS)
BITS 0-15 NUMBER OF CHARACTERS IN BLOCK TO
BE TRANSMITTED
TRANSMITTED WORD COUNT (XC)
BITS 0-15 NUMBER OF CHARACTERS IN BLOCK
ALREADY TRANSMITTED
RECEIVE TABLE POINTER (RTP)
BITS 0-15 STARTING ADDRESS OF RECEIVE BLOCK
FOR THIS LINE
RECEIVE TABLE SIZE (RTS)
BITS 0-15 MAXIMUM ALLOWABLE NUMBER OF
RECEIVE WORDS (2*XTS)
RECEIVED WORD COUNT (RC)
BITS 0-15 NUMBER OF CHARACTERS RECEIVED
IN THIS BLOCK

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SYNC WORD (SYNC)
BITS 0-7 NOT USED
BITS 8-15 SYN CHARACTER
OLE WORD (OLE)
BITS 0-7 NOT USED
BITS 8-15 DLE CHARACTER
CRC TEMPORARY (SCRC)
BITS 0-15 PRESENT CRC TEMPORARY
TIME COUNTER (TIME)
BITS 0-15 NUMBER OF TIMES THROUGH MONITOR ROUTINE
TRANSMIT WORD TABLE (XTBL)
BIT 0 NOT USED
BIT 1 UNDERRUN FOR THE REST OF THE BLOCK SIZE
BIT 2 DLE CHARACTER FOLLOWS
BIT 3 0=LEAVE TRANSPARENCY
1=ENTER TRANSPARENCY
BITS 4-7 NOT USED
BITS 8-15 TRANSMIT DATA
RECEIVE WORD TABLE (XTBL+RL)
BITS 0-3 NOT USED
BITS 4-7 ERROR STATUS
BITS 8-15 RECEIVE DATA WORD

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10019 .MAIN

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? 11.3 TO AID IN TROUBLE SHOOTING, EXAMINE THE LCB'S FOR THE
? FAILING LINE(S) FOR ADDITIONAL INFORMATION. TO FIND
? THE APPROPRIATE LCB STARTING ADDRESS, ADD THE LINE
? NUMBER TO LCBPTR AND TAKE THE CONTENTS OF THAT
? LOCATION. A COMPARISON OF THE XMIT AND RECEIVE TABLES
? WILL PROVE VERY USEFUL IN IDENTIFYING THE PROBLEM.
? STARTING ADDRESSES OF XMIT AND RECEIVE TABLES ARE
? FOUND IN THE XTP AND RTP WORDS OF LCB BLOCK
? FOR THAT LINE.

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? 11.4. OCTAL DEBUG TOOL (ODT)
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? THE DIAGNOSTIC IS EQUIPPED WITH A BUILT IN ODT WHICH CAN
? BE ACCESSED BY HITTING CONTROL 0 ("0") AT ANY TIME DURING
? THE EXECUTION OF THE PROGRAM (AFTER SETTING THE PARA-
? METERS).
? ON ENTERING ODT THE ADDRESS OF THE LOCATION HAVING THE
? NEXT INSTRUCTION TO BE EXECUTED WILL BE TYPED-OUT.

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? 11.4.1 CONVENTIONS AND SYMBOLS
? THE FOLLOWING CONVENTIONS ARE USED BY THE ODT:
? ? POND WITH A "3".
? @ ODT IS READY AND AT YOUR SERVICE.

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? 11.4.2 COMMAND STRUCTURE
? AN ODT COMMAND HAS THE FOLLOWING FORMAT:
? (ARGUMENT) (COMMAND)
? AN ARGUMENT MAY BE ONE OF THE FOLLOWING:
? "EXP" AN OCTAL EXPRESSION CONSISTING OF OCTAL NUMBERS
? SEPARATED BY PLUS (+) OR MINUS (-) SIGNS. LEAD-
? ING ZEROS NEED NOT BE TYPED.
? "ADR" AN ADDRESS IS THE SAME AS AN EXPRESSION EXCEPT
? THAT BIT 0 IS NEGLECTED.
? A COMMAND IS A SINGLE TELETYPE CHARACTER

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? 11.4.3 ODT COMMANDS
? THE LOCATIONS THAT CAN BE EXAMINED AND MODIFIED BY THE
? USER ARE CALLED CELLS. THESE CELLS ARE OF TWO TYPES:
? INTERNAL CPU CELLS AND MEMORY LOCATIONS.

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? 11.4.3.1 OPENING INTERNAL CELLS
? THE COMMAND TO OPEN ONE OF THE INTERNAL REGISTERS IS OF
? THE FORM "NA" WHERE N IS ANY OCTAL EXPRESSION BETWEEN
? 0 AND 7
? 0-3 FOR ACCUMULATORS 0-3
? 4 FOR PC OF THE NEXT INSTRUCTION TO BE EXECUTED IN
? THE EVENT OF A "P" COMMAND.
? 5 CPU AND TTD STATUS
? BIT INTERPRETATION
? 15 STATUS OF TTD DONE FLAG
? 14 STATUS OF INTERRUPTS (ION FLAG)
? 13 STATUS OF CARRY BIT
? 6 ADDRESS OF THE LOCATION HAVING THE BREAK POINT (IF
? ANY)
? 7 INSTRUCTION AT THE BREAK POINT LOCATION
? OTHER COMMANDS TO OPEN CELLS ARE:

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? "ADR"/ OPEN THE CELL AND PRINT ITS CONTENTS
? . / OPEN THE CELL CURRENTLY POINTED TO BY THE POINTER
? AND PRINT ITS CONTENTS.
? "+ADR"/ ADD "ADR" TO THE POINTER, OPEN THE CELL
? AND PRINT ITS CONTENTS.
? "-ADR"/ SUBTRACT "ADR" FROM THE POINTER, OPEN
? THE CELL AND PRINT ITS CONTENTS.
? "CR" THE RETURN KEY IS USED TO CLOSE THE OPEN CELL
? WITH OR WITHOUT MODIFICATION.
? "LF" LINE FEED IS USED TO CLOSE THE OPEN CELL WITH OR
? WITHOUT MODIFICATION AND TO OPEN THE SUCCEEDING
? CELL.

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? = CLOSE THE OPEN CELL WITH OR WITHOUT MODIFICATION
? AND OPEN THE PRECEDING CELL
? / CLOSE THE OPEN CELL WITHOUT MODIFICATION, AND
? OPEN THE CELL POINTED TO BY ITS CONTENTS.
? +ADR/ CLOSE THE OPEN CELL WITHOUT MODIFICATION, AND
? OPEN THE CELL POINTED TO BY ITS CONTENTS + "ADR".
? -ADR/ CLOSE THE OPEN CELL WITHOUT MODIFICATION, AND
? OPEN THE CELL POINTED TO BY ITS CONTENTS - "ADR".

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? 11.4.3.2 MODIFICATION OF A CELL
? ONCE A CELL HAS BEEN OPENED ITS CONTENTS CAN BE MODIFIED
? BY TYPING THE NEW VALUE THE CELL IS TO CONTAIN IN THE
? FORM OF AN OCTAL EXPRESSION FOLLOWED BY "CR" OR "LF".
? IF A + OR - IS TYPED AS THE FIRST CHARACTER OF THE EX-
? PRESSION THEN THE VALUE OF THE EXPRESSION IS ADDED TO OR
? SUBTRACTED FROM THE OLD CONTENTS OF THE CELL. THE
? ADDRESS ITSELF OR AN EXPRESSION RELATIVE TO THE ADDRESS
? CAN BE POSITED BY TYPING A " " OR " " OCTAL EXPRESS-
? ION". A RUBOUT COMMAND GIVEN RIGHT AFTER OPENING A CELL
? ALLOWS THE MODIFICATION OF ITS CONTENTS AS IF THEY WERE
? TYPED IN JUST BEFORE THE COMMAND WAS ISSUED.

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? 11.4.3.3 OTHER ODT COMMANDS
? RUBOUT THIS KEY IS USED TO DELETE ERRONEOUSLY TYPED
? DIGITS. EACH TIME THE KEY IS PRESSED THE RIGHT MOST
? DIGIT IS DELETED AND ECHOED ON THE TERMINAL. IF
? THE RUBOUT KEY IS PRESSED RIGHT AFTER OPENING A
? CELL THEN IT DELETES THE RIGHT MOST DIGIT OF THE CELLS
? CONTENTS. THIS ALLOWS THE MODIFICATION OF THE CELL
? AS IF ITS CONTENTS WERE TYPED IN JUST BEFORE THE
? KEY WAS PRESSED.
? "ADR"B INSERT A BREAK POINT AT LOCATION "ADR".
? ONLY ONE BREAK POINT CAN BE INSERTED AND ANY
? ENTRY TO ODT AFTER EXECUTING A BREAK POINT WILL
? CAUSE IT TO BE DELETED.
? D DELETE THE BREAK POINT IF ANY.
? P RESTART THE EXECUTION OF THE PROGRAM AT LOCATION
? POINTED BY 4A.
? "ADR"R START EXECUTING THE PROGRAM AT "ADR" AFTER AN
? IO-RESET.
? K KILL THE STRING TYPED SO FAR. THE ODT RESPONDS
? WITH A "3" AND THE OPEN CELL IS CLOSED WITHOUT
? MODIFICATION.
? = PRINT THE OCTAL VALUE OF THE INPUT ONLY.
? THIS WILL CLOSE ANY OPEN CELLS WITHOUT
? MODIFICATION AND WILL NOT OPEN A CELL

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NOTE: IN PROGRAMS WHICH RELOCATE THEMSELVES THE USER SHOULD PLACE BREAK POINTS ONLY IN THE ORIGINAL PROGRAM AREA. IF A BREAK POINT IS PLACED OUTSIDE THIS AREA THE RESULTS WILL BE UNPREDICTABLE.

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SPECIAL NOTES/SPECIAL FEATURES:

MODEM CONTROL TEST PLUG CONNECTS:

ASYNC

RTS X TO RING X AND DSR X+1
 RTS X+1 TO RING X+1 AND DSR X
 DTR X TO CTS X AND CD X+1
 DTR X+1 TO CTS X+1 AND CD X

X = ANY EVEN NUMBERED LINE

SYNC

DTR TO RING AND CTS
 RTS TO DSR AND CD

IF 20 MA CURRENT LOOP INTERFACE IS BEING USED,
 DO NOT CONNECT MODEM TEST PLUGS FOR THAT PAIR
 OF LINES.

IF A LINE IS BEING USED FOR THE CONSOLE, DO NOT
 CONNECT MODEM TEST PLUGS AND DO NOT TEST MODEMS FOR
 THAT PAIR OF LINES. USE THE APPROPRIATE JUMPERS TO
 ASSERT CTS AND SELECT DEFAULT BAUD RATE FOR THE
 CONSOLE LINE.

THE RANDOM NUMBERS ARE TRANSMITTED IN BLOCKS AT
 A TIME AND COMPARED IN NON-INTERRUPT TIME. THE
 TRANSMIT/RECEIVE BUFFER AREAS ARE DIVIDED
 ACCORDING TO HOW MANY LINES ARE ACTIVE- THEN EACH
 LINE IS GIVEN A RANDOM BLOCK LENGTH EVERY TIME
 A NEW BLOCK IS SENT, WITHIN THE CONSTRAINTS OF THE
 MAXIMUM BLOCK SIZE. TO TRANSMIT LARGER BLOCKS
 OF CHARACTERS AT A TIME, THE OPERATOR MAY WANT TO
 SELECT FEWER LINES TO ACTIVATE.

THIS RELIABILITY PROGRAM CAN BE RUN WITH THE
 DATA CHANNEL EXERCISER (CATS), BUT THE CAT INTERRUPT
 ROUTINE TAKES A RELATIVELY LONG TIME TO SERVICE
 AND IT IS POSSIBLE TO MISS A FEW RECEIVER INTERRUPTS
 DURING THIS PERIOD WHICH WOULD RESULT IN FREQUENT
 OVERRUN ERRORS BEING REPORTED FOR SPEEDS GREATER
 THAN 600 BAUD.

WHEN LOADING THIS PROGRAM USING THE DIAGNOSTIC
 OPERATING SYSTEM (DOS OR DDOS), THE OPTION
 OF USING ONE OF THE ASYNC LINES FOR THE CONSOLE
 TTY IS NOT AVAILABLE.

RUN TIME: N/A

.EOT

0023 .MAIN

**00000 TOTAL ERRORS. 00000 PASS 1 ERRORS

0024 .MAIN

070TD 000524 MC 19/11
S7WPD 000050 MC 4/01