

VT62/DZ11

SELF TEST
CZDZCB0

AH-A920B-MC

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The main body of the document is a large grid of 150 small, rectangular data blocks arranged in 10 columns and 15 rows. Each block contains faint, illegible text or patterns, characteristic of a test pattern or a data table. The blocks are separated by thin white lines. The overall appearance is that of a technical document or a test sheet.

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IDENTIFICATION

PRODUCT CODE: AC-A919B-MC
PRODUCT NAME: CZDZCB0 VT62/DZ11 TST
DATE: 1-DEC-78
MAINTAINER: DIAGNOSTIC ENGINEERING
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REVISION HISTORY

REVISION
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82

TABLE OF CONTENTS

1. GENERAL	PG. 4
1.1 ABSTRACT	PG. 4
1.2 DEFINITIONS	PG. 4
1.3 DESIGN NOTES	PG. 4
1.4 DDCMP	PG. 5
2. EQUIPMENT REQUIREMENTS	PG. 5
3. LOAD PROCEDURE	PG. 5
4. STARTING AND RUNNING THE PROGRAM	PG. 5
4.1 START	PG. 6
4.2 RESTART	PG. 9
4.3 CONTINUE	PG. 10
4.4 ZERO FLAGS	PG. 10
4.5 ADD UNITS	PG. 10
4.6 DROP UNITS	PG. 10
4.7 DISPLAY PTABLE	PG. 11
4.8 SWITCH OPTIONS	PG. 11
5. ERROR AND INFORMATIONAL MESSAGES	PG. 12
6. RESTRICTIONS	PG. 13
7. MISC.	PG. 13
8. TEST DESCRIPTIONS	PG. 13
8.1 MICRODIAGNOSTIC	PG. 13
8.2 LOOPBACK	PG. 13
9. INDEX	PG. 15

83
84
85
86
87
88
89
90
91
92
93
94
95
96
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99
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101
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GENERAL
ABSTRACT

CZDZC RUNS THE SELFTEST FOR THE VT62 TERMINAL AND EXERCISES THE LINK BETWEEN THE TERMINAL AND THE HOST. THIS PARTICULAR VERSION SUPPORTS MULTIDROP, FULL DUPLEX COMMUNICATION VIA THE DZ-11 COMMUNICATION INTERFACE. OTHER VERSIONS (MAINDEC-11-DZDPG AND MAINDEC-11-DZDVP) SUPPORT THE DUP-11 AND DV-11 COMMUNICATION INTERFACES RESPECTIVELY. THE PROGRAM IS XXDP COMPATIBLE AND SUPPORTS SEQUENTIAL TESTING OF UP TO 8 VT62'S. PLEASE READ ALL SECTIONS OF THIS DOCUMENT CAREFULLY BEFORE USING THE PROGRAM. PAY PARTICULAR ATTENTION TO SECTIONS 3.0 THROUGH 6.0

1.2

DEFINITIONS

MODEM - EQUIPMENT, ALSO KNOWN AS A 'DATASET', WHICH PERFORMS THE MODULATION/DEMODULATION OF DATA SIGNALS. THIS UNIT PROVIDES TIMING FOR SYNCHRONOUS COMMUNICATION DEVICES.

MODEM ELIMINATOR - EQUIPMENT WHICH CONNECTS TWO SYNCHRONOUS DEVICES USING A CABLE RATHER THAN TELEPHONE VOICE LINES. THE ELIMINATOR HAS A CLOCK FOR TIMING.

DDCMP PROTOCOL - DEC'S COMMUNICATION LINE PROTOCOL.

UUT - UNIT UNDER TEST.

PTABLE - A TABLE OF INFORMATION, WITH ENTRIES FOR EACH UNIT UNDER TEST, THAT DESCRIBES THE HARDWARE (BUS ADDRESS, VECTOR, ETC.)

DUP - SINGLE LINE, SYNCHRONOUS COMMUNICATION INTERFACE.

DZ - EIGHT LINE, MULTIPLEXED, SYNCHRONOUS COMMUNICATION INTERFACE.

DV - SIXTEEN LINE, MULTIPLEXED, SYNCHRONOUS COMMUNICATION INTERFACE.

CRC CHECKSUM - CHECKSUM USED IN DEC NETWORK PROTOCOL (CYCLIC REDUNDANCY CHECK).

MICRODIAGNOSTIC - THE MICROCODE IN THE VT62 THAT PERFORMS THE DIAGNOSTIC CHECKOUT OF THE HARDWARE. (ALSO KNOWN AS 'SELF TEST')

SELF TEST - SEE 'MICRODIAGNOSTIC'.

1.3

DESIGN NOTES

THIS PROGRAM WAS DESIGNED AND IMPLEMENTED USING STRUCTURED TECHNIQUES. THE PROCEDURE CAUSED THE PROGRAM TO HAVE SOME OPERATIONAL CHARACTERISTICS WHICH ARE OF INTEREST TO THE USER. THESE CHARACTERISTICS ARE DISCUSSED IN THIS SECTION. THIS DISCUSSION IS NOT VITAL TO LEARNING HOW TO OPERATE THE PROGRAM HOWEVER.

THE MOST IMPORTANT OPERATIONAL CHARACTERISTIC OF STRUCTURED DESIGN, AS IT AFFECTS THE USER, IS HOW ERRORS ARE REPORTED. THE TOP-DOWN DESIGN OF THE PROGRAM RESULTS IN A BOTTOM-UP REPORT OF ERROR INFORMATION. SEVERAL LINES OF ERROR INFORMATION ARE PRINTED AS EACH PROGRAM SECTION REPORTS ITS LEVEL OF INFORMATION. AN EXAMPLE OF THIS TYPE OF ERROR LOG WOULD BE A DZ ERROR. THE FIRST ERROR MESSAGE WOULD GIVE SPECIFIC DEVICE INFORMATION SUCH AS REGISTER CONTENTS AND THEN RETURN CONTROL TO THE NEXT LEVEL. AT THE NEXT LEVEL, THE LOGICAL DEVICE NUMBER OR DEVICE SERIAL NUMBER WOULD BE REPORTED. AT THE LEVEL ABOVE THAT, STILL MORE GENERAL INFORMATION WOULD BE GIVEN. THE REPORTS CONTINUE UNTIL THE HIGHEST LEVEL IS REACHED.

COMMENT FIELDS IN THE LISTING WITH SQUARE BRACKETS ([]) REFER TO

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FUNCTIONAL BLOCKS IN THE DESIGN AND HAVE NO SIGNIFICANCE TO THE USER. THEY ARE RETAINED FOR USE BY PROGRAM MAINTAINERS.

1.4

DDCMP

THIS SECTION GIVES A VERY BRIEF DESCRIPTION OF DDCMP AS USED BY THIS DIAGNOSTIC. THE DESCRIPTION IS BY NO MEANS COMPLETE; IT IS INTENDED TO HELP THE USER UNDERSTAND ERROR REPORTS.

THERE ARE THREE TYPES OF DDCMP MESSAGES: CONTROL, DATA AND BOOTSTRAP. THE BOOTSTRAP MESSAGE IS NOT USED BY THIS DIAGNOSTIC. THE DATA MESSAGES CONSIST OF A 6-BYTE HEADER, A 2-BYTE CRC FOR THE HEADER, THE DATA ITSELF AND A 2-BYTE CRC FOR THE DATA. CONTROL MESSAGES CONSIST OF THE HEADER (AND ITS CRC) ONLY. ALL CONTROL MESSAGES HAVE AN 'ENQ' CHARACTER AS THE FIRST BYTE. ALL DATA MESSAGES ARE NUMBERED SO THAT EACH STATION ON THE LINK CAN KEEP TRACK OF WHICH MESSAGES ARE TRANSMITTED PROPERLY. ALL MESSAGES HAVE A STATION ADDRESS IN THE HEADER SO THAT MESSAGES ARE DIRECTED TO AND FROM THE PROPER STATIONS ON A MULTIDROP LINE.

THERE ARE FOUR CONTROL MESSAGES USED BY THIS DIAGNOSTIC: ACK, NAK, STRT AND STACK. ACK IS AN ACKNOWLEDGEMENT THAT THE LAST MESSAGE SENT WAS PROPERLY RECEIVED. NORMALLY, MESSAGES ARE ACKNOWLEDGED BY SENDING A DATA MESSAGE WITH THE NUMBER OF THE LAST MESSAGE IN THE HEADER. ACK'S ARE USED WHEN THERE IS NO DATA MESSAGE TO SEND BACK. NAK IS A NEGATIVE ACKNOWLEDGEMENT FOR THE LAST MESSAGE SENT AND IT INDICATES THE REASON FOR THE ERROR. STRT IS USED TO INITIATE COMMUNICATION BETWEEN TWO STATIONS. THE RECEIVING STATION SETS ITSELF UP AND ACKNOWLEDGES THE STRT WITH A STACK, OR START ACKNOWLEDGE. THE STRT-STACK SEQUENCE IS USED BEFORE AND AFTER EACH TEST. ALL MESSAGES ARE REQUIRED TO BE ACKNOWLEDGED WITH EITHER A DATA MESSAGE OR AN ACK.

2.0

EQUIPMENT REQUIREMENTS

THIS PROGRAM REQUIRES A PDP-11 WITH A MINIMUM OF 16K CORE AND A CONSOLE TERMINAL. A CLOCK OPTION IS NOT REQUIRED, BUT ONLY ROUGH TIMING IS AVAILABLE WITHOUT ONE. THE PDP-11 CONSOLE SWITCH REGISTER IS NOT USED. ONE OR MORE DZ-11'S MUST BE CONNECTED TO THE TERMINALS UNDER TEST VIA COMMUNICATION LINES THROUGH EITHER MODEM'S OR NULL MODEM'S. THE VT62'S MUST BE IN ASYNCHRONOUS MODE AND ON-LINE. THE TERMINAL ADDRESS SWITCHES ON THE CONTROL BOARD MUST BE SET TO MATCH THE TERMINAL ADDRESS ASSIGNED TO THE LOGICAL UNIT (SEE SECTION 4.0).

3.0

LOADING PROCEDURE

THIS PROGRAM MAY BE LOADED FROM PAPER TAPE USING THE ABSOLUTE LOADER. IT MAY ALSO BE LOADED FROM PAPER TAPE OR DISK USING XXDP PROCEDURES.

4.0

STARTING AND RUNNING THE PROGRAM

THE STARTING ADDRESS FOR THE PROGRAM IS 200. THE PROGRAM WILL FIRST ASK IF A CLOCK (KW11-L OR KW11-P) IS AVAILABLE. IT WILL THEN ASK IF A LINE PRINTER IS AVAILABLE. IF A LINE PRINTER IS SPECIFIED, THE PROGRAM WILL

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ASK FOR ITS ADDRESS (DEFAULT = 177514). THE PROGRAM ALSO ASKS FOR MEMORY SIZE, Q-BUS OPTION AND LINE FREQUENCY. IF NEITHER CLOCK IS SPECIFIED, THE PROGRAM WILL ASK THE USER TO TYPE TWO CHARACTERS, FIVE SECONDS APART, IN ORDER TO PROVIDE ROUGH TIMING.

THE PROGRAM WILL THEN PROMPT THE USER BY TYPING A '>'. NOW THE USER MAY TYPE ONE OF SEVEN COMMANDS: STA(RT), RES(TART), CON(TINUE), ZFL(AG), ADD, DRO(P) OR DIS(PLAY), WHERE THE LETTERS IN PARENTHESIS NEED NOT BE TYPED. IF A TYPING MISTAKE IS MADE, THE RUBOUT KEY IS USED TO DELETE THE LAST CHARACTER(S) TYPED. THE PROGRAM WILL TYPE A MESSAGE IF THE COMMAND IS INVALID. EACH OF THESE COMMANDS IS EXPLAINED IN THE SECTIONS BELOW. SWITCHES ARE USED TO SET SOFTWARE FLAGS SUCH AS 'LOOP ON ERROR'. THE FLAGS USED BY THIS PROGRAM ARE DESCRIBED IN SECTION 4.8.

4.1

START
THE START COMMAND (STA) ZEROS ALL FLAGS (PRINT ALL ERROR MESSAGES AND DO NOT LOOP WITHIN TESTS) AND INITIATES THE OPERATOR DIALOGUE. AT THIS POINT, THE DEVICE TABLE (PTABLE) IS EMPTY AND THE OPERATOR MUST USE THE DIALOGUE TO DESCRIBE ALL UUT'S AS SHOWN BELOW. THE NUMBERS IN SQUARE BRACKETS, [], RELATE THE TYPEOUT TO THE EXPLANATION BELOW AND ARE NOT TYPED IN ACTUAL OPERATION. THE PROCEDURES FOR HANDLING TYPING ERRORS ARE ALSO DESCRIBED BELOW. CR REFERS TO THE RETURN KEY (CARRIAGE RETURN).

DIALOGUE

UNITS ? (DECIMAL) [1]
DZ ADDRESS: ? (OCTAL) NNNNNN [2]
DZ VECTOR: ? (OCTAL) NNN [3]
DZ BUS PRIORITY: ? (OCTAL) N [4]
TERMINAL ADDRESS: ? (OCTAL) N [5]
LINE NUMBER: ? (OCTAL) N [6]
BAUD RATE: ? (OCTAL) N [7]
STOP CODE/CHAR. LENGTH: ? (OCTAL) N [8]
CHANGE S.W. ? (Y OR N) [9]
HOW MANY INITIATE TRIES BEFORE ABORT ? (OCTAL) 10 [10]
USE ALL ZERO'S FOR LOOPBACK DATA ? (Y OR N) Y [11]

EXPLANATION

[1] TYPE THE TOTAL NO. OF UUT'S IN DECIMAL. QUESTIONS 2 THROUGH 5 WILL BE REPEATED UNTIL ALL UUT'S HAVE BEEN

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DESCRIBED. THE USER DOES NOT HAVE TO ANSWER THESE QUESTIONS FOR EACH DZ HOWEVER, IF THERE ARE MULTIPLE UUT'S PER DZ OR PER DZ LINE. THE EXPLANATION FOR QUESTION 5 SHOWS HOW TO ENTER MULTIPLE UUT'S.

- [2] TYPE THE BUS ADDRESS OF THE DZ. THIS MUST BE AN EVEN OCTAL NUMBER NOT GREATER THAN 177776. THE USER MAY TYPE CR TO USE THE DEFAULT VALUE: NNNNNN.
- [3] TYPE THE VECTOR ADDRESS FOR THE DZ. THIS MUST BE AN EVEN OCTAL NUMBER NOT GREATER THAN 376. THE USER MAY TYPE CR TO USE THE DEFAULT VALUE: NNN.
- [4] TYPE THE BUS PRIORITY LEVEL OF THE DZ. THIS MUST BE A DIGIT FROM 0 TO 7. AGAIN, THE USER MAY TYPE CR TO GET THE DEFAULT VALUE: N.
- [5] TYPE THE TERMINAL ADDRESS FOR EACH TERMINAL ATTACHED TO THE DZ LINE. SEPARATE EACH ADDRESS WITH A COMMA. THIS IS THE ADDRESS SELECTED BY THE SWITCHES ON THE I/O BOARD IN THE TERMINAL AND IS AN OCTAL NUMBER BETWEEN 0 AND 377. THE USER MAY TYPE CR TO GET THE DEFAULT VALUE: N.
- [6] TYPE THE DZ LINE NUMBER (0-7) TO WHICH THE TERMINAL IS ATTACHED. TYPE CR TO GET THE DEFAULT OF N.
- [7] TYPE THE CODE FOR THE BAUD RATE DESIRED. THE CODES ARE GIVEN IN THE TABLE BELOW. TYPE CR TO GET THE DEFAULT: N.

BAUD RATE TABLE

TYPE	TO GET THIS RATE
0	50
1	75
2	110
3	134.5
4	150
5	300
6	600
7	1200
10	1800
11	2000
12	2400
13	3600
14	4800
15	7200
16	9600
17	19,200

FOR FASTER TESTING, USE AS HIGH A BAUD RATE AS PRACTICAL. A BAUD RATE OF 19,200 IS NOT AVAILABLE ON THE VT62.

- [8] TYPE A CODE TO SELECT THE STOP CODE AND CHARACTER LENGTH. THE CODES ARE GIVEN IN THE TABLE BELOW.

TYPE	STOP CODE	CHARACTER LENGTH
0	1 BIT	5 BITS

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1	::	6	::
2	::	7	::
3	::	8	::
4	2 BITS	5	::
5	::	6	::
6	::	7	::
7	::	8	::

- [9] IF THE USER WISHES TO CHANGE EITHER OF THE TWO SOFTWARE PARAMETERS DESCRIBED FOR QUESTIONS 7 OR 8, HE MUST ANSWER THIS QUESTION BY TYPING 'Y'. IF THE USER WISHES TO BYPASS QUESTIONS 7 AND 8, HE TYPES 'N'.
- [10] TYPE THE NUMBER OF TIMES THE PROGRAM IS TO ATTEMPT TO INITIALIZE A DUP BEFORE ABORTING THE UNIT. THE USER MAY TYPE ANY OCTAL NUMBER BETWEEN 0 AND 177777. TYPE CR TO DEFAULT TO 10 (OCTAL) ATTEMPTS.
- [11] IF THE USER TYPES 'Y', THE LOOPBACK DATA WILL BE 255 ZERO BYTES. IF THE USER TYPES 'N', THE LOOPBACK DATA WILL BE A PATTERN OF ALTERNATING 1 AND 0 BITS. SEE SECTION 8.2 FOR DETAILS ON THE LOOPBACK TEST.

EXAMPLE OF DIALOGUE

ASSUME THE FOLLOWING HARDWARE CONFIGURATION: A DZ (160000,300,3) WITH TWO TERMINALS (ADDRESSES 0 AND 1) ON LINE 0, A SECOND DZ (160010,320,3) WITH A SINGLE TERMINAL (ADDRESS 5) ON LINE 2 AND A THIRD DZ (170000,340,4) WITH THREE TERMINALS (ADDRESSES 0) ON LINES 1, 2 AND 3. NOTE THAT VARIABLE BAUD RATES CAN BE SPECIFIED. THE USER WOULD USE THE FOLLOWING DIALOGUE TO SET UP THE PROGRAM:

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>STA
# UNITS ? (DECIMAL) 6
DZ ADDRESS: ? (OCTAL) 160000
DZ VECTOR: ? (OCTAL) 310 300
DZ BUS PRIORITY: ? (OCTAL) 4 3
TERMINAL ADDRESS: ? (OCTAL) 0 0,1
LINE NUMBER: ? (OCTAL) 0
BAUD RATE: ? (OCTAL) 0 16
STOP CODE/CHAR. LENGTH (SEE DOC.): ? (OCTAL) 0 7
DZ ADDRESS: ? (OCTAL) 160000 160010
DZ VECTOR: ? (OCTAL) 300 320

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DZ BUS PRIORITY: ? (OCTAL) 3
TERMINAL ADDRESS: ? (OCTAL) 1 5
LINE NUMBER: ? (OCTAL) 0 2
BAUD RATE: ? (OCTAL) 16 7
STOP CODE/CHAR. LENGTH (SEE DOC.): ? (OCTAL) 7
DZ ADDRESS. ? (OCTAL) 160010 170000
DZ VECTOR: ? (OCTAL) 320 340
DZ BUS PRIORITY: ? (OCTAL) 3 5
TERMINAL ADDRESS: ? (OCTAL) 5 0
LINE NUMBER: ? (OCTAL) 2 1-3
BAUD RATE: ? (OCTAL) 7 7,16,7
STOP CODE/CHAR. LENGTH (SEE DOC.): ? (OCTAL) 7
CHANGE S. W. ? (Y OR N) N

(NOTE WHERE CR WAS USED TO ACCEPT THE DEFAULT)

TYPING ERRORS

- (1) THE RUBOUT KEY IS USED TO DELETE ANY CHARACTERS WHICH ARE IN ERROR.
- (2) IF THE RESPONSE IS NOT WITHIN LIMITS OR IS IN THE WRONG FORMAT, THE PROGRAM WILL NOTIFY THE USER AND ASK THE QUESTION AGAIN.
- (3) WHEN ENTERING MULTIPLE TERMINAL ADDRESSES FOR A SINGLE DZ, THE USER MAY NEGLECT TO TYPE ONE OR MORE ADDRESSES. IN SUCH A CASE, THE USER MERELY ENTERS THE SAME DZ ADDRESS, VECTOR AND PRIORITY IN THE NEXT SERIES OF QUESTIONS AND THEN ENTERS THE REMAINING TERMINAL ADDRESSES. REMEMBER; THE SERIES OF QUESTIONS (2 THROUGH 5) WILL BE RE-ASKED UNTIL ALL UUT'S HAVE BEEN ACCOUNTED FOR.

4.2

RESTART

THE RESTART COMMAND (RES) STARTS THE PROGRAM WITHOUT CLEARING THE PTABLE. ALL FLAGS REVERT TO THEIR INITIAL STATE UNLESS THE FLAG SWITCH IS USED TO CHANGE THEM (SECTION 4.8). THE OPERATOR DIALOGUE DESCRIBED IN 4.1 DOES NOT TAKE PLACE UNLESS REQUESTED. WHEN THIS COMMAND IS USED, THE PROGRAM WILL ASK IF THE USER WISHES TO CHANGE THE HARDWARE TABLE AND IF HE WISHES TO CHANGE THE SOFTWARE TABLE. IF THE USER ANSWERS YES (BY TYPING 'Y') TO THE HARDWARE TABLE QUESTION, THAT PORTION OF THE DIALOGUE DESCRIBED IN

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SECTION 4.1 BEGINNING WITH QUESTION 1 ENDING WITH QUESTION 5 WILL TAKE PLACE. IF THE USER ANSWERS YES TO THE SOFTWARE TABLE QUESTION, HE WILL BE ASKED QUESTIONS 7 AND 8.

THE MOST COMMON USE OF THIS COMMAND IS TO CHANGE RUN-TIME FLAGS OR TO ADD/DROP UNITS. THESE FLAGS ARE DESCRIBED IN SECTION 4.8 - SWITCH OPTIONS. TYPING A '^C' WILL FORCE THE SUPERVISOR TO ISSUE A PROMPT CHARACTER ('>') SO THAT THE USER MAY USE THE RESTART COMMAND FOR THIS PURPOSE. NOTE: IF THE USER USES THE START COMMAND AFTER A ^C, HE WILL HAVE TO REENTER ALL DEVICE INFORMATION!

4.3 CONTINUE
THE CONTINUE COMMAND WILL RESTART THE PROGRAM AT THE TEST WHICH WAS INTERRUPTED. UNLIKE THE RESTART COMMAND, THIS COMMAND DOES NOT FORCE FLAGS BACK TO THE INITIAL STATE. THE FLAGS WILL REMAIN AS SET UP DURING THE LAST START OR RESTART. THE USER HAS THE SAME DIALOGUE AND FLAG OPTIONS AS DESCRIBED FOR THE RESTART COMMAND.

4.4 ZERO FLAGS
THIS COMMAND WILL ZERO ALL FLAGS (SECTION 4.8) AND TYPE A PROMPT. SECTION 4.8 DESCRIBES THE EFFECTS OF CLEARING ALL FLAGS, BUT ESSENTIALLY, ALL LOOPING AND HALTS WILL BE DISABLED AND ALL ERROR INFORMATION WILL BE PRINTED IN THE EVENT OF AN ERROR.

4.5 ADD UNITS
WHILE TESTING MULTIPLE UNITS, THE USER MAY WISH TO DROP A PARTICULAR UNIT FROM THE TEST PROCEDURE AND, LATER ON, BEGIN TESTING THAT UNIT AGAIN. IN THIS CASE, THE USER NEED NOT STOP THE DIAGNOSTIC AND REBUILD THE PTABLE. AFTER A UNIT HAS BEEN DROPPED (SEE SECTION 4.6), THE USER MAY ADD THE UNIT BY TYPING '^C' AND USING THE ADD COMMAND AS FOLLOWS:

ADD/UNI:N

WHERE N IS A DECIMAL UNIT NUMBER THAT SPECIFIES THE UNIT TO BE ADDED. UNITS ARE NUMBERED FROM 1 TO 32 ACCORDING TO THE ORDER IN WHICH THEY WERE SPECIFIED FOR THE HARDWARE TABLE. MULTIPLE UNITS MAY BE ADDED BY TYPING EACH UNIT NUMBER SEPARATED BY COLONS (I.E., ADD/UNI:2:4:22) OR BY TYPING THE FIRST AND LAST UNIT NUMBERS OF A CONTIGUOUS GROUP OF UNITS SEPARATED BY A DASH (I.E., ADD/UNI:1-10 WILL ADD THE FIRST TEN UNITS). NOTE: AFTER A START COMMAND, ALL UNITS ARE CONSIDERS ADDED. THERE IS NO NEED TO USE THE ADD COMMAND UNLESS THE UNIT WAS DROPPED.

4.6 DROP UNITS
TO REMOVE A UNIT FROM TESTING, THE DROP COMMAND (DRO) IS USED. TO USE THIS COMMAND, TYPE '^C' AND DROP THE UNIT(S) USING THE DROP COMMAND AS FOLLOWS:

DRO/UNI:N

WHERE 'N' IS A DECIMAL UNIT NUMBER WHICH SPECIFIES THE UNIT TO BE DROPPED. UNITS ARE NUMBERED FROM 1 TO 32 ACCORDING TO THE ORDER IN WHICH THEY WERE SPECIFIED FOR THE HARDWARE TABLE. MULTIPLE UNITS MAY BE DROPPED BY TYPING EACH UNIT NUMBER SEPARATED BY COLONS (I.E., DRO/UNI:1:3:7) OR BY TYPING THE FIRST AND LAST UNIT NUMBERS OF A CONTIGUOUS GROUP SEPARATED BY A DASH (I.E., DRO/UNI:1-9 CAUSES THE FIRST

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NINE UNITS TO BE DROPPED). AFTER THE PROGRAM IS RESTARTED, THE SPECIFIED UNIT(S) WILL NOT BE INCLUDED FOR TESTING.

4.7 DISPLAY PTABLE
WHEN THE DISPLAY COMMAND IS TYPED, THE ENTIRE CONTENTS OF THE PTABLE WILL BE PRINTED. UNITS THAT HAVE BEEN DROPPED WILL BE SO MARKED. THIS COMMAND IS USEFUL FOR VERIFYING THE PTABLE CONTENTS.

4.8 SWITCH OPTIONS
THERE ARE THREE SWITCH OPTIONS AVAILABLE FOR USE WITH THE COMMANDS: /TES:, /PAS: AND /FLA:. THE TEST SWITCH, /TES:, IS USED ONLY WITH THE START COMMAND AND THE RESTART COMMAND. IT IS USED TO SPECIFY THE INDIVIDUAL TEST(S) TO BE RUN IN CASES WHERE ALL TESTS ARE NOT TO BE RUN. FOR EXAMPLE, IF THE USER WISHED TO RUN THE LOOPBACK TEST ONLY, HE WOULD TYPE:

>STA/TES:2

IF THIS SWITCH IS NOT USED, ALL TESTS WILL BE RUN AS THE DEFAULT CONDITION.

THE PASS SWITCH IS USED TO SPECIFY THE NUMBER OF PASSES TO BE RUN. TO RUN THE LOOPBACK TEST TWENTY TIMES, THE USER WOULD TYPE:

>STA/TES:2/PAS:20

THIS SWITCH MAY BE USED WITH THE START, RESTART AND CONTINUE COMMANDS. THE DEFAULT CONDITION IS ESSENTIALLY AN INFINITE NUMBER OF PASSES.

THE FLAG SWITCH IS USED TO SET FLAGS WHICH CONTROL PROGRAM OPERATION AND ERROR PRINTOUTS. THIS SWITCH MAY BE USED WITH THE CONTINUE COMMAND AS WELL AS THE START COMMAND AND RESTART COMMAND. THE AVAILABLE FLAGS ARE SHOWN IN THE TABLE BELOW.

FLAG	EFFECT IF SET
LOE	LOOP ON ERROR
HLT	HALT ON ERROR
IER	INHIBIT ERROR REPORTS
IBE	INHIBIT BASIC ERROR REPORT*
IXE	INHIBIT EXTENDED ERROR REPORT*
PRI	SEND ALL TYPEOUTS TO THE PRINTER
BOE	BELL ON ERROR
UAM	UNATTENDED MODE (NO MANUAL INTERVENTION)
PNT	PRINT TEST NUMBER

*SEE SECTION 5.0

EXAMPLE:
IF THE USER WISHES TO RUN THE PROGRAM WITHOUT ERROR MESSAGES AND HAVE IT LOOP ON ERROR, HE WOULD TYPE:

>RES/FLA:LOE:IER

EXAMPLE:
IF THE USER LATER WANTED TO STOP THE LOOP ON ERROR FEATURE, HE WOULD TYPE:

>CON/FLA:LOE=0

NOTE: THE ERROR REPORTS WOULD STILL BE INHIBITED.

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ALL FLAGS ARE DEFAULTED TO ZERO (NOT SET).

5.0

ERROR AND INFORMATIONAL MESSAGES

AS NOTED IN THE DESIGN NOTES (SECTION 1.3), A SINGLE ERROR MAY RESULT IN SEVERAL MESSAGES BEING TYPED. THIS IS DUE TO THE STRUCTURE OF THE PROGRAM. EACH SECTION, IN THE EVENT OF AN ERROR, REPORTS THE INFORMATION AVAILABLE TO IT. THE FINAL MESSAGE FOR EACH ERROR CONTAINS THE UNIT NUMBER (DECIMAL 1 1 TO 32 - SEE SECTIONS 4.5 AND 4.6) AND THE PHRASE: "END OF ERROR REPORT".

THERE ARE THREE LEVELS OF ERROR REPORTS. BY USING THE FLAG SWITCH (SECTION 4.8), ONE OR MORE LEVELS OF REPORT MAY BE INHIBITED. THE FIRST LEVEL CONSISTS OF AN ERROR NUMBER, PC CONTENTS AND ERROR TYPE (HARD, SOFT OR FATAL). THE ERROR NUMBER CAN BE RELATED TO THE TABLE AT THE END OF THIS SECTION. THE PC CONTENTS GIVE THE ADDRESS WHERE THE ERROR REPORT MECHANISM WAS INVOKED. THE NEXT LEVEL (BASIC ERROR REPORT) GIVES AN ENGLISH DESCRIPTION OF THE ERROR. AN EXAMPLE OF THIS TYPE OF MESSAGE IS: 'HEADER HAS CRC ERROR'. THE FINAL LEVEL (EXTENDED ERROR REPORT) GIVES ADDITIONAL DATA CONCERNING THE ERROR, SUCH AS REGISTER CONTENTS.

TO INHIBIT SOME OR ALL ERROR MESSAGES, USE THE FLAGS DESCRIBED IN SECTION 4.8. THE INHIBIT-EXTENDED-ERROR-REPORT FLAG (IXE) INHIBITS THAT LEVEL ONLY. THE INHIBIT-BASIC-ERROR-REPORT FLAG (IBE) INHIBITS BOTH BASIC AND EXTENDED ERROR REPORTS. FINALLY, THE INHIBIT-ERROR-REPORT FLAG (IER) INHIBITS ALL TYPEOUTS.

TABLE OF ERROR NUMBERS

NO.	ERROR DESCRIPTION
00	CANNOT INITIALIZE DZ
01	REPLY MESSAGE FROM TERM. WAS NOT AN ENQ
02	REPLY FROM TERM. WAS NOT EXPECTED TYPE OF CONTROL MESSAGE
03	TERM. ADDRESS IN RESPONSE WAS NOT COORECT
04	RESPONSE HAD CRC ERROR IN THE HEADER
20	DZ TRANSMIT ERROR
21	DZ RECEIVE ERROR
22	MESSAGE TO TERMINAL WAS NOT ACK'ED
23	ERROR OCCURRED WHILE INITIALIZING DZ
24	ERROR OCCURRED DURING TRANSMISSION
25	DDCMP STRT MESSAGE DID NOT GET A STACK
26	ERROR DURING RECEPTION
31	TIMEOUT WHILE WAITING FOR RESPONSE
40	SEE 21
41	SEE 04
42	SEE 03
43	MESSAGE DATA HAD CRC ERROR
50	ERROR OCCURRED DURING SELFTTEST (TEST #1)
51	ERROR OCCURRED DURING LOOPBACK (TEST #2)
52	ERROR IN RECEIVED DATA

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70 SELFTEST RESPONSE IN ERROR (NOT RECOGNIZED)
71 TERMINAL MEMORY ERROR
72 TERMINAL CONTROL-ROM ERROR

6.0 RESTRICTIONS
THIS DIAGNOSTIC DOES NOT ATTEMPT TO TEST THE DZ11. IF A LARGE NUMBER OF COMM ERRORS OCCUR, OR IF ATTEMPTS TO SEND OR RECEIVE DATA TO AND FROM THE TERMINAL FAIL; USE THE SPECIFIC DZ11 DIAGNOSTICS TO VERIFY THE DZ11.

7.0 MISCELLANEOUS
PLEASE REPORT ALL PROGRAM PROBLEMS VIA THE AIDS REPORTING SYSTEM. REFER ALL COMMENTS REGARDING DOCUMENTATION TO DIAGNOSTIC ENGINEERING TERMINAL GROUP IN MAYNARD, MASS.

8.0 TEST DESCRIPTIONS
8.1 MICRODIAGNOSTIC (TEST #1)
THE MICRODIAGNOSTIC, OR SELFTEST, IS ROM RESIDENT CODE IN THE VT62 THAT IS EXECUTED UPON COMMAND FROM THE HOST COMPUTER OR DURING POWER UP. A FULL DESCRIPTION OF THE TEST IS AVAILABLE IN THE HARDWARE MANUAL FOR THE VT62. ESSENTIALLY, THE TEST VERIFIES THE MICROPROCESSOR, CHECKS ROM MEMORY, EXERCISES RAM MEMORY AND EXERCISES THE SCREEN. THE HOST MAY REQUEST THE RESULTS OF THE TEST. IN ANY CASE, THE RESULTS ARE ALWAYS DISPLAYED ON THE LAST LINE OF THE SCREEN. THE FIRST CHARACTERS ARE A CODED ERROR REPORT FOR THE HOST COMPUTER AND THE REMAINDER OF THE LINE IS AN ENGLISH DESCRIPTION OF THE ERROR STATUS.

8.2 LOOPBACK (TEST #2)
IN THIS TEST, THE TERMINAL IS COMMANDED TO ENTER LOOPBACK MODE AND A SINGLE, 256(DECIMAL) BYTE DATA MESSAGE IS SENT TO THE TERMINAL. THIS DATA MESSAGE WILL HAVE A DDCMP PROTOCOL ENVELOPE. WHEN THE DATA IS RETURNED, THE TERMINAL IS TAKEN OUT OF LOOPBACK MODE USING A DDCMP 'STRT' SEQUENCE. THE CRC CHECKSUMS ARE VALIDATED FOR BOTH THE MESSAGE HEADER AND THE MESSAGE DATA. THE DATA IS THEN CHECKED, BYTE BY BYTE. THUS THERE ARE THREE POSSIBLE ERRORS DETECTED: NO TERMINAL RESPONSE, BAD CRC OR BAD DATA.

INTERPRETATION OF ANY ERROR MESSAGES REQUIRES SOME EDUCATED GUESSWORK BECAUSE OF THE NUMBER OF COMPONENTS IN THE COMMUNICATION LINK. INTERMITTENT ERRORS WOULD GENERALLY INDICATE LINE PROBLEMS UNLESS THE LINE IS PHYSICALLY SHORT OR THE ENVIRONMENT IS RELATIVELY NOISE FREE. IF EITHER OF THESE CONDITIONS IS THE CASE OR IF THE ERROR IS NOT INTERMITTENT, THEN THE TERMINAL I/O BOARD, THE MODEM AND THE DUP ARE SUSPECT. IF THERE IS NO TERMINAL RESPONSE, RUN THE TERMINAL SELF TEST OFF-LINE. THIS WILL SHOW WHETHER THE TERMINAL IS COMPLETELY 'DEAD' OR THE PORTIONS OF THE COMMUNICATION LINK MENTIONED ABOVE ARE BROKEN.

THERE ARE TWO DATA PATTERNS AVAILABLE FOR LOOPBACK: ALL ZERO'S AND ALTERNATING 1/0 BITS (I.E., BYTES OF 252,125,252,125,...). THE ZERO

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PAGE 14

PATTERN IS NOISE-SUSCEPTIBLE. HOWEVER THE ALTERNATING BITS PATTERN EXERCISES THE DATA PATHS BETTER. SECTION 4.0 SPECIFIES HOW TO SELECT THE PATTERN.

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9.0

INDEX

ACK	5, 12
ADD COMMAND	10
BAUD RATE	7
CONTINUE COMMAND	10-11
CRC	4-5, 12
DDCMP	4-5
DISPLAY COMMAND	11
DROP COMMAND	10
ENQ	5, 12
ERROR NUMBER	12
ERROR REPORT	12
FLAGS	6, 9-12
LOOPBACK	8, 12-13
MULTIPLE UNITS	10
MULTIPLE UUT'S	7
NAK	5
PTABLE	4, 10-11
RESTART COMMAND	9-11
STACK	5, 12
START COMMAND	6, 10-11
STOP CODE	7
STRT	5, 12
SWITCH OPTIONS	10
SWITCH OPTIONS	11
SWITCHES	6
UNIT NUMBER	10, 12

.FNDR

673 000000'

.PRINT ;SPMAC: VERSION 1.1

```

674      002000
675
676      :
677      :
678 002000
679 002000
680 002000
681 002000      103
682 002001      132
683 002002      104
684 002003      132
685 002004      103
686 002005      000
687 002006      000
688 002007      000
689 002010      102
690 002011      060
691 002012      000000
692 002014      000000
693 002016      022020
694 002020      022354
695 002022      011672
696 002024      011706
697 002026      022612
698 002030      000000
699 002032      000000
700 002034      000000
701 002036      000000
702 002040      011716
703 002042      000000
704 002044      000000
705 002046      000000
706 002050      002
707 002051      002
708 002052      000000
709 002054      000000
710 002056      000000
711 002060      000000
712 002062      000000
713 002064      002234
714 002066      011722
715 002070      002250
716 002072      002254
717 002074      011724
718 002076      011726
719 002100      000000
720 002102      000000
721 002104      011730
722 002106      012322
723 002110
  
```

```

.=2000
HEADER - VT62 ACCEPTANCE TEST
POINTER ALL
BGNMOD HEAD
HEADER CZDZC,B,0,0,0,0
  
```

```

.ASCII /C/
.ASCII /Z/
.ASCII /D/
.ASCII /Z/
.ASCII /C/
.BYTE 0
.BYTE 0
.BYTE 0
.ASCII /B/
.ASCII /O/
.WORD 0
.WORD 0
.WORD L$HARD
.WORD L$SOFT
.WORD L$HW
.WORD L$SW
.WORD L$LAST
.WORD 0
.WORD 0
.WORD 0
.WORD 0
.WORD L$DISPATCH
.WORD 0
.WORD 0
.WORD 0
.WORD C$REVISION
.WORD C$EDIT
.WORD 0
.WORD 0
.WORD 0
.WORD 0
.WORD 0
.WORD L$DVTYP
.WORD L$RPT
.WORD L$DR
.WORD L$DRST
.WORD L$AU
.WORD L$DU
.WORD 0
.WORD 0
.WORD L$INIT
.WORD L$CLEAN
  
```

ENDMOD


```
760
761
762
763 002110 000000
764 002112 000000
765 002114 000000
766 002116 000000
767 002120 002000
768 002122 000000
769 002124 000010
770 002126 000000
771 002130 000000
772 002132 000001
773 002134 000000
774 002136 000000
775 002140 000000
776 002142 000000
777 002144 000000
778 002146 000000
779 002150 000000
780 002152 000000
781 002154 000000
782 002156 000000
783 002160 000000
784
785 002162
786 002162 000000
787 002164 000000
788 002166 000000
789 002170 000000
790 002172 000000
791 002174 000000
792 002176 000000
793 002200 000000
794 002202 000000
795 002204 000000
796 002206 000000
797 002210 000000
798 002212
799 002212 000000
800 002214
801 002214 000001
802 002216 000002
803 002220 000004
804 002222 000010
805 002224 000020
806 002226 000040
807 002230 000100
808 002232 000200
809
810 002234
811 002234 052126 031066 042054
812 002242 030532 000061
813
814 002246
815 002246 000001
```

```
*****
: GLOBAL DATA *
*****
RSSTCK: 0 ;FLAG TO INDICATE IF R5 STACK IS SET UP
SCRATCH: 0 ;SCRATCH LOCATIONS
TEMP: 0
ABORT: 0 ;TEST ABORT FLAG
TIMLIM: 2000 ;TIMEOUT LIMIT (IN 100 MICROSEC. INCREMENTS)
STIME: 0 ;SHORT TIMEOUT LIMIT (APPROX. 20 MICROSEC. INCREM.)
ILIMIT: 10 ;LIMIT ON DEVICE INITIALIZATION ATTEMPTS
INERR: 0 ;INPUT ERROR
OUTERR: 0 ;OUTPUT ERROR
PASCNT: 1
EOMSG: 0 ;END OF MESSAGES FLAG
LOGDEV: 0 ;LOGICAL DEVICE NUMBER
EXPINP: 0 ;EXPECT INPUT FLAG
OUTMSG: 0 ;OUTPUT MESSAGE POINTER AND SIZE
INMSG: 0 ;INPUT MESSAGE POINTER AND SIZE
OUTBUF: 0 ;OUTPUT BUFFER POINTER AND SIZE
OUTSIZ: 0
INBUF: 0 ;INPUT BUFFER POINTER AND SIZE
INSIZ: 0
MSGAP:
OUT: 0 ;TEST MESSAGE AREA POINTER
INITMA: 0 ;TEMPORARY MESSAGE POINTER AND SIZE
INITMS: 0 ;USED FOR INITIALIZATION OF OUTPUT ROUTINES
BAPNT: 0 ;GENERAL BUFFER AREA POINTER AND SIZE
BASIZE: 0
MSGNO: 0 ;MESSAGE NUMBER (DDCMP)
RMSGNO: 0
PTABLE: 0 ;PRESENT UNIT PTABLE DATA
0
0
0
NMOD: 0
PTEND:
DEVPRI: 0 ;DEVICE PRIORITY
LINMSK: ;MASKS FOR LINE SELECTION BITS (DZ11)
1 ;LINE 0
2 ;LINE 1
4 ;LINE 2
10 ;LINE 3
20 ;LINE 4
40 ;LINE 5
100 ;LINE 6
200 ;LINE 7
DEVTYP <VT62,DZ11>
.DEVTYP /VT62,DZ11/
.DEVEN
.DEVREG 4,17,DZREG,DZMSK
.DEVREG 1
```

816 002250 000017
817 002252 000004
818 002254 000004

.WORD 17
.WORD 4
.BLKW 4

```
819  
820  
821  
822  
823 002264 040503 020116 047516 MSG00: .ASCIZ /CAN NOT INITIALIZE COMM DEVICE/  
824 002272 020124 047111 052111  
825 002300 040511 044514 042532  
826 002306 041440 046517 020115  
827 002314 042504 044526 042503  
828 002322 000  
829 002323 122 050105 054514 MSG01: .ASCIZ /REPLY WAS NOT AN ENQ/  
830 002330 053440 051501 047040  
831 002336 052117 040440 020116  
832 002344 047105 000121  
833 002350 047111 047503 051122 MSG02: .ASCIZ /INCORRECT REPLY TYPE/  
834 002356 041505 020124 042522  
835 002364 046120 020131 054524  
836 002372 042520 000  
837 002375 103 051101 044522 MSG05: .ASCIZ /CARRIER NOT DETECTED AFTER 10MSEC/  
838 002402 051105 047040 052117  
839 002410 042040 052105 041505  
840 002416 042524 020104 043101  
841 002424 042524 020122 030061  
842 002432 051515 041505 000  
843 002437  
844 002437 122 050105 054514 MSG42:  
845 002444 044040 051501 044440 MSG03: .ASCIZ /REPLY HAS INCORRECT STATION ADDRESS/  
846 002452 041516 051117 042522  
847 002460 052103 051440 040524  
848 002466 044524 047117 040440  
849 002474 042104 042522 051523  
850 002502 000  
851 002503  
852 002503 110 040505 042504 MSG41:  
853 002510 020122 040510 020123 MSG04: .ASCIZ /HEADER HAS CRC ERROR/  
854 002516 051103 020103 051105  
855 002524 047522 000122  
856 002530 051105 047522 020122 MSG10: .ASCIZ /ERROR DURING KEYBOARD TEST ** END OF REPORT **/  
857 002536 052504 044522 043516  
858 002544 045440 054505 047502  
859 002552 051101 020104 042524  
860 002560 052123 020040 025052  
861 002566 042440 042116 047440  
862 002574 020106 042522 047520  
863 002602 052122 025040 000052  
864 002610 040502 020104 042522 MSG11: .ASCIZ /BAD RESPONSE FROM KEYBOARD/  
865 002616 050123 047117 042523  
866 002624 043040 047522 020115  
867 002632 042513 041131 040517  
868 002640 042122 000  
869 002643 124 047517 046440 MSG12: .ASCIZ /TOO MANY CHARACTERS SENT FROM KEYBOARD/  
870 002650 047101 020131 044103  
871 002656 051101 041501 042524  
872 002664 051522 051440 047105  
873 002672 020124 051106 046517  
874 002700 045440 054505 047502
```

875	002706	051101	000104		
876	002712	051124	047101	046523	MSG20: .ASCIZ /TRANSMIT ERROR: NO TRANSMIT INTERRUPTS/
877	002720	052111	042440	051122	
878	002726	051117	020072	047516	
879	002734	052040	040522	051516	
880	002742	044515	020124	047111	
881	002750	042524	051122	050125	
882	002756	051524	000		
883	002761				MSG40:
884	002761	122	041505	050105	MSG21: .ASCIZ /RECEPTION ERROR/
885	002766	044524	047117	042440	
886	002774	051122	051117	000	
887	003001	116	020117	041501	MSG22: .ASCIZ /NO ACK RECEIVED AFTER TRANSMISSION/
888	003006	020113	042522	042503	
889	003014	053111	042105	040440	
890	003022	052106	051105	052040	
891	003030	040522	051516	044515	
892	003036	051523	047511	000116	
893	003044	051105	047522	020122	MSG23: .ASCIZ /ERROR WHILE INITIALIZING COMM DEVICE/
894	003052	044127	046111	020105	
895	003060	047111	052111	040511	
896	003066	044514	044532	043516	
897	003074	041440	046517	020115	
898	003102	042504	044526	042503	
899	003110	000			
900	003111	105	051122	051117	MSG24: .ASCIZ /ERROR DURING COMM DEVICE TRANSMIT/
901	003116	042040	051125	047111	
902	003124	020107	047503	046515	
903	003132	042040	053105	041511	
904	003140	020105	051124	047101	
905	003146	046523	052111	000	
906	003153	116	020117	052123	MSG25: .ASCIZ /NO STACK IN RESPONSE TO STRT/
907	003160	041501	020113	047111	
908	003166	051040	051505	047520	
909	003174	051516	020105	047524	
910	003202	051440	051124	000124	
911	003210	051105	047522	020122	MSG26: .ASCIZ /ERROR DURING COMM DEVICE RECEIVE/
912	003216	052504	044522	043516	
913	003224	041440	046517	020115	
914	003232	042504	044526	042503	
915	003240	051040	041505	044505	
916	003246	042526	000		
917	003251	103	047101	052047	MSG30: .ASCIZ /CAN'T GET CLEAR TO SEND/
918	003256	043440	052105	041440	
919	003264	042514	051101	052040	
920	003272	020117	042523	042116	
921	003300	000			
922	003301	124	046511	020105	MSG31: .ASCIZ /TIME OUT: NO CHARACTERS FROM TERMINAL/
923	003306	052517	035124	047040	
924	003314	020117	044103	051101	
925	003322	041501	042524	051522	
926	003330	043040	047522	020115	
927	003336	042524	046522	047111	
928	003344	046101	000		
929	003347	124	046511	020105	MSG32: .ASCIZ /TIME OUT: MESSAGE FROM TERMINAL INCOMPLETE/
930	003354	052517	035124	046440	

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931 003362 051505 040523 042507
932 003370 043040 047522 020115
933 003376 042524 046522 047111
934 003404 046101 044440 041516
935 003412 046517 046120 052105
936 003420 000105
937 003422 040504 040524 041440
938 003430 041522 042440 051122
939 003436 051117 000
940 003441 116 044517 042523
941 003446 050040 052101 042524
942 003454 047122 051440 041125
943 003462 042524 052123 000
944 003467 105 051122 051117
945 003474 042040 051125 047111
946 003502 020107 042523 043114
947 003510 042524 052123 000
948 003515 105 051122 051117
949 003522 042040 051125 047111
950 003530 020107 047514 050117
951 003536 040502 045503 000
952 003543 104 052101 020101
953 003550 051105 047522 000122
954 003556 046111 042514 040507
955 003564 020114 042523 043114
956 003572 052040 051505 020124
957 003600 042522 050123 047117
958 003606 042523 000
959 003611 115 046505 051117
960 003616 020131 051105 047522
961 003624 020122 020040 054524
962 003632 042520 040
963 003635 000 000
964 003637 115 026440 041040
965 003644 047101 020113 043
966 003651 000 000
967
968 003654 051103 046517 042440
969 003662 051122 051117 000
970
971
972 003670 005
973 003671 006
974 003672 300
975 003673 000
976 003674 000
977 003675 000
978 003676 000000
979
980
981
982
983 003700
984 003700
985 003700 016746 176220
986 003704 012746 003726

```

```

MSG43: .ASCIZ /DATA CRC ERROR/
MSG45: .ASCIZ /NOISE PATTERN SUBTEST/
MSG50: .ASCIZ /ERROR DURING SELFTEST/
MSG51: .ASCIZ /ERROR DURING LOOPBACK/
MSG52: .ASCIZ /DATA ERROR/
MSG70: .ASCIZ /ILLEGAL SELF TEST RESPONSE/
MSG71: .ASCII /MEMORY ERROR TYPE /
MTY: .BYTE 0,0
.ASCII /M - BANK #/
BNO: .BYTE 0,0
.EVEN
MSG72: .ASCIZ /CROM ERROR/
.EVEN
STRTB: .BYTE ENQ
.BYTE STRT
.BYTE 300
.BYTE 0
.BYTE 0
STR TSA: .BYTE 0
STR TC: .WORD 0

```

```

:*****
: GLOBAL ERROR REPORT *
:*****
BGNMSG AREA00
PRINTX #FORM00,ILIMIT

```

```

MOV ILIMIT, -(SP)
MOV #FORM00, -(SP)

```


987 003710 012746 000002
988 003714 010600
989 003716 104015
990 003720 062706 000006
991 003724
992 003724
993 003724 104023
994 003726 040445 043101 042524
995 003734 020122 047445 022466
996 003742 020101 052101 042524
997 003750 050115 051524 047045
998 003756 000
999 003760
1000
1001 003760
1002 003760
1003 003760
1004 003760 104023
1005
1006 003762
1007 003762
1008 003762 016746 000030
1009 003766 016746 000022
1010 003772 012746 004020
1011 003776 012746 000003
1012 004002 010600
1013 004004 104015
1014 004006 062706 000010
1015 004012
1016 004012
1017 004012 104023
1018 004014 000000
1019 004016 000000
1020 004020 040445 042522 042503
1021 004026 053111 042105 022440
1022 004034 031517 040445 026440
1023 004042 020055 054105 042520
1024 004050 052103 042105 022440
1025 004056 031517 047045 000
1026 004064
1027
1028 004064
1029 004064
1030 004064
1031 004064 016746 176022
1032 004070 016746 176020
1033 004074 012746 004020
1034 004100 012746 000003
1035 004104 010600
1036 004106 104015
1037 004110 062706 000010
1038 004114
1039 004114
1040 004114 104023
1041
1042 004116

ENDMSG
FORM00: .ASCIZ /%AFTER %06%A ATTEMPTS%N/
.EVEN
BGNMSG AREA01
ENDMSG
BGNMSG AREA02
PRINTX #FORM02,A02A,A02B
A02A: 0
A02B: 0
FORM02: .ASCIZ /%ARECEIVED %03%A -- EXPECTED %03%N/
.EVEN
BGNMSG AREA03
AREA42:
PRINTX #FORM02,TEMP,SCRATCH
ENDMSG
BGNMSG AREA04

MOV #2,-(SP)
MOV SP,R0
EMT C\$PNTX
ADD #6,SP
L10000:
EMT C\$MSG
L10001:
EMT C\$MSG
MOV A02B,-(SP)
MOV A02A,-(SP)
MOV #FORM02,-(SP)
MOV #3,-(SP)
MOV SP,R0
EMT C\$PNTX
ADD #10,SP
L10002:
EMT C\$MSG
MOV SCRATCH,-(SP)
MOV TEMP,-(SP)
MOV #FORM02,-(SP)
MOV #3,-(SP)
MOV SP,R0
EMT C\$PNTX
ADD #10,SP
L10003:
EMT C\$MSG

1043	004116				AREA41:			
1044	004116				AREA43:			
1045	004116				PRINTX #FORM04,A04RC,A04EX			
1046	004116	016746	000030				MOV	A04EX,-(SP)
1047	004122	016746	000022				MOV	A04RC,-(SP)
1048	004126	012746	004154				MOV	#FORM04,-(SP)
1049	004132	012746	000003				MOV	#3,-(SP)
1050	004136	010600					MOV	SP,R0
1051	004140	104015					EMT	C\$PNTX
1052	004142	062706	000010				ADD	#10,SP
1053	004146				ENDMSG			
1054	004146						L10004:	
1055	004146	104023					EMT	C\$MSG
1056	004150	000000			A04RC: 0			
1057	004152	000000			A04EX: 0			
1058	004154	040445	042522	042503	FORM04: .ASCIZ /%ARECEIVED %06% -- EXPECTED %06%/			
1059	004162	053111	042105	022440				
1060	004170	033117	040445	026440				
1061	004176	020055	054105	042520				
1062	004204	052103	042105	022440				
1063	004212	033117	047045	000				
1064		004220			.EVEN			
1065								
1066	004220				BGNMSG AREA11			
1067	004220				PRINTX #FORM04,KRC,KEX			
1068	004220	016746	000030				MOV	KEX,-(SP)
1069	004224	016746	000022				MOV	KRC,-(SP)
1070	004230	012746	004154				MOV	#FORM04,-(SP)
1071	004234	012746	000003				MOV	#3,-(SP)
1072	004240	010600					MOV	SP,R0
1073	004242	104015					EMT	C\$PNTX
1074	004244	062706	000010				ADD	#10,SP
1075	004250				ENDMSG			
1076	004250						L10005:	
1077	004250	104023					EMT	C\$MSG
1078	004252	000000			KRC: 0			
1079	004254	000000			KEX: 0			
1080	004256				BGNMSG AREA21			
1081	004256				ENDMSG			
1082	004256						L10006:	
1083	004256	104023					EMT	C\$MSG
1084	004260				BGNMSG AREA22			
1085	004260				ENDMSG			
1086	004260						L10007:	
1087	004260	104023					EMT	C\$MSG
1088	004262				BGNMSG AREA23			
1089	004262				AREA24:			
1090	004262				AREA40:			
1091	004262				LET TEMP2 .= LOGDEV			
1092	004262	016767	175650	000064			MOV	LOGDEV,TEMP2
1093	004270				IF TEMP2 LT #0 THEN			
1094	004270	005767	000060				TST	TEMP2
1095	004274	002002					BGE	50000\$
1096	004276				LET TEMP2 := #0			
1097	004276	005067	000052				CLR	TEMP2
1098	004302				ENDIF			

1155	004536	012701	002254					MOV	#DZREG,R1
1156	004542				PRINTX #FORM30,RCVCSR(R1)			MOV	RCVCSR(R1),-(SP)
1157	004542	016146	000000					MOV	#FORM30,-(SP)
1158	004546	012746	004666					MOV	#2,-(SP)
1159	004552	012746	000002					MOV	SP,R0
1160	004556	010600						EMT	C\$PNTX
1161	004560	104015						ADD	#6,SP
1162	004562	062706	000006						
1163	004566				PRINTX #FRM30A,RCVBUF(R1)			MOV	RCVBUF(R1),-(SP)
1164	004566	016146	000002					MOV	#FRM30A,-(SP)
1165	004572	012746	004707					MOV	#2,-(SP)
1166	004576	012746	000002					MOV	SP,R0
1167	004602	010600						EMT	C\$PNTX
1168	004604	104015						ADD	#6,SP
1169	004606	062706	000006						
1170	004612				PRINTX #FRM30B,XMTCSR(R1)			MOV	XMTCSR(R1),-(SP)
1171	004612	016146	000004					MOV	#FRM30B,-(SP)
1172	004616	012746	004731					MOV	#2,-(SP)
1173	004622	012746	000002					MOV	SP,R0
1174	004626	010600						EMT	C\$PNTX
1175	004630	104015						ADD	#6,SP
1176	004632	062706	000006						
1177	004636				PRINTX #FRM30C,XMTBUF(R1)			MOV	XMTBUF(R1),-(SP)
1178	004636	016146	000006					MOV	#FRM30C,-(SP)
1179	004642	012746	004752					MOV	#2,-(SP)
1180	004646	012746	000002					MOV	SP,R0
1181	004652	010600						EMT	C\$PNTX
1182	004654	104015						ADD	#6,SP
1183	004656	062706	000006						
1184	004662				POP R1			MOV	(SP)+,R1
1185	004662	012601							
1186	004664				ENDMSG				
1187	004664								
1188	004664	104023						L10012:	
1189	004666	040445	055104	051040	FORM30: .ASCIZ /%ADZ RCSR: %06%N/			EMT	C\$MSG
1190	004674	051503	035122	022440					
1191	004702	033117	047045	000					
1192	004707	045	042101	020132	FRM30A: .ASCIZ /%ADZ RBUF: %06%N/				
1193	004714	041122	043125	035106					
1194	004722	022440	033117	047045					
1195	004730	000							
1196	004731	045	042101	020132	FRM30B: .ASCIZ /%ADZ TCSR: %06%N/				
1197	004736	041524	051123	020072					
1198	004744	047445	022466	000116					
1199	004752	040445	055104	052040	FRM30C: .ASCIZ /%ADZ TBUF: %06%N/				
1200	004760	052502	043106	020072					
1201	004766	047445	022466	000116					
1202					.EVEN				
1203									
1204	004774				BGNMSG AREA60				
1205	004774				PRINTX #FORM60				
1206	004774	012746	005016					MOV	#FORM60,-(SP)
1207	005000	012746	000001					MOV	#1,-(SP)
1208	005004	010600						MOV	SP,R0
1209	005006	104015						EMT	C\$PNTX
1210	005010	062706	000004					ADD	#4,SP

```

1211 005014          ENDMSG
1212 005014
1213 005014 104023
1214 005016 040445 040503 023516 FORM60: .ASCIZ /%ACAN'T GET INTO LOOPBACK%N/
1215 005024 020124 042507 020124
1216 005032 047111 047524 046040
1217 005040 047517 041120 041501
1218 005046 022513 000116
1219
1220 005052          .EVEN
1221 005052          BGNMSG AREA61
1222 005052          PRINTX #FORM61
1223 005052 012746 005144
1224 005056 012746 000001
1225 005062 010600
1226 005064 104015
1227 005066 062706 000004
1228 005072 016767 175040 177254 LET TEMP2 := LOGDEV
1229 005100          IF TEMP2 LT #0 THEN
1230 005100 005767 177250
1231 005104 002002
1232 005106          LET TEMP2 := #0
1233 005106 005067 177242
1234 005112          ENDIF
1235 005112
1236 005112          LET TEMP2 := TEMP2 + #1
1237 005112 005267 177236
1238 005116          PRINTX #FORM23,TEMP2
1239 005116 016746 177232
1240 005122 012746 004356
1241 005126 012746 000002
1242 005132 010600
1243 005134 104015
1244 005136 062706 000006
1245 005142          ENDMSG
1246 005142
1247 005142 104023
1248 005144 040445 040503 023516 FORM61: .ASCIZ /%ACAN'T GET OUT OF LOOPBACK%N/
1249 005152 020124 042507 020124
1250 005160 052517 020124 043117
1251 005166 046040 047517 041120
1252 005174 041501 022513 000116
1253
1254 005202          .EVEN
1255 005202          BGNMSG AREA52
1256 005202          PRINTX #FORM52,A52A,A52B
1257 005206 016746 000074
1258 005212 012746 005234
1259 005216 012746 000003
1260 005222 010600
1261 005224 104015
1262 005226 062706 000010
1263 005232          ENDMSG
1264 005232
1265 005232 104023
1266 005234 040445 054105 042520 FORM52: .ASCIZ /%AEXPECTED: %03%A -RECEIVED: %03%N/
    
```

```

L10013:
EMT      C$MSG

MOV      #FORM61,-(SP)
MOV      #1,-(SP)
MOV      SP,R0
EMT      C$PNTX
ADD      #4,SP

MOV      LOGDEV,TEMP2

TST      TEMP2
BGE      50001$

CLR      TEMP2

50001$:
INC      TEMP2

MOV      TEMP2,-(SP)
MOV      #FORM23,-(SP)
MOV      #2,-(SP)
MOV      SP,R0
EMT      C$PNTX
ADD      #6,SP

L10014:
EMT      C$MSG

MOV      A52B,-(SP)
MOV      A52A,-(SP)
MOV      #FORM52,-(SP)
MOV      #3,-(SP)
MOV      SP,R0
EMT      C$PNTX
ADD      #10,SP

L10015:
EMT      C$MSG
    
```

1267 005242 052103 042105 020072
1268 005250 047445 022463 020101
1269 005256 026440 042522 042503
1270 005264 053111 042105 020072
1271 005272 047445 022463 000116
1272
1273 005300 000000
1274 005302 000000
1275
1276 005304
1277 005304
1278 005304
1279 005304 104023
1280
1281 005306
1282 005306
1283 005306
1284 005306 104023
1285
1286 005310
1287 005310 001452
1288 010434
1289 010434 000416
1290 011470 000100
1291 011670
1292
1293 011670

.EVEN
A52A: 0
A52B: 0

BGNMSG AREA70
ENDMSG

L10016: EMT C\$MSG

BGNMSG AREA71
ENDMSG

L10017: EMT C\$MSG

TEMBUF :
TMPBUF : .BLKW 810.
.BLKW 270.
.BLKW 100

SSTACK:

;STACK FOR SUBROUTINE LINKAGE.

ENDMOD

1294 011670
1295
1296
1297
1298 011670
1299 011670 000005
1300 011672 160010
1301 011674 000320
1302 011676 000640
1303 011700 007030
1304 011702 000001
1305 011704
1306 011704
1307 011704
1308 011704 000003
1309 011706 000010
1310 011710 000001
1311 011712 020000
1312 011714
1313 011714
1314
1315
1316
1317
1318 011714
1319 011714 000002
1320 011716 017466
1321 011720 020516
1322 011722

```
BGNMOD TABLE
:*****
:  DEFAULT HARDWARE P-TABLE AND SOFTWARE P-TABLE  *
:*****
BGNHW
                                .WORD  L10020-L$HW/2
                                160010
                                320
                                640
                                7030
                                1
                                ENDPHW
                                L10020:
BGNSW
                                .WORD  L10021-L$SW/2
                                000010
PATTERN:000001
STWAIT: 20000
                                ENDSW
                                L10021:
:*****
:  DISPATCH TABLE  *
:*****
DISPATCH TSTS
                                .WORD  TSTS
                                .WORD  T1
                                .WORD  T2

ENDMOD
```

```

1323 011722          BGNMOD CODE
1324
1325                :*****
1326                :STUB AREAS FOR SUPERVISOR COMPATIBILITY *
1327                :*****
1328 011722          BGNRPT
1329 011722          ENDRPT
1330
1331 011722 104025   L10022:  EMT      C$RPT
1332
1333 011724          BGNAU
1334 011724          ENDAU
1335
1336 011724 104054   L10023:  EMT      C$AU
1337
1338 011726          BGNDU
1339 011726          ENDDU
1340
1341 011726 104055   L10024:  EMT      C$DU
1342
1343                :*****
1344                :      INITIALIZE CODING      *
1345                :*****
1346 011730          BGNINIT
1347
1348                :SAVE R1
1349
1350                :      PUSH R1
1351 011730 010146   MOV      R1,-(SP)
1352
1353                :CHECK START EVENT FLAG TO SEE IF WE GOT HERE BECAUSE OF A START
1354                :
1355 011732 012700 000040  REDEF #EF.START
1356 011732 104050   MOV      #EF.START,R0
1357 011736 104050   EMT      C$REFG
1358
1359                :IF A START, THEN...
1360
1361 011740          IF.ERROR THEN
1362 011740 103005   BCC      50002$
1363
1364                :INITIALIZE THE SUBROUTINE LINKAGE STACK
1365                :
1366 011742 012705 011670  LET R5 := #SSTACK
1367 011742          MOV      #SSTACK,R5
1368 011746 005267 170136  LET R5STCK := R5STCK + #1
1369 011746          INC      R5STCK
1370 011752          ELSE
1371 011752 000414   BR       50003$
1372 011754          50002$:
1373
1374                :IF NOT START THEN....
1375                :
1376                :CHECK FOR RESTART AND IF IT IS:
1377                :UPDATE LOGICAL DEVICE AND STAT. TABLE ENTRY POINTER,
1378                :BUT DON'T EXCEED THE NUMBER OF UNITS SPECIFIED
    
```



```

1379      ;
1380 011754      ;          READEF #EF.RESTART
1381 011754 012700 000037      ;          MOV #EF.RESTART,R0
1382 011760 104050      ;          EMT C$REFG
1383 011762      ;          IF.NO.ERROR THEN
1384 011762 103410      ;          BCS 50004$
1385 011764      ;          LET LOGDEV := LOGDEV + #1
1386 011764 005267 170146      ;          INC LOGDEV
1387 011770      ;          IF LOGDEV EQ L$UNIT THEN
1388 011770 026767 170142 170014      ;          CMP LOGDEV,L$UNIT
1389 011776 001002      ;          BNE 50005$
1390 012000      ;          LET LOGDEV := #0
1391 012000 005067 170132      ;          CLR LOGDEV
1392 012004      ;          ENDIF
1393 012004      ;          50005$:
1394 012004      ;          ENDIF
1395 012004      ;          50004$:
1396 012004      ;          ENDIF
1397 012004      ;          50003$:
1398
1399      ;:CHECK FOR NEW PASS... IF IT IS, FORCE LOGICAL UNIT TO ZERO.
1400      ;:
1401 012004      ;          READEF #EF.NEW
1402 012004 012700 000035      ;          MOV #EF.NEW,R0
1403 012010 104050      ;          EMT C$REFG
1404 012012      ;          IF.ERROR THEN
1405 012012 103002      ;          BCC 50006$
1406 012014      ;          LET LOGDEV := #0
1407 012014 005067 170116      ;          CLR LOGDEV
1408 012020      ;          ENDIF
1409 012020      ;          50006$:
1410
1411      ;:END OF START CODE
1412      ;:FORCE THE COMM DEVICE TO BE INITIALIZED
1413      ;:
1414 012020      ;          LET INIT := #0
1415 012020 005067 003624      ;          CLR INIT
1416 012024      ;          LET ABORT := #0
1417 012024 005067 170066      ;          CLR ABORT
1418
1419      ;:SET UP THE INPUT BUFFERS QUEUE
1420      ;:
1421 012030      ;          LET RQUE := #RQUET
1422 012030 012767 015674 003634      ;          MOV #RQUET,RQUE
1423 012036      ;          LET RQUEUE := RQUE
1424 012036 016767 003630 003624      ;          MOV RQUE,RQUEUE
1425 012044      ;          LET RBQUE := #RBQUET
1426 012044 012767 015712 003636      ;          MOV #RBQUET, RBQUE
1427 012052      ;          LET R1 := RBQUE
1428 012052 016701 003632      ;          MOV RBQUE,R1
1429 012056      ;          LET SCRATCH := #TEMBUF
1430 012056 012767 005310 170026      ;          MOV #TEMBUF,SCRATCH
1431 012064      ;          REPEAT
1432 012064      ;          50007$:
1433 012064      ;          LET (R1)+ := SCRATCH
1434 012064 016721 170022      ;          MOV SCRATCH,(R1)+

```

```

1435 012070          LET SCRTCH := SCRTCH + #270.
1436 012070 062767 000416 170014          ADD      #270.,SCRTCH
1437 012076          UNTIL R1 GT #RBQUEB
1438 012076 020127 015716          CMP      R1,#RBQUEB
1439 012102 003770          BLE      50007$
1440
1441          :GET THE PTABLE ENTRY FOR THIS LOGICAL DEVICE
1442          :
1443          REPEAT
1444          50010$:
1445          LET R1 := R1 + #1
1446 012104 005201          INC      R1
1447 012106          GPHARD LOGDEV,SCRTCH
1448 012106 016700 170024          MOV      LOGDEV,R0
1449 012112 104042          EMT
1450 012114 010067 167772          MOV      R0,SCRTCH
1451
1452          :IF UNIT HAS BEEN DROPPED, UPDATE POINTERS ETC. AND TRY AGAIN
1453          :
1454          IF.NO.ERROR THEN
1455 012120 103411          BCS      50011$
1456 012122          LET LOGDEV := LOGDEV + #1
1457 012122 005267 170010          INC      LOGDEV
1458 012126          IF LOGDEV EQ L$UNIT THEN
1459 012126 026767 170004 167656          CMP      LOGDEV,L$UNIT
1460 012134 001002          BNE      50012$
1461 012136          LET LOGDEV := #0
1462 012136 005067 167774          CLR      LOGDEV
1463 012142          ENDIF
1464 012142          50012$:
1465 012142          LET R1 := #0
1466 012142 005001          CLR      R1
1467 012144          ENDIF
1468          50011$:
1469 012144          UNTIL R1 NE #0
1470 012144 005701          TST      R1
1471 012146 001756          BEQ      50010$
1472
1473          :NOW GET THE PTABLE DATA FROM THE SUPERVISOR AND STORE WITHIN THE
1474          :DIAGNOSTIC PROGRAM
1475          :
1476 012150          LET R1 := #PTABLE
1477 012150 012701 002200          MOV      #PTABLE,R1
1478 012154          REPEAT
1479 012154          50013$:
1480 012154          LET (R1) := @SCRTCH
1481 012154 017711 167732          MOV      @SCRTCH,(R1)
1482 012160          LET R1 := R1 + #2
1483 012160 062701 000002          ADD      #2,R1
1484 012164          LET SCRTCH := SCRTCH + #2
1485 012164 062767 000002 167720          ADD      #2,SCRTCH
1486 012172          UNTIL R1 EQ #PTEND
1487 012172 020127 002212          CMP      R1,#PTEND
1488 012176 001366          BNE      50013$
1489
1490          :GET THE LINE NUMBER AND ISOLATE IT FOR FUTURE USE

```

```

1491
1492 012200          ;      LET R1 := #PTABLE + #6
1493 012200 012701 002200          MOV      #PTABLE,R1
1494 012204 062701 000006          ADD      #6,R1
1495 012210          ;      LET R1 := (R1)
1496 012210 011101          MOV      (R1),R1
1497 012212          ;      LET R1 := R1 CLR.BY #177770
1498 012212 042701 177770          BIC      #177770,R1
1499 012216          ;      LET R1 := R1 SHIFT #1
1500 012216 006301          ASL      R1
1501 012220          ;      LET $LINE := LINMSK(R1)
1502 012220 016167 002214 003406  MOV      LINMSK(R1),$LINE
1503
1504          ;:RESTORE R1 AND EXIT INIT CODE
1505          ;:
1506 012226          ;      POP R1
1507 012226 012601          MOV      (SP)+,R1
1508 012230          ;      ENDINIT
1509 012230          ;
1510 012230 104011          ;
1511 012232 047045 040445 052126  VMSG:  .ASCIZ /%N%AVT62 ACCEPTANCE TEST  --  VERSION 10 TERMINALS%N/
1512 012240 031066 040440 041503
1513 012246 050105 040524 041516
1514 012254 020105 042524 052123
1515 012262 020040 026440 020055
1516 012270 020040 042526 051522
1517 012276 047511 020116 030061
1518 012304 052040 051105 044515
1519 012312 040516 051514 047045
1520 012320          000
1521          012322          .EVEN
1522
1523          ;:*****
1524          ;:      CLEAN-UP CODING          *
1525          ;:*****
1526 012322          ;:      BGNCLN
1527          ;:
1528          ;:MAKE SURE DEVICE IS SHUT DOWN
1529          ;:
1530 012322          ;      PUSH R1
1531 012322 010146          MOV      R1,-(SP)
1532 012324          ;      LET R1 := PTABLE
1533 012324 016701 167650          MOV      PTABLE,R1
1534 012330          ;      LET XMTCSR(R1) := #0
1535 012330 005061 000004          CLR      XMTCSR(R1)
1536 012334          ;      LET RCVCSR(R1) := RCVCSR(R1) SET.BY #MASCLR
1537 012334 052761 000020 000000  BIS      #MASCLR,RCVCSR(R)
1538 012342          ;      POP R1
1539 012342 012601          MOV      (SP)+,R1
1540          ;:
1541          ;:UPDATE PASS COUNT
1542          ;:
1543 012344          ;      LET PASCNT := PASCNT + #1
1544 012344 005267 167562          INC      PASCNT
1545          ;:
1546          ;:EXIT CLEAN-UP CODE

```

1547
1548 012350
1549 012350
1550 012350 104012
1551 012352

:
ENDCLN
ENDMOD

L10026:
EMT CSCLEAN

```

1552 012352          BGNMOD GSUB
1553                *****
1554                GLOBAL SUBROUTINES
1555                *****
1556
1557                +-----+
1558                | ROUTINE TO PROCESS TERMINAL MESSAGES FOR ALL TESTS | +
1559                | RETURNS POINTER TO MESSAGE ('OUTMSG') AND ITS SIZE | +
1560                | IN BYTES ('OUTSIZ')                                | +
1561                |                                                    | +
1562                | SIZE MAY BE ANY NUMBER OF BYTES                    | +
1563                |                                                    | +
1564                | SETS A FLAG ('EXPINP') IF RESPONSE OTHER THAN 'ACK' IS | +
1565                | TO BE EXPECTED                                      | +
1566                |                                                    | +
1567                | SETS ANOTHER FLAG ('EOMSG') IF THIS IS THE LAST MESSAGE | +
1568                |-----+
1569 012352          ROUTINE MSG          ;[3.2.14]
1570 012352
1571
1572 012352          DECLARE LOCALS
1573 012352          LOCAL <A>
1574 012352          ALLOCATE
1575 012352          010446
1576 012354          010604
1577 012356          162706 000002
1578
1579                : GET MESSAGE POINTER
1580
1581 012362          LET A(R4) := @MSGAP
1582 012362          017764 167574 177776
1583
1584                : IF MESSAGE POINTER IS ODD,
1585                : SET END_OF_MESSAGE INDICATOR
1586
1587 012370          LET SCRTCH := A(R4) AND #1
1588 012370          016467 177776 167514
1589 012376          016746 167510
1590 012402          042716 000001
1591 012406          042667 167500
1592 012412          IF SCRTCH NE #0 THEN
1593 012412          005767 167474
1594 012416          001405
1595 012420          LET EOMSG := EOMSG + #1
1596 012420          005267 167510
1597 012424          LET A(R4) := A(R4) CLR.BY #1
1598 012424          042764 000001 177776
1599 012432          ENDIF
1600 012432
1601
1602                : IF MESSAGE POINTER IS NEGATIVE,
1603                : SET EXPECT_INPUT INDICATOR
1604
1605 012432          IF A(R4) LT #0 THEN
1606 012432          005764 177776
1607 012436          002006
  
```

```

MSG:
MOV R4,-(SP)
MOV SP,R4
SUB #2,SP

MOV @MSGAP,A(R4)

MOV A(R4),SCRTCH
MOV SCRTCH,-(SP)
BIC #1,(SP)
BIC (SP)+,SCRTCH

TST SCRTCH
BEQ 50002$

INC EOMSG

BIC #1,A(R4)

50002$:

TST A(R4)
BGE 50003$
  
```

```

1608 012440          LET EXPINP := EXPINP + #1
1609 012440 005267 167474          INC      EXPINP
1610 012444          LET A(R4) := A(R4) CLR.BY #100000
1611 012444 042764 100000 177776    BIC      #100000,A(R4)
1612
1613      : OTHERWISE, CLEAR EXPECT_INPUT
1614      :
1615 012452          ELSE
1616 012452 000402          BR      50003$
1617 012454          LET EXPINP := #0
1618 012454          LET EXPINP := #0
1619 012454 005067 167460          CLR      EXPINP
1620 012460          ENDIF
1621 012460          50004$:
1622
1623      : SET MESSAGE ADDRESS AND
1624      : MESSAGE_SIZE
1625      :
1626 012460          LET OUTMSG := A(R4)
1627 012460 016467 177776 167454    MOV      A(R4),OUTMSG
1628 012466          LET MSGAP := MSGAP + #2
1629 012466 062767 000002 167466    ADD      #2,MSGAP
1630 012474          LET OUTMSG+2 := @MSGAP
1631 012474 017767 167462 167442    MOV      @MSGAP,OUTMSG+2
1632
1633      : UPDATE MESSAGE_AREA_POINTER
1634      :
1635 012502          LET MSGAP := MSGAP + @MSGAP
1636 012502 067767 167454 167452    ADD      @MSGAP,MSGAP
1637 012510          LET MSGAP := MSGAP + #2
1638 012510 062767 000002 167444    ADD      #2,MSGAP
1639
1640      : IF MESSAGE AREA POINTER IS ODD
1641      : ADD 1 TO MAKE IT EVEN
1642      :
1643 012516          LET SCRTCH := MSGAP AND #1
1644 012516 016767 167440 167366    MOV      MSGAP,SCRTCH
1645 012524 016746 167362          MOV      SCRTCH,-(SP)
1646 012530 042716 000001          BIC      #1,(SP)
1647 012534 042667 167352          BIC      (SP)+,SCRTCH
1648 012540          IF SCRTCH NE #0 THEN
1649 012540 005767 167346          TST      SCRTCH
1650 012544 001402          BEQ      50005$
1651 012546          LET MSGAP := MSGAP + #1
1652 012546 005267 167410          INC      MSGAP
1653 012552          ENDIF
1654 012552          50005$:
1655 012552          ENDRTN
1656 012552          50000$:
1657 012552          50001$:
1658 012552 010406          MOV      R4,SP
1659 012554 012604          MOV      (SP)+,R4
1660 012556 000207          RTS      PC
1661
1662
1663

```

```

1664
1665
1666
1667
1668
1669
1670
1671 012560
1672 012560
1673 012560
1674 012560 005767 003064
1675 012564 001011
1676 012566
1677 012566 004767 000222
1678 012572
1679 012572 103002
1680 012574
1681 012574 000261
1682 012576 000504
1683 012600
1684 012600
1685 012600
1686 012600 005067 167370
1687 012604
1688 012604 005067 167366
1689 012610
1690 012610
1691
1692
1693
1694 012610
1695 012610 016767 167326 167346
1696 012616
1697 012616 012767 002142 167266
1698 012624 062767 000002 167260
1699 012632
1700 012632 017767 167254 167326
1701
1702 012640
1703 012640 012767 010434 167322
1704 012646
1705 012646 012767 000412 167316
1706
1707
1708
1709 012654
1710 012654 162705 000004
1711 012660 004767 000336
1712 012664 012567 167262
1713 012670 012567 167260
1714
1715
1716
1717
1718
1719 012674

```

```

*****
: ROUTINE TO HANDLE OUTPUT OF MESSAGES TO THE TERMINAL +
: UNDER TEST. MESSAGES MAY BE OF ANY LENGTH SINCE +
: ROUTINES USED BY THIS ROUTINE SPLIT THE MESSAGES INTO +
: BUFFERS OF APPROPRIATE LENGTH FOR DDCMP. +
*****
ROUTINE TEROUT ;[3.2.20]
IF INIT EQ #0 THEN
    CALL XSTRT
    IF .ERROR THEN
        RETURN ERROR
    ENDIF
    LET MSGNO := #0
    LET RMSGNO := #0
ENDIF
50003$:
CLR MSGNO
CLR RMSGNO
50002$:
TST INIT
BNE 50002$
JSR PC,XSTRT
BCC 50003$
SEC
BR 50001$
INIT 50002$
50003$
50002$
: INITIALIZE THE BUFFER ROUTINES [3.2.20.4]
:
LET INITMA := OUTMSG
MOV OUTMSG,INITMA
LET SCRTCH := #OUTMSG + #2
MOV #OUTMSG,SCRTCH
ADD #2,SCRTCH
LET INITMS := @SCRTCH
MOV @SCRTCH,INITMS
:
BUFFER #1,BAPNT
LET BAPNT := #TMPBUF
MOV #TMPBUF,BAPNT
LET BASIZE := #266.
MOV #266.,BASIZE
:
: GET A BUFFER OF THE MESSAGE
:
CALL GETOB OUT <OUTBUF,OUTSIZ>
SUB #2*2,R5
JSR PC,GETOB
MOV (R5)+,OUTBUF
MOV (R5)+,OUTSIZ
:
: PERFORM THE FOLLOWING LOOP WHILE
: A AND ABORT ARE CLEAR AND OUTSIZ
: IS GREATER THAN 0
:
WHILE OUTSIZ GT #0 AND ABORT EQ #0 DO

```

```

1720 012674
1721 012674 005767 167254
1722 012700 003442
1723 012702 005767 167210
1724 012706 001037
1725
1726
1727
1728 012710
1729 012710 162705 000004
1730 012714 010546
1731 012716 016745 167232
1732 012722 016745 167224
1733 012726 004767 000416
1734 012732 012605
1735 012734 012567 002714
1736 012740 012567 002712
1737 012744
1738 012744 004767 001674
1739
1740
1741
1742 012750
1743 012750 103005
1744 012752
1745 012752 104423
1746 012754 000024
1747 012756 002712
1748 012760
1749 012760 000261
1750 012762 000412
1751 012764
1752 012764
1753
1754
1755
1756 012764
1757 012764 162705 000004
1758 012770 004767 000226
1759 012774 012567 167152
1760 013000 012567 167150
1761
1762
1763
1764 013004
1765 013004 000733
1766 013006
1767
1768
1769
1770 013006
1771 013006
1772 013006 000241
1773 013010
1774 013010 000207
1775 013012 000000

```

```

:ADD PROTOCOL ENVELOPE AND TRANSMIT

```

```

CALL PROBUF IN <OUTBUF,OUTSIZ> OUT <XBUFFER,XSIZE>

```

```

CALL XMIT

```

```

:IF TRANSMIT ERROR, REPORT IT AND SET ERRXMT

```

```

IF.ERROR THEN

```

```

ERRHRD 20,MSG20 ;[3.2.20.10]

```

```

RETURN ERROR

```

```

ENDIF

```

```

:GET THE NEXT BUFFER

```

```

CALL GETOB OUT <OUTBUF,OUTSIZ>

```

```

:END OF LOOP

```

```

ENDDO

```

```

:IF ERROR OCCURRED, DO AN ERROR RETURN

```

```

ENDRTN

```

```

TYPE: 0

```

```

;TYPE OF MESSAGE EXPECTED

```

50004\$:

```

TST OUTSIZ
BLE 50005$
TST ABORT
BNE 50005$

```

```

SUB #2*2,R5
MOV R5,-(SP)
MOV OUTSIZ,-(R5)
MOV OUTBUF,-(R5)
JSR PC,PROBUF
MOV (SP)+,R5
MOV (R5)+,XBUFFER
MOV (R5)+,XSIZE

```

```

JSR PC,XMIT

```

BCC 50006\$

```

TRAP T$ERCODE
.WORD 20
.WORD MSG20

```

```

SEC BR 50001$

```

50006\$:

```

SUB #2*2,R5
JSR PC,GETOB
MOV (R5)+,OUTBUF
MOV (R5)+,OUTSIZ

```

BR 50004\$

50005\$:

50000\$:

50001\$:

```

CLC
RTS PC

```



```

1776
1777
1778
1779
1780
1781
1782
1783
1784
1785 013014
1786 013014
1787 013014
1788 013014
1789 013014
1790 013014 010446
1791 013016 010604
1792 013020 162706 000002
1793
1794
1795
1796
1797
1798 013024
1799 013024 012767 000010 002624
1800 013032
1801 013032 012767 003670 002614
1802
1803
1804
1805 013040
1806 013040 012764 002200 177776
1807 013046 062764 000005 177776
1808 013054
1809 013054 117467 177776 170613
1810
1811
1812
1813
1814 013062
1815 013062 162705 000002
1816 013066 010546
1817 013070 012745 000006
1818 013074 016745 002554
1819 013100 004767 004006
1820 013104 012605
1821 013106 012567 170564
1822
1823
1824
1825 013112
1826 013112 004767 001526
1827
1828
1829
1830 013116
1831 013116 103005

```

```

:*****
:ROUTINE TO SEND A 'STRT' MESSAGE TO THE TERMINAL +
: A 'STACK' MUST BE RETURNED BY THE TERMINAL +
:*****
:ROUTINE XSTRT ;[3.2.20.1] XSTRT:
:
:DECLARE LOCALS
: LOCAL <A>
:ALLOCATE
:
:THE DDCMP STRT MESSAGE IS 10 BYTES LONG (INCLUDING CRC) AND IS IN
:A BUFFER STARTING AT 'STRTB' -- PUT THIS INFORMATION
:IN THE TRANSMIT ROUTINE'S POINTERS
:
: LET XSIZE := #10
:
: LET XBUFFER := #STRTB
:
:GET THE TERMINAL ADDRESS AND PUT INTO THE STRT MESSAGE
:
: LET A(R4) := #PTABLE + #5
:
: LET STRTSA :B= @A(R4)
:
:COMPUTE THE CRC FOR THE STRT MESSAGE AND PUT IN THE LAST TWO BYTES
:OF THE BUFFER ('STRTC')
:
: CALL CRC IN <XBUFFER,#6> OUT <STRTC> ;[3.2.20.1.2 + 3]
:
: SUB #1*2,R5
: MOV R5,-(SP)
: MOV #6,-(R5)
: MOV XBUFFER,-(R5)
: JSR PC,CRC
: MOV (SP)+,R5
: MOV (R5)+,STRTC
:
:TRANSMIT THE MESSAGE
:
: CALL XMIT
:
:JSR PC,XMIT
:
:IF AN ERROR OCCURS, REPORT IT AND EXIT WITH THE ERROR FLAG SET.
:
: IF .ERROR THEN
:
: BCC 50002$

```

```

1832 013120          ERRHRD 20,MSG20          ;[3.2.20.10]
1833 013120 104423
1834 013122 000024
1835 013124 002712
1836 013126          RETURN ERROR
1837 013126 000261
1838 013130 000430
1839 013132          ENDIF
1840 013132          50002$:
1841
1842      :OTHERWISE, GET THE TERMINAL'S RESPONSE
1843      :
1844 013132          CALL RCVE
1845 013132 004757 003472
1846
1847      :IF RECEPTION ERROR, REPORT IT AND EXIT WITH THE ERROR FLAG SET
1848      :
1849 013136          IF.ERROR THEN
1850 013136 103005
1851 013140          ERRHRD 21,MSG21          ;[3.2.20.10]
1852 013140 104423
1853 013142 000025
1854 013144 002761
1855 013146          RETURN ERROR
1856 013146 000261
1857 013150 000420
1858 013152          ENDIF
1859 013152          50003$:
1860
1861      :OTHERWISE, SET TYPE TO 'STACK' AND CHECK TO SEE THAT IT WAS THE REPLY
1862      :
1863 013152          LET TYPE := #STACK
1864 013152 012767 000007 177632
1865 013160          CALL CHKREP IN <TYPE>
1866 013160 010546
1867 013162 016745 177624
1868 013166 004767 001062
1869 013172          MOV #STACK,TYPE
1870
1871      :IF REPLY WASN'T A 'STACK', REPORT THE ERROR AND EXIT WITH THE ERROR FLAG SET
1872      :
1873 013174          IF.ERROR THEN
1874 013174 103005
1875 013176          ERRHRD 25,MSG25          ;[3.2.20.10]
1876 013176 104423
1877 013200 000031
1878 013202 003153
1879 013204          RETURN ERROR
1880 013204 000261
1881 013206 000401
1882 013210          ENDIF
1883 013210          50004$:
1884
1885      :END OF XSTRT ROUTINE
1886      :
1887 013210          ENDRTN

```

1888 013210
1889 013210 000241
1890 013212
1891 013212 010406
1892 013214 012604
1893 013216 000207
1894 013220 000000

DDSTRY: 0

50000\$:
50001\$: CLC
MOV R4,SP
MOV (SP)+,R4
RTS PC

1895
1896
1897
1898
1899
1900
1901
1902
1903
1904
1905
1906 013222
1907 013222
1908 013222
1909 013222
1910 013222
1911 013222 010446
1912 013224 010604
1913 013226 162706 000002

```

:*****
: THIS ROUTINE SPLITS A MESSAGE OF ANY LENGTH INTO
: SEGMENTS OF A SIZE SUITABLE FOR TRANSMISSION OVER A DATA
: LINK -- RETURNS BUFFER ADDRESS, BUFFER SIZE AND END_OF_MESSAGE+
: (BUFFER SIZE = 0 IS END_OF_MESSAGE)
:*****

```

ROUTINE GETOB <A,B> ;[3.2.20.5]

GETOB:

DECLARE LOCALS
LOCAL <C>
ALLOCATE

MOV R4,-(SP)
MOV SP,R4
SUB #2,SP

1914
1915
1916
1917 013232
1918 013232 016765 166732 000000
1919 013240 062765 000010 000000

LEAVE ENOUGH ROOM FOR A DDCMP HEADER

LET A(R5) := BAPNT + #10

MOV BAPNT,A(R5)
ADD #10,A(R5)

1920
1921
1922
1923 013246
1924 013246 005065 000002

INIT SIZE TO ZERO

LET B(R5) := #0

CLR B(R5)

1925
1926
1927
1928 013252
1929 013252 016767 166714 166632
1930 013260 162767 000012 166624

SCRATCH HAS MAXIMUM DDCMP MESSAGE SIZE

LET SCRATCH := BASIZE - #12

MOV BASIZE,SCRATCH
SUB #12,SCRATCH

1931
1932
1933
1934 013266
1935 013266 016564 000000 177776

GET A COPY OF THE BUFFER POINTER

LET C(R4) := A(R5)

MOV A(R5),C(R4)

1936
1937
1938

REPEAT LOOP UNTIL MAX SIZE OR END OF DATA

1939 013274
1940 013274
1941 013274 026567 000002 166610
1942 013302 002017
1943 013304 005767 166656

WHILE B(R5) LT SCRATCH AND INITMS GT #0 DO

50002\$:
CMP B(R5),SCRATCH
BGE 50003\$
TST INITMS

```

1944 013310 003414 BLE 50003$
1945
1946 :MOVE DATA INTO MESSAGE BUFFER
1947 :
1948 013312 LET @C(R4) :B= @INITMA ;[3.2.20.5.1 + 2]
1949 013312 117774 166646 177776 MOV @INITMA,@C(R4)
1950 013320 LET INITMS := INITMS - #1 ;[3.2.20.5.1]
1951 013320 005367 166642 DEC INITMS
1952 013324 LET INITMA := INITMA + #1
1953 013324 005267 166634 INC INITMA
1954 013330 LET B(R5) := B(R5) + #1 ;[3.2.20.5.2]
1955 013330 005265 000002 INC B(R5)
1956 013334 LET C(R4) := C(R4) + #1
1957 013334 005264 177776 INC C(R4)
1958 013340 ENDDO
1959 013340 000755 BR 50002$
1960 013342 50003$:
1961 :
1962 : END OF LOOP
1963 :
1964 013342 ENDRTN
1965 013342 50000$:
1966 013342 50001$:
1967 013342 010406 MOV R4,SP
1968 013344 012604 MOV (SP)+,R4
1969 013346 000207 RTS PC
1970
1971
1972
1973
1974
1975 :*****
1976 : ROUTINE TO PROVIDE LINE PROTOCOL HEADER AND CHECKSUMS +
1977 : CALL WITH DATA AREA ADDRESS AND SIZE (IN BYTES) +
1978 : RETURN WITH MODIFIED ADDRESS AND SIZE +
1979 :*****
1980 013350 ROUTINE PROBUF <A,B,C,D> ;[3.2.20.6]
1981 013350 PROBUF:
1982 013350 PUSH R1
1983 013350 010146 MOV R1,-(SP)
1984 013352 PUSH R2
1985 013352 010246 MOV R2,-(SP)
1986
1987 :CHANGE POINTER TO INCLUDE DDCMP HEADER
1988 :
1989 013354 LET R2 := A(R5) - #10 ;[3.2.20.6.1]
1990 013354 016502 000000 MOV A(R5),R2
1991 013360 162702 000010 SUB #10,R2
1992
1993 :FIRST BYTE IS SOH (START OF HEADER)
1994 :
1995 013364 LET (R2)+ :B= #SOH
1996 013364 112722 000201 MOV #SOH,(R2)+
1997
1998 :NEXT TWO BYTES GET MESSAGE SIZE
1999 :
    
```

```

2000 013370          LET R1 := B(R5)
2001 013370 016501 000002          MOV      B(R5),R1
2002 013374          LET (R2)+ :B= R1
2003 013374 110122          MOV      R1,(R2)+
2004 013376          LET R1 := SWAP R1
2005 013376 000301          SWAB    R1
2006 013400          LET (R2) :B= R1
2007 013400 110112          MOV      R1,(R2)
2008
2009          ;SET SELECT BIT
2010
2011 013402          LET (R2) :B= (R2) SET.BY #200
2012 013402 152712 000200          BISB    #200,(R2)
2013 013406          LET R2 := R2 + #1
2014 013406 005202          INC     R2
2015
2016          ;NEXT BYTE IS LAST GOOD RESPONSE
2017
2018 013410          LET (R2)+ :B= RMSGNO
2019 013410 116722 166562          MOV      RMSGNO,(R2)+
2020
2021          ;NEXT BYTE GETS MESSAGE NUMBER --- POP NUMBER FOR NEXT MESSAGE (IF ANY)
2022
2023 013414          LET MSGNO := MSGNO + #1
2024 013414 005267 166554          INC     MSGNO
2025 013420          LET (R2)+ :B= MSGNO
2026 013420 116722 166550          MOV      MSGNO,(R2)+
2027
2028          ;GET THE TERMINAL ADDRESS FOR THE NEXT HEADER BYTE
2029
2030 013424          LET R1 := #PTABLE + #5
2031 013424 012701 002200          MOV      #PTABLE,R1
2032 013430 062701 000005          ADD     #5,R1
2033 013434          LET (R2)+ :B= (R1)
2034 013434 111122          MOV      (R1),(R2)+
2035
2036          ;GET HEADER START ADDRESS AND SIZE IN BYTES
2037
2038 013436          LET SCRTCH := A(R5) - #10
2039 013436 016567 000000 166446          MOV      A(R5),SCRTCH
2040 013444 162767 000010 166440          SUB     #10,SCRTCH
2041 013452          LET TEMP := #6
2042 013452 012767 000006 166434          MOV      #6,TEMP
2043
2044          ;COMPUTE HEADER CRC
2045
2046 013460          CALL CRC IN <SCRTCH,TEMP> OUT <TEMP>          ;[3.2.20.6.2]
2047 013460 162705 000002          SUB     #1*2,R5
2048 013464 010546          MOV      R5,-(SP)
2049 013466 016745 166422          MOV      TEMP,-(R5)
2050 013472 016745 166414          MOV      SCRTCH,-(R5)
2051 013476 004767 003410          JSR     PC,CRC
2052 013502 012605          MOV      (SP)+,R5
2053 013504 012567 166404          MOV      (R5)+,TEMP
2054
2055          ;PUT CRC INTO BUFFER
  
```

```

2056
2057 013510      ;      LET (R2) := TEMP                ;[3.2.20.6.3]
2058 013510 016712 166400      MOV      TEMP,(R2)
2059
2060      ;GET ADDRESS OF MESSAGE AND MESSAGE SIZE IN BYTES
2061
2062 013514      ;      LET SCRTCH := A(R5)
2063 013514 016567 000000 166370      MOV      A(R5),SCRTCH
2064 013522      ;      LET TEMP := B(R5)
2065 013522 016567 000002 166364      MOV      B(R5),TEMP
2066
2067      ;COMPUTE DATA CRC
2068
2069 013530      ;      CALL CRC IN <SCRTCH,TEMP> OUT <TEMP>      ;[3.2.20.6.4]
2070 013530 162705 000002      SUB      #1*2,R5
2071 013534 010546      MOV      R5,-(SP)
2072 013536 016745 166352      MOV      TEMP,-(R5)
2073 013542 016745 166344      MOV      SCRTCH,-(R5)
2074 013546 004767 003340      JSR      PC,CRC
2075 013552 012605      MOV      (SP)+,R5
2076 013554 012567 166334      MOV      (R5)+,TEMP
2077
2078      ;PUT DATA CRC IN LAST TWO BYTES OF BUFFER
2079
2080 013560      ;      LET R2 := A(R5) + B(R5)                ;[3.2.20.6.5]
2081 013560 016502 000000      MOV      A(R5),R2
2082 013564 066502 000002      ADD      B(R5),R2
2083 013570      ;      LET (R2)+ :B= TEMP
2084 013570 116722 166320      MOV      TEMP,(R2)+
2085 013574      ;      LET TEMP := SWAP TEMP
2086 013574 000367 166314      SWAB     TEMP
2087 013600      ;      LET (R2) :B= TEMP
2088 013600 116712 166310      MOV      TEMP,(R2)
2089
2090      ;RETURN WITH MODIFIED ADDRESS AND SIZE
2091
2092 013604      ;      LET D(R5) := B(R5) + #12
2093 013604 016565 000002 000006      MOV      B(R5),D(R5)
2094 013612 062765 000012 000006      ADD      #12,D(R5)
2095 013620      ;      LET C(R5) := A(R5) - #10
2096 013620 016565 000000 000004      MOV      A(R5),C(R5)
2097 013626 162765 000010 000004      SUB      #10,C(R5)
2098 013634      POP R2
2099 013634 012602      MOV      (SP)+,R2
2100 013636      POP R1
2101 013636 012601      MOV      (SP)+,R1
2102 013640      ENDRTN
2103 013640
2104 013640
2105 013640 000207      50000$:
2106                                     50001$:
2107                                     RTS      PC
2108
2109
2110
2111      ;*****

```

```

2112          : ROUTINE TO GET TERMINAL INPUT
2113          : +-----+
2114 013642    : ROUTINE TERIN <A> ;[3.2.1]
2115 013642    :
2116          :
2117          : SAVE R1
2118          :
2119 013642    : PUSH R1
2120 013642 010146 :
2121          :
2122          : GET TERMINAL RESPONSE
2123          :
2124 013644    : CALL RCVE
2125 013644 004767 002760 :
2126          :
2127          : IF RECEIVE ERROR, REPORT IT AND EXIT WITH THE ERROR FLAG SET
2128          :
2129 013650    : IF.ERROR THEN
2130 013650 103007 :
2131 013652    : ERRHRD 40,MSG40,AREA40
2132 013652 104463 :
2133 013654 000050 :
2134 013656 002761 :
2135 013660 004262 :
2136          :
2137          : .....RESTORE R1 FIRST
2138          :
2139 013662    : POP R1
2140 013662 012601 :
2141 013664    : RETURN ERROR
2142 013664 000261 :
2143 013666 000571 :
2144 013670    :
2145 013670    :
2146          :
2147          : IF MESSAGE IS ONLY 10 BYTES, SEE IF IT IS AN ACK.
2148          : IT'S OK TO BE AN ACK, BUT RECEPTION IS INCOMPLETE (CLEAR FLAG).
2149          :
2150 013670    : IF INSIZ EQ #10 THEN
2151 013670 026727 166264 000010 :
2152 013676 001027 :
2153 013700    : LET A(R5) := #0
2154 013700 005065 000000 :
2155 013704    : LET TYPE := #ACK
2156 013704 012767 000001 177100 :
2157 013712    : CALL CHKREP IN <TYPE>
2158 013712 010546 :
2159 013714 016745 177072 :
2160 013720 004767 000330 :
2161 013724 012605 :
2162          :
2163          : IF.ERROR THEN
2164 013730    : POP R1
2165 013730 012601 :
2166 013732    : RETURN ERROR
2167 013732 000261 :
    
```

TERIN:

MOV R1,-(SP)

JSR PC,RCVE

BCC 50002\$

TRAP T\$ERCODE
 .WORD 40
 .WORD MSG40
 .WORD AREA40

MOV (SP)+,R1

SEC
 BR 50001\$

50002\$:

CMP INSIZ,#10
 BNE 50003\$

CLR A(R5)

MOV #ACK,TYPE

MOV R5,-(SP)
 MOV TYPE,-(R5)
 JSR PC,CHKREP
 MOV (SP)+,R5

BCC 50004\$

MOV (SP)+,R1

SEC

2168	013734	000546					
2169	013736			ENDIF		BR	50001\$
2170	013736					50004\$:	
2171	013736			LET R1 := INBUF + #4			
2172	013736	016701	166214			MOV	INBUF,R1
2173	013742	062701	000004			ADD	#4,R1
2174	013746			LET RMSGNO :B= (R1)			
2175	013746	111167	166224			MOVB	(R1),RMSGNO
2176	013752			POP R1			
2177	013752	012601				MOV	(SP)+,R1
2178	013754			RETURN			
2179	013754	000535				BR	50000\$
2180	013756			ENDIF			
2181	013756					50003\$:	
2182							
2183				: IF RECEIVE OK, CHECK THE HEADER CRC			
2184				: COMPUTE EXPECTED CRC			
2185				:			
2186	013756			CALL CRC IN <INBUF,#6> OUT <A04EX>			
2187	013756	162705	000002			SUB	#1*2,R5
2188	013762	010546				MOV	R5,-(SP)
2189	013764	012745	000006			MOV	#6,-(R5)
2190	013770	016745	166162			MOV	INBUF,-(R5)
2191	013774	004767	003112			JSR	PC,CRC
2192	014000	012605				MOV	(SP)+,R5
2193	014002	012567	170144			MOV	(R5)+,A04EX
2194							
2195				: GET THE CRC RECEIVED			
2196				:			
2197	014006			LET R1 := INBUF + #10			
2198	014006	016701	166144			MOV	INBUF,R1
2199	014012	062701	000010			ADD	#10,R1
2200	014016			LET A04RC :B= -(R1)			
2201	014016	114167	170126			MOVB	-(R1),A04RC
2202	014022			LET A04RC := SWAP A04RC			
2203	014022	000367	170122			SWAB	A04RC
2204	014026			LET A04RC :B= -(R1)			
2205	014026	114167	170116			MOVB	-(R1),A04RC
2206							
2207				: IF THEY AREN'T THE SAME, REPORT THE ERROR, RESTORE R1 AND EXIT WITH			
2208				: THE ERROR FLAG SET			
2209				:			
2210	014032			IF A04EX NE A04RC THEN			
2211	014032	026767	170114 170110			CMP	A04EX,A04RC
2212	014040	001407				BEQ	50005\$
2213	014042			ERRHRD 41,MSG41,AREA41			
2214	014042	104463				TRAP	T\$ERCODE
2215	014044	000051				.WORD	41
2216	014046	002503				.WORD	MSG41
2217	014050	004116				.WORD	AREA41
2218	014052			POP R1			
2219	014052	012601				MOV	(SP)+,R1
2220	014054			RETURN ERROR			
2221	014054	000261				SEC	
2222	014056	000475				BR	50001\$
2223	014060			ENDIF			


```

2224 014060                                     50005$:
2225
2226      :COMPARE TERMINAL ADDRESS RECEIVED WITH THAT EXPECTED
2227      :AND IF THEY AREN'T THE SAME, REPORT THE ERROR, RESTORE R1 AND
2228      :EXIT WITH THE ERROR FLAG SET
2229      :
2230      IFB -(R1) NE STRTSA THEN
2231 014060 124167 167611                                CMPB   -(R1),STRTSA
2232 014064 001407                                BEQ    50006$
2233 014066                                ERRHRD 42,MSG42,AREA42
2234 014066 104463                                TRAP   T$ERCODE
2235 014070 000052                                .WORD 42
2236 014072 002437                                .WORD MSG42
2237 014074 004064                                .WORD AREA42
2238 014076                                POP R1
2239 014076 012601                                MOV    (SP)+,R1
2240 014100                                RETURN ERROR
2241 014100 000261
2242 014102 000463                                SEC
2243 014104                                BR     50001$
2244 014104
2245                                     50006$:
2246      :MOVE THE POINTERS PAST THE HEADER AND COMPUTE THE DATA CRC
2247      :
2248 014104                                LET INBUF := INBUF + #10
2249 014104 062767 000010 166044                    ADD    #10,INBUF
2250 014112                                LET INSIZ := INSIZ - #12
2251 014112 162767 000012 166040                    SUB    #12,INSIZ
2252 014120                                CALL CRC IN <INBUF,INSIZ> OUT <A04EX>
2253 014120 162705 000002                                SUB    #1*2,R5
2254 014124 010546                                MOV    R5,-(SP)
2255 014126 016745 166026                                MOV    INSIZ,-(R5)
2256 014132 016745 166020                                MOV    INBUF,-(R5)
2257 014136 004767 002750                                JSR    PC,CRC
2258 014142 012605                                MOV    (SP)+,R5
2259 014144 012567 170002                                MOV    (R5)+,A04EX
2260
2261      :GET THE DATA CRC RECEIVED
2262      :
2263 014150                                LET R1 := INBUF + INSIZ
2264 014150 016701 166002                                MOV    INBUF,R1
2265 014154 066701 166000                                ADD    INSIZ,R1
2266 014160                                LET R1 := R1 + #2
2267 014160 062701 000002                                ADD    #2,R1
2268 014164                                LET A04RC .B= -(R1)
2269 014164 114167 167760                                MOV    -(R1),A04RC
2270 014170                                LET A04RC := SWAP A04RC
2271 014170 000367 167754                                SWAB   A04RC
2272 014174                                LET A04RC .B= -(R1)
2273 014174 114167 167750                                MOV    -(R1),A04RC
2274
2275      :IF THEY AREN'T THE SAME; REPORT THE ERROR, RESTORE R1 AND
2276      :EXIT WITH THE ERROR FLAG SET
2277      :
2278 014200                                IF A04RC NE A04EX THEN
2279 014200 026767 167744 167744                    CMP    A04RC,A04EX

```

```

2280 014206 001407
2281 014210 ERRHRD 43,MSG43,AREA43
2282 014210 104463
2283 014212 000053
2284 014214 003422
2285 014216 004116
2286 014220 POP R1
2287 014220 012601
2288 014222 RETURN ERROR
2289 014222 000261
2290 014224 000412
2291 014226 ENDIF
2292 014226
2293
2294
2295
2296 014226 OTHERWISE; SET COMPLETE FLAG, RESTORE R1 AND EXIT NORMALLY
2297 014226 005265 000000 LET A(R5) := A(R5) + #1
2298 014232 LET R1 := INBUF - #4
2299 014232 016701 165720
2300 014236 162701 000004
2301 014242 LET RMSGNO :B= (R1)
2302 014242 111167 165730
2303 014246 POP R1
2304 014246 012601
2305 014250 ENDRTN
2306 014250
2307 014250 000241
2308 014252
2309 014252 000207
2310
2311
2312
2313
2314
2315
2316
2317
2318
2319
2320
2321
2322
2323
2324
2325
2326 014254
2327 014254
2328 014254
2329 014254
2330 014254
2331 014254 010446
2332 014256 010604
2333 014260 162706 000002
2334
2335
  
```

```

: OTHERWISE; SET COMPLETE FLAG, RESTORE R1 AND EXIT NORMALLY
  
```

```

+++++
ROUTINE TO CHECK AN INPUT BUFFER FOR A STANDARD
RESPONSE ('ACK' OR 'STACK')
LOCATION 'TYPE' CONTAINS THE RESPONSE CODE EXPECTED
INPUT BUFFER POINTER IS IN 'INBUF'
INPUT BUFFER SIZE (IN BYTES) IS IN 'INSIZ'
+++++
ROUTINE CHKREP <B> ;[3.2.20.3, 3.2.20.9]
CHKREP:
  
```

```

: IF MESSAGE IS NOT 10 BYTES LONG, IT CAN'T BE A CONTROL MESSAGE
  
```

```

BEQ 50007$
TRAP T$ERCODE
.WORD 43
.WORD MSG43
.WORD AREA43
MOV (SP)+,R1
SEC
BR 50001$
50007$:
INC A(R5)
MOV INBUF,R1
SUB #4,R1
MOVB (R1),RMSGNO
MOV (SP)+,R1
50000$:
CLC
50001$:
RTS PC
  
```

```

MOV R4,-(SP)
MOV SP,R4
SUB #2,SP
  
```

```

2336 ;TYPE AN ERROR MESSAGE AND EXIT WITH ERROR SET
2337
2338 IF INSIZ NE #10 THEN
2339 014264 026727 165670 000010
2340 014272 001406
2341 014274
2342 014274 104463
2343 014276 000001
2344 014300 002323
2345 014302 003760
2346 014304
2347 014304 000261
2348 014306 000553
2349 014310
2350 014310
2351
2352 ;OTHERWISE, COMPUTE THE CRC AND CHECK IT AGAINST THAT SENT
2353
2354 014310
2355 014310 162705 000002
2356 014314 010546
2357 014316 012745 000006
2358 014322 016745 165630
2359 014326 004767 002560
2360 014332 012605
2361 014334 012567 165554
2362 014340
2363 014340 016764 165612 177776
2364 014346 062764 000007 177776
2365 014354
2366 014354 117467 177776 165530
2367 014362
2368 014362 000367 165524
2369 014366
2370 014366 005364 177776
2371 014372
2372 014372 117467 177776 165512
2373
2374 ;IF CRC'S MATCH GO ON... OTHERWISE SKIP FOLLOWING CODE
2375
2376 014400
2377 014400 026767 165510 165504
2378 014406 001076
2379
2380 ;COMPARE CONTROL MESSAGE TYPE WITH THAT PASSED AS AN ARGUEMENT
2381
2382 014410
2383 014410 016764 165542 177776
2384 014416 005264 177776
2385 014422
2386 014422 117464 177776 177776
2387 014430
2388 014430 042764 177400 177776
2389
2390 ;IF NOT THE EXPECTED TYPE, PRINT ERROR MESSAGE AND EXIT WITH ERROR SET
2391
  
```

```

CMP      INSIZ,#10
BEQ      50002$
;[3.2.20.3.4, 3.2.20.9.4]
TRAP     T$ERCODE
.WORD    1
.WORD    MSG01
.WORD    AREA01

SEC
BR       50001$

50002$:

SUB      #1*2,R5
MOV      R5,-(SP)
MOV      #6,-(R5)
MOV      INBUF,-(R5)
JSR     PC,CRC
MOV      (SP)+,R5
MOV      (R5)+,TEMP

MOV      INBUF,A(R4)
ADD      #7,A(R4)

MOVB     @A(R4),SCRTCH

SWAB     SCRTCH

DEC      A(R4)

MOVB     @A(R4),SCRTCH

CMP      TEMP,SCRTCH
BNE      50004$

MOV      INBUF,A(R4)
INC      A(R4)

MOVB     @A(R4),A(R4)

BIC      #HYBYTE,A(R4)
  
```

```

2392 014436                IF A(R4) NE B(R5) THEN                ;[3.2.20.3.3, 3.2.20.9.3]
2393 014436 026465 177776 000000                CMP      A(R4),B(R5)
2394 014444 001414                BEQ      50005$
2395 014446                LET A02A := A(R4)
2396 014446 016467 177776 167340                MOV      A(R4),A02A
2397 014454                LET A02B := B(R5)
2398 014454 016567 000000 167334                MOV      B(R5),A02B
2399 014462                ERRHRD 02,MSG02,AREA02                ;[3.2.20.3.4, 3.2.20.9.4]
2400 014462 104463                TRAP    T$ERCODE
2401 014464 000002                .WORD  2
2402 014466 002350                .WORD  MSG02
2403 014470 003762                .WORD  AREA02
2404 014472                RETURN ERROR
2405 014472 000261                SEC
2406 014474 000460                BR      50001$
2407
2408                ; OTHERWISE, CHECK TERMINAL ADDRESS
2409
2410                ELSE
2411                50005$:
2412                LET SCRTCH := #PTABLE + #5
2413                MOV      #PTABLE,SCRTCH
2414                ADD      #5,SCRTCH
2415                LET SCRTCH :B= @SCRTCH
2416                MOV      @SCRTCH,SCRTCH
2417                LET SCRTCH := SCRTCH CLR.BY #HYBYTE
2418                BIC      #HYBYTE,SCRTCH
2419                LET TEMP := INBUF + #5
2420                MOV      INBUF,TEMP
2421                ADD      #5,TEMP
2422                LET TEMP :B= @TEMP
2423                MOV      @TEMP,TEMP
2424                LET TEMP := TEMP CLR.BY #HYBYTE
2425                BIC      #HYBYTE,TEMP
2426
2427                ; IF NOT THE EXPECTED TERMINAL ADDRESS, THEN REPORT THE ERROR AND
2428                ; EXIT WITH ERROR SET
2429
2430                IF TEMP NE SCRTCH THEN
2431                50007$:
2432                CMP      TEMP,SCRTCH
2433                BEQ      50007$
2434                ERRHRD 03,MSG03,AREA03                ;[3.2.20.3.4, 3.2.20.9.4]
2435                TRAP    T$ERCODE
2436                .WORD  3
2437                .WORD  MSG03
2438                .WORD  AREA03
2439                RETURN ERROR
2440                SEC
2441                BR      50001$
2442                ENDF
2443                50007$:
2444                ENDF
2445                50006$:
2446                ; IF CRC WAS IN ERROR, SKIP ABOVE CODE, COME TO HERE, REPORT ERROR AND
2447                ; EXIT WITH ERROR SET

```

```

2448
2449 014602          ELSE
2450 014602 000414          50004$: BR      50010$
2451 014604
2452 014604          LET A04RC := SCRTCH
2453 014604 016767 165302 167336          MOV      SCRTCH,A04RC
2454 014612          LET A04EX := TEMP
2455 014612 016767 165276 167332          MOV      TEMP,A04EX
2456 014620          ERRHRD 04,MSG04,AREA04          :[3.2.20.3.4, 3.2.20.9.4]
2457 014620 104463          TRAP    T$ERCODE
2458 014622 000004          .WORD   4
2459 014624 002503          .WORD   MSG04
2460 014626 004116          .WORD   AREA04
2461 014630          RETURN ERROR
2462 014630 000261          SEC
2463 014632 000401          BR      50001$
2464 014634          ENDIF
2465 014634          ENDIF          50010$:
2466 014634          ENDIF          50003$:
2467 014634
2468
2469 :NORMAL RETURN
2470 :
2471 014634          ENDRTN
2472 014634          50000$:
2473 014634 000241          CLC
2474 014636          50001$:
2475 014636 010406          MOV      R4,SP
2476 014640 012604          MOV      (SP)+,R4
2477 014642 000207          RTS      PC
2478
2479
2480
2481
2482
2483 :*****
2484 : THIS ROUTINE SETS UP AND CHECKS FOR COMPLETE TRANSMISSION +
2485 : RETURNS AN ERROR FLAG IF ANY ERROR OCCURS DURING TRANSMISSION +
2486 : SET 'ABORT' IF INITIALIZATION OF THE DEVICE FAILS +
2487 :*****
2488 014644          ROUTINE XMIT          :[3.2.20.7 AND 3.2.20.1]
2489 014644          XMIT:
2490 014644          DECLARE LOCALS
2491 014644          LOCAL <B>
2492 014644          ALLOCATE
2493 014644 010446          MOV      R4,-(SP)
2494 014646 010604          MOV      SP,R4
2495 014650 162706 000002          SUB      #2,SP
2496
2497 :CLEAR ERROR COUNT, TRANSMIT DONE FLAG AND RECEIVE DONE FLAG
2498 :
2499 014654          LET B(R4) := #0
2500 014654 005064 177776          CLR      B(R4)
2501 014660          LET XDONE := #0
2502 014660 005067 000270          CLR      XDONE
2503 014664          LET RDONE := #0
  
```



```

2560 014764 005064 177776                                CLR      B(R4)
2561 014770                                ENDIF
2562 014770                                50004$:
2563                                     :
2564                                     : IF ERROR COUNT HAS EXCEEDED LIMITS, ABORT AND NEGATE THE COUNT
2565                                     :
2566 014770                                IF B(R4) EQ ILIMIT THEN
2567 014770 026467 177776 165126                    CMP      B(R4),ILIMIT
2568 014776 001010                                BNE     50005$
2569 015000                                ERRDF 00,MSG00,AREA00
2570 015000 104462                                TRAP    T$ERCODE
2571 015002 000000                                .WORD  0
2572 015004 002264                                .WORD  MSG00
2573 015006 003700                                .WORD  AREA00
2574 015010                                LET ABORT := ABORT + #1
2575 015010 005267 165102                            INC     ABORT
2576 015014                                LET B(R4) := NEGATE B(R4)
2577 015014 005464 177776                            NEG     B(R4)
2578 015020                                ENDIF
2579 015020                                50005$:
2580                                     :
2581                                     :           END OF LOOP
2582                                     : EXIT LOOP WHEN ERROR COUNT IS ZERO OR NEGATIVE (ABORT)
2583                                     :
2584 015020                                UNTIL B(R4) LE #0
2585 015020 005764 177776                                TST     B(R4)
2586 015024 003321                                BGT    50002$
2587                                     :
2588                                     : IF NOT ABORT THEN EXECUTE THE FOLLOWING CODE
2589                                     : OTHERWISE SKIP AND RETURN WITH ERROR SET
2590                                     :
2591 015026                                IF B(R4) EQ #0 THEN
2592 015026 005764 177776                                TST     B(R4)
2593 015032 001042                                BNE    50006$
2594                                     :
2595                                     : WAIT FOR TRANSMIT DONE FLAG TO SET
2596                                     :
2597 015034                                REPEAT
2598 015034                                BREAK
2599 015034                                50007$:
2600 015034 104022                                EMT    C$BRK
2601 015036                                UNTIL XDONE NE #0
2602 015036 005767 000112                            TST     XDONE
2603 015042 001774                                BEQ    50007$
2604                                     :
2605                                     : IF TRANSMIT FLAG IS NEGATIVE, AN ERROR OCCURRED.
2606                                     :
2607 015044                                IF XDONE LT #0 THEN
2608 015044 005767 000104                            TST     XDONE
2609 015050 002032                                BGE    50010$
2610 015052                                PUSH R1
2611 015052 010146                                MOV     R1,-(SP)
2612 015054                                PUSH R2
2613 015054 010246                                MOV     R2,-(SP)
2614                                     :
2615                                     : IF ERROR, GET COPY OF DEVICE REGISTERS, PRINT MESSAGE AND EXIT WITH ERROR SET

```

```

2616 ;OTHERWISE DO A NORMAL EXIT
2617 ;
2618 015056 LET R1 := PTABLE
2619 015056 016701 165116 MOV PTABLE,R1
2620 015062 LET R2 := #DZREG
2621 015062 012702 002254 MOV #DZREG,R2
2622 015066 LET RCVCSR(R2) := RCVCSR(R1)
2623 015066 016162 000000 000000 MOV RCVCSR(R1),RCVCS
2624 015074 LET RCVBUF(R2) := RCVBUF(R1)
2625 015074 016162 000002 000002 MOV RCVBUF(R1),RCVBU
2626 015102 LET XMTCSR(R2) := XMTCSR(R1)
2627 015102 016162 000004 000004 MOV XMTCSR(R1),XMTCS
2628 015110 LET XMTBUF(R2) := XMTBUF(R1)
2629 015110 016162 000006 000006 MOV XMTBUF(R1),XMTBU
2630 015116 POP R2
2631 015116 012602 MOV (SP)+,R2
2632 015120 POP R1
2633 015120 012601 MOV (SP)+,R1
2634 015122 ERRHRD 24,MSG24,AREA24
2635 015122 104463 TRAP T$ERCODE
2636 015124 000030 .WORD 24
2637 015126 003111 .WORD MSG24
2638 015130 004262 .WORD AREA24
2639 015132 RETURN ERROR
2640 015132 000261 SEC
2641 015134 000404 BR 50001$
2642 015136 ENDIF
2643 015136 50010$:
2644 015136 ELSE BR 50011$
2645 015136 000402 50006$:
2646 015140 RETURN ERROR SEC
2647 015140 000261 BR 50001$
2648 015140 000401
2649 015142 ENDIF
2650 015144 ENDRTN
2651 015144 50011$:
2652 015144 50000$:
2653 015144 000241 50001$:
2654 015146 010406 CLC
2655 015146 012604 MOV R4,SP
2656 015150 000207 MOV (SP)+,R4
2657 015152 000000 RTS
2658 015154 000000 PC
2659 015156 000000
2660 015156 000000
2661
2662
2663
2664
2665
2666
2667 *****
2668 ROUTINE TO INITIALIZE A DEVICE +
2669 IF 'INIT' IS NON-ZERO, THE ROUTINE WILL EXECUTE AND SET IT +
2670 RETURNS WITH AN ERROR IF CTS CANNOT BE SET +
2671

```

XDONE : 0
RDONE : 0


```

2672
2673
2674
2675
2676
2677 015160
2678 015160
2679 015160
2680 015160
2681 015160
2682 015160 010446
2683 015162 010604
2684 015164 162706 000002
2685
2686 015170
2687 015170 010146
2688 015172
2689 015172 010246
2690
2691
2692
2693 015174
2694 015174 016701 165000
2695
2696
2697
2698 015200
2699 015200 052761 000020 000000
2700 015206
2701 015206
2702 015206
2703 015206 032761 000020 000000
2704 015214 001374
2705
2706
2707
2708 015216
2709 015216 016767 000412 164666
2710 015224
2711 015224 000367 164662
2712 015230
2713 015230 056761 164656 000004
2714
2715
2716
2717 015236
2718 015236 005767 164746
2719 015242 001035
2720 015244
2721 015244 012700 000100
2722 015250 104027
2723 015252
2724 015252 036761 164634 000006
2725 015260 001026
2726 015262
2727 015262 012702 002254

```

```

: RETURNS WITH ERROR AND 'ABORT' SET IF THE DEVICE DOES
: NOT EXIST
:
:*****
ROUTINE DEVINIT ;[3.2.20.1.5 AND 3.2.20.7.2]
DEVINIT:
DECLARE LOCALS
LOCAL <A>
ALLOCATE
MOV R4,-(SP)
MOV SP,R4
SUB #2,SP
PUSH R1
MOV R1,-(SP)
PUSH R2
MOV R2,-(SP)
: GET DEVICE ADDRESS
:
LET R1 := PTABLE
MOV PTABLE,R1
: DO A MASTER CLEAR ON THE DZ AND WAIT FOR THE CLEAR BIT TO GO DOWN
:
LET RCVCSR(R1) := RCVCSR(R1) SET.BY #MASCLR
REPEAT
UNTIL #MASCLR NOTSETIN RCVCSR(R1)
50002$:
BIT #MASCLR,RCVCSR(R)
BNE 50002$
: GET THE LINE MASK AND SET THE RIGHT DATA TERMINAL READY BIT IN THE DZ
:
LET SCRTCH := $LINE
MOV $LINE,SCRTCH
LET SCRTCH := SWAP SCRTCH
SWAB SCRTCH
LET XMTCSR(R1) := XMTCSR(R1) SET.BY SCRTCH
BIS SCRTCH,XMTCSR(R1)
: WAIT 10MSEC AND SEE IF CARRIER IS UP
:
IF NMOD EQ #0 THEN
TST NMOD
BNE 50003$
WAITUS #100
MOV #100,R0
EMT C$WTU
IF SCRTCH NOTSETIN XMTBUF(R1) THEN
BIT SCRTCH,XMTBUF(R1)
BNE 50004$
LET R2 := #DZREG
MOV #DZREG,R2

```

```
2728 015266          LET RCVCSR(R2) := RCVCSR(R1)
2729 015266 016162 000000 000000          MOV      RCVCSR(R1),RCVCS
2730 015274          LET RCVBUF(R2) := RCVBUF(R1)          MOV      RCVBUF(R1),RCVBU
2731 015274 016162 000002 000002          MOV      XMTCSR(R1),XMTCS
2732 015302          LET XMTCSR(R2) := XMTCSR(R1)          MOV      XMTCSR(R1),XMTCS
2733 015302 016162 000004 000004          MOV      XMTBUF(R1),XMTBU
2734 015310          LET XMTBUF(R2) := XMTBUF(R1)          MOV      XMTBUF(R1),XMTBU
2735 015310 016162 000006 000006          POP R2
2736 015316          POP R1          MOV      (SP)+,R2
2737 015316 012602          ERRHRD 05,MSG05,AREA30          MOV      (SP)+,R1
2738 015320          RETURN ERROR          TRAP    T$ERCODE
2739 015320 012601          .WORD    5
2740 015322          .WORD    MSG05
2741 015322 104463          .WORD    AREA30
2742 015324 000005          RETURN ERROR          SEC
2743 015326 002375          .WORD    50001$
2744 015330 004534          .WORD    50004$
2745 015332          RETURN ERROR          .WORD    50003$
2746 015332 000261          .WORD    50004$
2747 015334 000534          .WORD    50003$
2748 015336          ENDIF
2749 015336          ENDIF
2750 015336          .GET THE LINE NUMBER, STOP CODE, CHARACTER LENGTH AND BAUD RATE FROM
2751 015336          .THE PTABLE AND CLEAR EXTRANEIOUS BITS. SET THE RECEIVER ENABLE BIT
2752          .AND LOAD THE DZ LINE CONTROL REGISTER.
2753          .
2754          LET R2 := #PTABLE + #6          MOV      #PTABLE,R2
2755          .
2756          LET R2 := (R2)          ADD      #6,R2
2757 015336 012702 002200          MOV      (R2),R2
2758 015336 012702 002200          LET R2 := R2 CLR.BY #300          BIC      #300,R2
2759 015342 062702 000006          LET R2 := R2 SET.BY #10000          BIS      #10000,R2
2760 015346          LET RCVBUF(R1) := R2          MOV      R2,RCVBUF(R1)
2761 015346 011202          .
2762 015350          .GET THE DEVICE PRIORITY AND SET UP THE INTERRUPT HANDLERS AND
2763 015350 042702 000300          .CLEAR THE NEW MESSAGE FLAG (NMSG)
2764 015354          .
2765 015354 052702 010000          LET DEVPRI := #PTABLE + #4          MOV      #PTABLE,DEVPRI
2766 015360          .
2767 015360 010261 000002          LET DEVPRI := @DEVPRI          ADD      #4,DEVPRI
2768          .
2769          LET DEVPRI := DEVPRI CLR.BY #HYBYTE          MOVB    @DEVPRI,DEVPRI
2770          .
2771          LET A(R4) := #PTABLE + #2          BIC      #HYBYTE,DEVPRI
2772 015364 012767 002200 164620          MOV      #PTABLE,A(R4)
2773 015364 062767 000004 164612          ADD      #2,A(R4)
2774 015372          SETVEC @A(R4),#RINT,DEVPRI          MOV      DEVPRI,-(SP)
2775 015400          .
2776 015400 117767 164606 164604          .
2777 015406          .
2778 015406 042767 177400 164576          .
2779 015414          .
2780 015414 012764 002200 177776          .
2781 015422 062764 000002 177776          .
2782 015430          .
2783 015430 016746 164556          .
```

2784	015434	012746	016066			MOV	#RINT,-(SP)
2785	015440	017446	177776			MOV	@A(R4),-(SP)
2786	015444	012746	000003			MOV	#3,-(SP)
2787	015450	104037				EMT	C\$SVEC
2788	015452	062706	000010			ADD	#10,SP
2789	015456				LET NMSG := #0		
2790	015456	005067	000176			CLR	NMSG
2791	015462				LET A(R4) := @A(R4) + #4		
2792	015462	017464	177776	177776		MOV	@A(R4),A(R4)
2793	015470	062764	000004	177776		ADD	#4,A(R4)
2794	015476				SETVEC A(R4),#XINT,DEVPRI		
2795	015476	016746	164510			MOV	DEVPRI,-(SP)
2796	015502	012746	015720			MOV	#XINT,-(SP)
2797	015506	016446	177776			MOV	A(R4),-(SP)
2798	015512	012746	000003			MOV	#3,-(SP)
2799	015516	104037				EMT	C\$SVEC
2800	015520	062706	000010			ADD	#10,SP
2801							
2802					:GET COPIES OF THE DEVICE BUFFER REGISTER ADDRESSES		
2803							
2804	015524				LET XMTADD := R1 + #6		
2805	015524	010167	000106			MOV	R1,XMTADD
2806	015530	062767	000006	000100		ADD	#6,XMTADD
2807	015536				LET RCVADD := R1 + #2		
2808	015536	010167	000076			MOV	R1,RCVADD
2809	015542	062767	000002	000070		ADD	#2,RCVADD
2810							
2811					:SET COUNTS FOR 4 SYNC'S AND FOUR FILL CHARACTERS		
2812							
2813	015550				LET SYNCNT := #4		
2814	015550	012767	000004	000066		MOV	#4,SYNCNT
2815	015556				LET FLLCNT := #4		
2816	015556	012767	000004	000062		MOV	#4,FLLCNT
2817							
2818					:USE LINE MASK TO ENABLE THE TRANSMITTER...ENABLE THE MASTER SCAN		
2819					:ENABLE TRANSMIT AND RECEIVE INTERRUPTS		
2820							
2821	015564				LET XMTCSR(R1) := XMTCSR(R1) SET.BY \$LINE		
2822	015564	056761	000044	000004		BIS	\$LINE,XMTCSR(R1)
2823	015572				LET RCVCSR(R1) := RCVCSR(R1) SET.BY #MSCNEN		
2824	015572	052761	000040	000000		BIS	#MSCNEN,RCVCSR(R1)
2825	015600				LET RCVCSR(R1) := RCVCSR(R1) SET.BY #TXINTE		
2826	015600	052761	040000	000000		BIS	#TXINTE,RCVCSR(R1)
2827	015606				LET RCVCSR(R1) := RCVCSR(R1) SET.BY #RXINTE		
2828	015606	052761	000100	000000		BIS	#RXINTE,RCVCSR(R1)
2829	015614				POP R2		
2830	015614	012602				MOV	(SP)+,R2
2831	015616				POP R1		
2832	015616	012601				MOV	(SP)+,R1
2833							
2834					:SET INIT COMPLETE FLAG		
2835							
2836	015620				LET INIT := INIT + #1		
2837	015620	005267	000024			INC	INIT
2838	015624				ENDRTN		
2839	015624						

50000\$:

```

2840 015624 000241
2841 015626
2842 015626 010406
2843 015630 012604
2844 015632 000207
2845 015634 000000
2846
2847
2848 015636 000000
2849 015640 000000
2850 015642 000000
2851 015644 000000
2852 015646 000000
2853 015650 000000
2854 015652 000000
2855 015654 000000
2856 015656 000000
2857 015660 000000
2858 015662 000000
2859 015664 000000
2860 015666 000000
2861
2862
2863
2864 015670 000000
2865 015672 000000
2866 015674 000000
2867 015676 000000
2868 015700 000000
2869 015702 000000
2870 015704 000000
2871 015706 000000
2872 015710 000000
2873 015712 000000
2874 015714 000000
2875 015716 000000

$LINE: 0
:
XMTADD: 0 ;TRANSMIT BUFFER REGISTER ADDRESS
RCVADD: 0 ;RECEIVE BUFFER REGISTER ADDRESS
TIMER: 0 ;TIMER FOR CLEAR TO SEND OPERATION
SYNCNT: 0 ;NUMBER OF SYNC CHARACTERS INSERTED BEFORE DDCMP MESSAGE
FLLCNT: 0 ;NUMBER OF FILL CHARACTERS AFTER MESSAGE
INIT: 0 ;INITIALIZE COMPLETE FLAG
FIL: 0 ;FILL CHARACTER
XBUFFER: 0 ;CURRENT TRANSMIT BUFFER POINTER
XSIZE: 0 ;CURRENT TRANSMIT BUFFER SIZE
NMSG: 0 ;NEW MESSAGE EXPECTED FLAG
RTEMP1: 0 ;CURRENT RECEIVE BUFFER POINTER
RTEMP2: 0 ;CURRENT RECEIVE BUFFER SIZE
CNTFLG: 0 ;CONTROL FLAG FOR INPUTTING DDCMP MESSAGES
:
RECEIVER QUEUES
RQUEUE: 0 ;QUEUE POINTER FOR BUFFER PROCESSING
RQUE: 0 ;QUEUE POINTER FOR NEXT AVAILABLE BUFFER
RQUET: 0 ;QUEUE OF BUFFER ADDRESSES AND SIZES
0
0
0
RQUEB: 0
RBQUE: 0 ;QUEUE POINTER FOR NEXT AVAILABLE BUFFER AREA
RBQUET: 0 ;QUEUE OF BUFFER AREAS
0
RBQUEB: 0
  
```

```

50001$: CLC
MOV R4,SP
MOV (SP)+,R4
RTS PC
  
```

```

2876
2877
2878
2879 015720
2880
2881
2882
2883 015720
2884 015720 016700 164266
2885 015724 104041
2886
2887
2888
2889 015726
2890 015726 005767 177712
2891 015732 001047
2892
2893
2894
2895
2896 015734
2897 015734 010146
2898 015736
2899 015736 005767 177714
2900 015742 003413
2901
2902
2903
2904 015744
2905 015744 117701 177704
2906 015750
2907 015750 042701 177400
2908 015754
2909 015754 110177 177656
2910 015760
2911 015760 005267 177670
2912 015764
2913 015764 005367 177666
2914
2915
2916
2917 015770
2918 015770 000426
2919 015772
2920 015772
2921 015772 005767 177650
2922 015776 001406
2923
2924
2925
2926 016000
2927 016000 056777 177646 177630
2928 016006
2929 016006 005367 177634
2930 016012
2931 016012 000415

```

```

////////////////////////////////////
TRANSMISSION INTERRUPT HANDLER
////////////////////////////////////
BGNSRV XINT ;[3.2.20.1.7 AND 3.2.20.7.4]

:SET PROCESSOR PRIORITY LEVEL
:
SETPRI DEVPRI

MOV DEVPRI,R0
EMT C$SPRI

:IF SYNC COUNT EQUAL TO ZERO...
:
IF SYNCNT EQ #0 THEN

TST SYNCNT
BNE 50005$

:
CHECK BUFFER SIZE.
IF GREATER THAN ZERO, THEN....

PUSH R1
MOV R1,-(SP)

IF XSIZE GT #0 THEN

TST XSIZE
BLE 50006$

:
SEND THE NEXT CHARACTER AND UPDATE POINTER AND COUNT

LET R1 :B= @XBUFFER
MOV B @XBUFFER,R1

LET R1 := R1 CLR.BY #HYBYTE
BIC #HYBYTE,R1

LET @XMTADD :B= R1
MOV B R1,@XMTADD

LET XBUFFER := XBUFFER + #1
INC XBUFFER

LET XSIZE := XSIZE - #1
DEC XSIZE

:
IF ALL CHARACTERS SENT, CHECK FILL COUNT.
ELSE
50006$: BR 50007$

IF FLLCNT NE #0 THEN

TST FLLCNT
BEQ 50010$

:
IF FILL COUNT ISN'T ZERO SEND A FILL CHAR. AND DECREMENT COUNT

LET @XMTADD := @XMTADD SET.BY FIL
BIS FIL,@XMTADD

LET FLLCNT := FLLCNT - #1
DEC FLLCNT

ELSE
BR 50011$

```

```
2932 016014                                50010$:
2933                                     :
2934                                     :   IF ALL TRANSMIT DONE, DISABLE TRANSMISSION AND SET DONE FLAG
2935                                     :
2936 016014                                LET R1 := XMTADD - #6
2937 016014 016701 177616                                MOV    XMTADD,R1
2938 016020 162701 000006                                SUB    #6,R1
2939 016024                                LET XDONE := XDONE + #1
2940 016024 005267 177124                                INC    XDONE
2941 016030                                ABORTWAIT
2942 016030 104021                                EMT    C$ABRT
2943 016032                                LET XMTCSR(R1) := XMTCSR(R1) CLR.BY $LINE
2944 016032 046761 177576 000004                        BIC    $LINE,XMTCSR(R1)
2945 016040                                LET RCVCSR(R1) := RCVCSR(R1) CLR.BY #TXINTE
2946 016040 042761 040000 000000                        BIC    #TXINTE,RCVCSR(R
2947 016046                                ENDIF
2948 016046                                ENDIF
2949 016046                                ENDIF
2950 016046                                POP R1
2951 016046                                POP R1
2952 016046 012601                                MOV    (SP)+,R1
2953                                     :
2954                                     :...OTHERWISE, SEND A SYNC AND DECREMENT THE SYNC COUNT
2955                                     :
2956 016050                                ELSE
2957 016050 000405                                BR     50012$
2958 016052                                LET @XMTADD :B= #SYNC
2959 016052                                LET SYNCNT := SYNCNT - #1
2960 016052 112777 000377 177556                        MOV    #SYNC,@XMTADD
2961 016060                                LET SYNCNT := SYNCNT - #1
2962 016060 005367 177560                                DEC    SYNCNT
2963 016064                                ENDIF
2964 016064                                ENDIF
2965                                     :
2966                                     :DO A SUPERVISOR-TYPE RTI!
2967                                     :
2968 016064                                ENDSRV
2969 016064                                ENDSRV
2970 016064 000002                                L10027:
2971                                     :
2972                                     :
2973                                     :
2974                                     :
2975                                     :
2976                                     :
2977                                     ://////RECEPTION INTERRUPT ROUTINE//////
2978                                     ://////BGNSRV RINT ;[3.2.1.1.1, 3.2.20.2.1 AND 3.2.20.9.1]//////
2979 016066
2980                                     :
2981                                     :SET PROCESSOR PRIORITY
2982                                     :
2983 016066                                SETPRI DEVPRI
2984 016066 016700 164120                                MOV    DEVPRI,R0
2985 016072 104041                                EMT    C$SPRI
2986 016074                                PUSH R1
2987 016074 010146                                MOV    R1,-(SP)
```

```

2988
2989      : IF NEW MESSAGE FLAG IS RESET...
2990
2991      :
2992      : GET THE BYTE
2993
2994      016076      LET R1 := @RCVADD
2995      016076 017701 177536      MOV @RCVADD,R1
2996
2997      : IF ERROR, REPORT IT AND EXIT IMMEDIATELY (FORCE RESTART)
2998
2999      016102      IF #70000 SETIN R1 THEN
3000      016102 032701 070000      BIT #70000,R1
3001      016106 001407      BEQ 50013$
3002      016110      LET RDONE := R1
3003      016110 010167 177042      MOV R1,RDONE
3004      016114      LET NMSG := #0
3005      016114 005067 177540      CLR NMSG
3006      016120      POP R1
3007      016120 012601      MOV (SP)+,R1
3008      016122 000167 000500      JMP REXIT
3009      016126      ENDIF
3010      016126
3011      016126      LET R1 := R1 CLR.BY #HYBYTE
3012      016126 042701 177400      BIC #HYBYTE,R1
3013      016132      IF NMSG EQ #0 THEN
3014      016132 005767 177522      TST NMSG
3015      016136 001132      BNE 50014$
3016
3017      :
3018      : CHECK FOR SYNC/FILL CHARACTER
3019      : (LOOKING FOR FIRST NON-SYNC/NON-FILL)
3020
3021      016140      IFB R1 NE #SYNC ANDB R1 NE FIL THEN
3022      016144 120127 000377      CMPB R1,#SYNC
3023      016146 001526      BEQ 50015$
3024      016152 120167 177500      CMPB R1,FIL
3025      016152 001523      BEQ 50015$
3026
3027      : NOT FILL OR SYNC. CHECK FOR ENQ (DDCMP CONTROL MESSAGE).
3028
3029      016154      IFB R1 EQ #ENQ THEN
3030      016160 120127 000005      CMPB R1,#ENQ
3031      016160 001053      BNE 50016$
3032
3033      : IF IT IS AN ENQ, SET EXPECTED BYTE COUNT TO 7, SET MESSAGE SIZE
3034      : TO 10 (OCTAL) AND UPDATE THE BUFFER QUEUES
3035
3036      016162      LET RTEMP1 := @RBQUE
3037      016170 017767 177522 177472      MOV @RBQUE,RTEMP1
3038      016170 016777 177466 177474      LET @RQUE := RTEMP1
3039      016176      LET @RIEMP1 :B= R1
3040      016176 110177 177460      MOV RTEMP1,@RQUE
3041      016202      LET RTEMP1 := RTEMP1 + #1
3042      016202 005267 177454      MOVB R1,@RTEMP1
3043      016206      LET RBQUE := RBQUE + #2
  
```

3044	016206	062767	000002	177474				
3045	016214				IF RBQUE GT #RBQUEB THEN		ADD	#2, RBQUE
3046	016214	026727	177470	015716			CMP	RBQUE, #RBQUEB
3047	016222	003403					BLE	50017\$
3048	016224				LET RBQUE := #RBQUET			
3049	016224	012767	015712	177456			MOV	#RBQUET, RBQUE
3050	016232				ENDIF			
3051	016232					50017\$:		
3052	016232				LET RTEMP2 := #7			
3053	016232	012767	000007	177424			MOV	#7, RTEMP2
3054	016240				LET RQUE := RQUE + #2			
3055	016240	062767	000002	177424			ADD	#2, RQUE
3056	016246				LET @RQUE := #10			
3057	016246	012777	000010	177416			MOV	#10, @RQUE
3058	016254				LET RQUE := RQUE + #2			
3059	016254	062767	000002	177410			ADD	#2, RQUE
3060	016262				IF RQUE GT #RQUEB THEN			
3061	016262	026727	177404	015706			CMP	RQUE, #RQUEB
3062	016270	003403					BLE	50020\$
3063	016272				LET RQUE := #RQUET			
3064	016272	012767	015674	177372			MOV	#RQUET, RQUE
3065	016300				ENDIF			
3066	016300					50020\$:		
3067								
3068					SET COUNTER FLAG TO -1 (MESSAGE SIZE COUNT COMPLETE)			
3069					LET CNTFLG := #-1			
3070	016300						MOV	#-1, CNTFLG
3071	016300	012767	177777	177360	ELSE			
3072	016306						BR	50021\$
3073	016306	000443				50016\$:		
3074	016310							
3075								
3076					NOT FILL, SYNC OR ENQ. CHECK FOR SOH OR DLE (DDCMP DATA MESSAGE)			
3077					IFB R1 EQ #SOH ORB R1 EQ #DLE THEN			
3078	016310						CMPB	R1, #SOH
3079	016310	120127	000201				BEQ	50022\$
3080	016314	001403					CMPB	R1, #DLE
3081	016316	120127	000220				BNE	50023\$
3082	016322	001033				50022\$:		
3083	016324							
3084								
3085					MOVE QUEUE POINTER TO SIZE ENTRY AND SET COUNTER FLAG TO 1 (EXPECT FIRST COUNT BYTE)			
3086								
3087								
3088	016324				LET RTEMP1 := @RBQUE			
3089	016324	017767	177360	177330			MOV	@RBQUE, RTEMP1
3090	016332				LET @RQUE := RTEMP1			
3091	016332	016777	177324	177332			MOV	RTEMP1, @RQUE
3092	016340				LET @RTEMP1 :B= R1			
3093	016340	110177	177316				MOVB	R1, @RTEMP1
3094	016344				LET RTEMP1 := RTEMP1 + #1			
3095	016344	005267	177312				INC	RTEMP1
3096	016350				LET RBQUE := RBQUE + #2			
3097	016350	062767	000002	177332			ADD	#2, RBQUE
3098	016356				IF RBQUE GT #RBQUEB THEN			
3099	016356	026727	177326	015716			CMP	RBQUE, #RBQUEB


```

3100 016364 003403          *          BLE      50024$
3101 016366          LET RBQUE := #RBQUET          MOV      #RBQUET,RBQUE
3102 016366 012767 015712 177314          ENDIF
3103 016374          50024$:
3104 016374          LET RQUE := RQUE + #2          ADD      #2,RQUE
3105 016374          LET CNTFLG := #1          MOV      #1,CNTFLG
3106 016374 062767 000002 177270          ELSE
3107 016402          BR      50025$
3108 016402 012767 000001 177256          50023$:
3109 016410          :
3110 016410 000402          :
3111 016412          :
3112          :
3113          :
3114          :
3115          :
3116 016412          LET NMSG := NMSG - #1          DEC      NMSG
3117 016412 005367 177242          ENDIF
3118 016416          50025$:
3119 016416          ENDIF
3120 016416          50021$:
3121 016416          :
3122          :
3123          :
3124          :
3125          :
3126 016416          SET THE NEW MESSAGE FLAG
3127 016416 005267 177236          EXIT ROUTINE
3128 016422          LET NMSG := NMSG + #1          INC      NMSG
3129 016422          ENDIF
3130          :
3131          :
3132          :
3133 016422          :
3134 016422 000500          :
3135 016424          :
3136          :
3137          :
3138          :
3139 016424          :
3140 016424 110177 177232          :
3141          :
3142          :
3143          :
3144 016430          :
3145 016430 005767 177232          :
3146 016434 003413          :
3147          :
3148          :
3149          :
3150          :
3151          :
3152 016436          :
3153 016436 117767 177220 177220          :
3154 016444          :
3155 016444 042767 177400 177212          :

```

BYTE WASN'T ANY OF THE LEGAL CHARACTERS... FORCE
 A RESTART BY FORCING THE NEW MESSAGE FLAG TO RESET ON EXIT.

SET THE NEW MESSAGE FLAG
 EXIT ROUTINE

NEW MESSAGE FLAG IS SET... CONTINUE BUILDING MESSAGE

NOT A NEW MESSAGE...GET BYTE AND STORE IT

IF COUNTER FLAG IS GREATER THAN ZERO, BYTE IS ALSO THE FIRST COUNT BYTE

IF CNTFLG GT #0 THEN
 PUT THE BYTE IN RTEMP2 (EXPECTED COUNT), UPDATE THE BUFFER POINTER
 DECREMENT THE COUNTER FLAG (SET TO GET SECOND COUNT BYTE) AND
 GO DO AN RTI

```

3156 016452          LET RTEMP1 := RTEMP1 + #1
3157 016452 005267 177204          INC      RTEMP1
3158 016456          LET CNTFLG := CNTFLG - #1
3159 016456 005367 177204          DEC      CNTFLG
3160 016462          ELSE
3161 016462 000460          BR        50030$
3162 016464          50027$:
3163
3164  :
3165  :   COUNTER FLAG NOT GREATER THAN ZERO, IS IT ZERO?
3166  :
3166 016464          IF CNTFLG EQ #0 THEN
3167 016464 005767 177176          TST     CNTFLG
3168 016470 001041          BNE     50031$
3169
3170  :
3171  :   IF ZERO, BYTE IS ALSO SECOND BYTE OF COUNT (6 HIGH ORDER BITS)
3172  :   GET IT, MASK IT AND PUT IT INTO RTEMP2 (EXPECTED COUNT)
3173  :
3173 016472          PUSH R1
3174 016472 010146          MOV     R1,-(SP)
3175 016474          LET R1 := @RTEMP1
3176 016474 117701 177162          MOVB  @RTEMP1,R1
3177 016500          LET RTEMP1 := RTEMP1 + #1
3178 016500 005267 177156          INC     RTEMP1
3179 016504          LET R1 := SWAP R1
3180 016504 000301          SWAB  R1
3181 016506          LET R1 := R1 CLR.BY #140377
3182 016506 042701 140377          BIC   #140377,R1
3183 016512          LET RTEMP2 := RTEMP2 + R1
3184 016512 060167 177146          ADD   R1,RTEMP2
3185 016516          POP R1
3186 016516 012601          MOV   (SP)+,R1
3187
3188  :
3189  :   PUT THE COMPLETE SIZE IN THE QUEUE (EXPECTED COUNT +
3190  :   12 (OCTAL) BYTES OF HEADER AND CRC)
3191  :
3191 016520          LET @RQUE := RTEMP2
3192 016520 016777 177140 177144          MOV   RTEMP2,@RQUE
3193 016526          LET @RQUE := @RQUE + #12
3194 016526 062777 000012 177136          ADD   #12,@RQUE
3195
3196  :
3197  :   ADJUST EXPECTED COUNT TO INCLUDE THE REMAINDER OF THE HEADER AND
3198  :   THE DATA CRC
3199  :
3199 016534          LET RTEMP2 := RTEMP2 + #7
3200 016534 062767 000007 177122          ADD   #7,RTEMP2
3201
3202  :
3203  :   UPDATE THE QUEUE AND DECREMENT THE COUNTER FLAG (COUNT COMPLETE)
3204  :
3204 016542          LET RQUE := RQUE + #2
3205 016542 062767 000002 177122          ADD   #2,RQUE
3206 016550          IF RQUE GT #RQUEB THEN
3207 016550 026727 177116 015706          CMP   RQUE,#RQUEB
3208 016556 003403          BLE   50032$
3209 016560          LET RQUE := #RQUET
3210 016560 012767 015674 177104          MOV   #RQUET,RQUE
3211 016566          ENDIF

```

```

3212 016566                                50032$:
3213 016566                                LET CNTFLG := CNTFLG - #1
3214 016566 005367 177074                    DEC     CNTFLG
3215                                     :
3216                                     : GO DO AN RTI
3217                                     :
3218 016572                                ELSE
3219 016572 000414                            50031$: BR     50033$
3220 016574
3221                                     :
3222                                     : COUNTER FLAG IS LESS THAN ZERO... THIS IS A DATA BYTE
3223                                     : UPDATE POINTER AND COUNT
3224                                     :
3225 016574                                LET RTEMP1 := RTEMP1 + #1
3226 016574 005267 177062                    INC     RTEMP1
3227 016600                                LET RTEMP2 := RTEMP2 - #1
3228 016600 005367 177060                    DEC     RTEMP2
3229                                     :
3230                                     : IF COUNT HAS REACHED ZERO, END OF MESSAGE. SET DONE FLAG.
3231 016604                                IF RTEMP2 EQ #0 THEN
3232 016604 005767 177054                    TST     RTEMP2
3233 016610 001005                            BNE     50034$
3234 016612                                LET RDONE := RDONE + #1
3235 016612 005267 176340                    INC     RDONE
3236                                     :
3237                                     : ABORT ANY WAITS AND RESET NEW MESSAGE FLAG
3238                                     :
3239 016616                                ABORTWAIT
3240 016616 104021                            EMT     C$ABRT
3241 016620                                LET NMSG := #0
3242 016620 005067 177034                    CLR     NMSG
3243 016624                                ENDIF
3244 016624                                50034$:
3245 016624                                ENDIF
3246 016624                                50033$:
3247 016624                                ENDIF
3248 016624                                50030$:
3249 016624                                ENDIF
3250 016624                                50026$:
3251                                     :
3252                                     : DO RTI
3253                                     :
3254 016624                                POP R1
3255 016624 012601                            MOV     (SP)+,R1
3256 016626 REXIT: ENDSRV
3257 016626                                L10030:
3258 016626 000002                            RTI
3259
3260
3261
3262
3263 :+++++
3264 :
3265 : ROUTINE TO GET AN INPUT BUFFER FROM THE INPUT QUEUES
3266 :
3267 : WILL RETURN AN ERROR IF TERMINAL DOES NOT RESPOND

```

```
3268
3269
3270
3271
3272
3273
3274 016630
3275 016630
3276
3277
3278
3279 016630
3280 016630 005067 177006
3281
3282
3283
3284 016634
3285 016634
3286 016634
3287 016634 012700 000100
3288 016640 104027
3289 016642
3290 016642 005267 176774
3291
3292
3293
3294 016646
3295 016646 026767 176770 163244
3296 016654 003003
3297 016656 005767 176274
3298 016662 001764
3299 016664
3300
3301
3302
3303 016664
3304 016664 005067 176770
3305
3306
3307
3308 016670
3309 016670 026767 176746 163222
3310 016676 002044
3311
3312
3313
3314
3315 016700
3316 016700 005067 176736
3317 016704
3318 016704 005767 176246
3319 016710 003426
3320
3321
3322
3323 016712
```

ARGUMENT (IF SET) INHIBITS ERROR PRINTOUT. THIS ALLOWS
THE PROGRAM TO RETRY THE STRT-STACK SEQUENCE WITHOUT HAVING
AN ERROR MESSAGE EACH TIME

+++++

ROUTINE RCVE ;[3.2.1.1, 3.2.20.2 AND 3.2.20.8]
RCVE:

RESET TIMER

LET TIMER := #0

CLR TIMER

GO TO SUPERVISOR FOR AWHILE AND INCREMENT TIMER

REPEAT

WAITUS #100 ;[3.2.1.1.4, 3.2.20.2.4, 3.2.20.8.4] 50002\$:

MOV #100,RO

EMT C\$WTU

LET TIMER := TIMER + #1

INC TIMER

LOOP UNTIL TIME LIMIT EXCEEDED OR RECEIVER DONE FLAG IS SET

UNTIL TIMER GT TIMLIM OR RDONE NE #0

CMP TIMER,TIMLIM

BGT 50003\$

TST RDONE

BEQ 50002\$

50003\$:

RESET THE NEW MESSAGE FLAG

LET NMSG := #0

CLR NMSG

IF THE TIME LIMIT WASN'T EXCEEDED...

IF TIMER LT TIMLIM THEN

CMP TIMER,TIMLIM

BGE 50004\$

RESET THE TIMER

CHECK FOR ERROR (RDONE LESS THAN ZERO)

LET TIMER := #0

CLR TIMER

IF RDONE GT #0 THEN

TST RDONE

BLE 50005\$

NOT ERROR, GET BUFFER ADDRESS AND SIZE FROM QUEUE AND UPDATE QUEUE

LET INBUF := @RQUEUE

```

ASSEMBLY ROUTINES          MACY11 30A(1052) 29-DEC-78 11:50 PAGE 68D 6
CZDZCB.P11 21-NOV-78 16:33
                                                                    SEQ 0068

3324 016712 017767 176752 163236
3325 016720
3326 016720 062767 000002 176742
3327 016726
3328 016726 017767 176736 163224
3329 016734
3330 016734 062767 000002 176726
3331 016742
3332 016742 026727 176722 015706
3333 016750 003403
3334 016752
3335 016752 012767 015674 176710
3336 016760
3337 016760
3338
3339
3340
3341 016760
3342 016760 005067 176172
3343 016764
3344 016764 000410
3345 016766
3346
3347
3348
3349 016766
3350 016766 104463
3351 016770 000032
3352 016772 003210
3353 016774 004454
3354 016776
3355 016776 005067 176154
3356 017002
3357 017002 000261
3358 017004 000440
3359 017006
3360 017006
3361 017006
3362 017006 000436
3363 017010
3364
3365
3366
3367 017010
3368 017010 005067 176626
3369 017014
3370 017014 010146
3371 017016
3372 017016 016701 176616
3373 017022 162701 000002
3374 017026
3375 017026 010246
3376 017030
3377 017030 012702 002254
3378 017034
3379 017034 016162 000000 000000

      LET RQUEUE := RQUEUE + #2
      LET INSIZ := @RQUEUE
      LET RQUEUE := RQUEUE + #2
      IF RQUEUE GT #RQUEB THEN
          LET RQUEUE := #RQUET
      ENDIF
      50006$:
      :RESET DONE FLAG AND LEAVE
      LET RDONE := #0
      ELSE
      50005$:
      :ERROR DID OCCUR...RESET THE DONE FLAG, REPORT ERROR, RETURN WITH ERROR
      ERRHRD 26,MSG26,AREA26
      TRAP T$ERCODE
      .WORD 26
      .WORD MSG26
      .WORD AREA26
      LET RDONE := #0
      RETURN ERROR
      CLR RDONE
      SEC
      BR 50001$
      50007$:
      ELSE
      50004$:
      :TIME LIMIT EXCEEDED...RESET TIMER, GET REGISTER CONTENTS
      LET TIMER := #0
      CLR TIMER
      PUSH R1
      MOV R1,-(SP)
      LET R1 := RCVADD - #2
      MOV RCVADD,R1
      SUB #2,R1
      PUSH R2
      MOV R2,-(SP)
      LET R2 := #DZREG
      MOV #DZREG,R2
      LET RCVCSR(R2) := RCVCSR(R1)
      MOV RCVCSR(R1),RCVCS

```

```
3380 017042          LET RCVBUF(R2) := RCVBUF(R1)
3381 017042 016162 000002 000002          MOV   RCVBUF(R1),RCVBU
3382 017050          LET XMTCSR(R2) := XMTCSR(R1)
3383 017050 016162 000004 000004          MOV   XMTCSR(R1),XMTCS
3384 017056          LET XMTBUF(R2) := XMTBUF(R1)
3385 017056 016162 000006 000006          MOV   XMTBUF(R1),XMTBU
3386 017064          POP R2
3387 017064 012602          MOV   (SP)+,R2
3388 017066          POP R1
3389 017066 012601          MOV   (SP)+,R1
3390
3391      :PRINT ERROR MESSAGE
3392      :
3393      :      ERRHRD 31,MSG31,AREA31
3394 017070 104463          TRAP  T$ERCODE
3395 017072 000037          .WORD 31
3396 017074 003301          .WORD MSG31
3397 017076 004534          .WORD AREA31
3398
3399      :RETURN WITH ERROR IN ANY CASE
3400      :
3401          RETURN ERROR
3402 017100 000261          SEC
3403 017102 000401          BR   50001$
3404 017104          ENDIF
3405 017104          ENDRTN
3406 017104          50010$:
3407 017104          50000$:
3408 017104 000241          CLC
3409 017106          50001$:
3410 017106 000207          RTS   PC
3411
3412
3413
3414
3415
3416      :+++++
3417      :      DUMMY ROUTINE FOR COMPATIBILITY      +
3418      :      +
3419      :      +
3420      :+++++
3421 017110          ROUTINE INSERR <A>
3422 017110          ENDRTN
3423 017110          INSERR:
3424 017110          50000$:
3425 017110          50001$:
3426 017110 000207          RTS   PC
3427
3428
3429
3430
3431
3432
3433      :+++++
3434      :      THIS ROUTINE COMPUTES CRC-16 AND REQUIRES THREE ARGUMENTS:      +
3435      :      +
```

```

3436      : DATA ADDRESS, DATA SIZE (IN BYTES) AND A WORD LOCATION      +
3437      : FOR THE COMPUTED CRC                                          +
3438      : [3.2.1.2.1, 3.2.1.2.4, 3.2.20.1.2, 3.2.20.3.1,          +
3439      : 3.2.20.6.2, 3.2.20.6.4 AND 3.2.20.10.1]                    +
3440      :                                                                +
3441      : THIS IS A STANDARD ROUTINE FROM DEC'S NETWORK GROUP        +
3442      :                                                                +
3443      : ++++++
3444 017112 ROUTINE CRC <A,B,C>
3445 017112
3446 017112
3447 017112
3448 017112
3449 017112 010446
3450 017114 010604
3451 017116 162706 000004
3452 017122
3453 017122 010146
3454 017124
3455 017124 010246
3456 017126
3457 017126 010346
3458 017130
3459 017130 016501 000000
3460 017134
3461 017134 016502 000002
3462 017140
3463 017140 005003
3464 017142
3465 017142
3466 017142 005702
3467 017144 003500
3468 017146
3469 017146 112164 177776
3470 017152
3471 017152 042764 177400 177776
3472 017160
3473 017160 005302
3474 017162
3475 017162 010346
3476 017164 046416 177776
3477 017170 040364 177776
3478 017174 052664 177776
3479 017200
3480 017200 016464 177776 177774
3481 017206
3482 017206 042764 177760 177776
3483 017214
3484 017214 006364 177776
3485 017220
3486 017220 062764 017366 177776
3487 017226
3488 017226 017464 177776 177776
3489 017234
3490 017234 042764 177417 177774
3491 017242

```

```

CRC:
DECLARE LOCALS
LOCAL<D,E>
ALLOCATE

MOV R4,-(SP)
MOV SP,R4
SUB #4,SP

PUSH R1
MOV R1,-(SP)

PUSH R2
MOV R2,-(SP)

PUSH R3
MOV R3,-(SP)

LET R1 := A(R5)
MOV A(R5),R1

LET R2 := B(R5)
MOV B(R5),R2

LET R3 := #0
CLR R3

WHILE R2 GT #0 DO
50002$:
TST R2
BLE 50003$
MOVB (R1)+,D(R4)
BIC #HYBYTE,D(R4)
DEC R2

MOV R3,-(SP)
BIC D(R4),(SP)
BIC R3,D(R4)
BIS (SP)+,D(R4)

MOV D(R4),E(R4)
BIC #177760,D(R4)
ASL D(R4)
ADD #CRCTAB,D(R4)
MOV @D(R4),D(R4)
BIC #177417,E(R4)

LET D(R4) := B(R1)+
LET D(R4) := D(R4) CLR.BY #HYBYTE
LET R2 := R2 - #1
LET D(R4) := D(R4) XOR R3
LET E(R4) := D(R4)
LET D(R4) := D(R4) CLR.BY #177760
LET D(R4) := D(R4) SHIFT #1
LET D(R4) := D(R4) + #CRCTAB
LET D(R4) := @D(R4)
LET E(R4) := E(R4) CLR.BY #177417
LET E(R4) := E(R4) SHIFT -3

```

3492	017242	006264	177774			ASR	E(R4)
3493	017246	006264	177774			ASR	E(R4)
3494	017252	006264	177774			ASR	E(R4)
3495	017256				LET E(R4) := E(R4) + #CRCTAB		
3496	017256	062764	017366	177774		ADD	#CRCTAB,E(R4)
3497	017264				LET E(R4) := E(R4) + #32.		
3498	017264	062764	000040	177774		ADD	#32.,E(R4)
3499	017272				LET E(R4) := @E(R4)		
3500	017272	017464	177774	177774		MOV	@E(R4),E(R4)
3501	017300				LET D(R4) := D(R4) XOR E(R4)		
3502	017300	016446	177774			MOV	E(R4),-(SP)
3503	017304	046416	177776			BIC	D(R4),(SP)
3504	017310	046464	177774	177776		BIC	E(R4),D(R4)
3505	017316	052664	177776			BIS	(SP)+,D(R4)
3506	017322				LET R3 := R3 CLR.BY #LOBYTE		
3507	017322	042703	000377			BIC	#LOBYTE,R3
3508	017326				LET R3 := SWAP R3		
3509	017326	000303				SWAB	R3
3510	017330				LET R3 := R3 XOR D(R4)		
3511	017330	016446	177776			MOV	D(R4),-(SP)
3512	017334	040316				BIC	R3,(SP)
3513	017336	046403	177776			BIC	D(R4),R3
3514	017342	052603				BIS	(SP)+,R3
3515	017344				ENDDO		
3516	017344	000676				BR	50002\$
3517	017346					50003\$:	
3518	017346				LET C(R5) := R3		
3519	017346	010365	000004			MOV	R3,C(R5)
3520	017352				POP R3		
3521	017352	012603				MOV	(SP)+,R3
3522	017354				POP R2		
3523	017354	012602				MOV	(SP)+,R2
3524	017356				POP R1		
3525	017356	012601				MOV	(SP)+,R1
3526	017360				ENDRTN		
3527	017360					50000\$:	
3528	017360					50001\$:	
3529	017360	010406				MOV	R4,SP
3530	017362	012604				MOV	(SP)+,R4
3531	017364	000207				RTS	PC
3532							
3533	017366	000000			CRCTAB: 000000		
3534	017370	140301			140301		
3535	017372	140601			140601		
3536	017374	000500			000500		
3537	017376	141401			141401		
3538	017400	001700			001700		
3539	017402	001200			001200		
3540	017404	141101			141101		
3541	017406	143001			143001		
3542	017410	003300			003300		
3543	017412	003600			003600		
3544	017414	143501			143501		
3545	017416	002400			002400		
3546	017420	142701			142701		
3547	017422	142201			142201		

3548	017424	002100	002100
3549	017426	000000	000000
3550	017430	146001	146001
3551	017432	154001	154001
3552	017434	012000	012000
3553	017436	170001	170001
3554	017440	036000	036000
3555	017442	024000	024000
3556	017444	162001	162001
3557	017446	120001	120001
3558	017450	066000	066000
3559	017452	074000	074000
3560	017454	132001	132001
3561	017456	050000	050000
3562	017460	116001	116001
3563	017462	104001	104001
3564	017464	042000	042000
3565	017466		ENDMOD

```
3566 017466           BGNMOD TESTS
3567           ..
3568           ..
3569           ..
3570           ..
3571           ..
3572           ..
3573           ..
3574           ..
3575           ..
3576 017466           BGNTST
3577           ..
3578           ..
3579           ..
3580 017466           ..
3581 017466           LET INIT := #0
3582           ..
3583           ..
3584           ..
3585 017472           GET MESSAGE ADDRESS AND SIZE
3586 017472           LET OUTMSG := MDMSG CLR.BY #100001
3587 017500           ..
3588 017506           LET OUTMSG+2 := MDMSG+2
3589 017506           ..
3590           ..
3591           ..
3592           ..
3593 017514           SEND THE MESSAGE
3594 017514           CALL TEROUT
3595           ..
3596           ..
3597           ..
3598 017520           IF ERROR.....
3599 017520           ..
3600           ..
3601           ..
3602           ..
3603           ..
3604           ..
3605 017522           IF.ERROR THEN
3606 017522           ..
3607 017524           INSERT ERROR INTO STATISTICS TABLE (MANUFACTURING VERSIONS ONLY),
3608 017530           REPORT THE ERROR, REQUEST SUPERVISOR TO LOOP
3609 017534           IF LOOPING ENABLED (EXIT TEST IF NO LOOPING)
3610 017536           ..
3611 017536           CALL INSERR IN <#0>
3612 017540           ..
3613 017542           ..
3614 017544           ..
3615 017546           ..
3616 017546           ERRHRD 50,MSG50,AREA40
3617 017550           CKLOOP
3618 017550           EXIT TST
3619 017552           ..
3620 017554           ..
3621 017554           ENDIF
```

CLR	INIT
MOV	MDMSG,OUTMSG
BIC	#100001,OUTMSG
MOV	MDMSG+2,OUTMSG+2
JSR	PC,TEROUT
BCC	50004\$
MOV	R5,-(SP)
MOV	#0,-(R5)
JSR	PC,INSERR
MOV	(SP)+,R5
TRAP	T\$ERCODE
.WORD	50
.WORD	MSG50
.WORD	AREA40
EMT	C\$CLP1
EMT	C\$EXIT
.WORD	L10031-

```
50004$:
```

```

3622
3623      :LOOK FOR ACK
3624      :
3625      017554      CALL TERIN OUT <MCOMP>
3626      017554      162705      000002      SUB      #1*2,R5
3627      017560      004767      174056      JSR      PC,TERIN
3628      017564      012567      000674      MOV      (R5)+,MCOMP
3629
3630      :IF ERROR...INSERT ERROR INTO TABLE (MANUFACTURING TEST ONLY)
3631      :REPORT THE ERROR, REQUEST LOOP IF ENABLED (EXIT TEST
3632      :IF NO LOOPING)
3633      :
3634      017570      IF.ERROR THEN
3635      017570      103015
3636      017572      CALL INSERR IN <#0>      BCC      50005$
3637      017572      010546
3638      017574      012745      000000      MOV      R5,-(SP)
3639      017600      004767      177304      MOV      #0,-(R5)
3640      017604      012605      JSR      PC,INSERR
3641      017606      ERRHRD 50,MSG50,AREA40      MOV      (SP)+,R5
3642      017606      104463      TRAP     T$ERCODE
3643      017610      000062      .WORD   50
3644      017612      003467      .WORD   MSG50
3645      017614      004262      .WORD   AREA40
3646      017616      CKLOOP
3647      017616      104006      EMT      C$CLP1
3648      017620      EXIT TST
3649      017620      104032      EMT      C$EXIT
3650      017622      000342      .WORD   L10031-.
3651      017624      ENDIF
3652      017624
3653
3654      :IF MESSAGE WAS NOT AN ACK...ERROR
3655      :REPORT ERROR, LOOP IF ENABLED, EXIT TEST IF NOT
3656      :
3657      017624      IF MCOMP NE #0 THEN
3658      017624      005767      000634      TST      MCOMP
3659      017630      001407      BEQ      50006$
3660      017632      ERRHRD 50,MSG50,AREA40      TRAP     T$ERCODE
3661      017632      104463      .WORD   50
3662      017634      000062      .WORD   MSG50
3663      017636      003467      .WORD   AREA40
3664      017640      004262      CKLOOP
3665      017642      104006      EMT      C$CLP1
3666      017642      104006      EXIT TST
3667      017644      104032      EMT      C$EXIT
3668      017644      104032      .WORD   L10031-.
3669      017646      000316      ENDIF
3670      017650
3671      017650
3672
3673      :FORCE A RESTART ON THE LINK AND WAIT FOR SELFTST TO COMPLETE
3674      :
3675      017650      LET INIT := #0
3676      017650      005067      175774      CLR      INIT
3677      017654      LET SCRTCH := #0

```

3678	017654	005067	162232			CLR	SCRATCH
3679	017660			REPEAT			
3680	017660				50007\$:		
3681	017660			WAITUS #100			
3682	017660	012700	000100			MOV	#100,R0
3683	017664	104027				EMT	C\$WTU
3684	017666			LET SCRATCH := SCRATCH + #1			
3685	017666	005267	162220			INC	SCRATCH
3686	017672			UNTIL SCRATCH GT STWAIT			
3687	017672	026767	162214	172012		CMP	SCRATCH,STWAIT
3688	017700	003767				BLE	50007\$
3689							
3690				SET UP MESSAGE ASKING FOR RESULTS AND SEND IT			
3691							
3692	017702			LET OUTMSG := MDMSG1 CLR.BY #100001			
3693	017702	016767	000570	162232		MOV	MDMSG1,OUTMSG
3694	017710	042767	100001	162224		BIC	#100001,OUTMSG
3695	017716			LET OUTMSG+2 := MDMSG1+2			
3696	017716	016767	000556	162220		MOV	MDMSG1+2,OUTMSG+
3697	017724			CALL TEROUT			
3698	017724	004767	172630			JSR	PC,TEROUT
3699							
3700				IF ERROR....INSERT ERROR IN TABLE (MANUF. TESTS ONLY), REPORT ERROR,			
3701				LOOP IF ENABLED, EXIT TEST IF NO LOOPING			
3702							
3703	017730			IF.ERROR THEN			
3704	017730	103015				BCC	50010\$
3705	017732			CALL INSERR IN <#0>			
3706	017732	010546				MOV	R5,-(SP)
3707	017734	012745	000000			MOV	#0,-(R5)
3708	017740	004767	177144			JSR	PC,INSERR
3709	017744	012605				MOV	(SP)+,R5
3710	017746			ERRHRD 50,MSG50,AREA40			
3711	017746	104463				TRAP	T\$ERCODE
3712	017750	000062				.WORD	50
3713	017752	003467				.WORD	MSG50
3714	017754	004262				.WORD	AREA40
3715	017756			CKLOOP			
3716	017756	104006		EXIT TST		EMT	C\$CLP1
3717	017760						
3718	017760	104032				EMT	C\$EXIT
3719	017762	000202				.WORD	L10031-
3720	017764			ENDIF			
3721	017764				50010\$:		
3722							
3723				ACK TERMINAL AND GET ITS RESPONSE			
3724							
3725	017764			REPEAT			
3726	017764				50011\$:		
3727							
3728				GET THE RESPONSE			
3729							
3730	017764			CALL TERIN OUT <MCOMP>			
3731	017764	162705	000002			SUB	#1*2,R5
3732	017770	004767	173646			JSR	PC,TERIN
3733	017774	012567	000464			MOV	(R5)+,MCOMP

```

3734
3735      :
3736      :
3737      :
3738      :
3739      :
3740      :
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3773      :
3774      :
3775      :
3776      :
3777      :
3778      :
3779      :
3780      :
3781      :
3782      :
3783      :
3784      :
3785      :
3786      :
3787      :
3788      :
3789      :

```

020000	103015			HANDLE ERROR IF ONE OCCURED.		
020002				IF.ERROR THEN		
020002	010546	000000		CALL INSERR IN <#0>	BCC	50012\$
020004	012745	177074			MOV	R5,-(SP)
020010	004767				MOV	#0,-(R5)
020014	012605				JSR	PC,INSERR
020016				ERRHRD 50,MSG50,APEA40	MOV	(SP)+,R5
020016	104463				TRAP	T\$ERCODE
020020	000062				.WORD	50
020022	003467				.WORD	MSG50
020024	004262				.WORD	AREA40
020026				CKLOOP		
020026	104006			EXIT TST	EMT	C\$CLP1
020030	104032				EMT	C\$EXIT
020032	000132				.WORD	L10031-
020034				ENDIF		
020034				IF MCOMP EQ #0 THEN	50012\$:	
020034	005767	000424			TST	MCOMP
020040	001026				BNE	50013\$
020042				CALL OUTREP		
020042	004767	000120			JSR	PC,OUTREP
				HANDLE ERROR IF ONE OCCURED WHILE ACK'ING		
				IF.ERROR THEN		
020046	103023			CALL INSERR IN <#0>	BCC	50014\$
020050	010546	000000			MOV	R5,-(SP)
020052	012745	177026			MOV	#0,-(R5)
020056	004767				JSR	PC,INSERR
020062	012605				MOV	(SP)+,R5
020064				CALL INSERR IN <#1>		
020064	010546	000001			MOV	R5,-(SP)
020066	012745	177012			MOV	#1,-(R5)
020072	004767				JSR	PC,INSERR
020076	012605				MOV	(SP)+,R5
020100				ERRHRD 50,MSG50,AREA40		
020100	104463				TRAP	T\$ERCODE
020102	000062				.WORD	50
020104	003467				.WORD	MSG50
020106	004262				.WORD	AREA40
020110				CKLOOP		
020110	104006			EXIT TST	EMT	C\$CLP1
020112	104032				EMT	C\$EXIT
020114	000050				.WORD	L10031-
020116				ENDIF		
020116				ENDIF	50014\$:	
020116					50013\$:	

```

3790
3791      :REPEAT THE LOOP UNTIL A MESSAGE IS RECEIVED
3792      :
3793      :      UNTIL MCOMP NE #0
3794      020116      005767      000342
3795      020122      001720
3796
3797      :PROCESS THE MESSAGE RECEIVED
3798      :
3799      :      CALL STINPT
3800      020124      004767      000146
3801
3802      :IF IN ERROR...INSERT ERROR INTO TABLE (MANUF.TESTS ONLY, REPORT
3803      :ERROR, LOOP IF ENABLED, EXIT TEST IF NOT
3804      :
3805      :      IF.ERROR THEN
3806      020130      103015
3807      :      CALL INSERR IN <#1>
3808      020132      010546
3809      020134      012745      000001
3810      020140      004767      176744
3811      020144      012605
3812      :      ERRHRD 50,MSG50,AREA40
3813      020146      104463
3814      020150      000062
3815      020152      003467
3816      020154      004262
3817      020156
3818      :      CKLOOP
3819      :      EXIT TST
3820      020160      104032
3821      020162      000002
3822      :      ENDIF
3823      :
3824      :
3825      :END OF TEST
3826      :
3827      :      ENDTST
3828      :
3829      :      L10031:
3830      :
3831      :
3832      :
3833      :
3834      :
3835      :*****
3836      :ROUTINE TO SEND AND ACK IN ORDER TO POLL A TERMINAL
3837      :
3838      :*****
3839      :ROUTINE OUTREP
3840      020166
3841      020166
3842      :
3843      :
3844      :      INSERT MESSAGE NUMBER (LAST MESSAGE SENT) AND RESPONSE NUMBER
3845      :      (LAST MESSAGE RECEIVED)....INSERT STATION ADDRESS
  
```

TST MCOMP
 BEQ 50011\$

JSR PC,STINPT

BCC 50015\$

MOV R5,-(SP)
 MOV #1,-(R5)
 JSR PC,INSERR
 MOV (SP)+,R5

TRAP T\$ERCODE
 .WORD 50
 .WORD MSG50
 .WORD AREA40

EMT C\$CLP1

EMT C\$EXIT
 .WORD L10031-

50015\$:

L10031:
 EMT C\$SETST

OUTREP:

```

3846 020166          LET MSGN :B= MSGNO
3847 020166 116767 162002 000316          MOVB  MSGNO,MSGN
3848 020174          LET REPN :B= RMSGNO
3849 020174 116767 161776 000307          MOVB  RMSGNO,REPN
3850 020202          LET REPA :B= STRTSA
3851 020202 116767 163467 000303          MOVB  STRTSA,REPA
3852
3853      : COMPUTE AND INSERT CRC
3854      :
3855 020210          CALL CRC IN <#REPM,#6> OUT <REPCRC>
3856 020210 162705 000002          SUB   #1*2,R5
3857 020214 010546          MOV   R5,-(SP)
3858 020216 012745 000006          MOV   #6,-(R5)
3859 020222 012745 020506          MOV   #REPM,-(R5)
3860 020226 004767 176660          JSR   PC,CRC
3861 020232 012605          MOV   (SP)+,R5
3862 020234 012567 000254          MOV   (R5)+,REPCRC
3863
3864      : SET UP BUFFER POINTER AND SIZE AND SEND THE MESSAGE
3865      :
3866 020240          LET XBUFFER := #REPM
3867 020240 012767 020506 175406          MOV   #REPM,XBUFFER
3868 020246          LET XSIZE := #10
3869 020246 012767 000010 175402          MOV   #10,XSIZE
3870 020254          CALL XMIT
3871 020254 004767 174364          JSR   PC,XMIT
3872
3873      : IF AN ERROR OCCURRED, RETURN WITH ERROR. OTHERWISE RETURN NORMALLY
3874      :
3875 020260          IF .ERROR THEN
3876 020260 103004          BCC   50002$
3877 020262          LET OUTERR := OUTERR + #1
3878 020262 005267 161642          INC   OUTERR
3879 020266          RETURN ERROR
3880 020266 000261          SEC
3881 020270 000401          BR   50001$
3882 020272          ENDIF
3883 020272          ENDRTN
3884 020272          50002$:
3885 020272          50000$: CLC
3886 020272 000241          50001$:
3887 020274          RTS   PC
3888 020274 000207
3889
3890
3891
3892
3893
3894      : *****
3895      : ROUTINE TO PROCESS TERMINAL SELFTEST RESULTS
3896      : *****
3897
3898      : ROUTINE STINPT
3899 020276          STINPT:
3900 020276          PUSH R1
3901 020276
  
```

3902	020276	010146			MOV	R1,-(SP)
3903	020300			PUSH R2		
3904	020300	010246			MOV	R2,-(SP)
3905	020302			PUSH R3		
3906	020302	010346			MOV	R3,-(SP)
3907				...		
3908				...SKIP RESPONSE HEADER AND CHECK FIRST DATA BYTE		
3909				...		
3910	020304			LET R1 := INBUF + #4		
3911	020304	016701	161646		MOV	INBUF,R1
3912	020310	062701	000004		ADD	#4,R1
3913				...		
3914				...IF IT IS 'A', GOOD RESPONSE. OTHERWISE...		
3915				...		
3916	020314			IFB (R1) NE #101 THEN		
3917	020314	121127	000101		CMPB	(R1),#101
3918	020320	001454			BEQ	50002\$
3919				...		
3920				...GET THE BYTE AND CHECK TO SEE IF IT IS 'M' (MEMORY ERROR)		
3921				...		
3922	020322			LET R3 :B= (R1)+		
3923	020322	112103			MOVB	(R1)+,R3
3924	020324			IFB R3 EQ #115 THEN		
3925	020324	120327	000115		CMPB	R3,#115
3926	020330	001025			BNE	50003\$
3927				...		
3928				...MEMORY ERROR...GET THE TYPE AND BANK NUMBER		
3929				...INSERT INTO ERROR MESSAGE, REPORT THE ERROR AND		
3930				...RETURN WITH ERROR		
3931				... (NOTE: ERROR REPORTING PROTOCOL DELIMITERS ARE		
3932				... IGNORED. THIS PROGRAM WILL NOT ACCEPT INPUT FROM		
3933				... ANY OTHER INTELLIGENT TERMINAL PROPERLY.)		
3934				...		
3935	020332			LET R1 := R1 + #2		
3936	020332	062701	000002		ADD	#2,R1
3937	020336			LET R2 := #MTY		
3938	020336	012702	003635		MOV	#MTY,R2
3939	020342			LET (R2)+ :B= (R1)+		
3940	020342	112122			MOVB	(R1)+,(R2)+
3941	020344			LET (R2)+ :B= (R1)+		
3942	020344	112122			MOVB	(R1)+,(R2)+
3943	020346			LET R2 := #BNO		
3944	020346	012702	003651		MOV	#BNO,R2
3945	020352			LET R1 := R1 + #1		
3946	020352	005201			INC	R1
3947	020354			LET R3 :B= (R1)		
3948	020354	111103			MOVB	(R1),R3
3949	020356			LET R3 := R3 + #60		
3950	020356	062703	000060		ADD	#60,R3
3951	020362			LET (R2) :B= R3		
3952	020362	110312			MOVB	R3,(R2)
3953	020364			ERRHRD 71,MSG71		
3954	020364	104423			TRAP	T\$ERCODE
3955	020366	000107			.WORD	71
3956	020370	003611			.WORD	MSG71
3957	020372			POP R3		


```
3958 020372 012603                                MOV      (SP)+,R3
3959 020374                                POP R2
3960 020374 012602                                MOV      (SP)+,R2
3961 020376                                POP R1
3962 020376 012601                                MOV      (SP)+,R1
3963 020400                                RETURN ERROR
3964 020400 000261                                SEC
3965 020402 000427                                BR       50001$
3966 020404                                ELSE
3967 020404                                50003$:
3968
3969      :
3970      : NOT A MEMORY ERROR OR PASS...CHECK FOR 'P' (PROCESSOR ERROR)
3971      :
3972      : IFB R3 EQ #120 THEN
3973 020404 120327 000120                                CMPB    R3,#120
3974 020410 001010                                BNE    50005$
3975      :
3976      : PROCESSOR ERROR...REPORT IT AND EXIT WITH ERROR
3977      :
3978      : ERRHRD 72,MSG72
3979      :
3980      : TRAP      T$ERCODE
3981      : .WORD    72
3982      : .WORD    MSG72
3983      : POP R3
3984      : POP R2
3985      : POP R1
3986      : MOV      (SP)+,R3
3987      : MOV      (SP)+,R2
3988      : MOV      (SP)+,R1
3989      : RETURN ERROR
3990      : SEC
3991      : BR       50001$
3992      : ELSE
3993      : 50005$:
3994      : RESPONSE WAS NOT LEGAL...REPORT IT AND RETURN WITH ERROR
3995      :
3996      : ERRHRD 70,MSG70
3997      :
3998      : TRAP      T$ERCODE
3999      : .WORD    70
4000      : .WORD    MSG70
4001      : POP R3
4002      : POP R2
4003      : POP R1
4004      : MOV      (SP)+,R3
4005      : MOV      (SP)+,R2
4006      : MOV      (SP)+,R1
4007      : RETURN ERROR
4008      : SEC
4009      : BR       50001$
4010      : ENDIF
4011      : 50006$:
4012      : ENDIF
4013      : 50004$:
4014      : ENDIF
4015      : 50002$:
```



```

4070 020532 005067 175112
4071 020536
4072 020536 004767 172252
4073
4074
4075
4076
4077 020542
4078 020542 103015
4079 020544
4080 020544 010546
4081 020546 012745 000000
4082 020552 004767 176332
4083 020556 012605
4084 020560
4085 020560 104463
4086 020562 000063
4087 020564 003515
4088 020566 004262
4089 020570
4090 020570 104006
4091 020572
4092 020572 104032
4093 020574 000460
4094 020576
4095 020576
4096
4097
4098
4099 020576
4100 020576 010146
4101 020600
4102 020600 012701 021414
4103 020604
4104 020604 005767 171100
4105 020610 001403
4106 020612
4107 020612 005067 161274
4108 020616
4109 020616 000403
4110 020620
4111 020620
4112 020620 012767 125125 161264
4113 020626
4114 020626
4115 020626
4116 020626
4117 020626
4118 020626 016721 161260
4119 020632
4120 020632 020127 022014
4121 020636 001373
4122
4123
4124
4125 020640

```

```

CALL XSTR
IF ERROR DURING START-UP...INSERT INTO TABLE (MANUF. TESTS ONLY, REPORT
IT, LOOP IF ENABLED--EXIT IF NOT
IF.ERROR THEN
CALL INSERR IN <#0>
ERRHRD 51,MSG51,AREA40
CKLOOP
EXIT TST
ENDIF
50007$:
FILL MESSAGE AREA WITH 256 BYTES OF SELECTED PATTERN
PUSH R1
LET R1 := #LOOPB
IF PATTERN NE #0 THEN
LET SCRTCH := #0
ELSE
LET SCRTCH := #125125
ENDIF
REPEAT
LET (R1)+ := SCRTCH
UNTIL R1 EQ #ELOOPB
50010$:
50011$:
50012$:

```

```

CLR INIT
JSR PC,XSTR
MOV R5,-(SP)
MOV #0,-(R5)
JSR PC,INSERR
MOV (SP)+,R5
TRAP T$ERCODE
.WORD 51
.WORD MSG51
.WORD AREA40
EMT C$CLP1
EMT C$EXIT
.WORD L10032-
MOV R1,-(SP)
MOV #LOOPB,R1
TST PATTERN
BEQ 50010$
CLR SCRTCH
BR 50011$
MOV #125125,SCRTCH
MOV SCRTCH,(R1)+
CMP R1,#ELOOPB
BNE 50012$

```

```

PUT A 1 AT THE END TO ASSURE THAT THE FINAL BYTE IS NOT NULL (0)
LET R1 := #ELOOPB - #1

```



```

4182      ;IF ERROR OCCURRED...INSERT THE ERROR INTO TABLE (MANUF. TESTS ONLY),
4183      ;REPORT THE ERROR, LOOP IF ENABLED
4184      ;
4185      IF.ERROR THEN
4186      021004 103012      CALL INSERR IN <#0>      BCC      50013$
4187      021006      CALL INSERR IN <#0>
4188      021006 010546      MOV      R5,-(SP)
4189      021010 012745 000000      MOV      #0,-(R5)
4190      021014 004767 176070      JSR      PC,INSERR
4191      021020 012605      MOV      (SP)+,R5
4192      021022      ERRHRD 51,MSG51,AREA40
4193      021022 104463      TRAP     T$ERCODE
4194      021024 000063      .WORD   51
4195      021026 003515      .WORD   MSG51
4196      021030 004262      .WORD   AREA40
4197      021032      ENDIF
4198      021032      50013$:
4199      021032      CKLOOP
4200      021032 104006      EMT      C$CLP1
4201      ;
4202      ;SEND ACK'S TO TERMINAL UNTIL IT RESPONDS
4203      ;
4204      021034      REPEAT
4205      021034      50014$:
4206      ;
4207      ;GET RESPONSE
4208      ;
4209      021034      CALL TERIN OUT <LCOMP>
4210      021034 162705 000002      SUB     #1*2,R5
4211      021040 004767 172576      JSR     PC,TERIN
4212      021044 012567 000326      MOV     (R5)+,LCOMP
4213      ;
4214      ;IF ERROR OCCURS...INSERT IN TABLE (MAN. ONLY), REPORT IT, LOOP IF
4215      ;ENABLED, EXIT TEST IF NOT
4216      ;
4217      IF.ERROR THEN
4218      021050 103012      CALL INSERR IN <#0>      BCC      50015$
4219      021052      CALL INSERR IN <#0>
4220      021052 010546      MOV      R5,-(SP)
4221      021054 012745 000000      MOV      #0,-(R5)
4222      021060 004767 176024      JSR      PC,INSERR
4223      021064 012605      MOV      (SP)+,R5
4224      021066      ERRHRD 51,MSG51,AREA40
4225      021066 104463      TRAP     T$ERCODE
4226      021070 000063      .WORD   51
4227      021072 003515      .WORD   MSG51
4228      021074 004262      .WORD   AREA40
4229      021076      ENDIF
4230      021076      50015$:
4231      021076      CKLOOP
4232      021076 104006      EMT      C$CLP1
4233      021100      IF LCOMP EQ #0 THEN
4234      021100 005767 000272      TST     LCOMP
4235      021104 001026      BNE     50016$
4236      021106      CALL OUTREP
4237      021106 004767 177054      JSR     PC,OUTREP

```

```

4238
4239      ; IF AN ERROR OCCURS...INSERT IN TABLE (MAN. ONLY), REPORT IT, LOOP
4240      ; IF ENABLED - EXIT TEST IF NOT
4241      ;
4242      IF.ERROR THEN
4243      021112 103023
4244      021114
4245      021114 010546
4246      021116 012745 000000
4247      021122 004767 175762
4248      021126 012605
4249      021130
4250      021130 010546
4251      021132 012745 000002
4252      021136 004767 175746
4253      021142 012605
4254      021144
4255      021144 104463
4256      021146 000063
4257      021150 003515
4258      021152 004262
4259      021154
4260      021154 104006
4261      021156
4262      021156 104032
4263      021160 000074
4264      021162
4265      021162
4266      021162
4267      021162
4268
4269      ; REPEAT LOOP UNTIL TERMINAL SENDS LOOPBACK DATA
4270      ;
4271      021162
4272      021162 005767 000210
4273      021166 001722
4274
4275      ; PROCESS THE LOOPBACK DATA
4276      ;
4277      021170
4278      021170 004767 000062
4279      021174
4280      021174 104004
4281
4282      ; REINIT THE LINK
4283      ;
4284      021176
4285      021176 005067 174446
4286      021202
4287      021202 004767 171606
4288
4289      ; IF ERROR OCCURS, INSERT ERROR INTO TABLE (MANUF. ONLY), REPORT ERROR,
4290      ; LOOP ON REINIT IF ERROR LOOPING ENABLED...EXIT TEST IF NO LOOPING
4291      ;
4292      021206
4293      021206 103020

```

IF AN ERROR OCCURS...INSERT IN TABLE (MAN. ONLY), REPORT IT, LOOP
IF ENABLED - EXIT TEST IF NOT

IF.ERROR THEN

CALL INSERR IN <#0>

BCC 50017\$
MOV R5,-(SP)
MOV #0,-(R5)
JSR PC,INSERR
MOV (SP)+,R5

CALL INSERR IN <#2>

MOV R5,-(SP)
MOV #2,-(R5)
JSR PC,INSERR
MOV (SP)+,R5

ERRHRD 51,MSG51,AREA40

TRAP T\$ERCODE
.WORD 51
.WORD MSG51
.WORD AREA40

CKLOOP

EMT C\$CLP1

EXIT TST

EMT C\$EXIT
.WORD L10032-

ENDIF

50017\$:

ENDIF

50016\$:

REPEAT LOOP UNTIL TERMINAL SENDS LOOPBACK DATA

UNTIL LCOMP NE #0

TST LCOMP
BEQ 50014\$

PROCESS THE LOOPBACK DATA

CALL PROLOOP

JSR PC,PROLOOP

BGNSEG

EMT C\$BSEG

REINIT THE LINK

LET INIT := #0

CLR INIT

CALL XSTRT

JSR PC,XSTRT

IF ERROR OCCURS, INSERT ERROR INTO TABLE (MANUF. ONLY), REPORT ERROR,
LOOP ON REINIT IF ERROR LOOPING ENABLED...EXIT TEST IF NO LOOPING

IF.ERROR THEN

BCC 50020\$

```

4294 021210          CALL INSERR IN <#0>
4295 021210 010546
4296 021212 012745 000000
4297 021216 004767 175666
4298 021222 012605
4299 021224          CALL INSERR IN <#2>
4300 021224 010546
4301 021226 012745 000002
4302 021232 004767 175652
4303 021236 012605
4304 021240          ERRHRD 51,MSG51,AREA61
4305 021240 104463
4306 021242 000063
4307 021244 003515
4308 021246 005052
4309 021250          ENDIF
4310 021250          CKLOOP
4311 021250          50020$:
4312 021250 104006          EMT      C$CLP1
4313 021252          ENDSEG
4314 021252          10000$:
4315 021252 104005          EMT      C$ESEG
4316
4317          :END OF TEST
4318          :
4319 021254          ENDTST
4320 021254          L10032:
4321 021254 104001          EMT      C$ETST
4322
4323
4324
4325
4326
4327          :
4328          :*****
4329          :ROUTINE TO PROCESS LOOPBACK DATA
4330          :*****
4331          :
4332 021256          ROUTINE PROLOP
4333 021256          FROLOP:
4334 021256          PUSH R1
4335 021256 010146          MOV      R1,-(SP)
4336 021260          PUSH R2
4337 021260 010246          MOV      R2,-(SP)
4338 021262          PUSH R3
4339 021262 010346          MOV      R3,-(SP)
4340
4341          :R1 = POINTER TO EXPECTED DATA
4342          :R2 = COUNT OF DATA EXPECTED
4343          :R3 = POINTER TO DATA FROM TERMINAL
4344          :
4345 021264          LET R1 := #LOOPB
4346 021264 012701 021414          MOV      #LOOPB,R1
4347 021270          LET R2 := #128.
4348 021270 012702 000200          MOV      #128.,R2
4349 021274          LET R3 := INBUF
    
```

```

4350 021274 016703 160656                                MOV     INBUF ,R3
4351
4352      :CHECK DATA BYTE-BY-BYTE...
4353      :
4354 021300      REPEAT
4355 021300                                50002$:
4356
4357      :IF ERROR...INSERT ERROR INTO TABLE (MANUF. ONLY), REPORT ERROR
4358      :(INCLUDING RECEIVED/EXPECTED BYTES), RETURN WITH ERROR
4359      :
4360 021300      IFB (R1) NE (R3) THEN
4361 021300 121113                                CMPB   (R1) ,(R3)
4362 021302 001423                                BEQ    50003$
4363 021304      LET A52A := (R1)
4364 021304 011167 163770                            MOV    (R1) ,A52A
4365 021310      LET A52B := (R3)
4366 021310 011367 163766                            MOV    (R3) ,A52B
4367 021314      CALL INSERR IN <#2>
4368 021314 010546
4369 021316 012745 000002
4370 021322 004767 175562
4371 021326 012605
4372 021330      ERRSOF 52,MSG52,AREA52
4373 021330 104464
4374 021332 000064                                TRAP   T$ERCODE
4375 021334 003543                                .WORD 52
4376 021336 005202                                .WORD MSG52
4377 021340      POP R3                                .WORD AREA52
4378 021340 012603                                MOV    (SP)+ ,R3
4379 021342      POP R2
4380 021342 012602                                MOV    (SP)+ ,R2
4381 021344      POP R1
4382 021344 012601                                MOV    (SP)+ ,R1
4383 021346      RETURN ERROR
4384 021346 000261
4385 021350 000411                                SEC
4386 021352      ENDIF                                BR     50001$
4387 021352                                50003$:
4388
4389      :UPDATE COUNT AND POINTERS
4390      :
4391 021352      LET R1 := R1 + #1
4392 021352 005201                                INC    R1
4393 021354      LET R2 := R2 - #1
4394 021354 005302                                DEC    R2
4395 021356      LET R3 := R3 + #1
4396 021356 005203                                INC    R3
4397
4398      :REPEAT UNTIL ALL DATA HAS BEEN CHECKED
4399      :
4400 021360      UNTIL R2 EQ #0
4401 021360 005702
4402 021362 001346                                TST   R2
4403 021364      POP R3                                BNE   50002$
4404 021364 012603                                MOV    (SP)+ ,R3
4405 021366      POP R2

```


4406 021366 012602
 4407 021370
 4408 021370 012601
 4409 021372
 4410 021372
 4411 021372 000241
 4412 021374
 4413 021374 000207
 4414
 4415
 4416
 4417
 4418 021376 000000
 4419 021400 121405
 4420 021402 000410
 4421 021404 220 000
 4422 021407 000
 4423 021410 000
 4424 021411 000
 4425 021412 000000
 4426 021414 000200
 4427 022014
 4428 022014 000000
 4429
 4430 022016

000

201

```

: LOOPBACK MESSAGE AREA
:
LCOMP: 0
LOOPMG: .+100005
ELOOPB-2-
LOOPH: .BYTE DLE,0,201,0

LOOPN: .BYTE 0
LOOSTA: .BYTE 0
LCRCH: 0
LOOPB: .BLKW 128.
ELOOPB:
LCRCD: 0

ENDMOD

```

```

MOV (SP)+,R2
MOV (SP)+,R1
50000$:
CLC
50001$:
RTS PC

```

```

4431 022016          BGNMOD PTCODE
4432                :
4433                :
4434                :
4435 022016          BGNHRD
4436 022016 000044          .WORD L10033-L$HARD/2
4437 022020          GPRMA  DEVICE,0,0,0,177776,YES
4438 022020 000031          .WORD  T$CODE
4439 022022 022130          .WORD  DEVICE
4440 022024 000000          .WORD  T$LOLIM
4441 022026 177776          .WORD  T$HILIM
4442 022030          GPRMA  VECTOR,2,0,0,400,YES
4443 022030 001031          .WORD  T$CODE
4444 022032 022145          .WORD  VECTOR
4445 022034 000000          .WORD  T$LOLIM
4446 022036 000400          .WORD  T$HILIM
4447 022040          GPRMD  PRIOR,4,0,340,0,7,YES
4448 022040 002032          .WORD  T$CODE
4449 022042 022161          .WORD  PRIOR
4450 022044 000340          .WORD  340
4451 022046 000000          .WORD  T$LOLIM
4452 022050 000007          .WORD  T$HILIM
4453 022052          GPRMD  STATION,4,0,177400,0,377,YES
4454 022052 002032          .WORD  T$CODE
4455 022054 022203          .WORD  STATION
4456 022056 177400          .WORD  177400
4457 022060 000000          .WORD  T$LOLIM
4458 022062 000377          .WORD  T$HILIM
4459 022064          GPRMD  LINE,6,0,7,0,7,YES
4460 022064 003032          .WORD  T$CODE
4461 022066 022226          .WORD  LINE
4462 022070 000007          .WORD  7
4463 022072 000000          .WORD  T$LOLIM
4464 022074 000007          .WORD  T$HILIM
4465 022076          GPRMD  BAUD,6,0,7400,0,17,YES
4466 022076 003032          .WORD  T$CODE
4467 022100 022244          .WORD  BAUD
4468 022102 007400          .WORD  7400
4469 022104 000000          .WORD  T$LOLIM
4470 022106 000017          .WORD  T$HILIM
4471 022110          GPRMD  FLAGZ,6,0,70,0,7,YES
4472 022110 003032          .WORD  T$CODE
4473 022112 022260          .WORD  FLAGZ
4474 022114 000070          .WORD  70
4475 022116 000000          .WORD  T$LOLIM
4476 022120 000007          .WORD  T$HILIM
4477 022122          GPRML  NMODEM,10,177777,YES
4478 022122 004130          .WORD  T$CODE
4479 022124 022324          .WORD  NMODEM
4480 022126 177777          .WORD  177777
4481 022130          ENDHRD
4482                :
4483 022130          .EVEN
4484                :
4485 022130 055104 040440 042104 DEVICE: .ASCIZ /DZ ADDRESS: /
4486 022136 042522 051523 020072

```

L10033:

```

4487 022144 000
4488 022145 104 020132 042526 VECTOR: .ASCIZ /DZ VECTOR: /
4489 022152 052103 051117 020072
4490 022160 000
4491 022161 104 020132 052502 PRIOR: .ASCIZ /DZ BUS PRIORITY: /
4492 022166 020123 051120 047511
4493 022174 044522 054524 020072
4494 022202 000
4495 022203 124 051105 044515 STATION:.ASCIZ /TERMINAL ADDRESS: /
4496 022210 040516 020114 042101
4497 022216 051104 051505 035123
4498 022224 000040
4499 022226 044514 042516 047040 LINE: .ASCIZ /LINE NUMBER: /
4500 022234 046525 042502 035122
4501 022242 000040
4502 022244 040502 042125 051040 BAUD: .ASCIZ 7BAUD RATE: /
4503 022252 052101 035105 000040

```

```

:BAUD RATE SELECTION:
:      TYPE      TO GET  BAUD RATE

```

```

:BAUD RATE SELECTION:
:      TYPE      TO GET  THIS RATE
:0
:1
:2
:3
:4
:5
:6
:7
:10
:11
:12
:13
:14
:15
:16
:17

```

```

4526
4527 022260 052123 050117 041440 FLAGZ: .ASCIZ @STOP CODE/CHAR. LENGTH (SEE DOC.): @
4528 022266 042117 027505 044103
4529 022274 051101 020056 042514
4530 022302 043516 044124 024040
4531 022310 042523 020105 047504
4532 022316 027103 035051 000040

```

```

:ALLOWABLE RESPONSES:
:0 = 1 STOP BIT - 5 BIT CHAR.
:1 = .. - 6 ..
:2 = .. - 7 ..
:3 = .. - 8 ..
:4 = 2 STOP BIT - 5 ..
:5 = .. - 6 ..
:6 = .. - 7 ..
:7 = .. - 8 ..

```

```

4533
4534
4535
4536
4537
4538
4539
4540
4541
4542

```

```
4543
4544 022324 051525 047111 020107 ;MODEM: .ASCIZ /USING A NULL MODEM? /
4545 022332 020101 052516 046114
4546 022340 046440 042117 046505
4547 022346 020077 000
4548 022352 .EVEN
4549
4550
4551
4552
4553 022352 BGNSFT
4554 022352 000015 .WORD L10034-L$SOFT/2
4555 022354 GPRMD ALIMIT,0,0,177777,0,77777,YES
4556 022354 000032 .WORD T$CODE
4557 022356 022406 .WORD ALIMIT
4558 022360 177777 .WORD 177777
4559 022362 000000 .WORD T$LOLIM
4560 022364 077777 .WORD T$HILIM
4561 022366 GPRML PATTRN,2,177777,YES
4562 022366 001130 .WORD T$CODE
4563 022370 022455 .WORD PATTRN
4564 022372 177777 .WORD 177777
4565 022374 GPRMD SWAIT,4,0,177777,0,77777,YES
4566 022374 002032 .WORD T$CODE
4567 022376 022520 .WORD SWAIT
4568 022400 177777 .WORD 177777
4569 022402 000000 .WORD T$LOLIM
4570 022404 077777 .WORD T$HILIM
4571 022406 ENDSFT
4572 .EVEN
4573 022406 L10034:
4574 022406 047510 020127 040515 ALIMIT: .ASCIZ /HOW MANY INITIATE TRIES BEFORE ABORT? /
4575 022414 054516 044440 044516
4576 022422 044524 052101 020105
4577 022430 051124 042511 020123
4578 022436 042502 047506 042522
4579 022444 040440 047502 052122
4580 022452 020077 000
4581 022455 125 042523 040440 PATTRN: .ASCIZ /USE ALL ZERO'S FOR LOOPBACK DATA? /
4582 022462 046114 055040 051105
4583 022470 023517 020123 047506
4584 022476 020122 047514 050117
4585 022504 040502 045503 042040
4586 022512 052101 037501 000040
4587 022520 040527 052111 043040 SWAIT: .ASCIZ @WAIT FACTOR FOR SELFTEST (20000 = 11/70 - 4000 = 11/10)?@
4588 022526 041501 047524 020122
4589 022534 047506 020122 042523
4590 022542 043114 042524 052123
4591 022550 024040 030062 030060
4592 022556 020060 020075 030461
4593 022564 033457 020060 020055
4594 022572 030064 030060 036440
4595 022600 030440 027461 030061
4596 022606 037451 000
4597 022612 .EVEN
4598 022612 ENDMOD
```

4599 022612
4600
4601 022612
4602

LASTAD

.EVEN

L\$LAST::
.REQ DOCTOR.P11[400,1066]

4603
 4604 053406 000000
 053410 000000
 053412 000000
 053414 000000
 053420
 000200

.SBTTL DIAGNOSTIC SUPERVISOR -- LOW CORE SET UP
 .WORD 0 ;SPACE FOR USER POOL POINTER
 .WORD 0 ;SIZE
 .WORD 0 ;CHECKSUM (NOT CURRENTLY USED)
 .WORD 0 ;SIZE OF H.W. PTAB. ALLOCATION
 END.SUPV=+.+2
 .END 200

L\$CO	002032	G	699#		
L\$DEPO	002011	G	690#		
L\$DESC	002102	G	720#		
L\$DEVP	002064	G	713#		
L\$DISP	011716	G	702	1320#	
L\$DR	002250	G	715	816#	
L\$DRCT	002070	G	715#		
L\$DRS	002072	G	716#		
L\$DRST	002254	G	716	818#	
L\$DTP	002040	G	702#		
L\$DU	011726	G	718	1339#	
L\$DUT	002076	G	718#		
L\$DVTY	002234	G	713	811#	
L\$EF	002056	G	710#		
L\$EFLG	002034	G	700#		
L\$EXP1	002042	G	703#		
L\$EXP2	002044	G	704#		
L\$EXP3	002046	G	705#		
L\$HARD	022020	G	693	4436	4437#
L\$HPCP	002016	G	693#		
L\$HPTP	002022	G	695#		
L\$HW	011672	G	695	1299	1300#
L\$IICP	002104	G	721#		
L\$INIT	011730	G	721	1347#	
L\$LADP	002026	G	697#		
L\$LAST	022612	G	697	4601#	
L\$MREV	002050	G	706#		
L\$NAME	002000	G	681#		
L\$REPP	002066	G	714#		
L\$REV	002010	G	689#		
L\$RPT	011722	G	714	1329#	
L\$SOFT	022354	G	694	4554	4555#
L\$SPC	002062	G	712#		
L\$SPCP	002020	G	694#		
L\$SPTP	002024	G	696#		
L\$STA	002030	G	698#		
L\$SW	011706	G	696	1308	1309#
L\$TIML	002014	G	692#		
L\$TIMU	002054	G	709#		
L\$TIM1	002052	G	708#		
L\$TSTI	002100	G	719#		
L\$UNIT	002012	G	691#	1388	1459
L.CLK.	027210		4604#		
L10000	003724		992#		
L10001	003760		1003#		
L10002	004012		1016#		
L10003	004114		1039#		
L10004	004146		1054#		
L10005	004250		1076#		
L10006	004256		1082#		
L10007	004260		1086#		
L10010	004352		1116#		
L10011	004500		1141#		
L10012	004664		1187#		
L10013	005014		1212#		
L10014	005142		1246#		

PATRN	022455	4563	4581#														
PRINTC	043416	4604#															
PRINTF	046724	4604#															
PRIOR	022161	4449	4491#														
PRNTST	043306	4604#															
PROBUF	013350	1733	1981#														
PROLOP	021256	4278	4333#														
PRO.CM	027556	4604#*															
PTABLE	002200	793#	1477	1493	1533	1806	2031	2413	2528	2619	2694	2758	2773	2780			
		4134															
PTAB.S	023076	4604#*															
PTCODE	022016	4432#															
PTEND	002212	798#	1487														
PUTCHR	042122	4604#															
PWR.FA	053246	4604#															
PWR.FL	022702	4604#*															
PWR.MS	053374	4604#															
PWR.SA	053370	4604#*															
PWR.UP	053372	4604#*															
P.CLK.	027216	4604#															
RBQUE	015710	1426*	1428	2872#	3036	3044*	3046	3049*	3089	3097*	3099	3102*					
RBQUEB	015716	1438	2875#	3046	3099												
RBQUET	015712	1426	2873#	3049	3102												
RCVADD	015640	2808*	2809*	2849#	2995	3372											
RCVBUF=	000002	746#	1164	2534*	2625*	2731*	2767*	3381*									
RCVCSR=	000000	745#	1157	1537*	2532*	2623*	2699*	2703	2729*	2824*	2826*	2828*	2946*	3379*			
RCVE	016630	1845	2125	3275#													
RDONE	015156	1134	2504*	2660#	3003*	3235*	3297	3318	3342*	3355*							
READ.P	050306	4604#															
REGBAC	052776	4604#															
REGSAV	052762	4604#															
RENABL=	010000	756#															
REP =	000003	736#															
REPA	020513	3851*	4048#														
REPCRC	020514	3862*	4049#														
REPM	020506	3859	3867	4045#													
REPNI	020511	3849*	4046#														
REQN.P	022666	4604#*															
REQN.T	027560	4604#*															
REXIT	016626	3008	3256#														
RE.SET	024350	4604#															
RINT	016066	2784	2980#														
RMSGNO	002176	792#	1688*	2019	2175*	2302*	3849										
RQUE	015672	1422*	1424	2865#	3038*	3055*	3057*	3059*	3061*	3064*	3091*	3106*	3192*	3194*			
		3205*	3207	3210*													
RQUEB	015706	2871#	3061	3207	3332												
RQUET	015674	1422	2866#	3064	3210	3335											
RQUEUE	015670	1424*	2864#	3324	3326*	3328	3330*	3332	3335*								
RSTACK	052236	4604#															
RTEMP1	015662	2858#	3036*	3038	3040*	3042*	3089*	3091	3093*	3095*	3140*	3153	3157*	3176			
		3178*	3226*														
RTEMP2	015664	2859#	3053*	3153*	3155*	3184*	3192	3200*	3228*	3232							
RXINTE=	000100	753#	2828														
R5STCK	002110	763#	1369*														
SAVEDO=	024546	4604#															
SCRTCH	002112	764#	1031	1430*	1434	1436*	1450*	1481	1485*	1588*	1589	1591*	1593	1644*			

		1645	1647*	1649	1697*	1698*	1700	1929*	1930*	1941	2039*	2040*	2050	2063*
		2073	2366*	2368*	2372*	2377	2413*	2414*	2416*	2418*	2431	2453	2709*	2711*
		2713	2724	3678*	3685*	3687	4107*	4112*	4118					
SEARCH	044244	4604#												
SEGSTA	023112 G	4604#*												
SET.MA	027770	4604#												
SHIFT	053074 G	4604#												
SOH =	000201	733#	1996	3079										
SPEC.U	027504	4604#*												
SPV.SE	000400	4604#												
SSTACK	011670	1291#	1367											
STACK =	000007	739#	1864											
STARTC	051764 G	4604#												
STATIO	022203	4455	4495#											
STIME	002122	768#												
STINPT	020276	3800	3900#											
STRCHR	042776	4604#												
STRT =	000006	738#	973											
STRTB	003670	972#	1801											
STRTC	003676	978#	1821*											
STR TSA	003675	977#	1809*	2231	3851									
STRT.T	027562	4604#*												
STWAIT	011712	1311#	3687											
ST.SET	024414	4604#												
SUNIT.	027566	4604#*												
SUPERV	025450	4604#												
SUPFLA	023056 G	4604#*												
SUPV.T	023230 G	4604#*												
SUP.PR	024166	4604#												
SVCGBL=	000000	673#	680	681	689	690	691	692	693	694	695	696	697	698
		699	700	701	702	703	704	705	706	708	709	710	712	713
		714	715	716	717	718	719	720	721	722	725	811	816	818
		984	1002	1007	1029	1043	1067	1081	1085	1089	1133	1151	1205	1221
		1255	1277	1282	1295	1300	1309	1320	1324	1329	1334	1339	1347	1527
		1553	2880	2980	3567	4432	4437	4555	4601#	4602				
SVCHAN	032104	4604#												
SVCINS=	000001	573#	674#	681	682	683	684	685	686	687	688	689	690	691
		692	693	694	695	696	697	698	699	700	701	702	703	704
		705	706	707	708	709	710	711	712	713	714	715	716	717
		718	719	720	721	722	811	813	815	816	817	818	985	986
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	2153	2213	2233	2281	2341	2379	2395	2433	2569	2594	2610	2726
	2892	2901	2923	3002	3016	3023	3025	3031	3048	3063	3081	3147
	3169	3209	3234	3311	3320	3334	3468	3660	3759	3919	3927	4106
	4236	4363										
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	2328	2472	2490	2653	2679	2839	3276	3407	3423	3424	3446	3842
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	2341	2379	2395	2433	2569	2594	2610	2720	2726	2892	2901	3002
	3016	3025	3031	3048	3063	3084	3101	3147	3169	3209	3234	3311
	3334	3660	3759	3919	3927	3974	4106	4236	4363			
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	3516											
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	1368	1370	1371	1384	1387	1388	1392	1393	1395	1397	1405	1409
	1416	1418	1423	1425	1427	1429	1431	1435	1437	1447	1455	1459
	1463	1464	1467	1468	1478	1482	1484	1486	1495	1497	1499	1503
	1534	1536	1538	1545	1583	1592	1593	1597	1599	1600	1601	1612
	1616	1620	1621	1628	1630	1632	1637	1639	1648	1649	1651	1674
	1679	1684	1687	1689	1690	1696	1699	1701	1704	1706	1721	1743
	1752	1800	1802	1808	1810	1831	1840	1850	1859	1865	1874	1920
	1925	1931	1936	1941	1943	1950	1952	1954	1956	1958	1992	2002
	2004	2006	2008	2013	2015	2020	2025	2027	2033	2035	2041	2059
	2064	2066	2083	2085	2087	2089	2095	2098	2130	2145	2151	2157
	2163	2170	2174	2176	2181	2200	2202	2204	2206	2211	2224	2244
	2250	2252	2266	2268	2270	2272	2274	2279	2292	2298	2301	2339
	2350	2365	2367	2369	2371	2373	2377	2385	2387	2389	2393	2399
	2411	2415	2417	2419	2422	2424	2426	2431	2442	2444	2450	2456
	2465	2467	2501	2503	2505	2519	2529	2531	2533	2535	2537	2553

2557	2561	2562	2567	2576	2578	2579	2592	2608	2620	2622	2624	2626	
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3010	3013	3014	3021	3023	3029	3037	3039	3041	3043	3045	3046	3050	
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3092	3094	3096	3098	3099	3103	3104	3107	3109	3110	3118	3119	3121	
3128	3129	3134	3141	3145	3154	3156	3158	3160	3161	3167	3177	3179	
3181	3183	3185	3193	3195	3201	3206	3207	3211	3212	3215	3219	3227	
3229	3232	3236	3243	3244	3246	3248	3250	3281	3291	3305	3309	3317	
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3924	3925	3937	3939	3941	3943	3945	3947	3949	3951	3953	3967	3972	
3991	4009	4011	4013	4062	4064	4066	4071	4078	4095	4103	4104	4108	
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4198	4218	4230	4234	4243	4265	4267	4286	4293	4310	4347	4349	4351	
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	1690#	1743#	1752#	1831#	1840#	1850#	1859#	1874#	1883#	2130#	2145#	2151#	2163#
	2170#	2181#	2211#	2224#	2231#	2244#	2279#	2292#	2339#	2377#	2393#	2431#	2442#
	2444#	2465#	2467#	2519#	2562#	2567#	2579#	2592#	2608#	2643#	2651#	2718#	2724#
	2749#	2751#	2890#	2899#	2921#	2948#	2950#	2964#	3000#	3010#	3014#	3021#	3029#
	3046#	3051#	3061#	3066#	3079#	3099#	3104#	3119#	3121#	3129#	3145#	3167#	3207#
	3212#	3232#	3244#	3246#	3248#	3250#	3309#	3318#	3332#	3337#	3360#	3405#	3599#
	3621#	3635#	3652#	3658#	3671#	3704#	3721#	3738#	3755#	3757#	3765#	3787#	3789#
	3806#	3823#	3876#	3883#	3917#	3925#	3972#	4009#	4011#	4013#	4078#	4095#	4104#
\$ISK0 = 000001	4114#	4186#	4198#	4218#	4230#	4234#	4243#	4265#	4267#	4293#	4310#	4361#	4387#
	1094#	1099	1230#	1235	1362#	1397	1405#	1409	1455#	1468	1593#	1600	1606#
	1621	1649#	1654	1674#	1690	1743#	1752	1831#	1840	1850#	1859	1874#	1883
	2130#	2145	2151#	2181	2211#	2224	2231#	2244	2279#	2292	2339#	2467	2519#
	2562	2567#	2579	2592#	2651	2718#	2751	2890#	2964	3000#	3010	3014#	3250
	3309#	3405	3599#	3621	3635#	3652	3658#	3671	3704#	3721	3738#	3755	3757#
	3789	3806#	3823	3876#	3883	3917#	4013	4078#	4095	4104#	4114	4186#	4198
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	1384#	1395	1459#	1464	1679#	1684	2163#	2170	2377#	2465	2608#	2643	2724#
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	4243#	4265											
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	1786	1831	1838	1840	1850	1857	1859	1874	1881	1883	1888	1890	1907
	1940	1942	1944	1959	1960	1965	1966	1981	2103	2104	2115	2130	2143
	2145	2152	2163	2168	2170	2179	2181	2212	2222	2224	2232	2242	2244

2280	2290	2292	2306	2308	2327	2340	2348	2350	2378	2394	2406	2411
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2519	2557	2558	2562	2568	2579	2586	2593	2598	2603	2609	2641	2643
2645	2646	2649	2651	2653	2655	2678	2701	2704	2719	2725	2747	2749
2751	2839	2841	2891	2900	2918	2919	2922	2931	2932	2948	2950	2957
2958	2964	3001	3010	3015	3022	3024	3030	3047	3051	3062	3066	3073
3074	3080	3082	3083	3100	3104	3110	3111	3119	3121	3129	3134	3135
3146	3161	3162	3168	3208	3212	3219	3220	3233	3244	3246	3248	3250
3275	3285	3296	3298	3299	3310	3319	3333	3337	3344	3345	3358	3360
3362	3363	3403	3405	3407	3409	3422	3424	3425	3445	3465	3467	3516
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3726	3738	3755	3758	3765	3787	3789	3795	3806	3823	3841	3876	3881
3883	3885	3887	3900	3918	3926	3965	3967	3973	3989	3991	4007	4009
4011	4013	4021	4023	4078	4095	4105	4109	4110	4114	4116	4121	4186
4198	4205	4218	4230	4235	4243	4265	4267	4273	4293	4310	4333	4355
4362	4385	4387	4402	4410	4412							
674#	1092	1094	1095	1097	1101	1153	1155	1185	1228	1230	1231	1233
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1493	1494	1496	1498	1500	1502	1507	1531	1533	1535	1537	1539	1544
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1935	1941	1942	1943	1944	1949	1951	1953	1955	1957	1959	1967	1968
1969	1983	1985	1990	1991	1996	2001	2003	2005	2007	2012	2014	2019
2024	2026	2031	2032	2034	2039	2040	2042	2047	2048	2049	2050	2051
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2130	2140	2142	2143	2151	2152	2154	2156	2158	2159	2160	2161	2163
2165	2167	2168	2172	2173	2175	2177	2179	2187	2188	2189	2190	2191
2192	2193	2198	2199	2201	2203	2205	2211	2212	2219	2221	2222	2231
2232	2239	2241	2242	2249	2251	2253	2254	2255	2256	2257	2258	2259
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2378	2383	2384	2386	2388	2393	2394	2396	2398	2405	2406	2413	2414
2416	2418	2420	2421	2423	2425	2431	2432	2439	2440	2450	2453	2455
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2519	2521	2523	2528	2530	2532	2534	2536	2538	2540	2542	2552	2557
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\$LSTIN= 000001

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3772	3773	3774	3775	3794	3795	3800	3806	3808	3809	3810	3811	3847
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4157	4158	4159	4160	4165	4166	4167	4168	4169	4170	4171	4176	4178
4180	4186	4188	4189	4190	4191	4210	4211	4212	4218	4220	4221	4222
4223	4234	4235	4237	4243	4245	4246	4247	4248	4250	4251	4252	4253
4272	4273	4278	4285	4287	4293	4295	4296	4297	4298	4300	4301	4302
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4370	4371	4378	4380	4382	4384	4385	4392	4394	4396	4401	4402	4404
4406	4408	4411	4413									
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1771	1773	1786	1840	1859	1883	1888	1890	1907	1940	1960	1965	1966
1981	2103	2104	2115	2145	2170	2181	2224	2244	2292	2306	2308	2327
2350	2411	2442	2444	2451	2465	2467	2472	2474	2489	2509	2558	2562
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2919	2932	2948	2950	2958	2964	3010	3051	3066	3074	3083	3104	3111
3119	3121	3129	3135	3162	3212	3220	3244	3246	3248	3250	3275	3285
3299	3337	3345	3360	3363	3405	3407	3409	3422	3424	3425	3445	3465
3517	3527	3528	3621	3652	3671	3680	3721	3726	3755	3787	3789	3823
3841	3883	3885	3887	3900	3967	3991	4009	4011	4013	4021	4023	4095
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4412												
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1409#	1432#	1438#	1444#	1455#	1459#	1464#	1468#	1470#	1479#	1487#	1571#	1593#
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\$LSTTA= 000001

\$NESTL= 177777

\$NSKO = 000300

3405#	3407#	3423#	3424#	3446#	3465#	3516#	3527#	3599#	3621#	3635#	3652#	3658#
3671#	3680#	3687#	3704#	3721#	3726#	3738#	3755#	3757#	3765#	3787#	3789#	3794#
3806#	3823#	3842#	3876#	3883#	3885#	3901#	3917#	3925#	3967	3972#	3991	4009#
4011#	4013#	4021#	4078#	4095#	4104#	4109	4114#	4116#	4120#	4186#	4198#	4205#
4218#	4230#	4234#	4243#	4265#	4267#	4272#	4293#	4310#	4334#	4355#	4361#	4387#
4401#	4410#											
1094#	1099	1230#	1235	1362#	1371	1397	1405#	1409	1432#	1438	1444#	1470
1479#	1487	1571#	1656	1673#	1771	1787#	1888	1908#	1965	1982#	2103	2116#
2306	2328#	2472	2490#	2653	2679#	2839	2890#	2957	2964	3000#	3010	3014#
3134	3250	3276#	3407	3423#	3424	3446#	3527	3599#	3621	3635#	3652	3658#
3671	3680#	3687	3704#	3721	3726#	3794	3806#	3823	3842#	3885	3901#	4021
4078#	4095	4104#	4109	4114	4116#	4120	4186#	4198	4205#	4272	4293#	4310
4334#	4410											

\$NSK1 = 000130

1384#	1395	1455#	1468	1593#	1600	1606#	1616	1621	1649#	1654	1674#	1690
1720#	1765	1831#	1840	1850#	1859	1874#	1883	1940#	1959	2130#	2145	2151#
2181	2211#	2224	2231#	2244	2279#	2292	2339#	2350	2467	2509#	2585	2592#
2645	2651	2701#	2703	2718#	2751	2899#	2918	2950	3021#	3129	3145#	3161
3248	3285#	3295	3309#	3362	3405	3465#	3516	3738#	3755	3757#	3789	3876#

\$NSK2 = 000110

3883	3917#	4013	4218#	4230	4234#	4267	4355#	4401				
1388#	1393	1459#	1464	1679#	1684	1743#	1752	2163#	2170	2377#	2450	2465
2519#	2557	2562	2567#	2579	2598#	2602	2608#	2643	2724#	2749	2921#	2931
2948	3029#	3073	3121	3167#	3219	3246	3318#	3344	3360	3765#	3787	3925#

\$NSK3 = 000110

3967	4011	4243#	4265	4361#	4387							
2393#	2411	2444	3046#	3051	3061#	3066	3079#	3110	3119	3207#	3212	3232#
3244	3332#	3337	3972#	3991	4009							

\$NSK4 = 000110

\$SAVLE= 177777

\$SAV2 053140 G

\$SAV3 053154 G

\$SAV4 053172 G

\$SAV5 053212 G

\$SSKO = 050003

\$TAGLE= 177777

674#	1766	1959#	1960	3516#	3517							
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1600#	1409#	1433#	1438#	1445#	1456#	1461#	1464#	1468#	1470#	1480#	1487#	1595#
1744#	1608#	1617#	1618#	1621#	1651#	1654#	1676#	1680#	1684#	1690#	1721#	1725#
2145#	1752#	1765#	1832#	1840#	1851#	1859#	1875#	1883#	1941#	1945#	1959#	2131#
2351#	2153#	2164#	2170#	2181#	2213#	2224#	2233#	2244#	2281#	2292#	2341#	2350#
2520#	2379#	2395#	2411#	2412#	2433#	2442#	2444#	2451#	2452#	2465#	2467#	2510#
2647#	2558#	2559#	2562#	2569#	2579#	2585#	2594#	2599#	2602#	2610#	2643#	2646#
2932#	2651#	2702#	2703#	2720#	2726#	2749#	2751#	2892#	2901#	2919#	2920#	2923#
3051#	2933#	2948#	2950#	2958#	2959#	2964#	3002#	3010#	3016#	3025#	3031#	3048#
3135#	3063#	3066#	3074#	3075#	3084#	3101#	3104#	3111#	3112#	3119#	3121#	3129#
3248#	3136#	3147#	3162#	3163#	3169#	3209#	3212#	3220#	3221#	3234#	3244#	3246#
3405#	3250#	3286#	3295#	3311#	3320#	3334#	3337#	3345#	3346#	3360#	3363#	3364#
3721#	3466#	3468#	3516#	3600#	3621#	3636#	3652#	3660#	3671#	3681#	3687#	3705#
3919#	3727#	3739#	3755#	3759#	3766#	3787#	3789#	3794#	3807#	3823#	3877#	3883#
4110#	3927#	3967#	3968#	3974#	3991#	3992#	4009#	4011#	4013#	4079#	4095#	4106#
4267#	4111#	4114#	4117#	4120#	4187#	4198#	4206#	4219#	4230#	4236#	4244#	4265#

\$TAGNU= 050004

674#	1095	1096#	1231	1232#	1362	1363#	1371	1373#	1384	1385#	1389	1390#
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1571#	1594	1595#	1607	1608#	1616	1618#	1650	1651#	1672#	1673#	1675	1676#
1679	1680#	1720	1721#	1722	1724	1725#	1743	1744#	1786#	1787#	1831	1832#
1850	1851#	1874	1875#	1907#	1908#	1940	1941#	1942	1944	1945#	1981#	1982#
2115#	2116#	2130	2131#	2152	2153#	2163	2164#	2212	2213#	2232	2233#	2280
2281#	2327#	2328#	2340	2341#	2351#	2378	2379#	2394	2395#	2412#	2432	2433#

\$TEMP = 000300

2450	2452#	2489#	2490#	2509	2510#	2519	2520#	2557	2559#	2568	2569#	2593
2594#	2598	2599#	2609	2610#	2645	2647#	2678#	2679#	2701	2702#	2719	2720#
2725	2726#	2891	2892#	2900	2901#	2918	2920#	2922	2923#	2931	2933#	2957
2959#	3001	3002#	3015	3016#	3022	3024	3025#	3030	3031#	3047	3048#	3062
3063#	3073	3075#	3080	3082	3083	3084#	3100	3101#	3110	3112#	3134	3136#
3146	3147#	3161	3163#	3168	3169#	3208	3209#	3219	3221#	3233	3234#	3275#
3276#	3285	3286#	3296	3299	3300#	3310	3311#	3319	3320#	3333	3334#	3344
3346#	3362	3364#	3422#	3423#	3445#	3446#	3465	3466#	3467	3468#	3599	3600#
3635	3636#	3659	3660#	3680	3681#	3704	3705#	3726	3727#	3738	3739#	3758
3759#	3765	3766#	3806	3807#	3841#	3842#	3876	3877#	3900#	3901#	3918	3919#
3926	3927#	3968#	3973	3974#	3992#	4078	4079#	4105	4106#	4109	4111#	4116
4117#	4186	4187#	4205	4206#	4218	4219#	4235	4236#	4243	4244#	4293	4294#
4333#	4334#	4355	4356#	4362	4363#							
1092#	1093#	1097#	1098#	1099#	1101#	1102#	1155#	1156#	1228#	1229#	1233#	1234#
1235#	1237#	1238#	1367#	1368#	1369#	1370#	1371#	1372#	1386#	1387#	1391#	1392#
1393#	1395#	1397#	1407#	1408#	1409#	1415#	1416#	1417#	1418#	1422#	1423#	1424#
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1478#	1481#	1482#	1483#	1484#	1485#	1486#	1487#	1488	1493#	1495#	1496#	1497#
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1612#	1616#	1617#	1619#	1620#	1621#	1627#	1628#	1629#	1630#	1631#	1632#	1636#
1637#	1638#	1639#	1644#	1648#	1652#	1653#	1654#	1656#	1684#	1686#	1687#	1688#
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1765#	1766#	1771#	1799#	1800#	1801#	1802#	1806#	1808#	1809#	1810#	1840#	1859#
1864#	1865#	1883#	1888#	1918#	1920#	1924#	1925#	1929#	1931#	1935#	1936#	1949#
1950#	1951#	1952#	1953#	1954#	1955#	1956#	1957#	1958#	1959#	1960#	1965#	1990#
1992#	1996#	1997#	2001#	2002#	2003#	2004#	2005#	2006#	2007#	2008#	2012#	2013#
2014#	2015#	2019#	2020#	2024#	2025#	2026#	2027#	2031#	2033#	2034#	2035#	2039#
2041#	2042#	2043#	2058#	2059#	2063#	2064#	2065#	2066#	2081#	2083#	2084#	2085#
2086#	2087#	2088#	2089#	2093#	2095#	2096#	2098#	2103#	2145#	2154#	2155#	2156#
2157#	2170#	2172#	2174#	2175#	2176#	2181#	2198#	2200#	2201#	2202#	2203#	2204#
2205#	2206#	2224#	2244#	2249#	2250#	2251#	2252#	2264#	2266#	2267#	2268#	2269#
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2529#	2530#	2531#	2532#	2533#	2534#	2535#	2536#	2537#	2538#	2539#	2552#	2553#
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2807#	2808#	2810#	2814#	2815#	2816#	2817#	2822#	2823#	2824#	2825#	2826#	2827#
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2964#	2995#	2996#	3003#	3004#	3005#	3006#	3010#	3012#	3013#	3036#	3037#	3038#
3039#	3040#	3041#	3042#	3043#	3044#	3045#	3049#	3050#	3051#	3053#	3054#	3055#
3056#	3057#	3058#	3059#	3060#	3064#	3065#	3066#	3071#	3072#	3073#	3074#	3089#
3090#	3091#	3092#	3093#	3094#	3095#	3096#	3097#	3098#	3102#	3103#	3104#	3106#
3107#	3108#	3109#	3110#	3111#	3117#	3118#	3119#	3121#	3127#	3128#	3129#	3134#
3135#	3140#	3141#	3153#	3154#	3155#	3156#	3157#	3158#	3159#	3160#	3161#	3162#
3176#	3177#	3178#	3179#	3180#	3181#	3182#	3183#	3184#	3185#	3192#	3193#	3194#

3195#	3200#	3201#	3205#	3206#	3210#	3211#	3212#	3214#	3215#	3219#	3220#	3226#
3227#	3228#	3229#	3235#	3236#	3242#	3243#	3244#	3246#	3248#	3250#	3280#	3281#
3290#	3291#	3295#	3298	3304#	3305#	3316#	3317#	3324#	3325#	3326#	3327#	3328#
3329#	3330#	3331#	3335#	3336#	3337#	3342#	3343#	3344#	3345#	3355#	3356#	3360#
3362#	3363#	3368#	3369#	3372#	3374#	3377#	3378#	3379#	3380#	3381#	3382#	3383#
3384#	3385#	3386#	3405#	3407#	3424#	3459#	3460#	3461#	3462#	3463#	3464#	3469#
3470#	3471#	3472#	3473#	3474#	3475#	3479#	3480#	3481#	3482#	3483#	3484#	3485#
3486#	3487#	3488#	3489#	3490#	3491#	3492#	3495#	3496#	3497#	3498#	3499#	3500#
3501#	3502#	3506#	3507#	3508#	3509#	3510#	3511#	3515#	3516#	3517#	3519#	3520#
3527#	3581#	3582#	3586#	3588#	3589#	3590#	3621#	3652#	3671#	3676#	3677#	3678#
3679#	3685#	3686#	3687#	3688	3693#	3695#	3696#	3697#	3721#	3755#	3787#	3789#
3794#	3795	3823#	3847#	3848#	3849#	3850#	3851#	3852#	3867#	3868#	3869#	3870#
3878#	3879#	3883#	3885#	3911#	3913#	3923#	3924#	3936#	3937#	3938#	3939#	3940#
3941#	3942#	3943#	3944#	3945#	3946#	3947#	3948#	3949#	3950#	3951#	3952#	3953#
3967#	3991#	4009#	4011#	4013#	4021#	4061#	4062#	4063#	4064#	4065#	4066#	4070#
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4120#	4121	4126#	4128#	4129#	4130#	4134#	4136#	4137#	4138#	4144#	4145#	4149#
4150#	4176#	4177#	4178#	4179#	4198#	4230#	4265#	4267#	4272#	4273	4285#	4286#
4310#	4346#	4347#	4348#	4349#	4350#	4351#	4364#	4365#	4366#	4367#	4387#	4392#
4393#	4394#	4395#	4396#	4397#	4401#	4402	4410#					
\$TSK0 = 050002	1096#	1099	1232#	1235	1363#	1372	1373#	1397	1406#	1409	1433#	1438
	1470	1480#	1487	1595#	1600	1608#	1617	1618#	1621	1651#	1654	1676#
	1721#	1765	1832#	1840	1851#	1859	1875#	1883	1941#	1959	2131#	2145
	2181	2213#	2224	2233#	2244	2281#	2292	2341#	2350	2351#	2467	2510#
	2594#	2646	2647#	2651	2702#	2703	2720#	2751	2892#	2958	2959#	2964
	3010	3016#	3135	3136#	3250	3286#	3295	3311#	3363	3364#	3405	3466#
	3600#	3621	3636#	3652	3660#	3671	3681#	3687	3705#	3721	3727#	3794
	3823	3877#	3883	3919#	4013	4079#	4095	4106#	4110	4111#	4114	4117#
\$TSK1 = 050003	4187#	4198	4206#	4272	4294#	4310	4356#	4401				
	1385#	1395	1456#	1468	1680#	1684	1725#	1765	1945#	1959	2164#	2170
	2451	2452#	2465	2520#	2558	2559#	2562	2569#	2579	2599#	2602	2610#
	2726#	2749	2901#	2919	2920#	2950	3025#	3129	3147#	3162	3163#	3248
	3345	3346#	3360	3468#	3516	3739#	3755	3759#	3789	3927#	3967	3968#
	4219#	4230	4236#	4267	4363#	4387						
\$TSK2 = 050017	1390#	1393	1461#	1464	1744#	1752	2395#	2411	2412#	2444	2923#	2932
	2948	3031#	3074	3075#	3121	3169#	3220	3221#	3246	3334#	3337	3766#
	3974#	3991	3992#	4009	4244#	4265						
\$TSK3 = 050034	2433#	2442	3048#	3051	3063#	3066	3084#	3111	3112#	3119	3209#	3212
	3244											3234#
\$TSK4 = 050024	3101#	3104										
\$SARGC= 000000	674#	1571#	1673#	1787#	1908#	1982#	2116#	2328#	2490#	2679#	3276#	3423#
	3842#	3901#	4334#									3446#
\$SBYTE= 000402	674#	1094#	1230#	1388#	1459#	1593#	1606#	1649#	1674#	1721#	1723#	1941#
	2151#	2211#	2231#	2279#	2339#	2377#	2393#	2431#	2567#	2592#	2608#	2718#
	2890#	2899#	2921#	3000#	3014#	3021#	3023#	3029#	3046#	3061#	3079#	3081#
	3145#	3167#	3207#	3232#	3309#	3318#	3332#	3466#	3658#	3757#	3917#	3925#
	4104#	4234#	4361#									3972#
\$SCASE= 000000	674#											
\$SDST = 000003	674#	1589#	1645#	3475#	3502#	3511#						
\$SELOC= 000402	674#	1094#	1099#	1230#	1235#	1362#	1371	1384#	1388#	1393#	1395#	1397#
	1409#	1455#	1459#	1464#	1468#	1593#	1600#	1606#	1616	1621#	1649#	1654#
	1679#	1683#	1684#	1690#	1743#	1751#	1752#	1831#	1839#	1840#	1850#	1858#
	1874#	1882#	1883#	2130#	2144#	2145#	2151#	2163#	2169#	2170#	2180#	2181#
	2223#	2224#	2231#	2243#	2244#	2279#	2291#	2292#	2339#	2349#	2350	2377#
	2407#	2411	2431#	2441#	2442#	2444#	2450	2464#	2465#	2467#	2519#	2557
	2567#	2579#	2592#	2608#	2642#	2643#	2645	2650#	2651#	2718#	2724#	2748#

\$\$SERFL= 000000
\$\$FLAG= 000001

2751#	2890#	2899#	2918	2921#	2931	2948#	2950#	2957	2964#	3000#	3010#	3014#
3021#	3029#	3046#	3051#	3061#	3066#	3073	3079#	3099#	3104#	3110	3119#	3121#
3129#	3134	3145#	3161	3167#	3207#	3212#	3219	3232#	3244#	3246#	3248#	3250#
3309#	3318#	3332#	3337#	3344	3359#	3360#	3362	3404#	3405#	3599#	3621#	3635#
3652#	3658#	3671#	3704#	3721#	3738#	3755#	3757#	3765#	3787#	3789#	3806#	3823#
3876#	3882#	3883#	3917#	3925#	3966#	3967	3972#	3990#	3991	4008#	4009#	4011#
4013#	4078#	4095#	4104#	4109	4114#	4186#	4198#	4218#	4230#	4234#	4243#	4265#
4267#	4293#	4310#	4361#	4386#	4387#							
674#												
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	4356#	4361#	4363#																	

. ABS. 053416 000

ERRORS DETECTED: 0

CZDZCB.BIN,CZDZCB.SEQ/CRF/SOL/NL:TOC=SMAC/ML,SPMAC/ML,CZDZCB.P11
RUN-TIME: 100 97 8 SECONDS
RUN-TIME RATIO: 531/207=2.5
CORE USED: 33K (65 PAGES)