

DZ11

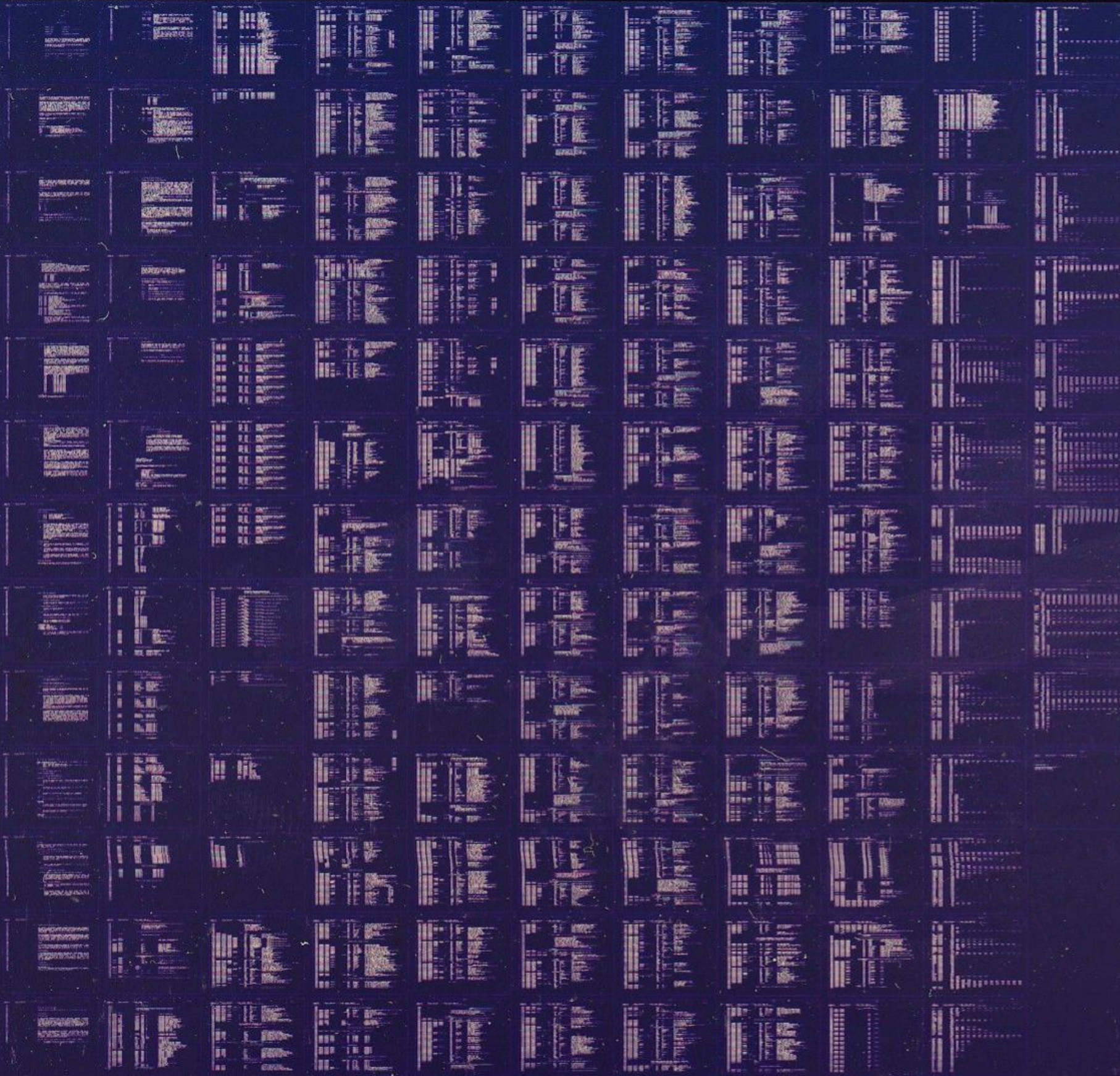
DZ11 ASYNC MUX TEST
CZDZAH0

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IDENTIFICATION

PRODUCT CODE: AC-8781H-MC
PRODUCT NAME: CZDZAH0 DZ11 LN ASYNC MUX TSTS
PRODUCT DATE: JUNE 1984
MAINTAINER: MK-DIAGNOSTIC ENGINEERING

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1. ABSTRACT

THE FUNCTION OF THE DZ11 DIAGNOSTICS IS TO VERIFY THE OPTION OPERATES ACCORDING TO SPECIFICATIONS. THE DIAGNOSTICS ALSO VERIFY THAT THE DZ11 OPERATES IN ITS ENVIRONMENT SUCH AS THE SYSTEM IN WHICH IT IS INSTALLED.

PARAMETERS MAY BE SUPPLIED TO THE PROGRAM BY EITHER 'AUTO SIZING' OR INPUT FROM THE USER ON THE CONSOLE BY HAVING SW00-1 AT START TIME. AUTO SIZING WILL BE DONE ONLY THE FIRST TIME THE PROGRAM IS STARTED AND SW07-0 AND SW00-0 AND SW03-0. THE AUTOSIZER IS DESIGNED TO DETECT DZ11 DEVICE ADDRESSES AND VECTORS AND TO DETERMINE WHETHER THE DZ11 THAT IS DETECTED IS AN EIA OR 20MA BOARD. ALL REMAINING PARAMETERS DEFAULT TO CERTAIN VALUES (SEE SEC.8.5). CONSOLE INPUT MAY BE CONTROLLED AT ANY START TIME THROUGH THE USE OF SW00, SW03, SW04, AND SW06 (SEE SEC. 4.1.1 FOR A DETAILED DESCRIPTION OF THESE SWITCHES).

CURRENTLY THERE IS ONE STANDALONE DIAGNOSTIC (CZDZA), ONE SYSTEM FOR DEC X/11 (DZAA), AND AN ONLINE OVERLAY FOR DZITA (ITEP) - DZDZB. (ITEP) - DZDZB.

CZDZA WILL TEST ALL PARTS OF THE DZ11 SUCH AS CABLES, DIST PNL., INTERFACE MODULE ITSELF.

2. REQUIREMENTS

2.1 EQUIPMENT

ANY PDP11 FAMILY CPU (WITH MINIMUM 8K MEMORY)
ASR 33 (OR EQUIVALENT FOR CONSOLE)
DZ11 INTERFACE MODULE (M7819(EIA), M7814(20MA))
H3271 STAGGERED TURNAROUND CONNECTOR FOR EIA MODULE.
H3190 STAGGERED TURNAROUND CONNECTOR FOR 20MA MODULE.
H325 CABLE TURNAROUND AND DIST PNL TESTING FOR EIA MODULE.
H315 THIS MAY BE SUBSTITUTED FOR H325.

NOTE: A STAGGERED TURNAROUND CONNECTOR IS NEEDED IN ORDER TO TEST THE PARITY AND BREAK LOGIC.

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2.2 STORAGE

PROGRAM WILL USE ALL 8K OF MEMORY EXCEPT WHERE ABL AND BOOTSTRAP LOADER RESIDE. LOCATION 1500 THRU 2000 ARE ESPECIALLY TO BE NOTED AND TO BE UNTOUCHED BY OPERATOR AFTER PARAMETERS HAVE BEEN INPUT FROM CONSOLE (SM00=1); OR AFTER THE 'AUTO SIZING' HAS BEEN DONE. THESE LOCATIONS MAY BE CHANGED IF THE USER UNDERSTANDS THEIR MEANING AND DIFFERENT PARAMETERS ARE REQUIRED.

3. LOADING PROCEEDURE

3.1 METHOD

ALL PROGRAMS ARE IN ABSOLUTE FORMAT AND ARE LOADED USING THE ABSOLUTE LOADER. NOTE: IF THE DIAGNOSTICS ARE ON A MEDIA SUCH AS DISK ,MAGTAPE,DECTAPE, OR CASSETTE; FOLLOW INSTRUCTIONS FOR THE MONITOR WHICH HAS BEEN PROVIDED ON THAT SPECIFIC MEDIA.

ABSOLUTE LOADER STARTING ADDRESS *500

MEMORY * SIZE

4K	17
8K	37
12K	57
16K	77
20K	117
24K	137
28K	157

3.1.1 PLACE ADDRESS OF ABS LOADER INTO SWITCH REGISTER.
(ALSO PLACE 'HALT' SW UP)

3.1.2 DEPRESS 'LOAD ADDRESS' KEY ON CONSOLE AND RELEASE.

3.1.3 DEPRESS 'START KEY' ON CONSOLE AND RELEASE (PROGRAM SHOULD NOW BE LOADING INTO CPU)

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4. STARTING PROCEEDURE

- A. SET SWITCH REGISTER TO 000200
- B. DEPRESS 'LOAD ADDRESS' KEY AND RELEASE
- C. SET SWR TO ZERO FOR 'AUTO SIZING' OR SET SW00=1 FOR USER PARAMETER INPUT FROM CONSOLE TERMINAL. ON FIRST START IF SW07=1 AND SW00=0 THE PROGRAM WILL DEFAULT TO CONSOLE PARAMETER INPUT (SW00=1).
- D. DEPRESS 'START KEY' AND RELEASE, THE PROGRAM WILL TYPE MAINDEC NAME AND PROGRAM NAME (IF THIS WAS THE FIRST START UP OF THE PROGRAM OR PARAMETERS WERE CHANGED BY SW00=1) AND ALSO THE FOLLOWING:

```
'MAP OF DZ11 STATUS'
1500 160100
1502 000300
1504 000005
1506 000377
1510 017070
1512 000000
```

THE ABOVE IS ONLY AN EXAMPLE! THIS WOULD INDICATE THE STATUS TABLE STARTING AT ADD. 1500 IN THE PROGRAM. THE STATUS TABLE MUST BE VERIFIED BY THE USER IF AUTO SIZING IS DONE. FOR INFORMATION OF STATUS TABLE SEE SECTION 8.4 FOR HELP.
THE PROGRAM WILL TYPE "RUNNING" AND PROCEED TO RUN THE DIAGNOSTIC.

4.1 CONTROL SWITCH SETTINGS

NOTE: IF THERE IS NO REAL SWR (177570); SWR MAY BE MODIFIED AT LOC:176 OR BY HITTING CONTROL "G" <+G> ON CONSOLE TERMINAL.

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SW 15 SET: HALT ON ERROR
SW 14 SET: LOOP ON CURRENT TEST
SW 13 SET: INHIBIT ERROR PRINT OUT
SW 12 SET: INHIBIT **ALL** TYPE OUT/BELL ON ERROR.
SW 11 SET: INHIBIT ITERATIONS. (QUICK PASS)
SW 10 SET: ESCAPE TO NEXT TEST
SW 09 SET: LOOP WITH CURRENT DATA
SW 08 SET: CATCH ERROR AND LOOP ON IT
SW 07 SET: NO AUTO SIZE. IF 1ST START OF PROGRAM AFTER LOADING THE
        OPERATOR MUST INPUT ADDRESS AND VECTOR FROM CONSOLE.
SW 06 SET: RESELECT DZ11'S DESIRED ACTIVE
SW 05 SET: RESERVED
SW 04 SET: SELECT DELAY PARAMETER (SEE SEC. 4.1.1)
SW 03 SET: EXTRA PARAMETER INPUT (SEE SEC. 4.1.1)
SW 02 SET: LOCK ON SELECTED TEST
**SW 01 SET: RESTART PROGRAM AT SELECTED TEST
*SW 00 SET: GET USERS PARAMETERS FROM CONSOLE
```

* FOR ECHO OR CABLE TESTS (PROGRAM STARTED AT LOC. 210) THIS SWITCH SET TO 1 ALLOWS THE USER TO TYPE IN THE VECTOR AND THE CSR FOR THE DZ11 UNDER TEST.

** FOR ECHO OR CABLE TEST THIS SWITCH SET TO 1 ALLOWS THE SELECTION OF EITHER THE ECHO OR CABLE TEST, BAUD RATE, AND THE LINE NUMBER UNDER TEST.

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4.1.1 SWITCH REGISTER CONTROL OF PARAMETER INPUT FROM CONSOLE

- SW 00 GET USERS PARAMETERS FROM CONSOLE. SETTING THIS SWITCH AT START UP TIME ALLOWS THE USER TO INPUT AT THE CONSOLE TERMINAL THE FOLLOWING PARAMETERS: BASE DEVICE ADDRESS, BASE VECTOR ADDRESS, BUS REQUEST LEVEL, DECLARE EIA OR 20MA MODULE, MODE OF OPERATION (EXTERNAL, INTERNAL, OR STAGGERED), AND THE NUMBER OF DZ11'S THAT ARE RUNNING. USING THIS SWITCH ALONE DEFAULTS THE FOLLOWING PARAMETERS: ALL 8 LINES ARE SET TO BE TESTED ON EACH DZ11, THE DEFAULT BAUD RATE IS SET AT 9600 BAUD, AND THE CHARACTER LENGTH FOR THE MAJORITY OF TESTING IS SET AT EIGHT BITS PER CHARACTER WITH TWO STOP BITS.
- SW 03 EXTRA PARAMETER INPUT. SETTING THIS SWITCH AT START UP TIME PROVIDES THE USER WITH THE ABILITY TO SET THE LINES ACTIVE FOR TESTING AND TO SET THE DEFAULT BAUD RATE USED FOR THE MAJORITY OF THE DIAGNOSTIC TESTS. THE DELAY PARAMETER IS AUTOMATICALLY ADJUSTED TO THE BAUD RATE GIVEN BY THE USER.
- SW 04 SELECT DELAY PARAMETER. THE DELAY PARAMETER THIS SWITCH CONTROLS DETERMINES THE LENGTH OF TIME THE PROGRAM STALLS WAITING FOR A CHARACTER TO BE COMPLETELY TRANSMITTED OR RECEIVED. THIS DELAY COUNT IS AUTOMATICALLY SET TO PROVIDE ENOUGH DELAY TIME FOR THE DEFAULT BAUD RATE SPECIFIED WHEN RUNNING THE PROGRAM ON AN 11/45 WITH BIPOLAR MEMORY. WHEN RUNNING THIS PROGRAM ON A FASTER PROCESSOR THE DELAY PARAMETER SHOULD BE ADJUSTED PROPORTIONALLY HIGHER THAN THE FOLLOWING DEFAULTED VALUES:
- | | | |
|------|----------|------------|
| 2450 | TIME FOR | 50 BAUD |
| 1560 | TIME FOR | 75 BAUD |
| 1120 | TIME FOR | 110 BAUD |
| 0750 | TIME FOR | 134 BAUD |
| 0660 | TIME FOR | 150 BAUD |
| 0330 | TIME FOR | 300 BAUD |
| 0150 | TIME FOR | 600 BAUD |
| 0060 | TIME FOR | 1200 BAUD |
| 0040 | TIME FOR | 1800 BAUD |
| 0030 | TIME FOR | 2000 BAUD |
| 0020 | TIME FOR | 2400 BAUD |
| 0010 | TIME FOR | 3600 BAUD |
| 0001 | TIME FOR | 4800 BAUD |
| 0001 | TIME FOR | 7200 BAUD |
| 0001 | TIME FOR | 9600 BAUD |
| 0001 | TIME FOR | 19.2 KBAUD |

*** NOTE ***

19.2K BAUD IS AN UNSUPPORTED BAUD RATE. IT SHOULD NOT NORMALLY BE USED.
9600 BAUD IS THE SPECIFIED MAXIMUM.

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4.1.2 SWITCH REGISTER RESTRICTIONS

SW 06 RESELECT DZ11'S DESIRED ACTIVE. PLEASE NOTE THAT A MESSAGE IS TYPED OUT FOR SETTING THE SWITCH REGISTER EQUAL TO DZ11'S ACTIVE. THIS MEANS IF THE SYSTEM HAS FOUR DZ11S, BITS 00,01,02,03 WILL BE SET IN LOC 'DZACTV' FROM THE SWITCH REGISTER. USING THIS SWITCH(SW06) ALTERS THAT LOCATION, THEREFORE IF FOUR DZ11S ARE IN THE SYSTEM ***DO NOT*** SET SWITCHES GREATER THAN SW 03 IN THE UP POSITION. THIS WOULD BE A FATAL ERROR. DO NOT SELECT MORE ACTIVE DZ11S THAN HAS BEEN GIVEN INFORMATION ABOUT IN PARAMETER INPUT (SW00=1)

METHOD: A: LOAD ADDRESS 200
B: START WITH SW 06=1
C: PROGRAM WILL TYPE MESSAGE
D: SET THE BINARY NUMBER OF DZ11S DESIRED ACTIVE EXAMPLE: 1=1 DZ11; 3=2 DZ11; 7=3 DZ11; 17=4 DZ11 37=5 DZ11 ETC/AA PRESS CONTINUE.
E: NUMBER (IF VALID) WILL BE IN DATA LIGHTS (EXCLUDING 11/05)
F: SET WITH ANY OTHER SWITCH SETTINGS DESIRED. PRESS CONTINUE.

SW 01 RESTART PROGRAM AT SELECTED TEST IT IS STRONGLY SUGGESTED THAT AT LEAST ONE PASS HAS BEEN MADE BEFORE TRYING TO SELECT A TEST THAT IS NOT IN THE ORDER OF SEQUENCE THE REASON BEING IS THAT THE PROGRAM HAS TO CLEAR AREAS AND SET UP PARAMETERS. NOTE: IF RUNNING MULTIPLE DZ11'S, THE DZ11 YOU DESIRE TO BE UNDER TEST MUST BE SELECTED BY THE USE OF SW06 BEFORE LOCKING ON THE TEST. IN OTHER WORDS, EACH TIME THE PROGRAM IS STARTED, THE FIRST DZ11 WILL BE SELECTED TO BE UNDER TEST UNLESS SW06 IS USED TO SELECT ONLY ONE.

SW 09 LOOP ON CURRENT DATA: THIS SWITCH WILL ONLY WORK IF CALL 'SCOPI' IS IN THAT TEST. THE REASON BEING THAT MOST TESTS DEAL WITH BLOCKS OF DIFFERENT DATA TO BE SENT OR RECEIVED ALL AT ONCE THUS IN BLOCK DATA, ONE PATTERN CAN'T BE SINGLED OUT. THIS SWITCH IS DESIGNED TO PROVIDE AN AID FOR A TRAINED TROUBLE-SHOOTER TO SAMPLE VARIOUS SIGNALS ON THE MODULE AND IS NOT MEANT TO BE USED AS A GENERAL USER CONTROL SWITCH.

SW 04 SELECT DELAY PARAMETER; THIS SWITCH SHOULD BE USED WITH CARE AS TOO SHORT A DELAY WILL CAUSE VALID TESTS TO FAIL ON CERTAIN PROCESSORS. IT IS RECOMMENDED THAT THIS SWITCH ONLY BE USED IN CONJUNCTION WITH SCOPE LOOPS, E.G. SW 14,9,4,1 SET; SW 9,4,2,1 SET. THE SHORTEST PARAMETER IS 1; THE LONGEST ACCEPTED IS 177776. (SEE SEC. 4.1.1)

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4.1.3 SWITCH REGISTER PRIORITIES

ERROR SWITCHES

1. SW 12 DELETE PRINT OUT/BELL ON ERROR.
2. SW 13 DELETE ERROR PRINTOUT.
3. SW 15 HALT ON THE ERROR.
4. SW 08 GOTO BEGINNING OF THE TEST(ON ERROR).
5. SW 10 GOTO NEXT TEST(ON ERROR).

SCOPE SWITCHES

1. SW 09 (IF ENABLED BY 'SCOP1'). IF AN '*' IS PRINTED IN FRONT OF THE TEST NO. ON AN ERROR REPORT (EX. *TEST NO. 10) SW09 IS INCORPORATED IN THAT TEST AND THEREFORE SW09 IS *USUALLY* THE BEST SWITCH FOR THE SCOPE LOOP (SW14=0, SW10=0, SW09=1, SW08=0) IF THE PROGRAM USER IS TECHNICALLY TRAINED TO ELECTRONICALLY ISOLATE SIGNAL PROBLEMS ON THE DZ11 MODULE. IF SW09 IS NOT ENABLED; AND THERE IS A *HARD* ERROR (CONSTANT); SW08 IS BEST.
2. FOR INTERMITTENT ERRORS EITHER START THE PROGRAM WITH SW01 AND SW02 SET WHICH WILL ALLOW THE USER TO LOCK ON A SELECTED TEST, OR ELSE SET SW14 AS AN ERROR IS BEING TYPED OUT ON THE TERMINAL. SW14 WILL CONTINUE TO LOOP ON THAT TEST REGARDLESS OF WHETHER AN ERROR OCCURS.
3. SW 14 LOOP ON CURRENT TEST.

4.2 STARTING ADDRESS

SA 200 - ADDRESS 200 IS FOR NORMAL EXECUTION OF THE DIAGNOSTIC. THIS WILL DO THE MAJOR TESTING NECESSARY FOR VERIFICATION OF HARDWARE.

SA 210 - CABLE/ECHO - TERMINAL TESTS. STARTING AT ADDRESS 210 WILL GIVE THE USER THE OPTION TO VERIFY THE EIA CABLES AT THE DIST PNL OR VERIFY A TRUE LINK TO ANY DEC SUPPORTED TERMINAL SUPPORTED BY THE DZ11.

NOTE: IF ADDRESS 000042 IS NON-ZERO THE PROGRAM ASSUMES IT IS UNDER ACT11 OR XXDP CONTROL AND WILL ACT ACCORDINGLY. AFTER *ALL* AVAILABLE DZ11'S ARE TESTED THE PROGRAM WILL RETURN TO 'XXDP' OR 'ACT-11'.

5. OPERATING PROCEDURE

WHEN PROGRAM IS INITIALLY STARTED MESSAGES AS DESCRIBED IN SECTION FOUR WILL BE PRINTED AND PROGRAM WILL BEGIN RUNNING THE DIAGNOSTIC.

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5.1 NORMAL START OF DIAGNOSTIC

ON THE FIRST START OF THE DIAGNOSTIC AT ADDRESS 200, IF AUTO
SIZING IS NOT USED OR WHENEVER SW00=1, THE FOLLOWING QUESTIONS
ARE ASKED AND MUST BE ANSWERED.

"1ST CSR ADDRESS (160000:163700): "

YOU MUST TYPE IN THE FIRST DZ11 CSR IN THE SYSTEM YOU WISH
TESTING TO BEGIN AT. RANGE: 160000:163700

"1ST VECTOR ADDRESS (300:770): "

YOU MUST TYPE IN THE VECTOR OF THE FIRST DZ11 IN THE SYSTEM
UNDER TEST. RANGE 300:770

"BR LEVEL (4:6): "

TYPE IN THE PRIORITY LEVEL OF THE DZ11 THAT THE ABOVE
INFORMATION HAS BEEN GIVEN ABOUT. RANGE 4 OR 5 OR 6.

"TYPE "A" FOR EIA MODULE OR "B" FOR 20MA (A:B): "

TYPE "A" IF RUNNING A DZ11-A,B,E (EIA).
TYPE "B" IF RUNNING A DZ11-C,D,F (20MA).
TYPING A <CR> DEFAULTS TO EIA MODULES.

"MAINTENANCE MODE

[EXTERNAL <H325>-EIA ONLY (E)]
[INTERNAL <DZCSR03=1> (I)]
[STAGGERED <H3271>-EIA ONLY (S)]
[STAGGERED <H3190>-20MA ONLY (S)] :

TYPE "E" OR "I" OR "S" DEPENDING ON WHICH MODE YOU WISH TO RUN
IN. IF RUNNING "EXTERNAL", ALL SELECTED LINES MUST BE
TERMINATED BY AN H325 TEST CONNECTOR.

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"# OF DZ11'S <IN OCTAL> (1:20): "

TYPE TOTAL NUMBER OF DZ11'S TO BE TESTED IN THE SYSTEM. RANGE
IS 1 THRU 20 IN OCTAL.

***** IF SW03=1 THEN *****
IF SW03=1 THE FOLLOWING WILL BE PRINTED.

"LINES ACTIVE BY BIT <IN OCTAL> (001:377):"

EACH BIT REPRESENTS A LINE AND ANY COMBINATION OF LINES MAY BE
SELECTED (HOWEVER IN STAGGERED MODE TWO ADJACENT LINES MUST BE
SELECTED (0-1, 2-3, 4-5, 6-7))..

"DEFAULT BAUD RATE <IN OCTAL> (00:16): "

THIS GIVES THE USER A CHANCE TO CHANGE THE DEFAULT BAUD RATE
USED IN APP. 90 PERCENT OF THE TEST. BAUD RATE CHOICES ARE:
"00"(50 BAUD), "01"(75 BAUD), "02"(110 BAUD), "03"(134 BAUD),
"04"(150 BAUD), "05"(300 BAUD), "06"(600 BAUD), "07"(1200 BAUD),
"10"(1800 BAUD), "11"(2000 BAUD), "12"(2400 BAUD), "13"(3600 BAUD),
"14"(4800 BAUD), "15"(7200 BAUD), "16"(9600 BAUD), "17"(19.2 KBAUD)
LOW DEFAULT BAUD RATES ARE NOT SUGGESTED SINCE THEY LENGTHEN THE
TIME TO COMPLETE A PROGRAM PASS DRAMATICALLY.

*** NOTE ***

SPEED SELECT CODE 17 CAN BE USED TO SELECT 19.2K BAUD, BUT THIS
SPEED IS NOT SPECIFIED BY DEC, AND SHOULD NOT NORMALLY BE USED.

IT IS IMPORTANT TO NOTE THAT ALL DZ11'S IN THE SYSTEM MUST BE
CONTIGIOUS FOR BOTH ADDRESS AND VECTORS. ALSO ALL THE EXTRA
PARAMETERS OTHER THAN CSR AND VECTORS ARE GIVEN TO THE EXISTING
DZ11'S IN THE SYSTEM. IF NOT ALL DZ11'S ARE SAME PRIORITY OR IF
THE MODE OF OPERATION IS DIFFERENT FOR EACH DZ11; THIS MUST BE
"PATCHED" INTO THE CORRECT STATUS MAP ENTRY WHICH IS PRINTED AT
START TIME. AN ALTERNATIVE IS TO PUT SW00=1 AT START TIME;
ANSWER QUESTIONS ABOUT DZ11 UNDER TEST AND INDICATE ONLY 1 DZ11
IN THE SYSTEM. IF THE STATUS MAP IS TO BE "PATCHED" IT MUST BE
DONE AFTER THE QUESTIONS ARE ANSWERED OR AFTER THE AUTO SIZE.

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5.2 HOW TO RUN THE "CABLE/ECHO" TESTS.

NORMAL STARTING FOR THE FIRST TIME WOULD BE: LOAD ADDRESS 210; START WITH THE SWR EQUAL TO 003.

NOTE: SW00=1 ASKS FOR "VECTOR" AND "CSR"
SW01=1 ASKS FOR "WHICH TEST ECHO OR CABLE", "BAUD RATE", "LINE" UNDER TEST. PROGRAM WILL PRINT OUT:

"VECTOR ADDRESS-"

YOU TYPE VECTOR WITH A <CR>.

"CONTROL REGISTER ADDRESS-"

YOU TYPE IN DZCSR UNDER TEST.

"WHICH TEST ? ECHO OR CABLE (E OR C)"

LETS DO THE CABLE TEST FIRST. **THIS TEST IS ONLY TO BE DONE ON THE EIA VERSION OF THE DZ11 NOT THE 20MA VERSION". TYPE "C" <CR>

"BAUD RATE- "

TYPE EITHER 50, 110, 135, 150, 300, 600, 1200 1800, 2000, 2400, 3600, 4800, 7200, 9600 FOLLOWED BY <CR>

"LINE: "

YOU TYPE THE LINE WHICH HAS THE H325 TEST CONNECTOR. (TYPE EITHER 0, 1, 2, 3, 4, 5, 6, 7) PROGRAM WILL THEN PRINT:

"CABLE TEST"

AND IF EVERYTHING IS WORKING; THE FOLLOWING WILL BE PRINTED:

"PASS DONE."

"PASS DONE."

ETC.

TO CHANGE LINES; HIT ANY PRINTING KEY ON YOUR CONSOLE TERMINAL WHILE THE PROGRAM IS RUNNING AND THE FOLLOWING WILL BE PRINTED:

"LINE: "

NOW CHANGE THE H325 TEST CONNECTOR TO ANOTHER LINE AND TYPE THE NEW LINE. PROGRAM WILL THEN PRINT:

"CABLE TEST"

"PASS DONE."

"PASS DONE."

CONTINUE THIS OPERATION UNTIL ALL LINES ARE TESTED.

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5.3 ECHO TEST

IF PROGRAM HAS ALREADY BEEN STARTED AT 210 AND THE VECTOR AND ADDRESS HAVE BEEN TYPED IN, JUST LOAD ADDRESS 210 AND START WITH SWR EQUAL TO 002. PROGRAM WILL PRINT:

"WHICH TEST ? ECHO OR CABLE (E OR C)"

NOW TYPE AN "E" TO DO THE ECHO TEST. PROGRAM WILL PRINT:

"BAUD RATE -"

TYPE BAUD RATE AT WHICH THE TERMINAL IS SET THAT IS CONNECTED TO THE DZ11 DIST PNL. BAUD RATE CHOICES ARE: 50, 75, 110, 135, 150, 300, 600, 1200, 1800, 2000, 2400, 3600, 4800, 7200, 9600. THE PROGRAM WILL THEN PRINT:

LINE: "

TYPE THE LINE THE TERMINAL IS CONNECTED TO AT THE DIST PNL THEN THE PROGRAM WILL PRINT:

"TERMINAL ECHO TEST"

*** AT THIS POINT THE MESSAGE:

"THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 0123456789"

SHOULD BE PRINTED ON THE TERMINAL CONNECTED TO THE DZ11. IF THIS MESSAGE IS DESIRED TO BE CONTINUOUSLY OUTPUT, SET THE SWR TO 377 (SWR=377) WHILE IT IS BEING OUTPUT OR WHEN THE LINE NO. IS REQUESTED ABOVE. WHEN THIS MESSAGE IS DONE AND THE SWR IS NOT EQUAL TO 377, THE CONSOLE WILL PRINT:

"TYPE A CHAR. ON DZ11 TERMINAL"

ANY PRINTABLE CHAR HIT ON DZ11 TERMINAL SHOULD BE ECHOED BACK ON THE TERMINAL. **IF YOU HIT CNTRL C <+C> ON THE DZ11 TERMINAL THE PROGRAM WILL PRINT:

"PASS DONE."

ON THE CONSOLE TERMINAL AND THE "QUICK BROWN FOX" WILL BE PRINTED ON DZ11 TERMINAL AGAIN AND THE ECHO TEST WILL BE RUNNING. TO CHANGE LINES: TYPE ANY PRINTABLE CHARACTER ON THE CONSOLE TERMINAL (NOT THE DZ11 TERMINAL). THE PROGRAM WILL AGAIN TYPE "LINE: " AND WAIT FOR A RESPONSE.

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5.4 PROGRAM AND/OR OPERATOR ACTION

THE VARIETY OF PROGRAM CONTROL SWITCHES PROVIDED IN THIS DIAGNOSTIC PACKAGE IS DESIGNED TO PROVIDE THE USER WITH A WIDE RANGE OF TROUBLE-SHOOTING TECHNIQUES. BEFORE THE USER ATTEMPTS TO RUN THIS DIAGNOSTIC HE SHOULD BECOME FAMILIAR WITH THE USE OF THESE CONTROL SWITCHES AND THEIR RESTRICTIONS. (SEE SEC. 4.1, 4.1.1, 4.1.2, 4.1.3)

WHEN THE PROGRAM DETECTS AN ERROR THE TEST NUMBER AND PC WILL BE TYPED OUT AND POSSIBLY AN ERROR MESSAGE (DEPENDING ON THE PARTICULAR ERROR). IF IT IS NECESSARY TO KNOW MORE INFORMATION CONCERNING THE ERROR REPORT THEN LOOK IN THE PROGRAM LISTING FOR THAT TEST NUMBER AND THEN NOTE THE PC OF THE ERROR REPORT. THE REASON FOR THE ERROR REPORT WILL BECOME CLEARER WHEN READING THE COMMENTS IN THE PROGRAM LISTING.

6. ERRORS

AS DESCRIBED PREVIOUSLY THERE WILL ALWAYS BE A TEST NUMBER AND PC TYPED OUT AT THE TIME OF AN ERROR (PROVIDING SW 13=0 AND SW 12=0). IN MOST CASES ADDITIONAL INFORMATION WILL BE SUPPLIED TO THE THE ERROR MESSAGE WHICH IS TO GIVE THE OPERATOR AN INDICATION OF THE ERROR.

6.2 ERROR RECOVERY

IF FOR SOME REASON THE DZ11 SHOULD 'HANG THE BUS' (GAIN CONTROL OF BUS SO THAT CONSOLE MANUAL FUNCTIONS ARE INHIBITED) AN INIT OR POWER DOWN/UP IS NECESSARY FOR OPERATOR TO REGAIN CONTROL OF CPU. IF THIS SHOULD HAPPEN, LOOK IN LOCATION '4TSTNM' (BYTE 1122) FOR THE NUMBER OF THE TEST THAT WAS RUNNING AT THE TIME OF THE CATASTROPHIC ERROR. IN THIS WAY THE OPERATOR WILL HAVE AN IDEA AS TO WHAT THE DZ11 WAS DOING AT THE TIME OF THE ERROR.

7. RESTRICTIONS

7.1 STARTING RESTRICTIONS

SEE SECTION 4.1.2
STATUS TABLE SHOULD BE VERIFIED REGARDLESS OF HOW PROGRAM WAS STARTED. ALSO IT IS IMPORTANT TO USE THIS LISTING ALONG WITH THE INFORMATION PRINTED ON THE TTY TO COMPLETELY ISOLATE PROBLEMS.

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7.2 OPERATING RESTRICTIONS

PARAMETER MUST BE INPUT FROM USER OR APT IF "AUTO SIZING" IS NOT USED.

8. MISCELLANEOUS

8.1 EXECUTION TIME

ALL DZ11 DEVICE DIAGNOSTICS WILL GIVE AN 'END PASS' MESSAGE (PROVIDING NO ERRORS AND SW12=0) WITHIN 2 MIN. THIS IS ASSUMING SW11=1 (INHIBIT ITERATIONS) IS SET TO GIVE THE FASTEST POSSIBLE EXECUTION. THE ACTUAL EXECUTION TIME DEPENDS GREATLY ON THE PDP11 CPU CONFIGURATION. AN 11/40 WITH CORE MEMORY WILL TAKE AROUND 100 SECONDS TO EXECUTE A PASS WITH NO ITERATIONS AND ABOUT 400 SECONDS TO EXECUTE A FULLY ITERATED PASS. ANY OTHER PDP11 CPU TYPE WILL EXECUTE A PASS IN TIME PROPORTIONAL TO THE EXECUTION SPEED OF THE CPU 'S MEMORY IN RELATION TO THAT OF AN 11/40.

8.2 PASS COMPLETE

NOTE: *EVERY* TIME THE PROGRAM IS STARTED; THE TESTS WILL RUN AS IF SW11 (DELETE ITERATIONS) WAS UP (=1). THIS IS TO 'VERIFY NO *HARD* ERRORS' AS SOON AS POSSIBLE. THEREFORE THE FIRST PASS -EACH TIME PROGRAM IS STARTED- WILL BE A 'QUICK PASS' UNTIL ALL DZ11'S IN SYSTEM ARE TESTED. WHEN THE DIAGNOSTIC HAS COMPLETED A PASS THE FOLLOWING IS AN EXAMPLE OF THE PRINT OUT TO BE EXPECTED.

END PASS CZDZA-H CSR: 160010 VEC: 300 PASSES: 000001 ERRORS:

NOTE: THE NUMBERS FOR CSR AND VEC ARE NOT NECESSARILY THE VALUES FOR THE DEVICE. THEY ARE ONLY FOR THIS EXAMPLE.

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8.4 KEY LOCATIONS

#LPADR (1126)

CONTAINS THE ADDRESS WHERE PROGRAM WILL RETURN WHEN ITERATION COUNT IS REACHED OR IF LOOP ON TEST IS ASSERTED.

NEXT (1360)

CONTAINS THE ADDRESS OF THE NEXT TEST TO BE PERFORMED.

#TSTNM (1122)

CONTAINS THE NUMBER OF THE TEST NOW BEING PERFORMED.

RUN (1406)

THE BIT IN 'RUN' ALWAYS POINTS ONE PAST THE DZ11 CURRENTLY BEING TESTED. EXAMPLE: (RUN) 1304/0000000001000000 MEANS THAT DZ11 NO.05 IS THE DZ11 NOW RUNNING.

STATUS MAP
(1500)-(2000)

THESE LOCATIONS CONTAIN THE INFORMATION NEEDED TO TEST UP TO 16 (DECIMAL) DZ11S SEQUENTIALY. THEY CONTAIN THE CSR, VECTOR AND STATUS CONCERNING THE CONFIGURATION OF EACH DZ11.

DZACTV (1404)

EACH BIT SET IN THIS LOCATION INDICATES THAT THE ASSOCIATED DZ11 WILL BE TESTED IN TURN. EXAMPLE: (DZACTV) 1300/0000000000011111 MEANS THAT DZ11 NO. 00,01,02,03,04 WILL BE TESTED. EXAMPLE: (DZACTV) 1300/0000000000010001 MEANS THAT DZ11 NO. 00,04 WILL BE TESTED.

#BASE (1310)

CONTAINS THE RECEIVER CSR OF THE CURRENT DZ11 UNDER TEST.

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8.4A MORE ON THAT 'STATUS TABLE' (1500-2000)

'MAP OF DZ11 STATUS'	
1500	160100
1502	000300
1504	000005
1506	000377
1510	017070
1512	000000

THE ABOVE INFORMATION WILL BE REPEATED FOR EACH OF UP TO 16 DZ11'S IN THE SYSTEM (THESE WILL FOLLOW UNDER THIS TABLE). EXPLANATION:

1500	160100	THIS IS THE SYSTEM CONTROL REGISTER FOR THE 1ST DZ11 IN THE SYSTEM.
1502	000300	THIS IS VECTOR 'A' FOR THE FIRST DZ11 IN THE SYSTEM.
1504	000005	THIS REPRESENTS THE BUS INTERRUPT PRIORITY LEVEL OF THE DZ11. BIT15 OF THIS LOCATION INDICATES EITHER EIA OR 20MA. IF BIT15=0 MODULE SHOULD BE AN M7819, IF BIT15=1 MODULE SHOULD BE AN M7814.
1506	000377	THIS IS THE BINARY REPRESENTATION OF WHAT LINES ARE TO BE TESTED.
1510	017070	THIS IS THE PARAMETER LOCATION USED IN MOST OF THE TESTS. IT INDICATES PARAMETERS OF: RX ON, SPEED SELECT 16 (9600 BAUD) EIGHT BITS PER CHAR, AND TWO STOP BITS. THE USER MAY ALTER THE STOP BITS AND THE SPEED, BUT THE REMAINING PARAMETERS SHOULD BE LEFT ALONE. THIS LOCATION IS USED TO LOAD THE DZ11 LINE PARAMETER REGISTER FOR EACH LINE. THE MEANING OF THE BITS SET IN THIS LOCATION IS THE SAME AS THE FUNCTION OF THE RELATED BITS IN THE DEVICE LINE PARAMETER REGISTER.
1512	000000	THIS LOCATION WILL CONTAIN EITHER ALL ZEROS INDICATING THAT INTERNAL LOOP WAS SELECTED AS MODE OF OPERATION OR IT WILL CONTAIN 100000 INDICATING THAT "STAGGERED MODE" WAS SELECTED OR IT WILL CONTAIN 000200 INDICATING THAT "EXTERNAL" WAS THE MODE SELECTED.

THE ABOVE IS REPEATED FOR EACH DZ11 IN THE SYSTEM. THE TABLE IS FILLED BY AUTO SIZING OR BY THE MANUAL PARAMETER INPUT PROGRAM AS DESCRIBED PREVIOUSLY. ALSO IF DESIRED BY USER, THE LOCATIONS MAY BE ALTERED BY HAND (TOGGLED IN) TO SUIT THE SPECIFIC CONFIGURATION.

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8.5 *** METHOD OF AUTO SIZING ***

8.5.1 FINDING THE CONTROL STATUS REGISTER.

THE PROGRAM WILL START AT ADDRESS 16C000 AND START 'REFERENCING' THE ADDRESS IN THE POINTER. IF A NON-EX MEMORY TRAP OCCURS, THE POINTER (HOLDING 160000) IS UPDATED BY 10 AND THE ABOVE IS REPEATED UNTIL ADDRESS 163700 IS REACHED. IF A 'SLAVE SYNC RESPONSE' WAS ISSUED BY THE DZ11 (OR ANY OTHER DEVICE) (NO NXM TRAP), "MASTER SCAN ENABLE" IS ATTEMPTED TO BE SET AND THE "TCR" BIT FOR LINE 7 IS SET. "TRDY" IS THEN TESTED TO BE SET AND BOTH "TCR07" AND "MASTER SCAN ENABLE" ARE TESTED TO BE STILL SET. IF ALL OF THIS WORKED, THEN A "DEVICE CLEAR" IS ISSUED TESTING THAT THE BIT CAN BE READ BACK AND THAT AFTER SOME TIME IT SELF CLEARS. IF ALL OF THE ABOVE WORKED, THIS DEVICE IS ASSUMED TO BE A DZ11. IF ANY OF THE ABOVE FAILED, UPDATING OF THE POINTER IS DONE AND THE SEQUENCE IS REPEATED.

NOTE: IF THE PROGRAM DOES NOT FIND YOUR DZ11, SOMETHING IS WRONG AND AUTO SIZING SHOULD NOT BE DONE.

AFTER IDENTIFYING A DZ11 THE PROGRAM THEN ATTEMPTS TO SET ALL DTR BITS IN DEVICE REGISTER 4. IF ANY DTR BITS DID SET THE MODULE IS ASSUMED TO BE AN EIA MODULE (M7819) OTHERWISE THE STATUS MAP ENTRY IS SET FOR 20MA (M7814).

8.5.2 FINDING THE VECTOR

THE VECTOR AREA (ADDRESS 300-776) IS FILLED WITH THE INSTRUCTION IOT AND '..2' (NEXT ADDRESS). BIT14 AND BITS (TX INTERRUPT ENABLE AND MSTSCAN ENABLE) ARE SET INTO THE DZCSR. "TCR07" IS THEN SET. A DELAY IS MADE AND IF NO INTERRUPT OCCURS (BECAUSE OF A BAD DZ11) THE PROGRAM ASSUMES VECTOR ADDRESS 300 AND THE PROBLEM SHOULD BE FIXED IN THE DIAGNOSTIC. ONCE THE PROBLEM IS FIXED, THE PROGRAM SHOULD BE RE-SETUP AGAIN TO GET CORRECT VECTOR. IF AN INTERRUPT OCCURRED, THE ADDRESS TO WHICH THE DZ11 INTERRUPTED TO IS PICKED UP AND REPORTED AS THE VECTOR. NOTE: IF THE VECTOR REPORTED IS NOT THE VECTOR SET UP BY YOU, THERE IS A PROBLEM AND AUTO SIZING SHOULD NOT BE DONE.

8.5.3 PARAMETER ASSUMPTIONS.

SINCE TOO MUCH HARDWARE WOULD NEED TO BE TURNED ON TO SIZE THE REST OF THE PARAMETERS, THE PROGRAM MUST ASSUME THE REMAINING VARIATIONS. THE RESULT IF NOT TO YOUR SPECIFIC CONFIGURATION MAY BE ALTERED BY HAND (TOGGLE IN) IF DESIRED). IN THIS WAY 95 PERCENT OF THE PARAMETER SETUP WAS DONE BY THE PROGRAM, AND 5 PERCENT BY YOU.

THEREFORE:

- 1) BUS PRIORITY IS SET TO LEVEL5.
- 2) ALL EIGHT LINES ARE ASSUMED TO BE TESTED.
- 3) DEFAULT BAUD RATE IS SET TO 16 (9600 BAUD).
- 4) MODE OF OPERATION IS "INTERNAL MODE".

FOR ALL PARAMETER ADJUSTMENTS PLEASE REFER TO SECTION 8.4A FOR GREATER DETAIL.

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9.0 RUNNING THE DZ11 DIAGNOSTIC UNDER APT

9.1.1 THE APT INTERFACE

CZDZA HAS BEEN REDESIGNED TO BE COMPATIBLE WITH THE APT-AUTOMATED PRODUCT TEST SYSTEM. IT CAN BE RUN AS A STANDALONE DIAGNOSTIC OR IN EITHER OF THE APT MODES. CERTAIN VARIABLES IN THE ORIGINAL APT MODULE WERE REASSIGNED TO THE AREAS SET ASIDE FOR APT INTERFACING. THESE NEW VARIABLES GENERALLY BEGIN WITH A DOLLAR SIGN (\$), E.G., \$DEVH, \$BASE.

9.1.2 SETTING UP THE DIAGNOSTIC USING APT

THE DIAGNOSTIC USES SEVERAL VARIABLES IN THE REGION SUBTITLED 'APT MAILBOX-ETABLE'. THESE VARIABLES ARE:

\$SMREG - USED IF A SOFTWARE SWITCH REGISTER IS DESIRED WHILE UNDER APT

\$VECT1 - USED TO SPECIFY THE INTERRUPT LEVEL AND THE FIRST VECTOR ADDRESS

\$BASE - USED TO INDICATE BOTTOM ADDRESS OF DZ11 UNDER TEST

\$DEVH - A BIT MAP REPRESENTING WHICH DZ11'S WILL BE TESTED

\$CDW1 - USED TO INDICATE WHICH LINES TO RUN ON ALL DZ11'S

\$DDW0 - EACH OF THE \$DDW WORDS DESCRIBES THE PARAMETERS (LPR) FOR A PARTICULAR DZ11, GOING UP TO 16 DZ11'S

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9.1.3 RUNNING UNDER APT

THE USER SHOULD BE FAMILIAR WITH THE APT SYSTEM. THE APT TIMING PARAMETERS FOR THE DZ11 DIAGNOSTIC WERE BASED ON AN 11/40 PROCESSOR. IT MAY BE NECESSARY TO ADD A FEW MORE SECONDS IF THE DIAGNOSTIC IS OUT ON AN 11/05 PROCESSOR.

ALL OF THE VARIABLES MENTIONED IN SECTION 9.1.2 SHOULD BE SET UP PRIOR TO RUNNING THE DIAGNOSTIC UNDER APT.

NOTE

BE SURE #BASE POINTS TO THE FIRST DZ11 BEFORE RUNNING

BASED ON THESE VALUES, THE DIAGNOSTIC WILL SET UP THE STATUS TABLE. THE USER IS THEN FREE TO MONITOR UNDER APT AS NORMAL.

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770
771
772      10.0  CHANGE HISTORY
773
774      NOTE: HISTORY STARTS WITH REV. FO
775
776      REV          CHANGE DESCRIPTION
777      ---          -----
778
779      FO:          ALTER TRANSMITTER INTERRUPT SERVICE ROUTINE
780                    TO ALLOW MORE TIME FOR THE TCR BIT TO CLEAR BEFORE
781                    LOWERING THE BUS PRIORITY TO ENABLE DZ11 INTERRUPTS.
782
783      GO:          MAY 1981 - INCORPORATE XON/XOFF FEATURES (BY ASSEMBLING WITH
784                    LATEST SYSMAC - C5) AND CHANGE "." CODE MODIFIERS AT END
785                    OF PROGRAM FROM ABSOLUTE ADDRESS MODE TO RELATIVE. ALSO, THE
786                    DEFAULT BAUD RATE WAS CHANGED TO 9600 BAUD, SINCE 19.2K BAUD IS
787                    NOT SUPPORTED, AND TEST 34 WAS CHANGED TO REMOVE 19.2K TESTING.
788
789      HO:          JUNE 1984 - ADDED BAUD RATE TIMING TEST. ADDED IN ORDER
790                    TO TEST CRYSTAL SPEEDS. TRANSMITTS CHARACTERS TO ALL 8 LINES
791                    AT ALL BAUD RATES (EXCEPT 19200 BAUD) FOR 1 SECOND AND IF THE
792                    NUMBER OF CHARACTERS TRANSMITTED IS WITHIN A RANGE, THE TEST
793                    WILL PASS.
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000001

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;
; -PRGFRT-----
;
; .TITLE CZDZA-HO
; *COPYRIGHT (C) 1976,1984
; *DIGITAL EQUIPMENT CORP.
; *MAYNARD, MASS. 01754
; *
; *
; *THIS PROGRAM WAS ASSEMBLED USING THE PDP-11 MAINDEC SYSMAC
; *PACKAGE (MAINDEC-11-DZQAC-C5), JAN. 1981.
; *
; *
; TN=1
;
; STARTING PROCEDURE
; LOAD PROGRAM
; LOAD ADDRESS 000200
; PRESS START
; PROGRAM WILL TYPE "CZDZA-HO/<200>/CZDZAHO DZ11 LN ASYNC MUX TSTS "
; PROGRAM WILL TYPE "RUNNING" TO INDICATE THAT TESTING HAS STARTED
; AT THE END OF A PASS, PROGRAM WILL TYPE PASS COMPLETE MESSAGE
; AND THEN RESUME TESTING
;
; SBTTL BASIC DEFINITIONS
;
; *INITIAL ADDRESS OF THE STACK POINTER *** 1120 ***
STACK= 1120
; EQUIV EMT,ERROR ; BASIC DEFINITION OF ERROR CALL
; EQUIV IOT,SCOPE ; BASIC DEFINITION OF SCOPE CALL
;
; *MISCELLANEOUS DEFINITIONS

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001120

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826	000011	HT=	11	::CODE FOR HORIZONTAL TAB
827	000012	LF=	12	::CODE FOR LINE FEED
828	000015	CR=	15	::CODE FOR CARRIAGE RETURN
829	000200	CRLF=	200	::CODE FOR CARRIAGE RETURN-LINE FEED
830	177776	PS=	177776	::PROCESSOR STATUS WORD
831		.EQUIV	PS,PSW	
832	177774	STKLMT=	177774	::STACK LIMIT REGISTER
833	177772	PIRQ=	177772	::PROGRAM INTERRUPT REQUEST REGISTER
834	177570	DSMR=	177570	::HARDWARE SWITCH REGISTER
835	177570	DDISP=	177570	::HARDWARE DISPLAY REGISTER
836				
837		; *GENERAL PURPOSE REGISTER DEFINITIONS		
838	000000	R0=	#0	::GENERAL REGISTER
839	000001	R1=	#1	::GENERAL REGISTER
840	000002	R2=	#2	::GENERAL REGISTER
841	000003	R3=	#3	::GENERAL REGISTER
842	000004	R4=	#4	::GENERAL REGISTER
843	000005	R5=	#5	::GENERAL REGISTER
844	000006	R6=	#6	::GENERAL REGISTER
845	000007	R7=	#7	::GENERAL REGISTER
846	000006	SP=	#6	::STACK POINTER
847	000007	PC=	#7	::PROGRAM COUNTER
848				
849		; *PRIORITY LEVEL DEFINITIONS		
850	000000	PR0=	0	::PRIORITY LEVEL 0
851	000040	PR1=	40	::PRIORITY LEVEL 1
852	000100	PR2=	100	::PRIORITY LEVEL 2
853	000140	PR3=	140	::PRIORITY LEVEL 3
854	000200	PR4=	200	::PRIORITY LEVEL 4
855	000240	PR5=	240	::PRIORITY LEVEL 5
856	000300	PR6=	300	::PRIORITY LEVEL 6
857	000340	PR7=	340	::PRIORITY LEVEL 7
858				
859		; *"SWITCH REGISTER" SWITCH DEFINITIONS		
860	100000	SW15=	100000	
861	040000	SW14=	40000	
862	020000	SW13=	20000	
863	010000	SW12=	10000	
864	004000	SW11=	4000	
865	002000	SW10=	2000	
866	001000	SW09=	1000	
867	000400	SW08=	400	
868	000200	SW07=	200	
869	000100	SW06=	100	
870	000040	SW05=	40	
871	000020	SW04=	20	
872	000010	SW03=	10	
873	000004	SW02=	4	
874	000002	SW01=	2	
875	000001	SW00=	1	
876		.EQUIV	SW09,SW9	
877		.EQUIV	SW08,SW8	
878		.EQUIV	SW07,SW7	
879		.EQUIV	SW06,SW6	
880		.EQUIV	SW05,SW5	
881		.EQUIV	SW04,SW4	

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882      .EQUIV SW03,SW3
883      .EQUIV SW02,SW2
884      .EQUIV SW01,SW1
885      .EQUIV SW00,SW0
886
887      ;*DATA BIT DEFINITIONS (BIT00 TO BIT15)
888      100000      BIT15= 100000
889      040000      BIT14= 40000
890      020000      BIT13= 20000
891      010000      BIT12= 10000
892      004000      BIT11= 4000
893      002000      BIT10= 2000
894      001000      BIT09= 1000
895      000400      BIT08= 400
896      000200      BIT07= 200
897      000100      BIT06= 100
898      000040      BIT05= 40
899      000020      BIT04= 20
900      000010      BIT03= 10
901      000004      BIT02= 4
902      000002      BIT01= 2
903      000001      BIT00= 1
904      .EQUIV BIT09,BIT9
905      .EQUIV BIT08,BIT8
906      .EQUIV BIT07,BIT7
907      .EQUIV BIT06,BIT6
908      .EQUIV BIT05,BIT5
909      .EQUIV BIT04,BIT4
910      .EQUIV BIT03,BIT3
911      .EQUIV BIT02,BIT2
912      .EQUIV BIT01,BIT1
913      .EQUIV BIT00,BIT0
914
915      ;*BASIC "CPU" TRAP VECTOR ADDRESSES
916      000004      ERRVEC= 4      ;;TIME OUT AND OTHER ERRORS
917      000010      RESVEC= 10     ;;RESERVED AND ILLEGAL INSTRUCTIONS
918      000014      TBITVEC=14     ;; "T" BIT
919      000014      TRTVEC= 14     ;;TRACE TRAP
920      000014      BPTVEC= 14     ;;BREAKPOINT TRAP (BPT)
921      000020      IOTVEC= 20     ;;INPUT/OUTPUT TRAP (IOT) **SCOPE**
922      000024      PWRVEC= 24     ;;POWER FAIL
923      000030      EMTVEC= 30     ;;EMULATOR TRAP (EMT) **ERROR**
924      000034      TRAPVEC=34     ;; "TRAP" TRAP
925      000060      TKVEC= 60      ;;TTY KEYBOARD VECTOR
926      000064      TPVEC= 64     ;;TTY PRINTER VECTOR
927      000240      PIRQVEC=240   ;;PROGRAM INTERRUPT REQUEST VECTOR
928
929
930      ;INSTRUCTION DEFINITIONS
931      ;-----
932
933      005746      PUSH1SP=5746   ;DECREMENT PROCESSOR STACK 1 WORD
934      005726      POP1SP=5726   ;INCREMENT PROCESSOR STACK 1 WORD
935      010046      PUSHRO=10046   ;SAVE R0 ON STACK
936      012600      POPRO=12600   ;RESTORE R0 FROM STACK
937      024646      PUSH2SP=24646 ;DECREMENT STACK TWICE

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938      022626      POP2SP=22626      ;INCREMENT STACK TWICE
939
940      ;DZ11 CONTROL AND STATUS REGISTER DEFINITIONS
941      ;(DZCSR)      BIT DEFINITIONS
942      ;-----
943
944      000010      MAINT = BIT3      ;MAINTENANCE MODE ENABLE
945      000020      DCLR=BIT4      ;DEVICE CLEAR
946      000040      MSENAB=BIT5      ;MASTER SCAN ENABLE
947      000100      RIE=BIT6      ;RECEIVER INTERRUPT ENABLE
948      000200      RDONE=BIT7      ;RECEIVER DONE
949      010000      SILOEN= BIT12      ;SILO ALARM ENABLE
950      020000      SILOAL = BIT13      ;SILO ALARM
951      040000      TIE=BIT14      ;TRANSMITTER INTERRUPT ENABLE
952      100000      TRDY=BIT15      ;TRANSMITTER READY
953
954      000021      $XON=21
955      000023      $XOFF=23
956
957      ;DZCSR WORD DEFINITIONS
958      ;-----
959      000000      TL0=0      ;TRANSMIT LINE 0
960      000400      TL1=BIT8      ;TRANSMIT LINE 1
961      001000      TL2=BIT9      ;TRANSMIT LINE 2
962      001400      TL3=BIT9:BIT8      ;TRANSMIT LINE 3
963      002000      TL4=BIT10      ;TRANSMIT LINE 4
964      002400      TL5=BIT10:BIT8      ;TRANSMIT LINE 5
965      003000      TL6=BIT10:BIT9      ;TRANSMIT LINE 6
966      003400      TL7=BIT10:BIT9:BIT8 ;TRANSMIT LINE 7
967
968      ;DZRBUF BIT DEFINITIONS
969      ;-----
970
971      010000      PARER=BIT12      ;PARITY ERROR
972      020000      FRMERR=BIT13      ;FRAME ERROR
973      040000      OVRUN=BIT14      ;OVERRUN ERROR
974      100000      DVALID=BIT15      ;DATA VALID
975
976      ;DZRBUF WORD DEFINITIONS
977      ;-----
978
979      000000      RL0=0      ;RECEIVER LINE 0
980      000400      RL1=BIT8      ;RECEIVER LINE 1
981      001000      RL2=BIT9      ;RECEIVER LINE 2
982      001400      RL3=BIT9:BIT8      ;RECEIVER LINE 3
983      002000      RL4=BIT10      ;RECEIVER LINE 4
984      002400      RL5=BIT10:BIT8      ;RECEIVER LINE 5
985      003000      RL6=BIT10:BIT9      ;RECEIVER LINE 6
986      003400      RL7=BIT10:BIT9:BIT8 ;RECEIVER LINE 7
987
988      ;DZLPR WORD DEFINITIONS
989      ;-----
990
991      000000      LP0=0      ;LINE PARAMETER 0
992      000001      LP1=BIT0      ;LINE PARAMETER 1
993

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994	000002	LP2-BIT1	;LINE PARAMETER 2
995	000003	LP3-BIT1:BIT0	;LINE PARAMETER 3
996	000004	LP4-BIT2	;LINE PARAMETER 4
997	000005	LP5-BIT2:BIT0	;LINE PARAMETER 5
998	000006	LP6-BIT2:BIT1	;LINE PARAMETER 6
999	000007	LP7-BIT2:BIT1:BIT0	;LINE PARAMETER 7
1000			
1001	000000	FIVE=0	;FIVE BITS/CHAR,1 STOP BIT
1002	000010	SIX=BIT3	;SIX BITS/CHAR,1 STOP BIT
1003	000020	SEVEN=BIT4	;SEVEN BITS/CHAR,1 STOP BIT
1004	000030	EIGHT=BIT4:BIT3	;EIGHT BITS/CHAR,1 STOP BIT
1005	000040	FIVES=BIT5	;FIVE BITS/CHAR,2 STOP BITS
1006	000050	SIXS=BIT5:BIT3	;SIX BITS/CHAR,2 STOP BITS
1007	000060	SEVENS=BIT5:BIT4	;SEVEN BITS/CHAR, 2 STOP BITS
1008	000070	EIGHTS=BIT5:BIT4:BIT3	;EIGHT BITS/CHAR, 2 STOP BITS
1009			
1010	000100	PARITY=BIT6	;PARITY ENABLED
1011	000200	ODDPAR=BIT7	;ODD PARITY ENABLED
1012	000000	ONESTOP=0	;ONE STOP BIT ENABLED
1013	000040	TWOSTOP=BIT5	;TWO STOP BITS ENABLED
1014	000000	EVEPAR=0	;EVEN PARITY ENABLED
1015	010000	RCVON=BIT12	;ENABLE RECEIVER (RECEIVER ON)
1016			
1017	000000	S50=0	;SPEED 50 BAUD
1018	000400	S75=BIT8	;SPEED 75 BAUD
1019	001000	S110=BIT9	;SPEED 110 BAUD
1020	001400	S134=BIT9:BIT8	;SPEED 134.5 BAUD
1021	002000	S150=BIT10	;SPEED 150 BAUD
1022	002400	S300=BIT10:BIT8	;SPEED 300 BAUD
1023	003000	S600=BIT10:BIT9	;SPEED 600 BAUD
1024	003400	S1200=BIT10:BIT9:BIT8	;SPEED 1200 BAUD
1025	004000	S1800=BIT11	;SPEED 1800 BAUD
1026	004400	S2000=BIT11:BIT8	;SPEED 2000 BAUD
1027	005000	S2400=BIT11:BIT9	;SPEED 2400 BAUD
1028	005400	S3600=BIT11:BIT9:BIT8	;SPEED 3600 BAUD
1029	006000	S4800=BIT11:BIT10	;SPEED 4800 BAUD
1030	006400	S7200=BIT11:BIT10:BIT8	;SPEED 7200 BAUD
1031	007000	S9600=BIT11:BIT10:BIT9	;SPEED 9600 BAUD
1032	007400	S19200=BIT11:BIT10:BIT9:BIT8	;SPEED 19200 BAUD

;DZTCR BIT DEFINITIONS

1033			
1034			
1035			
1036	000001	TCR0=BIT0	;TCR0
1037	000002	TCR1=BIT1	;TCR1
1038	000004	TCR2=BIT2	;TCR2
1039	000010	TCR3=BIT3	;TCR3
1040	000020	TCR4=BIT4	;TCR4
1041	000040	TCR5=BIT5	;TCR5
1042	000100	TCR6=BIT6	;TCR6
1043	000200	TCR7=BIT7	;TCR7
1044	000400	DTR0=BIT8	;DTR0
1045	001000	DTR1=BIT9	;DTR1
1046	002000	DTR2=BIT10	;DTR2
1047	004000	DTR3=BIT11	;DTR3
1048	010000	DTR4=BIT12	;DTR4
1049	020000	DTR5=BIT13	;DTR5

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GENERAL DEFINITIONS AND EQUIVALENCES

1050	040000	DTR6=BIT14	;DTR6
1051	100000	DTR7=BIT15	;DTR7
1052			
1053		;DZMSR BIT DEFINITIONS	
1054		;-----	
1055	000001	RING0=BIT0	;RING INDICATED ON LINE 0
1056	000002	RING1=BIT1	;RING INDICATED ON LINE 1
1057	000004	RING2=BIT2	;RING INDICATED ON LINE 2
1058	000010	RING3=BIT3	;RING INDICATED ON LINE 3
1059	000020	RING4=BIT4	;RING INDICATED ON LINE 4
1060	000040	RING5=BIT5	;RING INDICATED ON LINE 5
1061	000100	RING6=BIT6	;RING INDICATED ON LINE 6
1062	000200	RING7=BIT7	;RING INDICATED ON LINE 7
1063	000400	C00=BIT8	;CARRIER PRESENT ON LINE 0
1064	001000	C01=BIT9	;CARRIER PRESENT ON LINE 1
1065	002000	C02=BIT10	;CARRIER PRESENT ON LINE 2
1066	004000	C03=BIT11	;CARRIER PRESENT ON LINE 3
1067	010000	C04=BIT12	;CARRIER PRESENT ON LINE 4
1068	020000	C05=BIT13	;CARRIER PRESENT ON LINE 5
1069	040000	C06=BIT14	;CARRIER PRESENT ON LINE 6
1070	100000	C07=BIT15	;CARRIER PRESENT ON LINE 7

;DZTDR BIT DEFINITIONS

;-----

1071			
1072			
1073			
1074			
1075	000400	BRK0=BIT8	;BREAK FOR LINE 0
1076	001000	BRK1=BIT9	;BREAK FOR LINE 1
1077	002000	BRK2=BIT10	;BREAK FOR LINE 2
1078	004000	BRK3=BIT11	;BREAK FOR LINE 3
1079	010000	BRK4=BIT12	;BREAK FOR LINE 4
1080	020000	BRK5=BIT13	;BREAK FOR LINE 5
1081	040000	BRK6=BIT14	;BREAK FOR LINE 6
1082	100000	BRK7=BIT15	;BREAK FOR LINE 7

;TABLE OF LOOP AROUND FUNCTIONS (H325)

;		
;	I	↑
;	V	↑
;	REC	TRANS
;	DATA	DATA
;		
;	I	↑
;	V	↑
;	CO	RTS
;		
;	I	↑
;	V	↑
;	RING	DTR

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```

1103 ;*****
1104 ;-----
1105 ; TRAPCATCHER FOR ILLEGAL INTERRUPTS
1106 ; THE STANDARD "TRAP CATCHER" IS PLACED
1107 ; BETWEEN ADDRESS 0 TO ADDRESS 776.
1108 ; IT LOOKS LIKE "PC+2 HALT".
1109 ;-----
1110 ;*****
1111
1112 000000 .=0
1113 ; STANDARD INTERRUPT VECTORS
1114 ;-----
1115
1116 000010 .=10
1117 000010 011440 SET.PS ;FAKE "MTPS" INSTRUCTION TRAP
1118 000012 000340 PR7 ;MAKE SURE PS IS PRIORITY 7
1119
1120 000020 .=20
1121 000020 005122 .SCOPE ;SCOPE LOOP HANDLER
1122 000022 000340 PR7 ;HANDLE AT PRIORITY 7
1123 000024 010320 $PWDRN ;POWER FAIL HANDLER
1124 000026 000340 340 ;SERVICE AT PRIORITY LEVEL 7
1125 000030 007230 $ERROR ;ERROR HANDLER
1126 000032 000340 340 ;SERVICE AT PRIORITY LEVEL 7
1127 000034 007122 .TRPSRV ;GENERAL HANDLER DISPATCH SERVICE
1128 000036 000340 340 ;SERVICE AT PRIORITY LEVEL 7
1129 .SBTTL ACT11 HOOKS
1130
1131 ;*****
1132 ;HOOKS REQUIRED BY ACT11
1133 000040 $SVPC=. ;SAVE PC
1134 000046 .=46
1135 000046 005056 $ENDAD ;1)SET LOC.46 TO ADDRESS OF $ENDAD IN .IEOP
1136 000052 .=52
1137 000052 000000 .WORD 0 ;2)SET LOC.52 TO ZERO
1138 000040 .=$SVPC ;RESTORE PC
1139
1140 .=174
1141 000174 000000 DISPREG:0 ;SOFTWARE DISPLAY REGISTER FOR SWITCHLESS 11S
1142 000176 000000 SMREG: 0 ;SOFTWARE SWITCH REGISTER FOR SWITCHLESS 11S
1143 000200 .=200
1144 000200 000137 002150 JMP .START ;GO TO START OF PROGRAM
1145 000210 000210 .=210
1146 000210 000137 025216 JMP XSTART ;GOTO CABLE TEST/ECHO TEST
1147
1148
1149 001000 .=1000
1150 001000 005200 055103 055104 MTITLE: .ASCIZ <200><12>/CZDZA-MO/<200>/CZDZAH0 DZ11 LN ASYNC MUX TSTS /<200>
(2)

```


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1151 .SBTTL COMMON TAGS

1152
 1153 ;*****
 1154 ;*THIS TABLE CONTAINS VARIOUS COMMON STORAGE LOCATIONS
 1155 ;*USED IN THE PROGRAM.
 1156

1157 001120

1158 001120 \$CHTAG: .-1120
 1159 001120 000000 \$TSTNM: .WORD 0
 1160 001122 000 \$TSTNM: .BYTE 0
 1161 001123 000 \$ERFLG: .BYTE 0
 1162 001124 000000 \$ICNT: .WORD 0
 1163 001126 000000 \$LPADR: .WORD 0
 1164 001130 000000 \$LPERR: .WORD 0
 1165 001132 000000 \$ERTTL: .WORD 0
 1166 001134 000 \$ITEMB: .BYTE 0
 1167 001135 001 \$ERMAX: .BYTE 1
 1168 001136 000000 \$ERRPC: .WORD 0
 1169 001140 000000 \$GDADR: .WORD 0
 1170 001142 000000 \$BDADR: .WORD 0
 1171 001144 000000 \$GDDAT: .WORD 0
 1172 001146 000000 \$BDDAT: .WORD 0
 1173 001150 000000 .WORD 0
 1174 001152 000000 .WORD 0
 1175 001154 000 \$AUTOB: .BYTE 0
 1176 001155 000 \$INTAG: .BYTE 0
 1177 001156 000000 .WORD 0
 1178 001160 177570 SWR: .WORD DSWR
 1179 001162 177570 DISPLAY: .WORD DDISP
 1180 001164 177560 \$TKS: 177560
 1181 001166 177562 \$TKB: 177562
 1182 001170 177564 \$TPS: 177564
 1183 001172 177566 \$TPB: 177566
 1184 001174 000 \$NULL: .BYTE 0
 1185 001175 002 \$FILLS: .BYTE 2
 1186 001176 012 \$FILLC: .BYTE 12
 1187 001177 000 \$TPFLG: .BYTE 0
 1188 001200 000000 \$REGAD: .WORD 0
 1189
 1190 001202 000000 \$REG0: .WORD 0
 1191 001204 000000 \$REG1: .WORD 0
 1192 001206 000000 \$REG2: .WORD 0
 1193 001210 000000 \$REG3: .WORD 0
 1194 001212 000000 \$REG4: .WORD 0
 1195 001214 000000 \$REG5: .WORD 0
 1196 001216 000000 \$TMP0: .WORD 0
 1197 001220 000000 \$TMP1: .WORD 0
 1198 001222 000000 \$TMP2: .WORD 0
 1199 001224 000000 \$TMP3: .WORD 0
 1200 001226 000000 \$TIMES: 0
 1201 001230 077 \$QUES: .ASCII /?/
 1202 001231 015 \$CRLF: .ASCII <15>
 1203 001232 000012 \$LF: .ASCII <12>

;; START OF COMMON TAGS

;; CONTAINS THE TEST NUMBER
 ;; CONTAINS ERROR FLAG
 ;; CONTAINS SUBTEST ITERATION COUNT
 ;; CONTAINS SCOPE LOOP ADDRESS
 ;; CONTAINS SCOPE RETURN FOR ERRORS
 ;; CONTAINS TOTAL ERRORS DETECTED
 ;; CONTAINS ITEM CONTROL BYTE
 ;; CONTAINS MAX. ERRORS PER TEST
 ;; CONTAINS PC OF LAST ERROR INSTRUCTION
 ;; CONTAINS ADDRESS OF 'GOOD' DATA
 ;; CONTAINS ADDRESS OF 'BAD' DATA
 ;; CONTAINS 'GOOD' DATA
 ;; CONTAINS 'BAD' DATA
 ;; RESERVED--NOT TO BE USED
 ;; AUTOMATIC MODE INDICATOR
 ;; INTERRUPT MODE INDICATOR
 ;; ADDRESS OF SWITCH REGISTER
 ;; ADDRESS OF DISPLAY REGISTER
 ;; TTY KBD STATUS
 ;; TTY KBD BUFFER
 ;; TTY PRINTER STATUS REG. ADDRESS
 ;; TTY PRINTER BUFFER REG. ADDRESS
 ;; CONTAINS NULL CHARACTER FOR FILLS
 ;; CONTAINS # OF FILLER CHARACTERS REQUIRED
 ;; INSERT FILL CHARS. AFTER A "LINE FEED"
 ;; "TERMINAL AVAILABLE" FLAG (BIT<07>=0=YES)
 ;; CONTAINS THE ADDRESS FROM
 ;; WHICH (\$REG0) WAS OBTAINED
 ;; CONTAINS ((\$REGAD)+0)
 ;; CONTAINS ((\$REGAD)+2)
 ;; CONTAINS ((\$REGAD)+4)
 ;; CONTAINS ((\$REGAD)+6)
 ;; CONTAINS ((\$REGAD)+10)
 ;; CONTAINS ((\$REGAD)+12)
 ;; USER DEFINED
 ;; USER DEFINED
 ;; USER DEFINED
 ;; USER DEFINED
 ;; MAX. NUMBER OF ITERATIONS
 ;; QUESTION MARK
 ;; CARRIAGE RETURN
 ;; LINE FEED

1204 ;*****
 1205 .SBTTL APT MAILBOX-ETABLE
 1206

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1207			*****		
1208			.EVEN		
1209	001234		\$MAIL:		APT MAILBOX
1210	001234	000000	\$MSGTY: .WORD	AMSGTY	MESSAGE TYPE CODE
1211	001236	000000	\$FATAL: .WORD	AFATAL	FATAL ERROR NUMBER
1212	001240	000000	\$TESTN: .WORD	ATESTN	TEST NUMBER
1213	001242	000000	\$PASS: .WORD	APASS	PASS COUNT
1214	001244	000000	\$DEVCT: .WORD	ADEVCT	DEVICE COUNT
1215	001246	000000	\$UNIT: .WORD	AUNIT	I/O UNIT NUMBER
1216	001250	000000	\$MSGAD: .WORD	AMSGAD	MESSAGE ADDRESS
1217	001252	000000	\$MSGLG: .WORD	AMSGLG	MESSAGE LENGTH
1218	001254		\$ETABLE:		APT ENVIRONMENT TABLE
1219	001254	000	\$ENV: .BYTE	AENV	ENVIRONMENT BYTE
1220	001255	000	\$ENVH: .BYTE	AENVH	ENVIRONMENT MODE BITS
1221	001256	000000	\$SWREG: .WORD	ASWREG	APT SWITCH REGISTER
1222	001260	000000	\$USMR: .WORD	AUSMR	USER SWITCHES
1223	001262	000000	\$CPUOP: .WORD	ACPUOP	CPU TYPE, OPTIONS
1224			;		BITS 15-11-CPU TYPE
1225			;		11/04-01, 11/05-02, 11/20-03, 11/40-04, 11/45-05
1226			;		11/70-06, PDQ-07, Q-10
1227			;		BIT 10-REAL TIME CLOCK
1228			;		BIT 9-FLOATING POINT PROCESSOR
1229			;		BIT 8-MEMORY MANAGEMENT
1230	001264	000	\$HMS1: .BYTE	AHMS1	HIGH ADDRESS, M.S. BYTE
1231	001265	000	\$HTYP1: .BYTE	AHTYP1	MEM. TYPE, BLK#1
1232			;		MEM. TYPE BYTE -- (HIGH BYTE)
1233			;		900 NSEC CORE-001
1234			;		300 NSEC BIPOLAR-002
1235			;		500 NSEC MOS-003
1236	001266	000000	\$HADR1: .WORD	AHADR1	HIGH ADDRESS, BLK#1
1237			;		MEM. LAST ADDR. = 3 BYTES, THIS WORD AND LOW OF "TYPE" ABOVE
1238	001270	000	\$HMS2: .BYTE	AHMS2	HIGH ADDRESS, M.S. BYTE
1239	001271	000	\$HTYP2: .BYTE	AHTYP2	MEM. TYPE, BLK#2
1240	001272	000000	\$HADR2: .WORD	AHADR2	MEM. LAST ADDRESS, BLK#2
1241	001274	000	\$HMS3: .BYTE	AHMS3	HIGH ADDRESS, M.S. BYTE
1242	001275	000	\$HTYP3: .BYTE	AHTYP3	MEM. TYPE, BLK#3
1243	001276	000000	\$HADR3: .WORD	AHADR3	MEM. LAST ADDRESS, BLK#3
1244	001300	000	\$HMS4: .BYTE	AHMS4	HIGH ADDRESS, M.S. BYTE
1245	001301	000	\$HTYP4: .BYTE	AHTYP4	MEM. TYPE, BLK#4
1246	001302	000000	\$HADR4: .WORD	AHADR4	MEM. LAST ADDRESS, BLK#4
1247	001304	000000	\$VECT1: .WORD	AVECT1	INTERRUPT VECTOR#1, BUS PRIORITY#1
1248	001306	000000	\$VECT2: .WORD	AVECT2	INTERRUPT VECTOR#2, BUS PRIORITY#2
1249	001310	160010	\$BASE: .WORD	ABASE	BASE ADDRESS OF EQUIPMENT UNDER TEST
1250	001312	000000	\$DEVH: .WORD	ADEVH	DEVICE MAP
1251	001314	000000	\$CDW1: .WORD	ACDW1	CONTROLLER DESCRIPTION WORD#1
1252	001316	000000	\$CDW2: .WORD	ACDW2	CONTROLLER DESCRIPTION WORD#2
1253	001320	000000	\$DDW0: .WORD	ADDW0	DEVICE DESCRIPTOR WORD#0
1254	001322	000000	\$DDW1: .WORD	ADDW1	DEVICE DESCRIPTOR WORD#1
1255	001324	000000	\$DDW2: .WORD	ADDW2	DEVICE DESCRIPTOR WORD#2
1256	001326	000000	\$DDW3: .WORD	ADDW3	DEVICE DESCRIPTOR WORD#3
1257	001330	000000	\$DDW4: .WORD	ADDW4	DEVICE DESCRIPTOR WORD#4
1258	001332	000000	\$DDW5: .WORD	ADDW5	DEVICE DESCRIPTOR WORD#5
1259	001334	000000	\$DDW6: .WORD	ADDW6	DEVICE DESCRIPTOR WORD#6
1260	001336	000000	\$DDW7: .WORD	ADDW7	DEVICE DESCRIPTOR WORD#7
1261	001340	000000	\$DDW8: .WORD	ADDW8	DEVICE DESCRIPTOR WORD#8
1262	001342	000000	\$DDW9: .WORD	ADDW9	DEVICE DESCRIPTOR WORD#9

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1263	001344	000000	#DDW10: .WORD	ADDW10	::DEVICE DESCRIPTOR WORD#10
1264	001346	000000	#DDW11: .WORD	ADDW11	::DEVICE DESCRIPTOR WORD#11
1265	001350	000000	#DDW12: .WORD	ADDW12	::DEVICE DESCRIPTOR WORD#12
1266	001352	000000	#DDW13: .WORD	ADDW13	::DEVICE DESCRIPTOR WORD#13
1267	001354	000000	#DDW14: .WORD	ADDW14	::DEVICE DESCRIPTOR WORD#14
1268	001356	000000	#DDW15: .WORD	ADDW15	::DEVICE DESCRIPTOR WORD#15
1269					
1270					
1271	001360		#ETEND:		
1272					

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1273
 1274
 1275
 1276
 1277
 1278
 1279
 1280
 1281
 1282
 1283
 1284
 1285
 1286
 1287 001360
 1288
 1289
 1290
 1291
 1292 001360 000000
 1293 001362 000000
 1294
 1295
 1296
 1297
 1298 001364 000377
 1299 001366 017070
 1300 001370 000000
 1301 001372 000000
 1302 001374 000000
 1303 001376 000000
 1304 001400 000000
 1305 001402 000000
 1306 001404 000001
 1307 001406 000001
 1308 001410 000001
 1309 001411 001
 1310
 1311 001412 001500

.SBTTL ERROR POINTER TABLE

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

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

\$ERRTB:

;PROGRAM CONTROL PARAMETERS

NEXT: 0 ;ADDRESS OF NEXT TEST TO BE EXECUTED
 LOCK: 0 ;ADDRESS FOR LOCK ON CURRENT DATA

;PROGRAM VARIABLES

LINE: 377 ;DEFAULT ALL EIGHT LINES RUNNING
 PAR: 17070 ;PARAMETERS: 8 BITS/CHAR,2 STOP BITS. 9600 BAUD.NO PARIT
 MODE: 0 ;DEFAULT MAINTENANCE MODE
 SAVLIN: 0 ;LINE NUMBER
 XMTLIN: 0 ;TRANSMISSION LINE NUMBER
 XMTCNT: 0 ;COUNT OF WORDS IN A TRANSMISSION PATTERN
 REGIST: 0 ;DEVICE ADDRESS STORAGE LOCATION
 SAVPC: 0 ;PROGRAM COUNTER STORAGE
 DZACTV: .BLKW 1 ;*DZ11'S SELECTED ACTIVE.
 RUN: 1 ;*POINTER ONE PAST RUNNING DEVICE.
 DZNUM: .BLKB 1 ;*OCTAL NUMBER OF DZ11'S.
 SAVNUM: .BYTE 1 ;*WORKABLE NUMBER.
 .EVEN
 ACTIVE: DZ.MAP ;TABLE POINTER.

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```

1312
1313
1314
1315
1316 001414 000
1317 001415 000
1318 001416 000
1319 001417 000
1320 001420 000
1321 001422
1322
1323 001422 000000
1324 001424 000000
1325 001426 000000
1326 001430 000000
1327 001432 000000
1328 001434 000000
1329 001436 000000
1330 001440 000000
1331 001442 000000
1332 001444 000000
1333 001446 000000
1334 001450 000000
1335 001452 000000
1336 001454 000000
1337 001456 000000
1338 001460 000000
1339 001462
1340
1341
1342
1343
1344
1345
1346 001462
1347 000624
1348 000024 000200
1349 000044 000044
1350 000044 001462
1351 001462
1352
1353
1354
1355
1356 001462
1357 001462 000000
1358 001464 001234
1359 001466 000132
1360 001470 000137
1361 001472 000137
1362 001474 000052
1363
1364
1365
1366 001500
1367 001500

```

```

;PROGRAM CONTROL FLAGS
;-----
EIAFLG: .BYTE 0 ;0-EIA 100000-20MA
INIFLG: .BYTE 0 ;PROGRAM INITIALIZATION FLAG
HDRFLG: .BYTE 0 ;PROGRAM INITIALIZATION FLAG FOR HEADER MAP
MNTFLG: .BYTE 0 ;MAINTENANCE BIT SET FLAG
DNFLG: .BYTE 0 ;TRANSMISSION COMPLETION FLAG
.EVEN
;DATA VARIABLES
TD0: .WORD 0
TD1: .WORD 0
TD2: .WORD 0
TD3: .WORD 0
TD4: .WORD 0
TD5: .WORD 0
TD6: .WORD 0
TD7: .WORD 0
TR0: .WORD 0
TR1: .WORD 0
TR2: .WORD 0
TR3: .WORD 0
TR4: .WORD 0
TR5: .WORD 0
TR6: .WORD 0
TR7: .WORD 0
STOP:
; -- END 0 MACRO -----
.SBTTL APT PARAMETER BLOCK
;*****
;SET LOCATIONS 24 AND 44 AS REQUIRED FOR APT
;*****
.X= . ;SAVE CURRENT LOCATION
=24 ;SET POWER FAIL TO POINT TO START OF PROGRAM
200 ;FOR APT START UP
=44 ;POINT TO APT INDIRECT ADDRESS PNTR.
$APTHOR ;POINT TO APT HEADER BLOCK
=.X ;RESET LOCATION COUNTER
;*****
;SETUP APT PARAMETER BLOCK AS DEFINED IN THE APT-PDP11 DIAGNOSTIC
;INTERFACE SPEC.
$APTHD:
$HIBTS: .WORD 0 ;TWO HIGH BITS OF 18 BIT MAILBOX ADDR.
$MBADR: .WORD $MAIL ;ADDRESS OF APT MAILBOX (BITS 0-15)
$TSTM: .WORD 90. ;RUN TIM OF LONGEST TEST
$PASTM: .WORD 95. ;RUN TIME IN SECS. OF 1ST PASS ON 1 UNIT (QUICK VERIFY)
$UNITH: .WORD 95. ;ADDITIONAL RUN TIME (SECS) OF A PASS FOR EACH ADDITIONAL UNIT
.WORD $ETEND-$MAIL/2 ;LENGTH MAILBOX-ETABLE(WORDS)
;DZ11 STATUS TABLE AND ADDRESS ASSIGNMENTS
;-----
=1500
DZ.MAP:

```

Line	Address	Value	Field	Count	Description
1368					
1369					
1370	001500	000001	DZCR0:	1	CONTROL STATUS REGISTER FOR DZ11 NUMBER 0
1371	001502	000001	DZVC0:	1	RECEIVER AND BASE VECTOR FOR DZ11 NUMBER 0
1372	001504	000001	DZLV0:	1	PRIORITY LEVEL AND EIA FLAG SELECTOR
1373	001506	000001	LINE0:	1	ALL LINES SELECTED
1374	001510	000001	PAR0:	1	PARAMETERS
1375	001512	000001	MANT0:	1	MAINTENANCE MODE FOR THIS DEVICE
1376			; -- END 0 MACRO -----		
1377					
1378					
1379	001514	000001	DZCR1:	1	CONTROL STATUS REGISTER FOR DZ11 NUMBER 1
1380	001516	000001	DZVC1:	1	RECEIVER AND BASE VECTOR FOR DZ11 NUMBER 1
1381	001520	000001	DZLV1:	1	PRIORITY LEVEL AND EIA FLAG SELECTOR
1382	001522	000001	LINE1:	1	ALL LINES SELECTED
1383	001524	000001	PAR1:	1	PARAMETERS
1384	001526	000001	MANT1:	1	MAINTENANCE MODE FOR THIS DEVICE
1385			; -- END 0 MACRO -----		
1386					
1387					
1388	001530	000001	DZCR2:	1	CONTROL STATUS REGISTER FOR DZ11 NUMBER 2
1389	001532	000001	DZVC2:	1	RECEIVER AND BASE VECTOR FOR DZ11 NUMBER 2
1390	001534	000001	DZLV2:	1	PRIORITY LEVEL AND EIA FLAG SELECTOR
1391	001536	000001	LINE2:	1	ALL LINES SELECTED
1392	001540	000001	PAR2:	1	PARAMETERS
1393	001542	000001	MANT2:	1	MAINTENANCE MODE FOR THIS DEVICE
1394			; -- END 0 MACRO -----		
1395					
1396					
1397	001544	000001	DZCR3:	1	CONTROL STATUS REGISTER FOR DZ11 NUMBER 3
1398	001546	000001	DZVC3:	1	RECEIVER AND BASE VECTOR FOR DZ11 NUMBER 3
1399	001550	000001	DZLV3:	1	PRIORITY LEVEL AND EIA FLAG SELECTOR
1400	001552	000001	LINE3:	1	ALL LINES SELECTED
1401	001554	000001	PAR3:	1	PARAMETERS
1402	001556	000001	MANT3:	1	MAINTENANCE MODE FOR THIS DEVICE
1403			; -- END 0 MACRO -----		
1404					
1405					
1406	001560	000001	DZCR4:	1	CONTROL STATUS REGISTER FOR DZ11 NUMBER 4
1407	001562	000001	DZVC4:	1	RECEIVER AND BASE VECTOR FOR DZ11 NUMBER 4
1408	001564	000001	DZLV4:	1	PRIORITY LEVEL AND EIA FLAG SELECTOR
1409	001566	000001	LINE4:	1	ALL LINES SELECTED
1410	001570	000001	PAR4:	1	PARAMETERS
1411	001572	000001	MANT4:	1	MAINTENANCE MODE FOR THIS DEVICE
1412			; -- END 0 MACRO -----		
1413					
1414					
1415	001574	000001	DZCR5:	1	CONTROL STATUS REGISTER FOR DZ11 NUMBER 5
1416	001576	000001	DZVC5:	1	RECEIVER AND BASE VECTOR FOR DZ11 NUMBER 5
1417	001600	000001	DZLV5:	1	PRIORITY LEVEL AND EIA FLAG SELECTOR
1418	001602	000001	LINE5:	1	ALL LINES SELECTED
1419	001604	000001	PAR5:	1	PARAMETERS
1420	001606	000001	MANT5:	1	MAINTENANCE MODE FOR THIS DEVICE
1421			; -- END 0 MACRO -----		
1422					
1423					

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1424	001610	000001	DZCR6: .BLKW 1	;CONTROL STATUS REGISTER FOR DZ11 NUMBER 6
1425	001612	000001	DZVC6: .BLKW 1	;RECEIVER AND BASE VECTOR FOR DZ11 NUMBER 6
1426	001614	000001	DZLV6: .BLKW 1	;PRIORITY LEVEL AND EIA FLAG SELECTOR
1427	001616	000001	LINE6: .BLKW 1	;ALL LINES SELECTED
1428	001620	000001	PAR6: .BLKW 1	;PARAMETERS
1429	001622	000001	MANT6: .BLKW 1	;MAINTENANCE MODE FOR THIS DEVICE
1430			; -- END 0 MACRO -----	
1431			; -JUNK-----	
1432				
1433	001624	000001	DZCR7: .BLKW 1	;CONTROL STATUS REGISTER FOR DZ11 NUMBER 7
1434	001626	000001	DZVC7: .BLKW 1	;RECEIVER AND BASE VECTOR FOR DZ11 NUMBER 7
1435	001630	000001	DZLV7: .BLKW 1	;PRIORITY LEVEL AND EIA FLAG SELECTOR
1436	001632	000001	LINE7: .BLKW 1	;ALL LINES SELECTED
1437	001634	000001	PAR7: .BLKW 1	;PARAMETERS
1438	001636	000001	MANT7: .BLKW 1	;MAINTENANCE MODE FOR THIS DEVICE
1439			; -- END 0 MACRO -----	
1440			; -JUNK-----	
1441				
1442	001640	000001	DZCR10: .BLKW 1	;CONTROL STATUS REGISTER FOR DZ11 NUMBER 10
1443	001642	000001	DZVC10: .BLKW 1	;RECEIVER AND BASE VECTOR FOR DZ11 NUMBER 10
1444	001644	000001	DZLV10: .BLKW 1	;PRIORITY LEVEL AND EIA FLAG SELECTOR
1445	001646	000001	LINE10: .BLKW 1	;ALL LINES SELECTED
1446	001650	000001	PAR10: .BLKW 1	;PARAMETERS
1447	001652	000001	MANT10: .BLKW 1	;MAINTENANCE MODE FOR THIS DEVICE
1448			; -- END 0 MACRO -----	
1449			; -JUNK-----	
1450				
1451	001654	000001	DZCR11: .BLKW 1	;CONTROL STATUS REGISTER FOR DZ11 NUMBER 11
1452	001656	000001	DZVC11: .BLKW 1	;RECEIVER AND BASE VECTOR FOR DZ11 NUMBER 11
1453	001660	000001	DZLV11: .BLKW 1	;PRIORITY LEVEL AND EIA FLAG SELECTOR
1454	001662	000001	LINE11: .BLKW 1	;ALL LINES SELECTED
1455	001664	000001	PAR11: .BLKW 1	;PARAMETERS
1456	001666	000001	MANT11: .BLKW 1	;MAINTENANCE MODE FOR THIS DEVICE
1457			; -- END 0 MACRO -----	
1458			; -JUNK-----	
1459				
1460	001670	000001	DZCR12: .BLKW 1	;CONTROL STATUS REGISTER FOR DZ11 NUMBER 12
1461	001672	000001	DZVC12: .BLKW 1	;RECEIVER AND BASE VECTOR FOR DZ11 NUMBER 12
1462	001674	000001	DZLV12: .BLKW 1	;PRIORITY LEVEL AND EIA FLAG SELECTOR
1463	001676	000001	LINE12: .BLKW 1	;ALL LINES SELECTED
1464	001700	000001	PAR12: .BLKW 1	;PARAMETERS
1465	001702	000001	MANT12: .BLKW 1	;MAINTENANCE MODE FOR THIS DEVICE
1466			; -- END 0 MACRO -----	
1467			; -JUNK-----	
1468				
1469	001704	000001	DZCR13: .BLKW 1	;CONTROL STATUS REGISTER FOR DZ11 NUMBER 13
1470	001706	000001	DZVC13: .BLKW 1	;RECEIVER AND BASE VECTOR FOR DZ11 NUMBER 13
1471	001710	000001	DZLV13: .BLKW 1	;PRIORITY LEVEL AND EIA FLAG SELECTOR
1472	001712	000001	LINE13: .BLKW 1	;ALL LINES SELECTED
1473	001714	000001	PAR13: .BLKW 1	;PARAMETERS
1474	001716	000001	MANT13: .BLKW 1	;MAINTENANCE MODE FOR THIS DEVICE
1475			; -- END 0 MACRO -----	
1476			; -JUNK-----	
1477				
1478	001720	000001	DZCR14: .BLKW 1	;CONTROL STATUS REGISTER FOR DZ11 NUMBER 14
1479	001722	000001	DZVC14: .BLKW 1	;RECEIVER AND BASE VECTOR FOR DZ11 NUMBER 14

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1480	001724	000001	DZLV14: .BLKW 1	;PRIORITY LEVEL AND EIA FLAG SELECTOR
1481	001726	000001	LINE14: .BLKW 1	;ALL LINES SELECTED
1482	001730	000001	PAR14: .BLKW 1	;PARAMETERS
1483	001732	000001	MANT14: .BLKW 1	;MAINTENANCE MODE FOR THIS DEVICE
1484			; -- END 0 MACRO -----	
1485				; -JUNK-----
1486				
1487	001734	000001	DZCR15: .BLKW 1	;CONTROL STATUS REGISTER FOR DZ11 NUMBER 15
1488	001736	000001	DZVC15: .BLKW 1	;RECEIVER AND BASE VECTOR FOR DZ11 NUMBER 15
1489	001740	000001	DZLV15: .BLKW 1	;PRIORITY LEVEL AND EIA FLAG SELECTOR
1490	001742	000001	LINE15: .BLKW 1	;ALL LINES SELECTED
1491	001744	000001	PAR15: .BLKW 1	;PARAMETERS
1492	001746	000001	MANT15: .BLKW 1	;MAINTENANCE MODE FOR THIS DEVICE
1493			; -- END 0 MACRO -----	
1494				; -JUNK-----
1495				
1496	001750	000001	DZCR16: .BLKW 1	;CONTROL STATUS REGISTER FOR DZ11 NUMBER 16
1497	001752	000001	DZVC16: .BLKW 1	;RECEIVER AND BASE VECTOR FOR DZ11 NUMBER 16
1498	001754	000001	DZLV16: .BLKW 1	;PRIORITY LEVEL AND EIA FLAG SELECTOR
1499	001756	000001	LINE16: .BLKW 1	;ALL LINES SELECTED
1500	001760	000001	PAR16: .BLKW 1	;PARAMETERS
1501	001762	000001	MANT16: .BLKW 1	;MAINTENANCE MODE FOR THIS DEVICE
1502			; -- END 0 MACRO -----	
1503				; -JUNK-----
1504				
1505	001764	000001	DZCR17: .BLKW 1	;CONTROL STATUS REGISTER FOR DZ11 NUMBER 17
1506	001766	000001	DZVC17: .BLKW 1	;RECEIVER AND BASE VECTOR FOR DZ11 NUMBER 17
1507	001770	000001	DZLV17: .BLKW 1	;PRIORITY LEVEL AND EIA FLAG SELECTOR
1508	001772	000001	LINE17: .BLKW 1	;ALL LINES SELECTED
1509	001774	000001	PAR17: .BLKW 1	;PARAMETERS
1510	001776	000001	MANT17: .BLKW 1	;MAINTENANCE MODE FOR THIS DEVICE
1511			; -- END 0 MACRO -----	
1512				
1513	002000	177777	DZ.END: 177777	

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1514      ;DEFINITIONS FOR TRAP SUBROUTINE CALLS
1515      ;POINTERS TO SUBROUTINES CAN BE FOUND
1516      ;IN THE TABLE IMMEDIATELY FOLLOWING THE DEFINITIONS
1517
1518      ;*****
1519      ;-----
1520      .TRPTAB:
1521      ADVANCE=TRAP+0      ;CALL TO ADVANCE TO NEXT TEST( OR SCOPE THIS ONE)
1522      .ADVANCE
1523      ; -- END 0 MACRO -----
1524      SCOP1=TRAP+1      ;CALL TO LOOP ON CURRENT DATA HANDLER
1525      .SCOP1
1526      ; -- END 0 MACRO -----
1527      TYPE=TRAP+2      ;CALL TO TELETYPE OUTPUT ROUTINE
1528      .TYPE
1529      ; -- END 0 MACRO -----
1530      INSTR=TRAP+3      ;CALL TO ASCII STRING INPUT ROUTINE
1531      .INSTR
1532      ; -- END 0 MACRO -----
1533      INSTER=TRAP+4      ;CALL TO INPUT ERROR HANDLER
1534      .INSTER
1535      ; -- END 0 MACRO -----
1536      PARAM=TRAP+5      ;CALL TO NUMERICAL DATA INPUT ROUTINE
1537      .PARAM
1538      ; -- END 0 MACRO -----
1539      SETFLG=TRAP+6      ;CALL TO SET FLAG ROUTINE
1540      .SETFLG
1541      ; -- END 0 MACRO -----
1542      SAVOS=TRAP+7      ;CALL TO REGISTER SAVE ROUTINE
1543      .SAVOS
1544      ; -- END 0 MACRO -----
1545      RESOS=TRAP+10      ;CALL TO REGISTER RESTORE ROUTINE
1546      .RESOS
1547      ; -- END 0 MACRO -----
1548      CONVRT=TRAP+11      ;CALL TO DATA OUTPUT ROUTINE
1549      .CONVRT
1550      ; -- END 0 MACRO -----
1551      CNVRT=TRAP+12      ;CALL TO DATA OUTPUT ROUTINE WITHOUT CR/LF.
1552      .CNVRT
1553      ; -- END 0 MACRO -----
1554      DEVICE.CLR=TRAP+13      ;CALL TO ISSUE A DEVICE CLEAR
1555      .DEVICE.CLR
1556      ; -- END 0 MACRO -----
1557      DELAY=TRAP+14      ;CALL TO DELAY FOR FAST CPU'S
1558      .DELAY
1559      ; -- END 0 MACRO -----
1560      PARMD=TRAP+15      ;CONVERT DECIMAL STRING TO OCTAL
1561      .PARMD

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1562			; -- END 0 MACRO
1563		104416	PAWCH=TRAP+16 ;SET FLAG ECHO OR CABLE
1564	002036	027140	.PAWCH
1565			; -- END 0 MACRO
1566		104417	DCLASH=TRAP+17 ;CLEAR DEVICE, SET MAINT. BIT IF I MODE
1567	002040	007164	.DCLASH
1568			; -- END 0 MACRO
1569			
1570			;
1571			;*****

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1594
1595
1596
1597

; TIME TABLE FOR RELATIVE TIMING TESTS
;-----

1598 002102
1599 002102 000000
1600 002104 000000
1601 002106 000000
1602 002110 000000
1603 002112 000000
1604 002114 000000
1605 002116 000000
1606 002120 000000
1607 002122 000000
1608 002124 000000
1609 002126 000000
1610 002130 000000
1611 002132 000000
1612 002134 000000
1613 002136 000000
1614 002140 000000
1615 002142 000000
1616 002144 000000
1617 002146 000000

TMTBL:
T50: 0
T75: 0
T110: 0
T134: 0
T150: 0
T300: 0
T600: 0
T1200: 0
T1800: 0
T2000: 0
T2400: 0
T3600: 0
T4800: 0
T7200: 0
T9600: 0
TEIGHT: 0
TSEVEN: 0
TSIX: 0
TFIVE: 0

CZDZA-MO
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1618
1619
1620
1621
1622
1623
1624
1625
1626 002150
1627 002150 000005
1628 002152 012706 001120
1629 002156 106427 000340
1630 002162 012737 010320 000024
1631 002170 012737 005122 000020
1632 002176 012737 000340 000022
1633 002204 012737 007230 000030
1634 002212 012737 000340 000032
1635 002220 012737 007122 000034
1636 002226 012737 000340 000036
1637 002234 012737 010320 000024
1638 002242 012737 000340 000026
1639 002250 113737 001410 001411
1640 002256 005037 001242
1641 002262 105037 001123
1642 002266 012737 001500 001412
1643 002274 012737 000001 001406
1644 002302 005037 001132
1645 002306 005037 001136
1646 002312 005037 001122
1647 002316 012737 002150 001126
1648
1649
1650 002324 013746 000006
1651 002330 013746 000004
1652 002334 012737 002354 000004
1653 002342 022777 177777 176610
1654 002350 001402
1655 002352 000407
1656 002354 022626
1657 002356 012737 000176 001160
1658 002364 012737 000174 001162
1659 002372 012637 000004
1660 002376 012637 000006
1661 002402 105737 001415
1662 002406 001010
1663 002410 023727 000042 005056
1664 002416 001402
1665 002420 104402 001000
1666 002424 105337 001415
1667 002430 105737 001255
1668 002434 100006
1669 002436 004737 012112
1670
1671 002442 000240
1672 002444 000240
1673

;PROGRAM INITIALIZATION
;LOCK OUT INTERRUPTS
;SET UP PROCESSOR STACK
;SET UP POWER FAIL VECTOR
;CLEAR PROGRAM CONTROL FLAGS AND COUNTS
;TYPE TITLE MESSAGE

.START:
RESET
MOV #STACK,SP
MTPS #PR7
MOV #IPWRDN,0024
MOV #ISCOPE,00IOTVEC
MOV #340,00IOTVEC+2
MOV #IERROR,00EMTVEC
MOV #340,00EMTVEC+2
MOV #.TRPSR,00TRAPVEC
MOV #340,00TRAPVEC+2
MOV #IPWRDN,00PWVEC
MOV #340,00PWVEC+2
MOVB DZNUM,SAVNUM
CLR #PASS
CLRB #ERFLG
MOV #0Z.MAP,ACTIVE
MOV #1,RUN
CLR #ERTTL
CLR #ERRPC
CLR #TSTNM
MOV #.START,0LPADR
;CLEAR THE WORLD. START NEW ENVIRONMENT
;SET UP STACK
;LOCK OUT INTERRUPTS
;SET UP POWER FAIL VECTOR
;SET VECTOR FOR SCOPE ROUTINE
;LEVEL 7
;SET VECTOR FOR ERROR ROUTINE
;LEVEL 7
;SET VECTOR FOR TRAP CALLS
;LEVEL 7
;SET VECTOR FOR POWER FAIL ROUTINE
;LEVEL 7
;SAVE NUMBER OF DEVICES IN SYSTEM.
;CLEAR PASS COUNT
;CLEAR ERROR FLAG
;GET MAP POINTER.
;POINT POINTER TO FIRST DEVICE.
;CLEAR ERROR COUNT
;CLEAR LAST ERROR POINTER
;SET UP FOR TEST 1
;SET UP FOR POWER FAIL BEFORE
;TESTING STARTS
;SET UP FOR SMALL 11 SWITCH REGISTER COMPATIBILITY
MOV 6,-(SP)
MOV 4,-(SP)
MOV #200,4
CMP #1,BSWR
BEQ 220
BR 210
POP2SP
MOV #SWREG,SWR
MOV #DISPREG,DISPLAY
MOV (SP)+,4
MOV (SP)+,6
TSTB INIFLG
BNE 290
CMP #042,00ENDAD
BEQ 310
TYPE ,MTITLE
DECIB INIFLG
TSTB #ENVH
BPL 300
JSR PC,SETAPT
;REPLACE "CLRB HDRFLG" WITH NOP'S
NOP
NOP
CLRB HDRFLG
;MAKE SURE STATUS TABLE IS PRINTED

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1674 002446 000137 004420      JMP      164      ;GO PRINT DZ STATUS TABLE
1675 002452 032777 000001 176500 304:  BIT      @SW00,BSMR ;RESELECT ?
1676 002460 001011          BNE      324      ;IF YES, GO SET UP THE INFORMATION
1677 002462 122737 000377 001415  CMPB     @377,INIFLG ;ON 1ST START, MUST ANSWER QUESTION
1678 002470 001003          BNE      ..10     ;IF NOT ANSWERING QUESTIONS
1679 002472 105777 176462      TSTB     BSMR   ;ARE U AUTO SIZING?
1680 002476 100402          BMI      324      ;NO AUTO SIZE! NO SW00=1 ON 1ST START!
1681 002500 000137 003244      JMP      734      ;IF NO, SKIP THE INTERROGATION
1682 002504 012700 001500      324:  MOV      @DZ.MAP,R0 ;POINT TO THE BEGINNING OF THE MAP TABLE
1683 002510 105037 001416      CLR      HDRFLG ;MAKE SURE A MAP GETS PRINTED
1684 002514 005020      654:  CLR      (R0)+ ;CLEAR A TABLE LOCATION
1685 002516 020027 002000      CMP      R0,@DZ.END ;HAVE THE TABLE BOUNDARIES BEEN EXCEEDED?
1686 002522 001374          BNE      654      ;IF NOT ,CLEAR THE NEXT LOCATION IN THE TABLE
1687 002524 105337 001415      DECB     INIFLG ;INSURE NO AUTO SIZING IF QUESTIONS ANSWERED!
1688
1689      ;THE FOLLOWING ARE PARAMETERS USED TO FILL IN THE MAP
1690      ;TABLE AND SET UP THE DIAGNOSTIC.
1691
1692      ;GET THE BASE ADDRESS OF THE DZ11'S
1693
1694 002530      334:
1695
1696 002530 104403      INSTR      ; - $GETPAR-----
1697 002532 003464      664      ;CALL THE STRING INPUT ROUTINE
1698 002534 104405      PARAM      ;POINTER TO MESSAGE TO BE PRINTED
1699 002536 160000      160000     ;CALL THE OCTAL TO ASCII CONVERT ROUTINE
1700 002540 163770      163770     ;LOWEST LEGITIMATE VALUE OF EXPECTED RESPONSE
1701 002542 001500      DZCRO      ;HIGHEST LEGITIMATE VALUE OF EXPECTED RESPONSE
1702 002544      007      .BYTE     7 ;POINTER TO MAP LOCATION TO BE FILLED
1703 002545      001      .BYTE     1 ;MASK OF INVALID BITS FOR THIS PARAMETER
1704      ; -- END 0 MACRO ----- ;NUMBER OF PARAMETERS TO STORE
1705 002546 013737 001500 001310  MOV      DZCRO,@BASE ;COPY BASE ADDRESS TO ETABLE
1706
1707      ;GET THE BASE VECTOR ADDRESS
1708
1709 002554      344:
1710
1711 002554 104403      INSTR      ; - $GETPAR-----
1712 002556 003530      674      ;CALL THE STRING INPUT ROUTINE
1713 002560 104405      PARAM      ;POINTER TO MESSAGE TO BE PRINTED
1714 002562 000300      300      ;CALL THE OCTAL TO ASCII CONVERT ROUTINE
1715 002564 000776      776      ;LOWEST LEGITIMATE VALUE OF EXPECTED RESPONSE
1716 002566 001502      DZVCO      ;HIGHEST LEGITIMATE VALUE OF EXPECTED RESPONSE
1717 002570      003      .BYTE     3 ;POINTER TO MAP LOCATION TO BE FILLED
1718 002571      001      .BYTE     1 ;MASK OF INVALID BITS FOR THIS PARAMETER
1719      ; -- END 0 MACRO ----- ;NUMBER OF PARAMETERS TO STORE
1720 002572 013737 001502 001304  MOV      DZVCO,@VECT1 ;COPY VECTOR TO ETABLE
1721
1722      ;GET THE BUS REQUEST LEVEL
1723
1724
1725 002600 104403      INSTR      ; - $GETPAR-----
1726 002602 003571      684      ;CALL THE STRING INPUT ROUTINE
1727 002604 104405      PARAM      ;POINTER TO MESSAGE TO BE PRINTED
1728 002606 000004      4         ;CALL THE OCTAL TO ASCII CONVERT ROUTINE
1729 002610 000007      7         ;LOWEST LEGITIMATE VALUE OF EXPECTED RESPONSE

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1730 002612 001504      DZLVO      ; POINTER TO MAP LOCATION TO BE FILLED
1731 002614      000      .BYTE 0    ; MASK OF INVALID BITS FOR THIS PARAMETER
1732 002615      001      .BYTE 1    ; NUMBER OF PARAMETERS TO STORE
1733      ; -- END 0 MACRO -----
1734 002616 113737 001504 001305      MOVB DZLVO, #VECT1.1 ; GET BUS REQUEST LEVEL INTO ETABLE
1735 002624 106337 001305      ASLB #VECT1.1 ; ALIGN THE BITS PROPERLY
1736 002630 106337 001305      ASLB #VECT1.1 ; ALIGN THE BITS PROPERLY
1737 002634 106337 001305      ASLB #VECT1.1 ; ALIGN THE BITS PROPERLY
1738 002640 106337 001305      ASLB #VECT1.1 ; ALIGN THE BITS PROPERLY
1739 002644 106337 001305      ASLB #VECT1.1 ; ALIGN THE BITS PROPERLY
1740
1741      ; FIND OUT IF MODULE IS EIA OR 20 MA.
1742
1743 002650 104402 004260      TYPE .74 ; PRINT EIA MESSAGE
1744 002654 095037 001220      CLR #TMP1 ; USE #TMP1
1745 002660 105777 176300      804: TSTB #TKS ; IS KEYBOARD DONE?
1746 002664 100375      BPL 804 ; IF NOT, WAIT FOR IT
1747 002666 017746 176274      MOV #TKB, -(SP) ; IF YES, PUT CHARACTER ON STACK
1748 002672 042716 177600      BIC #177600, (SP) ; STRIP DOWN CHARACTER ; DSH-BHL
1749 002676 122716 000023      CPB #XOFF, (SP) ; IS IT A XOFF? ; DSH-BHL
1750 002702 001014      BNE 834 ; OR IF NOT ; DSH
1751 002704 105777 176254      1014: TSTB #TKS ; WAIT FOR A CHARACTER ; DSH-BHL
1752 002710 100375      BPL 1014 ; ; DSH-BHL
1753 002712 117716 176250      MOVB #TKB, (SP) ; GET CHARACTER ; DSH-BHL
1754 002716 042716 177600      BIC #177600, (SP) ; STRIP DOWN CHARACTER ; DSH-BHL
1755 002722 122716 000021      CPB #XON, (SP) ; WAIT FOR A XON? ; DSH-BHL
1756 002726 001366      BNE 1014 ; GET NEXT CHAR IF NOT ; DSH-BHL
1757 002730 005726      TST (SP) ; POP STACK ; DSH
1758 002732 000752      BR 804 ; WAIT FOR A CHAR ; DSH
1759 002734 122716 000021      834: CPB #XON, (SP) ; IS IT A RANDOM XON ; DSH-BHL
1760 002740 001002      BNE 1024 ; OR IF NO ; DSH-BHL
1761 002742 005726      TST (SP) ; ELSE, POP STACK ; DSH-BHL
1762 002744 000745      BR 804 ; GO GET NEXT CHAR ; DSH-BHL
1763 002746 122726 000015      1024: CPB #15, (SP) ; IS IT <CR> ?
1764 002752 001414      BEQ 814 ; IF SO, GET OUT
1765 002754 014677 176212      MOV -(SP), #TPB ; IF NOT, PRINT CHARACTER
1766 002760 042737 100000 001504      BIC #BIT15, DZLVO ; CLEAR EIA FLAG
1767 002766 122726 000102      CPB #102, (SP) ; IS IT A B?
1768 002772 001332      BNE 804 ; IF NOT, GO BACK FOR INPUT
1769 002774 052737 100000 001504      BIS #BIT15, DZLVO ; IF SO, SET FLAG
1770 003002 000726      BR 804 ; GET MORE INPUT
1771 003004
1772
1773      ; GET THE MODE OF OPERATION (E,I,S)
1774
1775      ; - GETFLG -----
1776 003004 104403      INSTR ; CALL THE STRING INPUT ROUTINE
1777 003006 004002      724 ; POINTER TO THE MESSAGE TO BE PRINTED
1778 003010 104406      SETFLG ; CALL THE MAINTENANCE FLAG SETUP ROUTINE
1779 003012 001512      MANTO ; THIS IS THE FLAG BEING SETUP
1780      ; -- END 0 MACRO -----
1781
1782      ; GET THE NUMBER OF DZ11'S RUNNING
1783
1784      ; - GETPAR -----
1785 003014 104403      INSTR ; CALL THE STRING INPUT ROUTINE

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```

1786 003016 003740          71:  ; POINTER TO MESSAGE TO BE PRINTED
1787 003020 104405          PARAM  ; CALL THE OCTAL TO ASCII CONVERT ROUTINE
1788 003022 000001          1      ; LOWEST LEGITIMATE VALUE OF EXPECTED RESPONSE
1789 003024 000020          16.    ; HIGHEST LEGITIMATE VALUE OF EXPECTED RESPONSE
1790 003026 001220          $TMP1  ; POINTER TO MAP LOCATION TO BE FILLED
1791 003030      000        .BYTE 0  ; MASK OF INVALID BITS FOR THIS PARAMETER
1792 003031      001        .BYTE 1  ; NUMBER OF PARAMETERS TO STORE
1793          ; -- END 0 MACRO -----
1794
1795 003032 012737 000377 001506  MOV      #377,LINE0  ; SET UP DEFAULT LINES
1796 003040 012737 017070 001510  MOV      #17070,PAR0  ; SET UP DEFAULT LPR PARAMETER
1797                                ; RECEIVER ON, 9600 BAUD, 2STOP BITS, 8 BIT/CHAR
1798 003046 012737 000001 007214  MOV      #1,DLYCNT  ; INITIALIZE DELAY COUNT
1799 003054 032777 000010 176076  BIT      #SW03,BSMR  ; DO YOU WANT PARAMETERS?
1800 003062 001402          BEQ      40:  ; IF NO, SKIP THE PARAMETER CALL
1801 003064 004737 003274          JSR      PC,23:  ; GET PARAMETERS
1802 003070 012737 000001 001312 40:  MOV      #1,$DEVH  ; INITIALIZE ACTIVE DEVICE SELECTION PARAMETER
1803 003076 113737 001220 001410  MOV      $TMP1,DZNUM  ; COPY THE NUMBER OF DEVICES
1804 003104 113737 001220 001411  MOV      $TMP1,SAVNUM  ; COPY A BACKUP NUMBER
1805 003112 075337 001220          62:  DEC      $TMP1  ; $TMP1 CONTAINS THE COUNT OF UNINITIALIZED
1806 003116 001404          BEQ      61:  ; SELECTED DEVICES
1807 003120 000261          SEC          ; SET A BIT FLAG TO INDICATE AN ACTIVE DEVICE
1808 003122 006137 001312          ROL      $DEVH  ; POINT TO THE NEXT DEVICE
1809 003126 000771          BR      62:  ; GO DO THIS PROCEDURE AGAIN
1810 003130 013737 001312 001222 61:  MOV      $DEVH,$TMP2  ; # OF TIMES
1811 003136 013737 001312 001404  MOV      $DEVH,DZACTV  ; COPY THE ACTIVE DEVICE PARAMETER
1812 003144 012700 001500          MOV      #DZCR0,R0  ; SET A POINTER TO THE SPECIFIED INFORMATION
1813 003150 012701 001514          MOV      #DZCR1,R1  ; POINT R1 TO THE REST OF THE MAP TABLE
1814 003154 012702 001320          MOV      #DDW0,R2  ; POINT TO ETABLE'S DEVICE DESCRIPTOR WORDS
1815 003160 000241          CLC          ; INITIALIZE THE "C" BIT FOR A ROTATION
1816 003162 006037 001222          ROR      $TMP2  ; SKIP MAPPING SETUP FOR DEVICE 0- IT'S DONE
1817 003166 006237 001222          64:  ASR      $TMP2  ; ISOLATE A SELECTION FLAG IN THE "C" BIT
1818 003172 103404          BCS      41:  ; IS THIS DEVICE SELECTED? IF YES, GO LOAD TABLE
1819 003174 012711 177777          MOV      #-1,(R1)  ; TERMINATE THE LIST
1820 003200 000137 004374          JMP      63:  ; GO TO THE NEXT BLOCK
1821 003204 012011          41:  MOV      (R0),,(R1)  ; ADDRESS
1822 003206 062721 000010          ADD      #10,(R1).  ; POINT TO THE NEXT DZ11 ADDRESS VALUE
1823 003212 012011          MOV      (R0),,(R1)  ; VECTOR
1824 003214 062721 000010          ADD      #10,(R1).  ; POINT TO THE NEXT VECTOR VALUE
1825 003220 012021          MOV      (R0),,(R1).  ; LEVEL
1826 003222 012021          MOV      (R0),,(R1).  ; LINES
1827 003224 016012 177774          MOV      -4(R0),(R2)  ; GET THE EIA FLAG FROM THE PRIORITY WORD
1828 003230 042712 077777          BIC      #77777,(R2)  ; ISOLATE THAT FLAG
1829 003234 051022          BIS      (R0),(R2).  ; ADD PARAMETERS TO DEVICE DESCRIPTOR WORD
1830 003236 012021          MOV      (R0),,(R1).  ; PARAMETERS
1831 003240 012021          MOV      (R0),,(R1).  ; MAINTENANCE MODE
1832 003242 000731          BR      64:  ;
1833 003244 032777 000010 175706 73:  BIT      #SW03,BSMR  ; ASK PARAMETERS ?
1834 003252 001002          BNE      42:  ; IF NO, GO DO AUTO SIZING
1835 003254 000137 004374          JMP      63:  ; GO SET UP FOR AUTO SIZING
1836 003260 004737 003274          42:  JSR      PC,23:  ; GO ASK PARAMETERS
1837 003264 105337 001415          DEC      INIFLG  ; INSURE NO AUTO SIZE IF QUESTIONS ANSWERED
1838 003270 000137 004420          JMP      16:  ; GO TO THE NEXT BLOCK
1839
1840          ; GET THE ACTIVE LINES PARAMETER
1841

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1842 003274      231:
1843
1844 003274 104403      INSTR
1845 003276 003614      691
1846 003300 104405      PARAM
1847 003302 000001      1
1848 003304 000377      377
1849 003306 001506      LINE0
1850 003310      000      .BYTE 0
1851 003311      001      .BYTE 1
1852
1853 003312 105037 001416  ; -- END 0 MACRO -----
1854
1855
1856
1857
1858 003316 005737 001512      TST      MANTO
1859 003322 100021      BPL      261
1860 003324 013703 001506      MOV      LINE0,R3
1861 003330 006003      241:  ROR      R3
1862 003332 103410      BCS      251
1863 003334 001414      BEQ      261
1864 003336 006203      ASR      R3
1865 003340 103373      BCC      241
1866 003342 104402 001230      271:  TYPE      ,IQUES
1867 003346 104402 011075      TYPE      ,MBADLN
1868 003352 000750      BR      231
1869 003354 001772      251:  BEQ      271
1870 003356 006203      ASR      R3
1871 003360 103370      BCC      271
1872 003362 000241      CLC
1873 003364 000761      BR      241
1874
1875
1876
1877 003366      ;GET THE LINE PARAMETER REGISTER ARGUMENT
1878
1879 003366 104403      261:
1880 003370 003670      INSTR
1881 003372 104405      701
1882 003374 000000      PARAM
1883 003376 000017      0
1884 003400 001510      17
1885 003402      000      PAR0
1886 003403      001      .BYTE 0
1887
1888 003404 012702 001506      .BYTE 1
1889 003410 012703 001510      ; -- END 0 MACRO -----
1890 003414 011304      MOV      #LINE0,R2
1891 003416 006304      MOV      #PAR0,R3
1892 003420 016437 032416 007214  MOV      (R3),R4
1893 003426 000313      ASL      R4
1894 003430 052713 010070      MOV      DLYTBL(R4),DLYCNT
1895 003434 011262 000014      SWAB      (R3)
1896 003440 011363 000014      BIS      #10070,(R3)
1897 003444 062702 000014      281:  MOV      (R2),14(R2)
      ADD      (R3),14(R3)
      ADD      #14,R2

```

; -IGETPAR-----
 ;CALL THE STRING INPUT ROUTINE
 ;POINTER TO MESSAGE TO BE PRINTED
 ;CALL THE OCTAL TO ASCII CONVERT ROUTINE
 ;LOWEST LEGITIMATE VALUE OF EXPECTED RESPONSE
 ;HIGHEST LEGITIMATE VALUE OF EXPECTED RESPONSE
 ;POINTER TO MAP LOCATION TO BE FILLED
 ;MASK OF INVALID BITS FOR THIS PARAMETER
 ;NUMBER OF PARAMETERS TO STORE
 ;MAKE SURE THE CHANGES ARE PRINTED
 ;THIS SEGMENT CHECKS TO MAKE SURE THE LINE PARAMETER JUST ENTERED
 ;IS LEGITIMATE IN STAGGERED MODE OPERATION IF THAT MODE WAS SELECTED
 ;IS STAGGERED THE MODE OF OPERATION?
 ;IF NOT, SKIP THIS SEGMENT
 ;GET A SCRATCH COPY OF THE ACTIVE LINES
 ;GET A LINE SELECTION BIT(EVEN NUMBER LINE)
 ;IF IT IS SELECTED, CHECK TO SEE IF THE NEXT IS TOO
 ;IF ALL HAVE BEEN CHECKED, CONTINUE PROCESSING
 ;IF IT IS 0,CHECK TO SEE IF THE NEXT IS TOO
 ;IF THIS ONE'S 0 TOO, GO CHECK THE NEXT PAIR
 ;THIS IS AN INCORRECT PARAMETER
 ;LET THE USER KNOW ABOUT IT
 ;GO GET THE CORRECT PARAMETER
 ;IF ANOTHER FLAG ISN'T SET, THERE'S AN ERROR
 ;GET THE NEXT FLAG
 ;IF IT ISN'T SET, THERE'S AN ERROR
 ;INITIALIZE THE "C" BIT FOR TESTING OF THE NEXT PAIR
 ;GO TEST THE NEXT PAIR OF FLAGS
 ; -IGETPAR-----
 ;CALL THE STRING INPUT ROUTINE
 ;POINTER TO MESSAGE TO BE PRINTED
 ;CALL THE OCTAL TO ASCII CONVERT ROUTINE
 ;LOWEST LEGITIMATE VALUE OF EXPECTED RESPONSE
 ;HIGHEST LEGITIMATE VALUE OF EXPECTED RESPONSE
 ;POINTER TO MAP LOCATION TO BE FILLED
 ;MASK OF INVALID BITS FOR THIS PARAMETER
 ;NUMBER OF PARAMETERS TO STORE
 ;POINT TO THE LINE SELECTION PARAMETER
 ;POINT TO THE CHOSEN PARAMETERS
 ;USE BAUD RATE AS AN INDEX IN DELAY TABLE
 ;ALIGN INDEX ON WORD BOUNDARY
 ;SET THE DELAY COUNT FOR THIS BAUD RATE
 ;PLACE IN HIGH BYTE
 ;PLACE EXTRA PARAMETERS INTO LOC
 ;LOAD THE LINES
 ;LOAD THE PARAMETERS
 ;POINT TO THE NEXT SET

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1898	003450	062703	000014		ADD	#14,R3	; ... OF BOTH PARAMETERS
1899	003454	020327	001774		CMP	R3,#PAR17	; HAVE THE TABLE BOUNDARIES BEEN EXCEEDED?
1900	003460	001365			BNE	284	; IF NOT, GO LOAD SOME MORE PARAMETERS
1901	003462	000207			RTS	PC	; RETURN TO CALLING BLOCK
1902	003464	030600	052123	041440	664:	.ASCIZ	<200>/1ST CSR ADDRESS (160000:163700): /
(1)	003530	030600	052123	053040	674:	.ASCIZ	<200>/1ST VECTOR ADDRESS (300:770): /
(1)	003571	200	051102	046040	684:	.ASCIZ	<200>/BR LEVEL (4:6): /
(1)	003614	046200	047111	051505	694:	.ASCIZ	<200>/LINES ACTIVE BY BIT <IN OCTAL>(001:377): /
(1)	003670	042200	043105	052501	704:	.ASCIZ	<200>/DEFAULT BAUD RATE <IN OCTAL>(00:16): /
(1)	003740	021600	047440	020106	714:	.ASCIZ	<200>/# OF DZ11'S <IN OCTAL> (1:20): /
(1)	004002	046600	044501	052116	724:	.ASCII	<200>/MAINTENANCE MODE/
(1)	004023	200	055440	054105		.ASCII	<200>/ [EXTERNAL <H325>-EIA ONLY (E)]/
(1)	004071	200	055440	047111		.ASCII	<200>/ [INTERNAL <DZCSR03=1> (I)]/
(1)	004137	200	055440	052123		.ASCII	<200>/ [STAGGERED <H3271>-EIA ONLY (S)]: /
(1)	004207	200	055440	052123		.ASCII	<200>/ [STAGGERED <H3190>-20MA ONLY (S)]: /
(1)	004260	052200	050131	020105	744:	.ASCIZ	<200>/TYPE "A" FOR EIA MODULE OR "B" FOR 20 MA (A:B): /
(1)	004342	042600	052116	051105	754:	.ASCIZ	<200>/ENTER DELAY PARAMETER: /
(1)		004374					
(1)	004374				634:		
1903	004374	122737	000377	001415		CMPB	#377,INIFLG
1904	004402	001006				BNE	164
1905	004404	032777	000200	174546		BIT	#BIT7,BSWR
1906	004412	001002				BNE	164
1907	004414	004737	012264			JSR	PC,AUTO.SIZE
1908	004420	105737	001416		164:	TSTB	HDRFLG
1909	004424	001021				BNE	14
1910	004426	105337	001416			DECB	HDRFLG
1911	004432	104402	011050			TYPE	,XHEAD
1912	004436	012700	001500			MOV	#DZ.MAP,RO
1913	004442	010037	001220		54:	MOV	RO,#TMP1
1914	004446	012037	001222			MOV	(RO),#TMP2
1915	004452	022737	177777	001222		CMP	#-1,#TMP2
1916	004460	001403				BEQ	14
1917	004462	104411			174:	CONVRT	
1918	004464	011140				XSTATQ	
1919	004466	000765				BR	54
1920	004470	005737	000042		14:	TST	#42
1921	004474	001026				BNE	34
1922	004476	032777	000100	174454		BIT	#SW06,BSWR
1923	004504	001422				BEQ	34
1924	004506	104402	010771			TYPE	,MNEW
1925	004512	005000				CLR	RO
1926	004514	000000				HALT	
1927	004516	027737	174436	001312		CMP	BSWR,#DEVH
1928	004524	101404				BLOS	24
1929	004526	104402	010643			TYPE	,MERR3
1930	004532	000000			94:	HALT	
1931	004534	000776				BR	94
1932	004536	017737	174416	001404	24:	MOV	BSWR,DZACTV
1933	004544	013700	001404			MOV	DZACTV,RO
1934	004550	000000				HALT	
1935	004552	032777	000020	174400	34:	BIT	#SW04,BSWR
1936	004560	001407				BEQ	184
1937							
1938	004562	104403				INSTR	
1939	004564	004342				754	

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1940 004566 104405          PARAM
1941 004570 000001          1
1942 004572 177777          177777
1943 004574 007214          DLYCNT
1944 004576      000          .BYTE 0
1945 004577      001          .BYTE 1
1946                                     ; -- END 0 MACRO -----
1947 004600 012700 000300    18:  MOV      #300,R0          ;PREPARE TO CLEAR THE FLOATING
1948 004604 012701 000302    MOV      #302,R1          ;VECTOR AREA. 300-776
1949 004610 010120          4:  MOV      R1,(R0)+        ;START PUTTING "PC+2 - HALT"
1950 004612 005021          CLR      (R1)+            ;IN VECTOR AREA.
1951 004614 022021          CMP      (R0)+,(R1)+        ;POP POINTERS
1952 004616 022700 001000    CMP      #1000,R0         ;ALL DONE??
1953 004622 001372          BNE      4:                ;BR IF NO.
1954
1955                                     ;TEST START AND RESTART
1956                                     ;-----
1957
1958 004624 012706 001120    .BEGIN: MOV      #STACK,SP    ;SET UP STACK
1959 004630 106427 000340    MTPS      #PR7              ;LOCK OUT INTERRUPTS
1960 004634 005737 000042    TST       #42               ;IS PROGRAM UNDER MONITOR CONTROL
1961 004640 001015          BNE      2:                ;BR IF YES
1962 004642 032777 000004 174310  BIT      #BIT2,BSHR     ;CHECK FOR LOCK ON TEST
1963 004650 001406          BEQ      1:                ;BR IF NO LOCK DESIRED.
1964 004652 104402 010667    TYPE      ,MLOCK           ;TYPE LOCK SELECTED.
1965 004656 012737 000240 005140  MOV      #NOP,TTST      ;ADJUST SCOPE ROUTINE.
1966 004664 000403          BR       2:                ;CONTINUE ALONG.
1967 004666 013737 005372 005140 1:  MOV      BRW,TTST     ;PREPARE NORMAL SCOPE ROUTINE
1968 004674 012737 011542 001126 2:  MOV      #CYCLE,#LPADR ;START AT "CYCLE" FIND WHICH DEVICE TO TEST
1969 004702 104402 010560    TYPE      ,MR              ;TYPE "RUNNING"
1970 004706 000177 174214    JMP       #LPADR           ;START TESTING
1971                                     ; -- END 0 MACRO -----
1972                                     ; -PRGEND-----

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1973      ;END OF PASS
1974      ;TYPE NAME OF TEST
1975      ;UPDATE PASS COUNT
1976      ;CHECK FOR EXIT TO ACT-11
1977      ;RESTART TEST
1978      .SBTTL  END OF PASS ROUTINE
1979
1980      ;*****
1981      ;*INCREMENT THE PASS NUMBER (#PASS)
1982      ;*IF THERES A MONITOR GO TO IT
1983      ;*IF THERE ISN'T JUMP TO CYCLE
1984
1985      $EOP:
1986
1987      004712      000004      SCOPE
1988      004714      005037      001136      CLR      $ERRPC      ;CLEAR LAST ERROR PC
1989      004720      105037      001123      CLRB     $ERFLG      ;CLEAR ERROR FLAG
1990      004724      104402      010535      TYPE     ,HEPASS     ;TYPE END PASS
1991      004730      104402      010716      TYPE     ,MCSRX      ;TYPE CSR
1992      004734      104412      005072      CNVRT    ,XCSR       ;SHOW IT
1993      004740      104402      010724      TYPE     ,MVECX      ;TYPE VECTOR
1994      004744      104412      005100      CNVRT    ,XVEC       ;SHOW IT
1995      004750      005237      001242      INC      $PASS      ;RAISE PASS COUNT
1996      004754      104402      010732      TYPE     ,MPASSX     ;TYPE PASSES
1997      004760      104412      005106      CNVRT    ,XPASS      ;SHOW IT
1998      004764      005337      001242      DEC      $PASS      ;RESTORE PASS COUNT
1999      004770      104402      010743      TYPE     ,MERRX     ;TYPE ERRORS
2000      004774      104412      005114      CNVRT    ,XERR       ;SHOW IT
2001      005000      105337      001411      DECB     SAVNUM     ;ARE ALL DEVICES TESTED?
2002      005004      001030      BNE      $DOAGN     ;BR IF NO.
2003      005006      113737      001410      001411      MOVB     DZNUM,SAVNUM ;RESTORE THE COUNT
2004      005014      005037      001226      CLR      $TIMES     ;ZERO THE NUMBER OF ITERATIONS
2005      005020      005237      001242      INC      $PASS      ;INCREMENT THE PASS NUMBER
2006      005024      042737      100000      001242      BIC      $100000,$PASS ;DON'T ALLOW A NEG. NUMBER
2007      005032      005327      DEC      (PC)+      ;LOOP?
2008      005034      000001      $EOPCT: .WORD     1
2009      005036      003013      BGT      $DOAGN     ;YES
2010      005040      012737      MOV      (PC)+,B(PC)+ ;RESTORE COUNTER
2011      005042      000001      $ENDCT: .WORD     1
2012      005044      005034      $EOPCT
2013      005046      013700      000042      $GET42: MOV      $42,R0      ;GET MONITOR ADDRESS
2014      005052      001405      BEQ      $DOAGN     ;BRANCH IF NO MONITOR
2015      005054      000005      RESET
2016      005056      004710      $ENDAD: JSR      PC,(R0)   ;GO TO MONITOR
2017      005060      000240      NOP
2018      005062      000240      NOP
2019      005064      000240      NOP
2020      005066      $DOAGN:
2021      005066      000137      JMP      B(PC)+      ;RETURN
2022      005070      011542      $RTNAD: .WORD     CYCLE
2023
2024      005072      000001      XCSR:      1
2025      005074      006        002      .BYTE     6,2
2026      005076      002042      DZCSR
2027      005100      000001      XVEC:      1
2028      005102      003        002      .BYTE     3,2

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2029 005104 002072
2030 005106 000001
2031 005110 006 002
2032 005112 001242
2033 005114 000001
2034 005116 006 002
2035 005120 001132
2036
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2052 005122
2053
2054 005122 004737 007652
2055 005126 005037 001136
2056 005132 022716 013050
2057 005136 001417
2058 005140 000412
2059 005142 105777 174016
2060 005146 100073
2061 005150 127727 174012 000021
2062 005156 001467
2063 005160 017766 174002 177776
2064
2065 005166 032777 040000 173764
2066 005174 001060
2067
2068 005176 000416
2069
2070 005200 013746 000004
2071 005204 012737 005224 000004
2072 005212 005737 177060
2073 005216 012637 000004
2074 005222 000436
2075 005224 022626
2076 005226 012637 000004
2077 005232 000441
2078 005234
2079 005234 105737 001123
2080 005240 001404
2081 005242 105037 001123
2082 005246 005037 001226
2083 005252 032777 004000 173700
2084 005260 001011

DZRIV
XPASS: 1
        .BYTE 6.2
        $PASS
XERR: 1
        .BYTE 6.2
        $ERTTL

;SCOPE LOOP AND ITERATION HANDLER
;-----

.SBTTL SCOPE HANDLER ROUTINE

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

$SCOPE:

.SCOPE: JSR PC.SERV.G
        CLR $ERRPC
        CMP $TST1+2,($SP)
        BEQ $XTSTR
TTST: BR 1$
        TSTB $TKS
        BPL $OVER
        CMPB $TKB,$XON
        BEQ $OVER
        MOV $TKB,-2($SP)
; -- END O MACRO -----
1$: BIT $BIT14,$SWR ;:LOOP ON PRESENT TEST?
   BNE $OVER ;:YES IF SW14=1
;####START OF CODE FOR THE XOR TESTER####
$XTSTR: BR 6$ ;:IF RUNNING ON THE "XOR" TESTER CHANGE
;THIS INSTRUCTION TO A "NOP" (NOP=240)
        MOV $ERRVEC,-($SP) ;:SAVE THE CONTENTS OF THE ERROR VECTOR
        MOV $5,$ERRVEC ;:SET FOR TIMEOUT
        TST $177060 ;:TIME OUT ON XOR?
        BR $SVLAD ;:RESTORE THE ERROR VECTOR
        CMP ($SP)+,($SP)+ ;:GO TO THE NEXT TEST
        MOV ($SP)+,$ERRVEC ;:CLEAR THE STACK AFTER A TIME OUT
        BR $OVER ;:RESTORE THE ERROR VECTOR
        ;:LOOP ON THE PRESENT TEST
6$;####END OF CODE FOR THE XOR TESTER####
2$: TSTB $ERFLG ;:HAS AN ERROR OCCURRED?
   BEQ 3$ ;:BR IF NO
4$: CLRB $ERFLG ;:ZERO THE ERROR FLAG
   CLR $TIMES ;:CLEAR THE NUMBER OF ITERATIONS TO MAKE
3$: BIT $BIT11,$SWR ;:INHIBIT ITERATIONS?
   BNE 1$ ;:BR IF YES

```

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2085 005262 005737 001242          TST      $PASS          ;; IF FIRST PASS OF PROGRAM
2086 005266 001406                   BEQ      1$           ;; INHIBIT ITERATIONS
2087 005270 005237 001124                   INC      $ICNT          ;; INCREMENT ITERATION COUNT
2088 005274 023737 001226 001124          CMP      $TIMES,$ICNT      ;; CHECK THE NUMBER OF ITERATIONS MADE
2089 005302 002015                   BGE      $OVER          ;; BR IF MORE ITERATION REQUIRED
2090 005304 012737 000001 001124 1$:      MOV      $1,$ICNT          ;; REINITIALIZE THE ITERATION COUNTER
2091 005312 013737 005374 001226          MOV      $MXCNT,$TIMES      ;; SET NUMBER OF ITERATIONS TO DO
2092 005320 105237 001122          $SVLAD: INCB      $TSTNM          ;; COUNT TEST NUMBERS
2093 005324 113737 001122 001240          MOVB     $TSTNM,$TESTN      ;; SET TEST NUMBER IN APT MAILBOX
2094 005332 011637 001126          MOV      (SP),$LPADR          ;; SAVE SCOPE LOOP ADDRESS
2095 005336 013777 001122 173616 $OVER:  MOV      $TSTNM,$DISPLAY    ;; DISPLAY TEST NUMBER
2096 005344 013716 001126          MOV      $LPADR,(SP)          ;; FUDGE RETURN ADDRESS
2097                                     ; -SC1-----
2098 005350 105037 001417          3$:      CLRB      MNTFLG          ;; CLEAR THE MAINTENANCE BIT SETTER AFTER EACH TEST
2099 005354 005737 001370          TST      MODE          ;; HAS THE MODE BEEN CHANGED?
2100 005360 001003                   BNE      4$           ;; IF NOT INTERNAL , GO DO A TEST
2101 005362 112737 000010 001417          MOVB     $MAINT,MNTFLG      ;; IF INTERNAL MODE NOW, SET THE MAINTENANCE BIT
2102 005370 000002                   RTI                      ;; GO DO THE TEST
2103 005372 000406          BRW:      406
2104                                     ; -- END 0 MACRO -----
2105 005374 000005          $MXCNT: 5          ;; MAX. NUMBER OF ITERATIONS
2106
2107                                     ;CHECK FOR FREEZE ON CURRENT DATA
2108                                     ;-----
2109
2110 005376 032777 001000 173554 .SCOP1: BIT      $SW09,$SMR          ;; IS SW09=1(SET)?
2111 005404 001405                   BEQ      1$           ;; BR IF NOT SET.
2112 005406 005737 001362                   TST      LOCK          ;; IS THER A TIGHT LOOP SPECIFIED?
2113 005412 001402                   BEQ      1$           ;; IF NO, RETURN
2114 005414 013716 001362          MOV      LOCK,(SP)          ;; IF YES, GOTO THE ADDRESS IN LOCK.
2115 005420 000002          1$:      RTI                      ;; GO BACK.
2116
2117 005422 032777 010000 173530 .TYPE:  BIT      $SW12,$SMR          ;; INHIBIT ALL PRINTOUT??
2118 005430 001403                   BEQ      1$           ;; IF NOT, GO TYPE
2119 005432 062716 000002          ADD      $2,(SP)          ;; SKIP OVER MESSAGE POINTER
2120 005436 000002          RTI                      ;; RETURN TO WHERE PROCEDURE WAS INVOKED
2121 005440          1$:
2122          .SBTTL  TYPE ROUTINE
2123
2124          ;*****
2125          ;*ROUTINE TO TYPE ASCIZ MESSAGE. MESSAGE MUST TERMINATE WITH A 0 BYTE.
2126          ;*THE ROUTINE WILL INSERT A NUMBER OF NULL CHARACTERS AFTER A LINE FEED.
2127          ;*NOTE1:      $NULL CONTAINS THE CHARACTER TO BE USED AS THE FILLER CHARACTER.
2128          ;*NOTE2:      $FILLS CONTAINS THE NUMBER OF FILLER CHARACTERS REQUIRED.
2129          ;*NOTE3:      $FILLC CONTAINS THE CHARACTER TO FILL AFTER.
2130          ;*
2131          ;*CALL:
2132          ;*1) USING A TRAP INSTRUCTION
2133          ;*      TYPE      ,MESADR          ;; MESADR IS FIRST ADDRESS OF AN ASCIZ STRING
2134          ;*OR
2135          ;*      TYPE
2136          ;*      MESADR
2137          ;*
2138
2139 005440 105737 001177          $TYPE:  TSTB     $TPFLG          ;; IS THERE A TERMINAL?
2140 005444 100002          BPL      1$           ;; BR IF YES

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2141	005446	000000			HALT		;;HALT HERE IF NO TERMINAL	
2142	005450	000430			BR	3:	;;LEAVE	
2143	005452	010046			MOV	14:	;;SAVE R0	
2144	005454	017600	000002		MOV		;;GET ADDRESS OF ASCIZ STRING	
2145	005460	122737	000001	001254	CMPB		;;RUNNING IN APT MODE	
2146	005466	001011			BNE		;;NO,GO CHECK FOR APT CONSOLE	
2147	005470	132737	000100	001255	BITB		;;SPOOL MESSAGE TO APT	
2148	005476	001405			BEQ		;;NO,GO CHECK FOR CONSOLE	
2149	005500	010037	005510		MOV		;;SETUP MESSAGE ADDRESS FOR APT	
2150	005504	004737	006012		JSR		;;SPOOL MESSAGE TO APT	
2151	005510	000000			.WORD	614:	;;MESSAGE ADDRESS	
2152	005512	132737	000040	001255	BITB	624:	;;APT CONSOLE SUPPRESSED	
2153	005520	001003			BNE		;;YES,SKIP TYPE OUT	
2154	005522	112046			MOVB	24:	;;PUSH CHARACTER TO BE TYPED ONTO STACK	
2155	005524	001005			BNE		;;BR IF IT ISN'T THE TERMINATOR	
2156	005526	005726			TST		;;IF TERMINATOR POP IT OFF THE STACK	
2157	005530	012600			MOV	604:	;;RESTORE R0	
2158	005532	062716	000002		ADD	34:	;;ADJUST RETURN PC	
2159	005536	000002			RTI		;;RETURN	
2160	005540	122716	000011		CMPB	44:	;;BRANCH IF <HT>	
2161	005544	001430			BEQ			
2162	005546	122716	000200		CMPB		;;BRANCH IF NOT <CRLF>	
2163	005552	001006			BNE			
2164	005554	005726			TST		;;POP <CR><LF> EQUIV	
2165	005556	104402			TYPE		;;TYPE A CR AND LF	
2166	005560	001231			#CRLF			
2167	005562	105037	006000		CLRB		;;CLEAR CHARACTER COUNT	
2168	005566	000755			BR		;;GET NEXT CHARACTER	
2169	005570	004737	005652		JSR	54:	;;GO TYPE THIS CHARACTER	
2170	005574	123726	001176		CMPB	64:	;;IS IT TIME FOR FILLER CHARS.?	
2171	005600	001350			BNE		;;IF NO GO GET NEXT CHAR.	
2172	005602	013746	001174		MOV		;;GET # OF FILLER CHARS. NEEDED	
2173							;;AND THE NULL CHAR.	
2174	005606	105366	000001		DECB	74:	;;DOES A NULL NEED TO BE TYPED?	
2175	005612	002770			BLT		;;BR IF NO--GO POP THE NULL OFF OF STACK	
2176	005614	004737	005652		JSR		;;GO TYPE A NULL	
2177	005620	105337	006000		DECB		;;DO NOT COUNT AS A COUNT	
2178	005624	000770			BR		;;LOOP	
2179								
2180								
2181								
2182	005626	112716	000040		MOVB	84:	;;REPLACE TAB WITH SPACE	
2183	005632	004737	005652		JSR	94:	;;TYPE A SPACE	
2184	005636	132737	000007	006000	BITB		;;BRANCH IF NOT AT	
2185	005644	001372			BNE		;;TAB STOP	
2186	005646	005726			TST		;;POP SPACE OFF STACK	
2187	005650	000724			BR		;;GET NEXT CHARACTER	
2188	005652							
2189	005652	105777	173306		TSTB		;;CHAR IN KYBD BUFFER?	;;MJD001
2190	005656	100022			BPL		;;BR IF NOT	;;MJD001
2191	005660	017746	173302		MOV		;;GET CHAR	;;MJD001
2192	005664	042716	177600		BIC		;;STRIP EXTRANEIOUS BITS	;;MJD001
2193	005670	122716	000023		CMPB		;;WAS CHAR XOFF	;;MJD001
2194	005674	001012			BNE		;;BR IF NOT	;;MJD001
2195	005676							;;MJD001
2196	005676	105777	173262		TSTB	1014:	;;WAIT FOR CHAR	;;MJD001

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2197 005702 100375      BPL      101:
2198 005704 117716 173256  MOVB    @TKB,(SP)      ;;GET CHAR      ;MJD001
2199 005710 042716 177600  BIC     @177600,(SP)    ;;STRIP IT      ;MJD001
2200 005714 122716 000021  CMPB    @XON,(SP)      ;;WAS IT XON?    ;MJD001
2201 005720 001366      BNE     101:      ;;BR IF NOT      ;MJD001
2202      005722      102:      TST     (SP)+      ;;FIX STACK      ;MJD001
2203 005722 005726      104:      TSTB    @TPS      ;;WAIT UNTIL PRINTER IS READY ;MJD001
2204 005724      104:      BPL     104:      ;MJD001
2205 005724 105777 173240      BPL     104:      ;MJD001
2206 005730 100375      CMPB    2(SP),@XON    ;;IS CHARACTER A RANDOM XON? ;RAN001
2207 005732 126627 000002 000021  BEQ     $TYPEX    ;;BRANCH IF YES    ;RAN001
2208 005740 001420      MOVB    2(SP),@TPB    ;;LOAD CHAR TO BE TYPED INTO DATA REG.
2209 005742 116677 000002 173222  CMPB    @CR,2(SP)    ;;IS CHARACTER A CARRIAGE RETURN?
2210 005750 122766 000015 000002  BNE     1:      ;;BRANCH IF NO
2211 005756 001003      CLRB    $CHARCNT    ;;YES--CLEAR CHARACTER COUNT
2212 005760 105037 006000      BR     $TYPEX    ;;EXIT
2213 005764 000406      CMPB    @LF,2(SP)    ;;IS CHARACTER A LINE FEED?
2214 005766 122766 000012 000002 14:  BEQ     $TYPEX    ;;BRANCH IF YES
2215 005774 001402      INCB    (PC)+      ;;COUNT THE CHARACTER
2216 005776 105227      $CHARCNT: .WORD 0    ;;CHARACTER COUNT STORAGE
2217 006000 000000      $TYPEX: RTS     PC
2218 006002 000207
2219
2220      .SBTTL  APT COMMUNICATIONS ROUTINE
2221
2222      ;*****
2223 006004 112737 000001 006250 $ATY1: MOVB    @1,$FFLG    ;;TO REPORT FATAL ERROR
2224 006012 112737 000001 006246 $ATY3: MOVB    @1,$MFLG    ;;TO TYPE A MESSAGE
2225 006020 000403      BR     $ATYC
2226 006022 112737 000001 006250 $ATY4: MOVB    @1,$FFLG    ;;TO ONLY REPORT FATAL ERROR
2227 006030      $ATYC:
2228 006030 010046      MOV     R0,-(SP)    ;;PUSH R0 ON STACK
2229 006032 010146      MOV     R1,-(SP)    ;;PUSH R1 ON STACK
2230 006034 105737 006246      TSTB    $MFLG    ;;SHOULD TYPE A MESSAGE?
2231 006040 001450      BEQ     5:      ;;IF NOT: BR
2232 006042 122737 000001 001254  CMPB    @APTENV,$ENV    ;;OPERATING UNDER APT?
2233 006050 001031      BNE     3:      ;;IF NOT: BR
2234 006052 132737 000100 001255  BITB    @APTPOOL,$ENVH    ;;SHOULD SPOOL MESSAGES?
2235 006060 001425      BEQ     3:      ;;IF NOT: BR
2236 006062 017600 000004      MOV     @4(SP),R0    ;;GET MESSAGE ADDR.
2237 006066 062766 000002 000004  ADD     @2,4(SP)    ;;BUMP RETURN ADDR.
2238 006074 005737 001234      14:  TST     $MSGTYPE    ;;SEE IF DONE W/ LAST XMISSION?
2239 006100 001375      BNE     1:      ;;IF NOT: WAIT
2240 006102 010037 001250      MOV     R0,$MSGAD    ;;PUT ADDR IN MAILBOX
2241 006106 105720      24:  TSTB    (R0)+      ;;FIND END OF MESSAGE
2242 006110 001376      BNE     24:
2243 006112 163700 001250      SUB     $MSGAD,R0    ;;SUB START OF MESSAGE
2244 006116 006200      ASR     R0      ;;GET MESSAGE LGTH IN WORDS
2245 006120 010037 001252      MOV     R0,$MSGLGT    ;;PUT LENGTH IN MAILBOX
2246 006124 012737 000004 001234  MOV     @4,$MSGTYPE    ;;TELL APT TO TAKE MSG.
2247 006132 000413      BR     5:
2248 006134 017637 000004 006160 34:  MOV     @4(SP),44    ;;PUT MSG ADDR IN ISR LINKAGE
2249 006142 062766 000002 000004  ADD     @2,4(SP)    ;;BUMP RETURN ADDRESS
2250 006150 013746 177776      MOV     177776,-(SP)    ;;PUSH 177776 ON STACK
2251 006154 004737 005440      JSR     PC,$TYPE    ;;CALL TYPE MACRO
2252 006160 000000      44:  .WORD 0

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2253 006162          54:
2254 006162 105737 006250 104:  TSTB  #FFLG      ;; SHOULD REPORT FATAL ERROR?
2255 006166 001416          BEQ  124      ;; IF NOT: BR
2256 006170 005737 001254          TST  #ENV      ;; RUNNING UNDER APT?
2257 006174 001413          BEQ  124      ;; IF NOT: BR
2258 006176 005737 001234 114:  TST  #MSGTYPE  ;; FINISHED LAST MESSAGE?
2259 006202 001375          BNE  114      ;; IF NOT: WAIT
2260 006204 017637 000004 001236 MOV  B4(SP),#FATAL ;; GET ERROR #
2261 006212 062766 000002 000004 ADD  #2,4(SP)      ;; BUMP RETURN ADDR.
2262 006220 005237 001234          INC  #MSGTYPE  ;; TELL APT TO TAKE ERROR
2263 006224 105037 006250 124:  CLRB  #FFLG      ;; CLEAR FATAL FLAG
2264 006230 105037 006247          CLRB  #LFLG      ;; CLEAR LOG FLAG
2265 006234 105037 006246          CLRB  #MFLG      ;; CLEAR MESSAGE FLAG
2266 006240 012601          MOV  (SP)+,R1    ;; POP STACK INTO R1
2267 006242 012600          MOV  (SP)+,R0    ;; POP STACK INTO R0
2268 006244 000207          RTS   PC          ;; RETURN
2269 006246      000      #MFLG: .BYTE 0      ;; MESSG. FLAG
2270 006247      000      #LFLG: .BYTE 0      ;; LOG FLAG
2271 006250      000      #FFLG: .BYTE 0      ;; FATAL FLAG
2272          006252          .EVEN
2273          000200  APTSIZE=200
2274          000001  APTENV=001
2275          000100  APTSPool=100
2276          000040  APTCSUP=040
2277
2278          ;STRING INPUT ROUTINE
2279          ;-----
2280
2281 006252 010346          .INSTR: MOV  R3,-(SP)    ;SAVE R3 ON STACK
2282 006254 010446          MOV  R4,-(SP)    ;SAVE R4 ON STACK
2283 006256 017637 000004 006274 MOV  B4(SP),.MSG  ;GET THE ADDRESS OF THE MESSAGE TO BE PRINTED
2284 006264 062766 000002 000004 ADD  #2,4(SP)    ;POINT TO INSTRUCTION AFTER ADDRESS POINTER
2285 006272 104402          .INST1: TYPE  ;PRINT THE MESSAGE
2286 006274 000000          .MSG: 0          ;MESSAGE IS POINTED TO FROM HERE
2287 006276 012704 011272          MOV  #INBUF,R4  ;POINT R4 TO THE INPUT BUFFER
2288 006302 012703 000007          MOV  #7,R3      ;SET THE MAXIMUM NUMBER OF CHARACTERS ALLOWED
2289 006306 105777 172652 14:  TSTB  #TKS      ;HAS A CHARACTER BEEN RECEIVED?
2290 006312 100375          BPL  14          ;IF NO, KEEP WAITING FOR IT
2291 006314 117714 172646          MOVB  #TKB,(R4)  ;IF YES, SAVE IT IN THE INPUT BUFFER
2292 006320 142714 000200          BICB  #200,(R4)  ;KEEP ONLY THE 7-BIT ASCII INFORMATION
2293 006324 122714 000023          CPB   #XOFF,(R4)  ;IS IT A XOFF?
2294 006330 001014          BNE  834          ;BR IF NOT
2295 006332 105777 172626 1014: TSTB  #TKS      ;WAIT FOR A CHARACTER
2296 006336 100375          BPL  1014          ;DSH-BHL
2297 006340 117714 172622          MOVB  #TKB,(R4)  ;GET CHARACTER
2298 006344 142714 000200          BICB  #200,(R4)  ;STRIP DOWN CHARACTER
2299 006350 122714 000021          CPB   #XON,(R4)  ;WAIT FOR A XON?
2300 006354 001366          BNE  1014          ;DSH-BHL
2301 006356 105724          TSTB  (R4)+      ;GET NEXT CHAR IF NOT
2302 006360 000752          BR  14          ;POP STACK
2303 006362 122714 000021 834:  CPB   #XON,(R4)  ;WAIT FOR A CHAR
2304 006366 001002          BNE  1024          ;IS IT A RANDOM XON
2305 006370 105724          TSTB  (R4)+      ;BR IF NO
2306 006372 000745          BR  14          ;DSH-BHL
2307 006374 122724 000015 1024: CPB   #15,(R4)+  ;ELSE, POP STACK
2308 006400 001417          BEQ  INSTR2        ;GO GET NEXT CHAR

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;; IF SO, TERMINATE THE INPUT SEQUENCE

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2309 006402 105777 172562      24:  TSTB    B4TPS      ;IF NOT, CHECK TO SEE IF THE CHARACTER CAN PRINT
2310 006406 100375              BPL      24      ;IF WE CAN'T, WAIT UNTIL WE CAN
2311 006410 017777 172552 172554  MOV     B4TKB,B4TPB ;ECHO THE CHARACTER BACK
2312 006416 005303              DEC      R3      ;REDUCE THE NUMBER OF CHARACTERS RECEIVED
2313 006420 001332              BNE      14      ;IF WE DON'T HAVE 7, GO GET SOME MORE
2314 006422 012604              MOV     (SP)+,R4 ;IF WE HAVE 7, RESTORE R4
2315 006424 012603              MOV     (SP)+,R3 ;RESTORE R3
2316 006426 010346              .INSTE: MOV    R3,-(SP) ;SAVE R3 ON THE STACK
2317 006430 010446              MOV     R4,-(SP) ;SAVE R4 ON THE STACK
2318 006432 104402 001230      TYPE    ,4QUES ;PRINT A QUESTION MARK... WHAT'S GOING ON?
2319 006436 000715              BR      .INST1 ;GO PRINT THE MESSAGE AGAIN
2320 006440 012604      INSTR2: MOV    (SP)+,R4 ;RESTORE R4
2321 006442 012603              MOV     (SP)+,R3 ;RESTORE R3
2322 006444 000002              RTI      ;RETURN TO THE MAIN PROCEDURE
2323
2324              ;CONVERT ASCII STRING TO OCTAL
2325              ;-----
2326
2327 006446 010546              .PARAM: MOV    R5,-(SP) ;SAVE R5 ON THE STACK
2328 006450 010446              MOV     R4,-(SP) ;SAVE R4 ON THE STACK
2329 006452 016605 000004      MOV     4(SP),R5 ;GET THE SETUP INFORMATION POINTER
2330 006456 012537 006636      MOV     (R5)+,LOLIM ;SET THE LOW LIMIT FOR THE INPUT
2331 006462 012537 006640      MOV     (R5)+,HILIM ;SET THE HIGH LIMIT FOR THE INPUT
2332 006466 012537 006642      MOV     (R5)+,DEVADR ;SAVE THE ADDRESS WHERE THE RESULT WILL BE STORED
2333 006472 112537 006644      MOV     (R5)+,LOBITS ;GET THE MASK OF THE INCORRECT BITS
2334 006476 112537 006645      MOV     (R5)+,ADRCNT ;GET THE COUNT OF ITEMS TO BE STORED
2335 006502 010566 000004      MOV     R5,4(SP) ;POINT TO WHERE MAIN LINE PROGRAM WILL RESUME
2336 006506 005005      PARAM1: CLR     R5 ;INITIALIZE THE ASCII TO OCTAL RESULT WORD
2337 006510 012704 011272      MOV     0INBUF,R4 ;POINT TO THE INPUT BUFFER
2338 006514 122714 000015      CMPB   #15,(R4) ;IS THIS CHARACTER A CARRIAGE RETURN?
2339 006520 001420              BEQ     PARERR ;IF SO, PRINT THE MESSAGE AGAIN
2340 006522 121427 000060      14:  CMPB   (R4),#60 ;IS THIS CHARACTER BELOW THE NUMERIC RANGE?
2341 006526 002415              BLT     PARERR ;IF SO, GO PRINT THE MESSAGE AGAIN
2342 006530 121427 000067      CMPB   (R4),#67 ;IS THIS CHARACTER ABOVE THE NUMERIC RANGE?
2343 006534 003012              BGT     PARERR ;IF SO, GO PRINT THE MESSAGE AGAIN
2344 006536 142714 000060      BICB   #60,(R4) ;ISOLATE THE NUMBER THE CHARACTER REPRESENTS
2345 006542 152405              BISB   (R4)+,R5 ;CONCATENATE THESE BITS TO THE ALREADY EXISTING STRING
2346 006544 122714 000015      CMPB   #15,(R4) ;IS THE NEXT CHARACTER A CARRIAGE RETURN?
2347 006550 001406              BEQ     LIMITS ;IF SO, GO SEE IF NUMBER IS WITHIN LIMITS
2348 006552 006305              ASL     R5 ;CLEAR BIT POSITION 0, MOVE EXISTING STRING TO LEFT
2349 006554 006305              ASL     R5 ;CLEAR POSITION 1, MOVE STRING TO LEFT AGAIN
2350 006556 006305              ASL     R5 ;MOVE THE STRING ONE MORE TIME TO MAKE ROOM FOR
2351                          ;NEXT THREE BITS
2352 006560 000760              BR      14 ;GO GET THE NEXT CHARACTER
2353 006562 104404      PARERR: INSTER ;THERE WAS AN ERROR... GO PRINT MESSAGE AGAIN
2354 006564 000750              BR      PARAM1 ;TRY GETTING THE PARAMETERS AGAIN
2355
2356              ;TEST TO SEE IF NUMBER IS WITHIN LIMITS
2357              ;-----
2358
2359 006566 020537 006640      LIMITS: CMP     R5,HILIM ;DOES RESULT EXCEED ITS MAXIMUM CORRECT VALUE?
2360 006572 101373              BHI     PARERR ;IF YES, GO PRINT THE MESSAGE AGAIN
2361 006574 020537 006636      CMP     R5,LOLIM ;IS THE RESULT LOWER THAN ALLOWED?
2362 006600 103770              BLO     PARERR ;IF YES, GO PRINT THE MESSAGE AGAIN
2363 006602 133705 006644      BITB   LOBITS,R5 ;ARE ANY INCORRECT BITS SET IN THE RESULT?
2364 006606 001365              BNE     PARERR ;IF SO, GO PRINT THE MESSAGE AGAIN

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2365
2366 ;STORE NUMBER AT SPECIFIED ADDRESS
2367
2368 006610 013704 006642      1$: MOV    DEVADR,R4      ;POINT TO THE LOCATION WHERE THE RESULT WILL BE STORED
2369 006614 010524      MOV    R5,(R4)+    ;STORE THE RESULT
2370 006616 062705 000002      ADD    #2,R5      ;CALCULATE THE NEXT DATUM
2371 006622 105337 006645      DECB    ADCNT      ;REDUCE COUNT OF STORED RESULTS. IS IT EXCEEDED?
2372 006626 001372      BNE     1$          ;IF NOT, GO STORE THE NEXT DATUM
2373 006630 012604      MOV    (SP)+,R4      ;RESTORE R4
2374 006632 012605      MOV    (SP)+,R5      ;RESTORE R5
2375 006634 000002      RTI                ;RETURN TO THE MAIN PROGRAM
2376
2377 006636 000000      LOLIM: 0              ;LOWEST ACCEPTABLE VALUE
2378 006640 000000      HILIM: 0              ;HIGHEST ACCEPTABLE
2379 006642 000000      DEVADR: 0             ;LOCATION WHERE RESULT WILL BE STORED
2380 006644      000      LOBITS: .BYTE 0      ;INCORRECT BITS MASK
2381 006645      000      ADCNT: .BYTE 0      ;COUNT OF ITEMS TO BE STORED
2382
2383 ;SAVE PC OF TEST THAT FAILED AND R0-R5
2384 ;-----
2385
2386 006646 016637 000004 001402 .SAV05: MOV    4(SP),SAVPC      ;SAVE R7 (PC)
2387
2388 ;SAVE R0-R5
2389
2390 006654 010537 001214      SV05:  MOV    R5,#REG5      ;SAVE R5
2391 006660 010437 001212      MOV    R4,#REG4      ;SAVE R4
2392 006664 010337 001210      MOV    R3,#REG3      ;SAVE R3
2393 006670 010237 001206      MOV    R2,#REG2      ;SAVE R2
2394 006674 010137 001204      MOV    R1,#REG1      ;SAVE R1
2395 006700 010037 001202      MOV    R0,#REG0      ;SAVE R0
2396 006704 000002      RTI                ;LEAVE.
2397
2398 ;RESTORE R0-R5
2399
2400 006706 013700 001202      .RES05: MOV    #REG0,R0      ;RESTORE R0
2401 006712 013701 001204      MOV    #REG1,R1      ;RESTORE R1
2402 006716 013702 001206      MOV    #REG2,R2      ;RESTORE R2
2403 006722 013703 001210      MOV    #REG3,R3      ;RESTORE R3
2404 006726 013704 001212      MOV    #REG4,R4      ;RESTORE R4
2405 006732 013705 001214      MOV    #REG5,R5      ;RESTORE R5
2406 006736 000002      RTI                ;LEAVE
2407
2408 ;CONVERT OCTAL NUMBER TO ASCII AND OUTPUT TO TELEPRINTER
2409 ;-----
2410
2411 006740 104402 001231      .CONVR: TYPE    ,#CRLF      ;PRINT A CARRIAGE RETURN
2412 006744 010046      .CNVRT: MOV    R0,-(SP)      ;SAVE R0
2413 006746 010146      MOV    R1,-(SP)      ;SAVE R1
2414 006750 010346      MOV    R3,-(SP)      ;SAVE R3
2415 006752 010446      MOV    R4,-(SP)      ;SAVE R4
2416 006754 010546      MOV    R5,-(SP)      ;SAVE R5
2417 006756 017601 000012      MOV    #12(SP),R1      ;PLACE THE ADDRESS OF THE ARGUMENTS IN R1
2418 006762 062766 000002 000012      ADD    #2,12(SP)      ;POINT TO WHERE MAIN PROGRAM WILL RESUME
2419 006770 012137 007114      MOV    (R1)+,WDCNT      ;GET NUMBER OF WORDS TO BE PRINTED
2420 006774 112105      1$:  MOVB   (R1)+,R5      ;GET THE NUMBER OF CHARACTERS TO BE PRINTED

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Address	Op-Code	Address	Op-Code	Comments
2421	006776	112100	MOV	(R1)+,R0 ;GET THE NUMBER OF SPACES TO PRINT
2422	007000	013104	MOV	8(R1)+,R4 ;COPY THE WORD TO BE CONVERTED
2423	007002	110537	MOV	R5,CHRCNT ;COPY THE CHARACTER COUNT
2424	007006	010403	MOV	R4,R3 ;COPY THE ARGUMENT WORD AGAIN
2425	007010	042703	BIC	0+C<7>,R3 ;ISOLATE THREE BITS TO BE TREATED AS A CHARACTER
2426	007014	062703	ADD	0060,R3 ;MAKE AN ASCII CHARACTER OUT OF THEM
2427	007020	110346	MOV	R3,-(SP) ;SAVE THAT CHARACTER
2428	007022	006004	ROR	R4 ;MOVE THE NEXT THREE BITS INTO PLACE
2429	007024	006204	ASR	R4 ;MOVE THEM AGAIN
2430	007026	006204	ASR	R4 ;AND FINALLY A THIRD TIME
2431	007030	005305	DEC	R5 ;REDUCE CHARACTER COUNT.ARE ALL CHARACTERS
2432				BUILT?
2433	007032	001365	BNE	31 ;IF NO, GO BUILD THE NEXT ONE.
2434	007034	012703	MOV	0+DATA,R3 ;NOW POINT TO WHERE NUMBER WILL BE PRINTED FROM
2435	007040	112623	MOV	(SP)+,(R3)+ ;STORE THE CHARACTER, STARTING WITH THE MOST
2436	007042	105337	DECB	CHRCNT ;REDUCE COUNT. ARE ALL CHARACTERS TRANSFERRED?
2437	007046	001374	BNE	41 ;IF NO, GO TRANSFER ANOTHER
2438	007050	105700	TSTB	R0 ;ARE ANY SPACES TO BE PRINTED?
2439	007052	001404	BEQ	61 ;IF NO, DON'T SET UP ANY
2440	007054	112723	MOV	0040,(R3)+ ;ADD A SPACE TO THE OUTPUT BUFFER
2441	007060	105300	DECB	R0 ;REDUCE THE COUNT. SHOULD WE PRINT MORE?
2442	007062	001374	BNE	51 ;IF YES, GO ADD ANOTHER SPACE
2443	007064	105013	CLRB	(R3) ;TERMINATE THE OUTPUT BUFFER WITH A ZERO
2444	007066	104402	TYPE	0+DATA ;PRINT THE STRING WE JUST BUILT
2445	007072	005337	DEC	WRDCNT ;REDUCE THE WORD COUNT. ARE ANY MORE WORDS LEFT?
2446	007076	001336	BNE	11 ;IF YES, GO CONVERT THEM
2447	007100	012605	MOV	(SP)+,R5 ;RESTORE R5
2448	007102	012604	MOV	(SP)+,R4 ;RESTORE R4
2449	007104	012603	MOV	(SP)+,R3 ;RESTORE R3
2450	007106	012601	MOV	(SP)+,R1 ;RESTORE R1
2451	007110	012600	MOV	(SP)+,R0 ;RESTORE R0
2452	007112	000002	RTI	;RETURN TO THE MAIN PROGRAM
2453	007114	000000	WRDCNT: 0	
2454	007116	000	CHRCNT: .BYTE	;NUMBER OF CHARACTERS TO PRINT
2455	007117	000	SPACNT: .BYTE	;NUMBER OF SPACES TO PRINT
2456				
2457	007120	000000	BINWRD: 0	
2458				
2459				
2460				;TRAP DISPATCH SERVICE
2461				;ARGUMENT OF TRAP IS EXTRACTED
2462				;AND USED AS OFFSET TO OBTAIN POINTER
2463				;TO SELECTED SUBROUTINE
2464				
2465	007122	010046	.TRPSR: MOV	R0,-(SP) ;SAVE R0. USE R0 TO FIND TRAP ROUTINE
2466	007124	016600	MOV	2(SP),R0 ;GET TRAP ADDRESS
2467	007130	005740	TST	-(R0) ;GET TRAP
2468	007132	111000	MOVB	(R0),R0 ;GET RIGHT BYTE OF TRAP(TRAP OFFSET)
2469	007134	006300	ASL	R0 ;POSITION OFFSET FOR TABLE INDEXING
2470	007136	016000	MOV	.TRPTAB(R0),R0 ;PLACE INDEXED ADDRESS OF TABLE IN R0
2471	007142	000200	RTS	R0 ;TRANSFER TO THAT ADDRESS AND RESTORE OLD R0
2472				
2473				;DEVICE CLEAR ROUTINE
2474				;ISSUE A DEVICE CLEAR
2475				;-----
2476	007144		.DEVICE.CLR:	

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2477 007144 052777 000020 172670      BIS      #DCLR,BDZCSR      ;SET DCLR
2478 007152 032777 000020 172662 14:    BIT      #DCLR,BDZCSR      ;DID IT CLEAR?
2479 007160 001374                      BNE      14              ;BR IF NO
2480 007162 000002                      RTI                          ;EXIT ROUTINE
2481
2482                      ;ROUTINE TO HANDLE MAINTENANCE BIT SETTING WITH DEVICE CLEAR
2483                      ;-----
2484 007164 104413      .DCLASH:DEVICE.CLR      ;ISSUE A DEVICE CLEAR
2485 007166 153777 001417 172646      BISB     MNTFLG,BDZCSR      ;LOAD THE MAINTENANCE BIT IF IT IS I MODE
2486 007174 000002                      RTI                          ;RETURN TO CALLING ROUTINE
2487
2488 007176                      .DELAY:
2489 007176 010046                      MOV      RO,-(SP)          ;SAVE RO
2490 007200 013700 007214                      MOV      DLYCNT,RO        ;SET COUNT
2491 007204 005300                      14:    DEC      RO              ;DELAY
2492 007206 001376                      BNE      14              ;
2493 007210 012600                      MOV      (SP)+,RO        ;RESTORE RO
2494 007212 000002                      RTI                          ;LEAVE ROUTINE
2495 007214 000001      DLYCNT: .WORD      1          ;PATCHABLE LOC FOR MORE TIME
2496
2497                      ;ADVANCE TO NEXT TEST HANDLER
2498                      ;-----
2499
2500 007216 013716 001360      .ADVANCE:MOV     NEXT,(SP)      ;CRUNCH STACK WITH ADDRESS OF SCOPE CALL
2501 007222 005037 001362                      CLR      LOCK          ;RESET TIGHT LOOP ADDRESS
2502 007226 000002                      RTI                          ;CHECK TO SEE IF OLD TEST GETS REPEATED
2503
2504                      ;ERROR HANDLER
2505                      ;-----
2506
2507 007230 004737 007652      !ERROR: JSR      PC,SERV.G        ;FIND OUT IF <+G> WAS HIT
2508 007234 032777 010000 171716      BIT      #SM12,BSMR      ;BELL ON ERROR?
2509 007242 001406                      BEQ      XBK              ;BR IF NO BELL
2510 007244 105777 171720      TSTB     #ITPS          ;TTY READY.
2511 007250 100003                      BPL      XBK              ;DON'T WAIT IF TTY NOT READY.
2512 007252 112777 000207 171712      MOVB     #207,#ITPB      ;PUSH A BELL AT THE TTY.
2513 007260 032777 020000 171672 XBK:    BIT      #SM13,BSMR      ;DELETE ERROR PRINT OUT?
2514 007266 001113                      BNE      HALTS          ;BR IF NO PRINT OUT WANTED.
2515 007270 021637 001136      CMP      (SP),!ERRPC      ;WAS THIS ERROR FOUND LAST TIME?
2516 007274 001404                      BEQ      14              ;BR IF YES
2517 007276 011637 001136      MOV      (SP),!ERRPC      ;RECORD BEING HERE
2518 007302 105037 001123      CLRB     !ERFLG          ;PREPARE HEADER
2519 007306 104407      14:    SAVO5          ;SAVE ALL PROC REGISTERS
2520 007310 011605                      MOV      (SP),R5          ;GET THE PC OF ERROR
2521 007312 162705 000002      SUB      #2,R5          ;GET ADDRESS OF TRAP CALL
2522 007316 011504                      MOV      (R5),R4          ;GET ERROR INSTRUCTION
2523 007320 110437 001134      MOVB     R4,!ITEMB      ;COPY TEST NUMBER FOR APT HANDLING
2524 007324 006304                      ASL      R4              ;MULT BY TWO
2525 007326 061504                      ADD      (R5),R4          ;DOUBLE IT
2526 007330 006304                      ASL      R4              ;MULT AGAIN
2527 007332 042704 177001      BIC      #177001,R4      ;CLEAR JUNK
2528 007336 062704 030312      ADD      #.ERRTAB,R4      ;GET POINTER
2529 007342 012437 007466      MOV      (R4)+,ERRMSG      ;GET ERROR MESSAGE
2530 007346 012437 007500      MOV      (R4)+,DATAHD      ;GET DATA HEADRER
2531 007352 011437 007512      MOV      (R4),DATABP      ;GET DATA TABLE
2532 007356 105737 001123      TSTB     !ERFLG          ;TYPE HEADER

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Address	Op Code	Op 2	Op 3	Op 4	Op 5	Op 6	Op 7	Op 8	Op 9	Op 10	Op 11	Op 12	Op 13	Op 14	Op 15	Op 16	Op 17	Op 18	Op 19	Op 20	Op 21	Op 22	Op 23	Op 24	Op 25	Op 26	Op 27	Op 28	Op 29	Op 30	Op 31	Op 32	Op 33	Op 34	Op 35	Op 36	Op 37	Op 38	Op 39	Op 40	Op 41	Op 42	Op 43	Op 44	Op 45	Op 46	Op 47	Op 48	Op 49	Op 50	Op 51	Op 52	Op 53	Op 54	Op 55	Op 56	Op 57	Op 58	Op 59	Op 60	Op 61	Op 62	Op 63	Op 64	Op 65	Op 66	Op 67	Op 68	Op 69	Op 70	Op 71	Op 72	Op 73	Op 74	Op 75	Op 76	Op 77	Op 78	Op 79	Op 80	Op 81	Op 82	Op 83	Op 84	Op 85	Op 86	Op 87	Op 88	Op 89	Op 90	Op 91	Op 92	Op 93	Op 94	Op 95	Op 96	Op 97	Op 98	Op 99	Op 100	Op 101	Op 102	Op 103	Op 104	Op 105	Op 106	Op 107	Op 108	Op 109	Op 110	Op 111	Op 112	Op 113	Op 114	Op 115	Op 116	Op 117	Op 118	Op 119	Op 120	Op 121	Op 122	Op 123	Op 124	Op 125	Op 126	Op 127	Op 128	Op 129	Op 130	Op 131	Op 132	Op 133	Op 134	Op 135	Op 136	Op 137	Op 138	Op 139	Op 140	Op 141	Op 142	Op 143	Op 144	Op 145	Op 146	Op 147	Op 148	Op 149	Op 150	Op 151	Op 152	Op 153	Op 154	Op 155	Op 156	Op 157	Op 158	Op 159	Op 160	Op 161	Op 162	Op 163	Op 164	Op 165	Op 166	Op 167	Op 168	Op 169	Op 170	Op 171	Op 172	Op 173	Op 174	Op 175	Op 176	Op 177	Op 178	Op 179	Op 180	Op 181	Op 182	Op 183	Op 184	Op 185	Op 186	Op 187	Op 188	Op 189	Op 190	Op 191	Op 192	Op 193	Op 194	Op 195	Op 196	Op 197	Op 198	Op 199	Op 200	Op 201	Op 202	Op 203	Op 204	Op 205	Op 206	Op 207	Op 208	Op 209	Op 210	Op 211	Op 212	Op 213	Op 214	Op 215	Op 216	Op 217	Op 218	Op 219	Op 220	Op 221	Op 222	Op 223	Op 224	Op 225	Op 226	Op 227	Op 228	Op 229	Op 230	Op 231	Op 232	Op 233	Op 234	Op 235	Op 236	Op 237	Op 238	Op 239	Op 240	Op 241	Op 242	Op 243	Op 244	Op 245	Op 246	Op 247	Op 248	Op 249	Op 250	Op 251	Op 252	Op 253	Op 254	Op 255	Op 256	Op 257	Op 258	Op 259	Op 260	Op 261	Op 262	Op 263	Op 264	Op 265	Op 266	Op 267	Op 268	Op 269	Op 270	Op 271	Op 272	Op 273	Op 274	Op 275	Op 276	Op 277	Op 278	Op 279	Op 280	Op 281	Op 282	Op 283	Op 284	Op 285	Op 286	Op 287	Op 288	Op 289	Op 290	Op 291	Op 292	Op 293	Op 294	Op 295	Op 296	Op 297	Op 298	Op 299	Op 300	Op 301	Op 302	Op 303	Op 304	Op 305	Op 306	Op 307	Op 308	Op 309	Op 310	Op 311	Op 312	Op 313	Op 314	Op 315	Op 316	Op 317	Op 318	Op 319	Op 320	Op 321	Op 322	Op 323	Op 324	Op 325	Op 326	Op 327	Op 328	Op 329	Op 330	Op 331	Op 332	Op 333	Op 334	Op 335	Op 336	Op 337	Op 338	Op 339	Op 340	Op 341	Op 342	Op 343	Op 344	Op 345	Op 346	Op 347	Op 348	Op 349	Op 350	Op 351	Op 352	Op 353	Op 354	Op 355	Op 356	Op 357	Op 358	Op 359	Op 360	Op 361	Op 362	Op 363	Op 364	Op 365	Op 366	Op 367	Op 368	Op 369	Op 370	Op 371	Op 372	Op 373	Op 374	Op 375	Op 376	Op 377	Op 378	Op 379	Op 380	Op 38
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2645 010122 006177 171032      ROL      BSWR      ;
2646 010126 006177 171026      ROL      BSWR      ;
2647 010132 006177 171022      ROL      BSWR      ;
2648 010136 103713              BCS      14          ;ERROR
2649 010140 026627 177776 000060  CMP      -2(SP),#60  ;
2650 010146 002707              BLT      14          ;
2651 010150 026627 177776 000067  CMP      -2(SP),#67  ;
2652 010156 003303              BGT      14          ;
2653 010160 042766 177770 177776  BIC      #C<7>,-2(SP) ;
2654 010166 056677 177776 170764  BIS      -2(SP),BSWR ;
2655 010174 105777 170764      124:  TSTB     #TKS      ;
2656 010200 100375              BPL      -4          ;
2657 010202 017746 170760      MOV      #TKB,-(SP) ;
2658 010206 042716 177600      BIC      #177600,(SP) ;STRIP CHAR
2659 010212 122716 000023      CMPB     #XOFF,(SP) ;IS IT A XOFF
2660 010216 001012              BNE      1224        ;BR IF NO
2661
2662 010220 105777 170740      1214:  TSTB     #TKS      ;WAIT FOR A CHAR
2663 010224 100375              BPL      1214        ;DSH-BHL
2664 010226 117716 170734      MOVB     #TKB,(SP) ;GET THE CHAR
2665 010232 042716 177600      BIC      #177600,(SP) ;STRIP CHAR
2666 010236 122716 000021      CMPB     #XON,(SP) ;IS IT A XON
2667 010242 001366              BNE      1214        ;BR IF NO
2668
2669 010244 122716 000021      1224:  CMPB     #XON,(SP) ;IS IT RANDOM XON ?
2670 010250 001002              BNE      104         ;BR IF NOT
2671 010252 005726              TST      (SP),      ;POP STACK
2672 010254 000747              BR       124         ;IGNORE XON CHAR
2673
2674 010256 122726 000015      104:  CMPB     #15,(SP),
2675 010262 001310              BNE      24          ;
2676 010264 104402 001231      54:  TYPE     ,#CRLF      ;
2677 010270 000207      64:  RTS      PC
2678
2679 010272 020200 051450 051127 894:  .ASCIZ   <200>? (SMR)=/?
2680 010300 036451 000057      .EVEN
2681
2682 010304 000001      884:  1
2683 010306 006      000      .BYTE     6,0
2684 010310 010312      904:  904
2685 010312 000000      904:  .WORD     0
2686 010314 036457 000057      914:  .ASCIZ   ?/?/?
2687
2688      .EVEN
2689      .SBTTL  POWER DOWN AND UP ROUTINES
2690
2691      ;*****
2692      ;POWER DOWN ROUTINE
2693      ;PWRDN: MOV      #ILLUP,#PWRVEC ;,SET FOR FAST UP
2694      MOV      #340,#PWRVEC+2 ;,PRIO:7
2695      MOV      R0,-(SP) ;,PUSH R0 ON STACK
2696      MOV      R1,-(SP) ;,PUSH R1 ON STACK
2697      MOV      R2,-(SP) ;,PUSH R2 ON STACK
2698      MOV      R3,-(SP) ;,PUSH R3 ON STACK
2699      MOV      R4,-(SP) ;,PUSH R4 ON STACK
2700      MOV      R5,-(SP) ;,PUSH R5 ON STACK
      MOV      BSWR,-(SP) ;,PUSH BSWR ON STACK
  
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2701 010354 010637 010470      MOV      SP, $SAVR6      ;;SAVE SP
2702 010360 012737 010372 000024  MOV      $PWRUP, $PWRVEC ;;SET UP VECTOR
2703 010366 000000      HALT
2704 010370 000776      BR      -2      ;;HANG UP
2705
2706      ;*****
2707      ;POWER UP ROUTINE
2708 010372 012737 010464 000024 $PWRUP: MOV      $ILLUP, $PWRVEC ;;SET FOR FAST DOWN
2709 010400 013706 010470      MOV      $SAVR6, SP      ;;GET SP
2710 010404 005037 010470      CLR      $SAVR6      ;;WAIT LOOP FOR THE TTY
2711 010410 005237 010470      1$: INC      $SAVR6      ;;WAIT FOR THE INC
2712 010414 001375      BNE      1$      ;;OF WORD
2713 010416 012677 170536      MOV      (SP)+, $SWR      ;;POP STACK INTO $SWR
2714 010422 012605      MOV      (SP)+, R5      ;;POP STACK INTO R5
2715 010424 012604      MOV      (SP)+, R4      ;;POP STACK INTO R4
2716 010426 012603      MOV      (SP)+, R3      ;;POP STACK INTO R3
2717 010430 012602      MOV      (SP)+, R2      ;;POP STACK INTO R2
2718 010432 012601      MOV      (SP)+, R1      ;;POP STACK INTO R1
2719 010434 012600      MOV      (SP)+, R0      ;;POP STACK INTO R0
2720 010436 012737 010320 000024  MOV      $PWRDN, $PWRVEC ;;SET UP THE POWER DOWN VECTOR
2721 010444 012737 000340 000026  MOV      $340, $PWRVEC+2 ;;PRIO:7
2722 010452 104402      TYPE      MPFAIL      ;;REPORT THE POWER FAILURE
2723 010454 010472      $PWRMG: .WORD      MPFAIL      ;;POWER FAIL MESSAGE POINTER
2724 010456 012716      MOV      (PC)+, (SP)      ;;RESTART AT RESTART
2725 010460 012106      $PWRAD: .WORD      RESTART      ;;RESTART ADDRESS
2726 010462 000002      RTI
2727 010464 000000      $ILLUP: HALT      ;;THE POWER UP SEQUENCE WAS STARTED
2728 010466 000776      BR      -2      ;;BEFORE THE POWER DOWN WAS COMPLETE
2729 010470 000000      $SAVR6: 0      ;;PUT THE SP HERE
2730 010472 050200 051127 043040 MPFAIL: .ASCIZ <200>/PWR FAILED. RESTART AT LAST TEST /
(2) 010535 200 047105 020104 MEPASS: .ASCIZ <200>/END PASS CZDZA-H /
(2) 010560 051200 047125 044516 MR: .ASCIZ <200>/RUNNING /
(2) 010574 050200 047522 051107 MERR2: .ASCIZ <200>/PROGRAM INDICATES NO DEVICES PRESENT./
(2) 010643 200 047111 052523 MERR3: .ASCIZ <200>/INSUFFICIENT DATA!/
(2) 010667 200 047514 045503 MLOCK: .ASCIZ <200>/LOCK ON SELECTED TEST/
(2) 010716 051503 035122 000040 MCSR: .ASCIZ /CSR: /
(2) 010724 042526 035103 000040 MVEC: .ASCIZ /VEC: /
(2) 010732 040520 051523 051505 MPASSX: .ASCIZ /PASSES: /
(2) 010743 105 051122 051117 MERRX: .ASCIZ /ERRORS: /
(2) 010754 042524 052123 047040 MTSTN: .ASCIZ /TEST NO: /
(2) 010766 020052 000 MASTEK: .ASCIZ /* /
(2) 010771 200 042523 020124 MNEW: .ASCIZ <200>/SET SWITCH REG TO DZ11'S DESIRED ACTIVE./
(2) 011043 120 035103 000040 MERRPC: .ASCIZ /PC: /
(2) 011050 046600 050101 047440 XHEAD: .ASCIZ <200>/MAP OF DZ11 STATUS/<200>
(2) 011075 200 046111 042514 MBADLN: .ASCIZ <200>/ILLEGAL ENTRY IN STAGGERED MODE/<200>
(2) 011140 000002      .EVEN
(2) 011140 000002      XSTATQ: 2
2731 011142 006 003      .BYTE 6,3
2732 011144 001220      $TMP1
2733 011146 006 002      .BYTE 6,2
2734 011150 001222      $TMP2
2735      .EVEN
2736      ; - $SETFLG-----
2737      ;THIS ROUTINE ESTABLISHES WHICH MAINTENANCE MODE THE DEVICE IS IN
2738      ;-----
2739      ;E=EXTERNAL LOOP BACK

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2740      ;I=INTERNAL LOOP BACK
2741      ;S=STAGGERED LOOP BACK
2742 011152 017605 000000      .SETFLG:MOV      8(SP),R5      ;PICK UP ADDRESS OF TAG
2743 011156 042737 000040 011272 BIC      #40,INBUF      ;STRIP LOWER CASE
2744 011164 122737 000105 011272 CMPB      #'E,INBUF      ;IS IT EXTERNAL LOOP BACK ?
2745 011172 001005          BNE      4#      ;NO
2746 011174 013715 011264      MOV      1#,(R5)      ;YES STORE INFO
2747 011200 105037 001417      CLRB      MNTFLG      ;SET MAINT BIT =0
2748 011204 000422          BR      7#      ;GET OUT
2749 011206 122737 000111 011272 4# : CMPB      #'I,INBUF      ;IS IT INTERNAL LOOP BACK ?
2750 011214 001006          BNE      5#      ;NO
2751 011216 013715 011266      MOV      2#,(R5)      ;YES STORE INFO
2752 011222 112737 000010 001417 MOVB      @MAINT,MNTFLG ;SET UP THE MAINTENANCE FLAG LOADER
2753 011230 000410          BR      7#      ;GET OUT
2754 011232 122737 000123 011272 5# : CMPB      #'S,INBUF      ;IS IT STAGGERED LOOP BACK ?
2755 011240 001007          BNE      6#      ;WHAT ?
2756 011242 013715 011270      MOV      3#,(R5)      ;YES STORE INFO
2757 011246 105037 001417      CLRB      MNTFLG      ;ZERO BITS
2758 011252 062716 000002      7# : ADD      #2,(SP)      ;POP AROUND
2759 011256 000002          RTI
2760 011260 104404      6# : INSTER
2761 011262 000733          BR      .SETFLG      ;RETRY
2762 011264 000200      1# : .WORD      200      ;DITTO
2763 011266 000000      2# : .WORD      0      ;EXTERNAL = E
2764 011270 100000      3# : .WORD      100000      ;INTERNAL = I
2765          ; -- END 0 MACRO ----- ;STAGGERED = S
2766          ; -#BUFFER-----
2767
2768      ;BUFFERS FOR INPUT-OUTPUT
2769
2770 011272 000000      INBUF: 0
2771          .=.+40
2772 011334 000000      TEMP: 0
2773          .=.+40
2774 011376 000000      MDATA: 0
2775          .=.+40
2776
2777 011440 011637 011536      SET.PS: MOV      (SP),3#
2778 011444 162737 000002 011536      SUB      #2,3#
2779 011452 017737 000060 011540      MOV      #3# ,4#
2780 011460 022737 106427 011540      CMP      #106427,4#
2781 011466 001003          BNE      1#
2782 011470 011637 011536      MOV      (SP),3#
2783 011474 000412          BR      2#
2784 011476 022737 106437 011540 1# : CMP      #106437,4#
2785 011504 001401          BEQ      .+4
2786 011506 000000          HALT      ;RESERVED INSTRUCTION NOT "MTPS"
2787 011510 011637 011536      MOV      (SP),3#
2788 011514 017737 000016 011536      MOV      #3# ,3#
2789 011522 062716 000002      2# : ADD      #2,(SP)
2790 011526 017766 000004 000002      MOV      #3# ,2(SP)
2791 011534 000002          RTI
2792 011536 000000      3# : 0
2793 011540 000000      4# : 0

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; -- END O MACRO -----

; -#CYCLE-----

```

2794
2795
2796
2797
2798
2799
2800
2801
2802
2803
2804
2805 011542 005737 001404      CYCLE: TST      DZACTV      ;ARE ANY DZ11'S TO BE TESTED?
2806 011546 001004              BNE      1#          ;BR IF OK.
2807 011550 104402 010574      TYPE      ,MERR2      ;NO DZ11'S SELECTED!!
2808 011554 000000              HALT                     ;STOP THE SHOW.
2809 011556 000776              BR      .-2             ;DISQUALIFY CONT. SW.
2810 011560 013737 005374 001226 1# : MOV      $MXCNT,$TIMES ;RESTORE THE NUMBER OF ITERATIONS TO MAKE
2811 011566 033737 001406 001404 BIT      RUN,DZACTV ;IS THIS ONE "ACTIVE"
2812 011574 001020              BNE      2#          ;BR IF GOOD ONE FOUND.
2813 011576 000241              CLC
2814 011600 006137 001406      ROL      RUN            ;UPDATE POINTER
2815 011604 005537 001406      ADC      RUN            ;CATCH CARRY FROM RUN
2816 011610 062737 000014 001412 ADD      #14,ACTIVE ;UPDATE ADDRESS POINTER.
2817 011616 022737 002000 001412 CMP      #DZ.END,ACTIVE ;HAVE WE PASSED THE END OF THE MAP?
2818 011624 001355              BNE      1#          ;IF NO, KEEP GOING, NOT ALL TESTED FOR.
2819 011626 012737 001500 001412 MOV      #DZ.MAP,ACTIVE ;RESET ADDRESS POINTER.
2820 011634 000751              BR      1#          ;KEEP LOOKING FOR ACTIVE DZ11
2821 011636 000241              CLC
2822 011640 006137 001406      ROL      RUN            ;UPDATE POINTER.
2823 011644 005537 001406      ADC      RUN            ;CATCH CARRY.
2824 011650 013700 001412      MOV      ACTIVE,RO      ;GET ADDRESS POINTER.
2825 011654 062737 000014 001412 ADD      #14,ACTIVE ;UPDATE.
2826 011662 022737 002000 001412 CMP      #DZ.END,ACTIVE
2827
2828 011670 001003              BNE      3#          ;ALL DONE?
2829 011672 012737 001500 001412 MOV      #DZ.MAP,ACTIVE ;BR IF NO.
2830 011700 012037 001310      MOV      (RO)+,$BASE ;RESTORE POINTER.
2831 011704 012037 002072      MOV      (RO)+,DZRIV ;LOAD SYSTEM CTRL. REG
2832 011710 012037 030306      MOV      (RO)+,DZPRT ;LOAD VECTOR
2833 011714 113737 030307 001414 MOV      DZPRT+1,EIAFLG ;LOAD PRIORITY
2834 011722 042737 100000 030306 BIC      #BIT15,DZPRT ;EIA OR 20MA
2835 011730 012037 001364      MOV      (RO)+,LINE ;CLEAR FLAG
2836 011734 012037 001366      MOV      (RO)+,PAR  ;SET UP LINE DZ LINES ACTIVE
2837 011740 012037 001370      MOV      (RO)+,MODE ;SET UP PARAMETERIZATION
2838 011744 004737 030100      JSR      PC,DZLEV ;SET UP MAINTENANCE MODE
2839 011750 005737 000042      TST      #042      ;SET UP
2840 011754 001051              BNE      4#          ;ARE WE UNDER MONITOR CONTROL?
2841 011756 032777 000002 167174 BIT      #SW01,BSMR ;IF YES, SKIP THIS SETUP
2842 011764 001445              BEQ      4#          ;IF SW01=1, GET STARTING TEST #
2843 011766 104402 001231      TYPE      ,#CRLF      ;BR IF NO TEST IS TO BE INPUTTED
2844
2845 011772 104403              INSTR
2846 011774 010754              MTSTN
2847 011776 104405              PARAM
2848 012000 000001              1
2849 012002 001000              1000

```

; -#GETPAR-----

;CALL THE STRING INPUT ROUTINE
;POINTER TO MESSAGE TO BE PRINTED
;CALL THE OCTAL TO ASCII CONVERT ROUTINE
;LOWEST LEGITIMATE VALUE OF EXPECTED RESPONSE
;HIGHEST LEGITIMATE VALUE OF EXPECTED RESPONSE

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2850 012004 001122          ;TSTNM          ; POINTER TO MAP LOCATION TO BE FILLED
2851 012006          000          ; MASK OF INVALID BITS FOR THIS PARAMETER
2852 012007          001          ; NUMBER OF PARAMETERS TO STORE
2853                                     ; -- END 0 MACRO -----
2854 012010 012700 013046      MOV          @TST1,R0
2855 012014 022710 000004      5$: CMP          @4,(R0)
2856 012020 001020            BNE          6$
2857 012022 022760 012737 000002 CMP          @12737,2(R0)
2858 012030 001014            BNE          6$
2859 012032 023760 001122 000004 CMP          $TSTNM,4(R0)      ; IS THIS THE TEST ?
2860 012040 001010            BNE          6$      ; IF NOT, DON'T PROCESS NUMBER
2861 012042 010037 001126      MOV          R0,$LPADR      ; SAVE PC
2862 012046 062737 000002 001126 ADD          @2,$LPADR      ; POP OVER SCOPE
2863 012054 104402 001231      TYPE          ,@CRLF
2864 012060 000412            BR          8$
2865 012062 005720            6$: TST          (R0),
2866 012064 020027 023740      CMP          R0,@TLAST+10
2867 012070 001351            BNE          5$
2868 012072 104402 001230      TYPE          ,@QUES
2869 012076 000733            BR          7$
2870 012100 012737 013046 001126 4$: MOV          @TST1,$LPADR      ; PREPARE TEST ADDRESS
2871 012106            8$:
2872 012106 000177 167014      RESTART:JMP      @LPADR      ; GO START TESTING.***WARNING!****
2873                                     ; THIS JUMP IS USED BY POWER UP ROUTINE!!!!
2874

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						-ROUTINE USED TO SET UP THE DIAGNOSTIC VIA APT.
						; IF BIT7 IN THE ENVIRONMENT MODE (\$ENVH) BYTE IS SET,
						; THE PROGRAM WILL LOAD ITS PARAMETERS FROM THE ETABLE.
2875						
2876						
2877						
2878						
2879	012112	012700	001500	SETAPT:	MOV	\$DZ.MAP,R0 ;POINT TO THE DEVICE MAP TABLE
2880	012116	013701	001310		MOV	\$BASE,R1 ;BUILD DEVICE ADDRESSES IN R1
2881	012122	013702	001304		MOV	\$VECT1,R2 ;BUILD DEVICE VECTORS IN R2
2882	012126	042702	177007		BIC	@C<770>,R2 ;STRIP AWAY OTHER INFORMATION
2883						
2884	012132	113703	001305		MOVB	\$VECT1+1,R3 ;LOAD THE INTERRUPT PRIORITY FROM R3
2885	012136	106003			RORB	R3 ;ALIGN THE NUMBER
2886	012140	106003			RORB	R3 ;ALIGN THE NUMBER
2887	012142	106003			RORB	R3 ;ALIGN THE NUMBER
2888	012144	106003			RORB	R3 ;ALIGN THE NUMBER
2889	012146	106003			RORB	R3 ;ALIGN THE NUMBER
2890	012150	042703	177770		BIC	@C<7>,R3 ;REMOVE ALL BUT BUS LEVEL NUMBER
2891	012154	012704	001320		MOV	\$DDWO,R4 ;POINT TO THE BEGINNING OF DEVICE PARAMETERS
2892	012160	013705	001312		MOV	\$DEVH,R5 ;GET THE MAP OF ACTIVE DEVICES
2893	012164	010537	001404		MOV	R5,DZACTV ;SAVE THE BIT MAP
2894	012170	006005		1#:	ROR	R5 ;GET A DEVICE SELECTION BIT
2895	012172	103407			BCS	3# ;IF IT IS SELECTED, GO SET UP A MAP
2896	012174	001425			BEQ	5# ;IF NO MORE ARE SELECTED, GET OUT OF SETUP
2897	012176	005724			TST	(R4)+ ;POINT TO NEXT DEVICE DESCRIPTOR
2898	012200	062701	000010	2#:	ADD	@10,R1 ;SET UP THE NEXT ADDRESS
2899	012204	062702	000010		ADD	@10,R2 ;SET UP THE NEXT VECTOR GROUP
2900	012210	000767			BR	1# ;GO SEE IF MORE DEVICES REMAIN
2901	012212	010120		3#:	MOV	R1,(R0)+ ;LOAD DEVICE ADDRESS
2902	012214	010220			MOV	R2,(R0)+ ;LOAD THE VECTOR ADDRESS
2903	012216	010320			MOV	R3,(R0)+ ;LOAD THE INTERRUPT PRIORITY LEVEL
2904	012220	013720	001314		MOV	\$CDW1,(R0)+ ;GET THE NUMBER OF LINES IN OPERATION
2905	012224	012420			MOV	(R4)+,(R0)+ ;LOAD DEVICE PARAMETERS
2906	012226	100006			BPL	4# ;IF 20MA MODE SELECTED, SET IT UP
2907	012230	052760	100000 177772		BIS	@100000,-6(R0) ;SET THE 20MA FLAG IN DZLVN
2908	012236	042760	100000 177776		BIC	@100000,-2(R0) ;CLEAR THE FLAG IN DZPARN
2909	012244	005020		4#:	CLR	(R0)+ ;DEFAULT OPERATION TO INTERNAL MAINTENANCE MODE
2910	012246	000754			BR	2# ;GO BUILD THE NEXT ADDRESS
2911	012250	012710	177777	5#:	MOV	@-1,(R0) ;TERMINATE THE DEVICE MAP
2912	012254	012737	001256 001160		MOV	\$SMREG,\$SWR ;SET TO SOFTWARE APT SWITCH REGISTER
2913	012262	000207			RTS	PC ;RETURN TO PRINT STATUS TABLE
2914						
2915						
2916						; ROUTINE USED TO "AUTO SIZE" THE DZ11
2917						; CSR AND VECTOR.
2918						; NOTE: THE CSR MAY BE ANY WHERE IN THE FLOATING
2919						; * ADDRESS RANGE (160000:163700)
2920						; * AND THE VECTOR MAY BE ANY WHERE IN THE
2921						; * FLOATING VECTOR RANGE (300:770)
2922						; *
2923						
2924	012264			AUTO.SIZE:		
2925	012264	000005			RESET	; INSURE A BUS INIT.
2926	012266	105337	001415		DECB	INIFLG ;SHOW THAT I WAS HERE
2927	012272	012702	001500	CSRMAP:	MOV	\$DZ.MAP,R2 ;LOAD MAP POINTER.
2928	012276	012703	001320		MOV	\$DDWO,R3 ;POINT TO ETABLE DEVICE DESCRIPTOR WORDS
2929	012302	005022		1#:	CLR	(R2)+ ;ZERO ENTIRE MAP
2930	012304	022702	002000		CMP	\$DZ.END,R2 ;ALL DONE?

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2931	012310	001374			BNE	14		;BR IF NO
2932	012312	105037	001410		CLRB	DZNUM		;SET OCTAL NUMBER OF DZ11'S TO 0
2933	012316	012702	001500		MOV	#DZ.MAP,R2		
2934	012322	012701	160000		MOV	#160000,R1		;SET FOR FIRST ADDRESS TO BE TESTED
2935	012326	012737	012646	000004	MOV	#64,B#4		;SET FOR NON-EXISTENT DEVICE TIME OUT
2936	012334	052711	000040		BIS	#BIT5,(R1)		;TRY TO SET MASTER SCAN ENABLE
2937	012340	052761	000200	000004	BIS	#BIT7,4(R1)		;TRY TO TRANSMIT ON LINE 7
2938	012346	005000			CLR	R0		;USE R0 AS A COUNTER
2939	012350	005711			TST	(R1)		;HAS TRANSMITTER READY COME UP?
2940	012352	100403			BMI	84		;IF SO, GO GET A FINAL CHECK
2941	012354	005300			DEC	R0		;REDUCE COUNT. TIME UP?
2942	012356	001374			BNE	74		;IF NOT, KEEP WAITING
2943	012360	000463			BR	34		;ASSUME IT'S NOT A DZ11
2944	012362	032761	000200	000004	BIT	#BIT7,4(R1)		;IS LINE 7 ENABLE STILL SET? IT SHOULD BE
2945	012370	001457			BEQ	34		;IF IT'S NOT, ASSUME IT'S NOT A DZ11
2946	012372	032711	000040		BIT	#BIT5,(R1)		;IS MASTER SCAN ENABLE STILL SET?
2947	012376	001454			BEQ	34		;IF NOT, ASSUME IT'S NOT A DZ11
2948	012400	005000			CLR	R0		
2949	012402	052711	000020		BIS	#20,(R1)		;SET DEVICE CLEAR
2950	012406	032711	000020		BIT	#20,(R1)		;SHOULD STAY SET FOR A WHILE IF DZ
2951	012412	001446			BEQ	34		;BR IF NOT DZ11
2952	012414	032711	000020		BIT	#20,(R1)		;WAIT FOR BIT TO CLEAR
2953	012420	001404			BEQ	..12		;BR WHEN CLEARED
2954	012422	104414			DELAY			
2955	012424	005200			INC	R0		
2956	012426	001372			BNE	..12		
2957	012430	000437			BR	34		;BIT NOT CLEARED! MUST NOT BE DZ11
2958	012432	005011			CLR	(R1)		;GET RID OF MASTER SCAN ENABLE
2959	012434	005061	000004		CLR	4(R1)		;GET RID OF LINE 7 ENABLE
2960								;AT THIS POINT IT IS ASSUMED THAT R1 HOLDS A DZ11 CSR ADDRESS.
2961	012440	010122			MOV	R1,(R2)+		;STORE CSR IN CORE TABLE.
2962	012442	005722			TST	(R2)+		;POP OVER VECTOR STORE AREA
2963	012444	012722	000005		MOV	#5,(R2)+		;SET THE DEFAULT BUS LEVEL
2964	012450	052761	177400	000004	BIS	#177400,4(R1)		;TRY TO SET ALL DTR BITS
2965	012456	032761	177400	000004	BIT	#177400,4(R1)		;IF ANY SET ASSUME EIA BOARD
2966	012464	001003			BNE	94		;IF NONE SET ASSUME BOARD IS
2967	012466	052762	100000	177776	BIS	#BIT15,-2(R2)		;20 MA, SET 20 MA FLAG
2968	012474	012722	000377		MOV	#377,(R2)+		;SET THE DEFAULT LINE SELECTION PARAMETER
2969	012500	012712	017070		MOV	#17070,(R2)		;SET THE DEFAULT PARAMETERS
2970	012504	012223			MOV	(R2)+,(R3)+		;COPY PARAMETERS INTO ETABLE DESCRIPTOR
2971	012506	005022			CLR	(R2)+		;SET THE DEFAULT MODE OF OPERATION
2972	012510	012712	177777		MOV	#-1,(R2)		;TERMINATE LIST
2973	012514	105237	001410		INCB	DZNUM		;UPDATE DEVICE COUNTER
2974	012520	122737	000020	001410	CHPB	#20,DZNUM		;ARE MAX. NO. OF DEV FOUND?
2975	012526	001405			BEQ	1004		;YES DCN'T LOOK FOR ANY MORE.
2976	012530	062701	000010		ADD	#10,R1		;UPDATE CSR POINTER ADDRESS
2977	012534	022701	163700		CHP	#163700,R1		
2978	012540	001275			BNE	24		;BR IF MORE ADDRESS TO CHECK.
2979	012542							
2980	012542	105737	001410		TSTB	DZNUM		;WERE ANY DZ11'S FOUND AT ALL?
2981	012546	001432			BEQ	54		;ERROR AUTO SIZER FOUND NO DZ11'S IN THIS SYS.
2982	012550	113701	001410		MOVB	DZNUM,R1		
2983	012554	110137	001411		MOVB	R1,SAVNUM		;SAVE NUMBER OF DEVICES
2984	012560	012737	000001	001404	MOV	#1,DZACTV		
2985	012566	005301			DEC	R1		
2986	012570	001404			BEQ	984		

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CZDZAH.P11 19-JUN-84 15:45 POWER DOWN AND UP ROUTINES

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2987 012572 000261          SEC
2988 012574 006137 001404    ROL    DZACTV
2989 012600 000772          BR      48
2990 012602 013737 001500 001310 98:  MOV    DZCRO, #BASE    ;POINT TO THE ADDRESS OF FIRST DEVICE
2991 012610 013737 001512 001314    MOV    MANTO, #CDW1    ;INDICATE TO ETABLE WHAT MODE IS BEING USED
2992 012616 012737 000006 000004 99:  MOV    #6, #M4      ;RESTORE TRAP VECTOR
2993 012624 013737 001404 001312    MOV    DZACTV, #DEVM    ;SAVE ACTIVE REGISTER
2994 012632 000410          BR      VECMAP    ;GO FIND THE VECTOR NOW.
2995 012634 104402 010574      5:  TYPE    ,MERR2      ;NOTIFY OPR THAT NO DZ11'S FOUND.
2996 012640 005000          CLR      R0      ;MAKE DATA DISPLAY ZERO
2997 012642 000000          HALT
2998 012644 000776          BR      -2      ;STOP THE SHOW
2999 012646 012716 012530      6:  MOV    #34, (SP)    ;DISABLE CONT. SW.
3000 012652 000002          RTI              ;ENTERED BY NON-EXISTENT TIME-OUT
3001                                     ;RETURN TO MAINSTREAM
3002 012654 012737 000340 000022 VECMAP: MOV    #340, #022    ;SET IOT TRAP PRIORITY TO 7
3003 012662 012737 013000 000020    MOV    #44, #020    ;SET IOT TRAP VECTOR
3004 012670 012702 001500          MOV    #02, MAP, R2    ;SET SOFTWARE POINTER
3005 012674 012700 000300          MOV    #300, R0      ;FLOATING VECTORS START HERE.
3006 012700 012701 000302          MOV    #302, R1      ;PC OF IOT INSTR.
3007 012704 010120          1:  MOV    R1, (R0)+      ;START FILLING VECTOR AREA
3008 012706 012721 000004          MOV    #4, (R1)+      ;WITH .+2; IOT
3009 012712 022021          CMP      (R0)+, (R1)+      ;ADD 2 TO R0 +R1
3010 012714 020127 001000          CMP      R1, #1000    ;HAS THE VECTOR AREA BEEN EXCEEDED?
3011 012720 101771          BLOS     18              ;BR IF MORE TO FILL
3012 012722 013704 001404          MOV    DZACTV, R4    ;STORE TEMPORARILY
3013 012726 000241          2:  CLC
3014 012730 006004          ROR      R4
3015 012732 103036          BCC      54              ;BRING OUT A BIT
3016 012734 106427 000000          HTPS     #0          ;BR IF ALL DONE
3017 012740 012772 040040 000000    MOV    #BIT14+BIT5, #R2    ;ZERO CPU PRIO
3018 012746 011201          MOV      (R2), R1
3019 012750 112761 000200 000004    MOV     #BIT7, 4(R1)
3020                                     ;GET CSR
3021 012756 005200          INC      R0      ;SET THE TCR BIT!
3022 012760 001376          BNE      -2      ;ATTEMPT TO FORCE AN INTERRUPT
3023 012762 012762 000300 000002    MOV     #300, 2(R2)    ;STALL
3024 012770 000005          3:  RESET
3025 012772 062702 000014          ADD     #14, R2      ;FOR TIME TO INTERRUPT
3026 012776 000753          BR      24          ;NO INTERRUPT ASSUME 300 AND FIX DZ11 LATER
3027 013000 011662 000002          4:  MOV     (SP), 2(R2)    ;INIT
3028 013004 162762 000010 000002    SUB     #10, 2(R2)    ;POP SOFTWARE POINTER
3029 013012 042762 000007 000002    BIC     #7, 2(R2)    ;KEEP GOING
3030 013020 022626          POP2SP
3031 013022 012716 012770          MOV     #34, (SP)    ;GET VECTOR ADDRESS
3032 013026 000002          RTI              ;POINT BACK TO THE CORRECT VECTOR
3033 013030 013737 001502 001304 5:  MOV     DZVCO, #VECT1    ;CLEAR JUNK
3034 013036 012737 005122 000020    MOV     #, SCOPE, IOTVEC ;POP IOT JUNK OFF STACK
3035 013044 000207          RTS      PC      ;SET FOR RETURN
3036                                     ;COPY VECTOR OF FIRST DEVICE INTO ETABLE
3037                                     ;RESTORE THE SCOPE TRAP
                                     ;ALL DONE WITH "AUTO SIZING"
; -- END 0 MACRO -----

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3047
3048 013046 000004
3049 013050 012737 000001 001122
3050
3051 013056 012737 013236 001360
3052 013064 012737 013224 000004
3053 013072 012737 000340 000006
3054 013100 012737 013106 001362
3055 013106 013700 002042
3056 013112 011001
3057 013114 000240
3058 013116 005010
3059 013120 000240
3060 013122 012737 013130 001362
3061 013130 013700 002046
3062 013134 011001
3063 013136 000240
3064 013140 005010
3065 013142 000240
3066 013144 012737 013152 001362
3067 013152 013700 002056
3068 013156 011001
3069 013160 000240
3070 013162 005010
3071 013164 000240
3072 013166 012737 013174 001362
3073 013174 013700 002062
3074 013200 011001
3075 013202 000240
3076 013204 005010
3077 013206 000240
3078 013210 012737 000006 000004
3079 013216 005037 000006
3080 013222 104400
3081 013224 011601
3082 013226 022626
3083 013230 104001
3084 013232 104401
3085 013234 000111
3086
3087
3088
3089
3090
3091
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3093

; -#UNIBUS-----
; -#XZ-----
;***** TEST 1 *****
;*THIS TEST PROVES THE SLAVE SYNC RESPONSE
;*DURING A READ OR WRITE TO THE FOLLOWING ADDRESS:
;*      DZCSR, DZRBUF, DZTCR, DZMSR
; -#XZ-----

;:* TEST 1
;*****
TST1:  SCOPE
      MOV     #1,#TSTNM      ;LOAD THE NUMBER OF THIS TEST
; -- END 0 MACRO -----
      MOV     #TST2,NEXT     ;POINT TO THE START OF THE NEXT TEST
      MOV     #5#4           ;SET TRAP VECTOR
      MOV     #PR7,6         ;SET PRIORITY TO LEVEL 7
      MOV     #1#LOCK        ;SET RETURN IF SW09=11
1#:    MOV     DZCSR,R0       ;SET ADDRESS TO TEST
      MOV     (R0),R1        ;READ THE ADDRESS
      NOP                     ;WASTE TIME
      CLR     (R0)           ;WRITE THE ADDRESS
      NOP                     ;WASTE TIME
      MOV     #2#LOCK        ;SET RETURN ADDRESS FOR SW09
2#:    MOV     DZRBUF,R0     ;SET ADDRESS TO TEST
      MOV     (R0),R1        ;READ THE ADDRESS
      NOP                     ;
      CLR     (R0)           ;WRITE THE ADDRESS
      NOP                     ;WASTE TIME
      MOV     #3#LOCK        ;SET RETURN ADDRESS FOR SW09
3#:    MOV     DZTCR,R0     ;SET ADDRESS TO TEST
      MOV     (R0),R1        ;READ THE ADDRESS
      NOP                     ;
      CLR     (R0)           ;WRITE THE ADDRESS
      NOP                     ;
      MOV     #4#LOCK        ;SET RETURN ADDRESS
4#:    MOV     DZMSR,R0     ;SET ADDRESS TO TEST
      MOV     (R0),R1        ;READ FROM ADDRESS
      NOP                     ;
      CLR     (R0)           ;WRITE THE ADDRESS
      NOP                     ;
      MOV     #6,4           ;SET TRAP CATCHER BACK TO NORMAL
      CLR     6              ;
      ADVANCE                ;SCOPE THIS TEST
5#:    MOV     (SP),R1       ;SAVE PC OF TRAP
      CMP     (SP)+,(SP)+    ;POP TRAP OFF STACK
      ERROR   1              ;*NO SLAVE SYNC RESPONSE.
      SCOP1                ;SW09=1?
      JMP     (R1)           ;RTI
; -- END 0 MACRO -----
; -#XZ-----
;***** TEST 2 *****
;*THIS TEST PROVES THAT BIT "DCLR"
;*CAN BE SET AND THAT IT WILL CLEAR
;*BY ITSELF AFTER A PERIOD OF TIME.
; -#XZ-----

;:* TEST 2

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3094
3095 013236 000004
3096 013240 012737 000002 001122
3097
3098 013246 012737 013322 001360
3099 013254 013700 002042
3100 013260 012705 000020
3101 013264 010510
3102 013266 011004
3103 013270 020504
3104 013272 001401
3105 013274 104002
3106
3107 013276 005002
3108 013300 005005
3109 013302 005003
3110 013304 011004
3111 013306 001405
3112 013310 005203
3113
3114
3115 013312 001374
3116 013314 005302
3117 013316 001372
3118 013320 104002
3119 013322
3120
3121
3122
3123
3124
3125
3126
3127
3128
3129
3130
3131 013322 000004
3132 013324 012737 000003 001122
3133
3134 013332 012737 013414 001360
3135 013340 013700 002042
3136 013344 012705 000010
3137 013350 010510
3138 013352 011004
3139 013354 020504
3140 013356 001401
3141 013360 104002
3142 013362 040510
3143 013364 011004
3144 013366 001404
3145 013370 010546
3146 013372 005005
3147 013374 104002
3148 013376 012605
3149 013400 010510

;*****
TST2: SCOPE
      MOV      #2, #TSTNM      ;LOAD THE NUMBER OF THIS TEST
; -- END 0 MACRO
      MOV      #TST3,NEXT      ;POINT TO THE START OF THE NEXT TEST
      MOV      DZCSR,R0        ;SET POINTER
      MOV      #DCLR,R5        ;SET DCLR
      MOV      R5,(R0)         ;WRITE DCLR INTO DZCSR
      MOV      (R0),R4         ;READ BACK DZCSR
      CMP      R5,R4           ;DZCSR OK?
      BEQ      16              ;IF IT IS SET SKIP THE ERROR CALL
      ERROR    2                ;DCLR SHOULD BE SET..MOMENTARILY
;NOW LETS WATCH IT DISAPPEAR
16:    CLR      R2              ;SET COUNTER TO 0
      CLR      R5              ;SET EXPECTED TO 0
      CLR      R3              ;DUAL LOOP COUNTER
24:    MOV      (R0),R4         ;IS DCLR CLEAR?
      BEQ      36              ;IF YES , GO TO THE NEXT TEST
      INC      R3              ;IF NO,COUNT 1 OF 65535 TICKS
                                ;THE WORD CREATED BY THE IMMEDIATE 0 WILL BE
                                ;THE COUNTER
                                ;HAS THE TIME EXPIRED? IF NO, GO TEST BIT AGAIN
      BNE      26              ;HAS THE TOTAL TIME EXPIRED?
      DEC      R2              ;IF NO, CHECK THE BIT AGAIN
      BNE      26              ;DCLR FAILED TO CLEAR
      ERROR    2
36:
; -#RRW-.....
; -#XZ-.....
;***** TEST 3 *****
;TEST TO VERIFY THAT BIT "MAINT" CAN
;BE SET. THEN VERIFY THAT BIT "MAINT" CAN
;BE CLEARED (WRITTEN TO A ZERO). AND FINALLY
;VERIFY THAT AFTER BEING SET AGAIN IT CAN BE
;CLEARED BY A "DEVICE CLEAR"
; -#XZ-.....
;: TEST 3
;*****
TST3: SCOPE
      MOV      #3, #TSTNM      ;LOAD THE NUMBER OF THIS TEST
; -- END 0 MACRO
      MOV      #TST4,NEXT      ;POINT TO THE START OF THE NEXT TEST
      MOV      DZCSR,R0        ;GET BASE ADDRESS
      MOV      #MAINT,R5       ;SET BIT
      MOV      R5,(R0)         ;SET SET IN DEVICE
      MOV      (R0),R4         ;READ THE BIT FROM DEVICE
      CMP      R5,R4           ;WAS BIT SET?
      BEQ      16              ;OR IF YES
      ERROR    2                ;BIT R/W FAILURE
      BIC      R5,(R0)         ;CLEAR THE BIT.
      MOV      (R0),R4         ;READ DEVICE
      BEQ      26              ;OR IF BITS WERE CLEARED.
      MOV      R5,-(SP)        ;SAVE THE BIT
      CLR      R5              ;SET EXPECTED RESULTS TO 0
      ERROR    2                ;BIT FAILED TO CLEAR
      MOV      (SP),R5         ;RESTORE THE BIT.
26:    MOV      R5,(R0)         ;SET THE BIT AGAIN

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3150 013402 104413          DEVICE.CLR          ;ISSUE DEVICE CLEAR
3151 013404 011004          MOV      (R0),R4      ;READ THE BIT.
3152 013406 001402          BEQ      31          ;BR IF BIT CLEARED BY INIT (DEVICE CLEAR)
3153 013410 005005          CLR      R5          ;SET EXPECTED TO ZERO
3154 013412 104002          ERROR    2          ;BIT NOT CLEARED BY DEVICE CLEAR
3155 013414
3156
3157          ; -- END 0 MACRO .....
3158          ; -- END 0 MACRO .....
3159          ; -@RRW-.....
3160          ; -@XZ-.....
3161          ;***** TEST 4 *****
3162          ;*TEST TO VERIFY THAT BIT "MSENAB" CAN
3163          ;*BE SET. THEN VERIFY THAT BIT "MSENAB" CAN
3164          ;*BE CLEARED (WRITTEN TO A ZERO). AND FINALLY
3165          ;*VERIFY THAT AFTER BEING SET AGAIN IT CAN BE
3166          ;*CLEARED BY A "DEVICE CLEAR"
3167          ; -@XZ-.....
3168          ;: TEST 4
3169          ;*****
3170 013414 000004          TST4:  SCOPE          ;LOAD THE NUMBER OF THIS TEST
3171 013416 012737 000004 001122          MOV      @4,@TSTNM
3172          ; -- END 0 MACRO .....
3173          MOV      @TST5,NEXT          ;POINT TO THE START OF THE NEXT TEST
3174          MOV      DZCSR,R0          ;GET BASE ADDRESS
3175          MOV      @MSENAB,R5          ;SET BIT
3176          MOV      R5,(R0)          ;SET SET IN DEVICE
3177          MOV      (R0),R4          ;READ THE BIT FROM DEVICE
3178          CMP      R5,R4          ;WAS BIT SET?
3179          BEQ      11          ;BR IF YES
3180          ERROR    2          ;BIT R/W FAILURE
3181          BIC      R5,(R0)          ;CLEAR THE BIT.
3182          MOV      (R0),R4          ;READ DEVICE
3183          BEQ      21          ;BR IF BITS WERE CLEARED.
3184          MOV      R5,-(SP)          ;SAVE THE BIT
3185          CLR      R5          ;SET EXPECTED RESULTS TO 0
3186          ERROR    2          ;BIT FAILED TO CLEAR
3187          MOV      (SP),R5          ;RESTORE THE BIT.
3188          MOV      R5,(R0)          ;SET THE BIT AGAIN
3189          DEVICE.CLR          ;ISSUE DEVICE CLEAR
3190          MOV      (R0),R4          ;READ THE BIT.
3191          BEQ      31          ;BR IF BIT CLEARED BY INIT (DEVICE CLEAR)
3192          CLR      R5          ;SET EXPECTED TO ZERO
3193          ERROR    2          ;BIT NOT CLEARED BY DEVICE CLEAR
3194          ;: TEST 4
3195          ; -- END 0 MACRO .....
3196          ; -- END 0 MACRO .....
3197          ; -@RRW-.....
3198          ; -@XZ-.....
3199          ;***** TEST 5 *****
3200          ;*TEST TO VERIFY THAT BIT "SILOEN" CAN
3201          ;*BE SET. THEN VERIFY THAT BIT "SILOEN" CAN
3202          ;*BE CLEARED (WRITTEN TO A ZERO). AND FINALLY
3203          ;*VERIFY THAT AFTER BEING SET AGAIN IT CAN BE
3204          ;*CLEARED BY A "DEVICE CLEAR"
3205          ; -@XZ-.....
          ;: TEST 5

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3206
3207 013506 000004
3208 013510 012737 000005 001122
3209
3210 013516 012737 013600 001360
3211 013524 013700 002042
3212 013530 012705 010000
3213 013534 010510
3214 013536 011004
3215 013540 020504
3216 013542 001401
3217 013544 104002
3218 013546 040510
3219 013550 011004
3220 013552 001404
3221 013554 010546
3222 013556 005005
3223 013560 104002
3224 013562 012605
3225 013564 010510
3226 013566 104413
3227 013570 011004
3228 013572 001402
3229 013574 005005
3230 013576 104002
3231 013600
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3244
3245 013600 000004
3246 013602 012737 000006 001122
3247
3248 013610 012737 013672 001360
3249 013616 013700 002042
3250 013622 012705 000100
3251 013626 010510
3252 013630 011004
3253 013632 020504
3254 013634 001401
3255 013636 104002
3256 013640 040510
3257 013642 011004
3258 013644 001404
3259 013646 010546
3260 013650 005005
3261 013652 104002

;*****
TSYS:  SCOPE
      MOV    #5,1TSTNM      ;LOAD THE NUMBER OF THIS TEST
; -- END 0 MACRO
      MOV    @TST6,NEXT     ;POINT TO THE START OF THE NEXT TEST
      MOV    DZCSR,R0       ;GET BASE ADDRESS
      MOV    @SILOEN,R5     ;SET BIT
      MOV    R5,(R0)        ;SET SET IN DEVICE
      MOV    (R0),R4        ;READ THE BIT FROM DEVICE
      CMP    R5,R4          ;WAS BIT SET?
      BEQ    14             ;BR IF YES
      ERROR  2              ;*BIT R/W FAILURE
14:    BIC    R5,(R0)        ;CLEAR THE BIT.
      MOV    (R0),R4        ;READ DEVICE
      BEQ    24             ;BR IF BITS WERE CLEARED.
      MOV    R5,-(SP)       ;SAVE THE BIT
      CLR    R5             ;SET EXPECTED RESULTS TO 0
      ERROR  2              ;*BIT FAILED TO CLEAR
      MOV    (SP)+,R5       ;RESTORE THE BIT.
24:    MOV    R5,(R0)        ;SET THE BIT AGAIN
      DEVICE.CLR            ;ISSUE DEVICE CLEAR
      MOV    (R0),R4        ;READ THE BIT.
      BEQ    34             ;BR IF BIT CLEARED BY INIT (DEVICE CLEAR)
      CLR    R5             ;SET EXPECTED TO ZERO
      ERROR  2              ;*BIT NOT CLEARED BY DEVICE CLEAR
34:
; -- END 0 MACRO
; -- END 0 MACRO
; -MRRW-----
; -XZ-----
;***** TEST 6 *****
;*TEST TO VERIFY THAT BIT "RIE" CAN
;*BE SET. THEN VERIFY THAT BIT "RIE" CAN
;*BE CLEARED (WRITTEN TO A ZERO). AND FINALLY
;*VERIFY THAT AFTER BEING SET AGAIN IT CAN BE
;*CLEARED BY A "DEVICE CLEAR"
; -XZ-----
;* TEST 6
;*****
TST6:  SCOPE
      MOV    #6,1TSTNM      ;LOAD THE NUMBER OF THIS TEST
; -- END 0 MACRO
      MOV    @TST7,NEXT     ;POINT TO THE START OF THE NEXT TEST
      MOV    DZCSR,R0       ;GET BASE ADDRESS
      MOV    @RIE,R5        ;SET BIT
      MOV    R5,(R0)        ;SET SET IN DEVICE
      MOV    (R0),R4        ;READ THE BIT FROM DEVICE
      CMP    R5,R4          ;WAS BIT SET?
      BEQ    14             ;BR IF YES
      ERROR  2              ;*BIT R/W FAILURE
14:    BIC    R5,(R0)        ;CLEAR THE BIT.
      MOV    (R0),R4        ;READ DEVICE
      BEQ    24             ;BR IF BITS WERE CLEARED.
      MOV    R5,-(SP)       ;SAVE THE BIT
      CLR    R5             ;SET EXPECTED RESULTS TO 0
      ERROR  2              ;*BIT FAILED TO CLEAR

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3262 013654 012605
3263 013656 010510
3264 013660 104413
3265 013662 011004
3266 013664 001402
3267 013666 005005
3268 013670 104002
3269 013672
3270
3271
3272
3273
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3278
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3283 013672 000004
3284 013674 012737 000007 001122
3285
3286 013702 012737 013764 001360
3287 013710 013700 002042
3288 013714 012705 040000
3289 013720 010510
3290 013722 011004
3291 013724 020504
3292 013726 001401
3293 013730 104002
3294 013732 040510
3295 013734 011004
3296 013736 001404
3297 013740 010546
3298 013742 005005
3299 013744 104002
3300 013746 012605
3301 013750 010510
3302 013752 104413
3303 013754 011004
3304 013756 001402
3305 013760 005005
3306 013762 104002
3307 013764
3308
3309
3310
3311
3312
3313
3314
3315
3316
3317

24:  MOV      (SP),R5      ;RESTORE THE BIT.
      MOV      R5,(R0)    ;SET THE BIT AGAIN
      DEVICE.CLR          ;ISSUE DEVICE CLEAR
      MOV      (R0),R4    ;READ THE BIT.
      BEQ      34         ;BR IF BIT CLEARED BY INIT (DEVICE CLEAR)
      CLR      R5         ;SET EXPECTED TO ZERO
      ERROR    2          ;*BIT NOT CLEARED BY DEVICE CLEAR

34:  ; -- END 0 MACRO -----
      ; -- END 0 MACRO -----
      ; -MRRW-----
      ; -XZ-----
      ;***** TEST 7 *****
      ;*TEST TO VERIFY THAT BIT "TIE" CAN
      ;*BE SET. THEN VERIFY THAT BIT "TIE" CAN
      ;*BE CLEARED (WRITTEN TO A ZERO). AND FINALLY
      ;*VERIFY THAT AFTER BEING SET AGAIN IT CAN BE
      ;*CLEARED BY A "DEVICE CLEAR"
      ; -XZ-----

;:* TEST 7
;*****
TST7: SCOPE
      MOV      #7,TSTNM    ;LOAD THE NUMBER OF THIS TEST
      ; -- END 0 MACRO -----
      MOV      #TST10,NEXT ;POINT TO THE START OF THE NEXT TEST
      MOV      DZCSR,R0    ;GET BASE ADDRESS
      MOV      #TIE,R5    ;SET BIT
      MOV      R5,(R0)     ;SET SET IN DEVICE
      MOV      (R0),R4     ;READ THE BIT FROM DEVICE
      CMP      R5,R4       ;WAS BIT SET?
      BEQ      14         ;BR IF YES
      ERROR    2          ;*BIT R/W FAILURE
      BIC      R5,(R0)     ;CLEAR THE BIT.
      MOV      (R0),R4     ;READ DEVICE
      BEQ      24         ;BR IF BITS WERE CLEARED.
      MOV      R5,-(SP)    ;SAVE THE BIT
      CLR      R5          ;SET EXPECTED RESULTS TO 0
      ERROR    2          ;*BIT FAILED TO CLEAR
      MOV      (SP),R5     ;RESTORE THE BIT.
      MOV      R5,(R0)     ;SET THE BIT AGAIN
      DEVICE.CLR          ;ISSUE DEVICE CLEAR
      MOV      (R0),R4     ;READ THE BIT.
      BEQ      34         ;BR IF BIT CLEARED BY INIT (DEVICE CLEAR)
      CLR      R5          ;SET EXPECTED TO ZERO
      ERROR    2          ;*BIT NOT CLEARED BY DEVICE CLEAR

14:  BIC      R5,(R0)
      MOV      (R0),R4
      BEQ      24
      MOV      R5,-(SP)
      CLR      R5
      ERROR    2
      MOV      (SP),R5
      MOV      R5,(R0)
      DEVICE.CLR
      MOV      (R0),R4
      BEQ      34
      CLR      R5
      ERROR    2

34:  ; -- END 0 MACRO -----
      ; -- END 0 MACRO -----
      ; -TCR-----
      ; -XZ-----
      ;***** TEST 10 *****
      ;*THIS TESTS THAT ALL OF THE FOLLOWING
      ;*BITS CAN BE: SET, CLEARED, CLEARED BY "DEVICE CLEAR "
      ;*BITS TESTED ARE:
      ;* TCR0, TCR1, TCR2, TCR3, TCR4, TCR5, TCR6, TCR7
      ; -XZ-----

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3318      ;:* TEST 10
3319      ;*****
3320      TST10: SCOPE
3321      MOV      #10, #TSTNM      ;LOAD THE NUMBER OF THIS TEST
3322      ; -- END 0 MACRO -----
3323      MOV      #TST11,NEXT      ;POINT TO THE START OF THE NEXT TEST
3324      MOV      DZTCR,R0          ;SET DEVICE ADDRESS
3325      MOV      #TCR0,R5          ;SET EXPECTED RESULTS
3326      MOV      #16,LOCK          ;SET FOR SW09
3327      1#:      MOV      R5,(R0)    ;SET THE BIT
3328      MOV      (R0),R4            ;READ THE BIT FROM THE DEVICE
3329      BIC      #C<377>,R4        ;CLEAR HIGH BYTE
3330      CMP      R5,R4             ;WAS BIT OK?
3331      BEQ      2#                ;BR IF YES
3332      ERROR    2                 ;*BIT FAILED TO SET.
3333      2#:      BIC      R5,(R0)    ;CLEAR THE BIT
3334      MOV      (R0),R4            ;READ THE REGISTER
3335      BIC      #C<377>,R4        ;CLEAR HIGH BYTE
3336      TST      R4                ;BITS CLEAR?
3337      BEQ      3#                ;BR IF YES
3338      MOV      R5,-(SP)          ;SAVE GOOD RESULTS
3339      CLR      R5                ;SET EXPECTED TO 0
3340      ERROR    2                 ;*REPORT BIT NOT CLEAR
3341      MOV      (SP)+,R5          ;RESTORE R5
3342      3#:      MOV      R5,(R0)    ;SET THE BIT AGAIN.
3343      DEVICE.CLR                ;ISSUE DEVICE CLEAR
3344      MOV      (R0),R4            ;READ THE REGISTER
3345      BIC      #C<377>,R4        ;CLEAR HIGH BYTE
3346      TST      R4                ;BITS CLEAR?
3347      BEQ      4#                ;BR IF YES
3348      MOV      R5,-(SP)          ;SAVE GOOD RESULTS
3349      CLR      R5                ;SET EXPECTED TO 0
3350      ERROR    2                 ;*REPORT BIT NOT CLEAR
3351      MOV      (SP)+,R5          ;RESTORE R5
3352      4#:      SCOP1          ;LOCK ON BIT? SET SW09=1
3353      ASLB      R5                ;CHANGE TO NEXT BIT
3354      BNE      1#                ;CONTINUE TESTING
3355      CLR      LOCK              ;MAKE SURE TIGHT LOOP IS CLEANED UP
3356      ; -- END 0 MACRO -----
3357      ; -#TCR-----
3358      ; -#XZ-----
3359      ;***** TEST 11 *****
3360      ;*THIS TESTS THAT ALL OF THE FOLLOWING
3361      ;*BITS CAN BE: SET, CLEARED, CLEARED BY "RESET INSTR *NOT* DEVICE CLEAR "
3362      ;*BITS TESTED ARE:
3363      ;* DTR0, DTR1, DTR2, DTR3, DTR4, DTR5, DTR6, DTR7
3364      ;*THIS TEST IS NOT DONE IF MODULE IS 20MA VERSION
3365      ; -#XZ-----
3366      ;:* TEST 11
3367      ;*****
3368      TST11: SCOPE
3369      MOV      #11, #TSTNM      ;LOAD THE NUMBER OF THIS TEST
3370      ; -- END 0 MACRO -----
3371      MOV      #TST12,NEXT      ;POINT TO THE START OF THE NEXT TEST
3372      MOV      DZTCR,R0          ;SET DEVICE ADDRESS
3373      MOV      #DTR0,R5          ;SET EXPECTED RESULTS

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3374 014150 012737 014166 001362      MOV      #10,LOCK      ;SET FOR SW09
3375 014156 105737 001414              TSTB      EIAFLG      ;20MA OR EIA
3376 014162 100001                      BPL        10         ;BR IF EIA
3377 014164 104400                      ADVANCE     ;EXIT TEST
3378 014166 010510      10:      MOV      R5,(R0)      ;SET THE BIT
3379 014170 011004      MOV      (R0),R4      ;READ THE BIT FROM THE DEVICE
3380 014172 105004      CLRB      R4          ;CLEAR LOW BYTE
3381 014174 020504      CMP       R5,R4        ;WAS BIT OK?
3382 014176 001401      BEQ       20         ;BR IF YES
3383 014200 104002      ERROR      2          ;*BIT FAILED TO SET.
3384 014202 040510      20:      BIC      R5,(R0)      ;CLEAR THE BIT
3385 014204 011004      MOV      (R0),R4      ;READ THE REGISTER
3386 014206 105004      CLRB      R4          ;CLEAR LOW BYTE
3387 014210 005704      TST       R4          ;BITS CLEAR?
3388 014212 001404      BEQ       30         ;BR IF YES
3389 014214 010546      MOV      R5,-(SP)      ;SAVE GOOD RESULTS
3390 014216 005005      CLR       R5          ;SET EXPECTED TO 0
3391 014220 104002      ERROR      2          ;*REPORT BIT NOT CLEAR
3392 014222 012605      MOV      (SP),R5      ;RESTORE R5
3393 014224 010510      30:      MOV      R5,(R0)      ;SET THE BIT AGAIN.
3394 014226 104413      DEVICE.CLR ;ISSUE DEVICE CLEAR
3395 014230 011004      MOV      (R0),R4      ;READ THE REGISTER
3396 014232 105004      CLRB      R4          ;CLEAR LOW BYTE
3397 014234 030510      BIT       R5,(R0)      ;WAS BIT CLEARED BY DEVICE.CLR?
3398 014236 001001      BNE       40         ;BR IF NO (IT SHOULDN'T BE CLEAR)
3399 014240 104002      ERROR      2          ;*BIT CLEARED BY DEVICE.CLR
3400 014242 104401      40:      SCOP1     ;LOCK ON BIT? SW09=1
3401 014244 006305      ASL       R5          ;CHANGE TO NEXT BIT
3402 014246 001347      BNE       10         ;IF NOT DONE LOOP
3403 014250 012710 177400      MOV      #177400,(R0) ;SET ALL DTR BITS
3404 014254 005005      CLR       R5          ;CLEAR LOCATION FOR ERROR PRINTOUT
3405 014256 005227 000000      50:      INC       #0          ;ACT DELAY LOOP FOR
3406 014262 001375      BNE       50         ;RESET INSTRUCTION
3407 014264 000005      RESET      ;ISSUE A BUS INIT
3408 014266 011004      MOV      (R0),R4      ;READ REGISTER
3409 014270 105004      CLRB      R4          ;CLEAR LOW BYTE
3410 014272 005704      TST       R4          ;DTR BITS CLEAR?
3411 014274 001401      BEQ       .+4        ;IF YES CONTINUE
3412 014276 104002      ERROR      2          ;IF NO PRINT ERROR
3413 014300 005037 001362      CLR      LOCK      ;MAKE SURE TIGHT LOOP IS CLEANED UP
3414      ; -- END 0 MACRO -----
3415      ; $MRR-----
3416      ; -$XZ-----
3417      ;***** TEST 12 *****
3418      ;*THIS TEST PERFORMS RESET TESTING &
3419      ;*TESTING OF WRITE ONLY OR READ ONLY BIT
3420      ;* TEST BITS "RDONE, BIT11, BIT10, BIT9, BIT8, BIT2, BIT1
3421      ;*      BIT0, SILOAL" ARE READ ONLY AND THAT TRDY IS
3422      ;*      ZERO UNTIL A LINE IS SELECTED AND MSENAB IS SET.
3423      ;*
3424      ; -$XZ-----
3425      ;:* TEST 12
3426      ;*****
3427 014304 000004      TST12: SCOPE
3428 014306 012737 000012 001122      MOV      #12,$TSTNM      ;LOAD THE NUMBER OF THIS TEST
3429      ; -- END 0 MACRO -----

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3430 014314 012737 014422 001360      MOV    #TST13,NEXT      ;POINT TO THE START OF THE NEXT TEST
3431 014322 013700 002042      MOV    DZCSR,R0        ;SET ADDRESS TO R0
3432 014326 005005              CLR     R5              ;SET EXPECTED TO 0
3433 014330 012710 027607      MOV    #RDONE+BIT11+BIT10+BIT9+BIT8+BIT2+BIT1+BIT0+SILOAL,(R0)
3434                                ;WRITE THE BITS
3435 014334 011004              MOV    (R0),R4          ;READ BACK THE BITS
3436 014336 001401              BEQ     1#              ;BR IF NONE ARE SET.
3437 014340 104002              ERROR   2              ;*BITS WERE SET.
3438 014342 012710 100000      1#:    MOV    #TRDY,(R0)      ;ATTEMPT TO WRITE TRDY
3439 014346 011004              MOV    (R0),R4          ;READ TRDY
3440 014350 001401              BEQ     2#              ;BR IF NOT SET
3441 014352 104002              ERROR   2              ;*
3442 014354 012705 100000      2#:    MOV    #TRDY,R5        ;SET EXPECTED BIT
3443 014360 005077 165466      CLR     BDZLPR          ;LOAD LINE 0
3444 014364 052777 000001 165464  BIS    #TCR0,BDZTCR      ;SET TCR BIT
3445 014372 052710 000040      BIS    #MSENAB,(R0)
3446 014376 052705 000040      BIS    #MSENAB,R5        ;SET SCAN ENABLE
3447 014402 005002              CLR     R2              ;SET COUNTER TO ZERO
3448 014404 011004      3#:    MOV    (R0),R4          ;READ THE REGISTER
3449 014406 020504              CMP     R5,R4          ;BIT SET?
3450 014410 001404              BEQ     4#              ;BR IF YES
3451 014412 104414              DELAY   ;STALL TIME
3452 014414 005202              INC     R2              ;UPDATE COUNTER
3453 014416 001372              BNE     3#              ;BR IF COUNTER NOT DONE.
3454 014420 104002              ERROR   2              ;*TRDY NOT SET!
3455 014422      4#:
3456      ; -- END 0 MACRO -----
3457                                ; -#XZ-----
3458                                ;***** TEST 13 *****
3459                                ;*THIS TEST PERFORMS RESET TESTING AND
3460                                ;*TESTING OF READ ONLY AND WRITE ONLY BITS
3461                                ;* IN REGISTER DZCSR
3462                                ;*VERIFY THAT "TIE", "SILOEN", "RIE", "MSENAB", "MAINT"
3463                                ;*ARE THE ONLY R/W BITS IN THE DZCSR.
3464                                ;*THEN VERIFY THAT A RESET WILL CLEAR THESE BITS
3465                                ;*THIS TEST ALSO CHECKS BYTE OPERATIONS ON THE CSR
3466                                ; -#XZ-----
3467                                ;:* TEST 13
3468                                ;*****
3469 014422 000004      TST13:  SCOPE
3470 014424 012737 000013 001122      MOV    #13,#TSTNM      ;LOAD THE NUMBER OF THIS TEST
3471      ; -- END 0 MACRO -----
3472 014432 012737 014552 001360      MOV    #TST14,NEXT      ;POINT TO THE START OF THE NEXT TEST
3473 014440 104413      DEVICE.CLR
3474 014442 013700 002042      MOV    DZCSR,R0        ;SET UP FOR ERROR MESSAGE
3475 014446 012710 177757      MOV    #C<DCLR>,(R0)    ;TRY TO WRITE
3476 014452 012705 050150      MOV    #TIE!SILOEN!RIE!MSENAB!MAINT,R5 ;MAKE EXPECTED
3477 014456 011004      MOV    (R0),R4          ;ACTUAL
3478 014460 020405      CMP     R4,R5          ;CMP EXPECTED VS ACTUAL
3479 014462 001401      BEQ     1#              ;YES
3480 014464 104002      ERROR   2              ;*NO
3481 014466 105010      1#:    CLRB    (R0)          ;CLEAR LOWER BYTE OF CSR
3482 014470 105005      CLRB    R5              ;SET EXPECTED
3483 014472 011004      MOV    (R0),R4          ;READ CSR BITS
3484 014474 020405      CMP     R4,R5          ;COMPARE ACTUAL TO EXPECTED
3485 014476 001401      BEQ     3#              ;BRANCH IF SAME

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3486 014500 104002          ERROR      2      ; OTHERWISE PRINT ERROR
3487 014502 012710 177757 34:      MOV      @C<DCLR>,(R0) ; RESET CSR BITS
3488 014506 105077 165332      CLRB      @DZCSR      ; CLEAR HIGH BYTE OF CSR
3489 014512 012705 000150      MOV      @RIE!MSENAB!MAINT,R5 ; SET R5 TO EXPECTED RESULTS
3490                                     ; READ CSR
3491 014516 011004          MOV      (R0),R4      ; ACTUAL = EXPECTED?
3492 014520 020405          CMP      R4,R5      ; BRANCH IF SAME
3493 014522 001401          BEQ      44          ; OTHERWISE PRINTOUT ERROR
3494 014524 104002          ERROR      2      ; RESET CSR BITS
3495 014526 012710 177757 44:      MOV      @C<DCLR>,(R0) ; SET R5 TO EXPECTED RESULTS
3496 014532 005005          CLR      R5          ; DELAY TIMER FOR
3497 014534 005227 000000 54:      INC      #0      ; ACT-11 COMPATIBILITY
3498 014540 001375          BNE      54          ; ISSUE BUS INIT
3499 014542 000005          RESET          ; READ CSR REGISTER
3500 014544 011004          MOV      (R0),R4      ; BRANCH IF CSR IS CLEAR
3501 014546 001401          BEQ      24          ; IF NOT PRINT ERROR
3502 014550 104002          ERROR      2
3503 014552          24:                                     ; -#MRMD-----
3504                                     ; -#XZ-----
3505                                     ; ***** TEST 14 *****
3506                                     ; *THIS TEST PERFORMS RESET TESTING AND
3507                                     ; *TESTING OF READ ONLY REGISTER DZRBUF
3508                                     ; *AND TESTING OF WRITE ONLY REGISTER DZLPR
3509                                     ; -#XZ-----
3510                                     ; : * TEST 14
3511                                     ; : *****
3512                                     ; TST14: SCOPE
3513 014552 000004          MOV      #14,#TSTNM      ; LOAD THE NUMBER OF THIS TEST
3514 014554 012737 000014 001122      -- END 0 MACRO -----
3515                                     ; -- END 0 MACRO -----
3516 014562 012737 014642 001360      MOV      @TST15,NEXT ; POINT TO THE START OF THE NEXT TEST
3517 014570 104413          DEVICE.CLR      ; CLEAR DZ11
3518 014572 013700 002046          MOV      DZRBUF,R0      ; SET UP FOR ERROR MESSAGE
3519 014576 011005          MOV      (R0),R5      ; SET EXPECTED
3520 014600 012777 177777 165244      MOV      #-1,@DZLPR ; TRY TO WRITE ALL 1'S
3521 014606 011004          MOV      (R0),R4      ; ACTUAL
3522 014610 042705 104000          BIC      @DVALID!BIT11,R5 ; DITTO
3523 014614 020405          CMP      R4,R5      ; CMP ACTUAL VS EXPECTED
3524 014616 001401          BEQ      14          ; IF YES, GO CONTINUE PROCESSING
3525 014620 104002          ERROR      2      ; *ERROR- BIT PATTERN NOT CORRECT
3526 014622 010403          14:      MOV      R4,R3      ; GET A COPY OF THE ACTUAL BIT PATTERN
3527 014624 005103          COM      R3          ; GET THE LOGICAL INVERSE OF THE BIT PATTERN
3528 014626 010377 165220          MOV      R3,@DZLPR      ; TRY TO WRITE
3529 014632 011004          MOV      (R0),R4      ; ACTUAL
3530 014634 020405          CMP      R4,R5      ; CMP ACTUAL VS EXPECTED
3531 014636 001401          BEQ      24          ; IF YES, GET OUT OF THIS TEST
3532 014640 104002          ERROR      2      ; *NO
3533 014642          24:                                     ; -#MRMD-----
3534                                     ; -#XZ-----
3535                                     ; ***** TEST 15 *****
3536                                     ; *THIS TEST PERFORMS RESET TESTING AND
3537                                     ; *TESTING OF READ ONLY REGISTER DZMSR
3538                                     ; *AND TESTING OF WRITE ONLY REGISTER DZTDR
3539                                     ; -#XZ-----
3540                                     ; *****
3541                                     ; *****

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3542      ;:* TEST 15
3543      ;*****
3544      TST15: SCOPE
3545      MOV     #15,#TSTNM      ;LOAD THE NUMBER OF THIS TEST
3546      ; -- END 0 MACRO -----
3547      MOV     #TST16,NEXT     ;POINT TO THE START OF THE NEXT TEST
3548      DEVICE.CLR              ;CLEAR DZ11
3549      MOV     DZMSR,R0        ;SET UP FOR ERROR MESSAGE
3550      MOV     (R0),R5          ;SET EXPECTED
3551      MOV     #-1,BDZTDR      ;TRY TO WRITE ALL 1'S
3552      MOV     (R0),R4          ;ACTUAL
3553      CMP     R4,R5            ;CMP ACTUAL VS EXPECTED
3554      BEQ     1#              ;IF YES,GO CONTINUE PROCESSING
3555      ERROR   2               ;*ERROR- BIT PATTERN NOT CORRECT
3556      1#:    MOV     R4,R3     ;GET A COPY OF THE ACTUAL BIT PATTERN
3557      COM     R3              ;GET THE LOGICAL INVERSE OF THE BIT PATTERN
3558      MOV     R3,BDZTDR      ;TRY TO WRITE
3559      MOV     (R0),R4          ;ACTUAL
3560      CMP     R4,R5            ;CMP ACTUAL VS EXPECTED
3561      BEQ     2#              ;IF YES, GET OUT OF THIS TEST
3562      ERROR   2               ;*NO
3563      2#:
3564      ; -- END 0 MACRO -----
3565
3566
3567      ; -#XZ-----
3568      ;***** TEST 16 *****
3569      ;*VERIFY THAT IF WE ARE IN "STAGGERED" MODE
3570      ;*THAT SETTING "DTR" FOR A LINE WILL
3571      ;*BRING UP "RING" AND "CARRIER" FOR THE
3572      ;*ASSOCIATED LINE IN WHICH WE ARE STAGGERED!
3573      ;* LINE0 DTR= LINE1 RING AND CARRIER
3574      ;* LINE1 DTR= LINE0 RING AND CARRIER
3575      ;* LINE2 DTR= LINE3 RING AND CARRIER
3576      ;* LINE3 DTR= LINE 4 RING AND CARRIER
3577      ;* ETC...
3578      ; -#XZ-----
3579
3580      ;:* TEST 16
3581      ;*****
3582      TST16: SCOPE
3583      MOV     #16,#TSTNM      ;LOAD THE NUMBER OF THIS TEST
3584      ; -- END 0 MACRO -----
3585      MOV     #TST17,NEXT     ;POINT TO THE START OF THE NEXT TEST
3586      MOV     #1# ,LOCK       ;USE THIS ADDRESS IF A TIGHT SCOPE LOOP IS SELECTED
3587      TSTB    EIAFLG          ;EIA OR 20MA?
3588      BPL     10#            ;BR IF EIA
3589      ADVANCE  10#            ;EXIT TEST
3590      10#:    MOV     DZMSR,R0 ;SET REGISTER
3591      DEVICE.CLR              ;INIT DZ11
3592      CLR     R3              ;ZERO LINE NUMBER
3593      MOV     #1,R2           ;SET POINTER
3594      TST     MODE            ;ARE WE IN STAGGERED MODE?
3595      BMI     1#              ;YES WE ARE!
3596      MOV     NEXT,#LPADR     ;LEAVE THIS TEST! NOT STAGGERED
3597      JMP     @LPADR          ;EXIT
  
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3598 015016 130237 001364      14:  BITB    R2,LINE      ;TEST THIS LINE?
3599 015022 001004              BNE      34          ;YES
3600 015024 005203      24:  INC      R3          ;LINE #
3601 015026 106302          ASLB     R2          ;GET NEXT LINE
3602 015030 103372          BCC      14          ;KEEP TESTING
3603 015032 104400          ADVANCE          ;ADVANCE THIS TEST
3604 015034 010204      34:  MOV      R2,R4          ;SAVE BINARY BIT FOR LINE #
3605 015036 032703 000001      BIT     #BIT0,R3      ;GET STAGGERED COMPANION LINE
3606 015042 001402          BEQ      44          ;BR IF LINE EVEN
3607 015044 006204          ASR      R4          ;ADJUST LINE
3608 015046 000401          BR       54          ;
3609 015050 006304      44:  ASL      R4          ;ADJUST LINE
3610 015052 005005      54:  CLR      R5          ;SET EXPECTED
3611 015054 150405          BISB     R4,R5          ;
3612 015056 000305          SWAB     R5          ;
3613 015060 150405          BISB     R4,R5          ;
3614 015062 150277 164772      BISB     R2,BMDZTCR      ;SET DTR
3615 015066 104414          DELAY          ;CABLE DELAY
3616 015070 011004          MOV      (R0),R4          ;READ MSR REGISTER
3617 015072 020504          CMP      R5,R4          ;OK?
3618 015074 001401          BEQ      64          ;YES
3619 015076 104002          ERROR     2          ;*ERROR IN RING OR CARRIER
3620 015100 140277 164754      64:  BICB     R2,BMDZTCR      ;CLEAR DTR
3621 015104 104414          DELAY          ;CABLE DELAY
3622 015106 011004          MOV      (R0),R4          ;READ MSR
3623 015110 001402          BEQ      74          ;BR IF THEY CLEARED
3624 015112 005005          CLR      R5          ;SET EXPECTED TO 0
3625 015114 104002          ERROR     2          ;*BITS NOT CLEARED
3626 015116 104401      74:  SCOP1          ;LOCK ON SIGNAL?
3627 015120 000741          BR       24          ;CONTINUE TEST
3628
3629
3630
3631
3632
3633
3634
3635
3636
3637
3638
3639
3640
3641
3642
3643 015122 000004
3644 015124 012737 000017 001122
3645
3646 015132 012737 015260 001360
3647 015140 012737 015174 001362
3648 015146 105737 001370
3649 015152 100401
3650 015154 104400
3651 015156 105737 001414
3652 015162 100774
3653 015164 013700 002062

;***** TEST 17 *****
;*TEST TO VERIFY THAT IF IN "EXTERNAL"
;*MODE; SETTING DTR FOR SELECTED LINES
;*WILL BRING UP "CARRIER" AND "RING"
;*FOR THAT SAME LINE. NOTE: IF YOU HAVE
;*SELECTED MODE AS "EXTERNAL"; THE H325 TEST CONNECTER
;*MUST BE USED ON ALL SPECIFIED LINES.
;*LINES MAY BE SPECIFIED BY SWR03=1
;*AND SWR00=1 AT START TIME OR ALTERING
;*STATUS MAP.

; -XZ-----

;: TEST 17
;*****
TST17: SCOPE
      MOV     #17,#TSTNM      ;LOAD THE NUMBER OF THIS TEST
; -- END O MACRO -----
      MOV     #TST20,NEXT      ;POINT TO THE START OF THE NEXT TEST
      MOV     #34,LOCK        ;USE THIS ADDRESS IF A TIGHT SCOPE LOOP IS SELECTED
      TSTB    MODE            ;EXTERNAL?
      BMI     24              ;BR IF YES
      ADVANCE          ;EXIT TEST
      TSTB    EIAFLG          ;YOU BETTER BE IN
      BMI     14              ;EIA MODE FOR THIS TEST.
      MOV     DZMSR,R0        ;SET REGISTER

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3654 015170 012702 000001      MOV    #1,R2      ;SET LINE POINTER
3655 015174 130237 001364      34:    BITB    R2,LINE    ;LINE SELECTED?
3656 015200 001003              BNE     54          ;BR IF YES
3657 015202 106302              44:    ASLB    R2          ;NEXT LINE
3658 015204 103373              BCC     34          ;CONTINUE TEST
3659 015206 104400              ADVANCE ;ADVANCE THIS TEST
3660 015210 005005              54:    CLR     R5          ;SET EXPECTED
3661 015212 150205              BISB    R2,R5          ;
3662 015214 000305              SWAB    R5          ;
3663 015216 150205              BISB    R2,R5          ;
3664 015220 150277 164634      BISB    R2,BDZTCR    ;SET DTR
3665 015224 104414              DELAY   ;CABLE DELAY
3666 015226 011004              MOV     (R0),R4    ;READ MSR
3667 015230 020504              CMP     R5,R4      ;BITS OK?
3668 015232 001401              BEQ     64          ;BR IF YES
3669 015234 104002              ERROR  2          ;CARRIER OR RING ERROR
3670 015236 140277 164616      64:    BICB    R2,BDZTCR    ;CLEAR DTR
3671 015242 104414              DELAY   ;CABLE DELAY
3672 015244 011004              MOV     (R0),R4    ;READ MSR
3673 015246 001402              BEQ     74          ;BR IF BITS CLEARED
3674 015250 005005              CLR     R5          ;CLEAR EXPECTED LOC.
3675 015252 104002              ERROR  2          ;BITS NOT CLEARED.
3676 015254 104401              74:    SCOP1   ;LOCK ON LINE?
3677 015256 000751              BR      44          ;CONTINUE TEST
3678
3679                               ; - $LINE-----
3680                               ; - $XZ-----
3681                               ;***** TEST 20 *****
3682                               ;* THIS TEST VERIFIES THAT TRDY IS SET WHEN A LINE
3683                               ;* IS READY TO BE LOADED, AND THAT THE LINE SPECI-
3684                               ;* FIED IN BITS 8-10 OF DZCSR CORRESPOND
3685                               ;* TO THE LINE SELECTED IN DZTCR
3686                               ; - $XZ-----
3687
3688                               ;:* TEST 20
3689                               ;*****
3690 015260 000004      TST20:  SCOPE
3691 015262 012737 000020 001122      MOV     #20,$TSTNM    ;LOAD THE NUMBER OF THIS TEST
3692 015270 012737 015404 001360      ; -- END 0 MACRO -----
3693 015276 104413      MOV     #TST21,NEXT    ;POINT TO THE START OF THE NEXT TEST
3694 015300 013700 002042      DEVICE.CLR ;ISSUE A "DEVICE CLEAR" (RESET)
3695 015304 012705 100040      MOV     DZCSR,R0    ;SET POINTER
3696 015310 005037 001372      MOV     #MSENAB!TRDY,R5 ;START THE EXPECTED LINE NUMBER AT 0
3697 015314 012702 000001      CLR     SAVLIN      ;SET UP FOR ERROR PRINTOUTS
3698 015320 130237 001364      MOV     #1,R2          ;USING R2 AS A BIT POINTER, POINT TO LINE 0
3699 015324 001420              14:    BITB    R2,LINE    ;IS THIS LINE SELECTED?
3700 015326 050277 164524      BEQ     54          ;IF NO, SKIP THE STARTUP
3701 015332 052710 000040      24:    BISB    R2,BDZTCR    ;SET THE GO BIT FOR THIS LINE
3702 015336 005004      BISB    #MSENAB,(R0) ;START THE SCANNER
3703 015340 032710 100000      CLR     R4          ;SET FOR DELAY
3704 015344 001004              34:    BIT     #TRDY,(R0) ;TX READY?
3705 015346 104414              BNE     44          ;BR IF YES
3706 015350 005204              DELAY   ;DELAY
3707 015352 001372              INC     R4          ;COUNTER
3708 015354 104003              BNE     34          ;BR IF <>0!
3709 015356 011004              ERROR  3          ;*TX NOT READY!
3710                               44:    MOV     (R0),R4    ;GET THE LINE POINTED TO BY THE SCANNER

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3710 015360 020405          CMP      R4,R5          ;IS THE LINE NUMBER WHAT IT SHOULD BE?
3711 015362 001401          BEQ      54             ;IF YES,GO WORK ON THE NEXT LINE
3712 015364 104002          ERROR    2              ;*LINE NUMBER DID NOT MATCH TCR BIT
3713 015366 062705 000400 54:  ADD      #400,R5        ;POINT TO THE NEXT EXPECTED LINE
3714 015372 104413          DEVICE.CLR          ;ISSUE A "DEVICE CLEAR" (RESET)
3715 015374 005237 001372  INC      SAVLIN        ;ADJUST FOR NEXT LINE
3716 015400 106302          ASLB      R2           ;POINT TO THE NEXT LINE.ARE ALL LINES TESTED?
3717 015402 103346          BCC      14           ;IF NOT, GO DO THE NEXT LINE
3718 015404
3719
3720          ; -- END 0 MACRO -----
3721          ; -#XZ-----
3722          ;***** TEST 21 *****
3723          ;*TEST TO TRANSMIT ONE CHAR AND
3724          ;*RECEIVE ONE CHAR ON ONE LINE
3725          ;*AT A TIME. THE CHAR IS "252" AND
3726          ;*ALL SELECTED LINES WILL BE TURNED ON
3727          ;*ONE AT A TIME. THIS IS THE FIRST TIME ANY
3728          ;*DATA IS CHECKED IN THE RECEIVER.
3729          ;*USING SWITCH NINE WITH THIS TEST CREATES A TIGHT SCOPE LOOP
3730          ;*WHICH TRANSMITS A STEADY STREAM OF CHARACTERS.
3731          ; -#XZ-----
3732          ;:* TEST 21
3733          ;*****
3734 015404 000004          TST21:  SCOPE
3735 015406 012737 000021 001122  MOV      #21,#TSTNM        ;LOAD THE NUMBER OF THIS TEST
3736          ; -- END 0 MACRO -----
3737 015414 012737 015742 001360  MOV      #TST22,NEXT      ;POINT TO THE START OF THE NEXT TEST
3738 015422 012737 015720 001362  MOV      #164,LOCK        ;USE THIS ADDRESS IF A TIGHT SCOPE LOOP IS SELECTED
3739          ;*LINEUP-----
3740 015430 104417          ; -#RESET-----
3741          ;CLEAR DEVICE AND SET MAINT BIT IF I MODE
3742          ; -- END 0 MACRO -----
3743 015432 013701 001366          DCLASH
3744 015436 012702 000001          ; -- END 0 MACRO -----
3745 015442 030237 001364          MOV      PAR,R1          ;PICK UP PARAMETERS
3746 015450 010177 164376          MOV      #1,R2           ;PICK UP INIT POINTER
3747 015454 005201          14:  BIT      R2,LINE          ;SHOULD THIS LINE BE SET UP ?
3748 015456 106302          BEQ      24             ;NO
3749 015460 103370          MOV      R1,BDZLPR        ;SET UP LINE PARAMETERS
3750 015462 005037 001372          24:  INC      R1           ;POSITION POINTER TO THE NEXT LINE
3751          ASLB      R2           ;GOT 'EM ALL ?
3752          BCC      14           ;IF NO, GO SET UP THE NEXT LINE
3753          CLR      SAVLIN        ;CLEAR LINE # INDICATOR
3754          ; -- END 0 MACRO -----
3755 015466 012702 000001          MOV      #1,R2           ;LINE POINTER
3756 015472 052777 000040 164342  BIS      #MSENAB,BDZCSR    ;START SCANNER
3757 015500 030237 001364          34:  BIT      R2,LINE          ;VALID LINE ?
3758 015504 001462          BEQ      144            ;NO SET UP NEXT LINE
3759 015506 010277 164344          MOV      R2,BDZTCR        ;SET TCR BIT
3760 015512 032777 000200 164322 44:  BIT      #RDONE,BDZCSR    ;IS REC DONE = 0 ?
3761 015520 001401          BEQ      54             ;IF YES, ALLOW TIME FOR TRDY TO SET
3762 015522 104020          ERROR    20            ;*REC DONE SHOULD = 0
3763 015524 005005          54:  CLR      R5
3764 015526 032777 100000 164306 64:  BIT      #TRDY,BDZCSR
3765 015534 001004          BNE      74
3766 015536 104414          DELAY
3767 015540 105205          INCB      R5
3768 015542 001371          BNE      64

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3766 015544 104003          ERROR 3          ;*TRDY FAILED TO SET!
3767 015546 112777 000252 164312 74:  MOVB  #252,BDZTDR ;LOAD CHARACTER
3768 015554 013705 001372          MOV    SAVLIN,R5 ;MAKE EXPECTED LINE #
3769                                ; -#STAG-----
3770 015560 105737 001371          TSTB  MODE+1 ;IS THIS TEST IN STAGGERED MODE?
3771 015564 001406          BEQ    104 ;IF NOT, SKIP STAGGERED SETUP
3772
3773                                ;WE MUST NOW INVERT THE LAST BIT OF THE LINE NUMBER
3774
3775 015566 006205          ASR    R5          ;GET THE LAST BIT INTO THE CARRY BIT
3776 015570 103402          BCS    84          ;IF IT IS SET, GO CLEAR IT
3777 015572 000261          SEC          ;IF IT IS CLEAR SET IT HERE
3778 015574 000401          BR     94          ;SKIP THE CLEARING
3779 015576 000241 84:      CLC          ;CLEAR THE CARRY BIT (INVERSION OF LINE PARITY)
3780 015600 006105 94:      ROL    R5          ;GET THE NEW BIT BACK INTO R5
3781                                ; -- END 0 MACRO -----
3782 015602 000305 104:     SWAB  R5          ;MOVE THE LINE NUMBER TO THE UPPER BYTE
3783 015604 152705 000252  DISB  #252,R5      ;ADD CHARACTER
3784 015610 052705 100000  BIS   #DVALID,R5 ;ADD DATA VALID
3785 015614 005003          CLR    R3
3786 015616 032777 000200 164216 114:  BIT   #RDONE,BDZCSR
3787 015624 001004          BNE    124
3788 015626 104414          DELAY
3789 015630 005203          INC    R3
3790 015632 001371          BNE    114
3791 015634 104004          ERROR 4
3792 015636 017704 164204 124:  MOV    BDZRBUF,R4 ;*RDONE FAILED TO SET!
3793 015642 020405          CMP    R4,R5      ;LOAD THE VALUE ACTUALLY RECEIVED
3794 015644 001401          BEQ    134        ;COMPARE ACTUAL VS EXPECTED. ARE THEY THE SAME?
3795 015646 104006          ERROR 6          ;IF YES, GO DO THE NEXT LINE
3796 015650 104401 134:     SCOP1 ;NO DATA/CONTENTS DID NOT COMPARE
3797 015652 040277 164200 144:     BIC    R2,BDZTCR ;CHECK TO SEE IF SWITCH NINE IS SET
3798 015656 005237 001372 154:     INC    SAVLIN ;CLEAR TCR BIT FOR THAT LINE.
3799 015662 013700 001372  MOV    SAVLIN,R0 ;INC EXPECTED LINE
3800 015666 006300          ASL    R0          ;SET UP CHARACTER OFFSET
3801 015670 106302          ASLB  R2          ;MAKE THE OFFSET A POWER OF TWO
3802 015672 103302          BCC    34          ;SHIFT THE LINE POINTER. ARE WE ALL DONE?
3803 015674 005003          CLR    R3          ;IF NO, GO AROUND AGAIN FOR NEXT LINE
3804 015676 104414 174:     DELAY ;THIS CODE HAS BEEN INSERTED
3805 015700 105203          INCB  R3          ;TO DETECT A PROBLEM FOUND IN FAULT
3806 015702 001375          BNE    174        ;INSERTION. IF AN ERROR OCCURS MORE
3807 015704 032777 000200 164130  BIT   #RDONE,BDZCSR ;THAN ONE WORD WAS RECIEVED ON
3808 015712 001401          BEQ    184        ;LINE 7.
3809 015714 104020          ERROR 20
3810 015716 104400 184:     ADVANCE ;GO TO NEXT TEST
3811
3812                                ;TIGHT SCOPE LOOP FOR THIS TEST. LOOP TRANSMITS CHARACTERS ONLY
3813
3814 015720 032777 100000 164114 164:  BIT   #TRDY,BDZCSR ;IS TRANSMITTER READY?
3815 015726 001774          BEQ    164        ;IF NOT, WAIT FOR IT
3816 015730 112777 000252 164130  MOVB  #252,BDZTDR ;LOAD THE CHARACTER
3817 015736 104401          SCOP1 ;LOOP AGIN IF SW09=1
3818 015740 000744          BR     144        ;OTHERWISE, GO PICK UP THE TEST NORMALLY
3819
3820                                ; -#XZ-----
3821                                ;***** TEST 22 *****

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3822                                     ;* THIS TEST PROVES THAT THE TRANSMITTER TRANSMITS
3823                                     ;* CHARACTERS (FLAG MODE) AND THE RECEIVER RECEIVES (FLAG MODE)
3824                                     ;* (ONE LINE AT A TIME BASED UPON VALID LINES)
3825                                     ;* THIS IS THE FIRST TIME THAT ALL DATA IS CHECKED
3826                                     ; -IXZ-----
3827                                     ;:: TEST 22
3828                                     ;::-----
3829 015742 000004 TST22: SCOPE
3830 015744 012737 000022 001122      MOV     #22, #TSTNM      ;LOAD THE NUMBER OF THIS TEST
3831                                     ; -- END 0 MACRO -----
3832 015752 012737 016270 001360      MOV     #TST23, NEXT    ;POINT TO THE START OF THE NEXT TEST
3833 015760 012737 016074 001362      MOV     #41, LOCK      ;USE THIS ADDRESS IF A TIGHT SCOPE LOOP IS SELECTED
3834                                     ;LINEUP-----
3835                                     ; -IMRESET-----
3836 015766 104417      DCLASH      ;CLEAR DEVICE AND SET MAINT BIT IF I MODE
3837                                     ; -- END 0 MACRO -----
3838 015770 013701 001366      MOV     PAR, R1      ;PICK UP PARAMETERS
3839 015774 012702 000001      MOV     #1, R2      ;PICK UP INIT POINTER
3840 016000 030237 001364      10:     BIT     R2, LINE      ;SHOULD THIS LINE BE SET UP ?
3841 016004 001402      BEQ     20      ;NO
3842 016006 010177 164040      MOV     R1, #DZLPR      ;SET UP LINE PARAMETERS
3843 016012 005201      20:     INC     R1      ;POSITION POINTER TO THE NEXT LINE
3844 016014 106302      ASLB     R2      ;GOT 'EM ALL ?
3845 016016 103370      BCC     10      ;IF NO, GO SET UP THE NEXT LINE
3846 016020 005037 001372      CLR     SAVLIN      ;CLEAR LINE # INDICATOR
3847                                     ; -- END 0 MACRO -----
3848 016024 012700 001422      MOV     #TDO, R0      ;POINT TO THE DATA AREA
3849 016030 005020      CLR     (R0)      ;CLEAR A DATA WORD
3850 016032 022700 001462      CMP     #STOP, R0      ;FINISHED ?
3851 016036 001374      BNE     .-6      ;NO
3852 016040 005000      CLR     R0      ;CLEAR OFFSET
3853 016042 013737 002046 001400      MOV     DZBUF, REGIST      ;SAVE FOR ERROR MSG
3854 016050 012702 000001      MOV     #1, R2      ;LINE POINTER
3855 016054 052777 000040 163760      BIS     #SENAB, #DZCSR      ;START SCANNER
3856 016062 030237 001364      30:     BIT     R2, LINE      ;VALID LINE ?
3857 016066 001465      BEQ     140      ;NO SET UP NEXT LINE
3858 016070 010277 163762      MOV     R2, #DZTCR      ;SET TCR BIT
3859 016074 032777 000200 163740      40:     BIT     #RDONE, #DZCSR      ;IS REC DONE = 0 ?
3860 016102 001401      BEQ     50      ;IF YES, ALLOW TIME FOR TRY TO SET
3861 016104 104020      ERROR     20      ;*REC DONE SHOULD = 0
3862 016106 005005      50:     CLR     R5
3863 016110 032777 100000 163724      60:     BIT     #TRDY, #DZCSR
3864 016116 001004      BNE     70
3865 016120 104414      DELAY
3866 016122 105205      INCB     R5
3867 016124 001371      BNE     60
3868 016126 104003      ERROR     3
3869 016130 116077 001422 163730      70:     MOVB     TDO(R0), #DZTCR      ;*TRDY FAILED TO SET!
3870 016136 013705 001372      MOV     SAVLIN, R5      ;LOAD CHARACTER
3871                                     ;MAKE EXPECTED LINE #
3872 016142 105737 001371      TSTB     MODE+1      ; -ISTAG-----
3873 016146 001406      BEQ     100      ;IS THIS TEST IN STAGGERED MODE?
3874                                     ;IF NOT, SKIP STAGGERED SETUP
3875                                     ;WE MUST NOW INVERT THE LAST BIT OF THE LINE NUMBER
3876
3877 016150 006205      ASR     R5      ;GET THE LAST BIT INTO THE CARRY BIT

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3878 016152 103402      BCS      81      ;IF IT IS SET, GO CLEAR IT
3879 016154 000261      SEC              ;IF IT IS CLEAR SET IT HERE
3880 016156 000401      BR       91      ;SKIP THE CLEARING
3881 016160 000241      81:      CLC              ;CLEAR THE CARRY BIT (INVERSION OF LINE PARITY)
3882 016162 006105      91:      ROL      R5      ;GET THE NEW BIT BACK INTO R5
3883                      ; -- END 0 MACRO -----
3884 016164 000305      101:     SWAB      R5      ;MOVE THE LINE NUMBER TO THE UPPER BYTE
3885 016166 156005 001422      BISB      TDO(R0),R5 ;ADD CHARACTER
3886 016172 052705 100000      BIS      @DVALID,R5 ;ADD DATA VALID
3887 016176 005003      CLR      R3
3888 016200 032777 000200 163634 111:     BIT      @RDONE,BDZCSR
3889 016206 001004      BNE              121
3890 016210 104414      DELAY
3891 016212 005203      INC      R3
3892 016214 001371      BNE              111
3893 016216 104004      ERROR      4
3894 016220 017704 163622      121:     MOV      BDZRBUF,R4 ;RDONE FAILED TO SET!
3895 016224 020405      CMP      R4,R5      ;LOAD THE VALUE ACTUALLY RECEIVED
3896 016226 001401      BEQ      131      ;COMPARE ACTUAL VS EXPECTED. ARE THEY THE SAME?
3897 016230 104006      ERROR      6      ;IF YES, GO DO THE NEXT LINE
3898 016232 104401      131:     SCOP1
3899 016234 105260 001422      INCB      TDO(R0) ;NO DATA/CONTENTS DID NOT COMPARE
3900 016240 001315      BNE      41      ;CHECK TO SEE IF SWITCH NINE IS SET
3901 016242 040277 163610      141:     BIC      R2,BDZTCR ;INCREMENT BINARY PATTERN FOR THIS LINE
3902 016246 005237 001372      151:     INC      SAVLIN ;GO 'ROUND AGAIN FOR NEXT CHARACTER
3903 016252 013700 001372      MOV      SAVLIN,R0 ;CLEAR TCR BIT FOR THAT LINE.
3904 016256 006300      ASL      R0      ;INC EXPECTED LINE
3905 016260 106302      ASLB      R2      ;SET UP CHARACTER OFFSET
3906 016262 103277      BCC      31      ;MAKE THE OFFSET A POWER OF TWO
3907 016264 005037 001362      CLR      LOCK ;SHIFT THE LINE POINTER. ARE WE ALL DONE?
3908                      ;IF NO, GO AROUND AGAIN FOR NEXT LINE
3909                      ;MAKE SURE LOCK IS CLEAR FOR NEXT TEST
3910                      ; -IXZ-----
3911                      ;***** TEST 23 *****
3912                      ;THIS TEST WILL PROVE THAT EACH RECEIVING LINE CAN
3913                      ;BE DISABLED BY SETTING THE RCVON BIT TO ZERO
3914                      ;FOR EACH LINE IN THE LPR REGISTER. IT ALSO
3915                      ;VERIFIES THAT MASTER CLEAR WILL ZERO DVALID FOR
3916                      ;CHARACTERS STORED IN THE SILO.
3917                      ; -IXZ-----
3918                      ;: TEST 23
3919                      ;*****
3920 016270 000004      TST23:  SCOPE
3921 016272 012737 000023 001122      MOV      @23,@TSTNM ;LOAD THE NUMBER OF THIS TEST
3922                      ; -- END 0 MACRO -----
3923 016300 012737 016622 001360      MOV      @TST24,NEXT ;POINT TO THE START OF THE NEXT TEST
3924 016306 105037 001420      CLRB      DONFLG ;INITIALIZE FOR FIRST TEST LOOP
3925 016312 005037 001372      CLR      SAVLIN ;ZERO LINE NO. FOR ERROR REPORT
3926 016316 104417      DCLASH ;EXECUTE MASTER CLEAR
3927 016320 013701 001366      MOV      PAR,R1 ;STORE DEFAULT PARAMETERS
3928 016324 042701 010000      RIC      @RCVON,R1 ;CLEAR RCVON BIT
3929 016330 012702 000001      11:     MOV      @1,R2 ;INIT LINE POINTER
3930 016334 010177 163512      21:     MOV      R1,BDZLPR ;LOAD LINE PARAMETER REGISTER
3931 016340 005201      INC      R1 ;SET R1 FOR NEXT LINE
3932 016342 106302      ASLB      R2 ;SHIFT R2 TO NEXT LINE
3933 016344 103373      BCC      21 ;ALL LINES LOADED?

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3934	016346	012701	000252		MOV	#252,R1	:LOAD TRANSMITTING CHARACTER
3935	016352	013702	001364		MOV	LINE,R2	:COPY ACTIVE LINE BITS
3936	016356	010277	163474		MOV	R2,BDZTCR	:LOAD TCR BITS
3937	016362	052777	000040	163452	BIS	#MSENAB,BDZCSR	:SET SCANNER
3938	016370	005005		38:	CLR	R5	:INIT DELAY COUNTER
3939	016372	005777	163444	48:	TST	BDZCSR	:TRDY SET?
3940	016376	100404			BMI	58	:IF YES BRANCH
3941	016400	104414			DELAY		:IF NOT THEN WAIT
3942	016402	005205			INC	R5	:INCREMENT DELAY COUNTER
3943	016404	001372			BNE	48	:DELAY DONE?
3944	016406	104003			ERROR	3	:IF YES TRDY FAILED TO SET
3945	016410	117705	163430	58:	MOVB	BDZCSR,R5	:MOVE LINE NO. INTO R5
3946	016414	012703	000001		MOV	#1,R3	:INIT TCR POINTER
3947	016420	042705	177770		BIC	#C<7>,R5	:ISOLATE LINE NO.
3948	016424	001403			BEQ	218	:IF LINE 0 GO TEST TRANSM. FLAG
3949	016426	106303		208:	ASLB	R3	:POINT R3 TO NEXT TCR BIT
3950	016430	005305			DEC	R5	:DECREMENT R5 UNTIL R3 POINTS
3951	016432	001375			BNE	208	:TO CORRECT TCR BIT
3952	016434	030302		218:	BIT	R3,R2	:HAS THIS LINE BEEN SERVICED?
3953	016436	001007			BNE	68	:IF NOT GO SEND CHARACTER
3954	016440	140377	163412		BICB	R3,BDZTCR	:IF YES CLEAR TCR BIT
3955	016444	001351			BNE	38	:IF MORE LINES SET BRANCH
3956	016446	105737	001420		TSTB	DONFLG	:IF ALL LOADED IS THIS SECOND PASS
3957	016452	001040			BNE	128	:IF YES BRANCH TO SECOND PART OF TEST
3958	016454	000404			BR	78	:OTHERWISE CONTINUE WITH FIRST PART
3959	016456	110177	163404	68:	MOVB	R1,BDZTCR	:TRANSMIT CHARACTER
3960	016462	040302			BIC	R3,R2	:CLEAR FLAG FOR THIS LINE
3961	016464	000741			BR	38	:GO WAIT FOR NEXT LINE
3962	016466	005077	163364	78:	CLR	BDZTCR	:CLEAR TCR BITS
3963	016472	005005			CLR	R5	:CLEAR DELAY COUNTER
3964	016474	104414		88:	DELAY		:WAIT FOR LAST CHARACTER
3965	016476	005205			INC	R5	:INCREMENT DELAY COUNTER
3966	016500	001375			BNE	88	:IF NOT FINISHED CONTINUE WAITING
3967	016502	105777	163334		TSTB	BDZCSR	:RDONE BIT SET?
3968	016506	100003			BPL	108	:IF NO CONTINUE
3969	016510	005037	001372		CLR	SAVLIN	:IF YES SET LINE NO. TO ZERO
3970	016514	104020			ERROR	20	:AND PRINT ERROR
3971	016516	017704	163324	108:	MOV	BDZRBUF,R4	:READ SILO
3972	016522	100007			BPL	118	:IF DVALID IS ZERO BRANCH
3973	016524	000304			SWAB	R4	:IF SET THEN
3974	016526	042704	177770		BIC	#C<7>,R4	:ISOLATE LINE NO. IN R4
3975	016532	010437	001372		MOV	R4,SAVLIN	:SET SAVLIN FOR ERROR REPORT
3976	016536	104017			ERROR	17	:DATA VALID SHOULD NOT BE SET
3977	016540	000766			BR	108	:GO READ SILO AGAIN
3978	016542	105237	001420	118:	INCB	DONFLG	:PREPARE FOR SECOND PART OF TEST
3979	016546	013701	001366		MOV	PAR,R1	:MOVE DEFAULT PARAMETERS TO R1
3980	016552	000666			BR	18	:GO LOAD LPR REGISTER
3981	016554	005005		128:	CLR	R5	:INIT DELAY COUNTER
3982	016556	104414		138:	DELAY		:WAIT FOR LAST CHARACTER
3983	016560	005205			INC	R5	:TO BE RECEIVED
3984	016562	001375			BNE	138	:DELAY FINISHED?
3985	016564	104413			DEVICE.CLR		:IF YES EXECUTE MASTER CLEAR
3986	016566	000240			NOP		
3987	016570	000240			NOP		
3988	016572	105777	163244		TSTB	BDZCSR	:RDONE SET?
3989	016576	100003			BPL	148	:IF NOT BRANCH

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3990 016600 005037 001372          CLR      SAVLIN      ;IF YES THEN PRINT OUT
3991 016604 104020          ERROR    20          ;REPORT
3992 016606 017704 163234      14:    MOV      BDZRBUF,R4    ;READ SILO
3993 016612 100003          BPL      15:          ;DATA VALID SET?
3994 016614 005037 001372      CLR      SAVLIN      ;IF YES THEN PRINT OUT
3995 016620 104017          ERROR    17          ;ERROR REPORT
3996 016622          15:
3997
3998
3999
4000
4001
4002
4003
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4007
4008
4009
4010 016622 000004          ;***** TEST 24 *****
4011 016624 012737 000024 001122      ;*THIS TEST WILL PROVE THAT:
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016622 000004          ;* 1) THE TRANSMITTER "BREAK BIT" WORKS
016624 012737 000024 001122      ;* 2) THE RECEIVER CAN FLAG "FRAMING ERRORS"
016632 012737 017100 001360      ;* 3) THE RECEIVER CAN FLAG "PARITY ERRORS"
016640 012737 016736 001362      ;*ONLY ONE LINE AT A TIME WILL BE EXERCISED.
016646 005737 001370      ;*THIS TEST WILL NOT BE EXERCISED UNLESS
016652 001510      ;*CONNECTED BY AN H325, H3271, OR H3190 CONNECTOR
016654 104417          ; -#XZ-----
016656 013701 001366      ;: TEST 24
016662 052701 000300      ;:*****
016666 012700 000001      TST24: SCOPE
016672 030037 001364          MOV      #24,#TSTNM      ;LOAD THE NUMBER OF THIS TEST
016676 001402          ; -- END 0 MACRO -----
016700 010177 163146      MOV      #TST25,NEXT    ;POINT TO THE START OF THE NEXT TEST
016704 005201          MOV      #31,LOCK      ;SET FOR LOOP
016706 106300          TST      MODE      ;ARE WE RUNNING IN INTERNAL MODE?
016710 103370          BEQ      12:          ;IF SO, SKIP THIS TEST
016712 005037 001372      ; -#RESET-----
016716 012702 000001      DCLASH      ;CLEAR DEVICE AND SET MAINT BIT IF I MODE
016722 052777 000040 163112      ; -- END 0 MACRO -----
016730 013737 002046 001400      MOV      PAR,R1      ;PICK UP PARAMETERS
016736 030237 001364      BIS      #ODDPAR!PARITY,R1 ;FORCE ODD PARITY
016742 001446          MOV      #1,R0      ;PICK UP INIT POINTER
016744 010277 163106      1:    BIT      R0,LINE      ;SHOULD THIS LINE BE SET UP ?
016750 110277 163114      BEQ      2:          ;IF NOT,DON'T SET IT UP
016754 112777 000377 163104      MOV      R1,BDZLPR      ;OTHERWISE, SET UP LINE PARAMETERS
016762 013705 001372      2:    INC      R1
016766 105737 001371      ASLB      R0      ;GOT 'EM ALL ?
016772 001406          BCC      1:          ;NO
016774 006205          CLR      SAVLIN      ;CLEAR LINE #
016776          MOV      #1,R2      ;LINE POINTER
016778          BIS      #MSENAB,BDZCSR      ;SET MASTER SCAN ENABLE
016780          MOV      DZRBUF,REGIST      ;SAVE FOR ERRR MESSAGE
016782          3:    BIT      R2,LINE
016784          BEQ      11:
016786          MOV      R2,BDZTCR      ;SET TCR BIT
016788          MOVB      R2,BDZTDR      ;SET BREAK BIT
016790          MOVB      #377,BDZTDR      ;LOAD CHARACTER
016792          MOV      SAVLIN,R5      ;MAKE EXPECTED DATA
016794          ; -#STAG-----
016796          TSTB      MODE+1      ;IS THIS TEST IN STAGGERED MODE?
016798          BEQ      7:          ;IF NOT, SKIP STAGGERED SETUP
016800          ;WE MUST NOW INVERT THE LAST BIT OF THE LINE NUMBER
016802          ASR      R5      ;GET THE LAST BIT INTO THE CARRY BIT

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4046 016776 103402      BCS      5:      ;IF IT IS SET, GO CLEAR IT
4047 017000 000261      SEC              ;IF IT IS CLEAR SET IT HERE
4048 017002 000401      BR        6:      ;SKIP THE CLEARING
4049 017004 000241      5:      CLC              ;CLEAR THE CARRY BIT (INVERSION OF LINE PARITY)
4050 017006 006105      6:      ROL      R5      ;GET THE NEW BIT BACK INTO R5
4051      ; -- END 0 MACRO -----
4052 017010 000305      7:      SWAB     R5      ;PUT LINE NUMBER IN UPPER BYTE
4053 017012 052705 130000      BIS      #DVALID!PARER!FMERR,R5 ;ADD EXPECTED
4054 017016 005004      CLR      R4
4055 017020 032777 000200 163014 8:      BIT      #RDONE,BDZCSR
4056 017026 001004      BNE      9:
4057 017030 104414      DELAY
4058 017032 005204      INC      R4
4059 017034 001371      BNE      8:
4060 017036 104004      ERROR     4      ;RDONE FAILED TO SET!
4061 017040 017704 163002      9:      MOV      BDZRBUR,R4 ;ACTUAL
4062 017044 020405      CMP      R4,R5      ;CMP ACTUAL VS EXPECTED. DO THEY MATCH?
4063 017046 001401      BEQ      10:      ;IF YES, GO CLEAN UP
4064 017050 104006      ERROR     6      ;DATA/CONTENTS FAILED TO COMPARE
4065 017052 105077 163012      10:     CLRB     BDZTDR      ;CLEAR BREAK BITS
4066 017056 104401      SCOP1
4067 017060 005237 001372      11:     INC      SAVLIN      ;INC LINE #
4068 017064 040277 162766      BIC      R2,BDZTCR      ;CLEAR TCR BIT
4069 017070 106302      ASLB     R2
4070 017072 103321      BCC      3:
4071 017074 005037 001362      12:     CLR      LOCK      ;MAKE SURE LOCK IS CLEAR FOR NEXT TEST
4072      ; -#LVLST-----
4073      ; -#XZ-----
4074      ;***** TEST 25 *****
4075      ;* THIS TEST VERIFIES THAT THE DEVICE DOES NOT INTERRUPT
4076      ;*WHILE THE PROCESSOR STATUS IS SET EXACTLY
4077      ;*TO WHAT THE DZ11 PRIORITY IS SET TO.
4078      ;*DEFAULT PRIORITY IS AT 5 (240).
4079      ; -#XZ-----
4080      ;: * TEST 25
4081      ;*****
4082 017100 000004      TST25:  SCOPE
4083 017102 012737 000025 001122      MOV      #25,#TSTNM      ;LOAD THE NUMBER OF THIS TEST
4084      ; -- END 0 MACRO -----
4085 017110 012737 017410 001360      MOV      #TST26,NEXT      ;POINT TO THE START OF THE NEXT TEST
4086      ;#LINEUP-----
4087      ; -#MRESET-----
4088 017116 104417      DCLASH
4089      ; -- END 0 MACRO -----
4090      MOV      PAR,R1      ;PICK UP PARAMETERS
4091      MOV      #1,R2      ;PICK UP INIT POINTER
4092 017130 030237 001364      1:      BIT      R2,LINE      ;SHOULD THIS LINE BE SET UP ?
4093 017134 001402      BEQ      2:      ;NO
4094 017136 010177 162710      MOV      R1,BDZLPR      ;SET UP LINE PARAMETERS
4095 017142 005201      2:      INC      R1      ;POSITION POINTER TO THE NEXT LINE
4096 017144 106302      ASLB     R2      ;GOT 'EM ALL ?
4097 017146 103370      BCC      1:      ;IF NO, GO SET UP THE NEXT LINE
4098 017150 005037 001372      CLR      SAVLIN      ;CLEAR LINE # INDICATOR
4099      ; -- END 0 MACRO -----
4100 017154 106437 030306      MTPS     #BDZPRT      ;SET CPU STATUS TO DZ11 PRIO.
4101 017160 113777 001364 162670      MOVB     LINE,BDZTCR      ;ENABLE THE VALID LINES

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4102 017166          34:
4103
4104 017166 012777 017256 162702      MOV      #64,8DZTIV      ; -#INTSET-----
4105 017174 012777 017264 162670      MOV      #74,8DZRIV      ;SET UP THE TRANSMITTER INTERRUPT VECTOR
4106 017202 013777 030306 162664      MOV      DZPRT,8DZRIIS ;SET UP THE RECEIVER INTERRUPT VECTOR
4107 017210 013777 030306 162662      MOV      DZPRT,8DZTIS ;SET THE INTERRUPT VECTOR STATUS
4108 017216 052777 040040 162616      BIS      #TIE!MSENAB,8DZCSR ;SET TRANSMITTER INTERRUPT PRIORITY
4109          ; -- END 0 MACRO ----- ;ENABLE THE DEVICE
4110 017224 005005          CLR      R5
4111 017226 032777 100000 162606 44:   BIT      #TRDY,8DZCSR
4112 017234 001403          BEQ      54
4113 017236 000240          NOP
4114 017240 000240          NOP
4115 017242 000412          BR      84
4116 017244 104414          54:   DELAY
4117 017246 005205          INC      R5
4118 017250 001366          BNE      44
4119 017252 104003          ERROR    3      ;*TRDY NOT SET!
4120 017254 000405          BR      84
4121 017256 104010          64:   ERROR    10      ;*TRANSMITTER SHOULD NOT INTERRUPT
4122 017260 022626          CMP      (SP)+,(SP)+ ;POP FOR FAKE RTI
4123 017262 000402          BR      84      ;CONTINUE TEST
4124 017264 104012          74:   ERROR    12      ;*RECEIVER SHOULD NOT INTERRUPT
4125 017266 022626          CMP      (SP)+,(SP)+ ;POP FOR FAKE RTI
4126 017270 042777 040000 162544 84:   BIC      #TIE,8DZCSR ;RESET TRANSMITTER INTERRUPT ENABLE
4127          ; -#INTSET-----
4128 017276 012777 017374 162572      MOV      #114,8DZTIV ;SET UP THE TRANSMITTER INTERRUPT VECTOR
4129 017304 012777 017402 162560      MOV      #124,8DZRIV ;SET UP THE RECEIVER INTERRUPT VECTOR
4130 017312 013777 030306 162554      MOV      DZPRT,8DZRIIS ;SET THE INTERRUPT VECTOR STATUS
4131 017320 013777 030306 162552      MOV      DZPRT,8DZTIS ;SET TRANSMITTER INTERRUPT PRIORITY
4132 017326 052777 000140 162506      BIS      #RIE!MSENAB,8DZCSR ;ENABLE THE DEVICE
4133          ; -- END 0 MACRO -----
4134 017334 113777 001422 162524      MOVB     TDO,8DZTDR ;PUT ANY RANDOM CHARACTER IN TRANSMITTER BUFFER
4135 017342 005005          CLR      R5
4136 017344 032777 000200 162470 94:   BIT      #RDONE,8DZCSR
4137 017352 001403          BEQ      104
4138 017354 000240          NOP
4139 017356 000240          NOP
4140 017360 000412          BR      134
4141 017362 104414          104:  DELAY
4142 017364 005205          INC      R5
4143 017366 001366          BNE      94
4144 017370 104004          ERROR    4      ;*NO RX DONE! (NOT SET)
4145 017372 000405          BR      134      ;CONTINUE TEST
4146 017374 104010          114:  ERROR    10      ;*TRANSMITTER SHOULD NOT INTERRUPT
4147 017376 022626          CMP      (SP)+,(SP)+ ;POP FOR FAKE RTI
4148 017400 000402          BR      134      ;CONT TEST
4149 017402 104012          124:  ERROR    12      ;*RECEIVER SHOULD NOT INTERRUPT
4150 017404 022626          CMP      (SP)+,(SP)+ ;POP FOR FAKE RTI
4151 017406          134:
4152 017406 104413          DEVICE.CLR ;ISSUE DEVICE CLEAR (RESET)
4153          ; -- END 0 MACRO -----
4154          ; -- END 0 MACRO -----
4155          ; -#LVLST-----
4156          ; -#XZ-----
4157          ;***** TEST 26 *****

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4158      ;* THIS TEST VERIFIES THAT THE DEVICE DOES INTERRUPT
4159      ;*WHILE THE PROCESSOR STATUS IS SET TO EXACTLY
4160      ;*ONE LEVEL LOWER THAN THE DZ11. DZ11 PRIORITY
4161      ;*DEFAULT TO LEVEL 5 MINUS ONE LEVEL IS LEVEL 4.
4162      ; -#XZ-----
4163      ;:: TEST 26
4164      ;*****
4165      TST26: SCOPE
4166      MOV     #26,#TSTNM      ;LOAD THE NUMBER OF THIS TEST
4167      ; -- END 0 MACRO -----
4168      MOV     #TST27,NEXT     ;POINT TO THE START OF THE NEXT TEST
4169      ;#LINEUP-----
4170      ; -#RESET-----
4171      DCLASH
4172      ; -- END 0 MACRO -----
4173      MOV     PAR,R1          ;PICK UP PARAMETERS
4174      MOV     #1,R2          ;PICK UP INIT POINTER
4175      1#:    BIT     R2,LINE   ;SHOULD THIS LINE BE SET UP ?
4176      BEQ     2#             ;NO
4177      MOV     R1,#DZLPR      ;SET UP LINE PARAMETERS
4178      2#:    INC     R1        ;POSITION POINTER TO THE NEXT LINE
4179      ASLB    R2            ;GOT 'EM ALL ?
4180      BCC     1#            ;IF NO, GO SET UP THE NEXT LINE
4181      CLR     SAVLIN        ;CLEAR LINE # INDICATOR
4182      ; -- END 0 MACRO -----
4183      MTPS    #BLESS1        ;MAKE CPU ONE LEVEL LOWER THAN DZ11
4184      MOV     LINE,#DZTCR    ;ENABLE THE VALID LINES
4185      3#:
4186      ; -#INTSET-----
4187      MOV     #64,#DZTIV     ;SET UP THE TRANSMITTER INTERRUPT VECTOR
4188      MOV     #74,#DZRIV     ;SET UP THE RECEIVER INTERRUPT VECTOR
4189      MOV     DZPRT,#DZCRIS  ;SET THE INTERRUPT VECTOR STATUS
4190      MOV     DZPRT,#DZTIS   ;SET TRANSMITTER INTERRUPT PRIORITY
4191      BIS     #TIE!#SENAB,#DZCSR ;ENABLE THE DEVICE
4192      ; -- END 0 MACRO -----
4193      CLR     R5
4194      4#:    BIT     #TRDY,#DZCSR
4195      BEQ     5#
4196      NOP
4197      NOP
4198      ERROR   7              ;*TRANSMITTER FAILED TO INTERRUPT
4199      BR      8#
4200      5#:    DELAY
4201      INC     R5
4202      BNE     4#
4203      ERROR   3
4204      BR      8#
4205      6#:    POP2SP
4206      BIC     #TIE,#DZCSR    ;REMOVE THE INTERRUPT FROM THE STACK
4207      MTPS    #BLESS1        ;DON'T LET ANY MORE INTERRUPTS OCCUR
4208      BR      8#            ;MAKE CPU ONE LEVEL LOWER THAN DZ11
4209      7#:    ERROR   12      ;RETURN TO THE NORMAL FLOW
4210      CMP     (SP)+,(SP)+    ;*RECEIVER SHOULD NOT INTERRUPT
4211      BIC     #TIE,#DZCSR    ;POP FOR FAKE RTI
4212      8#:    BIC     #TIE,#DZCSR ;RESET TRANSMITTER INTERRUPT ENABLE
4213      MOV     #114,#DZTIV    ;*RECEIVER SHOULD NOT INTERRUPT
  
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4214 017626 012777 017726 162236      MOV    #120,SDZRIV      ;SET UP THE RECEIVER INTERRUPT VECTOR
4215 017634 013777 030306 162232      MOV    DZPRT,SDZRIS    ;SET THE INTERRUPT VECTOR STATUS
4216 017642 013777 030306 162230      MOV    DZPRT,SDZTIS    ;SET TRANSMITTER INTERRUPT PRIORITY
4217 017650 052777 000140 162164      BIS     #RIE|MSENAB,SDZCSR ;ENABLE THE DEVICE
4218                                     ; -- END 0 MACRO -----
4219 017656 113777 001422 162202      MOVB   TDO,SDZTDR      ;PUT ANY RANDOM CHARACTER IN TRANSMITTER BUFFER
4220 017664 005005                                     CLR     R5
4221 017666 032777 000200 162146 94:   BIT     #RDONE,SDZCSR
4222 017674 001404                                     BEQ     104
4223 017676 000240                                     NOP
4224 017700 000240                                     NOP
4225 017702 104011                                     ERROR   11                ;*RECEIVER FAILED TO INTERRUPT
4226 017704 000413                                     BR      134
4227 017706 104414 104:   DELAY
4228 017710 005205                                     INC     R5
4229 017712 001365                                     BNE     94
4230 017714 104004                                     ERROR   4                ;*NO RX DONE! (NOT SET)
4231 017716 000406                                     BR      134              ;CONTINUE TEST
4232 017720 104010 114:   ERROR   10                ;*TRANSMITTER SHOULD NOT INTERRUPT
4233 017722 022626                                     CMP     (SP),.(SP).      ;POP FOR FAKE RTI
4234 017724 000403                                     BR      134              ;CONT TEST
4235 017726 022626 124:   POP2SP                      ;REMOVE THE INTERRUPT FROM THE STACK
4236 017730 005077 162106      CLR     SDZCSR          ;DON'T ALLOW ANY MORE INTERRUPTS
4237 017734 104413 134:   DEVICE.CLR                      ;ISSUE DEVICE CLEAR (RESET)
4238 017734 104413                                     ; -- END 0 MACRO -----
4239                                     ; -- END 0 MACRO -----
4240
4241                                     ; -#XZ-----
4242                                     ;***** TEST 27 *****
4243                                     ;*THIS TEST VERIFIES THAT THE RECEIVER WILL
4244                                     ;*INTERRUPT BEFORE THE TRANSMITTER EVEN
4245                                     ;*THOUGH THE TRANSMITTER WAS ENABLED
4246                                     ;*FIRST. SET PS TO LEVEL 7;
4247                                     ;*GET RDONE AND TRY TO SET;
4248                                     ;*SET TX IE AND RX IE;
4249                                     ;*CLEAR PS AND EXPECT RX TO INTERRUPT FIRST
4250                                     ; -#XZ-----
4251                                     ;: * TEST 27
4252                                     ;*****
4253 TST27: SCOPE
4254 017736 000004      MOV    #27,4TSTNM      ;LOAD THE NUMBER OF THIS TEST
4255 017740 012737 000027 001122      ; -- END 0 MACRO -----
4256                                     MOV     #TST30,NEXT      ;POINT TO THE START OF THE NEXT TEST
4257 017746 012737 020370 001360      ;#LINEUP-----
4258                                     ; -#HRESET-----
4259                                     ;CLEAR DEVICE AND SET MAINT BIT IF I MODE
4260 017754 104417      DCLASH
4261                                     ; -- END 0 MACRO -----
4262 017756 013701 001366      MOV     PAR,R1          ;PICK UP PARAMETERS
4263 017762 012702 000001      MOV     #1,R2          ;PICK UP INIT POINTER
4264 017766 030237 001364 14:   BIT     R2,LINE        ;SHOULD THIS LINE BE SET UP ?
4265 017772 001402                                     BEQ     24              ;NO
4266 017774 010177 162052      MOV     R1,SDZLPR      ;SET UP LINE PARAMETERS
4267 020000 005201 24:   INC     R1                ;POSITION PCINTER TO THE NEXT LINE
4268 020002 106302      ASLB    R2                ;GOT 'EM ALL ?
4269 020004 103370      BCC     14                ;IF NO, GO SET UP THE NEXT LINE

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4270 020006 075037 001372          CLR SAVLIN          ;CLEAR LINE # INDICATOR
4271          ; -- END 0 MACRO -----
4272 020012 012777 020242 162052    MOV  #01,SDZRIV      ;SETUP INTERRUPT STUFF
4273 020020 013777 030306 162046    MOV  DZPRT,SDZ RIS
4274 020026 012777 020332 162042    MOV  #121,SDZTIV
4275 020034 013777 030306 162036    MOV  DZPRT,SDZTIS
4276 020042 052777 000040 161772    BIS  #MSENAB,SDZCSR
4277 020050 012702 000001          MOV  #1,R2          ;LINE POINTER
4278 020054 030237 001364          BIT  R2,LINE        ;VALID LINE ?
4279 020060 001004          BNE  4$
4280 020062 005237 001372          INC  SAVLIN
4281 020066 106302          ASLB  R2
4282 020070 000771          BR  3$
4283 020072 106427 000340          MTPS  #PR7
4284 020076 000240          NOP
4285 020100 000240          NOP
4286 020102 110277 161750          MOVB  R2,SDZTCR      ;SET TCR BIT
4287 020106 005777 161734          TST  SDZRBUF      ;VALID DATA?
4288 020112 100001          BPL  .+4          ;IT BETTER NOT BE SET
4289 020114 104017          ERROR  17          ;DATA VALID SHOULD NOT BE SET
4290 020116 105777 161720          5$: TSTB  SDZCSR      ;RECEIVER DONE ?
4291 020122 100001          BPL  .+4
4292 020124 104020          ERROR  20          ;RECEIVER DONE BIT SHOULD NOT BE SET
4293 020126 005005          CLR  R5
4294 020130 005004          CLR  R4
4295 020132 005777 161704          99$: TST  SDZCSR      ;WAIT FOR TRDY
4296 020136 100404          BMI  100$          ;BR IF READY
4297 020140 104414          DELAY
4298 020142 005204          INC  R4          ;STALL TIME
4299 020144 001372          BNE  99$
4300 020146 104003          ERROR  3          ;
4301 020150 105077 161712          100$: CLRB  SDZTDR
4302 020154 005004          CLR  R4
4303 020156 032777 000200 161656    6$: BIT  #RDONE,SDZCSR
4304 020164 001004          BNE  7$
4305 020166 104414          DELAY
4306 020170 005204          INC  R4
4307 020172 001371          BNE  6$
4308 020174 104004          ERROR  4          ;*RDONE FAILED TO SET!
4309 020176 005777 161640          7$: TST  SDZCSR      ;TRANS DONE BIT = 1 ?
4310 020202 100401          BMI  .+4          ;YES
4311 020204 104003          ERROR  3          ;*NO TRANS DONE FAILED TO SET
4312          ;NOW THAT BOTH TRANSMITTER AND RECEIVER DONE BIT =1
4313          ;SET INTERRUPT ENABLES AND WATCH THE FUR FLY
4314 020206 052777 040000 161626    BIS  #TIE,SDZCSR
4315 020214 052777 000100 161620    BIS  #RIE,SDZCSR
4316 020222 106427 000000          MTPS  #0
4317 020226 000240          NOP
4318 020230 000240          NOP
4319 020232 104007          ERROR  7          ;*TRANSMITTER FAILED TO INTERRUPT
4320 020234 104011          ERROR  11         ;*RECEIVER FAILED TO INTERRUPT
4321          ;CHECK BR LEVEL
4322 020236 060137 020336          JMP  13$          ;GET OUT
4323
4324          ;RECEIVER INTERRUPT ROUTINE
4325 020242 017704 161600          8$: MOV  SDZRBUF,R4          ;ACTUAL

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4326 020246 010403      MOV    R4,R3
4327 020250 000303      SWAB   R3
4328 020252 042703 177770 BIC    #1C<7>,R3      ;STRIP JUNK
4329                                     ; -#STAG-----
4330 020256 105737 001371 TSTB   MODE+1          ;IS THIS TEST IN STAGGERED MODE?
4331 020262 001406      BEQ     11#      ;IF NOT, SKIP STAGGERED SETUP
4332
4333                                     ;WE MUST NOW INVERT THE LAST BIT OF THE LINE NUMBER
4334
4335 020264 006203      ASR     R3          ;GET THE LAST BIT INTO THE CARRY BIT
4336 020266 103402      BCS     9#          ;IF IT IS SET, GO CLEAR IT
4337 020270 000261      SEC          ;IF IT IS CLEAR SET IT HERE
4338 020272 000401      BR      10#      ;SKIP THE CLEARING
4339 020274 000241      CLC          ;CLEAR THE CARRY BIT (INVERSION OF LINE PARITY)
4340 020276 006103      ROL     R3          ;GET THE NEW BIT BACK INTO R3
4341                                     ; -- END 0 MACRO -----
4342 020300 020337 001372 11# : CMP    R3,SAVLIN      ;IS THIS A VALID LINE
4343 020304 001401      BEQ     .+4        ;YES
4344 020306 104015      ERROR   15        ;*INVALID LINE
4345 020310 042704 177400 BIC    #1C<377>,R4      ;STRIP JUNK
4346 020314 120504      CMPB   R5,R4      ;DATA COMPARE ?
4347 020316 001401      BEQ     .+4        ;YES
4348 020320 104005      ERROR   5         ;*DATA DOES NOT COMPARE
4349 020322 040277 161530 BIC    R2,BDZTCR      ;CLEAR TCR BIT
4350 020326 022626      POP2SP          ;REMOVE THE INTERRUPT VECTOR FROM THE STACK
4351 020330 000402      BR      13#      ;GO GET OUT OF INTERRUPT MODE
4352                                     ;TRANSMITTER INTERRUPT SVC ROUTINE
4353 020332 104011      12# : ERROR 11      ;THE RECEIVER INTERRUPT FAILED
4354                                     ;TO OVERRIDE THE TRANSMITTER
4355 020334 022626      POP2SP          ;REMOVE THE INTERRUPT VECTOR FROM THE STACK
4356 020336 042777 040100 161476 13# : BIC    #TIE!RIE,BDZCSR ;CLEAR INTERRUPT ENABLES
4357 020344 013777 002074 161520      MOV    DZRI5,BDZRIV ;RESTORE TRAPCATCHER
4358 020352 005077 161516      CLR     BDZRI5
4359 020356 013777 002100 161512      MOV    DZTI5,BDZTI5
4360 020364 005077 161510      CLR     BDZTI5
4361                                     ; -#XZ-----
4362                                     ;***** TEST 30 *****
4363                                     ;*TEST TO VERIFY THAT 'RDONE DOES NOT SET
4364                                     ;*IF THE SCANNER IS DISABLED.
4365                                     ;*TURN ON SCANNER, WAIT FOR TRDY.
4366                                     ;*TURN OFF SCANNER, TRANSMIT A CHARACTER
4367                                     ;*'RDONE SHOULD NOT SET.
4368                                     ; -#XZ-----
4369                                     ;:* TEST 30
4370                                     ;*****
4371 020370 000004      TST30: SCOPE
4372 020372 012737 000030 001122      MOV    #30,#TSTNM      ;LOAD THE NUMBER OF THIS TEST
4373                                     ; -- END 0 MACRO -----
4374 020400 012737 020556 001360      MOV    #TST31,NEXT      ;POINT TO THE START OF THE NEXT TEST
4375                                     ;#LINEUP-----
4376                                     ; -#MRESET-----
4377 020406 104417      DCLASH          ;CLEAR DEVICE AND SET MAINT BIT IF I MODE
4378                                     ; -- END 0 MACRO -----
4379 020410 013701 001366      MOV    PAR,R1      ;PICK UP PARAMETERS
4380 020414 012702 000001      MOV    #1,R2      ;PICK UP INIT POINTER
4381 020420 030237 001364      1# : BIT    R2,LINE      ;SHOULD THIS LINE BE SET UP ?

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4382 020424 001402      BEQ      24      ;NO
4383 020426 010177 161420  MOV     R1,BDZLPR ;SET UP LINE PARAMETERS
4384 020432 005201      24:    INC     R1      ;POSITION POINTER TO THE NEXT LINE
4385 020434 106302      ASLB    R2      ;GOT 'EM ALL ?
4386 020436 103370      DCC     14      ;IF NO, GO SET UP THE NEXT LINE
4387 020440 005037 001372  CLR     SAVLIN ;CLEAR LINE # INDICATOR
4388      ; -- END 0 MACRO -----
4389 020444 052777 000040 161370  BIS     #MSENAB,BDZCSR ;TURN ON SCANNER
4390 020452 012702 000001      MOV     #1, R2      ;INIT LINE COUNTER
4391 020456 030237 001364      34:    BIT     R2, LINE ;FIND A VALID LINE
4392 020462 001004      BNE     44      ;IF WE FOUND ONE GO TO TEST
4393 020464 005237 001372      INC     SAVLIN ;IF NOT
4394 020470 106302      ASLB    R2      ;KEEP LOOKING
4395 020472 000771      BR      34
4396 020474 110277 161356      44:    MOVB   R2, BDZTCR ;SET TCR BIT
4397 020500 005005      CLR     R5
4398 020502 005777 161334      54:    TST     BDZCSR ;IS TRDY SET
4399 020506 100404      BMI     64      ;CON'T TESTING IF IT IS
4400 020510 104414      DELAY    ;IF IT NOT WAIT A WHILE
4401 020512 005205      INC     R5
4402 020514 001372      BNE     54
4403 020516 104003      ERROR    3      ;WE WAITED LONG ENOUGH-ERROR
4404 020520 042777 000040 161314  64:    BIC     #MSENAB, BDZCSR ;TURN OFF SCANNER
4405 020526 105077 161334      CLRB   BDZTCR ;TRANSMIT A CHARACTER
4406 020532 005005      CLR     R5      ;CLEAR COUNTER
4407 020534 104414      74:    DELAY    ;WAIT SUFFICIENT TIME FOR
4408 020536 005205      INC     R5      ;RDONE TO SET
4409 020540 001375      BNE     74
4410 020542 032777 000200 161272  BIT     #RDONE, BDZCSR ;RDONE SET
4411 020550 001401      BEQ     84      ;IT SHOULDN'T BE-CONTINUE
4412 020552 104020      ERROR    20      ;IF IT IS THERE'S AN ERROR
4413 020554 104400      84:    ADVANCE
4414      ; -#XZ-----
4415      ;***** TEST 31 *****
4416      ;*THIS TEST VERIFIES OVERRUN AND SILO ALARM
4417      ;*ONE LINE AT A TIME - BASED UPON VALID LINES
4418      ;*AS EACH OF THE FIRST 16 CHARS ARE SENT, SILO ALARM IS
4419      ;*TESTED TO BE CLEARED. ON THE 16TH CHAR THE PROGRAM THEN
4420      ;*EXPECTS SILO ALARM TO SET. THEN THE ENTIRE
4421      ;*SILO IS FILLED AND AN OVERRUN IS EXPECTED ON THE 65TH
4422      ;*CHAR PULLED OUT OUT THE SILO.
4423      ;*USING SWITCH NINE FOR THIS TEST SENDS 20. CHARACTERS
4424      ;*ON DZ LINE PREVIOUSLY SELECTED CONTINUOUSLY WHILE SW09=1.
4425      ;*USED TO SCOPE SILO ALARM PULSES, ETC.
4426      ; -#XZ-----
4427      ;:* TEST 31
4428      ;*****
4429 020556 000004      TST31:  SCOPE
4430 020560 012737 000031 001122  MOV     #31,#TSTNM ;LOAD THE NUMBER OF THIS TEST
4431      ; -- END 0 MACRO -----
4432 020566 012737 021304 001360  MOV     #TST32,NEXT ;POINT TO THE START OF THE NEXT TEST
4433 020574 012737 021210 001362  MOV     #180,LOCK ;SET FOR LOOP
4434      ;#LINEUP-----
4435      ; -#MRESET-----
4436 020602 104417      DCLASH ;CLEAR DEVICE AND SET MAINT BIT IF I MODE
4437      ; -- END 0 MACRO -----

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4438	020604	013701	001366		MOV	PAR,R1		;PICK UP PARAMETERS
4439	020610	012702	000001		MOV	#1,R2		;PICK UP INIT POINTER
4440	020614	030237	001364	14:	BIT	R2,LINE		;SHOULD THIS LINE BE SET UP ?
4441	020620	001402			BEG	24		;NO
4442	020622	010177	161224		MOV	R1,BDZLPR		;SET UP LINE PARAMETERS
4443	020626	005201		24:	INC	R1		;POSITION POINTER TO THE NEXT LINE
4444	020630	106302			ASLB	R2		;GOT 'EM ALL ?
4445	020632	103370			BCC	14		;IF NO, GO SET UP THE NEXT LINE
4446	020634	005037	001372		CLR	SAVLIN		;CLEAR LINE # INDICATOR
4447					; -- END 0 MACRO -----			
4448	020640	012700	001422		MOV	#TDO,R0		;POINT TO THE DATA AREA
4449	020644	005020			CLR	(R0)		;CLEAR A DATA WORD
4450	020646	022700	001462		CMP	#STOP,R0		;FINISHED ?
4451	020652	001374			BNE	..6		;NO
4452	020654	005000			CLR	R0		;CLEAR OFFSET
4453	020656	012702	000001		MOV	#1,R2		;LINE POINTER
4454	020662	052777	010040	161152	BIS	#HSENA8!SILOEN,BDZCSR		;START SCANNER & SET SILO ENABLE
4455	020670	030237	001364	34:	BIT	R2,LINE		;VALID LINE?
4456	020674	001002			BNE	..6		;YES
4457	020676	000137	021172		JMP	224		;TRY NEXT LINE
4458	020702	013700	001372		MOV	SAVLIN,R0		;MAKE OFFSET
4459	020706	006300			ASL	R0		;MAKE POWER OF TWO
4460	020710	010277	161142		MOV	R2,BDZTCR		;SET TCR BIT
4461	020714	105777	161122	44:	TSTB	BDZCSR		;REC DONE = 1 ?
4462	020720	100001			BPL	..4		
4463	020722	104020			ERROR	20		;REC DONE SHOULD NOT = 1
4464	020724	005003			CLR	R3		;SET CHARACTER COUNT
4465	020726	005004		54:	CLR	R4		
4466	020730	032777	100000	161104	64:	BIT	#TRDY,BDZCSR	
4467	020736	001004			BNE	74		
4468	020740	104414			DELAY			
4469	020742	105204			INCB	R4		
4470	020744	001371			BNE	64		
4471	020746	104003			ERROR	3		;#TRDY FAILED TO SET
4472	020750	116077	001422	161110	74:	MOVB	TDO(R0),BDZTDR	;LOAD A CHARACTER
4473	020756	005260	001422		INC	TDO(R0)		;SET UP NEXT CHARACTER
4474	020762	020327	000017		CMP	R3,#15.		;16 CHARACTERS ?
4475	020766	103006			BHIS	84		
4476	020770	032777	020000	161044	BIT	#SILOAL,BDZCSR		;SILO ALARM = 0 ?
4477	020776	001401			BEG	..4		;YES
4478	021000	104013			ERROR	13		;#SILO ALARM SHOULD NOT = 1
4479								;UNTIL 16. DATA CHARACTERS
4480	021002	000411			BR	104		
4481	021004	005004		84:	CLR	R4		
4482	021006	032777	020000	161026	94:	BIT	#SILOAL,BDZCSR	
4483	021014	001004			BNE	104		
4484	021016	104414			DELAY			
4485	021020	005204			INC	R4		
4486	021022	001371			BNE	94		
4487	021024	104014			ERROR	14		;#SILO ALARM FAILED TO SET!
4488								;SILO ALARM SHOULD =1 AFTER 16.
4489								;DATA CHARACTERS
4490	021026	005203		104:	INC	R3		;INC CHAR COUNT
4491	021030	022703	000102		CMP	#66.,R3		;FINISHED SENDING CHARACTERS ?
4492	021034	001334			BNE	54		;NO
4493	021036	005004			CLR	R4		

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4494 021040 104414      DELAY
4495 021042 105204      INCB      R4
4496 021044 001375      BNE      .-4
4497                      ;NOW LETS READ THE SILO
4498 021046 013705 001372 MOV      SAVLIN,R5      ;MAKE EXPECTED LINE #
4499                      ; -#STAG-----
4500 021052 105737 001371 TSTB     MODE+1      ;IS THIS TEST IN STAGGERED MODE?
4501 021056 001406      BEQ      134      ;IF NOT, SKIP STAGGERED SETUP
4502
4503                      ;WE MUST NOW INVERT THE LAST BIT OF THE LINE NUMBER
4504
4505 021060 006205      ASR      R5      ;GET THE LAST BIT INTO THE CARRY BIT
4506 021062 103402      BCS      114      ;IF IT IS SET, GO CLEAR IT
4507 021064 000261      SEC                      ;IF IT IS CLEAR SET IT HERE
4508 021066 000401      BR       124      ;SKIP THE CLEARING
4509 021070 000241      114: CLC                      ;CLEAR THE CARRY BIT (INVERSION OF LINE PARITY)
4510 021072 006105      124: ROL      R5      ;GET THE NEW BIT BACK INTO R5
4511                      ; -- END 0 MACRO -----
4512 021074 000305      134: SWAB     R5      ;PUT IN UPPER BYTE
4513 021076 052705 100000 BIS      #DVALID,R5      ;ADD DATA VALID
4514 021102 017704 160740 144: MOV     #DZRBUF,R4      ;ACTUAL
4515 021106 020405      CMP      R4,R5      ;ACTUAL VS. EXPECTED
4516 021110 001401      BEQ      154      ;YES
4517 021112 104006      ERROR    6      ;*DATA/CONTENTS DID NOT COMPARE
4518 021114 032777 020000 160720 154: BIT     #SILOAL,#DZCSR      ;SILO ALARM= 0 ?
4519 021122 001401      BEQ      164      ;YES
4520 021124 104016      ERROR    16      ;READING DZRBUF DID NOT CLEAR SILO ALARM
4521 021126 005205      164: INC      R5      ;UP CHARACTER
4522 021130 120527 000077 CMPB     R5,#63.      ;LAST SILO CHAR ?....64TH CHAR
4523 021134 101762      BLOS     144
4524 021136 005205      INC      R5      ;ADD 1 MORE FOR THE CLOBBED CHAR
4525 021140 052705 040000 BIS      #OVRUN,R5      ;ADD OVERRUN TO EXPECTED
4526 021144 120527 000101 CMPB     R5,#65.      ;LAST CHARACTER ?
4527 021150 001754      BEQ      144
4528 021152 017704 160670 MOV     #DZRBUF,R4      ;FOR GOOD MEASURE
4529 021156 005704      TST      R4      ;DATA VALID SHOULD = 0
4530 021160 100001      BPL      174      ;YES
4531 021162 104017      ERROR    17      ;DATA VALID SHOULD = 0
4532 021164 040277 160666 174: BIC     R2,#DZTCR      ;CLR TCR BIT
4533 021170 104401      SCOP1     ;LOOP?
4534 021172 005237 001372 224: INC     SAVLIN      ;INC EXPECTED LINE
4535 021176 106302      ASLB     R2      ;NEXT LINE
4536 021200 103402      BCS      .+6      ;NO
4537 021202 000137 020670 JMP      34      ;YES
4538 021206 104400      ADVANCE      ;GO TO NEXT TEST
4539
4540                      ;TIGHT SCOPE LOOP FOR THIS TEST. SENDS 20. CHARACTERS
4541                      ;ON DZ LINE PREVIOUSLY SELECTED CONTINUOUSLY WHILE SW09=1.
4542                      ;USED TO SCOPE SILO ALARM PULSES, ETC.
4543
4544 021210 052777 010040 160624 184: BIS     #MSENAB!SILOEN,#DZCSR      ;SETUP DEVICE
4545 021216 012777 021274 160652 MOV     #20,#DZTIV      ;SETUP TRANSMITTER VECTOR
4546 021224 012737 000024 001216 MOV     #20.,#TMP0      ;TEMPORARY COUNT OF CHARACTER BURST
4547 021232 050277 160620      BIS     R2,#DZTCR      ;ENABLE LINE
4548 021236 052777 040000 160576 BIS     #TIE,#DZCSR      ;ENABLE INTERRUPTS
4549 021244 106427 000000 MTPS     #0      ;LOWER PRIORITY

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4550 021250 000001      191: WAIT      ;ALLOW INTERRUPTS
4551 021252 005337 001216 DEC      #TMP0 ;REDUCE COUNT. ALL CHARACTERS SENT?
4552 021256 001374      BNE      191 ;IF NO, WAIT FOR MORE
4553 021260 042777 050040 160554 BIC      #SILOEN!MSENAB!TIE,BDZCSR ;RESET SILO COUNTER, CLEAR STROBE
4554 021266 104401      SCOP1 ;LOOP AGAIN?
4555 021270 000137 021164 JMP      171 ;IF NOT, RETURN TO WHERE YOU LEFT OFF
4556 021274 112777 000232 160564 201: MOV      #252,BDZTDR ;SEND A CHARACTER
4557 021302 000002      RTI      ;ALLOW MORE CHARACTERS TO COME
4558                                     ; -#XZ-----
4559                                     ;***** TEST 32 *****
4560                                     ;*THIS TEST THAT "SILO ENABLE" WILL INHIBIT
4561                                     ;*RECEIVER INTERRUPTS AND THAT ON THE
4562                                     ;*16TH CHAR THAT "SILO ALARM" WILL CAUSE AN
4563                                     ;*INTERRUPT WITH "RIE" SET.
4564                                     ;*THIS WILL DO ALL SELECTED LINES ONE AT A TIME.
4565                                     ; -#XZ-----
4566                                     ;: * TEST 32
4567                                     ;:*****
4568 021304 000004      TST32: SCOPE ;LOAD THE NUMBER OF THIS TEST
4569 021306 012737 000032 001122 MOV      #32,#TSTNM
4570                                     ; -- END 0 MACRO -----
4571 021314 012737 021666 001360 MOV      #TST33,NEXT ;POINT TO THE START OF THE NEXT TEST
4572 021322 012737 021410 001362 MOV      #31,LOCK ;SET FOR LOOP
4573                                     ;#LINEUP-----
4574                                     ; -#HRESET-----
4575 021330 104417      DCLASH ;CLEAR DEVICE AND SET MAINT BIT IF I MODE
4576                                     ; -- END 0 MACRO -----
4577 021332 013701 001366      MOV      PAR,R1 ;PICK UP PARAMETERS
4578 021336 012702 000001      MOV      #1,R2 ;PICK UP INIT POINTER
4579 021342 030237 001364      14: BIT      R2,LINE ;SHOULD THIS LINE BE SET UP ?
4580 021346 001402      BEQ      21 ;NO
4581 021350 010177 160476      MOV      R1,BDZLPR ;SET UP LINE PARAMETERS
4582 021354 005201      24: INC      R1 ;POSITION POINTER TO THE NEXT LINE
4583 021356 106302      ASLB      R2 ;GOT 'EM ALL ?
4584 021360 103370      BCC      11 ;IF NO, GO SET UP THE NEXT LINE
4585 021362 005037 001372      CLR      SAVLIN ;CLEAR LINE # INDICATOR
4586                                     ; -- END 0 MACRO -----
4587 021366 012700 001422      MOV      #TDO,R0 ;POINT TO THE DATA AREA
4588 021372 005020      CLR      (R0) ;CLEAR A DATA WORD
4589 021374 022700 001462      CMP      #STOP,R0 ;FINISHED ?
4590 021400 001374      BNE      .-6 ;NO
4591 021402 005000      CLR      R0 ;CLEAR OFFSET
4592 021404 012702 000001      MOV      #1,R2 ;LINE POINTER
4593 021410 012777 021630 160454 34: MOV      #111,BDZRIV ;SET FOR UNEXPECTED INTER.
4594 021416 012777 000340 160450      MOV      #PR7,BDZRIS ;SET PRIO.
4595 021424 052777 010140 160410      BIS      #MSENAB!SILOEN!RIE,BDZCSR ;START SCANNER & SET SILO ENABLE
4596                                     ;VALID LINE?
4597 021432 030237 001364      BIT      R2,LINE ;YES
4598 021436 001002      BNE      .+6 ;TRY NEXT LINE
4599 021440 000137 021646      JMP      221 ;EMPTY THE SILO
4600 021444 005777 160376      TST      BDZRBUF ;BR IF DATA VALID IS SET!
4601 021450 100775      BMI      .-4 ;SET PROCESSOR PRIORITY TO 0
4602 021452 106427 000000      MTPS      #0 ;MAKE OFFSET
4603 021456 013700 001372      MOV      SAVLIN,R0 ;MAKE POWER OF TWO
4604 021462 006300      ASL      R0 ;SET TCR BIT
4605 021464 010277 160366      MOV      R2,BDZTCR

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4606	021470	005004			58:	CLN	R4	
4607	021472	032777	100000	160342	68:	RIT	#TRDY,BDZCSR	
4608	021500	001004				BNE	78	
4609	021502	104414				DELAY		
4610	021504	005204				INC	R4	
4611	021506	001371				BNE	68	
4612	021510	104003				ERROR	3	
4613	021512	116077	001422	160346	78:	MOVB	TDO(R0),BDZTDR	;*TRDY FAILED TO SET
4614	021520	005260	001422			INC	TDO(R0)	;LOAD A CHARACTER
4615	021524	022760	000017	001422		CMF	#15.,TDO(R0)	;SET UP NEXT CHARACTER
4616	021532	001406				BEQ	88	;15 CHARS YET?
4617	021534	032777	020000	160300		BIT	#SILOAL,BDZCSR	;SILO ALARM = 0 ?
4618	021542	001401				BEQ	.+4	;YES
4619	021544	104013				ERROR	13	;*SILO ALARM SHOULD NOT = 1
4620								;UNTIL 16. DATA CHARACTERS
4621	021546	000750				BR	58	
4622	021550	012777	021636	160314	88:	MOV	#128,BDZRV	;SET NEW VECTOR
4623	021556	032777	100000	160256		BIT	#TRDY,BDZCSR	;READY FOR 16TH CHAR
4624	021564	001774				BEQ	.-6	
4625	021566	016077	001422	160272		MOV	TDO(R0),BDZTDR	;LOAD THE 16TH CHAR.
4626	021574	005004				CLR	R4	
4627	021576	032777	020000	160236	98:	BIT	#SILOAL,BDZCSR	
4628	021604	001005				BNE	108	
4629	021606	104414				DELAY		
4630	021610	005204				INC	R4	
4631	021612	001371				BNE	98	
4632	021614	104014				ERROR	14	
4633	021616	000410				BR	178	;*SILO ALARM FAILED TO SET!
4634								;SILO ALARM SHOULD =1 AFTER 16.
4635	021620	000240			108:	NOP		;DATA CHARACTERS
4636	021622	000240				NOP		;STALL
4637	021624	104000				ERROR		
4638	021626	000404				BR	178	;SILO ALARM NOT INTERRUPTING.
4639	021630	022626			118:	CMF	(SP)+,(SP)+	;CONTINUE TEST.
4640	021632	104012				ERROR	12	;FAKE RTI
4641	021634	000401				BR	178	;RX SHOULD NOT INTERRUPT
4642	021636	022626			128:	CMF	(SP)+,(SP)+	;CONTINUE
4643	021640	040277	160212		178:	BIC	R2,BDZTCR	;GOOD INTERRUPT TO HERE.
4644	021644	104401				SCOP1		;CLR TCR BIT
4645	021646	005237	001372		228:	INC	SAVLIN	;LOOP?
4646	021652	106302				ASLB	R2	;INC EXPECTED LINE
4647	021654	103402				BCS	.+6	;NEXT LINE
4648	021656	000137	021410			JMP	38	;NO
4649	021662	005037	001362			CLR	LOCK	;YES
								;CLEAR TIGHT LOOP FOR NEXT TEST

Address	Op Code	Op 1	Op 2	Op 3	Op 4	Op 5	Op 6	Op 7	Op 8	Op 9	Op 10	Op 11	Op 12	Op 13	Op 14	Op 15	Op 16	Op 17	Op 18	Op 19	Op 20	Op 21	Op 22	Op 23	Op 24	Op 25	Op 26	Op 27	Op 28	Op 29	Op 30	Op 31	Op 32	Op 33	Op 34	Op 35	Op 36	Op 37	Op 38	Op 39	Op 40	Op 41	Op 42	Op 43	Op 44	Op 45	Op 46	Op 47	Op 48	Op 49	Op 50	Op 51	Op 52	Op 53	Op 54	Op 55	Op 56	Op 57	Op 58	Op 59	Op 60	Op 61	Op 62	Op 63	Op 64	Op 65	Op 66	Op 67	Op 68	Op 69	Op 70	Op 71	Op 72	Op 73	Op 74	Op 75	Op 76	Op 77	Op 78	Op 79	Op 80	Op 81	Op 82	Op 83	Op 84	Op 85	Op 86	Op 87	Op 88	Op 89	Op 90	Op 91	Op 92	Op 93	Op 94	Op 95	Op 96	Op 97	Op 98	Op 99	Op 100	Op 101	Op 102	Op 103	Op 104	Op 105	Op 106	Op 107	Op 108	Op 109	Op 110	Op 111	Op 112	Op 113	Op 114	Op 115	Op 116	Op 117	Op 118	Op 119	Op 120	Op 121	Op 122	Op 123	Op 124	Op 125	Op 126	Op 127	Op 128	Op 129	Op 130	Op 131	Op 132	Op 133	Op 134	Op 135	Op 136	Op 137	Op 138	Op 139	Op 140	Op 141	Op 142	Op 143	Op 144	Op 145	Op 146	Op 147	Op 148	Op 149	Op 150	Op 151	Op 152	Op 153	Op 154	Op 155	Op 156	Op 157	Op 158	Op 159	Op 160	Op 161	Op 162	Op 163	Op 164	Op 165	Op 166	Op 167	Op 168	Op 169	Op 170	Op 171	Op 172	Op 173	Op 174	Op 175	Op 176	Op 177	Op 178	Op 179	Op 180	Op 181	Op 182	Op 183	Op 184	Op 185	Op 186	Op 187	Op 188	Op 189	Op 190	Op 191	Op 192	Op 193	Op 194	Op 195	Op 196	Op 197	Op 198	Op 199	Op 200	Op 201	Op 202	Op 203	Op 204	Op 205	Op 206	Op 207	Op 208	Op 209	Op 210	Op 211	Op 212	Op 213	Op 214	Op 215	Op 216	Op 217	Op 218	Op 219	Op 220	Op 221	Op 222	Op 223	Op 224	Op 225	Op 226	Op 227	Op 228	Op 229	Op 230	Op 231	Op 232	Op 233	Op 234	Op 235	Op 236	Op 237	Op 238	Op 239	Op 240	Op 241	Op 242	Op 243	Op 244	Op 245	Op 246	Op 247	Op 248	Op 249	Op 250	Op 251	Op 252	Op 253	Op 254	Op 255	Op 256	Op 257	Op 258	Op 259	Op 260	Op 261	Op 262	Op 263	Op 264	Op 265	Op 266	Op 267	Op 268	Op 269	Op 270	Op 271	Op 272	Op 273	Op 274	Op 275	Op 276	Op 277	Op 278	Op 279	Op 280	Op 281	Op 282	Op 283	Op 284	Op 285	Op 286	Op 287	Op 288	Op 289	Op 290	Op 291	Op 292	Op 293	Op 294	Op 295	Op 296	Op 297	Op 298	Op 299	Op 300	Op 301	Op 302	Op 303	Op 304	Op 305	Op 306	Op 307	Op 308	Op 309	Op 310	Op 311	Op 312	Op 313	Op 314	Op 315	Op 316	Op 317	Op 318	Op 319	Op 320	Op 321	Op 322	Op 323	Op 324	Op 325	Op 326	Op 327	Op 328	Op 329	Op 330	Op 331	Op 332	Op 333	Op 334	Op 335	Op 336	Op 337	Op 338	Op 339	Op 340	Op 341	Op 342	Op 343	Op 344	Op 345	Op 346	Op 347	Op 348	Op 349	Op 350	Op 351	Op 352	Op 353	Op 354	Op 355	Op 356	Op 357	Op 358	Op 359	Op 360	Op 361	Op 362	Op 363	Op 364	Op 365	Op 366	Op 367	Op 368	Op 369	Op 370	Op 371	Op 372	Op 373	Op 374	Op 375	Op 376	Op 377	Op 378	Op 379	Op 380	Op 381	Op 382	Op 383	Op 384	Op 385	Op 386	Op 387	Op 388	Op 389	Op 390	Op 391	Op 392	Op 393	Op 394	Op 395	Op 396	Op 397	Op 398	Op 399	Op 400	Op 401	Op 402	Op 403	Op 404	Op 405	Op 406	Op 407	Op 408	Op 409	Op 410	Op 411	Op 412	Op 413	Op 414	Op 415	Op 416	Op 417	Op 418
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4706	022116	005777	157720	TXSVC: TST	BDZCSR	;TRANS INTR ?
4707	022122	100401		BMI	.+4	
4708	022124	104003		ERROR	3	;+TRANSMITTER FAILED
4709	022126	117703	157712	MOVB	BDZCSR,R3	;SAVE IT
4710				;NOW TEST FOR LINE # ETC		
4711	022132	042703	177770	BIC	#C<7>,R3	;STRIP JUNK
4712	022136	010304		MOV	R3,R4	;SAVE
4713	022140	010337	001372	MOV	R3,SAVLIN	;ADJUST LOCATION FOR ERROR PRINTOUT
4714	022144	012702	000001	MOV	#1,R2	;SET UP POSITION POINTER
4715	022150	105303		34: DECB	R3	;IS IT THIS LINE ?
4716	022152	100402		BMI	44	;YES
4717	022154	006302		ASL	R2	;UP THE LINE #
4718	022156	000774		BR	34	;GO 'ROUND AGAIN
4719	022160	030237	001364	44: BIT	R2,LINE	;VALID LINE?
4720	022164	001001		BNE	.+4	;YES
4721	022166	104010		ERROR	10	;NO,INVALID LINE!!!!
4722	022170	006304		ASL	R4	;MAKE POWER OF 2
4723	022172	116477	001422 157666	MOVB	TDO(R4),BDZTDR	;LOAD CHARACTER
4724	022200	105264	001422	INCB	TDO(R4)	;SET UP NEXT CHARACTER
4725	022204	001002		BNE	54	;LAST CHARACTER ?
4726	022206	040277	157644	BIC	R2,BDZTCR	;YES ,CLEAR TCR BIT
4727	022212	000002		54: RTI		
4728						
4729						
4730				;REC INTR SVC ROUTINE		
4731	022214	105777	157622	RXSVC: TSTB	BDZCSR	;REC DONE ?
4732	022220	100401		BMI	.+4	;YES
4733	022222	104004		ERROR	4	;FALSE INTERRUPT
4734	022224	017704	157616	MOV	BDZRBUF,R4	;SAVE IT
4735	022230	010403		MOV	R4,R3	
4736	022232	000303		SWAB	R3	
4737	022234	042703	177770	BIC	#C<7>,R3	;STRIP JUNK
4738	022240	010337	001372	MOV	R3,SAVLIN	;SAVE LINE NUMBER
4739	022244	032777	020000 157570	BIT	#SILOAL,BDZCSR	;SILO ALARM?
4740	022252	001401		BEQ	.+4	;NO
4741	022254	104000		ERROR		;SILO ALARM SHOULD NOT =1
4742	022256	005704		TST	R4	;DATA VALID SET?
4743	022260	100401		BMI	.+4	;YES
4744	022262	104023		ERROR	23	;YOU LOSE ...DATA VALID WAS'NT SET
4745	022264	032704	070000	BIT	#OVRUN!FRMERR!PARER,R4	
4746	022270	001401		BEQ	.+4	
4747	022272	104000		ERROR		;RECEIVER ERROR FLAG/S WERE SET
4748	022274	012702	000001	MOV	#1,R2	;SET UP POSITION POINTER
4749	022300	105303		54: DECB	R3	
4750	022302	100402		BMI	64	
4751	022304	006302		ASL	R2	;RE POSITION POINTER
4752	022306	000774		BR	54	;GO 'ROUND AGAIN
4753	022310	030237	001364	64: BIT	R2,LINE	;LINE VALID ?
4754	022314	001001		BNE	.+4	;YES
4755	022316	104011		ERROR	11	;INVALID LINE #
4756	022320	013703	001372	MOV	SAVLIN,R3	;GET THE LINE NUMBER AGAIN
4757	022324	006303		ASL	R3	;USE R3 AS A POINTER IN THE DATA TABLE
4758	022326	126304	001442	CMPB	TRO(R3),R4	;DOES THE DATA CHARACTER COMPARE ?
4759	022332	001405		BEQ	24	;YES
4760	022334	016305	001442	MOV	TRO(R3),R5	;SAVE EXPECTED
4761	022340	042704	177400	BIC	#C<377>,R4	;CLEAR JUNK

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4762
4763
4764
4765 022344 104005
4766 022346 005263 001442
4767 022352 105763 001442
4768 022356 001002
4769 022360 040237 022472
4770 022364 012716 022044
4771 022370 000002
4772
4773
4774
4775 022372 106427 000340
4776 022376 104413
4777 022400 005003
4778 022402 005037 001372
4779 022406 012702 000001
4780 022412 030237 001364
4781 022416 001405
4782 022420 022763 000400 001442
4783 022426 001401
4784 022430 104027
4785
4786 022432 005237 001372
4787 022436 005723
4788 022440 106302
4789 022442 103363
4790 022444
4791 022444 013777 002074 157420
4792 022452 005077 157416
4793 022456 013777 002100 157412
4794 022464 005077 157410
4795 022470 104400
4796 022472 000000
4797
4798
4799
4800
4801
4802
4803
4804
4805
4806
4807
4808
4809
4810
4811
4812
4813
4814
4815
4816
4817

;R2 = LINE # BY BIT POSITION
;R4 = ACTUAL DATA
;R5 = EXPECTED DATA
;NO, DATA DOES NOT COMPARE
;SET UP FOR NEXT CHARACTER
;ZERO LINE DONE INDICATOR.
;RESET THE BACKGROUND TIMING LOOP

24: ERROR 5
INC TRO(R3)
TSTB TRO(R3) ,ALL CHARS DONE?
BNE .+6
BIC R2,RXTCR
MOV #SNAP,(SP)
RTI

;FINISH UP ROUTINE
OUT: MTPS #PR7
DEVICE.CLR
CLR R3
CLR SAVLIN
MOV #1,R2
14: BIT R2,LINE
BEQ 24
CMP #400,TRO(R3)
BEQ .+4
ERROR 27

24: INC SAVLIN
TST (R3)+
ASLB R2
BCC 14

FINI: MOV DZCRIS,BDZCRIV
CLR BDZCRIS
MOV DZTIS,BDZTIV
CLR BDZTIS
ADVANCE
RXTCR: 0

;STOP ALL INTERRUPTS
;CLEAR ALL INTERRUPTS AWAY

;VALID LINE ?
;NO
;RECEIVED A BINARY COUNT PATTERN ?
;YES
;THE LINE FAILED TO RECEIVE A FULL
;BINARY COUNT PATTERN
;SET UP FOR NEXT LINE
;ADD 2
;SET UP NEXT LINE POINTER
;FINISHED ?

;RESTORE TRAPCATCHER

;GO TO THE NEXT TEST
;RX IMAGE OF TCR BITS

; -#XZ-----
;***** TEST 34 *****
;DZ11 RELATIVE TIMING TEST.
;EACH SELECTED LINE WILL IN TURN RUN 16. CHARS
;AT ALL BAUD RATES AND THEN THE HIGHEST BAUD
;WITH ALL CHAR LENGTHS. EACH NEW PARAMETER SHOULD
;DECREASE IN TIME FROM THE PREVIOUS PARAMETERS SELECTED.
;THE TIME IS CHECKED AGAINST THE LAST PARAMETER USED
;AND A LOWER TIME IS EXPECTED ON THE CURRENT PARAMETER.
;PARAMETERS ARE:
;EIGHT BITS/PER/CHAR - TWO STOP BITS AT
;50, 75, 110, 134.5, 150, 300, 600, 1200, 1800, 2000
;2400, 3600, 4800, 7200, 9600 BAUD.
;THEN, 9600 BAUD - TWO STOP BITS AT
;SEVEN, SIX, FIVE BITS/PER/CHAR.
;AFTER EACH LINE HAS FINISHED ALL THE ABOVE PARAMETERS
;THE NEXT SELECTED LINE IS THE TESTED.
; -#XZ-----

;: TEST 34

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4818
4819 022474 000004
4820 022476 012737 000034 001122
4821
4822 022504 012737 000002 001226
4823 022512 012737 023204 001360
4824 022520 012737 022644 001362
4825 022526 005037 025214
4826 022532 005037 001372
4827 022536 005037 001374
4828 022542 012737 000001 001216
4829 022550 012737 010070 023202
4830 022556 033737 001216 001364 1:
4831 022564 001027
4832 022566 012737 010070 023202 2:
4833 022574 012700 001422
4834 022600 005020
4835 022602 022700 001462
4836 022606 001374
4837 022610 005237 001374
4838 022614 042737 000007 023202
4839 022622 053737 001374 023202
4840 022630 005037 025214
4841 022634 106337 001216
4842 022640 103346
4843 022642 104400
4844 022644
4845
4846 022644 104417
4847
4848 022646 042737 010000 023202
4849 022654 013777 023202 157170
4850 022662 005737 001370
4851 022666 100011
4852 022670 000241
4853 022672 006037 023202
4854 022676 103002
4855 022700 000241
4856 022702 000401
4857 022704 000261
4858 022706 006137 023202
4859 022712 052737 010000 023202
4860 022720 013777 023202 157124
4861 022726 013737 023202 001372
4862 022734 042737 177770 001372
4863 022742 042737 000007 023202
4864 022750 053737 001374 023202
4865 022756 013737 023202 001400
4866 022764 012700 001422
4867 022770 005020
4868 022772 022700 001462
4869 022776 001374
4870 023000 005002
4871 023002 005003
4872 023004 005037 001220
4873 023010 005037 001224

;*****
TST34: SCOPE
MOV #34, #TSTNM ;LOAD THE NUMBER OF THIS TEST
; -- END 0 MACRO -----
MOV #2, #TIMES
MOV #TST35, NEXT ;POINT TO THE START OF THE NEXT TEST
MOV #3, #LOCK ;SET FOR LOOP
CLR OFFSET ;RESET THIS VARIABLE
CLR SAVLIN ;RESET LINE NUMBER INDICATOR
CLR XMTLIN ;USE THIS WORD TO TELL WHAT LINE TRANSMITTED
MOV #1, #TMP0 ;USE #TMP0 AS A BIT POINTER
MOV #RCVON!550!EIGHT!TWOSTOP,7! ;BUILD TEMPORARY PARAMETERS
1: BIT #TMP0, LINE ;IS THIS LINE ACTIVE?
BNE 3: ;IF SO, GO GET STARTED
MOV #RCVON!550!EIGHT!TWOSTOP,7! ;LOAD PARAMETERS TEMPORARILY
MOV #TDO, RO ;POINT TO THE DATA AREA
CLR (RO); ;CLEAR A DATA WORD
CMP #STOP, RO ;FINISHED ?
BNE .-6 ;NO
INC XMTLIN ;POINT TO THE NEXT LINE TO TRANSMIT
BIC #7, 7! ;MAKE SURE TEMPORARY PARAMETERS POINT TO 0
BIS XMTLIN, 7! ;ADD DESIRED LINE NUMBER
CLR OFFSET
ASLB #TMP0 ;POINT TO THE NEXT LINE
BCC 1: ;PROCESS THE NEXT LINE
ADVANCE ;TEST TO SEE IF THIS TEST GETS REPEATED
3:
; -#RESET-----
; -- END 0 MACRO -----
DCLASH
; -- END 0 MACRO -----
BIC #RCVON, 7! ;ZERO PARAMTERS FOR TX LINE
MOV 7!, #DZLPR ;LOAD PARAMTERS FOR TX
TST MODE ;STAGGERED?
BPL 100! ;OR IF NO
CLC ;SET UP LINE
ROR 7!
BCC 98! ;OR IF LINE WAS EVEN
CLC ;PREPARE TO MAKE LINE EVEN
BR 99! ;CONTINUE
98: SEC ;PREPARE TO MAKE LINE ODD
99: ROL 7! ;SET ALTERED LINE
100: BIS #RCVON, 7! ;SET RX ON
MOV 7!, #DZLPR ;LOAD RX PARAMETERS
MOV 7!, SAVLIN ;ADJUST LOCATION FOR ERROR PRINTOUT
BIC #C<7>, SAVLIN ;STRIP JUNK
BIC #7, 7! ;CLEAR OLD LINE #
BIS XMTLIN, 7! ;SET LINE UP AGAIN
MOV 7!, REGIST ;SAVE PARAMETERS FOR PRINTOUT
MOV #TDO, RO ;POINT TO THE DATA AREA
CLR (RO); ;CLEAR A DATA WORD
CMP #STOP, RO ;FINISHED ?
BNE .-6 ;NO
CLR R2 ;USE R2 TO COUNT TOTAL NUMBER OF TRANSMISSIONS
CLR R3 ;USE R3 TO COUNT TOTAL NUMBER OF RECEPTIONS
CLR #TMP1 ;INITIALIZE THE TIMER
CLR #TMP3 ;INITIALIZE THESE BITS ALSO

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4874 023014 012737 000020 001376      MOV      #20,XMTCNT      ;SET HOW MANY CHARACTERS TO TRANSMIT
4875 023022 012777 02463C 157046      MOV      @XMTSRV,BDZTIV
4876 023030 012777 025002 157034      MOV      @RXISR1,BDZRIV
4877 023036 013777 030306 157030      MOV      CZPRT,BDZRI5
4878 023044 013777 030306 157026      MOV      DZPRT,BDZTIS
4879 023052 113777 001216 156776      MOV8     @TMP0,BDZTCR      ;START THE VALID LINE
4880 023060 052777 040140 156754      BIS      @TIE!RIE!MSENAB,BDZCSR
4881 023066 106427 000000              MTPS      #0              ;LOWER THE PRIORITY TO ALLOW INTERRUPTS
4882 023072 032777 000100 156742 44:   BIT      @RIE,BDZCSR      ;IS ROUTINE DONE?
4883 023100 001407              BEQ      54              ;WHEN ALL IS DONE RX IE IS CLEARED IN ISR.
4884 023102 005237 001220              INC      @TMP1          ;COUNT TIME
4885 023106 001371              BNE      44              ;CONTINUE TEST
4886 023110 105237 001224              INCB     @TMP3          ;DOUBLE COUNT
4887 023114 001366              BNE      44              ;CONTINUE TEST
4888 023116 104011              ERROR    11              ;INTERRUPTS NOT FINISHED
4889 023120 004737 007652              JSR      PC,SERV.G      ;<TG>?
4890 023124 104401              SCOP1     ;LOOP?
4891 023126 062737 000002 025214      ADD      #2,OFFSET
4892 023134 013700 023202              MOV      74,R0
4893 023140 042700 170377              BIC      @C<17*400>,R0
4894 023144 022700 007000              CMP      @<16*400>,R0
4895 023150 001010              BNE      64
4896 023152 032737 000030 023202      BIT      @BIT4,BIT3,74
4897 023160 001602              BEQ      24
4898 023162 162737 000010 023202      SUB      @BIT3,74
4899 023170 000625              BR       34
4900 023172 062737 000400 023202 64:   ADD      #400,74
4901 023200 000621              BR       34
4902 023202 000000              74:   0
4903
4904
4905
4906
4907
4908
4909
4910
4911
4912
4913
4914
4915
4916
4917
4918
4919 023204 000004
4920 023206 012737 000035 001122      ; -@PARTST-----
4921
4922
4923
4924
4925
4926
4927
4928
4929 023232 013701 001366
4929 023236 042701 000200

;***** TEST 35 *****
;* THIS TEST VERIFIES THAT EVEN PARITY WORKS
;* FOR ALL ODD LINES SELECTED AND THAT ODD PARITY WORKS FOR ALL
;* EVEN LINES SELECTED.
;*THE MAIN FUNCTION OF THIS TEST IS TO VERIFY
;*THAT "PE" (PARITY ERROR) CAN BE FLAGGED BY
;*THE UARTS. THIS TEST WILL NOT BE DONE UNLESS
;*YOU ARE IN "STAGGERED" MODE.
;*40(8) CHARS ARE USED FOR THIS TEST.
;*ALL SELECTED LINES WILL BE ENABLED
;*AT THE SAME TIME!
; -@XZ-----

;: * TEST 35
;*****
TST35: SCOPE
      MOV      #35,@TSTNM      ;LOAD THE NUMBER OF THIS TEST
; -- END 0 MACRO -----
      MOV      @TST36,NEXT     ;POINT TO THE START OF THE NEXT TEST
      TST      MODE            ;IS THIS STAGGERED MODE?
      BPL      64              ;IF NOT, DON'T DO THIS TEST
; -@MRESET-----
      DCLASH                    ;CLEAR DEVICE AND SET MAINT BIT IF I MODE
; -- END 0 MACRO -----
      MOV      PAR,R1           ;USE R1 TO BUILD PARAMETERS TO BE LOADED
      BIC      @ODDPAR,R1      ;MAKE SURE ODD PARITY ISN'T SET

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4930 023242 052701 000100      BIS      #PARITY,R1      ;MAKE SURE PARITY IS TURNED ON
4931 023246 012702 000001      MOV      #1,R2      ;USE R2 AS A LINE POINTER
4932 023252 030237 001364      14:      BIT      R2,LINE      ;IS THIS A VALID LINE?
4933 023256 001411              BEQ      34      ;IF NOT, SKIP TO THE NEXT LINE
4934 023260 032701 000001      BIT      #BIT0,R1      ;IS THIS LINE AN ODD LINE?
4935 023264 001002              BNE      24      ;IF IT'S ODD, USE EVEN PARITY
4936 023266 052701 000200      BIS      #ODDPAR,R1      ;IF IT'S EVEN, USE ODD PARITY
4937 023272 010177 156554      24:      MOV      R1,#DZLPR      ;LOAD THE LINE PARAMETER REGISTER
4938 023276 042701 000200      BIC      #ODDPAR,R1      ;SET UP THE NEXT PARITY TO EVEN
4939 023302 005201              34:      INC      R1      ;POINT TO THE NEXT LINE
4940 023304 106302              ASLB      R2      ;MOVE THE BIT POINTER IN R2 TO THE NEXT LINE
4941 023306 103361              BCC      14      ;IF WE'RE NOT DONE, GO CHECK THE NEXT LINE
4942 023310 005037 001372      CLR      SAVLIN      ;CLEAR THE LINE NUMBER INDICATOR
4943 023314 005002              CLR      R2      ;USE R2 TO COUNT TOTAL NUMBER OF TRANSMISSIONS
4944 023316 005037 024632      CLR      COUNT0      ; 112-10-84 ECB REV I
4945 023322 005037 024634      CLR      COUNT1      ; 112-10-84 ECB REV I
4946 023326 005003              CLR      R3      ;USE R3 TO COUNT TOTAL NUMBER OF RECEPTIONS
4947 023330 012737 000040 001376  MOV      #40,XMTCNT      ;TRANSMIT A BINARY COUNT PATTERN(00-40)
4948 023336 012700 001422      MOV      #TDO,R0      ;POINT TO THE DATA AREA
4949 023342 005020              CLR      (R0)+      ;CLEAR A DATA WORD
4950 023344 022700 001462      CMP      #STOP,R0      ;FINISHED ?
4951 023350 001374              BNE      -6      ;NO
4952 023352 005000              CLR      R0      ;CLEAR OFFSET
4953                                ; -#INTSET-----
4954 023354 012777 024636 156514  MOV      #XMTSRV,#DZTIV      ;SET UP THE TRANSMITTER INTERRUPT VECTOR
4955 023362 012777 024460 156502  MOV      #PARESE,#DZRIV      ;SET UP THE RECEIVER INTERRUPT VECTOR
4956 023370 013777 030306 156476  MOV      DZPRT,#DZRIIS      ;SET THE INTERRUPT VECTOR STATUS
4957 023376 013777 030306 156474  MOV      DZPRT,#DZTIS      ;SET TRANSMITTER INTERRUPT PRIORITY
4958 023404 052777 040140 156430  BIS      #RIE!TIE!MSENAB,#DZCSR ;ENABLE THE DEVICE
4959                                ; -- END 0 MACRO -----
4960 023412 113777 001364 156436  MOV      LINE,#DZTCR      ;ENABLE ALL SELECTED LINES
4961 023420 106427 000000              MTPS      #0      ;ALLOW INTERRUPTS
4962 023424 032777 000100 156410  54:      BIT      #RIE,#DZCSR      ;WHEN RX DONE, RIE WILL =0
4963 023432 001410              BEQ      64      ;OR IF ALL DONE
4964 023434 104414              DELAY      ; 11 2-10-84 ECB REV I
4965 023436 005237 024632      INC      COUNT0
4966 023442 102770              BVS      54
4967 023444 105237 024634      INCB      COUNT1
4968 023450 100365              BPL      54
4969 023452 104011              ERROR      11      ;RX FAILED TO FINISH (INTERRUPT)
4970 023454 104400      64:      ADVANCE      ;ADVANCE LOOP
4971                                ; -- END 0 MACRO -----
4972                                ; -#PARTST-----
4973                                ; -#XZ-----
4974                                ;***** TEST 36 *****
4975                                ;*THIS TEST VERIFIES THAT ODD PARITY WORKS FOR ALL ODD LINES
4976                                ;* SELECTED AND THAT EVEN PARITY WORKS FOR ALL EVEN LINES SELECTED
4977                                ;*THE MAIN FUNCTION OF THIS TEST IS TO VERIFY
4978                                ;*THAT "PE" (PARITY ERROR) CAN BE FLAGGED BY
4979                                ;*THE UARTS. THIS TEST WILL NOT BE DONE UNLESS
4980                                ;*YOU ARE IN "STAGGERED" MODE.
4981                                ;*40(8) CHARS ARE USED FOR THIS TEST.
4982                                ;*ALL SELECTED LINES WILL BE ENABLED
4983                                ;*AT THE SAME TIME!
4984                                ; -#XZ-----
4985                                ;::* TEST 36

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CZDZA DZ11 DEVICE DIAGNOSTICS.

Address	Hex	Hex	Hex	Hex	Assembly	Comments
4986	023456	000004			TST36: SCOPE	
4988	023460	012737	000036	001122	MOV #36, #TSTNM	LOAD THE NUMBER OF THIS TEST
4989					; -- END 0 MACRO	
4990	023466	012737	023730	001360	MOV #TST37, NEXT	POINT TO THE START OF THE NEXT TEST
4991	023474	005737	001370		TST MODE	IS THIS STAGGERED MODE?
4992	023500	100112			BPL 64	IF NOT, DON'T DO THIS TEST
4993						; -#MRESET-----
4994	023502	104417			DCLASH	CLEAR DEVICE AND SET MAINT BIT IF I MODE
4995					; -- END 0 MACRO	
4996	023504	013701	001366		MOV PAR, R1	USE R1 TO BUILD PARAMETERS TO BE LOADED
4997	023510	042701	000200		BIC #ODDPAR, R1	MAKE SURE ODD PARITY ISN'T SET
4998	023514	052701	000100		BIS #PARITY, R1	MAKE SURE PARITY IS TURNED ON
4999	023520	012702	000001		MOV #1, R2	USE R2 AS A LINE POINTER
5000	023524	030237	001364	14:	BIT R2, LINE	IS THIS A VALID LINE?
5001	023530	001411			BEQ 34	IF NOT, SKIP TO THE NEXT LINE
5002	023532	032701	000001		BIT #BIT0, R1	IS THIS LINE AN ODD LINE?
5003	023536	001402			BEQ 24	IF IT'S EVEN, USE EVEN PARITY
5004	023540	052701	000200		BIS #ODDPAR, R1	IF IT'S ODD, USE ODD PARITY
5005	023544	010177	156302	24:	MOV R1, #DZLPR	LOAD THE LINE PARAMETER REGISTER
5006	023550	042701	000200		BIC #ODDPAR, R1	SET UP THE NEXT PARITY TO EVEN
5007	023554	005201		34:	INC R1	POINT TO THE NEXT LINE
5008	023556	106302			ASLB R2	MOVE THE BIT POINTER IN R2 TO THE NEXT LINE
5009	023560	103361			BCC 14	IF WE'RE NOT DONE, GO CHECK THE NEXT LINE
5010	023562	005037	001372		CLR SAVLIN	CLEAR THE LINE NUMBER INDICATOR
5011	023566	005002			CLR R2	USE R2 TO COUNT TOTAL NUMBER OF TRANSMISSIONS
5012	023570	005037	024632		CLR COUNT0	;; 2-10-84 ECB REV I
5013	023574	005037	024634		CLR COUNT1	;; 2-10-84 ECB REV I
5014	023600	005003			CLR R3	USE R3 TO COUNT TOTAL NUMBER OF RECEPTIONS
5015	023602	012737	000040	001376	MOV #40, XMT CNT	TRANSMIT A BINARY COUNT PATTERN(00-40)
5016	023610	012700	001422		MOV #TDO, R0	POINT TO THE DATA AREA
5017	023614	005020			CLR (R0)	CLEAR A DATA WORD
5018	023616	022700	001462		CMP #STOP, R0	FINISHED ?
5019	023622	001374			BNE -6	NO
5020	023624	005000			CLR R0	CLEAR OFFSET
5021						; -#INTSET-----
5022	023626	012777	024636	156242	MOV #XMTSRV, #DZTIV	SET UP THE TRANSMITTER INTERRUPT VECTOR
5023	023634	012777	024460	156230	MOV #PARESE, #DZRIV	SET UP THE RECEIVER INTERRUPT VECTOR
5024	023642	013777	030306	156224	MOV DZPRT, #DZRIS	SET THE INTERRUPT VECTOR STATUS
5025	023650	013777	030306	156222	MOV DZPRT, #DZTIS	SET TRANSMITTER INTERRUPT PRIORITY
5026	023656	052777	040140	156156	BIS #RIE!TIE!MSENAB, #DZCSR	ENABLE THE DEVICE
5027					; -- END 0 MACRO	
5028	023664	113777	001364	156164	MOVB LINE, #DZTCR	ENABLE ALL SELECTED LINES
5029	023672	106427	000000		MTPS #0	ALLOW INTERRUPTS
5030	023676	032777	000100	156136	54: BIT #RIE, #DZCSR	WHEN RX DONE, RIE WILL =0
5031	023704	001410			BEQ 64	OR IF ALL DONE
5032	023706	104414			DELAY	;; 2-10-84 ECB REV I
5033	023710	005237	024632		INC COUNT0	
5034	023714	102770			BVS 54	
5035	023716	105237	024634		INCB COUNT1	
5036	023722	100365			BPL 54	
5037	023724	104011			ERROR 11	*RX FAILED TO FINISH (INTERRUPT)

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5040                                     ; -#XZ-----
5041                                     ;***** TEST 37 *****
5042                                     ;*
5043                                     ;* ECB 21-FEB-84
5044                                     ;* BAUD RATE TIMING TEST. THIS TEST ADDED IN ORDER TO TEST CRYSTAL
5045                                     ;* SPEEDS. IT LOOKS FOR EITHER A KW11L OR KW11P. IF EITHER IS AVAIL.
5046                                     ;* THEN THE TEST IS RAN. IF NEITHER AVAILABLE, THEN TEST IS NOT RAN.
5047                                     ;*
5048                                     ;* KR 18-JUN-84
5049                                     ;* ADDED NUMBERS IN TTABLE AND NOW TEST ALL LINES AT ALL BAUD RATES
5050                                     ;* INSTEAD OF JUST LINE 0 AT ALL BAUD RATES.
5051                                     ;*
5052                                     ; -#XZ-----
5053                                     ;:: TEST 37
5054                                     ;*****
5055 023730 000004 TST37: SCOPE
5056 023732 012737 000037 001122      MOV #37,#TSTNM ;LOAD THE NUMBER OF THIS TEST
5057                                     ; -- END 0 MACRO -----
5058 023740 012737 004712 001360      MOV #EOP,NEXT ;POINT TO THE END-OF-PASS HANDLER
5059
5060 023746 106427 000000      HTPS #0 ;DROP PRIORITY TO 0
5061 023752 013700 000004      MOV #4,R0 ;SAVE CONTENTS OF LOCATION 4.
5062 023756 012737 024022 000004      MOV #104,R0 ;SET TO TRAP IF NOT KW11L
5063 023764 012701 177546      MOV #177546,R1 ;GET KW11L ADDRESS.
5064 023770 012737 024076 000100      MOV #CLKSRV,#100 ;SET FOR INTERRUPT.
5065 023776 012737 000340 000102      MOV #340,R102 ;PRIORITY 7 ON INTERRUPT.
5066 024004 005037 024106      CLR BCOUNT ;OUR OWN CLOCK TICK COUNTER
5067 024010 005037 024104      CLR CCOUNT ;CHAR SENT COUNTER
5068 024014 012711 000100      MOV #100,(R1) ;THIS WILL CAUSE A BOMB TO OCCUR IF
5069                                     ;THE KW11L DOES NOT EXIST
5070                                     ;BUT IF ITS THERE, THEN WE'RE STARTED.
5071 024020 000472      BR TCCONT ;START TEST
5072
5073 024022 022626 104: CMP (SP), (SP) ;READJUST STACK
5074 024024 012737 024066 000004      MOV #204,R0 ;SET TO TRAP IF NO KW11P
5075 024032 012737 024076 000104      MOV #CLKSRV,#104 ;SET FOR INTERRUPT.
5076 024040 012737 000340 000106      MOV #340,R106 ;PRIORITY 7 ON INTERRUPT.
5077 024046 012701 172540      MOV #172540,R1 ;KW11P ADDRESS.
5078 024052 012761 177777 000002      MOV #-1.2(R1) ;SET THE # OF COUNTS FOR INTERRUPT (1)
5079                                     ;NOTE, IF KW11P DOES NOT EXIST, THEN
5080                                     ;WE WILL BOMB FROM THIS PLACE.
5081 024060 012711 000133      MOV #133,(R1) ;SET INTERRUPT ENABLE,UP COUNT,REPEATED
5082                                     ;INTERRUPT,LF CLOCK, AND RUN.
5083 024064 000450      BR TCCONT ;START TEST.
5084
5085 024066 022626 204: CMP (SP), (SP) ;READJUST STACK, NO CLOCKS AT ALL!
5086 024070 010037 000004      MOV R0,R0 ;RESTORE LOCATION 4
5087 024074 104400      ADVANCE ;GET OUT.
5088
5089 024076 005237 024104      CLKSrv: INC CCOUNT ;CLOCK INTERRUPTS TO HERE, UPDATE COUNT.
5090 024102 000002      RTI ;THEN EXIT.
5091
5092 024104 000000      CCOUNT: .WORD 0 ;INCREMENTED BY CLKSrv. #CLOCK TICKS.
5093 024106 000000      BCOUNT: .WORD 0 ;USED BY TCCONT AS TIMER.
5094 024110 000000      DCOUNT: .WORD 0 ;USED BY TCCONT AS TIMER.
5095

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024112 000005 000007
024116 000007 000014
024122 000013 000021
024126 000015 000024
024132 000017 000025

024136 000035 000050
024142 000073 000114
024146 000167 000224
024152 000263 000334
024156 000307 000364

024162 000357 000444
024166 000547 000664
024172 000737 001104
024176 001317 001544
024202 001677 002204
024206

024106

```

; *
; THESE NUMBER WHERE WORKING GREAT ON A PDP-11/24 RUNNING AT 60 HERTZ
;
; TTABLE: .WORD 5.. 7. ;COUNT OF CHARS OUT FOR 50 BAUD
;           .WORD 7.. 9. ;COUNT OF CHARS OUT FOR 75 BAUD
;           .WORD 11.. 13. ;COUNT OF CHARS OUT FOR 110 BAUD
;           .WORD 13.. 15. ;COUNT OF CHARS OUT FOR 134.5 BAUD
;           .WORD 15.. 17. ;COUNT OF CHARS OUT FOR 150 BAUD
;
;           .WORD 29.. 32. ;COUNT OF CHARS OUT FOR 300 BAUD
;           .WORD 59.. 62. ;COUNT OF CHARS OUT FOR 600 BAUD
;           .WORD 119.. 122. ;COUNT OF CHARS OUT FOR 1200 BAUD
;           .WORD 179.. 182. ;COUNT OF CHARS OUT FOR 1800 BAUD
;           .WORD 199.. 202. ;COUNT OF CHARS OUT FOR 2000 BAUD
;
;           .WORD 239.. 242. ;COUNT OF CHARS OUT FOR 2400 BAUD
;           .WORD 359.. 362. ;COUNT OF CHARS OUT FOR 3600 BAUD
;           .WORD 479.. 482. ;COUNT OF CHARS OUT FOR 4800 BAUD
;           .WORD 719.. 722. ;COUNT OF CHARS OUT FOR 7200 BAUD
;           .WORD 959.. 962. ;COUNT OF CHARS OUT FOR 9600 BAUD
;
; -
; *
; THESE NUMBER WHERE MODIFIED SO THEY WOULD WORK ON A
; 50 HERTZ MACHINE (TESTED ON PDP-11/70) AS WELL AS 60 HERTZ.
; AT 9600 BAUD THERE IS ABOUT 17% ERROR.
; THE LOWER THE BAUD RATE THE LESS THE ERROR.
; -
; TTABLE: .WORD 5.. 7. ;COUNT OF CHARS OUT FOR 50 BAUD
;           .WORD 7.. 12. ;COUNT OF CHARS OUT FOR 75 BAUD
;           .WORD 11.. 17. ;COUNT OF CHARS OUT FOR 110 BAUD
;           .WORD 13.. 20. ;COUNT OF CHARS OUT FOR 134.5 BAUD
;           .WORD 15.. 21. ;COUNT OF CHARS OUT FOR 150 BAUD
;
;           .WORD 29.. 40. ;COUNT OF CHARS OUT FOR 300 BAUD
;           .WORD 59.. 76. ;COUNT OF CHARS OUT FOR 600 BAUD
;           .WORD 119.. 148. ;COUNT OF CHARS OUT FOR 1200 BAUD
;           .WORD 179.. 220. ;COUNT OF CHARS OUT FOR 1800 BAUD
;           .WORD 199.. 244. ;COUNT OF CHARS OUT FOR 2000 BAUD
;
;           .WORD 239.. 292. ;COUNT OF CHARS OUT FOR 2400 BAUD
;           .WORD 359.. 436. ;COUNT OF CHARS OUT FOR 3600 BAUD
;           .WORD 479.. 580. ;COUNT OF CHARS OUT FOR 4800 BAUD
;           .WORD 719.. 868. ;COUNT OF CHARS OUT FOR 7200 BAUD
;           .WORD 959.. 1156. ;COUNT OF CHARS OUT FOR 9600 BAUD
;
; ENDTTB =
;
; ; CHECK OUT THE CLOCK
;
; TCCONT: MOV R0,804 ;RESTORE LOCATION 4.
;          CLR CCOUNT ;START WITH LINE CLOCK AT ZERO COUNT
;          MOV #30,BCOUNT ;30-18MS LOOPS TO WAIT

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5152 024224 005737 024104      104:  TST      CCOUNT      ;WAIT FOR COUNT TO GO TO 1 TO AVOID
5153 024230 001010              BNE      204      ;USING THAT DANGEROUS FIRST COUNT!
5154 024232 005237 024110      INC      DCOUNT      ;BUT AS A SAFE GUARD,
5155 024236 001372              BNE      104      ;DON'T HANG HERE
5156 024240 005237 024106      INC      BCOUNT
5157 024244 001367              BNE      104
5158 024246 005011              CLR      (R1)      ;CLEAR CLOCK
5159 024250 104400              ADVANCE      ;CLOCK NOT WORKING RIGHT- ABORT TEST
5160                                     ;NOT THE FAULT OF THE DZ!
5161
5162                                     ;
5163                                     ; START XMITTING CHARACTERS TO ALL 8 LINES AT ALL BAUD RATES.
5164                                     ; IF THE NUMBER OF CHARACTERS TRANSMITTED IS BETWEEN THE
5165                                     ; TWO NUMBERS IN TTABLE THEN THE LINE IS OK, ELSE ERROR
5166                                     ;
5167
5168 024252 012777 000050 155562 204:  MOV      #50,8DZCSR      ;SET MSE AND MAINT.
5169 024260 012700 000030      MOV      #30,R0      ;SET BAUD RATE 50, 8 BIT CHAR LEN
5170 024264 012703 000001      MOV      #1,R3      ;HOLDS CURRENT LINE, START AT LINE 0
5171
5172 024270 110377 155562      304:  MOVB     R3,8DZTCR      ;ENABLE THE NEXT LINE TO XMIT
5173 024274 012702 024112      MOV      @TTABLE,R2      ;GET TABLE OF EXPECTED RESULTS
5174
5175 024300 010077 155546      404:  MOV      R0,8DZLPR      ;UPDATE THE BAUD RATE AND NEXT LINE
5176 024304 005037 024106      CLR      BCOUNT      ;REUSE TIMER AS XMIT CHAR COUNTER
5177 024310 005037 024104      CLR      CCOUNT      ;CLEAR CLOCK INTERRUPT COUNTER
5178
5179 024314 022737 000074 024104 504:  CMP      #60.,CCOUNT      ;DO THIS LOOP FOR 60 CLOCK TICKS
5180 024322 001413              BEQ      604      ;EXIT WHEN THAT OCCURS.
5181 024324 005777 155512      TST      8DZCSR      ;READY TO XMIT A CHAR?
5182 024330 100371              BPL      504      ;NO, THEN WAIT
5183 024332 112777 000101 155526  MOVB     #101,8DZTDR      ;XMIT A CHAR
5184 024340 005237 024106      INC      BCOUNT      ;UPDATE XMIT COUNT, SHOULD NOT OVERFLOW.
5185 024344 102363              BVC      504      ;IF NO OVERFLOW, CONTINUE
5186 024346 005011              CLR      (R1)      ;IF OVERFLOW, CLOCK COULD BE BAD, CLEAR IT
5187 024350 104400              ADVANCE      ;ABORT THIS TEST IF CLOCK 10-2.'
5188
5189 024352 023712 024106      604:  CMP      BCOUNT,(R2)      ;IF COUNT < LOW
5190 024356 103422              BLO      704      ; THEN ERROR
5191 024360 023762 024106 000002  CMP      BCOUNT,2(R2)      ;IF COUNT > HI
5192 024366 101016              BHI      704      ; THEN ERROR
5193 024370 062700 000400      ADD      #400,R0      ;NEXT BAUD RATE
5194 024374 062702 000004      ADD      #4,R2      ;GET NEXT PAIR OF NUMBERS
5195 024400 022702 024206      CMP      @ENDTTB,R2      ;HIT END OF TTABLE?
5196 024404 001335              BNE      404      ;NO, CONTINUE TESTING THIS LINE
5197 024406 042700 007400      BIC      #7400,R0      ;BRING THE BAUD RATE BACK TO 50
5198 024412 005200              INC      R0      ;AND GET NEXT LINE NUMBER
5199 024414 106303              ASLB     R3      ;MOVE ONTO THE NEXT LINE
5200 024416 103324              BCC      304      ;IF NOT DONE WITH ALL LINES THEN CONTINUE
5201 024420 005011              CLR      (R1)      ;ELSE STOP CLOCK
5202 024422 104400              ADVANCE      ;AND DO THE NEXT TEST
5203
5204                                     ;
5205                                     ; ERROR - COUNTER NOT IN THE RANGE OF THE NUMBERS IN TTABLE
5206                                     ;
5207

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5208 024424 005011          704: CLR      (R1)          ;STOP CLOCK.
5209 024426 011237 024104    MOV      (R2),CCOUNT      ;MOVE LOW COUNT FOR ERROR MESSAGE
5210 024432 016237 000002 024110 MOV      2(R2),DCOUNT      ;MOVE HIGH COUNT FOR ERROR MESSAGE
5211 024440 042700 177770    BIC      @C<7>,R0        ;STRIP EVERYTHING BUT LINE NUMBER
5212 024444 010037 001372    MOV      R0,SAVLIN        ;MOVE LINE NUMBER FOR ERROR MESSAGE
5213 024450 104030          ERROR    30              ;COUNT TOO HIGH OR LOW
5214 024452 004737 007652    JSR      PC,SERV.G        ;<TG?>
5215 024456 104400          ADVANCE          ;DO NEXT TEST
5216
5217
5218 ;RECEIVER SERVICE ROUTINE(PARITY TEST ONLY)
5219 ;
5220
5221 024460 017704 155362    PARESE: MOV      @DZRBUF,R4      ;GET THE CHARACTER
5222 024464 010401          MOV      R4,R1              ;COPY THE RECEIVED INFORMATION
5223 024466 000301          SWAB      R1                ;GET THE LINE NUMBER IN THE LOWER BYTE
5224 024470 042701 177770    BIC      @C<7>,R1          ;ISOLATE THE LINE NUMBER
5225 024474 010137 001372    MOV      R1,SAVLIN        ;FILL LOC. FOR ERROR PRINTOUT
5226 024500 005704          TST      R4                ;WAS DATA VALID?
5227 024502 100401          BMI      104              ;BRANCH IF YES
5228 024504 104023          ERROR    23              ;ERROR - DATA VALID NOT SET!
5229 024506 006301          104:  ASL      R1              ;ALIGN IT ON A WORD BOUNDARY
5230 024510 032704 010000    BIT      @PARER,R4        ;PARITY ERROR SHOULD BE SET. IS IT?
5231 024514 001013          BNE      114              ;IF SO, GO CHECK CHARACTER
5232 024516 013737 002046 001400 MOV      @DZRBUF,REGIST ;SET UP FOR THE ERROR MESSAGE
5233 024524 010405          MOV      R4,R5
5234 024526 042705 000377    BIC      @377,R5
5235 024532 156105 001442    BISB     TRO(R1),R5      ;GET THE CORRECT CHARACTER
5236 024536 052705 110000    BIS      @DVALID!PARER,R5 ;BUILD WHAT WAS EXPECTED
5237 024542 104006          ERROR    6              ;ERROR- DID NOT GET CORRECT INFORMATION
5238 024544 126104 001442    114:  CMPB     TRO(R1),R4    ;CHECK THE CHARACTER. IS IT CORRECT?
5239 024550 001407          BEQ      124              ;IF SO, GO SET UP NEXT CHARACTER
5240 024552 116105 001442    MOV      TRO(R1),R5      ;LOAD THE CHARACTER FOR ERROR REPORTING
5241 024556 042705 177400    BIC      @C<377>,R5      ;CLEAR SIGN EXTEND
5242 024562 042704 177400    BIC      @C<377>,R4      ;REMOVE THE JUNK FROM R4, THE ACTUAL CHARACTER
5243 024566 104005          ERROR    5              ;DATA ERROR
5244 024570 005261 001442    124:  INC      TRO(R1)      ;SET UP THE NEXT CHARACTER
5245 024574 005203          INC      R3              ;ADD TO THE TOTAL RECEIVED COUNT
5246 024576 005037 024632    CLR      COUNT0        ;RESET COUNTERS TO NEXT
5247 024602 005037 024634    CLR      COUNT1        ;RECIEVER INTERRUPT
5248 024606 032777 040000 155226 BIT      @TIE,@DZCSR    ;ARE TRANSMISSIONS DONE?
5249 024614 001005          BNE      134              ;IF NO, GO RECEIVE SOME MORE
5250 024616 020203          CMP      R2,R3            ;ARE ALL CHARACTERS RECEIVED?
5251 024620 001003          BNE      134              ;IF NO, GO RECEIVE SOME MORE
5252 024622 042777 000100 155212 BIC      @RIE,@DZCSR    ;DISABLE RECEIVER INTERRUPTS
5253 024630 000002          134:  RTI                  ;GO BACK TO RECEIVER WAIT LOOP
5254 024632 000000          COUNT0: 0
5255 024634 000000          COUNT1: 0
5256
5257
5258 ;TRANSMITTER INTERRUPT SERVICE
5259 ;-----
5260
5261 024636 117701 155202    XMTSRV: MOV      @MDZCSR,R1      ;GET THE LINE NUMBER. IS THE TRANSMITTER
5262 024642 100411          BMI      14              ;REALLY READY? IF SO, GO LOAD THE CHARACTER
5263 024644 013700 001372    MOV      SAVLIN,R0        ;ADJUST LOCATION SAVLIN

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5264 024650 042701 177770      BIC      0+C<7>,R1      ;ISOLATE THE LINE NUMBER
5265 024654 010137 001372      MOV      R1,SAVLIN    ;FOR ERROR PRINTOUT
5266 024660 104003              ERROR      3          ;TRANSMITTER NOT READY- FALSE INTERRUPT
5267 024662 010037 001372      MOV      R0,SAVLIN    ;RESET SAVLIN TO PREVIOUS VALUE
5268 024666 042701 177770      BIC      0+C<7>,R1      ;ISOLATE THE LINE NUMBER
5269 024672 006301              ASL      R1          ;MAKE SURE IT REFERENCES A WORD BOUNDARY
5270 024674 116177 001422 155164 MOVB    TDO(R1),BDZTDR ;LOAD THE CURRENT CHARACTER FOR THIS LINE
5271 024702 005261 001422      INC      TDO(R1)      ;SET UP NEXT CHARACTER FOR THIS LINE
5272                                     ;*****
5273                                     ;(REV. F0: DELETED INC
5274                                     ;*****
5275 024706 023761 001376 001422      CMP      XMTCNT,TDO(R1) ;HAVE WE DONE ALL PATTERNS ON THIS LINE?
5276 024714 001015              BNE      41          ;IF NOT, KEEP ON TRANSMITTING
5277 024716 012700 000001      MOV      01,R0        ;SET UP A DESELECTION POINTER
5278 024722 006201              ASR      R1          ;GET THE LINE NUMBER AGAIN
5279 024724 005301              DEC      R1          ;REDUCE THE COUNT, WAS THIS THE LINE?
5280 024726 100402              BMI      31          ;IF SO, GO DISABLE THE ENABLE BIT FOR IT
5281 024730 006300              ASL      R0          ;MOVE THE POINTER TO THE NEXT LINE
5282 024732 000774              BR       21          ;GO CHECK THE NEXT LINE
5283 024734 140077 155116      31:      BICB    R0,BDZTCR ;DISABLE THE LINE POINTED TO BY R0
5284 024740 001003              BNE      41          ;IF MORE LINES ARE ACTIVE, GO CONTINUE TRANSMIT
5285 024742 042777 040000 155072      BIC      0TIE,BDZCSR ;IF NOT, DISABLE TRANSMITTER INTERRUPTS
5286                                     ;*****
5287 024750 005202      41:      INC      R2          ;UP THE NUMBER OF TRANSMISSIONS (REV. F0)
5288                                     ;*****
5289 024752 000002              RTI          ;RETURN TO THE TIMING LOOP
5290
5291      ; RELATIVE TIME BUILDING ROUTINE
5292      ; -----
5293
5294 024754 012737 000004 001222 BUILD: MOV      04,$TMP2      ;ROTATE 4 BITS BACK INTO $TMP1
5295 024762 006037 001224      11:      ROR      $TMP3      ;GET THE BITS FROM $TMP3, THE HIGH BYTE
5296 024766 006037 001220              ROR      $TMP1      ;OF THE RELATIVE TIME COUNTER, PUT THEM BACK
5297 024772 005337 001222              DEC      $TMP2      ;INTO $TMP1 USING THE CARRY BIT WITH
5298                                     ;ROTATE INSTRUCTIONS
5299 024776 001371              BNE      11          ;REDUCE COUNT, ALL BITS BACK? IF NOT, GET MORE
5300 025000 000207              RTS      PC          ;RETURN TO CALLING TEST
5301

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RECEIVER SERVICE ROUTINE

5302									
5303									
5304	025002	105777	155034		RXISR1:	TSTB	BDZCSR		IS THE RECEIVER REALLY READY?
5305	025006	100401				BMI	10		IF SO, GO SERVICE IT
5306	025010	104004				ERROR	4		ERROR- RECEIVER DONE FLAG ISN'T SET
5307	025012	017704	155030		10:	MOV	BDZBUF,R4		SAVE THE RECEIVER INFORMATION
5308	025016	100401				BMI	20		IF IT WAS VALID, GO PROCESS IT
5309	025020	104023				ERROR	23		ERROR- DATA VALID WASN'T SET
5310	025022	032704	070000		20:	BIT	00VRRUN!FMERR:PARER,R4		ARE ANY ERROR FLAGS SET?
5311	025026	001403				BEQ	30		IF NOT, GO CONTINUE PROCESSING
5312	025030	013700	002046			MOV	DZBUF,R0		SET UP FOR ERROR REPORTING
5313	025034	104002				ERROR	2		ERROR- RECEIVER ERROR FLAG SET
5314	025036	010401			30:	MOV	R4,R1		COPY THE RECEIVER INFORMATION
5315	025040	000301				SWAB	R1		GET THE LINE NUMBER IN THE LOWER BYTE
5316	025042	042701	177770			BIC	0+C<7>,R1		ISOLATE THE LINE NUMBER
5317	025046	006301				ASL	R1		ALIGN IT ON A WORD BOUNDARY
5318	025050	120461	001442			CPB	R4,TRO(R1)		IS THE CHARACTER WHAT IT SHOULD BE?
5319	025054	001413				BEQ	40		IF SO, GO CONTINUE PROCESSING
5320	025056	116105	001442			MOVB	TRO(R1),R5		GET WHAT WAS EXPECTED FOR ERROR REPORTING
5321	025062	042705	177400			BIC	0+C<377>,R5		ELIMINATE PROPAGATED SIGN
5322	025066	042704	177400			BIC	0+C<377>,R4		ISOLATE THE ACTUAL CHARACTER
5323	025072	010137	001372			MOV	R1,SAVLIN		GET THE LINE NUMBER OF THE RECEIVER ERROR
5324	025076	006237	001372			ASR	SAVLIN		ALIGN IT CORRECTLY FOR REPORTING
5325	025102	104005				ERROR	5		DATA ERROR
5326	025104	005261	001442		40:	INC	TRO(R1)		SET UP THE NEXT EXPECTED CHARACTER
5327	025110	005203				INC	R3		INCREMENT THE COUNT OF RECEIVED CHARACTERS
5328	025112	032761	000020	001442		BIT	020,TRO(R1)		HAVE ALL CHARACTERS BEEN RECEIVED?
5329	025120	001402				BEQ	50		IF NOT, GO RECEIVE SOME MORE
5330	025122	020203				CPB	R2,R3		HAVE WE RECEIVED ALL CHARACTERS?
5331	025124	001401				BEQ	60		IF SO, GO DETERMINE THE TIMING
5332	025126	000002			50:	RTI			GO CONTINUE TIMING AND ALLOW INTERRUPTS
5333	025130	004737	024754		60:	JSR	PC,BUILD		GET THE RELATIVE TIME (SIGNIFICANT BITS)
5334									
5335	025134	013700	025214			MOV	OFFSET,R0		GET POINTER
5336	025140	013760	001220	002102		MOV	0TMP1,THTBL(R0)		SAVE THIS TEST'S TIME
5337	025146	005737	025214			TST	OFFSET		FIRST TEST?
5338	025152	001414				BEQ	70		IF NOT, GO CHECK THE TIME
5339	025154	005740				TST	-(R0)		POINT TO THE PREVIOUS TIME TAKEN
5340	025156	026037	002102	001220		CPB	THTBL(R0),0TMP1		IS THIS TIME WHAT IT SHOULD BE?
5341	025164	101007				BMI	70		IF SO, GO TO THE NEXT TEST
5342	025166	016005	002102			MOV	THTBL(R0),R5		PLACE WHAT WAS EXPECTED IN R5
5343	025172	010137	001372			MOV	R1,SAVLIN		GET THE LINE NUMBER OF THE RECEIVER
5344	025176	006237	001372			ASR	SAVLIN		MAKE SURE IT'S THE LINE NUMBER
5345	025202	104021				ERROR	21		TIMING ERROR
5346	025204	042777	000140	154630	70:	BIC	0RIE!MSENAB,BDZCSR		DISABLE THE DEVICE
5347	025212	000002				RTI			RETURN TO THE PROGRAM
5348	025214	000000				OFFSET:	0		

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;DZ11 ECHO/CABLE TEST

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5349
5350
5351      ;*STARTING PROCEDURE
5352      ;*LOAD PROGRAM
5353      ;*LOAD ADDRESS 000210
5354      ;*PRESS START
5355      ;*PROGRAM WILL TYPE DZ11 ECHO/CABLE TEST
5356      ;*PROGRAM WILL TYPE WHICH TEST- ECHO OR CABLE
5357      ;*TYPE IN E OR C RESPECTIVELY
5358      ;*PROGRAM WILL TYPE "VECTOR ADDRESS-"
5359      ;*TYPE IN THE ADDRESS OF THE RECEIVER INTERRUPT VECTOR
5360      ;*FOR THE DZ11 TO BE TESTED, FOLLOWED BY <CARRIAGE RETURN>
5361      ;*PROGRAM WILL TYPE "CONTROL REGISTER ADDRESS-"
5362      ;*TYPE IN THE ADDRESS OF THE SYSTEM CONTROL REGISTER
5363      ;*FOR THE DZ11 TO BE TESTED, FOLLOWED BY <CARRIAGE RETURN>
5364      ;*PROGRAM WILL TYPE "LINE NUMBER-"
5365      ;*TYPE IN THE LINE NUMBER TO BE TESTED (IN OCTAL)
5366      ;*,FOLLOWED BY <CARRIAGE RETURN>
5367      ;*PROGRAM WILL TYPE "BAUD RATE-"
5368      ;*TYPE IN THE BAUD RATE OF THE DZ11 TERMINAL
5369      ;*,FOLLOWED BY <CARRIAGE RETURN>
5370      ;*THE FOLLOWING BAUD RATES ARE ACCEPTED IN DECIMAL
5371      ;*      50
5372      ;*      75
5373      ;*      110
5374      ;*      135      (ROUNDED OFF 134.5)
5375      ;*      150
5376      ;*      300
5377      ;*      600
5378      ;*      1200
5379      ;*      1800
5380      ;*      2000
5381      ;*      2400
5382      ;*      3600
5383      ;*      4800
5384      ;*      7200
5385      ;*      9600
5386      ;*ALL OTHERS ARE REJECTED
5387
5388      ;*PROGRAM WILL TYPE "ECHO" OR "CABLE TEST" TO INDICATE THAT TESTING HAS STARTED
5389
5390
5391      ;PROGRAM INITIALIZATION
5392      ;LOCK OUT INTERRUPTS
5393      ;SET UP PROCESSOR STACK
5394      ;SET UP POWER FAIL VECTOR
5395      ;CLEAR PROGRAM FLAGS AND COUNTS
5396
5397      025216 012706 001120      XSTART: MOV      #STACK,SP      ;SET UP PROCESSOR STACK
5398      025222 106427 000340      MTPC,   #PR7      ;LOCK OUT INTERRUPTS
5399      025226 012737 025216      MOV,    #XSTART,#LPADR ;SET UP IN CASE OF POWER FAIL
5400      025234 005037 027412      CLR     STFLG      ;CLEAR TEST START FLAG
5401      025240 005037 001242      CLR     #PASS      ;CLEAR PASS COUNT
5402      025244 005037 001132      CLR     #ERTTL     ;CLEAR ERROR COUNT
5403      025250 105037 001123      CLRB    #ERFLG     ;CLEAR ERROR FLAG
5404      025254 005037 027416      CLR     LAST      ;CLEAR LAST ERROR PC

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5405	025260	032777	000001	153672	VEC1:	BIT	#SW00,BSWR	;IF SW00=1, GET NEW VECTOR
5406	025266	001465				BEG	OTHER	;AND CSR
5407	025270	012701	000300		VEC2:	MOV	#300,R1	
5408	025274	012702	000302			MOV	#302,R2	
5409	025300	010221			14:	MOV	R2,(R1)+	;RESTORE TRAPCATCHER
5410	025302	005022				CLR	(R2)+	;IN FLOATING VECTOR AREA
5411	025304	022122				CMP	(R1)+,(R2)+	;UPDATE THE POINTERS
5412	025306	020127	001000			CMP	R1,#1000	
5413	025312	001372				BNE	14	
5414	025314	104403				INSTR		;INPUT ADDRESS OF DEVICE VECTOR
5415	025316	027444				MVECTOR		;MESSAGE "VECTOR ADDRESS-"
5416	025320	104405				PARAM		;CONVERT STRING TO OCTAL
5417	025322	000300				300		;LOW LIMIT
5418	025324	000770				770		;HIGH LIMIT
5419	025326	002072				DZRV		;LOCATIONS TO BE FILLED
5420	025330	003			.BYTE	3		;LSB MASK
5421	025331	004			.BYTE	4		;NUMBER OF LOCATIONS
5422	025332	104403				INSTR		;INPUT ADDRESS OF DEVICE CSR
5423	025334	027466				MREGAD		;MESSAGE "CONTROL REGISTER ADDRESS-"
5424	025336	104405				PARAM		;CONVERT STRING TO OCTAL
5425	025340	160000				160000		;LOW LIMIT
5426	025342	163700				163700		;HIGH LIMIT
5427	025344	002042				DZCSR		;LOCATIONS TO BE FILLED
5428	025346	007			.BYTE	7		;LSB MASK
5429	025347	001			.BYTE	1		;NUMBER OF LOCATIONS
5430	025350	013737	002042	002046		MOV	DZCSR,DZBUF	;BEGIN BUILDING DEVICE ADDRESSES
5431	025356	062737	000002	002046		ADD	#2,DZBUF	;FORM THE READ BUFFER ADDRESS
5432	025364	013737	002046	002052		MOV	DZBUF,DZLPR	;REMEMBER THAT THIS IS ALSO LINE PARAMETER REG.
5433	025372	013737	002046	002056		MOV	DZBUF,DZTCR	;BEGIN BUILDING TRANSMITTER CONTROL REGISTER
5434	025400	062737	000002	002056		ADD	#2,DZTCR	;FORM THE TRANSMITTER CONTROL REGISTER POINTER
5435	025406	013737	002056	002060		MOV	DZTCR,HDZTCR	
5436	025414	005237	002060			INC	HDZTCR	
5437	025420	013737	002056	002066		MOV	DZTCR,DZTOR	;BEGIN FORMING TRANSMITTER DATA REGISTER
5438	025426	062737	000002	002066		ADD	#2,DZTOR	;FORM THE TRANSMITTER DATA REGISTER
5439	025434	013737	002066	002062		MOV	DZTOR,DZMSR	
5440	025442	032777	000002	153510	OTHER:	BIT	#SW01,BSWR	;RESELECT OF TEST?
5441	025450	001427				BEG	XBEGIN	;IF NOT, SKIP ASKING WHICH ONE
5442	025452	104403				INSTR		;INPUT WHICH TEST YOU ARE RUNNING
5443	025454	027652				MMICH		;ECHO OR CABLE
5444	025456	104416				PAWCH		;SET FLAG
5445	025460	027410				WCHFLG		;THIS FLAG
5446	025462	104403			BAUD:	INSTR		;INPUT BAUD RATE
5447	025464	027574				MSPEED		;MESSAGE "BAUD RATE-"
5448	025466	104415				PARAM		;CONVERT DECIMAL STRING TO OCTAL
5449	025470	000062				50.		;LOW LIMIT
5450	025472	022600				9600.		;HIGH LIMIT
5451	025474	027426				LINE SP		;LOCATION TO BE FILLED
5452	025476	000			.BYTE	0		;LSB MASK
5453	025477	001			.BYTE	1		;NUMBER OF LOCATIONS
5454	025500	104413			LINEX:	DEVICE.CLR		;CLEAR DEVICE
5455	025502	005037	027412			CLR	STFLG	;CLEAR PROGRAM START FLAG
5456	025506	104403				INSTR		;INPUT LINE NUMBER
5457	025510	027564				MLINE		;MESSAGE "LINE NUMBER-"
5458	025512	104405				PARAM		;CONVERT STRING TO OCTAL
5459	025514	000000				0		;LOW LIMIT
5460	025516	000007				7		;HIGH LIMIT

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5461	025520	001372				SAVLIN		LOCATION TO BE FILLED
5462	025522	000			.BYTE	0		LSB MASK
5463	025523	001			.BYTE	1		NUMBER OF LOCATIONS
5464	025524	004537	027214		JSR	RS,SET		
5465								
5466	025530	106427	000340		XBEGIN:	H7PS	#PR7	LOCK OUT INTERRUPTS
5467	025534	012706	001120			MOV	#STACK,SP	SET UP PROCESSOR STACK
5468	025540	005037	027414			CLR	LOCKUP	CLEAR TIMEOUT
5469	025544	005737	027410			TST	WCHFLG	ECHO OR CABLE TEST ?
5470	025550	001413				BEQ	24	ECHO
5471	025552	012737	026266	001126		MOV	#TEST2,#LPADR	CABLE TEST
5472	025560	005737	027412			TST	STFLG	ARE YOU LOOPING ?
5473	025564	001017				BNE	14	YES
5474	025566	005137	027412			COM	STFLG	NO
5475	025572	104402	027745			TYPE	,MCABLE	TYPE CABLE TEST
5476	025576	000412				BR	14	
5477	025600	012737	025630	001126	24:	MOV	#TEST1,#LPADR	SET UP ECHO TEST
5478	025606	005737	027412			TST	STFLG	ARE YOU LOOPING ?
5479	025612	001004				BNE	14	YES
5480	025614	005137	027412			COM	STFLG	NO
5481	025620	104402	027720			TYPE	,MTERM	TYPE ECHO TEST
5482	025624	000177	153276		14:	JMP	#LPADR	START TESTING
5483						THIS TEST WILL ACCEPT 1 CHARACTER AT A TIME		
5484						(IN INTERRUPT MODE) AND TRANSMIT THAT SAME CHARACTER.		
5485						ONE LINE AT A TIME, ANY LINE 0 THRU 7 (OCTAL)		
5486								
5487	025630	104413			TEST1:	DEVICE.CLR		CLEAR DZ11
5488	025632	012737	000001	001122		MOV	#1,#TSTNM	
5489	025640	013777	027434	154210		MOV	NUMTCR,BDZTCR	SET TCR BIT
5490	025646	013737	027432	001366		MOV	NUMLIN,PAR	SET PARAMETERS
5491	025654	053737	027430	001366		BIS	SPEED,PAR	SET BAUD RATE
5492	025662	013777	001366	154162		MOV	PAR,BDZLPR	LOAD PARAM.
5493	025670	012777	000040	154144		MOV	#HSENA,BDZCSR	SET SCANN ENABLE
5494	025676	005004				CLR	R4	
5495	025700	012705	027762			MOV	#MQUICK,R5	SET MESSAGE BUFFER
5496	025704	005777	154132		34:	TST	BDZCSR	TRDY?
5497	025710	100404				BMI	24	BR IF YES
5498	025712	104414				DELAY		WAIT
5499	025714	005304				DEC	R4	
5500	025716	001372				BNE	34	
5501	025720	104003				ERROR	3	NO TRDY SET! WHY?
5502	025722	005004			24:	CLR	R4	RESET COUNTER TO 0
5503	025724	112577	154136			MOVB	(R5)+,BDZTDR	LOAD CHAR
5504	025730	001365				BNE	34	
5505	025732	004737	007652			JSR	PC,SERV.G	<G>?
5506	025736	122777	000377	153214		CMPS	#377,BMR	RE-DO QUICK BROWN?
5507	025744	001731				BEQ	TEST1	BR IF REPEAT PATTERN
5508	025746	104413				DEVICE.CLR		
5509	025750	106427	000340			H7PS	#PR7	LOCK OUT INTERRUPTS
5510	025754	012737	026724	001360		MOV	#XEOP,NEXT	
5511	025762	104413				DEVICE.CLR		
5512	025764	013737	027432	001366		MOV	NUMLIN,PAR	SELECT LINE # & SET INTERRUPT ENABLE
5513	025772	053737	027430	001366		BIS	SPEED,PAR	SET LINE SPEED AND
5514								CHARACTER LENGTH (TRANS. & REC.)
5515	026000	052737	010000	001366		BIS	#RCVON,PAR	MAKE SURE RECEIVER IS TURNED ON
5516	026006	013777	001366	154036		MOV	PAR,BDZLPR	LOAD THE LINE PARAMETER REGISTER

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5517 026014 012777 026070 154050      MOV    #INTSVC,BDZRIV ;SET UP INTERRUPT SERVICE
5518 026022 013777 027436 154044      MOV    PRIO,BDZRI5 ;AND LEVEL
5519 026030 106437 030310              MTPS    #MLESS1 ;ALLOW INTERRUPTS
5520 026034 012777 000140 154000      MOV    #RIE!MSENAB,BDZCSR ;SET RECEIVER INTERRUPT ENABLE
5521 026042 104402 027612              TYPE    ,MCHAR ;TYPE "ANY CHARACTER"
5522 026046 105777 153112      14:   TSTB    #TKS ;IF SOMBODY HITS A KEY- GET NEW LINE #
5523 026052 100375              BPL      14 ;LOOP HERE
5524 026054 005777 153106              TST     #TKB ;CLEAR CHAR
5525 026060 004737 007652              JSR     PC,SERV.G ;MAKE SURE IT WASN'T <+G>
5526 026064 000137 025500              JMP     LINEX ;
5527
5528
5529                                     ;THE FOLLOWING IS THE RECEIVER INTERRUPT SVC ROUTINE
5530 026070 105777 153746      INTSVC: TSTB    BDZCSR ;TEST REC. FLAG
5531 026074 100401              BMI     .+4
5532 026076 104004              ERROR    4 ;ERROR - INTERRUPT NOT CAUSED BY FLAG
5533 026100 017737 153742 027440      MOV     BDZRBUF,RECDAT
5534 026106 100401              BMI     .+4
5535 026110 104023              ERROR    23 ;NON- VALID CHARACTER
5536 026112 032737 020000 027440      BIT     #BIT13,RECDAT ;CHECK FOR FRAMING ERROR
5537 026120 001401              BEQ     .+4 ;OR IF NO ERROR
5538 026122 104025              ERROR    25 ;EITHER SOMBODY HIT THE
5539                                     ;"BREAK KEY" OR YOU HAVE AN ERROR!
5540 026124 113737 027440 027442      MOVB    RECDAT,TBUF ;MOVE CHARACTER TO OUTPUT AREA
5541 026132 113737 027440 011272      MOVB    RECDAT,INBUF ;MOVE CHARACTER TO CHECK FOR +C
5542 026140 042737 177600 011272      BIC     #+C<177>,INBUF ;STRIP JUNK PLUS PARITY
5543 026146 042737 174377 027440      BIC     #174377,RECDAT ;SAVE ONLY LINE NUMBER
5544 026154 000337 027440              SWAB    RECDAT
5545 026160 023737 001372 027440      CMP     SAVLIN,RECDAT ;DOES THE LINE # COMPARE?
5546 026166 001401              BEQ     .+4
5547 026170 104015              ERROR    15 ;WRONG LINE NUMBER
5548 026172 012777 000040 153642      MOV     #MSENAB,BDZCSR ;START THE TRANSMITTERS SCANNER
5549 026200 123727 011272 000003      CMPB    INBUF,#3 ;IS IT A +C ?
5550 026206 001004              BNE     14 ;NO
5551 026210 104413              DEVICE.CLR
5552 026212 012716 026724              MOV     #XEOP,(SP) ;CRUNCH STACK
5553 026216 000002              RTI
5554 026220 005003      14:   CLR     R3 ;INITIALIZE DELAY
5555 026222 013777 027434 153626      MOV     NUMTCR,BDZTCR ;ENABLE THE LINE
5556 026230 005777 153606      104:  TST     BDZCSR ;TRANSMITTER READY?
5557 026234 100403              BMI     24 ;IF YES BRANCH
5558 026236 005203              INC     R3 ;INCREMENT DELAY
5559 026240 001373              BNE     104 ;DELAY DONE?
5560 026242 104003              ERROR    3 ;TRANSMIT READY NOT SET!
5561 026244 113777 027442 153614 24:  MOVB    TBUF,BDZTDR ;TRANSMIT THE CHARACTER
5562 026252 012777 000140 153562      MOV     #RIE!MSENAB,BDZCSR ;RESTART THE RECEIVER
5563 026260 005077 153572              CLR     BDZTCR ;CLEAR TCR BIT
5564 026264 000002              RTI
5565
5566
5567                                     ;THIS TEST TRANSMITS A BINARY COUNT PATTERN
5568                                     ;VIA INTERRUPT MODE TO THE RECEIVER
5569                                     ;...THE LINE UNDER TEST MUST BE TERMINATED WITH THE TEST CONNECTOR
5570 026266 106427 000340      TEST2: MTPS    #PR7 ;DISABLE INTERRUPTS
5571 026272 012737 000002 001122      MOV     #2,#TSTNM
5572 026300 012737 026724 001360      MOV     #XEOP,NEXT

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5573 026306 104413      DEVICE.CLR
5574                      ;*TEST TO VERIFY THAT SETTING DTR FOR A GIVEN LINE
5575                      ;*WILL BRING UP "CO" AND "RING" FOR THE SAME LINE
5576                      ;*THE DIST PNL MUST HAVE JUMPER FROM DTR TO RQST TO SEND
5577                      ;*IN ORDER FOR THIS TEST TO WORK!
5578 026310 012737 026316 001362      MOV     #14,LOCK      ;LOOP
5579 026316 113777 027434 153534 14:  MOV     NUMTCR,8DZTCR ;SET DTR
5580 026324 005005                      CLR     R5
5581 026326 153705 027434              BISB    NUMTCR,R5      ;BUILD EXPECTED
5582 026332 000305                      SWAB    R5              ;PUT IN HIGH BYTE
5583 026334 153705 027434              BISB    NUMTCR,R5      ;
5584 026340 104414                      DELAY
5585 026342 017704 153514              MOV     8DZMSR,R4      ;WAIT FOR CABLE DELAY
5586 026346 020504                      CMP     R5,R4          ;READY MODEM BITS
5587 026350 001401                      BEQ     24              ;ARE THEY OK?
5588 026352 104022                      ERROR    22             ;OR IF YES
5589                      ;IS THE TEST CONNECTOR ON?
5590                      ;HAS RIGHT LINE BEEN SELECTED?
5591                      ;IF SO- YOU HAVE A PROBLEM!
5592 026354 104401 24:                  SCOP1
5593 026356 104413 34:                  DEVICE.CLR
5594 026360 013737 027430 001366      MOV     SPEED,PAR      ;LOOP
5595 026366 053737 027432 001366      BIS     NUMLIN,PAR     ;INIT DZ11
5596 026374 052737 010000 001366      BIS     8RCVON,PAR    ;SET LINE SPEED
5597 026402 052777 040140 153432      BIS     8TIE!RIE!MSENAB,8DZCSR ;SELECT LINE # & REC. INTERRUPT ENABLE
5598 026410 012777 026524 153454      MOV     8INTREC,8DZRIV ;ENABLE THE RECEIVER FOR THIS LINE
5599 026416 013777 027436 153450      MOV     PRIO,8DZRIIS ;SET TRANSMITTER INTERRUPT ENABLE
5600 026424 012777 026704 153444      MOV     8INTRAN,8DZTIV ;SET UP INTR SERVICE
5601 026432 013777 027436 153440      MOV     PRIO,8DZTIS   ;SET UP LEVEL
5602 026440 005001                      CLR     R1              ;SET UP INTR SERVICE
5603 026442 005002                      CLR     R2              ;SET UP LEVEL
5604 026444 013777 001366 153400      MOV     PAR,8DZLPR     ;RX DATA POINTER- SET TO 0
5605 026452 106437 030310              MTPS    8DZLESS1      ;TX DATA POINTER- SET TO 0
5606 026456 013777 027434 153372      MOV     NUMTCR,8DZTCR ;SET THE PARAMETERS AND TURN ON RECEIVER
5607                      ;ALLOW INTERRUPTS
5608                      ;SET UP TCR BIT
5609 026464 105777 152474      SPIN:   TSTB    84TKS          ;YOU RETURN HERE AFTER EVERY RECEIVER INTERRUPT
5610 026470 100006                      BPL     14              ;IF SOMEBODY HITS A KEY- GET A NEW LINE #
5611 026472 005777 152470                      TST     84TKB          ;BR IF NO KEY HIT
5612 026476 004737 007652                      JSR     PC,SERV.G      ;CLEAR CHAR
5613 026502 000137 025500                      JMP     LINEX          ;MAKE SURE IT WASN'T <+G>
5614 026506 005237 027414 14:          INC     LOCKUP        ;SMO2=1
5615 026512 001364                      BNE     SPIN           ;INC TIMEOUT FLAG
5616 026514 104011                      ERROR    11             ;IF NOT 0 RETURN SPINNING
5617 026516 104413                      QUIT:   DEVICE.CLR    ;*RECEIVER FAILED TO INTERRUPT CHECK CABLE/TERMINATOR
5618 026520 000137 026724                      JMP     XEOP           ;CALL FOR END OF PASS
5619 026524 005037 027414      INTREC: CLR     LOCKUP        ;CLEAR TIMEOUT FLAG
5620 026530 105777 153306                      TSTB    8DZCSR          ;TEST REC DONE
5621 026534 100401                      BMI     .+4            ;YES
5622 026536 104004                      ERROR    4              ;*FALSE INTERRUPT
5623 026540 017737 153302 027440      MOV     8DZRBUF,RECDAT ;SAVE WORD
5624 026546 100401                      BMI     .+4            ;
5625 026550 104023                      ERROR    23             ;NON VALID CHARACTER
5626 026552 032737 040000 027440      BIT     8BIT14,RECDAT ;DATA OVERRUN ?
5627 026560 001401                      BEQ     .+4            ;NO
5628 026562 104024                      ERROR    24             ;*YES

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5629	026564	032737	020000	027440	BIT	#BIT13,RECDAT	;FRAMING ERROR ?
5630	026572	001401			BEQ	.+4	;NO
5631	026574	104025			ERROR	25	;+YES
5632	026576	032737	010000	027440	BIT	#BIT12,RECDAT	;PARITY ERROR ?
5633	026604	001401			BEQ	.+4	;NO
5634	026606	104026			ERROR	26	;+YES
5635	026610	110105			MOVB	R1,R5	;SET EXPECTED
5636	026612	042705	177400		BIC	#C<377>,R5	;CLEAR HIGH BYTE
5637	026616	113704	027440		MOVB	RECDAT,R4	;GET FOUND
5638	026622	042704	177400		BIC	#C<377>,R4	;CLEAR HIGH BYTE
5639	026626	020504			CMF	R5,R4 ;OK?	
5640	026630	001401			BEQ	.+4	
5641	026632	104005			ERROR	5	;DATA ERROR
5642	026634	042737	174377	027440	BIC	#174377,RECDAT	;SAVE ONLY LINE NUMBER
5643	026642	000337	027440		SWAB	RECDAT	
5644	026646	023737	001372	027440	CMF	SAVLIN,RECDAT	;DOES THE LINE # COMPARE ?
5645	026654	001401			BEQ	.+4	;YES
5646	026656	104015			ERROR	15	;+WRONG LINE #
5647	026660	120127	000377		CMFB	R1,#377	;LAST CHARACTER ?
5648	026664	001003			BNE	14	;NO
5649	026666	012716	026516		MOV	#QUITS,(SP)	;CRUNCH STACK
5650	026672	000403			BR	24	
5651	026674	105201			14: INCB	R1	;UPDATE EXPECTED DATA
5652	026676	012716	026464		24: MOV	#SPIN,(SP)	;CRUNCH STACK
5653	026702	000002			RTI		
5654							
5655	026704	005777	153132		INTRAN: TST	#DZCSR ;TEST TRANSMIT FLAG	
5656	026710	100401			BMI	.+4	
5657	026712	104003			ERROR	3	;+FALSE INTERRUPT
5658	026714	110277	153146		MOVB	R2,#DZTDR	;TRANSMIT A CHARACTER
5659	026720	105202			INCB	R2	;UPDATE TX DATA
5660	026722	000002			RTI	;RETURN	

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Address	Op Code	Operand 1	Operand 2	Comments
5661				
5662				END OF PASS
5663				RESTART TEST
5664				
5665	026724	104402		XEOP: TYPE ;TYPE NAME OF TEST
5666	026726	027522		MPASS
5667	026730	005037	027416	CLR LAST ;CLEAR LAST ERROR PC
5668	026734	105037	001123	CLRB #ERFLG ;CLEAR ERROR FLAG
5669	026740	000137	025530	RSTRT: JMP XBEGIN
5670				
5671				;CONVERT DECIMAL ASCII STRING TO OCTAL
5672	026744	011605		.PARMD: MOV (SP),R5
5673	026746	012537	027130	MOV (R5)+,6#
5674	026752	012537	027132	MOV (R5)+,7#
5675	026756	012537	027134	MOV (R5)+,8#
5676	026762	112537	027136	MOVB (R5)+,9#
5677	026766	112537	027137	MOVB (R5)+,10#
5678	026772	010516		MOV R5,(SP)
5679	026774	005005		2#: CLR R5
5680	026776	012704	011272	MOV #INBUF,R4
5681	027002	122714	000015	CMPB #15,(R4)
5682	027006	001424		BEQ 3#
5683	027010	121427	000060	1#: CMPB (R4),#0
5684	027014	002421		BLT 3#
5685	027016	121427	000071	CMPB (R4),#9
5686	027022	003016		BGT 3#
5687	027024	142714	000060	BICB #0,(R4)
5688	027030	005002		CLR R2
5689	027032	152402		BISB (R4)+,R2
5690	027034	060205		ADD R2,R5
5691	027036	122714	000015	CMPB #15,(R4)
5692	027042	001410		BEQ 4#
5693	027044	006305		ASL R5 ;X2
5694	027046	010502		MOV R5,R2 ;SAVE X2
5695	027050	006305		ASL R5 ;X4
5696	027052	006305		ASL R5 ;X8
5697	027054	060205		ADD R2,R5 ;TIMES 10
5698	027056	000754		BR 1#
5699	027060	104404		3#: INSTER
5700	027062	000744		BR 2#
5701				
5702				;TEST TO SEE IF NUMBER IS WITHIN LIMITS
5703				
5704	027064	020537	027132	4#: CMP R5,7#
5705	027070	101373		BHI 3#
5706	027072	020537	027130	CMR R5,6#
5707	027076	103770		BLO 3#
5708	027100	133705	027136	BITB 9#,R5
5709	027104	001365		BNE 3#
5710				
5711				;STORE NUMBER AT SPECIFIED ADDRESS
5712				
5713	027106	013704	027134	MOV 8#,R4
5714	027112	010524		5#: MOV R5,(R4)+
5715	027114	062705	000002	ADD #2,R5
5716	027120	105337	027137	DECB 10#

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5717 027124 001372      BNE      54
5718 027126 000002      RTI
5719 027130 000000      64:      0
5720 027132 000000      74:      0
5721 027134 000000      84:      0
5722 027136      000      94:      .BYTE 0
5723 027137      000     104:      .BYTE 0
5724
5725
5726      ;COMPARE THE FIRST CHARACTER IN THE TELETYPE INPUT
5727      ;BUFFER TO THE CHARACTERS "E" AND "C".
5728      ;IF THE CHARACTER IS "E" CLEAR THE FLAG
5729      ;IF THE CHARACTER IS "C" SET THE FLAG
5730
5731 027140 017605 000000 .PAWCH:MOV      B(SP),R5
5732 027144 142737 000040 011272 BICB      #40,INBUF      ;SET FOR LOWER CASE INPUT
5733 027152 122737 000105 011272 CMPB      #'E,INBUF      ;IS IT "E" ?
5734 027160 001002      BNE      14
5735 027162 105015      CLRB      (R5)      ;000
5736 027164 000406      BR       24
5737 027166 122737 000103 011272 14:      CMPB      #'C,INBUF      ;IS IT "C" ?
5738 027174 001005      BNE      34
5739 027176 112715 177777      MOVB      #-1,(R5)      ;3177
5740 027202 062716 000002      24:      ADD      #2,(SP)
5741 027206 000002      RTI
5742 027210 104404      34:      INSTER      ;RETRY
5743 027212 000752      BR       .PAWCH
5744
5745
5746
5747      ;THIS ROUTINE CONVERTS LINE SPEED (LINESP) AND
5748      ;LINE NUMBER (SAVLIN) FOR DZLPR, DZTCR AND DZCSR
5749      ;REGISTER USAGE.
5750
5751 027214 013737 001372 027432 SET:      MOV      SAVLIN,NUMLIN      ;SAVE SAVLIN
5752 027222 013700 001372      XTCR0:  MOV      SAVLIN,R0      ;COPY THE LINE NUMBER FOR LOOP CONTROL
5753 027226 005037 027434      CLR      NUMTCR      ;SET A DEFAULT OF LINE 0 OR NO LINES
5754 027232 012702 000001      MOV      #1,R2      ;SET A BIT POINTER TO THE FIRST LINE
5755 027236 005300      XTCR1:  DEC      R0      ;REDUCE THE INDICATOR.IS IT MINUS YET?
5756 027240 100402      BMI      SET1      ;IF SO, R2 POINTS TO THE RIGHT LINE
5757 027242 006302      ASL      R2      ;IF NOT, MOVE THE POINTER TO THE NEXT LINE
5758 027244 000774      BR       XTCR1      ;GO SEE IF THIS LINE IS THE ONE
5759 027246 012701 027310      SET1:  MOV      #TABLE2,R1
5760 027252 010237 027434      MOV      R2,NUMTCR      ;COPY THE CORRECT BIT POINTER
5761 027256 022137 027426      14:      CMP      (R1)+,LINESP
5762 027262 001407      BEQ      24
5763 027264 005721      TST      (R1)+      ;IS IT THE END OF TABLE?
5764 027266 001373      BNE      14      ;NO
5765 027270 104402 027536      TYPE      ,MINVAL      ;INVALID BAUD RATE,BEGIN AGAIN
5766 027274 012705 025462      MOV      #BAUD,R5      ;JUMP TO BAUD THRU R5
5767 027300 000402      BR       34
5768 027302 011137 027430      24:      MOV      (R1),SPEED      ;SET UP BAUD RATE
5769 027306 000205      34:      RTS      R5
5770
5771
5772

```

				THE FOLLOWING IS A TABLE OF LEGAL BAUD RATES (8 BITS/CHAR)	
5773				TABLE2:	.WORD 50.
5774	027310	000062			:50 BAUD
5775	027312	010070			:
5776	027314	000113			:75 BAUD
5777	027316	010470			:
5778	027320	000156			:110 BAUD
5779	027322	011070			:TWO STOP BITS
5780	027324	000207			:134.5 BAUD
5781	027326	011470			:TWO STOP BITS
5782	027330	000226			:150 BAUD
5783	027332	012070			:TWO STOP BITS
5784	027334	000454			:300 BAUD
5785	027336	012430			:ONE STOP BIT
5786	027340	001130			:600 BAUD
5787	027342	013030			:ONE STOP BIT
5788	027344	002250			:1200 BAUD
5789	027346	013430			:ONE STOP BIT
5790	027350	003410			:1800 BAUD
5791	027352	014030			:ONE STOP BIT
5792	027354	003720			:2000 BAUD
5793	027356	014430			:ONE STOP BIT
5794	027360	004540			:2400 BAUD
5795	027362	015030			:ONE STOP BIT
5796	027364	007020			:3600 BAUD
5797	027366	015430			:ONE STOP BIT
5798	027370	011300			:4800 BAUD
5799	027372	016030			:ONE STOP BIT
5800	027374	016040			:7200 BAUD
5801	027376	016430			:ONE STOP BIT
5802	027400	022600			:9600 BAUD
5803	027402	017070			:
5804	027404	177777	000000		:TABLE TERMINATOR
5805					
5806					
5807	027410	000000		WCHFLG: 0	:ECHO OR CABLE FLAG
5808	027412	000000		STFLG: 0	:PROGRAM START FLAG
5809	027414	000000		LOCKUP: 0	:TIMEOUT FLAG
5810	027416	000000		LAST: 0	:LAST ERROR PC
5811	027420	000000		TDATA: 0	
5812	027422	000000		RDATA: 0	
5813	027424	000000		BYTCNT: 0	
5814	027426	000156		LINESP: 110.	:DEFAULT BAUD RATE
5815	027430	006307		SPEED: 6307	:DEFAULT 110 BAUD, 8 BITS/CHAR.
5816					:FDX, 2 STOP BITS
5817	027432	000100		NUMLIN: 100	:DEFAULT VALUE, REC. INTERRUPT ENABLED
5818					
5819	027434	000001		NUMTCR: 1	:DEFAULT VALUE, TCR BIT 0
5820	027436	000240		PRI0: 240	:DEFAULT DEVICE PRIORITY 5
5821	027440	000000		RECDAT: 0	
5822	027442	000000		TBUF: 0	
5823	027444	053200	041505	047524	MVCTO: .ASCIZ <200>/VECTOR ADDRESS- /
	027466	041600	047117	051124	MREGAD: .ASCIZ <200>/CONTROL REGISTER ADDRESS- /
	027522	050200	051501	020123	MPASS: .ASCIZ <200>/PASS DONE./
	027536	044600	053116	046101	MINVAL: .ASCIZ <200>/INVALID BAUD RATE - /
	027564	046200	047111	035105	MLINE: .ASCIZ <200>/LINE: /
	027574	041200	052501	020104	MSPEED: .ASCIZ <200>/BAUD RATE - /

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```

027612 052200 050131 020105 MCHAR: .ASCIZ <200>/TYPE A CHAR. ON DZ11 TERMINAL /
027652 053600 044510 044103 MMICH: .ASCIZ <200>/WHICH TEST ? ECHO OR CABLE (E OR C) /
027720 052200 051105 044515 MTERM: .ASCIZ <200>/TERMINAL ECHO TEST /
027745      200 040503 046102 MCABLE: .ASCIZ <200>/CABLE TEST /
027762 006777 177777 177412 MQUICK: .ASCII <377><15><377><377><12><377><377>
027771      124 042510 050440      .ASCII /THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 0123456789/
030066 006777 177777 177412      .ASCII <377><15><377><377><12><377><377><377><0>
030100

```

.EVEN

;*****

;UTILITIES

;*****

;THIS UTILITY CALCULATES PRIORITY LEVEL,SETS UP CSR'S,SETS UP VECTORS.

```

DZLEV:  ASL      DZPRT      ;BUILD PRIORITY IN THIS LOCATION
        ASL      DZPRT      ;USING ARITHMETIC SHIFTS, ROTATE
        ASL      DZPRT      ;      THE PRIORITY LEVEL PAST
        ASL      DZPRT      ;      THE BIT POSITIONS CORRE-
        ASL      DZPRT      ;      SPONDING TO THE CONDITION CODES
        MOV      DZPRT,LESS1 ;MOVE THIS TO LESS1
        SUB      #1,LESS1    ;CREATE THE NEXT LOWEST PRIORITY
        BIC      #37,LESS1   ;INSURE THAT THE TNZVC BITS ARE CLEAR
        MOV      DZRV,RO     ;PLACE THE BASE VECTOR ADDRESS IN RO
        ADD      #2,RO       ;CALCULATE THE RECEIVER INTERRUPT STATUS ADDR.
        MOV      RO,DZRV     ;STORE IT HERE
        ADD      #2,RO       ;CALCULATE THE TRANSMITTER INTERRUPT VECTOR
        MOV      RO,DZTIV    ;STORE IT HERE
        ADD      #2,RO       ;CALCULATE THE TRANSMITTER VECTOR STATUS ADDRESS
        MOV      RO,DZTIS    ;STORE IT HERE

```

;THIS SEGMENT SETS UP POINTERS FOR THE GIVEN DZ11. #BASE IS THE BASE ADDRESS
;OF THE DEVICE

```

        MOV      #BASE,RO    ;COPY THE ADDRESS BEING LOADED
        MOV      RO,DZCSR    ;XXX0
        INC      RO
        MOV      RO,HDZCSR   ;XXX1
        INC      RO
        MOV      RO,DZRBUF   ;XXX2
        MOV      RO,DZLPR    ;XXX2
        INC      RO
        MOV      RO,HDZRBUF  ;XXX3
        MOV      RO,HDZLPR   ;XXX3
        INC      RO
        MOV      RO,DZTCR    ;XXX4
        INC      RO
        MOV      RO,HDZTCR   ;XXX5
        INC      RO
        MOV      RO,DZMSR    ;XXX6
        MOV      RO,DZTDR    ;XXX6
        INC      RO
        MOV      RO,HDZMSR   ;XXX7
        MOV      RO,HDZTDR   ;XXX7
        RTS      PC

```

DZPRT: PR5
LESS1: PR4

;LEVEL TO ALLOW INTERRUPTS

5824
5825
5826
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5831
5832
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5856
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030100 006337 030306
030104 006337 030306
030110 006337 030306
030114 006337 030306
030120 006337 030306
030124 013737 030306 030310
030132 162737 000001 030310
030140 042737 000037 030310
030146 013700 002072
030152 062700 000002
030156 010037 002074
030162 062700 000002
030166 010037 002076
030172 062700 000002
030176 010037 002100
030202 013700 001310
030206 010037 002042
030212 005200
030214 010037 002044
030220 005200
030222 010037 002046
030226 010037 002052
030232 005200
030234 010037 002050
030240 010037 002054
030244 005200
030246 010037 002056
030252 005200
030254 010037 002060
030260 005200
030262 010037 002062
030266 010037 002066
030272 005200
030274 010037 002064
030300 010037 002070
030304 000207
030306 000240
030310 000200

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			;ERROR ERROR TABLE	
	.ERRTAB:			
5870				
5871	030312	000000	0	;ERROR 0
5872	030314	000000	0	
5873	030316	000000	0	
5874				
5875	030320	030540	EM1	;ERROR
5876	030322	032045	DM1	
5877	030324	032276	DT1	
5878				
5879	030326	030613	EM2	;ERROR 2
5880	030330	032070	DM2	
5881	030332	032310	DT2	
5882				
5883	030334	030641	EM3	;ERROR 3
5884	030336	032123	DM3	
5885	030340	032326	DT3	
5886				
5887	030342	030700	EM4	;ERROR 4
5888	030344	032123	DM3	
5889	030346	032326	DT3	
5890				
5891	030350	030727	EM5	;ERROR 5
5892	030352	032135	DM4	
5893	030354	032334	DT4	
5894				
5895	030356	030756	EM6	;ERROR 6
5896	030360	032135	DM4	
5897	030362	032334	DT4	
5898				
5899	030364	031014	EM7	;ERROR 7
5900	030366	032123	DM3	
5901	030370	032326	DT3	
5902				
5903	030372	031055	EM8	;ERROR 10
5904	030374	032123	DM3	
5905	030376	032326	DT3	
5906				
5907	030400	031117	EM9	;ERROR 11
5908	030402	032123	DM3	
5909	030404	032326	DT3	
5910				
5911	030406	031155	EM10	;ERROR 12
5912	030410	032123	DM3	
5913	030412	032326	DT3	
5914				
5915	030414	031214	EM13	;ERROR 13
5916	030416	032123	DM3	
5917	030420	032326	DT3	
5918				
5919	030422	031245	EM14	;ERROR 14
5920	030424	032123	DM3	
5921	030426	032326	DT3	
5922				
5923	030430	031277	EM15	;ERROR 15
5924	030432	000000	0	
5925	030434	000000	0	

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5926			
5927	030436	031341	EM16
5928	030440	032123	DM3
5929	030442	032326	DT3
5930			
5931	030444	031412	EM17
5932	030446	032123	DM3
5933	030450	032326	DT3
5934			
5935	030452	031450	EM20
5936	030454	032123	DM3
5937	030456	032326	DT3
5938			
5939	030460	031511	EM21
5940	030462	032164	DM5
5941	030464	032352	DT5
5942			
5943	030466	031541	EM22
5944	030470	032135	DM4
5945	030472	032334	DT4
5946			
5947	030474	031603	EM23
5948	030476	032123	DM3
5949	030500	032326	DT3
5950			
5951	030502	031633	EM24
5952	030504	032123	DM3
5953	030506	032326	DT3
5954			
5955	030510	031661	EM25
5956	030512	032123	DM3
5957	030514	032326	DT3
5958			
5959	030516	031711	EM26
5960	030520	032123	DM3
5961	030522	032326	DT3
5962			
5963	030524	031740	EM27
5964	030526	032123	DM3
5965	030530	032326	DT3
5966			
5967	030532	032010	EM30
5968	030534	032243	DM6
5969	030536	032374	DT6
5970			

CZDZA-MO MACY11 30A(1052) 19-JUN-84 16:22 PAGE 119
 CZDZAM.P11 19-JUN-84 15:45 CZDZA DZ11 DEVICE DIAGNOSTICS.

5971
 5972

Address	Offset	Value	Label	Message
030540	047200	020117	046123	EM1: .ASCIZ <200>/NO SLAVE SYNC RESPONSE FROM DZ11 REGISTER/
030613	200	042522	044507	EM2: .ASCIZ <200>/REGISTER R/W FAILURE?
030641	200	051124	047101	EM3: .ASCIZ <200>/TRANSMIT READY (TROY) NOT SET/
030700	051200	041505	044505	EM4: .ASCIZ <200>/RECEIVER DONE NOT SET/
030727	200	040504	040524	EM5: .ASCIZ <200>/DATA COMPARISON ERROR/
030756	042200	030532	020061	EM6: .ASCIZ <200>/DZ11 RECEIVER BUFFER ERROR/
031014	052200	040522	051516	EM7: .ASCIZ <200>/TRANSMITTER FAILED TO INTERRUPT/
031055	200	047125	054105	EM8: .ASCIZ <200>/UNEXPECTED TRANSMITTER INTERRUPT/
031117	200	042522	042503	EM9: .ASCIZ <200>/RECEIVER FAILED TO INTERRUPT/
031155	200	047125	054105	EM10: .ASCIZ <200>/UNEXPECTED RECEIVER INTERRUPT/
031214	051600	046111	020117	EM13: .ASCIZ <200>/SILO ALARM SET TOO SOON/
031245	200	044523	047514	EM14: .ASCIZ <200>/SILO ALARM FAILED TO SET/
031277	200	041501	044524	EM15: .ASCIZ <200>/ACTION DETECTED ON INVALID LINE./
031341	200	042522	042101	EM16: .ASCIZ <200>/READING DZ11BUF DID NOT CLEAR SILO ALARM/
031412	042200	052101	020101	EM17: .ASCIZ <200>/DATA VALID SHOULD NOT BE SET/
031450	051200	041505	044505	EM20: .ASCIZ <200>/RECEIVER DONE SHOULD NOT BE SET/
031511	200	042522	040514	EM21: .ASCIZ <200>/RELATIVE TIMING ERROR./
031541	200	047515	042504	EM22: .ASCIZ <200>/MODEM SIGNAL ERROR ON CABLE TEST/
031603	200	040504	040524	EM23: .ASCIZ <200>/DATA VALID IS NOT SET!//
031633	200	040504	040524	EM24: .ASCIZ <200>/DATA OVERRUN IS SET!//
031661	200	051106	046501	EM25: .ASCIZ <200>/FRAMING ERROR OCCURRED/
031711	200	040520	044522	EM26: .ASCIZ <200>/PARITY ERROR OCCURRED/
031740	043200	046125	020114	EM27: .ASCIZ <200>/FULL BINARY COUNT PATTERN NOT RECEIVED/
032010	041200	052501	020104	EM30: .ASCIZ <200>/BAUD RATE TIMING TEST ERROR/
032045	200	051124	050101	DM1: .ASCIZ <200>/TRAP PC DZ11 REG/
032070	042600	050130	041505	DM2: .ASCIZ <200>/EXPECTED FOUND REGISTER/
032123	200	044514	042516	DM3: .ASCIZ <200>/LINE NO./
032135	200	054105	042520	DM4: .ASCIZ <200>/EXPECTED FOUND LINE/
032164	052200	020130	044514	DM5: .ASCIZ <200>/TX LINE PREVIOUS TIME ACTUAL TIME PARAMETER/
032243	200	044510	044107	DM6: .ASCIZ <200>/HIGH LOW COUNT LINE/

.EVEN

DATA TABLES FOR ERROR MESSAGES

Address	Offset	Value	Label	Message
032276	000002		DT1:	2
032300	006	003		.BYTE 6,3
032302	001204			REG1
032304	006	001		.BYTE 6,1
032306	001202			REG0
032310	000003		DT2:	3
032312	006	004		.BYTE 6,4
032314	001214			REG5
032316	006	001		.BYTE 6,1
032320	001212			REG4
032322	006	001		.BYTE 6,1
032324	001202			REG0
032326	000001		DT3:	1
032330	003	001		.BYTE 3,1
032332	001372			SAVLIN
032334	000003		DT4:	3
032336	006	004		.BYTE 6,4
032340	001214			REG5
032342	006	001		.BYTE 6,1
032344	001212			REG4

CZDZA-HO MACY11 30A(1052) 19-JUN-84 16:22 PAGE 120
 CZDZAH.P11 19-JUN-84 15:45 CZDZA DZ11 DEVICE DIAGNOSTICS.

032346	003	001	.BYTE	3,1	
032350	001372		SAVLIN		
032352	000004		DT5:	4	
032354	003	005	.BYTE	3,5	
032356	001372		SAVLIN		
032360	006	011	.BYTE	6,9.	
032362	001214		#REG5		
032364	006	007	.BYTE	6,7	
032366	001220		#TMP1		
032370	006	001	.BYTE	6,1	
032372	001400		REGIST		
032374	000004		DT6:	4	;FOR BAUD RATE ERROR MESSAGE
032376	006	001	.BYTE	6,1	
032400	024110		DCOUNT		;HIGH COUNTER
032402	006	001	.BYTE	6,1	
032404	024104		CCOUNT		;LOW COUNTER
032406	006	001	.BYTE	6,1	
032410	024106		BCOUNT		;ACTUAL XMIT COUNT
032412	001	001	.BYTE	1,1	
032414	001372		SAVLIN		;THE LINE NUMBER ERROR OCCURED ON

TABLE OF DELAY TIMES FOR INDIVIDUAL BAUD RATES

032416	002450	DLYTBL:	2450	;TIME FOR	50 BAUD
032420	001560		1560	;TIME FOR	75 BAUD
032422	001120		1120	;TIME FOR	110 BAUD
032424	000750		750	;TIME FOR	134 BAUD
032426	000660		660	;TIME FOR	150 BAUD
032430	000330		330	;TIME FOR	300 BAUD
032432	000150		150	;TIME FOR	600 BAUD
032434	000060		60	;TIME FOR	1200 BAUD
032436	000040		40	;TIME FOR	1800 BAUD
032440	000030		30	;TIME FOR	2000 BAUD
032442	000020		20	;TIME FOR	2400 BAUD
032444	000010		10	;TIME FOR	3600 BAUD
032446	000001		1	;TIME FOR	4800 BAUD
032450	000001		1	;TIME FOR	7200 BAUD
032452	000001		1	;TIME FOR	9600 BAUD
032454	000001		1	;TIME OF DELAY FOR	19200 BAUD

;DELAYS WERE COMPUTED TO ALLOW MAXIMUM TIME AT EACH BAUD RATE
 ;FOR ALL TESTS TO FUNCTION CORRECTLY ON A PDP11/45 WITH BIPOLAR
 ;MEMORY. THE TIMES WERE ALSO TESTED ON AN 11/40 AND 11/10.

032456		CORMAX:	
001512	001512		.-MANTO
	100000		100000
	000001		.END

Variable	Value	Variable	Value	Variable	Value	Variable	Value	Variable	Value	Variable	Value	Variable	Value	Variable	Value	Variable	Value
ABASE	160010	796	1208	1249													
ACDW1	000000	1208	1251														
ACDW2	000000	1208	1252														
ACPUOP	000000	1208	1223														
ACTIVE	001412	1311	1642	2816	2817	2819	2824	2825	2826	2829							
ADDW0	000000	1208	1253														
ADDW1	000000	1208	1254														
ADDW10	000000	1208	1263														
ADDW11	000000	1208	1264														
ADDW12	000000	1208	1265														
ADDW13	000000	1208	1266														
ADDW14	000000	1208	1267														
ADDW15	000000	1208	1268														
ADDW2	000000	1208	1255														
ADDW3	000000	1208	1256														
ADDW4	000000	1208	1257														
ADDW5	000000	1208	1258														
ADDW6	000000	1208	1259														
ADDW7	000000	1208	1260														
ADDW8	000000	1208	1261														
ADDW9	000000	1208	1262														
ADEVCT	000000	1208	1214														
ADEVH	000000	1208	1250														
ADRCNT	006645	2334	2371	2381													
ADVANC	104400	1521	3080	3377	3589	3603	3650	3659	3810	4413	4538	4795	4843	4970			
		5038	5087	5159	5187	5202	5215										
AENV	000000	1208	1219														
AENVH	000000	1208	1220														
AFATAL	000000	1208	1211														
AMADR1	000000	1208	1236														
AMADR2	000000	1208	1240														
AMADR3	000000	1208	1243														
AMADR4	000000	1208	1246														

CROSS REFERENCE TABLE -- USER SYMBOLS

[illegible]

[illegible]

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 CZDZAH.P11 19-JUN-84 15:45 CROSS REFERENCE TABLE -- USER SYMBOLS

DZCR1	001514	1379*	1813											
DZCR10	001640	1442*												
DZCR11	001654	1451*												
DZCR12	001670	1460*												
DZCR13	001704	1469*												
DZCR14	001720	1478*												
DZCR15	001734	1487*												
DZCR16	001750	1496*												
DZCR17	001764	1505*												
DZCR2	001530	1388*												
DZCR3	001544	1397*												
DZCR4	001560	1406*												
DZCR5	001574	1415*												
DZCR6	001610	1424*												
DZCR7	001624	1433*												
DZCSR	002042	1575*	2026	2477*	2478	2485*	3055	3099	3135	3173	3211	3249	3287	3431
		3474	3694	3753*	3757	3761	3786	3807	3814	3855*	3859	3863	3888	3937*
		3939	3967	3988	4031*	4055	4108*	4111	4126*	4132*	4136	4191*	4194	4206*
		4211*	4217*	4221	4236*	4276*	4290	4295	4303	4309	4314*	4315*	4356*	4389*
		4398	4404*	4410	4434*	4461	4466	4476	4482	4518	4544*	4548*	4553*	4595*
		4607	4617	4623	4627	4683*	4684*	4685*	4706	4731	4739	4880*	4882	4958*
		4962	5026*	5030	5168*	5181	5248	5252*	5285*	5304	5346*	5427	5430	5493*
		5496	5520*	5530	5548*	5556	5562*	5597*	5620	5655	5847*			
DZLEV	030100	2838	5828*											
DZLPR	002052	1579*	3443*	3520*	3528*	3746*	3842*	3930*	4025*	4094*	4177*	4266*	4383*	4442*
		4581*	4671*	4849*	4860*	4937*	5005*	5175*	5432*	5492*	5516*	5604*	5852*	
DZLV0	001504	1372*	1730	1734	1766*	1769*								
DZLV1	001520	1381*												
DZLV10	001644	1444*												
DZLV11	001660	1453*												
DZLV12	001674	1462*												
DZLV13	001710	1471*												
DZLV14	001724	1480*												
DZLV15	001740	1489*												
DZLV16	001754	1498*												
DZLV17	001770	1507*												
DZLV2	001534	1390*												
DZLV3	001550	1399*												
DZLV4	001564	1408*												
DZLV5	001600	1417*												
DZLV6	001614	1426*												
DZLV7	001630	1435*												
DZMSR	002062	1583*	3073	3549	3590	3653	5439*	5585	5861*					
DZNUM	001410	1308*	1639	1803*	2003	2932*	2973*	2974	2980	2982				
DZPRT	030306	2832*	2833	2834*	4100*	4106	4107	4130	4131	4189	4190	4215	4216	4273
		4275	4877	4878	4956	4957	5024	5025	5828*	5829*	5830*	5831*	5832*	5833
		5867*												
DZRBUF	002046	1577*	3061	3518	3792	3853	3894	3971	3992	4032	4061	4287	4325	4514
		4528	4600	4734	5221	5232	5307	5312	5430*	5431*	5432	5433	5533	5623
		5851*												
DZRI5	002074	1589*	4106*	4130*	4189*	4215*	4273*	4357	4358*	4594*	4680*	4791	4792*	4877*
		4956*	5024*	5518*	5599*	5838*								
DZRIV	002072	1588*	2029	2831*	4105*	4129*	4188*	4214*	4272*	4357*	4593*	4622*	4679*	4791*
		4876*	4955*	5023*	5419	5517*	5598*	5836						
DZTCR	002056	1581*	3067	3324	3372	3444*	3700*	3756*	3797*	3858*	3901*	3936*	3954*	3962*
		4035*	4068*	4101*	4184*	4286*	4349*	4396*	4460*	4532*	4547*	4605*	4643*	4686*

CROSS REFERENCE TABLE -- USER SYMBOLS

		4726*	4879*	4960*	5028*	5172*	5283*	5433*	5434*	5435	5437	5489*	5555*	5563*
DZTDR	002066	5606*	5857*											
		1585*	3551*	3558*	3767*	3816*	3869*	3959*	4037*	4134*	4219*	4301*	4405*	4472*
DZTIS	002100	4556*	4613*	4625*	4723*	5183*	5270*	5437*	5438*	5439	5503*	5561*	5658*	5862*
		1591*	4107*	4131*	4190*	4216*	4275*	4359	4360*	4682*	4793	4794*	4878*	4957*
DZTIV	002076	5025*	5601*	5842*										
		1590*	4104*	4128*	4187*	4213*	4274*	4359*	4545*	4681*	4793*	4875*	4954*	5022*
		5600*	5840*											
DZV	- ***** U	2777												
DZVC0	001502	1371*	1716	1720	3033									
DZVC1	001516	1380*												
DZVC10	001642	1443*												
DZVC11	001656	1452*												
DZVC12	001672	1461*												
DZVC13	001706	1470*												
DZVC14	001722	1479*												
DZVC15	001736	1488*												
DZVC16	001752	1497*												
DZVC17	001766	1506*												
DZVC2	001532	1389*												
DZVC3	001546	1398*												
DZVC4	001562	1407*												
DZVC5	001576	1416*												
DZVC6	001612	1425*												
DZVC7	001626	1434*												
DZ. END	002000	1513*	1685	2817	2826	2930								
DZ. MAP	001500	1311	1367*	1642	1682	1912	2819	2829	2879	2927	2933	3004		
EIAFLG	001414	1316*	2833*	3375	3587	3651								
EIGHT -	000030	1004*	4829	4832										
EIGHTS-	000070	1008*												
ENTVEC-	000030	923*	1633*	1634*										
EM1	030540	5875	5972*											
EM10	031155	5911	5972*											
EM13	031214	5915	5972*											
EM14	031245	5919	5972*											
EM15	031277	5923	5972*											
EM16	031341	5927	5972*											
EM17	031412	5931	59											

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CZDZA-HO MACY11 30A(1052) 19-JUN-84 16:22 PAGE 128
 CZDZAH.P11 19-JUN-84 15:45 CROSS REFERENCE TABLE -- USER SYMBOLS

LINE7	001632	1436*													
LOBITS	006644	2333*	2363	2380*											
LOCK	001362	1293*	2112	2114	2501*	2538	3054*	3060*	3066*	3072*	3326*	3355*	3374*	3413*	
		3586*	3647*	3737*	3833*	3907*	4014*	4071*	4433*	4572*	4649*	4824*	5578*		
LOCKUP	027414	5468*	5614*	5619*	5809*										
LOLIM	006636	2330*	2361	2377*											
LP0	= 000000	992*													
LP1	= 000001	993*													
LP2	= 000002	994*													
LP3	= 000003	995*													
LP4	= 000004	996*													
LP5	= 000005	997*													
LP6	= 000006	998*													
LP7	= 000007	999*													
MAINT	= 000010	944*	2101	2752	3136	3476	3489								
MANT0	001512	1375*	1779	1858	2991	5972									
MANT1	001526	1384*													
MANT10	001652	1447*													
MANT11	001666	1456*													
MANT12	001702	1465*													
MANT13	001716	1474*													
MANT14	001732	1483*													
MANT15	001746	1492*													
MANT16	001762	1501*													
MANT17	001776	1510*													
MANT2	001542	1393*													
MANT3	001556	1402*													
MANT4	001572	1411*													
MANT5	001606	1420*													
MANT6	001622	1429*													
MANT7	001636	1438*													
MASTEK	010766	2540	2730*												
MBADLN	011075	1867	2730*												
MCABLE	027745	5475	5823*												
MCHAR	027612	5521	5823*												
MCSRX	010716	1991	2545	2730*											
MDATA	011376	2434	2444	2774*											
MEPASS	010535	1990	2730*												
MERRPC	011043	2543	2730*												
MERRX	010743	1999	2730*												
MERR2	010574	2730*	2807	2995											
MERR3	010643	1929	2730*												
MINVAL	027536	5765	5823*												
MLINE	027564	5457	5823*												
MLOCK	010667	1964	2730*												
MNEW	010771	1924	2730*												
MNTFLG	001417	1319*	2098*	2101*	2485	2747*	2752*	2757*							
MODE	001370	1300*	2099	2837*	3594	3648	3770	3872	4015	4040	4330	4500	4850	4923	
		4991													
MPASS	027522	5666	5823*												
MPASSX	010732	1996	2730*												
MPFAIL	010472	2723	2730*												
MQUICK	027762	5495	5823*												
MR	010560	1969	2730*												
MREGAD	027466	5423	5823*												
MSENAB	= 000040	946*	3174	3445	3446	3476	3489	3695	3701	3753	3855	3937	4031	4108	

[illegible]

[illegible]

CROSS REFERENCE TABLE -- USER SYMBOLS

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CZDZA-MO MACY11 30A(1052) 19-JUN-84 16:22 PAGE 132
 CZDZAH.P11 19-JUN-84 15:45 CROSS REFERENCE TABLE -- USER SYMBOLS

S150	=	002000	10210															
S1800	=	004000	10250															
S19200	=	007400	10320															
S2000	=	004400	10260															
S2400	=	005000	10270															
S300	=	002400	10220															
S3600	=	005400	10280															
S4800	=	006000	10290															
S50	=	000000	10170	4829	4832													
S600	=	003000	10230															
S7200	=	006400	10300															
S75	=	000400	10180															
S9600	=	007000	10310															
TABLE2		027310	5759	57740														
TBITVE	=	000014	9180															
TBUF		027442	55400	5561	58220													
TCCONT		024206	5071	5083	51480													
TCR0	=	000001	10360	3325	3444													
TCR1	=	000002	10370															
TCR2	=	000004	10380															
TCR3	=	000010	10390															
TCR4	=	000020	10400															
TCR5	=	000040	10410															
TCR6	=	000100	10420															
TCR7	=	000200	10430															
TDATA		027420	58110															
TD0		001422	13230	3848	3869	3885	38990	4134	4219	4448	4472	44730	4587	4613	46140			
			4615	4625	4675	4723	47240	4833	4866	4948	5016	5270	52710	5275				
TD1		001424	13240															
TD2		001426	13250															
TD3		001430	13260															
TD4		001432	13270															
TD5		001434	13280															
TD6		001436	13290															
TD7		001440	13300															
TEIGHT		002140	16140															
TEMP		011334	27720															
TEST1		025630	5477	54870	5507													
TEST2		026266	5471	55700														
TFIVE		002146	16170															
TIE	=	040000	9510	3288	3476	4108	4126	4191	4206	4211	4314	4356	4548	4553	4684			
			4880	4958	5026	5248	5285	5597										
TKVEC	=	000060	9250															
TLAST	=	023730	2866	59720														
TL0	=	000000	9590															
TL1	=	000400	9600															
TL2	=	001000	9610															
TL3	=	001400	9620															
TL4	=	002000	9630															
TL5	=	002400	9640															
TL6	=	003000	9650															
TL7	=	003400	9660															
TMTBL		002102	15980	53360	5340	5342												
TPVEC	=	000064	9260															
TRAPVE	=	000034	9240	16350	16360													
TRDY	=	100000	9520	3438	3442	3695	3703	3761	3814	3863	4111	4194	4466	4607	4623			

[illegible]

T134	002110	1602#																	
T150	002112	1603#																	
T1800	002122	1607#																	
T2000	002124	1608#																	
T2400	002126	1609#																	
T300	002114	1604#																	
T3600	002130	1610#																	
T4800	002132	1611#																	
T50	002102	1599#																	
T600	002116	1605#																	
T7200	002134	1612#																	
T75	002104	1600#																	
T9600	002136	1613#																	
VECMAP	012654	2994	3002#																
VEC1	025260	5405#																	
VEC2	025270	5407#																	
WCHFLG	027410	5445	5469	5807#															
WRDCNT	007114	2419#	2445#	2453#															
WTBS.F	007470	2550	2553#																
XBEGIN	025530	5441	5466#	5669															
XBX	007260	2509	2511	2513#															
XCSR	005072	1992	2024#	2546															
XEOP	026724	5510	5552	5572	5618	5665#													
XERR	005114	2000	2033#																
XHEAD	011050	1911	2730#																
XHTCNT	001376	1303#	4874#	4947#	5015#	5275													
XHTLIN	001374	1302#	4827#	4837#	4839	4864													
XHTSRV	024636	4875	4954	5022	5261#														
XPASS	005106	1997	2030#																
XSTART	025216	1146	5397#	5399															
XSTATQ	011140	1918	2730#																
XTCRO	027222	5752#																	
XTCR1	027236	5755#	5758																
XTSTN	007644	2542	2587#																
XVEC	005100	1994	2027#																
XX -	160210	1368#	1377#	1386#	1395#	1404#	1413#	1422#	1431#	1440#	1449#	1458#	1467#	1476#					
		1485#	1494#	1503#	1512#														
YY -	000500	1368#	1377#	1386#	1395#														

[illegible]

\$HIBTS	001462	1357*												
\$ICNT	001124	1162*	2087*	2088	2090*	2105								
\$ILLUP	010464	2692	2708	2727*										
\$INTAG	001155	1176*												
\$ITEMB	001134	1166*	2523*	2565										
\$LF	001232	1203*	2220											
\$LFLG	006247	2264*	2270*											
\$LPADR	001126	1163*	1647*	1968*	1970	2094*	2096	2105	2580*	2582	2861*	2862*	2870*	2872
		3596*	3597	5399*	5471*	5477*	5482							
\$LPERR	001130	1164*												
\$MADR1	001266	1236*												
\$MADR2	001272	1240*												
\$MADR3	001276	1243*												
\$MADR4	001302	1246*												
\$MAIL	001234	1209*	1358	1362	2093	2145								
\$MMS1	001264	1230*												
\$MMS2	001270	1238*												
\$MMS3	001274	1241*												
\$MMS4	001300	1244*												
\$MBADR	001464	1358*												
\$MFLG	006246	2224*	2230	2265*	2269*									
\$MSGAD	001250	1216*	2240*	2243										
\$MSGLG	001252	1217*	2245*											
\$MSGTY	001234	1210*	2238	2246*	2258	2262*								
\$MTYP1	001265	1231*												
\$MTYP2	001271	1239*												
\$MTYP3	001275	1242*												
\$MTYP4	001301	1245*												
\$MXCNT	005374	2091	2105*	2810										
\$N	- 000037	796*	3041	3046	3052*	3088	3093	3099*	3122	3129	3135*	3160	3167	3173*
		3198	3205	3211*	3236	3243	3249*	3274	3281	3287*	3312	3318	3324*	3359
		3366	3372*	3417	3425	3431*	3458	3467	3473*	3506	3511	3517*	3537	3542
		3548*	3568	3580	3587*	3630	3641	3648*	3681	3687	3693*	3721	3731	3738*
		3821	3827	3834*	3911	3918	3924*	3999	4008	4014*	4074	4080	4086*	4157
		4163	4169*	4243	4252	4258*	4362	4369	4375*	4415	4427	4433*	4559	4566
		4572*	4651	4657	4663*	4800	4817	4824*	4905	4917	4923*	4974	4985	4991*
		5041	5053	5059*	5972*									
\$NULL	001174	1184*	2172	2220										
\$NMST-	000000	3047*	3094*	3130*	3168*	3206*	3244*	3282*	3319*	3367*	3426*	3468*	3512*	3543*
		3581*	3642*	3688*	3732*	3828*	3919*	4009*	4081*	4164*	4253*	4370*	4428*	4567*
		4658*	4818*	4918*	4986*	5054*								
\$OVER	005336	2060	2062	2066	2077	2089	2095*							
\$PASS	001242	1213*	1640*	1995*	1998*	2005*	2006*	2023	2032	2085	2106	5401*		
\$PASTM	001470	1360*												
\$PIRAD	010460	2725*												
\$PIRDN	010320	1123	1630	1637	2692*	2720								
\$PIRMG	010454	2723*												
\$PIRUP	010372	2702	2708*											
\$QUES	001230	1201*	1866	2220	2318	2868								
\$REGAD	001200	1188*												
\$REGO	001202	1190*	2395*	2400	5972									
\$REG1	001204	1191*	2394*	2401	5972									
\$REG2	001206	1192*	2393*	2402										
\$REG3	001210	1193*	2392*	2403										
\$REG4	001212	1194*	2391*	2404	5972									
\$REG5	001214	1195*	2390*	2405	5972									

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 CZDZAH.P11 19-JUN-84 15:45 CROSS REFERENCE TABLE -- USER SYMBOLS

\$RTNAD	005070	2022*												
\$SAVR6	010470	2701*	2709	2710*	2711*	2729*								
\$SCOPE	005122	1631	2052*											
\$SETUP=	000000	2004	2053											
\$SVLAD	005320	2074	2092*											
\$SVPC =	000040	1133*	1138											
\$SMR =	164000	796*	808	1200	1201	1982	2004	2015	2021	2023	2046	2047	2048	2049
		2065	2077	2079	2080	2081	2082	2083	2095	2105	2726	3049	3096	3132
		3170	3208	3246	3284	3321	3369	3428	3470	3514	3545	3583	3644	3690
		3734	3830	3921	4011	4083	4166	4255	4372	4430	4569	4660	4820	4920
		4988	5056											
\$SMREG	001256	1221*	2912											
\$SMRMC=	000000	2049												
\$TESTN	001240	1212*	2093*											
\$TIMES	001226	1200*	2004*	2082*	2088	2091*	2105	2810*	4822*					
\$TKB	001166	1181*	1747	1753	2061	2063	2191	2198	2220	2291	2297	2311	2593	2600
		2621	2628	2657	2664	5524	5611							
\$TKS	001164	1180*	1745	1751	2059	2189	2196	2220	2289	2295	2598	2612	2619	2626
		2655	2662	5522	5609									
\$TMP0	001216	1196*	4546*	4551*	4828*	4830	4841*	4879						
\$TMP1	001220	1197*	1744*	1790	1803	1804	1805*	1913*	2732	4872*	4884*	5296*	5336	5340
		5972												
\$TMP2	001222	1198*	1810*	1816*	1817*	1914*	1915	2734	5294*	5297*				
\$TMP3	001224	1199*	4873*	4886*	5295*									
\$TN =	000040	808*	3047	3049*	3094	3096*	3130	3132*	3168	3170*	3206	3208*	3244	3246*
		3282	3284*	3319	3321*	3367	3369*	3426	3428*	3468	3470*	3512	3514*	3543
		3545*	3581	3583*	3642	3644*	3688	3690*	3732	3734*	3828	3830*	3919	3921*
		4009	4011*	4081	4083*	4164	4166*	4253	4255*	4370	4372*	4428	4430*	4567
		4569*	4658	4660*	4818	4820*	4918	4920*	4986	4988*	5054	5056*		
\$TPB	001172	1183*	1765*	2209*	2220	2311*	2512*	2643*						
\$TPFLG	001177	1187*	2139	2220										
\$TPS	001170	1182*	2205	2220	2309	2510	2641							
\$TSTM	001466	1359*												
\$TSTM1	001122	1160*	1646*	2045	2092*	2093	2095	2106	2589	2850	2859	3049*	3096*	3132*
		3170*	3208*	3246*	3284*	3321*	3369*	3428*	3470*	3514*	3545*	3583*	3644*	3690*
		3734*	3830*	3921*	4011*	4083*	4166*	4255*	4372*	4430*	4569*	4660*	4820*	4920*
		4988*	5056*	5488*	5571*									
\$TYPE	005440	2139*	2251											
\$TYPEC	005652	2169	2176	2183	2188*									
\$TYPEX	006002	2208	2213	2215	2218*									
\$UNIT	001246	1215*												
\$UNITM	001472	1361*												
\$USMR	001260	1222*												
\$VECT1	001304	1247*	1720*	1734*	1735*	1736*	1737*	1738*	1739*	2881	2884	3033*		
\$VECT2	001306	1248*												
\$XOFF =	000023	955*	1749	2193	2220	2293	2595	2623	2659					
\$XON =	000021	954*	1755	1759	2061	2200	2207	2220	2299	2303	2602	2605	2630	2633
		2666	2669											
\$XTSTR	005176	2057	2068*											
\$Y =	000020	1514*	1521	1523*	1524	1526*	1527	1529*	1530	1532*	1533	1535*	1536	1538*
		1539	1541*	1542	1544*	1545	1547*	1548	1550*	1551	1553*	1554	1556*	1557
		1559*	1560	1562*	1563	1565*	1566	1568*						
\$GET4=	000000	2015*												
\$40CAT=	***** U	2065												
.	= 001514	1112*	1113	1116*	1120*	1133	1134*	1136*	1138*	1140*	1143*	1145*	1149*	1157*
		1204	1306*	1308*	1321*	1346	1347*	1349*	1351*	1366*	1370*	1371*	1372*	1373*

CROSS REFERENCE TABLE -- USER SYMBOLS

[illegible]

COMMENTS	9280	3083	3105	3118	3141	3147	3154	3179	3185	3192	3217	3223	3230	3255	3261
ENDCOM	9280														
ERROR	8220	3083	3105	3118	3141	3147	3154	3179	3185	3192	3217	3223	3230	3255	3261
	3268	3293	3299	3306	3332	3340	3350	3383	3391	3399	3412	3437	3441	3454	3480
	3486	3494	3502	3525	3532	3555	3562	3619	3625	3669	3675	3708	3712	3759	3766
	3791	3795	3809	3861	3868	3893	3897	3944	3970	3976	3991	3995	4060	4064	4119
	4121	4124	4144	4146	4149	4198	4203	4209	4225	4230	4232	4289	4292	4300	4308
	4311	4319	4320	4344	4348	4353	4403	4412	4463	4471	4478	4487	4517	4520	4531
	4612	4619	4632	4637	4640	4700	4701	4708	4721	4733	4741	4744	4747	4755	4765
	4784	4888	4969	5037	5213	5228	5237	5243	5266	5306	5309	5313	5325	5345	5501
	5532	5535	5538	5547	5560	5588	5616	5622	5625	5628	5631	5634	5641	5646	5657
ESCAPE	9280														
GETPRI	9280														
GETSMR	9280														
MULT	9280														
NEWTST	9280	3047	3094	3130	3168	3206	3244	3282	3319	3367	3426	3468	3512	3543	3581
	3642	3688	3732	3828	3919	4009	4081	4164	4253	4370	4428	4567	4658	4818	4918
	4986	5054													
PASEND	7960	1986													
POP	9280	2266	2267	2713	2714										
PRGEND	7960	1972													
PRGFRT	7960	798													
PUSH	9280	2227	2229	2250	2694	2700									
REPORT	7960	9280													
SC	7960	2053													
SCOPE	8230	1987	3048	3095	3131	3169	3207	3245	3283	3320	3368	3427	3469	3513	3544
	3582	3643	3689	3733	3829	3920	4010	4082	4165	4254	4371	4429	4568	4659	4819
	4919	4987	5055												
SC1	7960	2097													
SETPRI	9280														
SETUP	9280														
SKIP	9280														
SLASH	9280														
SPACE	9280														
STARS	9280	1131	1153	1204	1207	1343	1345	1352	1980	2042	2124	2222	2690	2706	3047
	3094	3130	3168	3206	3244	3282	3319	3367	3426	3468	3512	3543	3581	3642	3688
	3732	3828	3919	4009	4081	4164	4253	4370	4428	4567	4658				

[illegible]

K11

SEQ 140

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CZDZAH.P11 19-JUN-84 15:45 CROSS REFERENCE TABLE -- MACRO NAMES

. ABS. 032456 000

ERRORS DETECTED: 0

CZDZAH,CZDZAH/CRF/SOL/NL:TOC=CZDZAH.P11
RUN-TIME: 24 19 2 SECONDS
RUN-TIME RATIO: 132/46=2.8
CORE USED: 38K (75 PAGES)