DMC11 DDCMP MD LN UNIT TST AH-8553D-MC
CZDMEDO FICHE 1 OF 1

```
                                .REM    &
```

IDENTIFICATION

PRODUCT CODE:	AC-8552D-MC
PRODUCT NAME:	CZDMED0 DDCMP MD LN UNIT TST
DATE:	AUGUST 1980
MAINTAINER:	DIAGNOSTICS-MERRIMACK

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44
45
46                              1.      ABSTRACT
47
48                                      THE FUNCTION OF THE DMC11 DIAGNOSTICS IS TO  VERIFY  THAT  THE
49                                      OPTION  OPERATES ACCORDING TO SPECIFICATIONS.  THE DIAGNOSTICS
50                                      VERFIY THAT THERE ARE NO MALFUNCTIONS AND THE  ALL  OPERATIONS
51                                      OF THE DMC11 ARE CORRECT IN ITS ENVIRONMENT.
52
53                                      PARAMETERS MUST BE SET UP TO  ALERT  THE  DIAGNOSTICS  TO  THE
54                                      DMC11  CONFIGURATION.   THESE  PARAMETERS ARE CONTAINED IN THE
55                                      STATUS  TABLE  AND  ARE  GENERATED  IN  TWO  WAYS:  1)  MANUAL
56                                      INPUT - THE  OPERATOR  ANSWERS QUESTIONS.  2) AUTOSIZING - THE
57                                      PROGRAM DETERMINES THE PARAMETERS AUTOMATICALLY.
58
59                                      CZDME TESTS  THE  DMC-11  LINE  UNIT  (M8201  OR  M8202).   IT
60                                      PERFORMS  WRITE/READ TESTS ON THE DMC LINE UNIT REGISTERS.  IT
61                                      CHECKS FOR PROPER TRANSMITTER, RECEIVER, AND BCC OPERATION  IN
62                                      DDCMP  MODE.   THE  MODEM  SIGNALS  ARE  ALSO  CHECKED.  CZDME
63                                      REQUIRES A DMC MICRO-PROCESSOR (M8200 OR M8204) TO  RUN.   FOR
64                                      BEST  DIAGNOSIS  A  TURN-AROUND CONNECTOR SHOULD BE INSTALLED,
65                                      HOWEVER THE DIAGNOSTIC WILL RUN WITHOUT  IT  (SOME  TESTS  ARE
66                                      SKIPPED).
67
68                                      CURRENTLY THERE ARE FIVE OFF LINE DIAGNOSTICS THAT ARE  TO  BE
69                                      RUN  IN  SEQUENCE  TO  INSURE THAT IF AN ERROR SHOULD OCCUR IT
70                                      WILL BE DETECTED AT AN EARLY STAGE.
71
72                                      NOTE:   ADDITIONAL DIAGNOSTICS MAY BE ADDED IN THE FUTURE.
73
74                                      THE FIVE DIAGNOSTICS ARE:
75
76                                      1.  CZDMC [REV] BASIC W/R AND MICRO-PROCESSOR TESTS
77                                      2.  CZDME [REV] DDCMP MODE LINE UNIT TESTS
78                                      3.  DZDMF [REV] BITSTUFF LINE UNIT TESTS
79                                      4.  DZDMG [REV] JUMP AND CROM TESTS
80                                      5.  DZDMH [REV] FREE-RUNNING TESTS (HEAT TEST TAPE)
81
82
83                                      NOTE: THE NAMES OF THESE DIAGNOSTICS MAY VAYIE AS THEY ARE UPDATED.
84
85                              2.      REQUIREMENTS
86
87                              2.1     EQUIPMENT
88
89                                      ANY PDP11 FAMILY CPU (EXCEPT AN LSI-11) WITH MINIMUM 8K MEMORY
90                                      ASR 33 (OR EQUILIVALENT)
91                                      DMC11-AR  WITH  DMC11-DA  OR  DMC11-FA                      OR
92                                      DMC11-AL WITH DMC11-MA OR DMC11-MD
93
```

```
                                2.2     STORAGE

                                        PROGRAM WILL USE  ALL  8K  OF  MEMORY  EXCEPT  WHERE  ABL  AND
                                        BOOTSTRAP  LOADER  RESIDE.  LOCATIONS 1500 THRU 1640;  CONTAIN
                                        THE "STATUS TABLE" INFORMATION WHICH IS GENERATED AT START  OF
                                        DIAGNOSTICS  BY  MANUAL  INPUT  (QUESTIONS)  OR  AUTOMATICALLY
                                        (AUTO-SIZING).  THIS AREA IS AN OVERLAY AREA AND SHOULD NOT BE
                                        ALTERED BY THE OPERATOR.

                                3.      LOADING PROCEDURE

                                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)
```

4. STARTING PROCEDURE

A. SET SWITCH REGISTER TO 000200
B. DEPRESS 'LOAD ADDRESS' KEY AND RELEASE
C. SET SWR TO ZERO FOR 'AUTO SIZING' OR SWR BIT0=1 FOR MANUAL INPUT (QUESTIONS) OR SWR BIT7=1 TO USE EXISTING PARAMETERS SET UP BY A PREVIOUS START OR A PREVIOUSLY RUN DMC11 DIAGNOSTIC.
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) AND ALSO THE FOLLOWING:

MAP OF DMC11 STATUS

PC	CSR	STAT1	STAT2	STAT3
001500	160010	145310	177777	000000
001510	160020	145320	177777	000000

THE PROGRAM WILL TYPE 'R' AND PROCEED TO RUN THE DIAGNOSTIC. THE ABOVE IS ONLY AN EXAMPLE. THIS WOULD INDICATE THE STATUS TABLE STARTING AT ADD. 1500 IN THE PROGRAM. IN THIS EXAMPLE THE TABLE CONTAINS THE INFORMATION AND STATUS OF TWO DMC11'S. 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.

IF THE DIAGNOSTIC WAS STARTED WITH SW00=1 INDICATING MANUAL PARAMETER INPUT THEN THE FOLLOWING SHOWS AN EXAMPLE OF THE QUESTIONS ASKED AND SOME EXAMPLE ANSWERS:

```
HOW MANY DMC11'S TO BE TESTED?1

01
CSR ADDRESS?160010
VECTOR ADDRESS?310
BR PRIORITY LEVEL?  (4,5,6,7)?5
DOES MICRO-PROCESSOR HAVE CRAM?  (Y OR N)N
WHICH LINE UNIT?  IF NONE TYPE "N",  IF  M8201  TYPE  "1",  IF
M8202 TYPE "2"?1
IS THE LOOP BACK CONNECTOR ON?Y

(THE NEXT QUESTION WILL BE ASKED IF M8201 AND LOOP BACK CONNECTOR)

WHICH MODEM TYPE, TYPE "D" FOR DMC11-DA (RS232C), OR
TYPE "F" FOR DMC11-FA (V.35) ? D
SWITCH PAC#1 (DDCMP LINE#)?377
SWITCH PAC#2 (BM873 BOOT ADD)?377
```

FOLLOWING THE QUESTIONS THE STATUS MAP IS PRINTED OUT AS DESCRIBED ABOVE, THE INFORMATION IN THE MAP REFLECTS THE ANSWERS TO THE QUESTIONS. IF THE DIAGNOSTIC WAS STARTED WITH

SW00=0 AND SW07=0 (AUTO-SIZING) THEN NO QUESTIONS ARE ASKED AND ONLY THE STATUS-MAP IS PRINTED OUT. IF AUTO-SIZING IS USED THE STATUS INFORMATION MUST BE VERIFIED TO BE CORRECT (MATCH THE HARDWARE). IF IT DOES NOT MATCH THE HARDWARE THE DIAGNOSTIC MUST BE RESTARTED WITH SW00=1 AND THE QUESTIONS ANSWERED.

4.1 CONTROL SWITCH SETTINGS

SW 15 SET: HALT ON ERROR
SW 14 SET: LOOP ON CURRENT TEST
SW 13 SET: INHIBIT ERROR PRINT OUT
SW 12 SET: INHIBIT TYPE OUT/ABELL ON ERROR.
SW 11 SET: INHIBIT ITERATIONS. (QUICK PASS)
SW 10 SET: ESCAPE TO NEXT TEST ON ERROR
SW 09 SET: LOOP WITH CURRENT DATA
SW 08 SET: CATCH ERROR AND LOOP ON IT
SW 07 SET: USE PREVIOUS STATUS TABLE.
SW 06 SET: HALT IN ROMCLK ROUTINE BEFORE CLOCKING MICRO-PROCESSOR
SW 05 SET: RESERVED
SW 04 SET: RESERVED
SW 03 SET: RESELECT DMC11'S DESIRED ACTIVE
SW 02 SET: LOCK ON SELECTED TEST
SW 01 SET: RESTART PROGRAM AT SELECTED TEST
SW 00 SET: BUILD NEW STATUS TABLE FROM QUESTIONS. (IF SW07=0 AND SW00=0 A NEW STATUS TABLE IS BUILT BY AUTO-SIZING)

SWITCH 06 AND 08-15 ARE DYNAMIC AND CAN BE CHANGED AS NEEDED WHILE THE DIAGNOSTIC IS RUNNING. SWITCHES 00-03 AND SWITCH 07 ARE STATIC, AND ARE USED ONLY ON STARTING OR RESTARTING THE DIAGNOSTIC.

```
227
228
229                          4.1.2   SWITCH REGISTER OPTIONS (AT START UP)
230
231                                  SW 01   RESTART PROGRAM AT  SELECTED  TEST.   IT  IS  STRONGLY
232                                          SUGGESTED  THAT AT LEAST ONE PASS HAS BEEN MADE BEFORE
233                                          TRYING TO SELECT A TEST, THE REASON BEING IS THAT  THE
234                                          PROGRAM  HAS  TO  CLEAR  AREAS  AND SET UP PARAMETERS.
235                                          WHEN THIS SWITCH IS USED THE DIAGNOSTIC WILL ASK  TEST
236                                          NO.?   ANSWER BY TYPING THE NUMBER OF THE TEST DESIRED
237                                          AND CARRIGE RETURN TO BEGIN EXECUTION AT THE  SELECTED
238                                          TEST.
239
240                                  SW 02   LOCK ON SELECTED TEST.  THIS  SWITCH  WHEN  USED  WITH
241                                          SW01  WILL CAUSE THE PROGRAM TO CONSTANTLY LOOP ON THE
242                                          SELECTED TEST.  HITTING ANY KEY ON  THE  CONSOLE  WILL
243                                          LET  IT  ADVANCE TO THE NEXT TEST AND LOOP UNTIL A KEY
244                                          IS HIT AGAIN.  IF  SW02=0  WHEN  SW01  IS  USED.   THE
245                                          PROGRAM  WILL  BEGIN AT THE SELECTED TEST AND CONTINUE
246                                          NORMAL OPERATIONS.
247
248                                  SW 03   RESELECT DMC11'S DESIRED ACTIVE.  PLEASE NOTE  THAT  A
249                                          MESSAGE  IS  TYPED OUT FOR SETTING THE SWITCH REGISTER
250                                          EQUAL TO DMC11'S ACTIVE.  THIS MEANS IF THE SYSTEM HAS
251                                          FOUR  DMC11S;   BITS  00,01,02,03  WILL  BE SET IN LOC
252                                          'DMACTV'  FROM  THE  SWITCH  REGISTER.    USING    THIS
253                                          SWITCH(SW00)  ALTERS  THAT  LOCATION;THEREFORE IF FOUR
254                                          DMC11S ARE IN THE  SYSTEM  ***DO  NOT***  SET  SWITCHS
255                                          GREATER  THAN SW 03 IN THE UP POSITION.  THIS WOULD BE
256                                          A FATAL ERROR.  DO NOT SELECT MORE ACTIVE DMC11S  THAN
257                                          THERE IS INFORMATION ON IN THE STATUS TABLE.
258
259                                  METHOD: A:      LOAD ADDRESS 200
260                                          B:      START WITH SW 00=1
261                                          C:      PROGRAM WILL TYPE MESSAGE
262                                          D:      SET A SWITCH  FOR  EACH  DMC  DESIRED  ACTIVE.
263                                                  EXAMPLE:  IF YOU HAVE 4 DMC'S BUT ONLY WANT TO
264                                                  RUN THE FIRST AND THE LAST SET SWR BITS 0  AND
265                                                  3 = 1.  PRESS CONTINUE
266                                          E:      NUMBER (IF  VALID)  WILL  BE  IN  DATA  LIGHTS
267                                                  (EXCLUDING 11/05)
268                                          F:      SET WITH ANY OTHER  SWITCH  SETTINGS  DESIRED.
269                                                  PRESS CONTINUE.
```

4.1.3 DYNAMIC SWITCHES

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. SW06 HALT IN ROMCLK ROUTINE BEFORE CLOCKING MICRO-PROCESSOR INSTRUCTION. THIS ALLOWS THE OPERATOR TO SCOPE A MICRO-PROCESSOR INSTRUCTION IN THE STATIC STATE BEFORE IT IS CLOCKED. HIT CONTINUE TO RESUME RUNNING.
2. SW09 (IF ENABLED BY 'SCOP1') ON AN ERROR; IF AN '*' IS PRINTED IN FRONT OF THE TEST NO. (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 SW09 IS NOT ENABELED; AND THERE IS A HARD ERROR (CONSTANT); SW08 IS BEST. (SW14=1,0, SW10=0, SW09=0, SW08=1). FOR INTERMITTEMT ERRORS; SW14=1 WILL LOOP ON TEST REGUARDLESS OF ERROR OR NOI ERROR. (SW14=1, SW10=0, SW09=0, SW08=1,0)
3. SW11 INHIBIT INTERATIONS.
4. SW14 LOOP ON CURRENT TEST.

4.2 STARTING ADDRESS

STARTING ADDRESS IS AT 000200 THERE ARE NO OTHER STARTING ADDRESSES FOR THE DMC11 DIAGNOSTICS. (SEE SECTION 4.0)

NOTE: IF ADDRESS 000042 IS NON-ZERO THE PROGRAM ASSUMES IT IS UNDER ACT11 OR XXDP CONTROL AND WILL ACT ACCORDINGLY AFTER ALL AVAILABLE DMC11'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 4.0 WILL BE PRINTED, AND PROGRAM WILL BEGIN RUNNING THE DIAGNOSTIC

```
                        5.2     PROGRAM AND/OR OPERATOR ACTION

                                THE TYPICAL APPROACH SHOULD BE

                                1.      HALT ON ERROR (VIA SW 15=1) WHEN EVER AN ERROR OCCURS.
                                2.      CLEAR SW 15.
                                3.      SET SW 14:  (LOOP ON THIS TEST)
                                4.      SET SW 13:  (INHIBIT ERROR PRINT OUT)

                                THE TEST NUMBER AND PC WILL BE  TYPED  OUT  AND  POSSIBILY  AN
                                ERROR  MESSAGE (THIS DEPENDS ON THE TEST) TO GIVE THE OPERATOR
                                AN IDEA AS TO THE SOURCE OF THE PROBLEM.  IF IT  IS  NECESSARY
                                TO KNOW MORE INFORMATION CONCERNING THE ERROR REPORT;  LOOK IN
                                THE LISTING FOR THAT TEST NUMBER WHICH WAS TYPED OUT AND  THEN
                                NOTE THE PC OF THE ERROR REPORT THIS WAY THE EXACT FUNCTION OF
                                THE TEST CAN BE DETERMINED.

                        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
                                IN THE THE ERROR MESSAGE TO GIVE THE OPERATOR AN INDICATION OF
                                THE ERROR.

                        6.2     ERROR RECOVERY

                                IF FOR SOME REASON THE  DMC11  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
                                'TSTNO' (ADDRESS 1226)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 DMC11 WAS  DOING
                                AT THE TIME OF THE ERROR.

                        7.      RESTRICTIONS

                        7.1     STARTING RESTRICTIONS

                                SEE SECTION 4.  (PLEASE)
                                STATUS TABLE SHOULD BE VERIFIED REGUARDLESS OF HOW PROGRAM WAS
                                STARTED.   ALSO IT IS IMPORTANT TO USE THIS LISTING ALONG WITH
                                THE INFORMATION  PRINTED  ON  THE  TTY  TO  COMPLETLY  ISOLATE
                                PROBLEMS.
```

```
366
367
368                         7.2     OPERATING RESTRICTIONS
369
370                                 THE FIRST TIME A DMC11 DIAGNOSTIC IS LOADED INTO CORE AND  RUN
371                                 THE STATUS TABLE MUST BE SET UP.  THIS IS DONE BY MANUAL INPUT
372                                 (SW00=1) OR BY AUTOSIZING  (SW00=0  AND  SW07=0).   THEREAFTER
373                                 HOWEVER  THE  STATUS  TABLE  NEED  NOT  BE SETUP BY SUBSEQUENT
374                                 RESTARTS OR EVEN LOADING THE NEXT DMC DIAGNOSTIC  BECAUSE  THE
375                                 STATUS  TABLE  IS  OVERLAYED.   THE  CURRENT PARAMETERS IN THE
376                                 STATUS TABLE ARE USED WHEN SW07=1 ON START UP.
377
378                         7.3     HARDWARE CONFIGURATION RESTRICTIONS
379
380                                 DMC11(M8200)- JUMPER W1 MUST BE IN, AND SWITCH 7 OF  E76  MUST
381                                 BE IN THE OFF POSITION.
382
383                                 KMC(M8204)- JUMPER W1 MUST BE IN.
384
385                                 LINE UNIT(M8201)- JUMPERS W1, W2, AND W4 MUST BE IN.   JUMPERS
386                                 W3,  AND  W5  MUST  BE  OUT.   SW8  OF  E26  MUST BE IN THE ON
387                                 POSITION.
388
389                                 LINE UNIT (M8202)- JUMPER W1 MUST BE IN.  SW8 OF E26  MUST  BE
390                                 IN THE OFF POSITION.
391
392                         8.      MISCELLANEOUS
393
394                         8.1     EXECUTION TIME
395
396                                 ALL DMC11 DEVICE DIAGNOSTICS WILL GIVE AN 'END  PASS'  MESSAGE
397                                 (PROVIDING  NO  ERRORS  AND  SW12=0)  WITHIN  4 MINS.  THIS IS
398                                 ASSUMING SW11=1 (DELETE ITERATIONS) IS SET TO GIVE THE FASTEST
399                                 POSSIBLE EXECUTION.  THE ACTUAL EXECUTION TIME DEPENDS GREATLY
400                                 ON THE PDP11 CPU CONFIGURATION AND THE AMOUNT OF MEMORY IN THE
401                                 SYSTEM.
402
403                         8.2     PASS COMPLETE
404
405                                 NOTE:  EVERY TIME THE PROGRAM IS STARTED;  THE TESTS WILL  RUN
406                                 AS  IF  SW11  (DELETE  ITERATIONS)  WAS  UP  (=1).  THIS IS TO
407                                 'VERIFY NO HARD ERRORS' AS SOON AS  POSSIBLE.   THEREFORE  THE
408                                 FIRST  PASS  -EACH  TIME  PROGRAM IS STARTED- WILL BE A 'QUICK
409                                 PASS' UNTIL ALL  DMC11'S  IN  SYSTEM  ARE  TESTED.   WHEN  THE
410                                 DIAGNOSTIC HAS COMPLETED A PASS THE FOLLOWING IS AN EXAMPLE OF
411                                 THE PRINT OUT TO BE EXPECTED.
412
413                               END PASS CZDME CSR:  175000 VEC:  0300 PASSES:  000001
414                                 ERRORS:  000000
415
416                                 NOTE:    THE PASS COUNT AND ERROR COUNTS  ARE  CUMMULITIVE  FOR
417                                          EACH  DMC11  THAT IS RUNNING, AND ARE SET TO ZERO ONLY
418                                          WHEN THE DIAGNOSTIC IS STARTED.   THEREFORE  AFTER  AN
419                                          OVERNIGHT RUN FOR EXAMPLE, THE TOTAL PASSES AND ERRORS
420                                          FOR EACH DMC11 SINCE THE DIAGNOSTIC  WAS  STARTED  ARE
421                                          REFLECTED IN PASSES:  AND ERRORS:.
```

8.4 KEY LOCATIONS

RETURN (1214) CONTAINS THE ADDRESS WHERE PROGRAM WILL RETURN WHEN ITERATION COUNT IS REACHED OR IF LOOP ON TEST IS ASSERTED.

NEXT (1216) CONTAINS THE ADDRESS OF THE NEXT TEST TO BE PEFORMED.

TSTNO (1226) CONTAINS THE NUMBER OF THE TEST NOW BEING PEFORMED.

RUN (1316) THE BIT IN 'RUN' ALWAYS POINTS TO THE DMC11 CURRENTLY BEING TESTED. EXAMPLE: (RUN) 1302/0000000001000000 MEANS THAT DMC11 NO.06 IS THE DMC11 NOW RUNNING.

DMCR00-DMCR17
DMST00-DMST17
(1500)-(1640)

THESE LOCATIONS CONTAIN THE INFORMATION NEEDED TO TEST UP TO 16 (DECIMAL) DMC11S SEQUENTIALY. THEY CONTAIN THE CSR,VECTOR AND STATUS CONCERNING THE CONFIGURATION OF EACH DMC11.

DMACTV (1306) EACH BIT SET IN THIS LOCATION INDICATES THAT THE ASSOCIATED DMC11 WILL BE TESTED IN TURN. EXAMPLE: (DMACTV) 1276/0000000000011111 MEANS THAT DMC11 NO. 00,01,02,03,04 WILL BE TESTED. EXAMPLE: (DMACTV) 1276/0000000000010001 MEANS THAT DMC11 NO. 00,04 WILL BE TESTED.

DMCSR (1402) CONTAINS THE CSR OF THE CURRENT DMC11 UNDER TEST.

8.4A 'STATUS TABLE' (1500-1640)

THE TABLE IS FILLED BY AUTO SIZING OR BY THE MANUAL PARAMETER INPUT (QUESTIONS) AS DESCRIBED PREVIOUSLY. ALSO IF DESIRED BY USER; THE LOCATIONS MAY BE ALTERED BY HAND (TOGGLED IN) TO SUIT THE SPECIFIC CONFIGURATION.

THE EXAMPLE STATUS MAP SHOWN BELOW CONTAINS INFORMATION FOR TWO DMC11'S. THE TABLE CAN CONTAIN UP TO 16 DMC11'S. FOLLOWING THE MAP IS A DESCRIPTION OF THE BITS FOR EACH MAP ENTRY

MAP OF DMC11 STATUS

PC	CSR	STAT1	STAT2	STAT3
001500	160010	145310	177777	000000
001510	160020	016320	000000	000000

```
                        EACH MAP ENTRY CONTAINS  4  WORDS  WHICH  CONTAIN  THE  STATUS
                        INFORMATION  FOR  1  DMC11.  THE PC SHOWS WHERE IN CORE MEMORY
                        THE FIRST OF THE 4 WORDS IS.  IN THE EXAMPLE ABOVE  THE  FIRST
                        DMC'S STATUS IS IN LOCATIONS, 1500, 1502, 1504, AND 1506.  THE
                        SECOND DMC STATUS IS LOCATED AT 1510, 1512,  1514,  AND  1516.
                        THE  INFORMATION  CONTAINED IN EACH 4 WORD ENTRY IS DEFINED AS
                        FOLLOWS:

                        CSR:    CONTAINS DMC11 CSR ADDRESS

                        STAT1:  BITS 00-08 IS DMC11 VECTOR ADDRESS
                                BIT15=1 MICRO-PROCESSOR HAS CRAM
                                BIT15=0 MICRO-PROCESSOR HAS CROM
                                BIT14=1 TURNAROUND CONNECTOR IS ON
                                BIT14=0 NO TURNAROUND CONNECTOR
                                BIT13=0 LINE UNIT IS AN M8201
                                BIT13=1 LINE UNIT IS AN M8202
                                BIT12=1 NO LINE UNIT
                                BITS 09-11 IS DMC11 BR PRIORITY LEVEL

                        STAT2:  LOW BYTE IS SWITCH PAC#1 (DDCMP LINE NUMBER)
                                HIGH BYTE IS SWITCH PAC#2 (BM873 BOOT ADD)

                        STAT3:  BIT0=1 RUN FREE RUNNING TESTS ON KMC11
                                BIT1=0 DMC11-AR (LOW SPEED)
                                BIT1=1 DMC11-AL (HIGH SPEED)
                                BIT2=0  DMC11-DA (RS232)
                                BIT2=1  DMC11-FA (V.35)
```

8.5 METHOD OF AUTO SIZING

8.5.1 FINDING THE CONTROL STATUS REGISTER.

THE AUTO-SIZING ROUTINE FINDS A DMC11 AS FOLLOWS: IT STARTS AT ADDRESS 160000 AND TESTS ALL ADDRESS IN INCREMENTS OF 10 UP TO AND INCLUDING ADDRESS 167760. IF THE ADDRESS DOES NOT TIME OUT, THE FOLLOWING IS DONE, THE FIRST CROM ADDRESS IS WRITTEN TO A 125252 THEN IT IS READ BACK. IF IT CONTAINS A -1 OR 125252 OR 626 OR 16520 A DMC11 HAS BEEN FOUND, IF NOT, THE ADDRESS IS UPDATED BY 10 AND THE SEARCH CONTINUES. A -1 INDICATES A DMC11 WITH NO CROM OR CRAM, A 125252 INDICATES A KMC11 WITH CRAM, A 626 INDICATES A DMC11-AL AND A 16520 INDICATES A DMC11-AR. FURTHER TESTS ARE PERFORMED AT THIS POINT TO DETERMINE WHICH LINE UNIT, IF ANY, IS INSTALLED, IF A LOOP-BACK CONNECTOR IS INSTALLED AND VARIOUS SWITCH SETTINGS ON THE LINE UNIT. THIS IS WHY THE STATUS TABLE MUST BE VERIFIED BY THE USER AND IF ANY OF THE INFORMATION DOES NOT AGREE WITH THE HARDWARE THE DIAGNOSTIC MUST BE RESTARTED AND THE QUESTIONS MUST BE ANSWERED. ALL DMC11'S IN THE SYSTEM WILL BE FOUND BY THE AUTO-SIZER. IF IT DOES NOT FIND A DMC11 THE DIAGNOSTIC MUST BE RESTARTED AND THE QUESTIONS ANSWERED.

8.5.2 FINDING THE VECTOR AND BR LEVEL

THE VECTOR AREA (ADDRESS 300-776) IS FILLED WITH THE INSTRUCTION IOT AND '.+2' (NEXT ADDRESS). THE PROCESSOR STATUS IS STARTED AT 7 AND THE DMC IS PROGRAMMED TO INTERRUPT. THE PS IS LOWERED BY 1 UNTIL THE DMC INTERRUPTS, A DELAY IS MADE AND IF NO INTERUPT OCCURES AT PS LEVEL 3 (BECAUSE OF A BAD DMC11) THE PROGRAM ASSUMES VECTOR ADDRESS 300 AT BR LEVEL 5 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 INTERUPT OCCURED; THE ADDRESS TO WHICH THE DMC11 INTERUPTED 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.

8.6 SOFTWARE SWITCH REGISTER

IF THE DIAGNOSTIC IS RUN ON AN 11/04 OR OTHER CPU WITHOUT A SWITCH REGISTER THEN A SOFTWARE SWITCH REGISTER IS USED TO ALLOW USER THE SAME SWITCH OPTIONS AS DESCRIBED PREVIOUSLY. IF THE HARDWARE SWITCH REGISTER DOES NOT EXIST OR IF ONE DOES AND IT CONTAINS ALL ONES (177777) THIS SOFTWARE SWITCH REGISTER IS USED.

CONTROL:

TO OBTAIN CONTROL AT ANY ALLOWABLE TIME DURING EXECUTION OF THE DIAGNOSTIC THE OPERATOR TYPES A CTRL G ON THE CONSOLE TERMINAL KEYBOARD. AS SOON AS THE CTRL G IS RECOGNIZED, BY THE DIAGNOSTIC, THE FOLLOWING MESSAGE WILL BE DISPLAYED:

```
566
567
568                                 SWR=XXXXXX NEW?
569
570                             WHERE XXXXXX IS THE CURRENT CONTENTS OF  THE  SOFTWARE  SWITCH
571                             REGISTER  IN  OCTAL.   THE  SOFTWARE CONTROL ROUTINE WILL THEN
572                             AWAIT OPERATOR ACTION.  AT WHICH TIME THE OPERATOR IS REQUIRED
573                             TO  TYPE  ONE  OR  MORE OF THE LEGAL CHARACTERS:  1) 0 - 7, 2)
574                             LINE FEED(<LF>), 3) CARRIAGE  RETURN(<CR>),  OR  4)  CONTROL-U
575                             (CTRL  U).   NO  CHECK  IS  MADE  FOR  LEGALITY.  IF THE INPUT
576                             CHARACTER IS NOT A <LF>, <CR>, OR CTRL U IT IS ASSUMED  TO  BE
577                             AN OCTAL DIGIT.
578
579                             TO CHANGE THE CONTENTS OF THE SSR THE  OPERATOR  SIMPLY  TYPES
580                             THE  NEW  DESIRED  VALUE  IN OCTAL - LEADING ZEROS NEED NOT BE
581                             TYPED.  AND TERMINATES THE INPUT STRING WITH A  <CR>  OR  <LF>
582                             DEPENDING  ON  THE  PROGRAM ACTION DESIRED AS DESCRIBED BELOW.
583                             THE INPUT VALUE WILL BE TRUNCATED TO THE LAST 6 DIGITS  TYPED.
584                             AT  LEAST  ONE  DIGIT  MUST BE TYPED ON ANY GIVEN INPUT STRING
585                             PRIOR TO THE TERMINATOR BEFORE A CHANGE TO THE SSR WILL OCCUR.
586
587                             WHEN THE INPUT STRING IS TERMINATED WITH A <CR> THE DIAGNOSTIC
588                             WILL  CONTINUE  EXECUTION  FROM  THE  POINT  AT  WHICH  IT WAS
589                             INTERRUPTED.  IF A <CR> IS THE ONLY THING  TYPED  THE  PROGRAM
590                             WILL CONTINUE WITHOUT CHANGING THE SSR.  THE <LF> DIFFERS FROM
591                             THE <CR> BY RESTARTING THE PROGRAM AS IF IT WERE RESTARTED  AT
592                             ADDRESS 200.
593
594                             IF A CTRL U IS TYPED AT ANY POINT IN THE INPUT STRING PRIOR TO
595                             THE  TERMINATOR  THE  INPUT  VALUE WILL BE DISREGARDED AND THE
596                             PROMPT DISPLAYED (SWR = XXXXXX NEW?).
597
598                             TO SET THE SSR FOR  THE  STARTING  SWITCHES,  FIRST  LOAD  THE
599                             DIAGNOSTIC, THEN HIT CTRL G, THEN START THE DIAGNOSTIC.
600
601
602                         9.0   HISTORY
603
604                             THIS DIAGNOSTIC WAS UPDATED TO DETECT FOR THE CONDITION OF V.35
605                             AND M8201.  IN THIS CONIFURATION, RING WILL NOT BE LOOPED BACK
606                             AND SHOULD NOT BE TESTED FOR.
607
608
609                         &
610
```

```
                        ;*AC-8552D-MC   DMC11 DDCMP MODE LINE UNIT TESTS
                        ;*COPYRIGHT 1976,1978, DIGITAL EQUIPMENT CORP., MAYNARD, MASS. 01754
                        ;*-------------------------------------------------------------------

                        ;STARTING PROCEDURE
                        ;LOAD PROGRAM
                        ;LOAD ADDRESS 000200
                        ;SWR=0  AUTOSIZE DMC11
                        ;SW07=1  USE CURRENT DMC11 PARAMETERS
                        ;SW00=1  INPUT NEW DMC11 PARAMETERS
                        ;PRESS START
                        ;PROGRAM WILL TYPE "AC-8552D-MC   DMC11 DDCMP MODE LINE UNIT TESTS"
                        ;PROGRAM WILL TYPE STATUS MAP
                        ;PROGRAM WILL TYPE "R" TO INDICATE THAT TESTING HAS STARTED
                        ;AT THE END OF A PASS, PROGRAM WILL TYPE PASS COMPLETE MESSAGE
                        ;AND THEN RESUME TESTING
                        ;SUBSEQUENT RESTARTS WILL NOT TYPE PROGRAM TITLE


                        ;SWITCH REGISTER OPTIONS
                        ;----------------------

100000                  SW15=100000             ;=1,HALT ON ERROR
040000                  SW14=40000              ;=1,LOOP ON CURRENT TEST
020000                  SW13=20000              ;=1,INHIBIT ERROR TYPEOUT
010000                  SW12=10000              ;=1,DELETE TYPEOUT/BELL ON ERROR.
004000                  SW11=4000               ;=1,INHIBIT ITERATIONS
002000                  SW10=2000               ;=1,ESCAPE TO NEXT TEST ON ERROR
001000                  SW09=1000               ;=1,LOOP WITH CURRENT DATA
000400                  SW08=400                ;=1,LOOP ON ERROR
000200                  SW07=200                ;=1,USE CURRENT DMC11 PARAMETERS, =0,AUTOSIZE DMC11
000100                  SW06=100                ;=1, HALT BEFORE CLOCKING MICRO-PROCESSOR INSTRUCTION
000040                  SW05=40
000020                  SW04=20
000010                  SW03=10                 ;RESELECT DMC11'S TO BE TESTED (ACTIVE)
000004                  SW02=4                  ;LOCK ON TEST SELECT
000002                  SW01=2                  ;RESTART PROGRAM AT SELECTED TEST
000001                  SW00=1                  ;INPUT DMC11 PARAMETERS
```

```
                        ;REGISTER DEFINITIONS
                        ;--------------------

000000                  R0=%0           ;GENERAL REGISTER
000001                  R1=%1           ;GENERAL REGISTER
000002                  R2=%2           ;GENERAL REGISTER
000003                  R3=%3           ;GENERAL REGISTER
000004                  R4=%4           ;GENERAL REGISTER
000005                  R5=%5           ;GENERAL REGISTER
000006                  SP=%6           ;PROCESSOR STACK POINTER
000007                  PC=%7           ;PROGRAM COUNTER

                        ;LOCATION EQUIVALENCIES
                        ;----------------------

177776                  PS=177776       ;PROCESSOR STATUS WORD
001200                  STACK=1200      ;START OF PROCESSOR STACK

                        ;INSTRUCTION DEFINITIONS
                        ;-----------------------

005746                  PUSH1SP=5746    ;DECREMENT PROCESSOR STACK 1 WORD
005726                  POP1SP=5726     ;INCREMENT PROCESSOR STACK 1 WORD
010046                  PUSHR0=10046    ;SAVE R0 ON STACK
012600                  POPR0=12600     ;RESTORE R0 FROM STACK
024646                  PUSH2SP=24646   ;DECREMENT STACK TWICE
022626                  POP2SP=22626    ;INCREMENT STACK TWICE
                        .EQUIV  EMT,HLT ;BASIC DEFINITION OF ERROR CALL

                        ;BIT DEFINITIONS
                        ;---------------

100000                  BIT15=100000
040000                  BIT14=40000
020000                  BIT13=20000
010000                  BIT12=10000
004000                  BIT11=4000
002000                  BIT10=2000
001000                  BIT9=1000
000400                  BIT8=400
000200                  BIT7=200
000100                  BIT6=100
000040                  BIT5=40
000020                  BIT4=20
000010                  BIT3=10
000004                  BIT2=4
000002                  BIT1=2
000001                  BIT0=1
```

```
                                ;;*****************************************************************
                                ;-----------------------------------------------------------------
                                        ;TRAPCATCHER FOR ILLEGAL INTERRUPTS
                                        ;THE STANDARD "TRAP CATCHER" IS PLACED
                                        ;BETWEEN ADDRESS 0 TO ADDRESS 776.
                                        ;IT LOOKS LIKE "PC+2 HALT".
                                ;-----------------------------------------------------------------
                                ;;*****************************************************************

                        000000  .=0
                                ;STANDARD INTERRUPT VECTORS
                                ;-------------------------

                        000024  .=24
000024  005336                          .PFAIL                  ;POWER FAIL HANDLER
000026  000340                         340                     ;SERVICE AT LEVEL 7
000030  004750                         .HLT                    ;ERROR HANDLER
000032  000340                         340                     ;SERVICE AT LEVEL 7
000034  004716                         .TRPSRV                 ;GENERAL HANDLER DISPATCH SERVICE
000036  000340                         340                     ;SERVICE AT LEVEL 7
                        000040  .=40
000040  000000                         0                       ;SAVE FOR ACT-11 OR XXDP
000042  000000                         0                       ;RETURN ADDRESS IF UNDER ACT-11 OR XXDP
000044  000000                         0                       ;SAVE FOR ACT-11 OR XXDP
000046  003522                         $ENDAD                  ;FOR USE WITH ACT-11 OR XXDP
                        000052  .=52
000052  000000                         0                       ;ACT-11 PROGRAM CHARACTERISTICS

                        000174  .=174
000174  000000                 DISPREG:0                       ;SOFTWARE DISPLAY REGISTER
000176  000000                 SWREG:  0                       ;SOFTWARE SWITCH REGISTER

                        000200  .=200
000200  000137  002002                  JMP     .START          ;GO TO START OF PROGRAM


                        001000  .=1000
001000  005377  041501  034055  MTITLE: .ASCII  <377><12>/AC-8552D-MC/<377>
(2)     001016  046504  030503  020061         .ASCIZ  /DMC11 DDCMP MODE LINE UNIT TESTS/<377>
(2)
                        001200  .=1200

                                ;INDIRECT POINTERS TO SWITCH REGISTER AND LIGHT DISPLAY
                                ;-----------------------------------------------------

001200  177570                 DISPLAY:177570
001202  177570                 SWR:    177570
```

```
                        ;INDIRECT POINTERS TO TELETYPE VECTORS AND REGISTERS
                        ;--------------------------------------------------

001204  177560          TKCSR:  177560          ;TELETYPE KEYBOARD CONTROL REGISTER
001206  177562          TKDBR:  177562          ;TELETYPE KEYBOARD DATA BUFFER
001210  177564          TPCSR:  177564          ;TELEPRINTER CONTROL REGISTER
001212  177566          TPDBR:  177566          ;TELEPRINTER DATA BUFFER

                        ;PROGRAM CONTROL PARAMETERS
                        ;--------------------------

001214  000000          RETURN: 0               ;SCOPE ADDRESS FOR LOOP ON TEST
001216  000000          NEXT:   0               ;ADDRESS OF NEXT TEST TO BE EXECUTED
001220  000000          LOCK:   0               ;ADDRESS FOR LOCK ON CURRENT DATA
001222  000003          ICOUNT: 3               ;NUMBER OF ITERATIONS THAT CURRENT TEST WILL BE EXECUTED
001224  000000          LPCNT:  0               ;NUMBER OF ITEREATIONS COMPLETED
001226  000000          TSTNO:  0               ;NUMBER OF TEST IN PROGRESS
001230  000000          PASCNT: 0               ;NUMBER OF PASSES COMPLETED
001232  000000          ERRCNT: 0               ;TOTAL NUMBER OF ERRORS
001234  000000          LSTERR: 0               ;PC OF LAST ERROR CALL

                        ;PROGRAM VARIABLES
                        ;-----------------

001236  000000          STRTSW: 0               ;SWITCHES AT START OF PROGRAM
001240  000000          STAT:   0               ;DM STATUS WORD STORAGE
001242  000000          CLKX:   0
001244  000000          MASKX:  0
001246  000000          TEMP1:  0               ;TEMPORARY STORAGE
001250  000000          TEMP2:  0               ;TEMPORARY STORAGE
001252  000000          TEMP3:  0               ;TEMPORARY STORAGE
001254  000000          TEMP4:  0               ;TEMPORARY STORAGE
001256  000000          TEMP5:  0               ;TEMPORARY STORAGE
001260  000000          SAVR0:  0               ;R0 STORAGE
001262  000000          SAVR1:  0               ;R1 STORAGE
001264  000000          SAVR2:  0               ;R2 STORAGE
001266  000000          SAVR3:  0               ;R3 STORAGE
001270  000000          SAVR4:  0               ;R4 STORAGE
001272  000000          SAVR5:  0               ;R5 STORAGE
001274  000000          SAVSP:  0               ;STACK POINTER STORAGE
001276  000000          SAVPC:  0               ;PROGRAM COUNTER STORAGE
001300  000000          ZERO:   0
001302  000001          ONE:    1
001304  000000          MEMLIM: 0               ;HIGHEST LOCATION FOR NPR'S
001306  000001          DMACTV: .BLKW 1         ;DMC11'S SELECTED ACTIVE.
001310  000001          DMNUM:  .BLKW 1         ;OCTAL NUMBER OF DMC11'S.
001312  000001          SAVACT: .BLKW 1         ;ORIGINAL ACTV  DEVICES
001314  000001          SAVNUM: .BLKW 1         ;WORKABLE NUMBER
001316  000000          RUN:    0               ;POINTER TO RUNNING DEVICE.
                        .EVEN
001320  001472          CREAM:  DM.MAP-6        ;TABLE POINTER.
001322  001676          MILK:   CNT.MAP-4       ;TABLE POINTER
```

```
                                ;PROGRAM CONTROL FLAGS
                                ;---------------------

001324  000                     INIFLG: .BYTE   0               ;PROGRAM INITIALIZATION FLAG
001325  000                     ERRFLG: .BYTE   0               ;ERROR OCCURED FLAG
001326  000                     LOKFLG: .BYTE   0               ;LOCK ON CURRENT TEST FLAG
001327  000                     QV.FLG: .BYTE   0               ;QUICK VERIFY FLAG.
                                                                ;ON FIRST PASS OF EACH DMC11 ITERATIONS WILL BE SUPPRESS

                                .EVEN

                                        ;DEFINITIONS FOR TRAP SUBROUTINE CALLS
                                        ;POINTERS TO SUBROUTINES CAN BE FOUND
                                        ;IN THE TABLE IMMEDIATLY FOLLOWING THE DEFINITIONS

                                ;:*****************************************************************
                                ;-----------------------------------------------------------------
001330                          .TRPTAB:
        104400                  SCOPE=TRAP+0            ;CALL TO SCOPE LOOP AND ITERATION HANDLER
001330  003576                          .SCOPE
        104401                  SCOP1=TRAP+1            ;CALL TO LOOP ON CURRENT DATA HANDLER
001332  003736                          .SCOP1
        104402                  TYPE=TRAP+2             ;CALL TO TELETYPE OUTPUT ROUTINE
001334  003766                          .TYPE
        104403                  INSTR=TRAP+3            ;CALL TO ASCII STRING INPUT ROUTINE
001336  004050                          .INSTR
        104404                  INSTER=TRAP+4           ;CALL TO INPUT ERROR HANDLER
001340  004154                          .INSTER
        104405                  PARAM=TRAP+5            ;CALL TO NUMERICAL DATA INPUT ROUTINE
001342  004174                          .PARAM
        104406                  SAV05=TRAP+6            ;CALL TO REGISTER SAVE ROUTINE
001344  004374                          .SAV05
        104407                  RES05=TRAP+7            ;CALL TO REGISTER RESTORE ROUTINE
001346  004434                          .RES05
        104410                  CONVRT=TRAP+10          ;CALL TO DATA OUTPUT ROUTINE
001350  004466                          .CONVRT
        104411                  CNVRT=TRAP+11           ;CALL TO DATA OUTPUT ROUNTINE WITHOUT CR/LF.
001352  004472                          .CNVRT
        104412                  MSTCLR=TRAP+12          ;CALL TO ISUE A MASTER CLEAR
001354  005466                          .MSTCLR
        104413                  DELAY=TRAP+13           ;CALL TO DELAY
001356  005436                          .DELAY
        104414                  ROMCLK=TRAP+14          ;CALL TO CLOCK ROM ONCE
001360  005504                          .ROMCLK
        104415                  DATACLK=TRAP+15         ;CALL TO CLK DATA
001362  005552                          .DATACLK
        104416                  TIMER=TRAP+16           ;CALL TO DELAY A CLOCK TICK
001364  005616                          .TIMER

                                ;-----------------------------------------------------------------
                                ;:*****************************************************************
```

```
                        ;DMC11 CONTROL INDICATORS FOR CURRENT DMC11 UNDER TEST
                        ;-----------------------------------------------------

001366  000000          STAT1:  0
001370  000000          STAT2:  0
001372  000000          STAT3:  0

                        ;DMC11 VECTOR AND REGISTER INDIRECT POINTERS
                        ;-------------------------------------------

001374  000000          DMRVEC: 0               ;POINTER TO DMC11 RECEIVER INTERRUPT VECTOR
001376  000000          DMRLVL: 0               ;POINTER TO DMC11 RECEIVER INTERRUPT SERVICE PS
001400  000000          DMTVEC: 0               ;POINTER TO DMC11 TRANSMITTER INTERRUPT VECTOR
001402  000000          DMTLVL: 0               ;POINTER TO DMC11 TRANSMITTER INTERRUPT SERVICE PS
001404  000000          DMCSR:  0               ;POINTER TO DMC11 CONTROL STATUS REGISTER
001406  000000          DMCSRH: 0               ;POINTER TO DMC11 CONTROL STATUS REGISTER HIGH BYTE.
001410  000000          DMCTL:  0               ;POINTER TO DMC11 CONTOL OUT REGISTER
001412  000000          DMP04:  0               ;POINTER TO DMC11 PORT REGISTER(SEL 4)
001414  000000          DMP06:  0               ;POINTER TO DMC11 PORT REGISTER(SEL 6)

                        ;TEMP STORAGE
                        ;------------

001416  000000          TEMP:   0
        001460          .=.+40

                        ;DMC11 STATUS TABLE AND ADDRESS ASSIGNMENTS
                        ;------------------------------------------

        001500          .=1500
001500                  DM.MAP:
001500  000001          DMCR00: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 00
001502  000001          DMS100: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 00
001504  000001          DMS200: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 00
001506  000001          DMS300: .BLKW   1               ;3RD STATUS WORD

001510  000001          DMCR01: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 01
001512  000001          DMS101: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 01
001514  000001          DMS201: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 01
001516  000001          DMS301: .BLKW   1               ;3RD STATUS WORD

001520  000001          DMCR02: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 02
001522  000001          DMS102: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 02
001524  000001          DMS202: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 02
001526  000001          DMS302: .BLKW   1               ;3RD STATUS WORD

001530  000001          DMCR03: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 03
001532  000001          DMS103: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 03
001534  000001          DMS203: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 03
001536  000001          DMS303: .BLKW   1               ;3RD STATUS WORD

001540  000001          DMCR04: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 04
001542  000001          DMS104: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 04
001544  000001          DMS204: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 04
001546  000001          DMS304: .BLKW   1               ;3RD STATUS WORD
```

```
914  001550  000001                DMCR05: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 05
915  001552  000001                DMS105: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 05
916  001554  000001                DMS205: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 05
917  001556  000001                DMS305: .BLKW   1               ;3RD STATUS WORD
918
919  001560  000001                DMCR06: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 06
920  001562  000001                DMS106: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 06
921  001564  000001                DMS206: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 06
922  001566  000001                DMS306: .BLKW   1               ;3RD STATUS WORD
923
924  001570  000001                DMCR07: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 07
925  001572  000001                DMS107: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 07
926  001574  000001                DMS207: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 07
927  001576  000001                DMS307: .BLKW   1               ;3RD STATUS WORD
928
929  001600  000001                DMCR10: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 10
930  001602  000001                DMS110: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 10
931  001604  000001                DMS210: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 10
932  001606  000001                DMS310: .BLKW   1               ;3RD STATUS WORD
933
934  001610  000001                DMCR11: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 11
935  001612  000001                DMS111: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 11
936  001614  000001                DMS211: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 11
937  001616  000001                DMS311: .BLKW   1               ;3RD STATUS WORD
938
939  001620  000001                DMCR12: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 12
940  001622  000001                DMS112: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 12
941  001624  000001                DMS212: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 12
942  001626  000001                DMS312: .BLKW   1               ;3RD STATUS WORD
943
944  001630  000001                DMCR13: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 13
945  001632  000001                DMS113: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 13
946  001634  000001                DMS213: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 13
947  001636  000001                DMS313: .BLKW   1               ;3RD STATUS WORD
948
949  001640  000001                DMCR14: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 14
950  001642  000001                DMS114: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 14
951  001644  000001                DMS214: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 14
952  001646  000001                DMS314: .BLKW   1               ;3RD STATUS WORD
953
954  001650  000001                DMCR15: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 15
955  001652  000001                DMS115: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 15
956  001654  000001                DMS215: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 15
957  001656  000001                DMS315: .BLKW   1               ;3RD STATUS WORD
958
959  001660  000001                DMCR16: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 16
960  001662  000001                DMS116: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 16
961  001664  000001                DMS216: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 16
962  001666  000001                DMS316: .BLKW   1               ;3RD STATUS WORD
963
964  001670  000001                DMCR17: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 17
965  001672  000001                DMS117: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 17
966  001674  000001                DMS217: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 17
967  001676  000001                DMS317: .BLKW   1               ;3RD STATUS WORD
968
969  001700  000000                DM.END: 000000
```

```
                        ;DMC11 PASS COUNT AND ERROR COUNT TABLE
                        ;--------------------------------------

001702                  CNT.MAP:
001702  000000          PACT00: 0               ;PASS COUNT FOR DMC11 NUMBER 00
001704  000000          ERCT00: 0               ;ERROR COUNT FOR DMC11 NUMBER 00

001706  000000          PACT01: 0               ;PASS COUNT FOR DMC11 NUMBER 01
001710  000000          ERCT01: 0               ;ERROR COUNT FOR DMC11 NUMBER 01

001712  000000          PACT02: 0               ;PASS COUNT FOR DMC11 NUMBER 02
001714  000000          ERCT02: 0               ;ERROR COUNT FOR DMC11 NUMBER 02

001716  000000          PACT03: 0               ;PASS COUNT FOR DMC11 NUMBER 03
001720  000000          ERCT03: 0               ;ERROR COUNT FOR DMC11 NUMBER 03

001722  000000          PACT04: 0               ;PASS COUNT FOR DMC11 NUMBER 04
001724  000000          ERCT04: 0               ;ERROR COUNT FOR DMC11 NUMBER 04

001726  000000          PACT05: 0               ;PASS COUNT FOR DMC11 NUMBER 05
001730  000000          ERCT05: 0               ;ERROR COUNT FOR DMC11 NUMBER 05

001732  000000          PACT06: 0               ;PASS COUNT FOR DMC11 NUMBER 06
001734  000000          ERCT06: 0               ;ERROR COUNT FOR DMC11 NUMBER 06

001736  000000          PACT07: 0               ;PASS COUNT FOR DMC11 NUMBER 07
001740  000000          ERCT07: 0               ;ERROR COUNT FOR DMC11 NUMBER 07

001742  000000          PACT10: 0               ;PASS COUNT FOR DMC11 NUMBER 10
001744  000000          ERCT10: 0               ;ERROR COUNT FOR DMC11 NUMBER 10

001746  000000          PACT11: 0               ;PASS COUNT FOR DMC11 NUMBER 11
001750  000000          ERCT11: 0               ;ERROR COUNT FOR DMC11 NUMBER 11

001752  000000          PACT12: 0               ;PASS COUNT FOR DMC11 NUMBER 12
001754  000000          ERCT12: 0               ;ERROR COUNT FOR DMC11 NUMBER 12

001756  000000          PACT13: 0               ;PASS COUNT FOR DMC11 NUMBER 13
001760  000000          ERCT13: 0               ;ERROR COUNT FOR DMC11 NUMBER 13

001762  000000          PACT14: 0               ;PASS COUNT FOR DMC11 NUMBER 14
001764  000000          ERCT14: 0               ;ERROR COUNT FOR DMC11 NUMBER 14

001766  000000          PACT15: 0               ;PASS COUNT FOR DMC11 NUMBER 15
001770  000000          ERCT15: 0               ;ERROR COUNT FOR DMC11 NUMBER 15

001772  000000          PACT16: 0               ;PASS COUNT FOR DMC11 NUMBER 16
001774  000000          ERCT16: 0               ;ERROR COUNT FOR DMC11 NUMBER 16

001776  000000          PACT17: 0               ;PASS COUNT FOR DMC11 NUMBER 17
002000  000000          ERCT17: 0               ;ERROR COUNT FOR DMC11 NUMBER 17
```

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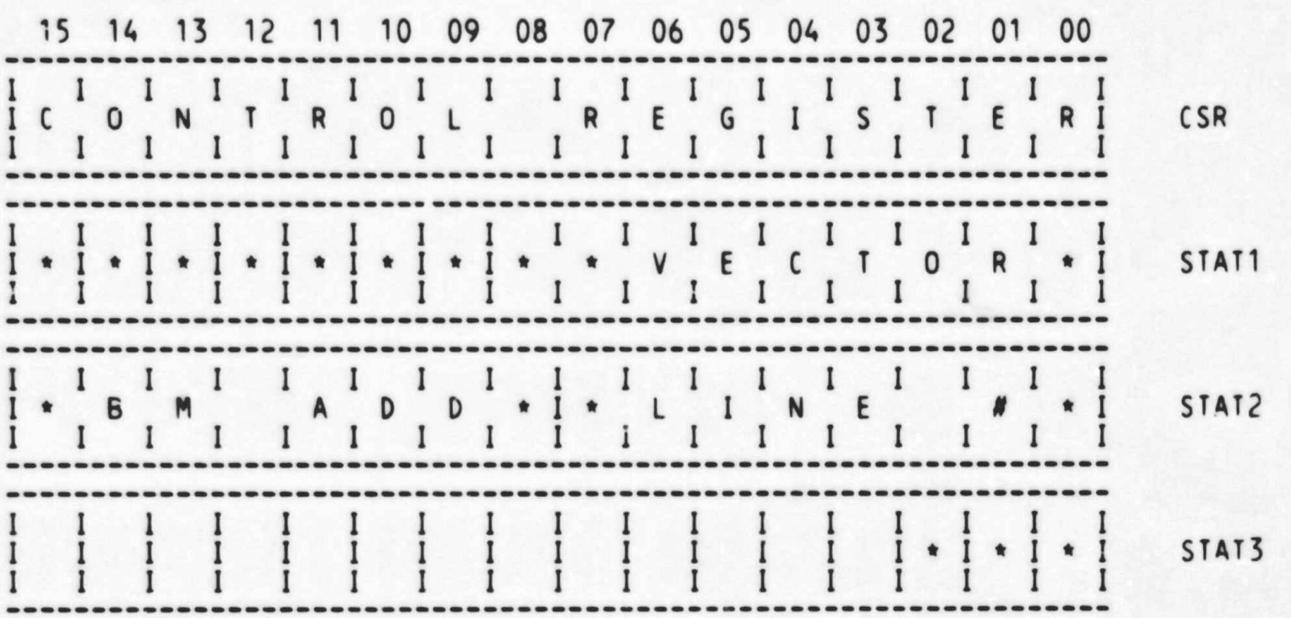
FORMAT OF STATUS TABLE



DEFINITION OF FORMAT

CSR: CONTAINS DMC11 CSR ADDRESS

STAT1: BITS 00-08 IS DMC11 VECTOR ADDRESS
BIT15=1 MICRO-PROCESSOR HAS CRAM
BIT15=0 MICRO-PROCESSOR HAS CROM
BIT14=1 ???? TURNAROUND CONNECTOR IS ON
BIT14=0 NO TURNAROUND CONNECTOR
BIT13=0 LINE UNIT IS AN M8201
BIT13=1 LINE UNIT IS AN M8202
BIT12=1 NO LINE UNIT
BITS 09-11 IS DMC11 BR PRIORITY LEVEL

STAT2: LOW BYTE IS SWITCH PAC#1 (DDCMP LINE NUMBER)
HIGH BYTE IS SWITCH PAC#2 (BM873 BOOT ADD)

STAT3: BIT0=1 DO FREE RUNNING TESTS ON KMC
(MUST BE SET TO A ONE MANUALLY [PROGRAM DZDMI ONLY])
KMC MUST HAVE MICRO-CODE WRITTEN FROM RUNNING
DZDMG TEST 2 FIRST
BIT1=1 DMC11-AL LOCAL HIGH SPEED MICRO-CODE
BIT1=0 DMC11-AR REMOTE LOW SPEED MICRO-CODE
BIT2=0 DMC11-DA (RS232C)
BIT2=1 DMC11-FA (V.35)

```
        $
```

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

002002  012737  000340  177776  .START: MOV     #340,PS         ;LOCK OUT INTERRUPTS
002010  012706  001200                  MOV     #STACK,SP       ;SET UP STACK
002014  012737  005336  000024          MOV     #.PFAIL,@#24    ;SET UP POWER FAIL VECTOR
002022  013737  001310  001314          MOV     DMNUM,SAVNUM    ;SAVE NUMBER OF DEVICES IN SYSTEM.
002030  005037  010144                  CLR     SWFLG           ;CLEAR SOFT TYPEOUT FLAG
002034  105037  001325                  CLRB    ERRFLG          ;CLEAR ERROR FLAG
002040  105037  001327                  CLRB    QV.FLG          ;ZERO QUICK VERIFY FLAG
002044  012737  001470  001320          MOV     #DM.MAP-10,CREAM;GET MAP POINTER.
002052  012737  001676  001322          MOV     #CNT.MAP-4,MILK ;GET PASS COUNT MAP POINTER
002060  012737  100000  001316          MOV     #BIT15,RUN      ;POINT POINTER TO FIRST DEVICE.
002066  012700  001702                  MOV     #CNT.MAP,R0     ;PASS COUNT POINTER TO R0
002072  005020                  23$:     CLR     (R0)+           ;CLEAR TABLE
002074  022700  002002                  CMP     #CNT.MAP+100,R0 ;DONE YET?
002100  001374                          BNE     23$             ;KEEP GOING
002102  005037  001234                  CLR     LSTERR          ;CLEAR LAST ERROR POINTER
002106  012737  000001  001226          MOV     #1,TSTNO        ;SET UP FOR TEST 1
002114  012737  002002  001214          MOV     #.START,RETURN  ;SET UP FOR POWER FAIL BEFORE
                                                                ;TESTING STARTS
002122  013746  000006                  MOV     @#6,-(SP)       ;SAVE CURRENT VECTORS
002126  013746  000004                  MOV     @#4,-(SP)       ;
002132  012737  002166  000004          MOV     #6$,@#4         ;SET UP FOR TIMEOUT
002140  012737  177570  001202          MOV     #177570,SWR     ;SET SWR TO HARD SWR ADDRESS
002146  012737  177570  001200          MOV     #177570,DISPLAY ;SET DISPLAY TO HARD SWR ADDRESS
002154  022777  177777  177020          CMP     #-1,@SWR        ;REFERENCE HARDWARE SWITCH REGISTER
002162  001402                          BEQ     6$+2            ;IF = -1 USE SOFT SWR ANYWAY
002164  000407                          BR      7$              ;IF IT EXISTS AND NOT = -1 USE HARD SWR
002166  022626                  6$:     CMP     (SP)+,(SP)+     ;ADJUST STACK
002170  012737  000176  001202          MOV     #SWREG,SWR      ;POINTER TO SOFT SWR
002176  012737  000174  001200          MOV     #DISPREG,DISPLAY;POINTER TO SOFT DISPLAY REG
002204  012637  000004          7$:     MOV     (SP)+,@#4       ;RESTORE VECTORS
002210  012637  000006                  MOV     (SP)+,@#6       ;
002214  105737  001324                  TSTB    INIFLG          ;HAS INITIALIZATION BEEN PERFORMED
002220  001006                          BNE     20$             ;BR IF YES
002222  022737  003522  000042          CMP     #$ENDAD,@#42    ;IF ACT-11 AUTOMATIC MODE, DON'T TYPE ID
002230  001402                          BEQ     20$
002232  104402  001000                  TYPE    ,MTITLE         ;TYPE TITLE MESSAGE
002236  004737  007734          20$:    JSR     PC,CKSWR        ;CHECK FOR SOFT SWR
002242  017737  176734  001236          MOV     @SWR,STRTSW     ;STORE STARTING SWITCHES
002250  005737  000042                  TST     @#42            ;IS IT RUNNING IN AUTO MODE?
002254  001402                          BEQ     .+6             ;BR IF NO
002256  005037  001236                  CLR     STRTSW          ;IF YES, CLEAR SWITCHES
002262  032737  000001  001236          BIT     #SW00,STRTSW    ;IF SW00=1, QUESTIONS ARE ASKED.
002270  001012                          BNE     17$             ;BR IF SW00=1
002272  105737  001236                  TSTB    STRTSW          ;BIT7=1??
002276  100007                          BPL     17$             ;BR IF SW07=0
002300  005737  001306                  TST     DMACTV          ;ARE ANY DEVICES SELECTED?
002304  001006                          BNE     16$             ;BR IF YES
002306  104402  007154                  TYPE,   NOACT           ;NO DEVICES SELECTED.
```

```
                                        HALT                    ;STOP THE SHOW
                                        BR      .-2             ;DISQUALIFY CONTINUE SWITCH
                                17$:    JSR     PC,AUTO.SIZE    ;GO DO THE AUTO SIZE
                                16$:    TSTB    INIFLG          ;FIRST TIME?
                                        BEQ     21$             ;BR IF YES
                                        TSTB    STRTSW          ;IF USING SAME PARAMETERS DONT TYPE MAP
                                        BMI     1$
                                        BIT     #BIT1!BIT2,STRTSW;IS TEST NO. OR LOCK SELECTED
                                        BEQ     24$             ;IF NO THEN TYPE STATUS
                                        BR      1$              ;IF YES DO NOT TYPE STATUS
                                21$:    COM     INIFLG          ;SET FLAG
                                24$:    TYPE    ,XHEAD          ;TYPE HEADER
                                        MOV     #DM.MAP,R4      ;SET POINTER
                                5$:     MOV     R4,TEMP1        ;SET ADDRESS
                                        MOV     (R4)+,TEMP2     ;SET CSR
                                        BEQ     1$              ;ALL DONE IF ZERO
                                        MOV     (R4)+,TEMP3     ;SET STAT1
                                        MOV     (R4)+,TEMP4     ;SET STAT2
                                        MOV     (R4)+,TEMP5     ;SET STAT3
                                        CONVRT                  ;TYPE OUT STATUS MAP
                                        XSTATQ                  ;
                                        BR      5$
                                1$:     MOV     #DM.MAP,R0      ;R0 POINTS TO STATUS TABLE

                                ;;*************************************************************************
                                ;;*AUTO SIZE TEST
                                ;;*THIS TEST VERIFYS THAT THE DMC11S AND/OR KMC11S ARE AT THE CORRECT FLOATING
                                ;;*ADDRESSES FOR YOUR SYSTEM. IF THIS TEST FAILS, IT IS NOT A HARDWARE ERROR.
                                ;;*CHECK THE ADDRESSES OF ALL FLOATING DEVICES (DJ,DH,DQ,DU,DUP,LK,DMC,DZ,KMC).
                                ;;*IF THERE ARE NO OTHER FLOATING DEVICES BEFORE THE DMC11, THE FIRST
                                ;;*DMC11 ADDRESS IS 760070, KMC11 IS 760110. NO DEVICE SHOULD EVER BE AT
                                ;;*ADDRESS 760000. THIS TEST MAY REQUIRE 2 OR MORE ATTEMPTS TO GET THE
                                ;;*RIGHT ADDRESSES. AFTER YOU HAVE CHANGED THE ADDRESS TO WHAT IT TOLD
                                ;;*YOU THE FIRST TIME, IT MAY COME BACK AND TELL YOU A DIFFERENT ADDRESS
                                ;;*THE NEXT TIME YOU RUN IT. PLEASE HAVE PATIENCE, THE FINAL ADDRESS
                                ;;*WILL BE CORRECT (AS LONG AS ALL DEVICES IN FRONT OF THE DMC'S ARE
                                ;;*CORRECT).
                                ;;*************************************************************************

002424  013746  000004                MOV     @#4,-(SP)       ;SAVE LOC 4
002430  013746  000006                MOV     @#6,-(SP)       ;SAVE LOC 6
002434  005037  000006                CLR     @#6             ;CLEAR VEC+2
002440  005037  001252                CLR     TEMP3           ;CLEAR FLAG
002444  005005                        CLR     R5              ;R5=0=DMC, R5=-1=KMC
002446  011037  001404        AUSTRT: MOV     (R0),DMCSR      ;GET NEXT DMC CSR
002452  001564                        BEQ     AUDONE          ;BR IF DONE
002454  005705                        TST     R5              ;DMC OR KMC?
002456  001005                        BNE     1$              ;BR IF KMC
002460  032760  100000  000002        BIT     #BIT15,2(R0)    ;CHECK FOR DMC CSR
002466  001061                        BNE     SKIP            ;SKIP IF NOT DMC
002470  000404                        BR      2$              ;ITS A DMC SO CONTINUE
002472  032760  100000  000002  1$:   BIT     #BIT15,2(R0)    ;CHECK FOR KMC CSR
002500  001454                        BEQ     SKIP            ;SKIP IF NOT KMC
002502  012737  002674  000004  2$:   MOV     #NODEV,@#4      ;SET UP FOR TIMEOUT
002510  005705                        TST     R5              ;DMC OR KMC?
002512  001003                        BNE     3$              ;BR IF KMC
```

```
1193  002514  012703  000006            MOV     #6,R3           ;R3 IS COUNT OF DEVICES BEFORE DMC
1194  002520  000402                    BR      4$              ;GO ON
1195  002522  012703  000010      3$:   MOV     #10,R3          ;R3 IS COUNT OF DEVICES BEFORE KMC
1196  002526  012702  003010      4$:   MOV     #DEVTAB,R2      ;R2 IS DEVICE TABLE PONTER
1197  002532  012701  160010            MOV     #160010,R1      ;START WITH ADDRESS 160010
1198  002536  005711            FLOAT:  TST     (R1)            ;CHECK ADDRESS IN R1
1199  002540  111204                    MOVB    (R2),R4         ;IF NO TIMEOUT, GET NEXT ADDRESS
1200  002542  060401                    ADD     R4,R1           ;IN R1
1201  002544  005201                    INC     R1              ;
1202  002546  040401                    BIC     R4,R1           ;
1203  002550  005703                    TST     R3              ;ANY MORE DEVICES TO CHECK FOR?
1204  002552  001371                    BNE     FLOAT           ;BR IF YES
1205  002554  012737  002700  000004    MOV     #ERR,@#4        ;OK ONLY DMC'S ARE LEFT, SET UP FOR TIMEOUT
1206  002562  010137  003022            MOV     R1,XLOC         ;SAVE FIRST DMC/KMC ADDRESS
1207  002566  005705            FY:     TST     R5              ;DMC OR KMC?
1208  002570  001005                    BNE     1$              ;BR IF KMC
1209  002572  032760  100000  000002    BIT     #BIT15,2(R0)    ;CHECK FOR DMC CSR
1210  002600  001014                    BNE     SKIP            ;SKIP IF NOT DMC
1211  002602  000404                    BR      2$              ;ITS A DMC SO CONTINUE
1212  002604  032760  100000  000002  1$:   BIT     #BIT15,2(R0)    ;CHECK FOR KMC CSR
1213  002612  001407                    BEQ     SKIP            ;SKIP IF NOT KMC
1214  002614  005711            2$:     TST     (R1)            ;CHECK DMC ADDRESS
1215  002616  020137  001404            CMP     R1,DMCSR        ;DOES IT MATCH
1216  002622  001411                    BEQ     OK              ;BR IF YES
1217  002624  062701  000010            ADD     #10,R1          ;GET NEXT DMC ADDRESS
1218  002630  000756                    BR      FY              ;DO IT AGAIN
1219  002632  062700  000010      SKIP: ADD     #10,R0          ;SKIP TO NEXT CSR IN TABLE
1220  002636  011037  001404            MOV     (R0),DMCSR      ;GET NEXT CSR
1221  002642  001470                    BEQ     AUDONE          ;BR IF DONE
1222  002644  000750                    BR      FY              ;ELSE CONTINUE
1223  002646  062700  000010      OK:   ADD     #10,R0          ;SKIP TO NEXT DMC CSR
1224  002652  062737  000010  003022    ADD     #10,XLOC        ;UPDATE EXPECTED DMC/KMC ADDRESS
1225  002660  011037  001404            MOV     (R0),DMCSR      ;GET NEXT DMC/KMC CSR
1226  002664  001457                    BEQ     AUDONE          ;BR IF DONE
1227  002666  013701  003022            MOV     XLOC,R1         ;GET EXPECTED DMC/KMC ADDRESS
1228  002672  000735                    BR      FY              ;CONTINUE
1229  002674  122243            NODEV:  CMPB    (R2)+,-(R3)     ;ON TIMEOUT, INC R2, DEC R3
1230  002676  000002                    RTI                     ;RETURN
1231  002700  005737  001252      ERR:  TST     TEMP3           ;CHECK FLAG IF = 0 TYPE HEADER
1232  002704  001014                    BNE     1$              ;SKIP HEADER
1233  002706  104402                    TYPE                    ;TYPEOUT HEADER MESSAGE
1234  002710  007223                    CONERR                  ;CONFIGURATION ERROR!!!!
1235  002712  012737  002700  001276    MOV     #ERR,SAVPC      ;SAVE PC FOR TYPEOUT
1236  002720  104411                    CNVRT                   ;TYPE OUT ERROR PC
1237  002722  002770                    ERRPC                   ;
1238  002724  104402                    TYPE                    ;TYPE REST OF HEADER
1239  002726  007277                    CNERR                   ;
1240  002730  012737  177777  001252    MOV     #-1,TEMP3       ;SET FLAG SO IT ONLY GETS TYPED ONCE
1241  002736  010137  001262      1$:   MOV     R1,SAVR1        ;SAVE R1 FOR TYPEOUT
1242  002742  104410                    CONVRT
1243  002744  002776                    CONTAB                  ;TYPE CSR VALUES
1244  002746  005705                    TST     R5              ;DMC OR KMC ?
1245  002750  001003                    BNE     3$              ;BR IF KMC
1246  002752  104402                    TYPE
1247  002754  007320                    DMCM
1248  002756  000402                    BR      4$              ;CONTINUE
```

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1249  002760  104402                  3$:     TYPE
1250  002762  007330                          KMCM
1251  002764  022626                  4$:     CMP     (SP)+,(SP)+     ;ADJUST STACK
1252  002766  000727                          BR      OK              ;BR TO GET OUT
1253  002770  000001                  ERRPC:  1
1254  002772     006      002                 .BYTE   6,2
1255  002774  001276                          SAVPC
1256  002776  000002                  CONTAB: 2
1257  003000     006      004                 .BYTE   6,4
1258  003002  003022                          XLOC
1259  003004     006      002                 .BYTE   6,2
1260  003006  001404                          DMCSR
1261  003010     007                  DEVTAB: .BYTE   7               ;DJ
1262  003011     017                          .BYTE   17              ;DH
1263  003012     007                          .BYTE   7               ;DQ
1264  003013     007                          .BYTE   7               ;DU
1265  003014     007                          .BYTE   7               ;DUP
1266  003015     007                          .BYTE   7               ;LK
1267  003016     007                          .BYTE   7               ;DMC
1268  003017     007                          .BYTE   7               ;DZ
1269  003020     007                          .BYTE   7               ;KMC
1270          003022                  .EVEN
1271  003022  000000                  XLOC:   0
1272  003024  005705                  AUDONE: TST     R5              ;DMC?
1273  003026  001005                          BNE     1$              ;BR IF KMC AND ALL DONE
1274  003030  012705  177777                  MOV     #-1,R5          ;SET R5 TO -1 (KMC)
1275  003034  012700  001500                  MOV     #DM.MAP,R0      ;RESET R0 TO START OF TABLE
1276  003040  000602                          BR      AUSTRT          ;GO DO KMC'S
1277  003042  012637  000006          1$:     MOV     (SP)+,@#6       ;RESTORE LOC 6
1278  003046  012637  000004                  MOV     (SP)+,@#4       ;RESTORE LOC 4
1279  003052  032737  000010  001236          BIT     #SW03,STRTSW    ;SELECT SPECIFIC DEVICES??
1280  003060  001422                          BEQ     3$              ;BR IF NO.
1281  003062  104402  006144                  TYPE    ,MNEW           ;TYPE THE MESSAGE.
1282  003066  005000                          CLR     R0              ;ZERO DATA LIGHTS
1283  003070  000000                          HALT                    ;WAIT FOR USER TO TELL WHAT DEVICES TO RUN
1284  003072  027737  176104  001312          CMP     @SWR,SAVACT     ;IS THE NUMBER VALID?
1285  003100  101404                          BLOS    2$              ;BR IF NUMBER IS OK.
1286  003102  104402  006005                  TYPE    ,MERR3          ;TELL USER OF INVALID NUMBER.
1287  003106  000000                          HALT                    ;STOP EVERY THING.
1288  003110  000776                          BR      .-2             ;RESTART THE PROGRAM AGAIN.
1289  003112  017737  176064  001306  2$:     MOV     @SWR,DMACTV     ;GET NEW DEVICE PATTERN
1290  003120  013700  001306                  MOV     DMACTV,R0       ;SHOW THE USER WHAT HE SELECTED.
1291  003124  000000                          HALT                    ;CONTINUE DYNAMIC SWITCHES.
1292  003126  012700  000300          3$:     MOV     #300,R0         ;PREPARE TO CLEAR THE FLOATING
1293  003132  012701  000302                  MOV     #302,R1         ;VECTOR AREA. 300-776
1294  003136  010120                  4$:     MOV     R1,(R0)+        ;START PUTTING "PC+2 - HALT"
1295  003140  005021                          CLR     (R1)+           ;IN VECTOR AREA.
1296  003142  022021                          CMP     (R0)+,(R1)+     ;POP POINTERS
1297  003144  022700  001000                  CMP     #1000,R0        ;ALL DONE??
1298  003150  001372                          BNE     4$              ;BR IF NO.
1299
1300                                  ;TEST START AND RESTART
1301                                  ;----------------------
1302
1303  003152  012706  001200          .BEGIN: MOV     #STACK,SP       ;SET UP STACK
1304  003156  013746  000006                  MOV     @#6,-(SP)       ;SAVE LOC 6
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1305  003162  013746  000004              MOV     @#4,-(SP)       ;SAVE LOC 4
1306  003166  005000                      CLR     R0              ;START AT 0
1307  003170  012737  003234  000004      MOV     #2$,@#4         ;SET UP FOR TIME OUT
1308  003176  005037  000006              CLR     @#6             ;TO AUTOSIZE MEMORY
1309  003202  005720                6$:   TST     (R0)+           ;CHECK ADDRESS IN R0
1310  003204  022700  157776              CMP     #157776,R0      ;IS IT AT LEAST 28K
1311  003210  001374                      BNE     6$              ;BR IF NO
1312  003212  162700  007776              SUB     #7776,R0        ;SAVE 2K FOR MONITORS
1313  003216  010037  001304        7$:   MOV     R0,MEMLIM       ;STORE MEMORY LIMIT
1314  003222  012637  000004              MOV     (SP)+,@#4       ;RESTORE LOC 4
1315  003226  012637  000006              MOV     (SP)+,@#6       ;RESTORE LOC 6
1316  003232  000413                      BR      10$             ;CONTINUE
1317  003234  022626                2$:   CMP     (SP)+,(SP)+     ;ADJUST STACK
1318  003236  162700  000004              SUB     #4,R0           ;GET LAST GOOD ADDRESS
1319  003242  162700  007776              SUB     #7776,R0        ;SAVE 2K FOR MONITORS
1320  003246  022700  030000              CMP     #30000,R0       ;IS IT 8K?
1321  003252  001361                      BNE     7$              ;BR IF NO
1322  003254  012700  037400              MOV     #37400,R0       ;IF 8K DON'T SAVE 2K
1323  003260  000756                      BR      7$              ;
1324  003262  012737  000340  177776 10$:  MOV     #340,PS         ;LOCK OUT INTERRUPTS
1325  003270  032737  000004  001236      BIT     #BIT2,STRTSW    ;CHECK FOR LOCK ON TEST
1326  003276  001411                      BEQ     1$              ;BR IF NO LOCK DESIRED.
1327  003300  104402  006043              TYPE    ,MLOCK          ;TYPE LOCK SELECTED.
1328  003304  012737  000240  003612      MOV     #NOP,TTST       ;ADJUST SCOPE ROUTINE.
1329  003312  012737  000240  003614      MOV     #NOP,TTST+2     ;SET UP TO LOCK
1330  003320  000406                      BR      3$              ;CONTINUE ALONG.
1331  003322  013737  003730  003612 1$:   MOV     BRW,TTST        ;PREPARE NORMAL SCOPE ROUTINE
1332  003330  013737  003732  003614      MOV     BRX,TTST+2      ;LOCK NOT SELECTED, SET UP FOR NORMAL SCOPE LOOP
1333  003336  012737  010206  001214 3$:   MOV     #CYCLE,RETURN   ;START AT "CYCLE" FIND WHICH DEVICE TO TEST
1334  003344  032737  000002  001236 4$:   BIT     #SW01,STRTSW    ;IS TEST NO. SELECTED?
1335  003352  001002                      BNE     5$              ;BR IF YES
1336  003354  104402  005755              TYPE    ,MR             ;TYPE R
1337  003360  000177  175630        5$:   JMP     @RETURN         ;START TESTING
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                                                ;END OF PASS
                                                ;TYPE NAME OF TEST
                                                ;UPDATE PASS COUNT
                                                ;CHECK FOR EXIT TO ACT-11
                                                ;RESTART TEST

003364  000005                        .EOP:   RESET                   ;MAKE THE  WORLD CLEAN AGAIN.
003366  005037  001234                        CLR     LSTERR          ;CLEAR LAST ERROR PC
003372  105037  001325                        CLRB    ERRFLG          ;CLEAR ERROR FLAG
003376  005237  001230                        INC     PASCNT          ;UPDATE PASS COUNT
003402  013777  001230  175570                MOV     PASCNT,@DISPLAY ;DISPLAY PASS COUNT
003410  104402  005733                        TYPE    ,MEPASS         ;TYPE END PASS
003414  104402  006072                        TYPE    ,MCSRX          ;TYPE CSR
003420  104411  003546                        CNVRT   ,XCSR           ;SHOW IT
003424  104402  006100                        TYPE    ,MVECX          ;TYPE VECTOR
003430  104411  003554                        CNVRT   ,XVEC           ;SHOW IT
003434  104402  006106                        TYPE    ,MPASSX         ;TYPE PASSES
003440  104411  003562                        CNVRT   ,XPASS          ;SHOW IT
003444  104402  006117                        TYPE    ,MERRX          ;TYPE ERRORS
003450  104411  003570                        CNVRT   ,XERR           ;SHOW IT
003454  013700  001322                        MOV     MILK,R0         ;GET POINTER TO PASS COUNT
003460  013720  001230                        MOV     PASCNT,(R0)+    ;STORE PASS COUNT FOR THIS DMC11
003464  013720  001232                        MOV     ERRCNT,(R0)+    ;STORE ERROR COUNT FOR THIS DMC11
003470  005337  001314                        DEC     SAVNUM          ;ARE ALL DEVICES TESTED?
003474  001017                              BNE     RESTRT          ;BR IF NO.
003476  112737  000377  001327              MOVB    #377,QV.FLG     ;SET THE QUICK VERIFY FLAG.
003504  013737  001310  001314              MOV     DMNUM,SAVNUM    ;RESTORE THE COUNT
003512  013701  000042                      MOV     @#42,R1         ;CHECK FOR ACT-11 OR DDP
003516  001406                              BEQ     RESTRT          ;IF NOT, CONTINUE TESTING
003520  000005                              RESET                   ;STOP THE SHOW--CLEAR THE WORLD
003522                              $ENDAD:
003522  004711                              JSR     PC,(R1)
003524  000240                              NOP
003526  000240                              NOP
003530  000240                              NOP
003532  000240                              NOP
003534  012737  010206  001214      RESTRT: MOV     #CYCLE,RETURN
003542  000137  010206                      JMP     CYCLE
003546  000001                      XCSR:   1
003550     006      002                     .BYTE   6,2
003552  001404                              DMCSR
003554  000001                      XVEC:   1
003556     004      002                     .BYTE   4,2
003560  001374                              DMRVEC
003562  000001                      XPASS:  1
003564     006      002                     .BYTE   6,2
003566  001230                              PASCNT
003570  000001                      XERR:   1
003572     006      002                     .BYTE   6,2
003574  001232                              ERRCNT

                                                ;SCOPE LOOP AND INTERATION HANDLER
                                                ;--------------------------------

003576  004737  007734              .SCOPE: JSR     PC,CKSWR        ;CKECK FOR SOFT SWR
003602  010016                              MOV     R0,(SP)         ;SAVE R0 ON THE STACK
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1394  003604  032777  040000  175370          BIT     #BIT14,@SWR     ;"LOOP ON THIS TEST"?
1395  003612  001407                  TTST:   BEQ     1$              ;BR IF NO.  (IF LOCK SW01=1; THIS LOC =240)
1396  003614  000437                          BR      3$              ;GOTO 3$    (IF LOCK SW01=1; THIS LOC =240)
1397  003616  005737  003734                  TST     DONE            ;WAS TKCSR DONE SET?
1398  003622  001434                          BEQ     3$              ;BR IF NO (LOCKED ON TEST)
1399  003624  005037  003734                  CLR     DONE            ;YES, CLEAR FLAG
1400  003630  000415                          BR      2$              ;GO TO NEXT TEST
1401  003632  032777  004000  175342  1$:     BIT     #SW11,@SWR      ;DELETE ITERATION?  (QUICK PASS)
1402  003640  001011                          BNE     2$              ;BR IF YES
1403  003642  105737  001327                  TSTB    QV.FLG          ;HAVE PASSES BEECOMPLETED?
1404  003646  001406                          BEQ     2$              ;BR IF QUICK PASS.
1405  003650  005237  001224                  INC     LPCNT           ;UPDATE ITERATION COUNTER
1406  003654  023737  001224  001222          CMP     LPCNT,ICOUNT    ;ARE ALL ITERATIONS DONE??
1407  003662  101414                          BLOS    3$              ;BR IF NOT YET
1408  003664  105037  001325          2$:     CLRB    ERRFLG          ;PREPARE FOR NEW TEST
1409  003670  005037  001224                  CLR     LPCNT           ;START ICOUNTER AT 0
1410  003674  005037  001220                  CLR     LOCK
1411  003700  012737  000020  001222          MOV     #20,ICOUNT      ;RESET ITERATIONS
1412  003706  013737  001216  001214          MOV     NEXT,RETURN     ;GET NEXT TEST
1413  003714  011600                  3$:     MOV     (SP),R0         ;POP R0 OFF OF THE STACK
1414  003716  022626                          POP2SP                  ;FAKE AN "RTI"
1415  003720  013701  001404                  MOV     DMCSR,R1        ;R1 CONTAINS BASE DMC ADDRESS
1416  003724  000177  175264                  JMP     @RETURN         ;GO DO THE TEST
1417  003730  001407                  BRW:    1407
1418  003732  000437                  BRX:    437
1419  003734  000000                  DONE:   0
1420
1421                                          ;CHECK FOR FREEZE ON CURRENT DATA
1422                                          ;-------------------------------
1423
1424  003736  004737  007734          .SCOP1: JSR     PC,CKSWR        ;CHECK FOR SOFT SWR
1425  003742  032777  001000  175232          BIT     #SW09,@SWR      ;IS SW09=1(SET)?
1426  003750  001405                          BEQ     1$              ;BR IF NOT SET.
1427  003752  005737  001220                  TST     LOCK
1428  003756  001402                          BEQ     1$
1429  003760  013716  001220                  MOV     LOCK,(SP)       ;GOTO THE ADDRESS IN LOCK.
1430  003764  000002                  1$:     RTI                     ;GO BACK.
1431
1432                                          ;TELETYPE OUTPUT ROUTINE
1433                                          ;----------------------
1434
1435  003766  010546                  .TYPE:  MOV     R5,-(SP)        ;SAVE R5 ON THE STACK.
1436  003770  017605  000002                  MOV     @2(SP),R5       ;GET ADDRESS OF MESSAGE.
1437  003774  062766  000002  000002          ADD     #2,2(SP)        ;POP OVER ADDRESS.
1438  004002  005737  010144          4$:     TST     SWFLG           ;SOFT SWR MESSAGE?
1439  004006  001004                          BNE     1$              ;IF YES TYPE IT OUT REGARDLESS OF SW12
1440  004010  032777  010000  175164          BIT     #SW12,@SWR      ;INHIBIT ALL PRINT OUT??
1441  004016  001012                          BNE     3$              ;BR IF NO PRINT OUT WANTED (SW12=1)
1442  004020  105715                  1$:     TSTB    (R5)            ;IS NUMBER MINUS? (MSB=1(BIT7))
1443  004022  100002                          BPL     2$              ;BR IF NUMBER IS PLUS
1444  004024  104402  005672                  TYPE    ,MCRLF          ;TYPE A CR/LF!
1445  004030  105777  175154          2$:     TSTB    @TPCSR          ;TTY READY?
1446  004034  100375                          BPL     2$              ;BR IF NO.
1447  004036  112577  175150                  MOVB    (R5)+,@TPDBR    ;PRINT CURRENT CHAR.
1448  004042  001357                          BNE     4$              ;IF NOT ZERO KEEP PRINTING!
1449  004044  012605                  3$:     MOV     (SP)+,R5        ;END OF OUTPUT. RESTORE R5
```

```
1450  004046  000002                        RTI                     ;GO HOME
1451                                        ;-----------------------
1452
1453  004050  010346                .INSTR:  MOV     R3,-(SP)        ;SAVE R3 ON STACK
1454  004052  010446                         MOV     R4,-(SP)        ;SAVE R4 ON STACK
1455  004054  017637  000004  004072         MOV     @4(SP),.MSG
1456  004062  062766  000002  000004         ADD     #2,4(SP)
1457  004070  104402                .INST1:  TYPE
1458  004072  000000                .MSG:    0
1459  004074  012704  007630                 MOV     #INBUF,R4
1460  004100  012703  000007                 MOV     #7,R3
1461  004104  105777  175074         1$:     TSTB    @TKCSR
1462  004110  100375                         BPL     1$
1463  004112  117714  175070                 MOVB    @TKDBR,(R4)
1464  004116  142714  000200                 BICB    #200,(R4)
1465  004122  122427  000015                 CMPB    (R4)+,#15
1466  004126  001417                         BEQ     INSTR2
1467  004130  105777  175054         2$:     TSTB    @TPCSR
1468  004134  100375                         BPL     2$
1469  004136  017777  175044  175046         MOV     @TKDBR,@TPDBR
1470  004144  005303                         DEC     R3
1471  004146  001356                         BNE     1$
1472  004150  012604                         MOV     (SP)+,R4
1473  004152  012603                         MOV     (SP)+,R3
1474  004154  104402  005666         .INSTE:  TYPE    ,MQM
1475  004160  010346                         MOV     R3,-(SP)
1476  004162  010446                         MOV     R4,-(SP)
1477  004164  000741                         BR      .INST1
1478  004166  012604                INSTR2:  MOV     (SP)+,R4        ;RESTORE R4
1479  004170  012603                         MOV     (SP)+,R3        ;RESTORE R3
1480  004172  000002                         RTI
1481
1482                                        ;CONVERT ASCII STRING TO OCTAL
1483                                        ;-----------------------------
1484
1485  004174  010546                .PARAM:  MOV     R5,-(SP)
1486  004176  010446                         MOV     R4,-(SP)
1487  004200  016605  000004                 MOV     4(SP),R5
1488  004204  012537  004364                 MOV     (R5)+,LOLIM
1489  004210  012537  004366                 MOV     (R5)+,HILIM
1490  004214  012537  004370                 MOV     (R5)+,DEVADR
1491  004220  112537  004372                 MOVB    (R5)+,LOBITS
1492  004224  112537  004373                 MOVB    (R5)+,ADRCNT
1493  004230  010566  000004                 MOV     R5,4(SP)
1494  004234  005005                PARAM1:  CLR     R5
1495  004236  012704  007630                 MOV     #INBUF,R4
1496  004242  122714  000015                 CMPB    #15,(R4)
1497  004246  001420                         BEQ     PARERR
1498  004250  121427  000060         1$:     CMPB    (R4),#60
1499  004254  002415                         BLT     PARERR
1500  004256  121427  000067                 CMPB    (R4),#67
1501  004262  003012                         BGT     PARERR
1502  004264  142714  000060                 BICB    #60,(R4)
1503  004270  152405                         BISB    (R4)+,R5
1504  004272  122714  000015                 CMPB    #15,(R4)
1505  004276  001406                         BEQ     LIMITS
```

```
1506  004300  006305                    ASL     R5
1507  004302  006305                    ASL     R5
1508  004304  006305                    ASL     R5
1509  004306  000760                    BR      1$
1510  004310  104404            PARERR: INSTER
1511  004312  000750                    BR      PARAM1
1512
1513                                    ;TEST TO SEE IF NUMBER IS WITHIN LIMITS
1514                                    ;--------------------------------------
1515
1516  004314  020537  004366      LIMITS: CMP     R5,HILIM
1517  004320  101373                    BHI     PARERR
1518  004322  020537  004364            CMP     R5,LOLIM
1519  004326  103770                    BLO     PARERR
1520  004330  133705  004372            BITB    LOBITS,R5
1521  004334  001365                    BNE     PARERR
1522
1523                                    ;STORE NUMBER AT SPECIFIED ADDRESS
1524
1525  004336  013704  004370            MOV     DEVADR,R4
1526  004342  010524              1$:   MOV     R5,(R4)+
1527  004344  062705  000002            ADD     #2,R5
1528  004350  105337  004373            DECB    ADRCNT
1529  004354  001372                    BNE     1$
1530  004356  012604                    MOV     (SP)+,R4
1531  004360  012605                    MOV     (SP)+,R5
1532  004362  000002                    RTI
1533  004364  000000            LOLIM:  0
1534  004366  000000            HILIM:  0
1535  004370  000000            DEVADR: 0
1536  004372  000000            LOBITS: 0
1537          004373            ADRCNT=LOBITS+1
1538
1539                                    ;SAVE PC OF TEST THAT FAILED AND R0-R5
1540                                    ;-------------------------------------
1541
1542  004374  016637  000004  001276 .SAV05: MOV     4(SP),SAVPC     ;SAVE R7 (PC)
1543
1544                                    ;SAVE R0-R5
1545
1546  004402  010537  001272      SV05:   MOV     R5,SAVR5        ;SAVE R5
1547  004406  010437  001270              MOV     R4,SAVR4        ;SAVE R4
1548  004412  010337  001266              MOV     R3,SAVR3        ;SAVE R3
1549  004416  010237  001264              MOV     R2,SAVR2        ;SAVE R2
1550  004422  010137  001262              MOV     R1,SAVR1        ;SAVE R1
1551  004426  010037  001260              MOV     R0,SAVR0        ;SAVE R0
1552  004432  000002                      RTI                     ;LEAVE.
1553
1554                                    ;RESTORE R0-R5
1555
1556  004434  013700  001260      .RES05: MOV     SAVR0,R0        ;RESTORE R0
1557  004440  013701  001262              MOV     SAVR1,R1        ;RESTORE R1
1558  004444  013702  001264              MOV     SAVR2,R2        ;RESTORE R2
1559  004450  013703  001266              MOV     SAVR3,R3        ;RESTORE R3
1560  004454  013704  001270              MOV     SAVR4,R4        ;RESTORE R4
1561  004460  013705  001272              MOV     SAVR5,R5        ;RESTORE R5
```

```
1562  004464  000002                          RTI                     ;LEAVE
1563
1564                                          ;CONVERT OCTAL NUMBER TO ASCII AND OUTPUT TO TELEPRINTER
1565                                          ;-----------------------------------------------------
1566
1567  004466  104402  005672          .CONVR: TYPE    ,MCRLF
1568  004472  010046                  .CNVRT: MOV     R0,-(SP)
1569  004474  010146                          MOV     R1,-(SP)
1570  004476  010346                          MOV     R3,-(SP)
1571  004500  010446                          MOV     R4,-(SP)
1572  004502  010546                          MOV     R5,-(SP)
1573  004504  017601  000012                  MOV     @12(SP),R1
1574  004510  062766  000002  000012          ADD     #2,12(SP)
1575  004516  012137  004710                  MOV     (R1)+,WRDCNT
1576  004522  112137  004712          1$:     MOVB    (R1)+,CHRCNT
1577  004526  112137  004713                  MOVB    (R1)+,SPACNT
1578  004532  013137  004714                  MOV     @(R1)+,BINWRD
1579  004536  122737  000003  004712          CMPB    #3,CHRCNT
1580  004544  001003                          BNE     2$
1581  004546  042737  177400  004714          BIC     #177400,BINWRD
1582  004554  013704  004714          2$:     MOV     BINWRD,R4
1583  004560  113705  004712                  MOVB    CHRCNT,R5
1584  004564  012700  001416                  MOV     #TEMP,R0
1585  004570  010403                  3$:     MOV     R4,R3
1586  004572  042703  177770                  BIC     #177770,R3
1587  004576  062703  000060                  ADD     #060,R3
1588  004602  110320                          MOVB    R3,(R0)+
1589  004604  000241                          CLC
1590  004606  006004                          ROR     R4
1591  004610  000241                          CLC
1592  004612  006004                          ROR     R4
1593  004614  000241                          CLC
1594  004616  006004                          ROR     R4
1595  004620  005305                          DEC     R5
1596  004622  001362                          BNE     3$
1597  004624  012703  007672                  MOV     #MDATA,R3
1598  004630  114023                  4$:     MOVB    -(R0),(R3)+
1599  004632  105337  004712                  DECB    CHRCNT
1600  004636  001374                          BNE     4$
1601  004640  105737  004713                  TSTB    SPACNT
1602  004644  001405                          BEQ     6$
1603  004646  112723  000040          5$:     MOVB    #040,(R3)+
1604  004652  105337  004713                  DECB    SPACNT
1605  004656  001373                          BNE     5$
1606  004660  105013                  6$:     CLRB    (R3)
1607  004662  104402  007672                  TYPE    ,MDATA
1608  004666  005337  004710                  DEC     WRDCNT
1609  004672  001313                          BNE     1$
1610  004674  012605                          MOV     (SP)+,R5
1611  004676  012604                          MOV     (SP)+,R4
1612  004700  012603                          MOV     (SP)+,R3
1613  004702  012601                          MOV     (SP)+,R1
1614  004704  012600                          MOV     (SP)+,R0
1615  004706  000002                          RTI
1616  004710  000000          WRDCNT: 0
1617  004712  000000          CHRCNT: 0
```

```
1618            004713                  SPACNT=CHRCNT+1
1619  004714   000000                   BINWRD: 0
1620
1621
1622                                    ;TRAP DISPATCH SERVICE
1623                                    ;ARGUMENT OF TRAP IS EXTRACTED
1624                                    ;AND USED AS OFFSET TO OBTAIN POINTER
1625                                    ;TO SELECTED SUBROUTINE
1626
1627  004716   011646                  .TRPSR: MOV     (SP),-(SP)      ;GET PC OF RETURN
1628  004720   162716   000002                 SUB     #2,(SP)         ;=PC OF TRAP
1629  004724   017616   000000                 MOV     @(SP),(SP)      ;GET TRP
1630  004730   006316                  TRPOK:  ASL     (SP)            ;MULTIPLY TRAP ARG BY 2
1631  004732   042716   177001                 BIC     #177001,(SP)    ;CLEAR UNWANTED BITS
1632  004736   062716   001330                 ADD     #.TRPTAB,(SP)   ;POINTER TO SUBROUTINE ADDRESS
1633  004742   017616   000000                 MOV     @(SP),(SP)      ;SUBROUTINE ADDRESS
1634  004746   000136                         JMP     @(SP)+          ;GO TO SUBROUTINE
1635
1636                                    ;ERROR HANDLER
1637                                    ;-------------
1638
1639  004750   004737   007734          .HLT:   JSR     PC,CKSWR        ;CHECK FOR SOFT SWR
1640  004754   032777   010000  174220         BIT     #SW12,@SWR      ;BELL ON ERROR?
1641  004762   001406                         BEQ     XBX             ;BR IF NO BELL
1642  004764   105777   174220                 TSTB    @TPCSR          ;TTY READY.
1643  004770   100003                         BPL     XBX             ;DON'T WAIT IF TTY NOT READY.
1644  004772   112777   000207  174212         MOVB    #207,@TPDBR     ;PUSH A BELL AT THE TTY.
1645  005000   032777   020000  174174  XBX:   BIT     #SW13,@SWR      ;DELETE ERROR PRINT OUT?
1646  005006   001105                         BNE     HALTS           ;BR IF NO PRINT OUT WANTED.
1647  005010   021637   001234                 CMP     (SP),LSTERR     ;WAS THIS ERROR FOUND LAST TIME?
1648  005014   001404                         BEQ     1$              ;BR IF YES
1649  005016   011637   001234                 MOV     (SP),LSTERR     ;RECORD BEING HERE
1650  005022   105037   001325                 CLRB    ERRFLG          ;PREPARE HEADER
1651  005026   104406                  1$:    SAV05                   ;SAVE ALL PROC REGISTERS
1652  005030   011605                         MOV     (SP),R5         ;GET THE PC OF ERROR
1653  005032   162705   000002                 SUB     #2,R5           ;GET ADDRESS OF TRAP CALL
1654  005036   011504                         MOV     (R5),R4         ;GET HLT INSTRUCTION
1655  005040   006304                         ASL     R4              ;MULT BY TWO
1656  005042   061504                         ADD     (R5),R4         ;DOUBLE IT
1657  005044   006304                         ASL     R4              ;MULT AGAIN
1658  005046   042704   177001                 BIC     #177001,R4      ;CLEAR JUNK
1659  005052   062704   032406                 ADD     #.ERRTAB,R4     ;GET POINTER
1660  005056   012437   005172                 MOV     (R4)+,ERRMSG    ;GET ERROR MESSAGE
1661  005062   012437   005204                 MOV     (R4)+,DATAHD    ;GET DATA HEADRER
1662  005066   011437   005216                 MOV     (R4),DATABP     ;GET DATA TABLE
1663  005072   105737   001325                 TSTB    ERRFLG          ;TYPE HEADREER
1664  005076   001403                         BEQ     TYPMSG          ;BR IF YES
1665  005100   005737   005216                 TST     DATABP          ;DOES DATA TABLE EXIST?
1666  005104   001040                         BNE     TYPDAT          ;BR IF YES.
1667  005106   104402   005672          TYPMSG: TYPE    ,MCRLF
1668  005112   104402   005672                 TYPE    ,MCRLF
1669  005116   005737   001220                 TST     LOCK
1670  005122   001402                         BEQ     1$
1671  005124   104402   006142                 TYPE    ,MASTEK
1672  005130   104402   006130          1$:    TYPE    ,MTSTN
1673  005134   104411   005330                 CNVRT   ,XTSTN          ;SHOW IT
```

```
1674  005140  104402  006217                  TYPE    ,MERRPC         ;TYPE PC.
1675  005144  104411  005322                  CNVRT   ,ERTABO         ;SHOW IT
1676  005150  104402  005672                  TYPE    ,MCRLF          ;GIVE A CR/LF
1677  005154  112737  177777  001325          MOVB    #-1,ERRFLG      ;NO MORE HEADER UNLESS NO DATA TABLE.
1678  005162  005737  005172                  TST     ERRMSG          ;IS THERE AN ERROR MESSAGE?
1679  005166  001402                          BEQ     WRKO.FM         ;BR IF NO.
1680  005170  104402                          TYPE                    ;TYPE
1681  005172  000000                  ERRMSG: 0                       ;    ERROR MESSAGE
1682  005174                          WRKO.FM:                        ;
1683  005174  005737  005204                  TST     DATAHD          ;DATA HEADER?
1684  005200  001402                          BEQ     TYPDAT          ;BR IF NO
1685  005202  104402                          TYPE                    ;TYPE
1686  005204  000000                  DATAHD: 0                       ;    DATA HEADER
1687  005206  005737  005216          TYPDAT: TST     DATABP          ;DATA TABLE?
1688  005212  001402                          BEQ     RESREG          ;BR IF NO.
1689  005214  104410                          CONVRT                  ;SHOW
1690  005216  000000                  DATABP: 0                       ;    DATA TABLE
1691  005220  104407                  RESREG: RES05                   ;RESTORE PROC REGISTERS
1692  005222  022737  003522  000042  HALTS:  CMP     #$ENDAD,@#42    ;IF ACT-11 AUTOMATIC MODE, HALT!!
1693  005230  001403                          BEQ     1$
1694  005232  005777  173744                  TST     @SWR            ;HALT ON ERROR?
1695  005236  100005                          BPL     EXITER          ;BR IF NO HALT ON ERROR
1696  005240  010046                  1$:     PUSHR0                  ;SAVE R0
1697  005242  016600  000002                  MOV     2(SP),R0        ;SHOW ERROR PC IN DATA LIGHTS
1698  005246  000000                          HALT                    ;HALT
1699  005250  012600                          POPR0                   ;GET R0
1700  005252  005237  001232          EXITER: INC     ERRCNT          ;UPDATE ERROR COUNT
1701  005256  032777  000400  173716          BIT     #SW08,@SWR      ;GOTO TOP OF TEST?
1702  005264  001007                          BNE     1$              ;BR IF YES
1703  005266  032777  002000  173706          BIT     #SW10,@SWR      ;GOTO NEXT TEST?
1704  005274  001411                          BEQ     2$              ;BR IF NO
1705  005276  013737  001216  001214          MOV     NEXT,RETURN     ;SET FOR NEXT TEST
1706  005304  012706  001200          1$:     MOV     #STACK,SP       ;RESET SP
1707  005310  013701  001404                  MOV     DMCSR,R1        ;SET UP R1
1708  005314  000177  173674                  JMP     @RETURN         ;GOTO SPECIFIED TEST
1709  005320  000002                  2$:     RTI                     ;RETURN
1710  005322  000001                  ERTABO: 1
1711  005324     006     002                  .BYTE   6,2
1712  005326  001276                          SAVPC
1713  005330  000001                  XTSTN:  1
1714  005332     003     002                  .BYTE   3,2
1715  005334  001226                          TSTNO
1716                                          ;ENTER HERE ON POWER FAILURE
1717                                          ;--------------------------
1718
1719
1720  005336                          .PFAIL:
1721  005336  012737  005350  000024          MOV     #RESTART,24             ;SET UP FOR POWER UP TRAP
1722  005344  000000                          HALT                            ;HALT ON POWER DOWN NORMAL
1723  005346  000777                          BR      .
1724
1725                                          ;PROCESSOR WILL TRAP HERE WHEN POWER IS RESTORED
1726
1727  005350                          RESTAR:
1728  005350  012737  005336  000024          MOV     #.PFAIL,24      ;SET UP FOR POWER FAILURE
1729  005356  012706  001200                  MOV     #STACK,SP       ;RESET THE STACK POINTER
```

```
                                                MOV     DMCSR,R1        ;RESTORE R1
                                                CLR     TEMP            ;READY FOR TIMMER
                                                INC     TEMP            ;PLUS ONE TO THE TIMER!
                                                BNE     .-4             ;BR IF MORE TO GO
                                                TYPE    ,MPFAIL         ;TYPE THE MESSAGE
                                                CNVRT   ,PFTAB          ;TELL WHAT TEST TO RETURN TO.
                                                CLRB    ERRFLG          ;START CLEAN
                                                CLR     LSTERR          ;'''''''''''''''
                                                CLR     (R1)            ;CLEAR MAINT BITS
                                                MSTCLR                  ;START CLEAN UP OF DEVICE
                                                JMP     @RETURN         ;START DOING THAT TEST AGAIN.
                                        PFTAB:  1
                                        .BYTE   3,2
                                                TSTNO

                                        .DELAY:
                                                MOV     #20,@DMP04
                                                ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
                                                121111                  ;POKE CLOCK DELAY BIT
                                        1$:
                                                ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
                                                121224                  ;PORT4 IBUS*11
                                                BIT     #BIT4,@DMP04    ;IS CLOCK BIT SET?
                                                BEQ     1$              ;BR IF NO
                                                RTI

                                        .MSTCLR:
                                                BISB    #BIT6,@DMCSRH   ;SET MASTER CLEAR
                                                BICB    #BIT6!BIT7,@DMCSRH  ;CLEAR MASTER CLEAR AND RUN
                                                RTI                     ;RETURN

                                        .ROMCLK:
                                                BISB    #BIT1,@DMCSRH   ;SET ROMI
                                                MOV     @(SP)+,@DMP06   ;LOAD INSTRUCTION IN SEL6
                                                ADD     #2,-(SP)        ;ADJUST STACK
                                                BIT     #SW06,@SWR      ;HALT IF SW06 =1
                                                BEQ     1$              ;BR IF SW06 =0
                                                HALT                    ;HALT BEFORE CLOCKING INSTRUCTION
                                        1$:     BISB    #BIT1!BIT0,@DMCSRH ;CLOCK INSTRUCTION
                                                BICB    #BIT2!BIT1!BIT0,@DMCSRH  ;CLEAR ROMO, ROMI, STEP
                                                RTI

                                        .DATACLK:
                                                MOV     @(SP)+,TEMP     ;PUT TICK COUNT IN TEMP
                                                ADD     #2,-(SP)        ;ADJUST STACK
                                        1$:     BISB    #BIT4,@DMCSRH   ;SET STEP LU
                                                CMP     @DMCSR,@DMCSR   ;WASTE TIME
                                                BICB    #BIT4,@DMCSRH   ;CLEAR STEP LU
                                                DEC     TEMP            ;DEC TICK COUNT
                                                BNE     1$              ;BR IF NOT DONE
                                                RTI                     ;RETURN
                                        3$:     .BLKW 1

                                        .TIMER:
                                                MOV     @(SP)+,TEMP     ;MOVE COUNT TO TEMP
                                                ADD     #2,-(SP)        ;ADJUST STACK
```

```
1786  005626                          1$:
1787  005626  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
1788  005630  021364                          021364                  ;PORT4 IBUS* REG11
1789  005632  032777  000002  173552          BIT     #2,@DMP04       ;IS PGM CLOCK BIT CLEAR?
1790  005640  001772                          BEQ     1$              ;BR IF YES
1791  005642                          2$:
1792  005642  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
1793  005644  021364                          021364                  ;PORT4 IBUS* REG11
1794  005646  032777  000002  173536          BIT     #2,@DMP04       ;IS PGM CLOCK BIT SET?
1795  005654  001372                          BNE     2$              ;BR IF YES
1796  005656  005337  001416                  DEC     TEMP            ;DEC COUNT
1797  005662  001361                          BNE     1$              ;BR IF NOT DONE
1798  005664  000002                          RTI                     ;RETURN
1799
1800  005666  020040  000077          MQM:    .ASCIZ  /  ?/
 (2)  005672  005015     000          MCRLF:  .ASCIZ   <15><12>
 (2)  005675     377  053520  020122  MPFAIL: .ASCIZ  <377>/PWR FAILED. RESTART AT TEST /
 (2)  005733     377  047105  020104  MEPASS: .ASCIZ  <377>/END PASS CZDMF  /
 (2)  005755     377  000122          MR:     .ASCIZ  <377>/R/
 (2)  005760  047377  020117  042504  MERR2:  .ASCIZ  <377>/NO DEVICES PRESENT./
 (2)  006005     377  047111  052523  MERR3:  .ASCIZ  <377>/INSUFFICIENT DATA!/
 (2)  006031     377  042524  052123  MTSTPC: .ASCIZ  <377>/TEST PC-/
 (2)  006043     377  047514  045503  MLOCK:  .ASCIZ  <377>/LOCK ON SELECTED TEST/
 (2)  006072  051503  035122  000040  MCSRX:  .ASCIZ   /CSR: /
 (2)  006100  042526  035103  000040  MVECX:  .ASCIZ  /VEC: /
 (2)  006106  040520  051523  051505  MPASSX: .ASCIZ  /PASSES: /
 (2)  006117     105  051122  051117  MERRX:  .ASCIZ  /ERRORS: /
 (2)  006130  042524  052123  047040  MTSTN:  .ASCIZ  /TEST NO: /
 (2)  006142  000052                  MASTEK: .ASCIZ  /*/
 (2)  006144  051777  052105  051440  MNEW:   .ASCIZ  <377>/SET SWITCH REG TO DMC11'S DESIRED ACTIVE./
 (2)  006217     120  035103  000040  MERRPC: .ASCIZ  /PC: /
 (2)  006224  020212  020040  020040  XHEAD:  .ASCII  <212>/           MAP OF DMC11 STATUS/
 (2)  006263     377  020040  020040          .ASCII  <377>/           -------------------/
 (2)  006322  020212  050040  020103          .ASCII  <212>/  PC      CSR     STAT1    STAT2    STAT3/
 (2)  006374  026777  026455  026455          .ASCIZ  <377>/------   ------   ------   ------   ------/
 (2)  006450  044377  053517  046440  NUM:    .ASCIZ  <377>/HOW MANY DMC11'S TO BE TESTED?/
 (2)  006510  041777  051123  040440  CSR:    .ASCIZ  <377>/CSR ADDRESS?/
 (2)  006526  053377  041505  047524  VEC:    .ASCIZ  <377>/VECTOR ADDRESS?/
 (2)  006547     377  051102  050040  PRIO:   .ASCIZ  <377>/BR PRIORITY LEVEL? (4,5,6,7)?/
 (2)  006606  044777  020106  046504  CRAM:   .ASCIZ  <377>/IF DMC HAS CRAM (M8204) TYPE "Y", IF CROM (M8200) TYPE "N" ?/
 (2)  006704  053777  044510  044103  MODU:   .ASCIZ  <377>/WHICH LINE UNIT? IF NONE TYPE "N", IF M8201 TYPE "1", IF M8202 TYP
 (2)  007016  051777  044527  041524  LINE:   .ASCIZ  <377>/SWITCH PAC#1 (DDCMP LINE #)?/
 (2)  007054  051777  044527  041524  BM:     .ASCIZ  <377>/SWITCH PAC#2 (BM873 BOOT ADD)?/
 (2)  007114  044777  020123  044124  CONN:   .ASCIZ  <377>/IS THE LOOP BACK CONNECTOR ON?/
 (2)  007154  047377  020117  042504  NOACT:  .ASCIZ  <377>/NO DEVICES ARE SELECTED/
 (2)  007205     377  051412  051127  SWMES:  .ASCIZ  <377><12>/SWR= /
 (2)  007215     116  053505  020077  SWMES1: .ASCIZ  /NEW? /
 (2)  007223     377  042377  041515  CONERR: .ASCIZ  <377><377>/DMC11 FOUND AT NON-STANDARD ADDRESS  PC: /
 (2)  007277     377  054105  042520  CNERR:  .ASCIZ  <377>/EXPECTED  FOUND/
 (2)  007320  024040  046504  024503  DMCM:   .ASCIZ  / (DMC) /
 (2)  007330  024040  046513  024503  KMCM:   .ASCIZ  / (KMC) /
 (2)  007340  042377  041515  030461  SPEED:  .ASCIZ  <377>/DMC11-AR(REMOTE,LOW SPEED) OR DMC11-AL(LOCAL,HIGH SPEED) TYPE "R"
 (2)  007454  053600  044510  044103  MV35:   .ASCII  <200>/WHICH MODEM TYPE, TYPE "D" FOR DMC11-DA (RS232C),OR/
 (2)  007540  052200  050131  020105          .ASCIZ  <200>/TYPE "F" FOR DMC11-FA (V.35) ? /
 (2)
 (2)          007602                  .EVEN
```

```
 (2) 007602 000005                  XSTATQ: 5
1801 007604    006  003                     .BYTE   6,3
1802 007606 001246                          TEMP1
1803 007610    006  003                     .BYTE   6,3
1804 007612 001250                          TEMP2
1805 007614    006  003                     .BYTE   6,3
1806 007616 001252                          TEMP3
1807 007620    006  003                     .BYTE   6,3
1808 007622 001254                          TEMP4
1809 007624    006  002                     .BYTE   6,2
1810 007626 001256                          TEMP5
1811                               .EVEN
1812
1813                                        ;BUFFERS FOR INPUT-OUTPUT
1814
1815 007630 000000                 INBUF:  0
1816        007672                  .=.+40
1817 007672 000000                 MDATA:  0
1818        007734                  .=.+40
1819
1820
1821                                        ;ROUTINE USED TO CHANGE SOFTWARE SWITCH
1822                                        ;REGISTER USING THE CONSOLE TERMINAL
1823                                        ;--------------------------------------
1824
1825 007734 022737 000176 001202 CKSWR:  CMP     #SWREG,SWR      ;IS THE SOFT SWR BEING USED?
1826 007742 001077                      BNE     CKSWR5          ;BR IF NO
1827 007744 105777 171234               TSTB    @TKCSR          ;IS DONE SET?
1828 007750 100003                      BPL     2$              ;GO ON IF NOT SET
1829 007752 012737 177777 003734        MOV     #-1,DONE        ;IF DONE SET, SET FLAG
1830 007760 022777 000007 171220 2$:    CMP     #7,@TKDBR       ;WAS CTRL G TYPED? (7 BIT ASCII)
1831 007766 001404                      BEQ     1$              ;BR IF YES
1832 007770 022777 000207 171210        CMP     #207,@TKDBR     ;WAS CTRL G TYPED? (8 BIT ASCII)
1833 007776 001061                      BNE     CKSWR5          ;BR IF NO
1834 010000 010246              1$:     MOV     R2,-(SP)        ;STORE R2
1835 010002 010346                      MOV     R3,-(SP)        ;STORE R3
1836 010004 010446                      MOV     R4,-(SP)        ;STORE R4
1837 010006 012737 177777 010144        MOV     #-1,SWFLG       ;SET SOFT TYPE OUT FLAG
1838 010014 005002              CKSWR1: CLR     R2              ;CLEAR NEW SWR CONTENTS
1839 010016 012704 177777               MOV     #-1,R4          ;SET FLAG TO ALL ONES
1840 010022 104402 007205               TYPE    ,SWMES          ;TYPE "SWR= "
1841 010026 104411              CKSWR2: CNVRT                   ;TYPE OUT PRESENT CONTENTS
1842 010030 010200                      SOFTSW                  ;OF SOFT SWITCH REGISTER
1843 010032 104402 007215       CKSWR3: TYPE    ,SWMES1         ;TYPE 'NEW? "
1844 010036 004737 010146       CKSWR4: JSR     PC,INCHAR       ;GET RESPONSE
1845 010042 022703 000015               CMP     #15,R3          ;WAS IT A CR?
1846 010046 001424                      BEQ     5$              ;BR IF YES
1847 010050 022703 000012               CMP     #12,R3          ;WAS IT A LF?
1848 010054 001416                      BEQ     4$              ;BR IF YES
1849 010056 022703 000025               CMP     #25,R3          ;WAS IT CTRL U?
1850 010062 001754                      BEQ     CKSWR1          ;BR IF YES(START OVER)
1851 010064 022703 000007               CMP     #7,R3           ;IF CNTL G GET NEXT CHAR
1852 010070 001762                      BEQ     CKSWR4
1853 010072 005004                      CLR     R4              ;IT MUST BE A DIGIT SO CLR FLAG
1854 010074 042703 177770               BIC     #177770,R3      ;ONLY 0-7 ARE LEGAL SO MASK OFF BITS
1855 010100 006302                      ASL     R2              ;SHIFT R2 3 TIMES
```

```
1856  010102  006302                        ASL     R2
1857  010104  006302                        ASL     R2
1858  010106  050302                        BIS     R3,R2           ;ADD LAST DIGIT
1859  010110  000752                        BR      CKSWR4          ;GET NEXT CHARACTER
1860  010112  012766  002002  000006  4$:   MOV     #.START,6(SP)   ;IF WAS TYPED SO GO TO START
1861  010120  005704                  5$:   TST     R4              ;IS FLAG CLEAR?
1862  010122  001002                        BNE     6$              ;IF NOT DON'T CHANGE SOFT SWR
1863  010124  010277  171052                MOV     R2,@SWR         ;IF YES THEN WRITE NEW CONTENTS TO SOFT SWR
1864  010130  005037  010144          6$:   CLR     SWFLG           ;CLEAR TYPEOUT FLAG
1865  010134  012604                        MOV     (SP)+,R4        ;RESTORE R4
1866  010136  012603                        MOV     (SP)+,R3        ;RESTORE R3
1867  010140  012602                        MOV     (SP)+,R2        ;RESTORE R2
1868  010142  000207                  CKSWR5: RTS     PC              ;RETURN
1869
1870  010144  000000                  SWFLG:  0
1871
1872  010146  105777  171032          INCHAR: TSTB    @TKCSR
1873  010152  100375                        BPL     .-4
1874  010154  017703  171026                MOV     @TKDBR,R3
1875  010160  105777  171024                TSTB    @TPCSR
1876  010164  100375                        BPL     .-4
1877  010166  010377  171020                MOV     R3,@TPDBR
1878  010172  042703  000200                BIC     #BIT7,R3
1879  010176  000207                        RTS     PC
1880
1881  010200  000001                  SOFTSW: 1
1882  010202     006     002                 .BYTE   6,2
1883  010204  000176                        SWREG
```

```
1884
1885                                            ;
1886                                            ;ROUTINE USED TO "CYCLE" THROUGH UP TO 16 DMC11'S
1887                                            ;THIS ROUTINE SETS UP THE CONTROL ADDRESS FOR THE DIAGNOSTIC
1888                                            ;AND RUNS THE SPECIFIED DMC11'S.   THIS ROUTINE *MUST*
1889                                            ;BE RUN FIRST BEFORE ENTERING THE DIAGNOSTIC FOR THE
1890                                            ;SETUP NECESSARY.
1891                                            ;
1892
1893  010206  005737  001306          CYCLE:  TST     DMACTV          ;ARE ANY DMC11'S TO BE TESTED?
1894  010212  001004                          BNE     1$              ;BR IF OK.
1895  010214  104402  007154                  TYPE    ,NOACT          ;NO DMC11'S SELECTED!!
1896  010220  000000                          HALT                    ;STOP THE SHOW.
1897  010222  000776                          BR      .-2             ;DISQUALIFY CONT. SW.
1898  010224  000241                  1$:     CLC                     ;CLEAR PROC. CARRY BIT.
1899  010226  006137  001316                  ROL     RUN             ;UPDATE POINTER
1900  010232  005537  001316                  ADC     RUN             ;CATCH CARRY FROM RUN
1901  010236  062737  000004  001322          ADD     #4,MILK         ;UPDATE POINTER
1902  010244  062737  000010  001320          ADD     #10,CREAM       ;UPDATE ADDRESS POINTER.
1903  010252  022737  001700  001320          CMP     #DM.MAP+200,CREAM
1904  010260  001006                          BNE     2$              ;KEEP GOING; NOT ALL TESTED FOR.
1905  010262  012737  001500  001320          MOV     #DM.MAP,CREAM   ;RESET ADDRESS POINTER.
1906  010270  012737  001702  001322          MOV     #CNT.MAP,MILK   ;RESET PASS COUNT POINTER
1907  010276  033737  001316  001306  2$:     BIT     RUN,DMACTV      ;IS THIS ONE ACTIVE?
1908  010304  001747                          BEQ     1$              ;BR IF NO
1909  010306  013700  001320                  MOV     CREAM,R0        ;GET ADDRESS POINTER
1910  010312  013702  001322                  MOV     MILK,R2         ;GET PASS COUNT POINTER
1911  010316  012037  001404                  MOV     (R0)+,DMCSR     ;LOAD SYSTEM CTRL. REG
1912  010322  011037  001374                  MOV     (R0),DMRVEC     ;LOAD VECTOR
1913  010326  042737  177000  001374          BIC     #177000,DMRVEC  ;CLEAR UNWANTED BITS
1914  010334  012037  001366                  MOV     (R0)+,STAT1     ;LOAD STAT1
1915  010340  012037  001370                  MOV     (R0)+,STAT2     ;LOAD STAT2
1916  010344  012037  001372                  MOV     (R0)+,STAT3     ;LOAD STAT3
1917  010350  012237  001230                  MOV     (R2)+,PASCNT    ;LOAD PASS COUNT
1918  010354  012237  001232                  MOV     (R2)+,ERRCNT    ;LOAD ERROR COUNT
1919  010360  012700  000002                  MOV     #2,R0           ;SAVE CORE THIS WAY!
1920  010364  013737  001404  001406          MOV     DMCSR,DMCSRH
1921  010372  005237  001406                  INC     DMCSRH
1922  010376  013737  001406  001410          MOV     DMCSRH,DMCTL
1923  010404  005237  001410                  INC     DMCTL
1924  010410  013737  001410  001412          MOV     DMCTL,DMP04
1925  010416  060037  001412                  ADD     R0,DMP04
1926  010422  013737  001412  001414          MOV     DMP04,DMP06
1927  010430  060037  001414                  ADD     R0,DMP06
1928
1929  010434  013737  001374  001376          MOV     DMRVEC,DMRLVL   ;PTY LVL
1930  010442  060037  001376                  ADD     R0,DMRLVL       ;
1931  010446  013737  001376  001400          MOV     DMRLVL,DMTVEC   ;TX VEC
1932  010454  060037  001400                  ADD     R0,DMTVEC       ;
1933  010460  013737  001400  001402          MOV     DMTVEC,DMTLVL   ;TX LVL
1934  010466  060037  001402                  ADD     R0,DMTLVL
1935
1936  010472  032737  000002  001236          BIT     #SW01,STRTSW    ;IS TEST NO. SELECTED
1937  010500  001450                          BEQ     7$              ;BR IF NO
1938  010502                          4$:
1939  010502  005737  000042                  TST     @#42            ;RUNNING IN AUTO MODE?
```

```
1940  010506  001045                        BNE     7$              ;BR IF YES
1941  010510  104402  005672                TYPE    ,MCRLF
1942  010514  104403                        INSTR                   ;GET TEST NO.
1943  010516  006130                        MTSTN
1944  010520  104405                        PARAM
1945  010522  000001                        1
1946  010524  001000                        1000
1947  010526  001226                        TSTNO
1948  010530     000              .BYTE   0
1949  010531     001              .BYTE   1
1950  010532  012700  012526              MOV     #TST1,R0
1951  010536  022710                5$:   CMP     (PC)+,(R0)      ;CMP FIRST WORD TO 12737
1952  010540  012737                      MOV     (PC)+,@(PC)+
1953  010542  001020                      BNE     6$              ;BR IF NOT SAME
1954  010544  023760  001226  000002      CMP     TSTNO,2(R0)     ;DOES TSTNO MATCH?
1955  010552  001014                      BNE     6$              ;BR IF NO
1956  010554  022760  001226  000004      CMP     #TSTNO,4(R0)    ;IS LAST WORD OK?
1957  010562  001010                      BNE     6$              ;BR IF NO
1958  010564  010037  001214              MOV     R0,RETURN       ;IT IS A LEGAL TEST SO DO IT
1959  010570  104402  005755              TYPE    ,MR
1960  010574  042737  000002  001236      BIC     #SW01,STRTSW
1961  010602  000412                      BR      8$
1962  010604  005720                6$:   TST     (R0)+           ;POP R0
1963  010606  020027  026342              CMP     R0,#TLAST+10    ;AT END YET?
1964  010612  001351                      BNE     5$              ;BR IF NO
1965  010614  104402  005666              TYPE    ,MQM            ;YES ILLEGAL TEST NO.
1966  010620  000730                      BR      4$              ;TRY AGAIN
1967
1968  010622  012737  012526  001214  7$: MOV     #TST1,RETURN    ;PREPARE RETURN ADDRESS
1969  010630  013701  001404        8$:   MOV     DMCSR,R1        ;R1 = BASE DMC11 ADDRESS
1970  010634  000177  170354              JMP     @RETURN         ;GO START TESTING.
1971
1972
1973                                      ;ROUTINE USED TO "AUTO SIZE" THE DMC11
1974                                      ;CSR AND VECTOR.
1975                                      ;NOTE:  THE CSR MAY BE ANY WHERE IN THE FLOATING
1976                                      ;       ADDRESS RANGE (160000:164000)
1977                                      ;       AND THE VECTOR MAY BE ANY WHERE IN THE
1978                                      ;       FLOATING VECTOR RANGE (300:770)
1979                                      ;
1980
1981  010640                        AUTO.SIZE:
1982  010640  000005                      RESET                   ;INSURE A BUS INIT.
1983  010642  012702  001500        CSRMAP: MOV     #DM.MAP,R2      ;LOAD MAP POINTER.
1984  010646  005022                1$:   CLR     (R2)+           ;ZERO ENTIRE MAP
1985  010650  022702  001700              CMP     #DM.END,R2      ;ALL DONE?
1986  010654  001374                      BNE     1$              ;BR IF NO
1987  010656  005037  001310              CLR     DMNUM           ;SET OCTAL NUMBER OF DMC11'S TO 0
1988  010662  012702  001500              MOV     #DM.MAP,R2      ;R2 POINTS TO DMC MAP
1989  010666  005037  001306              CLR     DMACTV          ;CLEAR ACTIVE
1990  010672  032737  000001  001236      BIT     #SW00,STRTSW    ;QUESTIONS?
1991  010700  001002                      BNE     .+6             ;BR IF YES
1992  010702  000137  011460              JMP     7$              ;IF NO SKIP QUESTIONS
1993  010706  012737  000001  001256      MOV     #1,TEMP5        ;START WITH 1
1994  010714  104403                      INSTR
1995  010716  006450                      NUM
```

```
 1996  010720  104405                          PARAM
 1997  010722  000001                          1
 1998  010724  000020                          16.
 1999  010726  001252                          TEMP3
 2000  010730     000                          .BYTE   0
 2001  010731     001                          .BYTE   1
 2002  010732  013737  001252  001310          MOV     TEMP3,DMNUM     ;DMNUM = HOW MANY
 2003  010740  104402  005672          12$:    TYPE    ,MCRLF
 2004  010744  104410                          CONVRT                  ;TYPE WHICH DMC IS BEING DONE
 2005  010746  012210                          WHICH                   ;TEMP5 IS WHICH DMC
 2006  010750  005237  001256                  INC     TEMP5
 2007  010754  104403                          INSTR
 2008  010756  006510                          CSR
 2009  010760  104405                          PARAM
 2010  010762  160000                          160000
 2011  010764  164000                          164000
 2012  010766  001254                          TEMP4
 2013  010770     000                          .BYTE   0
 2014  010771     001                          .BYTE   1
 2015  010772  013722  001254                  MOV     TEMP4,(R2)+     ;STORE CSR IN MAP
 2016  010776  104403                          INSTR
 2017  011000  006526                          VEC
 2018  011002  104405                          PARAM
 2019  011004  000000                          0
 2020  011006  000776                          776
 2021  011010  001254                          TEMP4
 2022  011012     000                          .BYTE   0
 2023  011013     001                          .BYTE   1
 2024  011014  013712  001254                  MOV     TEMP4,(R2)      ;STORE VECTOR IN MAP
 2025  011020  104402                  10$:    TYPE
 2026  011022  006547                          PRIO                    ;ASK WHAT BR LEVEL
 2027  011024  004737  012474                  JSR     PC,INTTY        ;GET RESPONSE
 2028  011030  022703  000024                  CMP     #24,R3          ;
 2029  011034  101014                          BHI     50$             ;BR IF LESS THAN 4
 2030  011036  022703  000027                  CMP     #27,R3          ;
 2031  011042  103411                          BLO     50$             ;BR IF GREATER THAN 7
 2032  011044  012704  000011                  MOV     #11,R4          ;R4 = NUMBER OF SHIFTS
 2033  011050  006303                          ASL     R3              ;SHIFT R3 LEFT
 2034  011052  005304                          DEC     R4              ;DEC SHIFT COUNT
 2035  011054  001375                          BNE     .-4             ;BR IF NOT DONE
 2036  011056  042703  170777                  BIC     #170777,R3      ;BIC UNWANTED BITS
 2037  011062  050312                          BIS     R3,(R2)         ;PUT BR LEVEL IN STATUS MAP
 2038  011064  000403                          BR      8$              ;CONTINUE
 2039  011066  104402                  50$:    TYPE
 2040  011070  005666                          MQM                     ;RESPONSE IS OUT OF LIMITS
 2041  011072  000752                          BR      10$             ;TRY AGAIN
 2042  011074  104402                  8$:     TYPE
 2043  011076  006606                          CRAM                    ;DOES DMC HAVE CRAM?
 2044  011100  004737  012474                  JSR     PC,INTTY        ;GET REPLY
 2045  011104  022703  000131                  CMP     #131,R3
 2046  011110  001427                          BEQ     9$              ;YES
 2047  011112  022703  000116                  CMP     #116,R3         ;NO
 2048  011116  001403                          BEQ     40$             ;NOT A Y OR N
 2049  011120  104402                          TYPE
 2050  011122  005666                          MQM                     ;TYPE "?"
 2051  011124  000763                          BR      8$              ;ASK AGAIN
```

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2052  011126  104402                    40$:    TYPE
2053  011130  007340                            SPEED                   ;DMC11-AR OR DMC11-AL?
2054  011132  004737  012474                    JSR     PC,INTTY        ;GET RESPONSE
2055  011136  022703  000122                    CMP     #122,R3         ;IS IT R
2056  011142  001414                            BEQ     16$             ;BR IF REMOTE
2057  011144  022703  000114                    CMP     #114,R3         ;IS IT L
2058  011150  001403                            BEQ     41$             ;BR IF LOCAL
2059  011152  104402                            TYPE
2060  011154  005666                            MQM
2061  011156  000763                            BR      40$             ;TRY AGAIN
2062  011160  052762  000002  000004    41$:    BIS     #BIT1,4(R2)     ;SET BIT1 IN STAT3
2063  011166  000402                            BR      16$             ;CONTINUE
2064  011170  052712  100000            9$:     BIS     #BIT15,(R2)     ;SET BIT 15 IF CRAM
2065  011174                            16$:
2066
2067  011174  104402                            TYPE
2068  011176  006704                            MODU                    ;ASK WHICH LINE UNIT
2069  011200  004737  012474                    JSR     PC,INTTY        ;GET REPLY
2070  011204  022703  000021                    CMP     #21,R3          ;''1''
2071  011210  001417                            BEQ     30$
2072  011212  022703  000022                    CMP     #22,R3          ;''2''
2073  011216  001412                            BEQ     31$
2074  011220  022703  000116                    CMP     #116,R3         ;''N''
2075  011224  001403                            BEQ     32$
2076  011226  104402                            TYPE
2077  011230  005666                            MQM                     ;IF NOT A 1,2 OR N TYPE ''?''
2078  011232  000760                            BR      16$             ;TRY AGIAN
2079  011234  052722  010000            32$:    BIS     #BIT12,(R2)+    ;SET BIT 12 IN STAT2 IF NO LU
2080  011240  022222                            CMP     (R2)+,(R2)+     ;POP OVER STAT2 AND STAT3
2081  011242  000477                            BR      33$
2082  011244  052712  020000            31$:    BIS     #BIT13,(R2)     ;SET BIT 13 IN STAT2 IF M8202
2083  011250  104402                    30$:    TYPE
2084  011252  007114                            CONN                    ;ASK IF LOOP-BACK IS ON
2085  011254  004737  012474                    JSR     PC,INTTY        ;GET REPLY
2086  011260  022703  000131                    CMP     #131,R3         ;Y
2087  011264  001406                            BEQ     17$
2088  011266  022703  000116                    CMP     #116,R3         ;N
2089  011272  001436                            BEQ     18$
2090  011274  104402                            TYPE
2091  011276  005666                            MQM                     ;IF NOT Y OR N TYPE ''?''
2092  011300  000763                            BR      30$             ;TRY AGAIN
2093  011302  052722  040000            17$:    BIS     #BIT14,(R2)+    ;TURNAROUND IS CONNECTED
2094  011306  032762  020000  177776            BIT     #BIT13,-2(R2)   ; IS IT A M8202?
2095  011314  001027                            BNE     19$             ; YES, IGNOR.
2096  011316                            440$:
2097
2098  011316  104402                            TYPE            ; ASK QUESTION
2099  011320  007454                            MV35            ; ABOUT MODEM TTYPE
2100  011322  004737  012474                    JSR     PC,INTTY        ; GET ANSWER.
2101  011326  122703  000104                    CMPB    #'D,R3          ; IS IT DMC11-DA?
2102  011332  001004                            BNE     442$            ; NO.
2103
2104  011334  042762  000004  000002            BIC     #BIT2,2(R2)     ; YES INDICATE IT IN STAT3
2105  011342  000411                            BR      441$
2106
2107  011344  122703  000106            442$:   CMPB    #'F,R3          ;IS IT A DMC11-FA (V.35)?
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2108  011350  001403                          BEQ     443$            ; YES-TAKE CARE OF IT.
2109
2110  011352  104402                          TYPE                    ; NO ASK OPERATER WHATS GOING ON.
2111  011354  005666                          MQM
2112  011356  000757                          BR      440$            ; REASK QUESTION
2113
2114  011360  052762  000004  000002  443$:   BIS     #BIT2,2(R2)     ; YES V.35, RECORD IN STAT3
2115
2116  011366                        441$:                             ; END DECISION POINT.
2117  011366  000402                          BR      19$
2118  011370  042722  040000        18$:     BIC     #BIT14,(R2)+    ;NO TURNAROUND
2119  011374                        19$:
2120  011374  104403                          INSTR
2121  011376  007016                          LINE
2122  011400  104405                          PARAM
2123  011402  000000                          0
2124  011404  000377                          377
2125  011406  001254                          TEMP4
2126  011410     000                          .BYTE   0
2127  011411     001                          .BYTE   1
2128  011412  113722  001254                  MOVB    TEMP4,(R2)+     ;STORE SWITCH PAC IN MAP
2129  011416  104403                          INSTR
2130  011420  007054                          BM
2131  011422  104405                          PARAM
2132  011424  000000                          0
2133  011426  000377                          377
2134  011430  001254                          TEMP4
2135  011432     000                          .BYTE   0
2136  011433     001                          .BYTE   1
2137  011434  113722  001254                  MOVB    TEMP4,(R2)+     ;STORE SWITCH PAC IN MAP
2138  011440  005722                          TST     (R2)+           ;POP OVER STAT3
2139  011442  005337  001252        33$:     DEC     TEMP3           ;DEC DMC COUNT
2140  011446  001402                          BEQ     34$             ;BR IF DONE
2141  011450  000137  010740                  JMP     12$             ;JUMP IF NOT
2142  011454  000137  012110        34$:     JMP     13$             ;CONTINUE
2143  011460  012701  160000        7$:      MOV     #160000,R1      ;SET FOR FIRST ADDRESS TO BE TESTED
2144  011464  012737  012202  000004         MOV     #6$,@#4         ;SET FOR NON-EXISTANT DEVICE TIME OUT
2145  011472  005011                2$:      CLR     (R1)            ;CLEAR SEL0
2146  011474  005711                          TST     (R1)            ;IF DMC11 DMCSR S/B 0
2147  011476  001172                          BNE     3$              ;IF NO DEV ; TRAP TO 4. IF NO BIT 8 THEN NO DMC11
2148  011500  005061  000006                  CLR     6(R1)           ;CLEAR SEL6
2149  011504  005761  000006                  TST     6(R1)           ;IF DMC11 THEN DMRIC S/B =0!
2150  011510  001165                          BNE     3$              ;BR IF NOT DMC11
2151  011512  012711  002000                  MOV     #BIT10,(R1)     ;SET ROM0
2152  011516  005061  000004                  CLR     4(R1)           ;CLEAR SEL4
2153  011522  012761  125252  000006         MOV     #125252,6(R1)   ;WRITE THIS TO SEL6
2154  011530  052711  020000                  BIS     #BIT13,(R1)     ;WRITE IT!
2155  011534  022761  125252  000004         CMP     #125252,4(R1)   ;WAS IT WRITTEN?
2156  011542  001004                          BNE     21$             ;IF NO IT IS NOT CRAM
2157  011544  052762  100000  000002         BIS     #BIT15,2(R2)    ;SET BIT15 IF CRAM
2158  011552  000431                          BR      22$
2159  011554  012711  001000        21$:     MOV     #BIT9,(R1)      ;SET ROM1
2160  011560  012761  100430  000006         MOV     #100430,6(R1)   ;PUT INSTRUCTION IN SEL6
2161  011566  012711  001400                  MOV     #BIT9!BIT8,(R1) ;CLOCK INSTRUCTION (MICRO PROC PC TO 0)
2162  011572  012711  002000                  MOV     #BIT10,(R1)     ;SET ROM0
2163  011576  022761  016472  000006         CMP     #016472,6(R1)   ;IS IT LOCAL CROM?
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2164  011604  001411                          BEQ     23$                 ;BR IF YES
2165  011606  022761  016461  000006          CMP     #016461,6(R1)       ;IS IT REMOTE CROM?
2166  011614  001410                          BEQ     22$                 ;BR IF YES
2167  011616  022761  177777  000006          CMP     #-1,6(R1)           ;NO CROM?
2168  011624  001404                          BEQ     22$                 ;BR IF YES
2169  011626  000516                          BR      3$                  ;NOT A DMC
2170  011630  052762  000002  000006  23$:    BIS     #BIT1,6(R2)         ;SET BIT 1 IN STAT3
2171                                  ;AT THIS POINT IT IS ASSUMED THAT R1 HOLDS A DMC11 CSR ADDRESS.
2172  011636  010122                  22$:    MOV     R1,(R2)+            ;STORE CSR IN CORE TABLE.
2173  011640  012711  001000          15$:    MOV     #BIT9,(R1)          ;CLEAR LINE UNIT LOOP
2174  011644  005061  000004                  CLR     4(R1)               ;CLEAR PORT4
2175  011650  012761  122113  000006          MOV     #122113,6(R1)       ;LOAD INSTRUCTION (CLR DTR)
2176  011656  052711  000400                  BIS     #BIT8,(R1)          ;CLOCK INSTRUCTION
2177  011662  012761  021264  000006          MOV     #021264,6(R1)       ;LOAD INSTRUCTION
2178  011670  052711  000400                  BIS     #BIT8,(R1)          ;CLOCK INSTRUCTION
2179  011674  122761  000377  000004          CMPB    #377,4(R1)          ;IS IT ALL ONES?
2180  011702  001003                          BNE     .+10                ;BR IF NO
2181  011704  052712  010000                  BIS     #BIT12,(R2)         ;IF YES, NO LINE UNIT, SET STATUS BIT
2182  011710  000436                          BR      20$
2183  011712  032761  000002  000004          BIT     #BIT1,4(R1)         ;IS SWITCH A ONE?
2184  011720  001403                          BEQ     .+10                ;BR IF M8201
2185  011722  052712  060000                  BIS     #BIT13!BIT14,(R2) ;M8202 ASSUME CONNECTOR
2186  011726  000427                          BR      20$                 ;CONNECTOR ON)
2187  011730  032761  000010  000004          BIT     #BIT3,4(R1)         ;IS MRDY SET
2188  011736  001023                          BNE     20$                 ;BR IF M8201 NO CONNECTOR (ON LINE)
2189  011740  012761  000100  000004          MOV     #BIT6,4(R1)         ;LOAD PORT4
2190  011746  012761  122113  000006          MOV     #122113,6(R1)       ;LOAD INSTRUCTION
2191  011754  052711  000400                  BIS     #BIT8,(R1)          ;CLOCK INSTRUCTION(SET DTR)
2192  011760  012761  021264  000006          MOV     #021264,6(R1)       ;LOAD INSTRUCTION
2193  011766  052711  000400                  BIS     #BIT8,(R1)          ;CLOCK INSTRUCTION(READ MODEM REG)
2194  011772  032761  000010  000004          BIT     #BIT3,4(R1)         ;IS MRDY SET NOW?
2195  012000  001402                          BEQ     20$                 ;BR IF NO CONNECTOR
2196  012002  052712  040000                  BIS     #BIT14,(R2)         ;SET STATUS BIT FOR CONNECTOR
2197  012006  005722                  20$:    TST     (R2)+               ;POP POINTER
2198  012010  012761  021324  000006          MOV     #021324,6(R1)       ;PUT INSTRUCTION IN PORT6
2199  012016  012711  001400                  MOV     #BIT9!BIT8,(R1)     ;PORT4_LU 15
2200  012022  156122  000004                  BISB    4(R1),(R2)+         ;STORE DDCMP LINE # IN TABLE
2201  012026  012761  021344  000006          MOV     #021344,6(R1)       ;PORT6_INSTRUCTION
2202  012034  012711  001400                  MOV     #BIT8!BIT9,(R1)     ;CLOCK INSTR.
2203  012040  156122  000004                  BISB    4(R1),(R2)+         ;STORE BM873 ADD IN TABLE
2204  012044  005722                          TST     (R2)+               ;POP OVER STAT3
2205  012046  005011                          CLR     (R1)                ;CLEAR ROMI
2206  012050  005237  001310                  INC     DMNUM               ;UPDATE DEVICE COUNTER
2207  012054  022737  000020  001310          CMP     #20,DMNUM           ;ARE MAX. NO. OF DEV FOUND?
2208  012062  001412                          BEQ     13$                 ;YES DON'T LOOK FOR ANY MORE.
2209  012064  005011                  3$:     CLR     (R1)                ;CLEAR BIT 10
2210  012066  005061  000006                  CLR     6(R1)               ;CLEAR SEL 6
2211  012072  062701  000010          14$:    ADD     #10,R1              ;UPDATE CSR POINTER ADDRESS
2212  012076  022701  164000                  CMP     #164000,R1
2213  012102  001402                          BEQ     13$                 ;BR IF DONE
2214  012104  000137  011472                  JMP     2$                  ;JUMP IF NOT
2215  012110  005037  001306          13$:    CLR     DMACTV
2216  012114  005737  001310                  TST     DMNUM               ;WERE ANY DMC11'S FOUND AT ALL?
2217  012120  001423                          BEQ     5$                  ;ERROR AUTO SIZER FOUND NO DMC11'S IN THIS SYS.
2218  012122  013701  001310                  MOV     DMNUM,R1
2219  012126  010137  001314                  MOV     R1,SAVNUM           ;SAVE NUMBER OF DEVICES
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2220  012132  000241                    4$:     CLC
2221  012134  006137  001306                    ROL     DMACTV          ;GENERATE ACTIVE REGISTER OF DEVICES.
2222  012140  005237  001306                    INC     DMACTV          ;SET THE BIT
2223  012144  005301                            DEC     R1
2224  012146  001371                            BNE     4$              ;BR IF MORE TO GENERATE
2225  012150  012737  000006  000004            MOV     #6,@#4          ;RESTORE TRAP VECTOR
2226  012156  013737  001306  001312            MOV     DMACTV,SAVACT   ;SAVE ACTIVE REGISTER
2227  012164  000137  012216                    JMP     VECMAP          ;GO FIND THE VECTOR NOW.
2228  012170  104402  005760            5$:     TYPE    ,MERR2          ;NOTIFY OPR THAT NO DMC11'S FOUND.
2229  012174  005000                            CLR     R0              ;MAKE DATA LIGHTS ZERO
2230  012176  000000                            HALT                    ;STOP THE SHOW
2231  012200  000776                            BR      .-2             ;DISABLE CONT. SW.
2232  012202  012716  012072            6$:     MOV     #14$,(SP)       ;ENTERED BY NON-EXISTANT TIME-OUT.
2233  012206  000002                            RTI                     ;RETURN TO MAINSTREAM
2234
2235  012210  000001                    WHICH:  1
2236  012212     002     002                    .BYTE   2,2
2237  012214  001256                            TEMP5
2238
2239  012216  032737  000001  001236  VECMAP: BIT     #SW00,STRTSW
2240  012224  001114                            BNE     5$
2241  012226  012737  000340  000022            MOV     #340,@#22       ;SET IOT TRAP PRIO TO 7
2242  012234  012737  012410  000020            MOV     #4$,@#20        ;SET IOT TRAP VECTOR
2243  012242  012702  001500                    MOV     #DM.MAP,R2      ;SET SOFTWARE POINTER
2244  012246  012700  000300                    MOV     #300,R0         ;FLOATING VECTORS START HERE.
2245  012252  012701  000302                    MOV     #302,R1         ;PC OF IOT INSTR.
2246  012256  010120                    1$:     MOV     R1,(R0)+        ;START FILLING VECTOR AREA
2247  012260  012721  000004                    MOV     #4,(R1)+        ;WITH .+2; IOT
2248  012264  022021                            CMP     (R0)+,(R1)+     ;ADD 2 TO R0 +R1
2249  012266  020127  001000                    CMP     R1,#1000
2250  012272  101771                            BLOS    1$              ;BR IF MORE TO FILL
2251  012274  013737  001306  001246            MOV     DMACTV,TEMP1    ;STORE TEMPORALLY
2252  012302  006037  001246            2$:     ROR     TEMP1           ;BRING OUT A BIT
2253  012306  103063                            BCC     5$              ;BR IF ALL DONE
2254  012310  012704  000012                    MOV     #12,R4          ;R4 IS INDEX REGISTER
2255  012314  016437  012460  177776            MOV     BRLVL(R4),PS    ;SET PS TO 7
2256  012322  011201                            MOV     (R2),R1
2257  012324  012761  000200  000004            MOV     #200,4(R1)
2258  012332  012711  001000                    MOV     #BIT9,(R1)      ;SET ROMI
2259  012336  012761  121111  000006            MOV     #121111,6(R1)   ;PUT INSTRUCTION IN PORT6
2260  012344  012711  001400                    MOV     #BIT9!BIT8,(R1) ;FORCE AN INTERRUPT
2261  012350  105200                    7$:     INCB    R0              ;STALL
2262  012352  001376                            BNE     .-2             ;FOR TIME TO INTERUPT
2263  012354  162704  000002                    SUB     #2,R4           ;GET NEXT LOWEST PS LEVEL
2264  012360  001404                            BEQ     6$              ;BR IF R4 = 0
2265  012362  016437  012460  177776            MOV     BRLVL(R4),PS    ;MOVE NEXT LOWER LEVEL IN PS
2266  012370  000767                            BR      7$              ;BR TO DELAY
2267  012372  052762  005300  000002    6$:     BIS     #5300,2(R2)     ;NO INTERUPT ASSUME 300 AT LEVEL 5 AND FIX DMC11 LATER
2268  012400  005011                    3$:     CLR     (R1)            ;CLEAR ROMI
2269  012402  062702  000010                    ADD     #10,R2          ;POP SOFTWARE POINTER
2270  012406  000735                            BR      2$              ;KEEP GOING
2271  012410  051662  000002            4$:     BIS     (SP),2(R2)      ;GET VECTOR ADDRESS
2272  012414  042762  000007  000002            BIC     #7,2(R2)        ;CLEAR JUNK
2273  012422  016405  012462                    MOV     BRLVL+2(R4),R5  ;GET BR LEVEL OF DMC11
2274  012426  006305                            ASL     R5              ;SHIFT LEVEL 4 PLACES
2275  012430  006305                            ASL     R5              ;TO THE LEFT FOR THE
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2276  012432  006305                      ASL     R5              ;STATUS TABLE
2277  012434  006305                      ASL     R5
2278  012436  042705  170777              BIC     #170777,R5      ;CLEAR UNWANTED BITS
2279  012442  050562  000002              BIS     R5,2(R2)        ;PUT BR LEVEL IN STATUS TABLE
2280  012446  022626                      CMP     (SP)+,(SP)+     ;POP IOT JUNK OFF STACK
2281  012450  012716  012400              MOV     #3$,(SP)        ;SET FOR RETURN
2282  012454  000002                      RTI
2283  012456  000207              5$:     RTS     PC              ;ALL DONE WITH "AUTO SIZING"
2284
2285  012460  000000              BRLVL:  0       ;LEVEL 0
2286  012462  000000                      0       ;LEVEL 0
2287  012464  000200                      200     ;LEVEL 4
2288  012466  000240                      240     ;LEVEL 5
2289  012470  000300                      300     ;LEVEL 6
2290  012472  000340                      340     ;LEVEL 7
2291
2292
2293  012474  105777  166504      INTTY:  TSTB    @TKCSR          ;WAIT FOR DONE
2294  012500  100375                      BPL     .-4
2295  012502  017703  166500              MOV     @TKDBR,R3       ;PUT CHAR IN R3
2296  012506  105777  166476              TSTB    @TPCSR          ;WAIT UNTIL PRINTER IS READY
2297  012512  100375                      BPL     .-4
2298  012514  010377  166472              MOV     R3,@TPDBR       ;ECHO CHAR
2299  012520  042703  000240              BIC     #BIT7!BIT5,R3   ;MASK OFF LOWER CASE
2300  012524  000207                      RTS     PC              ;RETURN
2301
2302
2303
2304
2305                                      ;***************************** TEST 1 ****************************
2306                                      ;*OUT CONTROL REGISTER READ/ONLY TEST
2307                                      ;*DO A MASTER CLEAR, VERIFY THAT ALL READ/ONLY
2308                                      ;*BITS ARE IN THE CORRECT STATE
2309                                      ;:*********************************************************************
2310
2311                                      ;  TEST 1
2312                                      ;--------------
2313  012526  012737  000001  001226  TST1:  MOV     #1,TSTNO
2314  012534  012737  012602  001216          MOV     #TST2,NEXT
2315                                                                  ;R1 CONTAINS BASE DMC11 ADDRESS
2316  012542  005077  166636                  CLR     @DMCSR          ;CLEAR SEL0
2317  012546  012702  000011                  MOV     #11,R2          ;SAVE R2 FOR TYPEOUT
2318  012552  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2319  012554  021224                          021004!<20*11>          ;PORT4 LINE UNIT REG 11
2320  012556  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" IN R4
2321  012562  042704  000054                  BIC     #54,R4          ;CLEAR UNKNOWN BITS
2322  012566  012705  000020                  MOV     #20,R5          ;PUT "EXPECTED" IN R5
2323  012572  120504                          CMPB    R5,R4           ;IS OUT READY SET?
2324  012574  001401                          BEQ     1$              ;BR IF YES
2325  012576  104002                          HLT     2               ;ERROR IN LU 11
2326  012600  104400                  1$:     SCOPE                   ;SCOPE THIS TEST
2327
2328
2329                                      ;***************************** TEST 2 ****************************
2330                                      ;*IN CONTROL REGISTER READ/ONLY TEST
2331                                      ;*DO A MASTER CLEAR, VERIFY THAT ALL READ/ONLY
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```
                                        ;*BITS ARE IN THE CORRECT STATE
                                        ;;*****************************************************************
                                        ;
                                        ;  TEST 2
                                        ;--------------
012602  012737  000002  001226  TST2:   MOV     #2,TSTNO
012610  012737  012650  001216          MOV     #TST3,NEXT
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
012616  012702  000012                  MOV     #12,R2          ;SAVE R2 FOR TYPEOUT
012622  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
012624  021244                          021004!<20*12>          ;PORT4 LINE UNIT REG 12
012626  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" IN R4
012632  042704  000017                  BIC     #17,R4          ;CLEAR UNKNOWN BITS
012636  005005                          CLR     R5              ;PUT "EXPECTED" IN R5
012640  120504                          CMPB    R5,R4           ;ARE ALL BITS CLEARED?
012642  001401                          BEQ     1$              ;BR IF YES
012644  104002                          HLT     2               ;ERROR IN LU 12
012646  104400                  1$:     SCOPE                   ;SCOPE THIS TEST

                                        ;***************************** TEST 3 ****************************
                                        ;*MODEM CONTROL REGISTER READ/ONLY TEST
                                        ;*DO A MASTER CLEAR, VERIFY THAT ALL READ/ONLY
                                        ;*BITS ARE IN THE CORRECT STATE
                                        ;;*****************************************************************

                                        ;  TEST 3
                                        ;--------------
012650  012737  000003  001226  TST3:   MOV     #3,TSTNO
012656  012737  012722  001216          MOV     #TST4,NEXT
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
012664  104412                          MSTCLR                  ;MASTER CLEAR DMC11
012666  012702  000013                  MOV     #13,R2          ;SAVE R2 FOR TYPEOUT
012672  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
012674  021264                          021004!<20*13>          ;PORT4 LINE UNIT REG 13
012676  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" IN R4
012702  042704  000213                  BIC     #213,R4         ;CLEAR UNKNOWN BITS
012706  012705  000100                  MOV     #100,R5         ;PUT "EXPECTED" IN R5
012712  120504                          CMPB    R5,R4           ;ARE RING, DTR,  AND MODEM READY SET?
012714  001401                          BEQ     1$              ;BR IF YES
012716  104002                          HLT     2               ;ERROR IN LU 13
012720  104400                  1$:     SCOPE                   ;SCOPE THIS TEST

                                        ;***************************** TEST 4 ****************************
                                        ;*MAINTENANCE REGISTER READ/ONLY TEST
                                        ;*DO A MASTER CLEAR, VERIFY THAT ALL READ/ONLY
                                        ;*BITS ARE IN THE CORRECT STATE
                                        ;;*****************************************************************

                                        ;  TEST 4
                                        ;--------------
012722  012737  000004  001226  TST4:   MOV     #4,TSTNO
012730  012737  013024  001216          MOV     #TST5,NEXT
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
012736  104412                          MSTCLR                  ;MASTER CLEAR DMC11
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2388  012740  012702  000017                    MOV     #17,R2          ;SAVE R2 FOR TYPEOUT
2389  012744  104414                            ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2390  012746  021364                            021004!<20*17>          ;PORT4 LINE UNIT REG 17
2391  012750  016104  000004                    MOV     4(R1),R4        ;PUT "FOUND" IN R4
2392  012754  042704  000206                    BIC     #206,R4         ;CLEAR UNKNOWN BITS
2393  012760  012705  000051                    MOV     #51,R5          ;PUT "EXPECTED" IN R5
2394  012764  032737  020000  001366            BIT     #BIT13,STAT1    ;IS LU AN M8202 OR M8201?
2395  012772  001004                            BNE     2$              ;BR IF M8202
2396  012774  032737  040000  001366            BIT     #BIT14,STAT1    ;CONNECTOR???
2397  013002  001004                            BNE     3$              ;BR IF M8201 WITH CONNECTOR
2398  013004  042704  000040          2$:       BIC     #40,R4          ;MASK OFF SI BIT IF M8202 OR M8201, NO CONNECTOR
2399  013010  042705  000040                    BIC     #BIT5,R5        ;SI BIT IS UNKNOWN
2400  013014                            3$:
2401  013014  120504                            CMPB    R5,R4           ;ARE SI AND ICIR SET?
2402  013016  001401                            BEQ     1$              ;BR IF YES
2403  013020  104002                            HLT     2               ;ERROR IN LU 17
2404  013022  104400                    1$:     SCOPE                   ;SCOPE THIS TEST
2405
2406
2407                                            ;***************************** TEST 5 ****************************
2408                                            ;*LINE UNIT REGISTER WRITE/READ TEST
2409                                            ;*SET BIT5 IN LU REGISTER 12, VERIFY IT IS SET
2410                                            ;*CLEAR BIT5 IN LU REGISTER 12, VERIFY IT IS CLEAR
2411                                            ;:*********************************************************************
2412
2413                                            ;  TEST 5
2414                                            ;--------------
2415  013024  012737  000005  001226    TST5:   MOV     #5,TSTNO
2416  013032  012737  013164  001216            MOV     #TST6,NEXT
2417  013040  012737  013054  001220            MOV     #1$,LOCK
2418                                                                    ;R1 CONTAINS BASE DMC11 ADDRESS
2419  013046  104412                            MSTCLR                  ;MASTER CLEAR DMC11
2420  013050  012702  000012                    MOV     #12,R2          ;SAVE REGISTER ADDRESS FOR TYPEOUT
2421  013054  012761  000040  000004    1$:     MOV     #40,4(R1)       ;LOAD PORT4
2422  013062  104414                            ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2423  013064  122112                            122112                  ;SET BIT5 IN LU-12
2424  013066  104414                            ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2425  013070  021245                            021245                  ;READ LU-12
2426  013072  012705  000040                    MOV     #40,R5          ;PUT "EXPECTED" IN R5
2427  013076  116104  000005                    MOVB    5(R1),R4        ;PUT "FOUND" IN R4
2428  013102  042704  000337                    BIC     #337,R4         ;CLEAR UNWANTED BITS
2429  013106  120504                            CMPB    R5,R4           ;IS BIT5 SET?
2430  013110  001401                            BEQ     2$              ;BR IF YES
2431  013112  104003                            HLT     3               ;ERROR, BIT 5 IS NOT SET
2432  013114  104401                    2$:     SCOP1                   ;SCOPE SUBTEST (SW09=1)
2433  013116  012737  013124  001220            MOV     #3$,LOCK        ;NEW SCOP1
2434  013124  005061  000004          3$:       CLR     4(R1)           ;LOAD PORT4
2435  013130  104414                            ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2436  013132  122112                            122112                  ;CLEAR BIT 5 IN LU-12
2437  013134  104414                            ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2438  013136  021245                            021245                  ;READ LU-12
2439  013140  005005                            CLR     R5              ;PUT "EXPECTED" IN R5
2440  013142  116104  000005                    MOVB    5(R1),R4        ;PUT "FOUND" IN R4
2441  013146  042704  000337                    BIC     #337,R4         ;CLEAR UNWANTED BITS
2442  013152  120504                            CMPB    R5,R4           ;IS BIT5 CLEAR?
2443  013154  001401                            BEQ     4$              ;BR IF YES
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```
2444  013156  104003                        HLT     3               ;ERROR, BIT5 IS NOT CLEAR
2445  013160  104401              4$:       SCOP1                   ;SCOPE SUBTEST (SW09=1)
2446  013162  104400                        SCOPE                   ;SCOPE THIS TEST
2447
2448
2449                                        ;*************************** TEST 6 ****************************
2450                                        ;*LINE UNIT REGISTER WRITE/READ TEST
2451                                        ;*SET BIT1 IN LU REGISTER 17, VERIFY IT IS SET
2452                                        ;*CLEAR BIT1 IN LU REGISTER 17, VERIFY IT IS CLEAR
2453                                        ;:************************************************************
2454
2455                                        ;  TEST 6
2456                                        ;--------------
2457  013164  012737  000006  001226  TST6: MOV     #6,TSTNO
2458  013172  012737  013324  001216        MOV     #TST7,NEXT
2459  013200  012737  013214  001220        MOV     #1$,LOCK
2460                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
2461  013206  104412                        MSTCLR                  ;MASTER CLEAR DMC11
2462  013210  012702  000017                MOV     #17,R2          ;SAVE REGISTER ADDRESS FOR TYPEOUT
2463  013214  012761  000001  000004  1$:   MOV     #1,4(R1)        ;LOAD PORT4
2464  013222  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2465  013224  122117                        122117                  ;SET BIT1 IN LU-17
2466  013226  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2467  013230  021365                        021365                  ;READ LU-17
2468  013232  012705  000001                MOV     #1,R5           ;PUT "EXPECTED" IN R5
2469  013236  116104  000005                MOVB    5(R1),R4        ;PUT "FOUND" IN R4
2470  013242  042704  000376                BIC     #376,R4         ;CLEAR UNWANTED BITS
2471  013246  120504                        CMPB    R5,R4           ;IS BIT1 SET?
2472  013250  001401                        BEQ     2$              ;BR IF YES
2473  013252  104003                        HLT     3               ;ERROR, BIT 1 IS NOT SET
2474  013254  104401              2$:       SCOP1                   ;SCOPE SUBTEST (SW09=1)
2475  013256  012737  013264  001220        MOV     #3$,LOCK        ;NEW SCOP1
2476  013264  005061  000004        3$:     CLR     4(R1)           ;LOAD PORT4
2477  013270  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2478  013272  122117                        122117                  ;CLEAR BIT 1 IN LU-17
2479  013274  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2480  013276  021365                        021365                  ;READ LU-17
2481  013300  005005                        CLR     R5              ;PUT "EXPECTED" IN R5
2482  013302  116104  000005                MOVB    5(R1),R4        ;PUT "FOUND" IN R4
2483  013306  042704  000376                BIC     #376,R4         ;CLEAR UNWANTED BITS
2484  013312  120504                        CMPB    R5,R4           ;IS BIT1 CLEAR?
2485  013314  001401                        BEQ     4$              ;BR IF YES
2486  013316  104003                        HLT     3               ;ERROR, BIT1 IS NOT CLEAR
2487  013320  104401              4$:       SCOP1                   ;SCOPE SUBTEST (SW09=1)
2488  013322  104400                        SCOPE                   ;SCOPE THIS TEST
2489
2490
2491                                        ;*************************** TEST 7 ****************************
2492                                        ;*LINE UNIT REGISTER WRITE/READ TEST
2493                                        ;*FLOAT A 1 THROUGH LINE UNIT REGISTER 13
2494                                        ;*FLOAT A 0 THROUGH LINE UNIT REGISTER 13
2495                                        ;:************************************************************
2496
2497                                        ;  TEST 7
2498                                        ;--------------
2499  013324  012737  000007  001226  TST7: MOV     #7,TSTNO
```

```
2500  013332  012737  013534  001216          MOV     #TST10,NEXT
2501  013340  012737  013360  001220          MOV     #64$,LOCK
2502                                                    ;R1 CONTAINS BASE DMC11 ADDRESS
2503  013346  104412                           MSTCLR                ;MASTER CLEAR DMC11
2504  013350  012702  000013                   MOV     #13,R2        ;SAVE REGISTER ADDRESS FOR TYPEOUT
2505  013354  012700  000001                   MOV     #1,R0         ;START WITH BIT 0
2506  013360                            64$:
2507  013360  010061  000004                   MOV     R0,4(R1)      ;PUT PATTERN INTO PORT4
2508  013364  042761  000257  000004           BIC     #257,4(R1)    ;CLEAR UNWANTED BITS
2509  013372  104414                           ROMCLK                ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2510  013374  122113                           122100!13             ;MOV DATA TO IBUS REGISTER 13
2511  013376  104414                           ROMCLK                ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2512  013400  021265                           21005!<13*20>         ;READ FROM IBUS REGISTER 13
2513  013402  010005                           MOV     R0,R5         ;PUT EXPECTED IN R5
2514  013404  042705  000257                   BIC     #257,R5       ;CLEAR UNWANTED BITS
2515  013410  116104  000005                   MOVB    5(R1),R4      ;PUT "FOUND" INTO R4
2516  013414  042704  000257                   BIC     #257,R4       ;CLEAR UNWANTED BITS
2517  013420  120504                           CMPB    R5,R4         ;DATA CORRECT?
2518  013422  001401                           BEQ     65$           ;BR IF YES
2519  013424  104003                           HLT     3             ;ERROR
2520  013426  104401                    65$:   SCOP1                 ;SW09=1?
2521  013430  000241                           CLC                   ;CLEAR CARRY
2522  013432  106100                           ROLB    R0            ;SHIFT BIT IN R0
2523  013434  001351                           BNE     64$           ;IF R0=0 THEN DONE
2524  013436  012737  013452  001220           MOV     #67$,LOCK     ;NEW SCOP1
2525  013444  012700  000001                   MOV     #1,R0         ;START WITH BIT 0
2526  013450  005100                    69$:   COM     R0            ;CHANGE TO FLOATING ZERO
2527  013452                            67$:
2528  013452  010061  000004                   MOV     R0,4(R1)      ;PUT PATTERN INTO PORT4
2529  013456  042761  000257  000004           BIC     #257,4(R1)    ;CLEAR UNWANTED BITS
2530  013464  104414                           ROMCLK                ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2531  013466  122113                           122100!13             ;MOV DATA TO IBUS REGISTER 13
2532  013470  104414                           ROMCLK                ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2533  013472  021265                           21005!<13*20>         ;READ FROM IBUS REGISTER 13
2534  013474  010005                           MOV     R0,R5         ;PUT EXPECTED IN R5
2535  013476  042705  000257                   BIC     #257,R5       ;CLEAR UNWANTED BITS
2536  013502  116104  000005                   MOVB    5(R1),R4      ;PUT "FOUND" INTO R4
2537  013506  042704  000257                   BIC     #257,R4       ;CLEAR UNWANTED BITS
2538  013512  120504                           CMPB    R5,R4         ;DATA CORRECT?
2539  013514  001401                           BEQ     68$           ;BR IF YES
2540  013516  104003                           HLT     3             ;ERROR
2541  013520  104401                    68$:   SCOP1                 ;SW09=1?
2542  013522  005100                           COM     R0            ;CHANGE TO FLOATING 1
2543  013524  000241                           CLC                   ;CLEAR CARRY
2544  013526  106100                           ROLB    R0            ;SHIFT BIT IN R0
2545  013530  001347                           BNE     69$           ;IF R0=0 THEN DONE
2546  013532  104400                           SCOPE                 ;SCOPE THIS TEST
2547
2548
2549                                          ;***************************** TEST 10 ****************************
2550                                          ;*LINE UNIT REGISTER WRITE/READ TEST
2551                                          ;*FLOAT A 1 THROUGH LINE UNIT REGISTER 14
2552                                          ;*FLOAT A 0 THROUGH LINE UNIT REGISTER 14
2553                                          ;;**********************************************************************
2554
2555                                          ;  TEST 10
```

```
                                                    ;--------------
013534  012737  000010  001226  TST10:  MOV     #10,TSTNO
013542  012737  013710  001216          MOV     #TST11,NEXT
013550  012737  013570  001220          MOV     #64$,LOCK

                                                                    ;R1 CONTAINS BASE DMC11 ADDRESS
013556  104412                          MSTCLR                      ;MASTER CLEAR DMC11
013560  012702  000014                  MOV     #14,R2              ;SAVE REGISTER ADDRESS FOR TYPEOUT
013564  012700  000001                  MOV     #1,R0               ;START WITH BIT 0
013570                          64$:
013570  010061  000004                  MOV     R0,4(R1)            ;PUT PATTERN INTO PORT4
013574  104414                          ROMCLK                      ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
013576  122114                          122100!14                   ;MOV DATA TO IBUS REGISTER 14
013600  104414                          ROMCLK                      ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
013602  021305                          21005!<14*20>               ;READ FROM IBUS REGISTER 14
013604  010005                          MOV     R0,R5               ;PUT EXPECTED IN R5
013606  116104  000005                  MOVB    5(R1),R4            ;PUT "FOUND" INTO R4
013612  120504                          CMPB    R5,R4               ;DATA CORRECT?
013614  001401                          BEQ     65$                 ;BR IF YES
013616  104003                          HLT     3                   ;ERROR
013620  104401                  65$:    SCOP1                       ;SW09=1?
013622  000241                          CLC                         ;CLEAR CARRY
013624  106100                          ROLB    R0                  ;SHIFT BIT IN R0
013626  001360                          BNE     64$                 ;IF R0=0 THEN DONE
013630  012737  013644  001220          MOV     #67$,LOCK           ;NEW SCOP1
013636  012700  000001                  MOV     #1,R0               ;START WITH BIT 0
013642  005100                  69$:    COM     R0                  ;CHANGE TO FLOATING ZERO
013644                          67$:
013644  010061  000004                  MOV     R0,4(R1)            ;PUT PATTERN INTO PORT4
013650  104414                          ROMCLK                      ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
013652  122114                          122100!14                   ;MOV DATA TO IBUS REGISTER 14
013654  104414                          ROMCLK                      ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
013656  021305                          21005!<14*20>               ;READ FROM IBUS REGISTER 14
013660  010005                          MOV     R0,R5               ;PUT EXPECTED IN R5
013662  116104  000005                  MOVB    5(R1),R4            ;PUT "FOUND" INTO R4
013666  120504                          CMPB    R5,R4               ;DATA CORRECT?
013670  001401                          BEQ     68$                 ;BR IF YES
013672  104003                          HLT     3                   ;ERROR
013674  104401                  68$:    SCOP1                       ;SW09=1?
013676  005100                          COM     R0                  ;CHANGE TO FLOATING 1
013700  000241                          CLC                         ;CLEAR CARRY
013702  106100                          ROLB    R0                  ;SHIFT BIT IN R0
013704  001356                          BNE     69$                 ;IF R0=0 THEN DONE
013706  104400                          SCOPE                       ;SCOPE THIS TEST


                                        ;*************************** TEST 11 ***************************
                                        ;*SWITCH PAC TEST
                                        ;*THIS TEST READS SWITCH PAC#1
                                        ;*THIS SWITCH PAC CONTAINS THE DDCMP LINE #
                                        ;:*************************************************************

                                        ;  TEST 11
                                        ;--------------
013710  012737  000011  001226  TST11:  MOV     #11,TSTNO
013716  012737  013752  001216          MOV     #TST12,NEXT
                                                                    ;R1 CONTAINS BASE DMC11 ADDRESS
```

```
2612  013724  104412                          MSTCLR                  ;MASTER CLEAR DMC11
2613  013726  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2614  013730  021324                          021324                  ;PORT4 LU15
2615  013732  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" IN R4
2616  013736  113705  001370                  MOVB    STAT2,R5        ;PUT "EXPECTED" IN R5
2617  013742  120504                          CMPB    R5,R4           ;SW OK?
2618  013744  001401                          BEQ     1$              ;BR IF YES
2619  013746  104031                          HLT     31              ;ERROR, SWITCH PAC READ ERROR
2620  013750  104400              1$:         SCOPE                   ;SCOPE THIS TEST
2621
2622
2623                                          ;***************************** TEST 12 ****************************
2624                                          ;*SWITCH PAC TEST
2625                                          ;*THIS TEST READS SWITCH PAC#2
2626                                          ;*THIS SWITCH PAC CONTAINS THE BM873 BOOT ADD
2627                                          ;:*********************************************************************
2628
2629                                          ;  TEST 12
2630                                          ;--------------
2631  013752  012737  000012  001226  TST12:  MOV     #12,TSTNO
2632  013760  012737  014014  001216          MOV     #TST13,NEXT
2633                                                                  ;R1 CONTAINS BASE DMC11 ADDRESS
2634  013766  104412                          MSTCLR                  ;MASTER CLEAR DMC11
2635  013770  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2636  013772  021344                          021344                  ;PORT4 LU16
2637  013774  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" IN R4
2638  014000  113705  001371                  MOVB    STAT2+1,R5      ;PUT "EXPECTED" IN R5
2639  014004  120504                          CMPB    R5,R4           ;SW OK?
2640  014006  001401                          BEQ     1$              ;BR IF YES
2641  014010  104031                          HLT     31              ;ERROR, SWITCH PAC READ ERROR
2642  014012  104400              1$:         SCOPE                   ;SCOPE THIS TEST
2643
2644
2645                                          ;***************************** TEST 13 ****************************
2646                                          ;*LINE UNIT CLOCK TEST
2647                                          ;*THIS TEST VERIFYS THAT THE LU INTERNAL CLOCK
2648                                          ;*(BIT 1 IN LU-17) IS WORKING
2649                                          ;:*********************************************************************
2650
2651                                          ;  TEST 13
2652                                          ;--------------
2653  014014  012737  000013  001226  TST13:  MOV     #13,TSTNO
2654  014022  012737  014114  001216          MOV     #TST14,NEXT
2655                                                                  ;R1 CONTAINS BASE DMC11 ADDRESS
2656  014030  104412                          MSTCLR                  ;MASTER CLEAR DMC11
2657  014032  005037  001416                  CLR     TEMP            ;PREPARE FOR DELAY
2658  014036                          1$:
2659  014036  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2660  014040  021364                          021364                  ;PORT4 LU-17
2661  014042  032761  000002  000004          BIT     #2,4(R1)        ;IS CLOCK BIT SET?
2662  014050  001004                          BNE     2$              ;BR IF YES
2663  014052  005237  001416                  INC     TEMP            ;DELAY
2664  014056  001367                          BNE     1$      ;DELAY FINISHED?
2665  014060  104004                          HLT     4               ;ERROR BIT IS STUCK CLEAR
2666  014062  005037  001416          2$:     CLR     TEMP            ;PREPARE FOR DELAY
2667  014066                          3$:
```

```
2668  014066  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2669  014070  021364                          021364                  ;PORT4 LU-17
2670  014072  032761  000002  000004          BIT     #2,4(R1)        ;IS CLOCK BIT CLEAR?
2671  014100  001404                          BEQ     4$              ;BR IF YES
2672  014102  005237  001416                  INC     TEMP            ;DELAY
2673  014106  001367                          BNE     3$              ;BR IF DELAY NOT DONE
2674  014110  104004                          HLT     4               ;ERROR BIT IS STUCK SET
2675  014112  104400                  4$:     SCOPE
2676
2677
2678                                          ;*************************** TEST 14 ***************************
2679                                          ;*OUT DATA SILO TEST
2680                                          ;*SET SOM AND LOAD OUT DATA SILO
2681                                          ;*VERIFY THAT OCOR SET, INDICATING THAT THE
2682                                          ;*CHARACTER IS AT THE BOTTOM OF THE OUT SILO
2683                                          ;:***********************************************************
2684
2685                                          ;  TEST 14
2686                                          ;--------------
2687  014114  012737  000014  001226  TST14:  MOV     #14,TSTNO
2688  014122  012737  014214  001216          MOV     #TST15,NEXT
2689                                                                  ;R1 CONTAINS BASE DMC11 ADDRESS
2690  014130  104412                          MSTCLR                  ;MASTER CLEAR DMC11
2691  014132  012711  004000                  MOV     #BIT11,(R1)     ;SET LINE UNIT LOOP
2692  014136  012761  000001  000004          MOV     #1,4(R1)        ;LOAD PORT4 WITH BIT0
2693  014144  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2694  014146  122111                          122111                  ;SET SOM
2695  014150  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2696  014152  122110                          122110                  ;LOAD OUT DATA SILO
2697  014154  104416  000002                  TIMER,  2               ;WAIT FOR OCOR
2698  014160  012702  000017                  MOV     #17,R2          ;SAVE ADDRESS FOR TYPEOUT
2699  014164  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2700  014166  021364                          021364                  ;PORT4 LU 17
2701  014170  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" IN R4
2702  014174  042704  000357                  BIC     #357,R4         ;CLEAR UNWANTED BITS
2703  014200  012705  000020                  MOV     #20,R5          ;PUT "EXPECTED" IN R5
2704  014204  120504                          CMPB    R5,R4           ;IS OCOR SET?
2705  014206  001401                          BEQ     1$              ;BR IF YES
2706  014210  104005                          HLT     5
2707  014212                          1$:
2708  014212  104400                          SCOPE                   ;SCOPE THIS TEST
2709
2710
2711                                          ;*************************** TEST 15 ***************************
2712                                          ;*DDCMP TEST OF RTS AND OUT ACTIVE
2713                                          ;*SET SOM AND LOAD OUT DATA SILO
2714                                          ;*SINGLE STEP 2 DATA CLOCKS, VERIFY
2715                                          ;*THAT RTS AND ACTIVE ARE SET
2716                                          ;:***********************************************************
2717
2718                                          ;  TEST 15
2719                                          ;--------------
2720  014214  012737  000015  001226  TST15:  MOV     #15,TSTNO
2721  014222  012737  014352  001216          MOV     #TST16,NEXT
2722                                                                  ;R1 CONTAINS BASE DMC11 ADDRESS
2723  014230  104412                          MSTCLR                  ;MASTER CLEAR DMC11
```

```
2724  014232  012711  004000                MOV     #BIT11,(R1)     ;SET LINE UNIT LOOP
2725  014236  012761  000001  000004        MOV     #1,4(R1)        ;LOAD PORT4 WITH BIT0
2726  014244  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2727  014246  122111                        122111                  ;SET SOM
2728  014250  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2729  014252  122110                        122110                  ;LOAD OUT DATA SILO
2730  014254  004737  026702                JSR     PC,OCOR         ;WAIT FOR OCOR
2731  014260  104415  000002                DATACLK,        2       ;CLOCK DATA FOUR TIMES
2732  014264  012702  000011                MOV     #11,R2          ;SAVE ADDRESS FOR TYPEOUT
2733  014270  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2734  014272  021224                        021224                  ;PORT4 LU 11
2735  014274  016104  000004                MOV     4(R1),R4        ;PUT "FOUND" IN R4
2736  014300  042704  000257                BIC     #257,R4         ;CLEAR UNWANTED BITS
2737  014304  012705  000120                MOV     #120,R5         ;PUT "EXPECTED" IN R5
2738  014310  120504                        CMPB    R5,R4           ;IS ACTIVE SET?
2739  014312  001401                        BEQ     1$              ;BR IF YES
2740  014314  104005                        HLT     5
2741  014316                        1$:
2742  014316  012702  000013                MOV     #13,R2          ;SAVE ADDRESS FOR TYPEOUT
2743  014322  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2744  014324  021264                        021264                  ;PORT4 LU 13
2745  014326  016104  000004                MOV     4(R1),R4        ;PUT EXPECTED IN R4
2746  014332  042704  000337                BIC     #337,R4         ;CLEAR UNWANTED BITS
2747  014336  012705  000040                MOV     #BIT5,R5        ;PUT "EXPECTED" IN R5, RTS SHOULD BE SET
2748  014342  120504                        CMPB    R5,R4           ;IS RTS OK?
2749  014344  001401                        BEQ     2$              ;BR IF YES
2750  014346  104005                        HLT     5               ;RTS ERROR
2751  014350                        2$:
2752  014350  104400                        SCOPE                   ;SCOPE THIS TEST
2753
2754
2755                                        ;*************************** TEST 16 ****************************
2756                                        ;*TEST OF OUT CLEAR
2757                                        ;*SET SOM AND LOAD OUT DATA SILO
2758                                        ;*SINGLE STEP DATA CLOCK, SET OUT CLEAR
2759                                        ;*VERIFY THAT OCOR,RTS, AND ACTIVE ARE CLEARED
2760                                        ;;************************************************************************
2761
2762                                        ;  TEST 16
2763                                        ;--------------
2764  014352  012737  000016  001226  TST16: MOV     #16,TSTNO
2765  014360  012737  014550  001216        MOV     #TST17,NEXT
2766                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
2767  014366  104412                        MSTCLR                  ;MASTER CLEAR DMC11
2768  014370  012711  004000                MOV     #BIT11,(R1)     ;SET LINE UNIT LOOP
2769  014374  012761  000001  000004        MOV     #1,4(R1)        ;LOAD PORT4 WITH BIT0
2770  014402  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2771  014404  122111                        122111                  ;SET SOM
2772  014406  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2773  014410  122110                        122110                  ;LOAD OUT DATA SILO
2774  014412  004737  026702                JSR     PC,OCOR         ;WAIT FOR OCOR
2775  014416  104415  000002                DATACLK,        2       ;CLOCK DATA FOUR TIMES
2776  014422  012761  000200  000004        MOV     #BIT7,4(R1)     ;SET BIT7 IN PORT4
2777  014430  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2778  014432  122111                        122111                  ;SET OUT CLEAR
2779  014434  104415  000001                DATACLK,        1       ;GIVE A TICK TO CLEAR RTS
```

```
2780  014440  012702  000017            MOV     #17,R2          ;SAVE ADDRESS FOR TYPEOUT
2781  014444  104414                    ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2782  014446  021364                    021364                  ;PORT4 LU 17
2783  014450  016104  000004            MOV     4(R1),R4        ;PUT "FOUND" IN R4
2784  014454  042704  000357            BIC     #357,R4         ;CLEAR UNWANTED BITS
2785  014460  005005                    CLR     R5              ;PUT "EXPECTED" IN R5
2786  014462  120504                    CMPB    R5,R4           ;IS OCOR CLEARED?
2787  014464  001401                    BEQ     1$              ;BR IF YES
2788  014466  104005                    HLT     5
2789  014470                    1$:
2790  014470  012702  000013            MOV     #13,R2          ;SAVE ADDRESS FOR TYPEOUT
2791  014474  104414                    ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2792  014476  021264                    021264                  ;PORT4 LU 13
2793  014500  016104  000004            MOV     4(R1),R4        ;PUT EXPECTED IN R4
2794  014504  042704  000337            BIC     #337,R4         ;CLEAR UNWANTED BITS
2795  014510  005005                    CLR     R5              ;PUT "EXPECTED" IN R5, RTS SHOULD BE CLEARED
2796  014512  120504                    CMPB    R5,R4           ;IS RTS OK?
2797  014514  001401                    BEQ     2$              ;BR IF YES
2798  014516  104005                    HLT     5               ;RTS ERROR
2799  014520                    2$:
2800  014520  012702  000011            MOV     #11,R2          ;SAVE ADDRESS FOR TYPEOUT
2801  014524  104414                    ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2802  014526  021224                    021224                  ;PORT4 LU11
2803  014530  016104  000004            MOV     4(R1),R4        ;PUT "FOUND" IN R4
2804  014534  012705  000020            MOV     #BIT4,R5        ;ONLY OUT READY SHOULD BE SET
2805  014540  120504                    CMPB    R5,R4           ;IS ACTIVE CLEAR?
2806  014542  001401                    BEQ     3$              ;BR IF YES
2807  014544  104005                    HLT     5               ;ERROR ACTIVE NOT CLEARED
2808  014546                    3$:
2809  014546  104400                    SCOPE                   ;SCOPE THIS TEST
2810
2811
2812                                    ;*************************** TEST 17 ***************************
2813                                    ;*DDCMP TRANSMITTER TEST
2814                                    ;*SINGLE CLOCK THE CHARACTER 0
2815                                    ;*VERIFY EACH BIT POSITION AS IT
2816                                    ;*PASSES THE BIT WINDOW (SI BIT)
2817                                    ;*ON AN ERROR, R3 CONTAINS BIT POSITION OF FAILURE
2818                                    ;;***********************************************************
2819
2820                                    ;  TEST 17
2821                                    ;--------------
2822  014550  012737  000017  001226    TST17:  MOV     #17,TSTNO
2823  014556  012737  014732  001216            MOV     #TST20,NEXT
2824                                            ;R1 CONTAINS BASE DMC11 ADDRESS
2825  014564  104412                    MSTCLR                  ;MASTER CLEAR DMC11
2826  014566  012711  004000            MOV     #BIT11,(R1)     ;SET LINE UNIT LOOP
2827  014572  004737  027034            JSR     PC,OUTRDY       ;WAIT FOR OUT-READY
2828  014576  012761  000001  000004    MOV     #1,4(R1)        ;SET BIT0 IN PORT4
2829  014604  104414                    ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2830  014606  122111                    122111                  ;SET SOM!
2831  014610  012705  000000            MOV     #0,R5   ;LOAD CHARACTER IN R5 FOR TYPEOUT
2832  014614  004737  027034            JSR     PC,OUTRDY       ;WAIT FOR OUT-READY
2833  014620  010561  000004            MOV     R5,4(R1)        ;LOAD PORT4 WITH CHARACTER
2834  014624  104414                    ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2835  014626  122110                    122110                  ;LOAD OUT DATA
```

```
2836  014630  004737  026702              JSR     PC,OCOR         ;WAIT FOR OCOR TO SET
2837  014634  005003                      CLR     R3              ;CLEAR BIT COUNTER
2838  014636  010502                      MOV     R5,R2           ;LOAD CHARACTER IN R2
2839  014640  104415  000002              DATACLK,        2       ;2 TICKS TO SET UP TRANSMITTER
2840  014644  104415  000001      1$:     DATACLK,        1       ;SHIFT NEXT BIT IN THE WINDOW (SI BIT)
2841  014650  106002                      RORB    R2              ;SHIFT NEXT SOFTWARE BIT IN TO CARRY
2842  014652  103005                      BCC     2$              ;BR IF CARRY CLEAR
2843  014654  004737  026650              JSR     PC,GETSI        ;GET THE WINDOW
2844  014660  103406                      BCS     3$              ;BR IF BIT IS A MARK
2845  014662  104006                      HLT     6               ;ERROR BIT WAS A SPACE
2846  014664  000404                      BR      3$              ;CONTINE WITH TEST
2847  014666  004737  026650      2$:     JSR     PC,GETSI        ;GET THE WINDOW
2848  014672  103001                      BCC     3$              ;BR IF BIT IS A SPACE
2849  014674  104006                      HLT     6               ;ERROR BIT WAS A MARK
2850  014676                      3$:
2851  014676  005203                      INC     R3              ;NEXT BIT
2852  014700  022703  000010              CMP     #10,R3          ;DONE YET?
2853  014704  001357                      BNE     1$              ;BR IF NO
2854  014706  104415  000014              DATACLK,        14      ;CLOCK TRANSMITTER 14 MORE TICKS
2855  014712  104414                      ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2856  014714  021264                      021264                  ;PORT4 LU-13
2857  014716  032761  000040  000004     BIT     #BIT5,4(R1)     ;RTS SHOULD BE CLEAR NOW
2858  014724  001401                      BEQ     4$              ;BR IF YES
2859  014726  104034                      HLT     34              ;ERROR, RTS NOT CLEAR
2860  014730  104400              4$:     SCOPE                   ;SCOPE THIS TEST
2861
2862
2863                                      ;***************************** TEST 20 *****************************
2864                                      ;*DDCMP TRANSMITTER TEST
2865                                      ;*SINGLE CLOCK THE CHARACTER 125
2866                                      ;*VERIFY EACH BIT POSITION AS IT
2867                                      ;*PASSES THE BIT WINDOW (SI BIT)
2868                                      ;*ON AN ERROR, R3 CONTAINS BIT POSITION OF FAILURE
2869                                      ;:*************************************************************
2870
2871                                      ;  TEST 20
2872                                      ;--------------
2873  014732  012737  000020  001226  TST20:  MOV     #20,TSTNO
2874  014740  012737  015114  001216          MOV     #TST21,NEXT
2875                                                          ;R1 CONTAINS BASE DMC11 ADDRESS
2876  014746  104412                      MSTCLR                  ;MASTER CLEAR DMC11
2877  014750  012711  004000              MOV     #BIT11,(R1)     ;SET LINE UNIT LOOP
2878  014754  004737  027034              JSR     PC,OUTRDY       ;WAIT FOR OUT-READY
2879  014760  012761  000001  000004     MOV     #1,4(R1)        ;SET BIT0 IN PORT4
2880  014766  104414                      ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2881  014770  122111                      122111                  ;SET SOM!
2882  014772  012705  000125              MOV     #125,R5 ;LOAD CHARACTER IN R5 FOR TYPEOUT
2883  014776  004737  027034              JSR     PC,OUTRDY       ;WAIT FOR OUT-READY
2884  015002  010561  000004              MOV     R5,4(R1)        ;LOAD PORT4 WITH CHARACTER
2885  015006  104414                      ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2886  015010  122110                      122110                  ;LOAD OUT DATA
2887  015012  004737  026702              JSR     PC,OCOR         ;WAIT FOR OCOR TO SET
2888  015016  005003                      CLR     R3              ;CLEAR BIT COUNTER
2889  015020  010502                      MOV     R5,R2           ;LOAD CHARACTER IN R2
2890  015022  104415  000002              DATACLK,        2       ;2 TICKS TO SET UP TRANSMITTER
2891  015026  104415  000001      1$:     DATACLK,        1       ;SHIFT NEXT BIT IN THE WINDOW (SI BIT)
```

```
2892  015032  106002                          RORB    R2              ;SHIFT NEXT SOFTWARE BIT IN TO CARRY
2893  015034  103005                          BCC     2$              ;BR IF CARRY CLEAR
2894  015036  004737  026650                  JSR     PC,GETSI        ;GET THE WINDOW
2895  015042  103406                          BCS     3$              ;BR IF BIT IS A MARK
2896  015044  104006                          HLT     6               ;ERROR BIT WAS A SPACE
2897  015046  000404                          BR      3$              ;CONTINE WITH TEST
2898  015050  004737  026650          2$:     JSR     PC,GETSI        ;GET THE WINDOW
2899  015054  103001                          BCC     3$              ;BR IF BIT IS A SPACE
2900  015056  104006                          HLT     6               ;ERROR BIT WAS A MARK
2901  015060                          3$:
2902  015060  005203                          INC     R3              ;NEXT BIT
2903  015062  022703  000010                  CMP     #10,R3          ;DONE YET?
2904  015066  001357                          BNE     1$              ;BR IF NO
2905  015070  104415  000014                  DATACLK,        14      ;CLOCK TRANSMITTER 14 MORE TICKS
2906  015074  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2907  015076  021264                          021264                  ;PORT4 LU-13
2908  015100  032761  000040  000004          BIT     #BIT5,4(R1)     ;RTS SHOULD BE CLEAR NOW
2909  015106  001401                          BEQ     4$              ;BR IF YES
2910  015110  104034                          HLT     34              ;ERROR, RTS NOT CLEAR
2911  015112  104400                  4$:     SCOPE                   ;SCOPE THIS TEST
2912
2913
2914                                          ;***************************** TEST 21 ****************************
2915                                          ;*DDCMP TRANSMITTER TEST
2916                                          ;*SINGLE CLOCK THE CHARACTER 252
2917                                          ;*VERIFY EACH BIT POSITION AS IT
2918                                          ;*PASSES THE BIT WINDOW (SI BIT)
2919                                          ;*ON AN ERROR, R3 CONTAINS BIT POSITION OF FAILURE
2920                                          ;;**********************************************************************
2921
2922                                          ;  TEST 21
2923                                          ;--------------
2924  015114  012737  000021  001226  TST21:  MOV     #21,TSTNO
2925  015122  012737  015276  001216          MOV     #TST22,NEXT
2926                                                                  ;R1 CONTAINS BASE DMC11 ADDRESS
2927  015130  104412                          MSTCLR                  ;MASTER CLEAR DMC11
2928  015132  012711  004000                  MOV     #BIT11,(R1)     ;SET LINE UNIT LOOP
2929  015136  004737  027034                  JSR     PC,OUTRDY       ;WAIT FOR OUT-READY
2930  015142  012761  000001  000004          MOV     #1,4(R1)        ;SET BIT0 IN PORT4
2931  015150  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2932  015152  122111                          122111                  ;SET SOM!
2933  015154  012705  000252                  MOV     #252,R5 ;LOAD CHARACTER IN R5 FOR TYPEOUT
2934  015160  004737  027034                  JSR     PC,OUTRDY       ;WAIT FOR OUT-READY
2935  015164  010561  000004                  MOV     R5,4(R1)        ;LOAD PORT4 WITH CHARACTER
2936  015170  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2937  015172  122110                          122110                  ;LOAD OUT DATA
2938  015174  004737  026702                  JSR     PC,OCOR         ;WAIT FOR OCOR TO SET
2939  015200  005003                          CLR     R3              ;CLEAR BIT COUNTER
2940  015202  010502                          MOV     R5,R2           ;LOAD CHARACTER IN R2
2941  015204  104415  000002                  DATACLK,        2       ;2 TICKS TO SET UP TRANSMITTER
2942  015210  104415  000001          1$:     DATACLK,        1       ;SHIFT NEXT BIT IN THE WINDOW (SI BIT)
2943  015214  106002                          RORB    R2              ;SHIFT NEXT SOFTWARE BIT IN TO CARRY
2944  015216  103005                          BCC     2$              ;BR IF CARRY CLEAR
2945  015220  004737  026650                  JSR     PC,GETSI        ;GET THE WINDOW
2946  015224  103406                          BCS     3$              ;BR IF BIT IS A MARK
2947  015226  104006                          HLT     6               ;ERROR BIT WAS A SPACE
```

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2948  015230  000404                          BR      3$              ;CONTINE WITH TEST
2949  015232  004737  026650          2$:     JSR     PC,GETSI        ;GET THE WINDOW
2950  015236  103001                          BCC     3$              ;BR IF BIT IS A SPACE
2951  015240  104006                          HLT     6               ;ERROR BIT WAS A MARK
2952  015242                          3$:
2953  015242  005203                          INC     R3              ;NEXT BIT
2954  015244  022703  000010                  CMP     #10,R3          ;DONE YET?
2955  015250  001357                          BNE     1$              ;BR IF NO
2956  015252  104415  000014                  DATACLK,        14      ;CLOCK TRANSMITTER 14 MORE TICKS
2957  015256  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2958  015260  021264                          021264                  ;PORT4_LU-13
2959  015262  032761  000040  000004        BIT     #BIT5,4(R1)     ;RTS SHOULD BE CLEAR NOW
2960  015270  001401                          BEQ     4$              ;BR IF YES
2961  015272  104034                          HLT     34              ;ERROR, RTS NOT CLEAR
2962  015274  104400                  4$:     SCOPE                   ;SCOPE THIS TEST
2963
2964
2965                                          ;***************************** TEST 22 ****************************
2966                                          ;*DDCMP TRANSMITTER TEST
2967                                          ;*SINGLE CLOCK THE CHARACTER 377
2968                                          ;*VERIFY EACH BIT POSITION AS IT
2969                                          ;*PASSES THE BIT WINDOW (SI BIT)
2970                                          ;*ON AN ERROR, R3 CONTAINS BIT POSITION OF FAILURE
2971                                          ;;*************************************************************
2972
2973                                          ;  TEST 22
2974                                          ;--------------
2975  015276  012737  000022  001226  TST22:  MOV     #22,TSTNO
2976  015304  012737  015460  001216          MOV     #TST23,NEXT
2977                                                                  ;R1 CONTAINS BASE DMC11 ADDRESS
2978  015312  104412                          MSTCLR                  ;MASTER CLEAR DMC11
2979  015314  012711  004000                  MOV     #BIT11,(R1)     ;SET LINE UNIT LOOP
2980  015320  004737  027034                  JSR     PC,OUTRDY       ;WAIT FOR OUT-READY
2981  015324  012761  000001  000004        MOV     #1,4(R1)        ;SET BIT0 IN PORT4
2982  015332  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2983  015334  122111                          122111                  ;SET SOM!
2984  015336  012705  000377                  MOV     #377,R5 ;LOAD CHARACTER IN R5 FOR TYPEOUT
2985  015342  004737  027034                  JSR     PC,OUTRDY       ;WAIT FOR OUT-READY
2986  015346  010561  000004                  MOV     R5,4(R1)        ;LOAD PORT4 WITH CHARACTER
2987  015352  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
2988  015354  122110                          122110                  ;LOAD OUT DATA
2989  015356  004737  026702                  JSR     PC,OCOR         ;WAIT FOR OCOR TO SET
2990  015362  005003                          CLR     R3              ;CLEAR BIT COUNTER
2991  015364  010502                          MOV     R5,R2           ;LOAD CHARACTER IN R2
2992  015366  104415  000002                  DATACLK,        2       ;2 TICKS TO SET UP TRANSMITTER
2993  015372  104415  000001          1$:     DATACLK,        1       ;SHIFT NEXT BIT IN THE WINDOW (SI BIT)
2994  015376  106002                          RORB    R2              ;SHIFT NEXT SOFTWARE BIT IN TO CARRY
2995  015400  103005                          BCC     2$              ;BR IF CARRY CLEAR
2996  015402  004737  026650                  JSR     PC,GETSI        ;GET THE WINDOW
2997  015406  103406                          BCS     3$              ;BR IF BIT IS A MARK
2998  015410  104006                          HLT     6               ;ERROR BIT WAS A SPACE
2999  015412  000404                          BR      3$              ;CONTINE WITH TEST
3000  015414  004737  026650          2$:     JSR     PC,GETSI        ;GET THE WINDOW
3001  015420  103001                          BCC     3$              ;BR IF BIT IS A SPACE
3002  015422  104006                          HLT     6               ;ERROR BIT WAS A MARK
3003  015424                          3$:
```

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3004  015424  005203                          INC     R3              ;NEXT BIT
3005  015426  022703  000010                  CMP     #10,R3          ;DONE YET?
3006  015432  001357                          BNE     1$              ;BR IF NO
3007  015434  104415  000014                  DATACLK,        14      ;CLOCK TRANSMITTER 14 MORE TICKS
3008  015440  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3009  015442  021264                          021264                  ;PORT4 LU-13
3010  015444  032761  000040  000004          BIT     #BIT5,4(R1)     ;RTS SHOULD BE CLEAR NOW
3011  015452  001401                          BEQ     4$              ;BR IF YES
3012  015454  104034                          HLT     34              ;ERROR, RTS NOT CLEAR
3013  015456  104400                  4$:     SCOPE                   ;SCOPE THIS TEST
3014
3015
3016                                          ;***************************** TEST 23 ****************************
3017                                          ;*DDCMP TRANSMITTER TEST
3018                                          ;*SINGLE CLOCK A BINARY COUNT PATTERN
3019                                          ;*VERIFY EACH BIT POSITION AS IT
3020                                          ;*PASSES THE BIT WINDOW (SI BIT)
3021                                          ;*ON AN ERROR, R3 CONTAINS BIT POSITION OF FAILURE
3022                                          ;*AND R5 CONTAINS THE CHARACTER THAT FAILED
3023                                          ;:**************************************************************
3024
3025                                          ;  TEST 23
3026                                          ;--------------
3027  015460  012737  000023  001226  TST23:  MOV     #23,TSTNO
3028  015466  012737  015666  001216          MOV     #TST24,NEXT
3029                                                                  ;R1 CONTAINS BASE DMC11 ADDRESS
3030  015474  104412                          MSTCLR                  ;MASTER CLEAR DMC11
3031  015476  012711  004000                  MOV     #BIT11,(R1)     ;SET LINE UNIT LOOP
3032  015502  005003                          CLR     R3              ;R3 CONTAINS BIT COUNT
3033  015504  005004                          CLR     R4              ;R4 CONTAINS CHAR TO BE LOADED IN SILO
3034  015506  005005                          CLR     R5              ;R5 CONTAINS CHARACTER CURRENTLY BEING SHIFTED OUT
3035  015510  004737  027034                  JSR     PC,OUTRDY       ;WAIT FOR OUT-READY
3036  015514  012761  000001  000004          MOV     #1,4(R1)        ;SET BIT0 IN PORT4
3037  015522  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3038  015524  122111                          122111                  ;SET SOM!
3039  015526  004737  027034                  JSR     PC,OUTRDY       ;WAIT FOR OUT-READY
3040  015532  010461  000004                  MOV     R4,4(R1)        ;LOAD PORT4 WITH CHARACTER
3041  015536  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3042  015540  122110                          122110                  ;LOAD OUT DATA
3043  015542  005204                          INC     R4              ;INCREMENT TO NEXT CHARACTER
3044  015544  004737  027034                  JSR     PC,OUTRDY       ;WAIT FOR OUT-READY
3045  015550  010461  000004                  MOV     R4,4(R1)        ;LOAD PORT4 WITH CHARACTER
3046  015554  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3047  015556  122110                          122110                  ;LOAD OUT DATA
3048  015560  004737  026702                  JSR     PC,OCOR         ;WAIT FOR OCOR TO SET
3049  015564  104415  000002                  DATACLK,        2       ;2 TICKS TO SET UP TRANSMITTER
3050  015570  005003                  4$:     CLR     R3              ;CLEAR BIT COUNTER
3051  015572  010502                          MOV     R5,R2           ;LOAD CHARACTER IN R2
3052  015574  104415  000001          1$:     DATACLK,        1       ;SHIFT NEXT BIT IN THE WINDOW (SI BIT)
3053  015600  106002                          RORB    R2              ;SHIFT NEXT SOFTWARE BIT IN TO CARRY
3054  015602  103005                          BCC     2$              ;BR IF CARRY CLEAR
3055  015604  004737  026650                  JSR     PC,GETSI        ;GET THE WINDOW
3056  015610  103406                          BCS     3$              ;BR IF BIT IS A MARK
3057  015612  104006                          HLT     6               ;ERROR BIT WAS A SPACE
3058  015614  000404                          BR      3$              ;CONTINE WITH TEST
3059  015616  004737  026650          2$:     JSR     PC,GETSI        ;GET THE WINDOW
```

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3060  015622  103001                      BCC     3$              ;BR IF BIT IS A SPACE
3061  015624  104006                      HLT     6               ;ERROR BIT WAS A MARK
3062  015626                        3$:
3063  015626  005203                      INC     R3              ;NEXT BIT
3064  015630  022703  000010              CMP     #10,R3          ;DONE YET?
3065  015634  001357                      BNE     1$              ;BR IF NO
3066  015636  005204                      INC     R4              ;NEXT CHARACTER
3067  015640  004737  027034              JSR     PC,OUTRDY       ;WAIT FOR OUT-READY
3068  015644  010461  000004              MOV     R4,4(R1)        ;LOAD PORT4 WITH CHARACTER
3069  015650  104414                      ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3070  015652  122110                      122110                  ;LOAD OUT DATA
3071  015654  005205                      INC     R5              ;NEXT CHARACTER
3072  015656  022705  000400              CMP     #400,R5         ;DONE YET?
3073  015662  001342                      BNE     4$              ;BR IF NO
3074  015664  104400                5$:   SCOPE                   ;SCOPE THIS TEST
3075
3076
3077                                      ;***************************** TEST 24 ****************************
3078                                      ;*DDCMP STRIP SYNC TEST
3079                                      ;*SET LU LOOP, SINGLE STEP 5 SYNCS,
3080                                      ;*VERIFY THAT IN ACTIVE DOES NOT SET
3081                                      ;;**********************************************************************
3082
3083                                      ;  TEST 24
3084                                      ;--------------
3085  015666  012737  000024  001226 TST24: MOV     #24,TSTNO
3086  015674  012737  015754  001216       MOV     #TST25,NEXT
3087                                                              ;R1 CONTAINS BASE DMC11 ADDRESS
3088  015702  104412                      MSTCLR                  ;MASTER CLEAR DMC11
3089  015704  012711  004000              MOV     #BIT11,(R1)     ;SET LU LOOP
3090  015710  012702  000012              MOV     #12,R2          ;SAVE LU REG FOR TYPEOUT
3091  015714  004737  026720              JSR     PC,SYNC         ;SINGLE CLOCK 5 SYNC CHARACTERS
3092  015720  000005                      5
3093  015722  104415  000054              DATACLK,        54
3094  015726  104414                      ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3095  015730  021244                      021244                  ;PORT4 LU12
3096  015732  016104  000004              MOV     4(R1),R4        ;PUT "FOUND" IN R4
3097  015736  042704  000277              BIC     #277,R4         ;CLEAR UNWANTED BITS
3098  015742  005005                      CLR     R5              ;PUT "EXPECTED" IN R5
3099  015744  120504                      CMPB    R5,R4           ;IS ACTIVE CLEAR?
3100  015746  001401                      BEQ     1$              ;BR IF YES
3101  015750  104040                      HLT     40              ;ERROR ACTIVE IS NOT CLEAR
3102  015752  104400                1$:   SCOPE                   ;SCOPE THIS TEST
3103
3104
3105                                      ;***************************** TEST 25 ****************************
3106                                      ;*DDCMP IN ACTIVE TEST
3107                                      ;*SET LU LOOP, SINGLE STEP 5 SYNCS AND A NON-SYNC (301)
3108                                      ;*VERIFY THAT IN ACTIVE IS SET
3109                                      ;;**********************************************************************
3110
3111                                      ;  TEST 25
3112                                      ;--------------
3113  015754  012737  000025  001226 TST25: MOV     #25,TSTNO
3114  015762  012737  016044  001216       MOV     #TST26,NEXT
3115                                                              ;R1 CONTAINS BASE DMC11 ADDRESS
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3116  015770  104412                          MSTCLR                  ;MASTER CLEAR DMC11
3117  015772  012711  004000                  MOV     #BIT11,(R1)     ;SET LU LOOP
3118  015776  012702  000012                  MOV     #12,R2          ;SAVE LU REG FOR TYPEOUT
3119  016002  004737  026720                  JSR     PC,SYNC         ;SINGLE CLOCK 5 SYNC CHARACTERS
3120  016006  000005                          5
3121  016010  104415  000064                  DATACLK,        64
3122  016014  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3123  016016  021244                          021244                  ;PORT4 LU12
3124  016020  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" IN R4
3125  016024  042704  000277                  BIC     #277,R4         ;CLEAR UNWANTED BITS
3126  016030  012705  000100                  MOV     #BIT6,R5                ;PUT "EXPECTED" IN R5
3127  016034  120504                          CMPB    R5,R4           ;IS ACTIVE SET?
3128  016036  001401                          BEQ     1$              ;BR IF YES
3129  016040  104040                          HLT     40              ;ERROR ACTIVE IS NOT SET
3130  016042  104400                  1$:     SCOPE                   ;SCOPE THIS TEST
3131
3132
3133                                          ;***************************** TEST 26 ****************************
3134                                          ;*DDCMP IN ACTIVE TEST
3135                                          ;*SET LU LOOP, SINGLE STEP 1 SYNC AND A NON-SYNC (301)
3136                                          ;*VERIFY THAT IN ACTIVE DOES NOT SET
3137                                          ;;**********************************************************************
3138
3139                                          ;  TEST 26
3140                                          ;--------------
3141  016044  012737  000026  001226  TST26:  MOV     #26,TSTNO
3142  016052  012737  016132  001216          MOV     #TST27,NEXT
3143                                                                  ;R1 CONTAINS BASE DMC11 ADDRESS
3144  016060  104412                          MSTCLR                  ;MASTER CLEAR DMC11
3145  016062  012711  004000                  MOV     #BIT11,(R1)     ;SET LU LOOP
3146  016066  012702  000012                  MOV     #12,R2          ;SAVE LU REG FOR TYPEOUT
3147  016072  004737  026720                  JSR     PC,SYNC         ;SINGLE CLOCK 1 SYNC CHARACTERS
3148  016076  000001                          1
3149  016100  104415  000024                  DATACLK,        24
3150  016104  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3151  016106  021244                          021244                  ;PORT4 LU12
3152  016110  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" IN R4
3153  016114  042704  000277                  BIC     #277,R4         ;CLEAR UNWANTED BITS
3154  016120  005005                          CLR     R5              ;PUT "EXPECTED" IN R5
3155  016122  120504                          CMPB    R5,R4           ;IS ACTIVE CLEAR?
3156  016124  001401                          BEQ     1$              ;BR IF YES
3157  016126  104040                          HLT     40              ;ERROR ACTIVE IS NOT CLEAR
3158  016130  104400                  1$:     SCOPE                   ;SCOPE THIS TEST
3159
3160
3161                                          ;***************************** TEST 27 ****************************
3162                                          ;*DDCMP IN ACTIVE TEST
3163                                          ;*SET LU LOOP, SINGLE STEP 2 SYNCS AND A NON-SYNC (301)
3164                                          ;*VERIFY THAT IN ACTIVE IS SET
3165                                          ;;**********************************************************************
3166
3167                                          ;  TEST 27
3168                                          ;--------------
3169  016132  012737  000027  001226  TST27:  MOV     #27,TSTNO
3170  016140  012737  016222  001216          MOV     #TST30,NEXT
3171                                                                  ;R1 CONTAINS BASE DMC11 ADDRESS
```

```
3172  016146  104412                        MSTCLR                  ;MASTER CLEAR DMC11
3173  016150  012711  004000                MOV     #BIT11,(R1)     ;SET LU LOOP
3174  016154  012702  000012                MOV     #12,R2          ;SAVE LU REG FOR TYPEOUT
3175  016160  004737  026720                JSR     PC,SYNC         ;SINGLE CLOCK 2 SYNC CHARACTERS
3176  016164  000002                        2
3177  016166  104415  000034                DATACLK,        34
3178  016172  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3179  016174  021244                        021244                  ;PORT4 LU12
3180  016176  016104  000004                MOV     4(R1),R4        ;PUT "FOUND" IN R4
3181  016202  042704  000277                BIC     #277,R4         ;CLEAR UNWANTED BITS
3182  016206  012705  000100                MOV     #BIT6,R5                ;PUT "EXPECTED" IN R5
3183  016212  120504                        CMPB    R5,R4           ;IS ACTIVE SET?
3184  016214  001401                        BEQ     1$              ;BR IF YES
3185  016216  104040                        HLT     40              ;ERROR ACTIVE IS NOT SET
3186  016220  104400                1$:     SCOPE                   ;SCOPE THIS TEST
3187
3188
3189                                        ;***************************** TEST 30 ****************************
3190                                        ;*IN CLEAR TEST
3191                                        ;*SYNC UP RECEIVER AND TRANSMIT A CHARACTER
3192                                        ;*WAIT FOR IN RDY, THEN SET IN CLEAR
3193                                        ;*VERIFY THAT IN ACTIVE AND IN RDY ARE CLEARED
3194                                        ;:**************************************************************
3195
3196                                        ;  TEST 30
3197                                        ;--------------
3198  016222  012737  000030  001226  TST30: MOV     #30,TSTNO
3199  016230  012737  016374  001216        MOV     #TST31,NEXT
3200                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
3201  016236  104412                        MSTCLR                  ;MASTER CLEAR DMC11
3202  016240  012702  000012                MOV     #12,R2          ;SAVE REG ADDRESS IN R2 FOR TYPEOUT
3203  016244  012711  004000                MOV     #BIT11,(R1)     ;SET LINE UNIT LOOP
3204  016250  004737  027066                JSR     PC,CHAR         ;LOAD SILO WITH 3 SYNCS
3205  016254  000301                        301                     ;AND A NON-SYNC  (301)
3206  016256  104415  000053                DATACLK,        53      ;SINGLE CLOCK THE DATA
3207  016262  104416  000002                TIMER,  2               ;WAIT FOR INRDY
3208  016266  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3209  016270  021244                        021244                  ;PORT4 LU 12
3210  016272  016104  000004                MOV     4(R1),R4        ;PUT "FOUND" IN R4
3211  016276  042704  000357                BIC     #357,R4         ;CLEAR UNWANTED BITS
3212  016302  012705  000020                MOV     #BIT4,R5                ;PUT "EXPECTED" IN R5
3213  016306  120504                        CMPB    R5,R4           ;IS INRDY SET?
3214  016310  001401                        BEQ     1$
3215  016312  104040                        HLT     40              ;ERROR, INRDY IS NOT SET
3216  016314                        1$:
3217  016314  012761  000200  000004        MOV     #BIT7,4(R1)     ;LOAD PORT4
3218  016322  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3219  016324  122112                        122112                  ;SET IN CLEAR
3220  016326  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3221  016330  021244                        021244                  ;PORT4 LU 12
3222  016332  016104  000004                MOV     4(R1),R4        ;PUT "FOUND" IN R4
3223  016336  042704  000277                BIC     #277,R4         ;CLEAR UNWANTED BITS
3224  016342  005005                        CLR     R5              ;PUT "EXPECTED" IN R5
3225  016344  120504                        CMPB    R5,R4           ;IS IN ACTIVE CLEAR?
3226  016346  001401                        BEQ     2$
3227  016350  104040                        HLT     40              ;ERROR, IN ACTIVE IS NOT CLEAR
```

```
3228  016352                          2$:
3229  016352  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" IN R4
3230  016356  042704  000357                  BIC     #357,R4         ;CLEAR UNWANTED BITS
3231  016362  005005                          CLR     R5              ;PUT "EXPECTED" IN R5
3232  016364  120504                          CMPB    R5,R4           ;IS INRDY CLEARED?
3233  016366  001401                          BEQ     3$
3234  016370  104040                          HLT     40              ;ERROR, INRDY IS NOT CLEARED
3235  016372  104400                  3$:     SCOPE                   ;SCOPE THIS TEST
3236
3237
3238                                          ;*************************** TEST 31 ****************************
3239                                          ;*DDCMP BASIC RECEICER TEST
3240                                          ;*SYNC UP RECEIVER AND SINGLE CLOCK THE CHARACTER 0
3241                                          ;*VERIFY THAT IN RDY IS SET, AND THAT THE CHARACTER WAS RECEIVED
3242                                          ;:************************************************************************
3243
3244                                          ;  TEST 31
3245                                          ;--------------
3246  016374  012737  000031  001226  TST31:  MOV     #31,TSTNO
3247  016402  012737  016510  001216          MOV     #TST32,NEXT
3248                                                                  ;R1 CONTAINS BASE DMC11 ADDRESS
3249  016410  104412                          MSTCLR                  ;MASTER CLEAR DMC11
3250  016412  012702  000012                  MOV     #12,R2          ;SAVE REG ADDRESS IN R2 FOR TYPEOUT
3251  016416  012711  004000                  MOV     #BIT11,(R1)     ;SET LINE UNIT LOOP
3252  016422  004737  027066                  JSR     PC,CHAR         ;LOAD SILO WITH 3 SYNCS
3253  016426  000000                          0                       ;AND THE CHARACTER 0
3254  016430  104415  000053                  DATACLK,        53      ;SINGLE CLOCK THE DATA
3255  016434  104416  000002                  TIMER,  2               ;WAIT FOR INRDY
3256  016440  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3257  016442  021244                          021244                  ;PORT4 LU 12
3258  016444  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" IN R4
3259  016450  042704  000357                  BIC     #357,R4         ;CLEAR UNWANTED BITS
3260  016454  012705  000020                  MOV     #BIT4,R5                ;PUT "EXPECTED" IN R5
3261  016460  120504                          CMPB    R5,R4           ;IS INRDY SET?
3262  016462  001401                          BEQ     1$
3263  016464  104040                          HLT     40              ;ERROR, INRDY IS NOT SET
3264  016466                          1$:
3265  016466  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3266  016470  021204                          021204                  ;PORT4 IN DATA
3267  016472  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" IN R4
3268  016476  005005                          CLR     R5              ;PUT "EXPECTED" IN R5
3269  016500  120504                          CMPB    R5,R4           ;WAS A 0 RECEIVED?
3270  016502  001401                          BEQ     2$
3271  016504  104010                          HLT     10              ;ERROR, RECEIVED DATA IS WRONG
3272  016506  104400                  2$:     SCOPE                   ;SCOPE THIS TEST
3273
3274
3275                                          ;*************************** TEST 32 ****************************
3276                                          ;*DDCMP BASIC RECEICER TEST
3277                                          ;*SYNC UP RECEIVER AND SINGLE CLOCK THE CHARACTER 125
3278                                          ;*VERIFY THAT IN RDY IS SET, AND THAT THE CHARACTER WAS RECEIVED
3279                                          ;:************************************************************************
3280
3281                                          ;  TEST 32
3282                                          ;--------------
3283  016510  012737  000032  001226  TST32:  MOV     #32,TSTNO
```

```
3284  016516  012737  016626  001216          MOV     #TST33,NEXT
3285
3286  016524  104412                          MSTCLR                  ;R1 CONTAINS BASE DMC11 ADDRESS
3287  016526  012702  000012                  MOV     #12,R2          ;MASTER CLEAR DMC11
3288  016532  012711  004000                  MOV     #BIT11,(R1)     ;SAVE REG ADDRESS IN R2 FOR TYPEOUT
3289  016536  004737  027066                  JSR     PC,CHAR         ;SET LINE UNIT LOOP
3290  016542  000125                          125                     ;LOAD SILO WITH 3 SYNCS
3291  016544  104415  000053                  DATACLK,        53      ;AND THE CHARACTER 125
3292  016550  104416  000002                  TIMER,  2               ;SINGLE CLOCK THE DATA
3293  016554  104414                          ROMCLK                  ;WAIT FOR INRDY
3294  016556  021244                          021244                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3295  016560  016104  000004                  MOV     4(R1),R4        ;PORT4 LU 12
3296  016564  042704  000357                  BIC     #357,R4         ;PUT "FOUND" IN R4
3297  016570  012705  000020                  MOV     #BIT4,R5        ;CLEAR UNWANTED BITS
3298  016574  120504                          CMPB    R5,R4                   ;PUT "EXPECTED" IN R5
3299  016576  001401                          BEQ     1$              ;IS INRDY SET?
3300  016600  104040                          HLT     40              ;ERROR, INRDY IS NOT SET
3301  016602                          1$:
3302  016602  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3303  016604  021204                          021204                  ;PORT4 IN DATA
3304  016606  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" IN R4
3305  016612  012705  000125                  MOV     #125,R5         ;PUT "EXPECTED" IN R5
3306  016616  120504                          CMPB    R5,R4           ;WAS A 125 RECEIVED?
3307  016620  001401                          BEQ     2$
3308  016622  104010                          HLT     10              ;ERROR, RECEIVED DATA IS WRONG
3309  016624  104400                  2$:     SCOPE                   ;SCOPE THIS TEST
3310
3311
3312                                          ;**************************** TEST 33 ****************************
3313                                          ;*DDCMP BASIC RECEICER TEST
3314                                          ;*SYNC UP RECEIVER AND SINGLE CLOCK THE CHARACTER 252
3315                                          ;*VERIFY THAT IN RDY IS SET, AND THAT THE CHARACTER WAS RECEIVED
3316                                          ;*****************************************************************
3317
3318                                          ;  TEST 33
3319                                          ;--------------
3320  016626  012737  000033  001226  TST33:  MOV     #33,TSTNO
3321  016634  012737  016744  001216          MOV     #TST34,NEXT
3322                                                                  ;R1 CONTAINS BASE DMC11 ADDRESS
3323  016642  104412                          MSTCLR                  ;MASTER CLEAR DMC11
3324  016644  012702  000012                  MOV     #12,R2          ;SAVE REG ADDRESS IN R2 FOR TYPEOUT
3325  016650  012711  004000                  MOV     #BIT11,(R1)     ;SET LINE UNIT LOOP
3326  016654  004737  027066                  JSR     PC,CHAR         ;LOAD SILO WITH 3 SYNCS
3327  016660  000252                          252                     ;AND THE CHARACTER 252
3328  016662  104415  000053                  DATACLK,        53      ;SINGLE CLOCK THE DATA
3329  016666  104416  000002                  TIMER,  2               ;WAIT FOR INRDY
3330  016672  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3331  016674  021244                          021244                  ;PORT4 LU 12
3332  016676  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" IN R4
3333  016702  042704  000357                  BIC     #357,R4         ;CLEAR UNWANTED BITS
3334  016706  012705  000020                  MOV     #BIT4,R5        ;PUT "EXPECTED" IN R5
3335  016712  120504                          CMPB    R5,R4           ;IS INRDY SET?
3336  016714  001401                          BEQ     1$
3337  016716  104040                          HLT     40              ;ERROR, INRDY IS NOT SET
3338  016720                          1$:
3339  016720  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
```

```
                                        021204                  ;PORT4 IN DATA
                                        MOV     4(R1),R4        ;PUT "FOUND" IN R4
                                        MOV     #252,R5         ;PUT "EXPECTED" IN R5
                                        CMPB    R5,R4           ;WAS A 252 RECEIVED?
                                        BEQ     2$
                                        HLT     10              ;ERROR, RECEIVED DATA IS WRONG
                                2$:     SCOPE                   ;SCOPE THIS TEST

                                        ;***************************** TEST 34 ****************************
                                        ;*DDCMP BASIC RECEICER TEST
                                        ;*SYNC UP RECEIVER AND SINGLE CLOCK THE CHARACTER 377
                                        ;*VERIFY THAT IN RDY IS SET, AND THAT THE CHARACTER WAS RECEIVED
                                        ;:**************************************************************

                                        ;  TEST 34
                                        ;--------------
                        001226  TST34:  MOV     #34,TSTNO
                        001216          MOV     #TST35,NEXT
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
                                        MSTCLR                  ;MASTER CLEAR DMC11
                                        MOV     #12,R2          ;SAVE REG ADDRESS IN R2 FOR TYPEOUT
                                        MOV     #BIT11,(R1)     ;SET LINE UNIT LOOP
                                        JSR     PC,CHAR         ;LOAD SILO WITH 3 SYNCS
                                        377                     ;AND THE CHARACTER 377
                                        DATACLK,        53      ;SINGLE CLOCK THE DATA
                                        TIMER,  2               ;WAIT FOR INRDY
                                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
                                        021244                  ;PORT4 LU 12
                                        MOV     4(R1),R4        ;PUT "FOUND" IN R4
                                        BIC     #357,R4         ;CLEAR UNWANTED BITS
                                        MOV     #BIT4,R5                ;PUT "EXPECTED" IN R5
                                        CMPB    R5,R4           ;IS INRDY SET?
                                        BEQ     1$
                                        HLT     40              ;ERROR, INRDY IS NOT SET
                                1$:
                                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
                                        021204                  ;PORT4 IN DATA
                                        MOV     4(R1),R4        ;PUT "FOUND" IN R4
                                        MOV     #377,R5         ;PUT "EXPECTED" IN R5
                                        CMPB    R5,R4           ;WAS A 377 RECEIVED?
                                        BEQ     2$
                                        HLT     10              ;ERROR, RECEIVED DATA IS WRONG
                                2$:     SCOPE                   ;SCOPE THIS TEST

                                        ;***************************** TEST 35 ****************************
                                        ;*DDCMP DATA TEST
                                        ;*THIS TEST SINGLE STEPS A BINARY COUNT PATTERN
                                        ;*CHECKING EACH CHARACTER AS IT IS RECEIVED
                                        ;:**************************************************************

                                        ;  TEST 35
                                        ;--------------
                        001226  TST35:  MOV     #35,TSTNO
                        001216          MOV     #TST36,NEXT
```

```
                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
                        MSTCLR                          ;MASTER CLEAR DMC11
                        CLR     SCHAR                   ;START BINARY COUNT AT ZERO
                        CLR     STUFLG                  ;CLEAR BITSTUFF FLAG
                        CLR     R2                      ;R2 IS "EXPECTED" DATA
                        MOV     #73,R3                  ;R3 IS CHARACTER COUNT
                        MOV     #BIT11,(R1)             ;SET LINE UNIT LOOP
                        JSR     PC,SILOLD               ;LOAD SILO WITH COUNT PATTERN
                        DATACLK,        43              ;SYNC RECEIVER AND GET IT ACTIVE
                1$:     DATACLK,        730             ;CLOCK IN 73 CHARACTERS
                4$:     JSR     PC,INRDY                ;WAIT FOR INRDY
                        ROMCLK                          ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
                        021204                          ;PORT4 IN DATA
                        MOV     4(R1),R4                ;PUT "FOUND" IN R4
                        MOV     R2,R5                   ;PUT "EXPECTED" IN R5
                        CMPB    R5,R4                   ;IS DATA CORRECT?
                        BEQ     2$                      ;BR IF YES
                        HLT     10                      ;DATA ERROR
                2$:     INC     R2                      ;NEXT CHARACTER
                        CMP     #400,R2                 ;ALL DONE?
                        BEQ     3$                      ;BR IF YES
                        DEC     R3                      ;DECREMENT CHARACTER COUNT
                        BNE     4$                      ;BR IF SILO NOT EMPTY
                        JSR     PC,SILOLD               ;LOAD SILO WITH MORE OF COUNT PATTERN
                        MOV     #73,R3                  ;RELOAD CHARACTER COUNT
                        BR      1$                      ;CONTINUE
                3$:     SCOPE                           ;SCOPE THIS TEST


                        ;***************************** TEST 36 *****************************
                        ;*DDCMP DATA TEST
                        ;*THIS TEST SINGLE STEPS A BINARY COUNT PATTERN
                        ;*CHECKING EACH CHARACTER AS IT IS RECEIVED
                        ;*THIS TEST IS EXACTLY THE SAME AS THE LAST TEST,
                        ;*EXCEPT LINE UNIT LOOP IS SET IN LU REGISTER 12
                        ;:*************************************************************

                        ;  TEST 36
                        ;--------------
 017212  012737  000036  001226  TST36: MOV     #36,TSTNO
 017220  012737  017352  001216         MOV     #TST37,NEXT
                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
 017226  104412                         MSTCLR                  ;MASTER CLEAR DMC11
 017230  005037  027504                 CLR     SCHAR           ;START BINARY COUNT AT ZERO
 017234  005037  027506                 CLR     STUFLG          ;CLEAR BITSTUFF FLAG
 017240  005002                         CLR     R2              ;R2 IS "EXPECTED" DATA
 017242  012703  000073                 MOV     #73,R3          ;R3 IS CHARACTER COUNT
 017246  005011                         CLR     (R1)            ;CLEAR LU LOOP IN MAINT REG
 017250  012761  000040  000004         MOV     #BIT5,4(R1)     ;LOAD PORT4
 017256  104414                         ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
 017260  122112                         122112                  ;SET LU LOOP IN LU REG 12
 017262  004737  027244                 JSR     PC,SILOLD       ;LOAD SILO WITH COUNT PATTERN
 017266  104415  000043                 DATACLK,        43      ;SYNC RECEIVER AND GET IT ACTIVE
 017272  104415  000730         1$:     DATACLK,        730     ;CLOCK IN 73 CHARACTERS
 017276  004737  027510         4$:     JSR     PC,INRDY        ;WAIT FOR INRDY
 017302  104414                         ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
```

```
3452  017304  021204                          021204                  ;PORT4 IN DATA
3453  017306  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" IN R4
3454  017312  010205                          MOV     R2,R5           ;PUT "EXPECTED" IN R5
3455  017314  120504                          CMPB    R5,R4           ;IS DATA CORRECT?
3456  017316  001401                          BEQ     2$              ;BR IF YES
3457  017320  104010                          HLT     10              ;DATA ERROR
3458  017322  005202                  2$:     INC     R2              ;NEXT CHARACTER
3459  017324  022702  000400                  CMP     #400,R2         ;ALL DONE?
3460  017330  001407                          BEQ     3$              ;BR IF YES
3461  017332  005303                          DEC     R3              ;DECREMENT CHARACTER COUNT
3462  017334  001360                          BNE     4$              ;BR IF SILO NOT EMPTY
3463  017336  004737  027244                  JSR     PC,SILOLD       ;LOAD SILO WITH MORE OF COUNT PATTERN
3464  017342  012703  000073                  MOV     #73,R3          ;RELOAD CHARACTER COUNT
3465  017346  000751                          BR      1$              ;CONTINUE
3466  017350  104400                  3$:     SCOPE                   ;SCOPE THIS TEST
3467
3468
3469                                          ;*************************** TEST 37 ****************************
3470                                          ;*TRANSMITTER MARK TEST
3471                                          ;*SINGLE CLOCK 3 SYNCS AND A 301 AND 20 EXTRA
3472                                          ;*CLOCK TICKS, VERIFY THAT A 301, A 377 AND A 377
3473                                          ;*WERE RECEIVED INDICATING THAT THE TRANSMITTER WENT
3474                                          ;*TO A MARK STATE FOR 16 BITS WHEN OUT SILO WAS EMPTY
3475                                          ;;*************************************************************
3476
3477                                          ;  TEST 37
3478                                          ;--------------
3479  017352  012737  000037  001226  TST37:  MOV     #37,TSTNO
3480  017360  012737  017512  001216          MOV     #TST40,NEXT
3481                                                                  ;R1 CONTAINS BASE DMC11 ADDRESS
3482  017366  104412                          MSTCLR                  ;MASTER CLEAR DMC11
3483  017370  012711  004000                  MOV     #BIT11,(R1)     ;SET LINE UNIT LOOP
3484  017374  004737  027066                  JSR     PC,CHAR         ;LOAD SILO WITH 3 SYNCS
3485  017400  000301                          301                     ;AND A 301
3486  017402  104415  000073                  DATACLK,        73      ;CLOCK THE 301 IN AND 20 EXTRA TICKS
3487  017406  004737  027510                  JSR     PC,INRDY        ;WAIT FOR INRDY
3488  017412  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3489  017414  021204                          021204                  ;PORT4 IN DATA
3490  017416  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" IN R4
3491  017422  012705  000301                  MOV     #301,R5         ;PUT "EXPECTED" IN R5
3492  017426  120504                          CMPB    R5,R4           ;WAS A 301 RECEIVED?
3493  017430  001401                          BEQ     1$
3494  017432  104010                          HLT     10              ;ERROR FIRST CHARACTER INCORRECT
3495  017434  004737  027510          1$:     JSR     PC,INRDY        ;WAIT FOR INRDY
3496  017440  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3497  017442  021204                          021204                  ;PORT4 IN DATA
3498  017444  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" IN R4
3499  017450  012705  000377                  MOV     #377,R5         ;PUT "EXPECTED" IN R5
3500  017454  120504                          CMPB    R5,R4           ;WAS A 377 RECEIVED?
3501  017456  001401                          BEQ     2$
3502  017460  104010                          HLT     10              ;ERROR, 377 WAS NOT RECEIVED
3503  017462  004737  027510          2$:     JSR     PC,INRDY        ;WAIT FOR INRDY
3504  017466  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3505  017470  021204                          021204                  ;PORT4 IN DATA
3506  017472  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" IN R4
3507  017476  012705  000377                  MOV     #377,R5         ;PUT "EXPECTED" IN R5
```

```
3508  017502  120504                    CMPB    R5,R4           ;WAS A 377 RECEIVED?
3509  017504  001401                    BEQ     3$
3510  017506  104010                    HLT     10              ;ERROR, 377 WAS NOT RECEIVED
3511  017510  104400              3$:   SCOPE                   ;SCOPE THIS TEST
3512
3513
3514                                    ;*************************** TEST 40 ***************************
3515                                    ;*CABLE TURNAROUND TEST
3516                                    ;*CLEAR LINE UNIT LOOP, SET DTR
3517                                    ;*VERIFY THAT RING ANDODEM READY ARE SET
3518                                    ;*CLEAR DTR, VERIFY THAT MRDY IS CLEARED
3519                                    ;:***********************************************************
3520
3521                                    ;  TEST 40
3522                                    ;--------------
3523  017512  012737  000040  001226  TST40:  MOV     #40,TSTNO
3524  017520  012737  017744  001216          MOV     #TST41,NEXT
3525                                                            ;R1 CONTAINS BASE DMC11 ADDRESS
3526  017526  104412                        MSTCLR              ;MASTER CLEAR DMC11
3527  017530  032737  020000  001366        BIT     #BIT13,STAT1    ;IS LINE UNIT M8202?
3528  017536  001004                        BNE     .+12            ;BR IF YES (DO TEST EVEN IF NO LOOP-BACK CONN)
3529  017540  032737  040000  001366        BIT     #BIT14,STAT1    ;IS TURNAROUND CONNECTOR ON?
3530  017546  001475                        BEQ     2$              ;SKIP TEST IF NO
3531  017550  005011                        CLR     (R1)            ;CLEAR LINE UNIT LOOP
3532  017552  012761  000100  000004        MOV     #100,4(R1)      ;LOAD PORT4
3533  017560  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3534  017562  122113                        122113                  ;SET DTR
3535  017564  104416  000002                TIMER,  2               ;WAIT
3536  017570  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3537  017572  021264                        021264                  ;PORT4 LU13
3538  017574  016104  000004                MOV     4(R1),R4        ; PUT FOUND IN R4       ++++NEW
3539  017600  042704  000023                BIC     #23,R4          ; CLEAR JUNK
3540  017604  012705  000310                MOV     #310,R5         ; GET EXPECTED.
3541  017610  032737  020000  001366        BIT     #BIT13,STAT1    ; IS LINE UNIT M8202?
3542  017616  001402                        BEQ     .+6
3543  017620  042705  000200                BIC     #BIT7,R5        ; NO RING ON M8202
3544
3545  017624  032737  000004  001372        BIT     #BIT2,STAT3     ; IS THIS V.35 MODEM?
3546  017632  001402                        BEQ     3$              ; NO THEN GO AHEAD.
3547
3548  017634  042705  000200                BIC     #BIT7,R5        ; YES-NO RING ON V.35 MODEM
3549  017640                          3$:
3550  017640  020504                        CMP     R5,R4           ; ARE RING AND MODEM READY SET?
3551  017642  001403                        BEQ     1$              ; WARNING! IF V.35 AND AUTO STARTED,
3552                                                                ; YOU WILL GET THIS ERROR. YOU MUST
3553                                                                ; MANUALL NASWER THE QUESTIONS FOR V.35.
3554  017644  120405                        CMPB    R4,R5           ; ARE RING AND MRDY CLEAR?
3555  017646  001435                        BEQ     2$
3556                                                                ; WARNING! YOU MAY GET THIS ERROR IF V.35
3557                                                                ; AND AUTOSTART. YOU MUST MANNUALLY ANSWER
3558                                                                ; ALL QUESTIONS IF V.35.
3559  017650  104011                        HLT     11              ;ERROR, MRDY NOT SET
3560  017652  005061  000004          1$:   CLR     4(R1)           ;CLEAR PORT4
3561  017656  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3562  017660  122113                        122113                  ;CLEAR DTR
3563  017662  104416  000002                TIMER,  2
```

```
3564  017666  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3565  017670  021264                          021264                  ;PORT4 LU13
3566  017672  016104  000004                  MOV     4(R1),R4        ; PUR FOUND IN R4                +++NEW
3567  017676  042704  000023                  BIC     #23,R4          ; STRIP JUNK
3568  017702  005005                          CLR     R5              ; SET EXPECTED.
3569  017704  032737  020000  001366          BIT     #BIT13,STAT1    ; IS THIS A M8202?
3570  017712  001402                          BEQ     .+6
3571  017714  052705  000010                  BIS     #BIT3,R5        ; YES THEN EXPECT MRDY SET.
3572  017720  032737  000004  001372          BIT     #BIT2,STAT3     ; IS THIS V.35?
3573  017726  001402                          BEQ     4$
3574  017730  042704  000200                  BIC     #BIT7,R4
3575  017734                          4$:
3576  017734  120405                          CMPB    R4,R5           ; ARE RING AND MRDY CLEAR?
3577  017736  001401                          BEQ     2$
3578                                                                  ; WARNING! YOU MAY GET THIS ERROR IF V.35
3579                                                                  ; AND AUTOSTART. YOU MUST MANNUALLY ANSWER
3580                                                                  ; ALL QUESTIONS IF V.35.
3581  017740  104011                          HLT     11              ;ERROR, MRDY NOT CLEAR
3582  017742  104400                  2$:     SCOPE                   ;SCOPE THIS TEST
3583
3584
3585                                          ;************************** TEST 41 **************************
3586                                          ;*CABLE TURNAROUND TEST
3587                                          ;*CLEAR LINE UNIT LOOP, LOAD OUT DATA SILO
3588                                          ;*VERIFY THAT ALL MODEM SIGNALS ARE SET
3589                                          ;;**********************************************************
3590
3591                                          ;  TEST 41
3592                                          ;--------------
3593  017744  012737  000041  001226  TST41:  MOV     #41,TSTNO
3594  017752  012737  020140  001216          MOV     #TST42,NEXT
3595                                                                  ;R1 CONTAINS BASE DMC11 ADDRESS
3596  017760  104412                          MSTCLR                  ;MASTER CLEAR DMC11
3597  017762  032737  020000  001366          BIT     #BIT13,STAT1    ;IS LINE UNIT M8202?
3598  017770  001004                          BNE     .+12            ;BR IF YES (DO TEST EVEN IF NO LOOP-BACK CONN)
3599  017772  032737  040000  001366          BIT     #BIT14,STAT1    ;IS TURNAROUND CONNECTOR ON?
3600  020000  001456                          BEQ     1$              ;SKIP TEST IF NO
3601  020002  012711  004000                  MOV     #BIT11,(R1)     ;SET LINE UNIT LOOP
3602  020006  012761  000100  000004          MOV     #100,   4(R1)           ;LOAD PORT4
3603  020014  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3604  020016  122113                          122113                  ;CLEAR ALL MODEM SIGNALS,EXCEPT DTR
3605  020020  104416  000002                  TIMER,  2               ;WAIT
3606  020024  012761  000001  000004          MOV     #1,4(R1)        ;LOAD PORT4
3607  020032  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3608  020034  122111                          122111                  ;SET SOM
3609  020036  004537  030152                  JSR     R5,MESLD        ;FILL OUT DATA SILO
3610  020042  030434                          MESDAT                  ;WITH 64 CHARACTERS
3611  020044  000100                          64.
3612  020046  012700  000050                  MOV     #50,R0          ;PREPARE FOR DELAY
3613  020052  005011                          CLR     (R1)            ;CLEAR LINE UNIT LOOP
3614  020054                          2$:
3615  020054  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3616  020056  021264                          021264                  ;PORT4 LU13
3617  020060  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" IN R4
3618  020064  042704  000023                  BIC     #23,R4          ;CLEAR UNWANTED BITS
3619  020070  012705  000354                  MOV     #354,R5         ;PUT "EXPECTED" IN R5
```

```
3620  020074  032737  000004  001372          BIT     #BIT2,STAT3     ; IS THIS V.35?
3621  020102  001402                          BEQ     40$
3622  020104  042705  000200                  BIC     #BIT7,R5        ; YES THEN GET RID OF RING
3623  020110  032737  020000  001366  40$:    BIT     #BIT13,STAT1    ; IS THIS M8202?
3624  020116  001402                          BEQ     4$
3625  020120  042705  000200                  BIC     #BIT7,R5
3626  020124                          4$:
3627  020124  120504                          CMPB    R5,R4           ;COMPARE EXPECTED AND FOUND
3628  020126  001403                          BEQ     1$              ;BR IF OK
3629  020130  005300                          DEC     R0              ;DEC DELAY COUNT
3630  020132  001350                          BNE     2$              ;BR IF NOT ZERO
3631  020134  104011                          HLT     11              ;ERROR, ALL SIGNALS ARE NOT SET
3632                                                                  ; WARNING THIS TEST WILL FAIL IF YOU
3633                                                                  ; DON'T MANUALLY ANSWER QUESTIONS IF
3634                                                                  ; YES HAVE V.35.
3635  020136  104400                  1$:     SCOPE                   ;SCOPE THIS TEST
3636
3637
3638                                          ;***************************** TEST 42 ****************************
3639                                          ;*TEST OF CRC OPERATION
3640                                          ;*USING THE CRC16 POLYNOMIAL, SINGLE CLOCK THE CHARACTER
3641                                          ;*0, VERIFY THE LSB OF THE BCC ON EACH SHIFT
3642                                          ;*TEST TRANSMITTER FIRST THEN THE RECEIVER BCC
3643                                          ;:*************************************************************
3644
3645                                          ;  TEST 42
3646                                          ;--------------
3647  020140  012737  000042  001226  TST42:  MOV     #42,TSTNO
3648  020146  012737  020454  001216          MOV     #TST43,NEXT
3649  020154  012737  020170  001220          MOV     #64$,LOCK
3650                                                                  ;R1 CONTAINS BASE DMC11 ADDRESS
3651  020162  104412                          MSTCLR                  ;MASTER CLEAR DMC11
3652  020164  012711  004000                  MOV     #BIT11,(R1)     ;SET LU LOOP
3653  020170  004737  030214          64$:    JSR     PC,CLRIO        ;CLEAR BCC REGISTERS
3654  020174  005000                          CLR     R0              ;START SHIFT COUNTER AT ZERO
3655  020176  012737  120001  027650          MOV     #CRC16,XPOLY    ;LOAD POLYNOMIAL FOR SOFTWARE BCC
3656  020204  012737  000000  020244          MOV     #0,66$          ;LOAD CHAR FOR SOFTWARE BCC
3657  020212  005037  020246                  CLR     67$             ;CLEAR OLD SOFTWARE BCC
3658  020216  004737  027654                  JSR     PC,BCCLD        ;LOAD OUT SILO WITH 2 SYNCS
3659  020222  000000                          0                       ;AND THE CHARACTER 0
3660  020224  104415  000021                  DATACLK,        21      ;GET TRANSMITTER ACTIVE
3661  020230  104415  000001          65$:    DATACLK,        1       ;SHIFT BCC ONCE
3662  020234  005200                          INC     R0              ;BUMP SHIFT COUNT
3663  020236  004537  027544                  JSR     R5,SIMBCC       ;CALCULATE SOFTWARE BCC LSB
3664  020242  000001                          1                       ;ONE SHIFT
3665  020244  000000          66$:            0                       ;DATA CHARACTER
3666  020246  000000          67$:            0                       ;OLD BCC
3667  020250  103405                          BCS     68$             ;BR IF SOFT BCC LSB IS SET
3668  020252  004737  027766                  JSR     PC,GETQO        ;GET HARDWARE TRANSMITTER BCC LSB
3669  020256  103006                          BCC     69$             ;BR IF HARD BCC LSB IS CLEAR
3670  020260  104012                          HLT     12              ;ERROR, BCC LSB IS SET
3671  020262  000404                          BR      69$             ;CONTINUE
3672  020264  004737  027766          68$:    JSR     PC,GETQO        ;GET HARDWARE TRANSMITTER BCC LSB
3673  020270  103401                          BCS     69$             ;BR IF HARD BCC LSB IS SET
3674  020272  104016                          HLT     16              ;ERROR, HARD BCC LSB IS CLEAR
3675  020274                          69$:
```

```
3676  020274  006037  020244                ROR     66$             ;SHIFT SOFT DATA
3677  020300  013737  027652  020246        MOV     CALBCC,67$      ;LOAD OLD SOFT BCC
3678  020306  022700  000010                CMP     #10,R0          ;DONE YET?
3679  020312  001346                        BNE     65$             ;BR IF NOT DONE
3680  020314  104401                        SCOP1                   ;SCOPE SUBTEST (SW09=1)
3681  020316  012737  020324  001220        MOV     #71$,LOCK       ;NEW SCOPE1
3682  020324  004737  030214          71$:  JSR     PC,CLRIO        ;CLEAR BCC REGISTERS
3683  020330  005000                        CLR     R0              ;START SHIFT COUNTER AT ZERO
3684  020332  012737  120001  027650        MOV     #CRC16,XPOLY    ;LOAD POLYNOMIAL FOR SOFTWARE BCC
3685  020340  012737  000000  020400        MOV     #0,73$          ;LOAD CHAR FOR SOFTWARE BCC
3686  020346  005037  020402                CLR     74$             ;CLEAR OLD SOFTWARE BCC
3687  020352  004737  027654                JSR     PC,BCCLD        ;LOAD OUT SILO WITH 2 SYNCS
3688  020356  000000                        0                       ;AND THE CHARACTER 0
3689  020360  104415  000032                DATACLK,        32      ;GET RECEIVER ACTIVE
3690  020364  104415  000001          72$:  DATACLK,        1       ;SHIFT BCC ONCE
3691  020370  005200                        INC     R0              ;BUMP SHIFT COUNT
3692  020372  004537  027544                JSR     R5,SIMBCC       ;CALCULATE SOFTWARE BCC LSB
3693  020376  000001                        1                       ;ONE SHIFT
3694  020400  000000          73$:  0                               ;DATA CHARACTER
3695  020402  000000          74$:  0                               ;OLD BCC
3696  020404  103405                        BCS     75$             ;BR IF SOFT BCC LSB IS SET
3697  020406  004737  030000                JSR     PC,GETQI        ;GET HARDWARE RECEIVER BCC LSB
3698  020412  103006                        BCC     76$             ;BR IF HARD BCC LSB IS CLEAR
3699  020414  104013                        HLT     13              ;ERROR, BCC LSB IS SET
3700  020416  000404                        BR      76$             ;CONTINUE
3701  020420  004737  030000          75$:  JSR     PC,GETQI        ;GET HARDWARE RECEIVER BCC LSB
3702  020424  103401                        BCS     76$             ;BR IF HARD BCC LSB IS SET
3703  020426  104017                        HLT     17              ;ERROR, BCC LSB IS CLEAR
3704  020430                          76$:
3705  020430  006037  020400                ROR     73$             ;SHIFT SOFT DATA
3706  020434  013737  027652  020402        MOV     CALBCC,74$      ;LOAD OLD SOFT BCC
3707  020442  022700  000010                CMP     #10,R0          ;DONE YET?
3708  020446  001346                        BNE     72$             ;BR IF NOT DONE
3709  020450  104401                        SCOP1                   ;SCOPE SUBTEST (SW09=1)
3710  020452  104400          77$:  SCOPE                           ;SCOPE THIS TEST
3711
3712
3713                                ;*************************** TEST 43 ***************************
3714                                ;*TEST OF CRC OPERATION
3715                                ;*USING THE CRC16 POLYNOMIAL, SINGLE CLOCK THE CHARACTER
3716                                ;*377, VERIFY THE LSB OF THE BCC ON EACH SHIFT
3717                                ;*TEST TRANSMITTER FIRST THEN THE RECEIVER BCC
3718                                ;:***************************************************************
3719
3720                                ;  TEST 43
3721                                ;--------------
3722  020454  012737  000043  001226  TST43:  MOV     #43,TSTNO
3723  020462  012737  020770  001216        MOV     #TST44,NEXT
3724  020470  012737  020504  001220        MOV     #64$,LOCK
3725                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
3726  020476  104412                        MSTCLR                  ;MASTER CLEAR DMC11
3727  020500  012711  004000                MOV     #BIT11,(R1)     ;SET LU LOOP
3728  020504  004737  030214          64$:  JSR     PC,CLRIO        ;CLEAR BCC REGISTERS
3729  020510  005000                        CLR     R0              ;START SHIFT COUNTER AT ZERO
3730  020512  012737  120001  027650        MOV     #CRC16,XPOLY    ;LOAD POLYNOMIAL FOR SOFTWARE BCC
3731  020520  012737  000377  020560        MOV     #377,66$;       ;LOAD CHAR FOR SOFTWARE BCC
```

```
3732  020526  005037  020562              CLR     67$             ;CLEAR OLD SOFTWARE BCC
3733  020532  004737  027654              JSR     PC,BCCLD        ;LOAD OUT SILO WITH 2 SYNCS
3734  020536  000377                      377                     ;AND THE CHARACTER 377
3735  020540  104415  000021              DATACLK,        21      ;GET TRANSMITTER ACTIVE
3736  020544  104415  000001      65$:    DATACLK,        1       ;SHIFT BCC ONCE
3737  020550  005200                      INC     R0              ;BUMP SHIFT COUNT
3738  020552  004537  027544              JSR     R5,SIMBCC       ;CALCULATE SOFTWARE BCC LSB
3739  020556  000001                      1                       ;ONE SHIFT
3740  020560  000000      66$:    0                               ;DATA CHARACTER
3741  020562  000000      67$:    0                               ;OLD BCC
3742  020564  103405                      BCS     68$             ;BR IF SOFT BCC LSB IS SET
3743  020566  004737  027766              JSR     PC,GETQO        ;GET HARDWARE TRANSMITTER BCC LSB
3744  020572  103006                      BCC     69$             ;BR IF HARD BCC LSB IS CLEAR
3745  020574  104012                      HLT     12              ;ERROR, BCC LSB IS SET
3746  020576  000404                      BR      69$             ;CONTINUE
3747  020600  004737  027766      68$:    JSR     PC,GETQO        ;GET HARDWARE TRANSMITTER BCC LSB
3748  020604  103401                      BCS     69$             ;BR IF HARD BCC LSB IS SET
3749  020606  104016                      HLT     16              ;ERROR, HARD BCC LSB IS CLEAR
3750  020610                      69$:
3751  020610  006037  020560              ROR     66$             ;SHIFT SOFT DATA
3752  020614  013737  027652  020562      MOV     CALBCC,67$      ;LOAD OLD SOFT BCC
3753  020622  022700  000010              CMP     #10,R0          ;DONE YET?
3754  020626  001346                      BNE     65$             ;BR IF NOT DONE
3755  020630  104401                      SCOP1                   ;SCOPE SUBTEST (SW09=1)
3756  020632  012737  020640  001220      MOV     #71$,LOCK       ;NEW SCOPE1
3757  020640  004737  030214      71$:    JSR     PC,CLRIO        ;CLEAR BCC REGISTERS
3758  020644  005000                      CLR     R0              ;START SHIFT COUNTER AT ZERO
3759  020646  012737  120001  027650      MOV     #CRC16,XPOLY    ;LOAD POLYNOMIAL FOR SOFTWARE BCC
3760  020654  012737  000377  020714      MOV     #377,73$;       ;LOAD CHAR FOR SOFTWARE BCC
3761  020662  005037  020716              CLR     74$             ;CLEAR OLD SOFTWARE BCC
3762  020666  004737  027654              JSR     PC,BCCLD        ;LOAD OUT SILO WITH 2 SYNCS
3763  020672  000377                      377                     ;AND THE CHARACTER 377
3764  020674  104415  000032              DATACLK,        32      ;GET RECEIVER ACTIVE
3765  020700  104415  000001      72$:    DATACLK,        1       ;SHIFT BCC ONCE
3766  020704  005200                      INC     R0              ;BUMP SHIFT COUNT
3767  020706  004537  027544              JSR     R5,SIMBCC       ;CALCULATE SOFTWARE BCC LSB
3768  020712  000001                      1                       ;ONE SHIFT
3769  020714  000000      73$:    0                               ;DATA CHARACTER
3770  020716  000000      74$:    0                               ;OLD BCC
3771  020720  103405                      BCS     75$             ;BR IF SOFT BCC LSB IS SET
3772  020722  004737  030000              JSR     PC,GETQI        ;GET HARDWARE RECEIVER BCC LSB
3773  020726  103006                      BCC     76$             ;BR IF HARD BCC LSB IS CLEAR
3774  020730  104013                      HLT     13              ;ERROR, BCC LSB IS SET
3775  020732  000404                      BR      76$             ;CONTINUE
3776  020734  004737  030000      75$:    JSR     PC,GETQI        ;GET HARDWARE RECEIVER BCC LSB
3777  020740  103401                      BCS     76$             ;BR IF HARD BCC LSB IS SET
3778  020742  104017                      HLT     17              ;ERROR, BCC LSB IS CLEAR
3779  020744                      76$:
3780  020744  006037  020714              ROR     73$             ;SHIFT SOFT DATA
3781  020750  013737  027652  020716      MOV     CALBCC,74$      ;LOAD OLD SOFT BCC
3782  020756  022700  000010              CMP     #10,R0          ;DONE YET?
3783  020762  001346                      BNE     72$             ;BR IF NOT DONE
3784  020764  104401                      SCOP1                   ;SCOPE SUBTEST (SW09=1)
3785  020766  104400      77$:    SCOPE                           ;SCOPE THIS TEST
3786
3787
```

```
                                        ;*************************** TEST 44 ***************************
                                        ;*TEST OF CRC OPERATION
                                        ;*USING THE CRC16 POLYNOMIAL, SINGLE CLOCK THE CHARACTER
                                        ;*125, VERIFY THE LSB OF THE BCC ON EACH SHIFT
                                        ;*TEST TRANSMITTER FIRST THEN THE RECEIVER BCC
                                        ;:*************************************************************

                                        ;  TEST 44
                                        ;--------------
020770  012737  000044  001226  TST44:  MOV     #44,TSTNO
020776  012737  021304  001216          MOV     #TST45,NEXT
021004  012737  021020  001220          MOV     #64$,LOCK
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
021012  104412                          MSTCLR                  ;MASTER CLEAR DMC11
021014  012711  004000                  MOV     #BIT11,(R1)     ;SET LU LOOP
021020  004737  030214          64$:    JSR     PC,CLRIO        ;CLEAR BCC REGISTERS
021024  005000                          CLR     R0              ;START SHIFT COUNTER AT ZERO
021026  012737  120001  027650          MOV     #CRC16,XPOLY    ;LOAD POLYNOMIAL FOR SOFTWARE BCC
021034  012737  000125  021074          MOV     #125,66$;       ;LOAD CHAR FOR SOFTWARE BCC
021042  005037  021076                  CLR     67$             ;CLEAR OLD SOFTWARE BCC
021046  004737  027654                  JSR     PC,BCCLD        ;LOAD OUT SILO WITH 2 SYNCS
021052  000125                          125                     ;AND THE CHARACTER 125
021054  104415  000021                  DATACLK,        21      ;GET TRANSMITTER ACTIVE
021060  104415  000001          65$:    DATACLK,        1       ;SHIFT BCC ONCE
021064  005200                          INC     R0              ;BUMP SHIFT COUNT
021066  004537  027544                  JSR     R5,SIMBCC       ;CALCULATE SOFTWARE BCC LSB
021072  000001                          1                       ;ONE SHIFT
021074  000000          66$:    0                               ;DATA CHARACTER
021076  000000          67$:    0                               ;OLD BCC
021100  103405                          BCS     68$             ;BR IF SOFT BCC LSB IS SET
021102  004737  027766                  JSR     PC,GETQO        ;GET HARDWARE TRANSMITTER BCC LSB
021106  103006                          BCC     69$             ;BR IF HARD BCC LSB IS CLEAR
021110  104012                          HLT     12              ;ERROR, BCC LSB IS SET
021112  000404                          BR      69$             ;CONTINUE
021114  004737  027766          68$:    JSR     PC,GETQO        ;GET HARDWARE TRANSMITTER BCC LSB
021120  103401                          BCS     69$             ;BR IF HARD BCC LSB IS SET
021122  104016                          HLT     16              ;ERROR, HARD BCC LSB IS CLEAR
021124                          69$:
021124  006037  021074                  ROR     66$             ;SHIFT SOFT DATA
021130  013737  027652  021076          MOV     CALBCC,67$      ;LOAD OLD SOFT BCC
021136  022700  000010                  CMP     #10,R0          ;DONE YET?
021142  001346                          BNE     65$             ;BR IF NOT DONE
021144  104401                          SCOP1                   ;SCOPE SUBTEST (SW09=1)
021146  012737  021154  001220          MOV     #71$,LOCK       ;NEW SCOPE1
021154  004737  030214          71$:    JSR     PC,CLRIO        ;CLEAR BCC REGISTERS
021160  005000                          CLR     R0              ;START SHIFT COUNTER AT ZERO
021162  012737  120001  027650          MOV     #CRC16,XPOLY    ;LOAD POLYNOMIAL FOR SOFTWARE BCC
021170  012737  000125  021230          MOV     #125,73$;       ;LOAD CHAR FOR SOFTWARE BCC
021176  005037  021232                  CLR     74$             ;CLEAR OLD SOFTWARE BCC
021202  004737  027654                  JSR     PC,BCCLD        ;LOAD OUT SILO WITH 2 SYNCS
021206  000125                          125                     ;AND THE CHARACTER 125
021210  104415  000032                  DATACLK,        32      ;GET RECEIVER ACTIVE
021214  104415  000001          72$:    DATACLK,        1       ;SHIFT BCC ONCE
021220  005200                          INC     R0              ;BUMP SHIFT COUNT
021222  004537  027544                  JSR     R5,SIMBCC       ;CALCULATE SOFTWARE BCC LSB
021226  000001                          1                       ;ONE SHIFT
```

```
3844  021230  000000                  73$:    0                       ;DATA CHARACTER
3845  021232  000000                  74$:    0                       ;OLD BCC
3846  021234  103405                          BCS     75$             ;BR IF SOFT BCC LSB IS SET
3847  021236  004737  030000                  JSR     PC,GETQI        ;GET HARDWARE RECEIVER BCC LSB
3848  021242  103006                          BCC     76$             ;BR IF HARD BCC LSB IS CLEAR
3849  021244  104013                          HLT     13              ;ERROR, BCC LSB IS SET
3850  021246  000404                          BR      76$             ;CONTINUE
3851  021250  004737  030000          75$:    JSR     PC,GETQI        ;GET HARDWARE RECEIVER BCC LSB
3852  021254  103401                          BCS     76$             ;BR IF HARD BCC LSB IS SET
3853  021256  104017                          HLT     17              ;ERROR, BCC LSB IS CLEAR
3854  021260                          76$:
3855  021260  006037  021230                  ROR     73$             ;SHIFT SOFT DATA
3856  021264  013737  027652  021232          MOV     CALBCC,74$      ;LOAD OLD SOFT BCC
3857  021272  022700  000010                  CMP     #10,R0          ;DONE YET?
3858  021276  001346                          BNE     72$             ;BR IF NOT DONE
3859  021300  104401                          SCOP1                   ;SCOPE SUBTEST (SW09=1)
3860  021302  104400                  77$:    SCOPE                   ;SCOPE THIS TEST
3861
3862
3863                                          ;*************************** TEST 45 ***************************
3864                                          ;*TEST OF CRC OPERATION
3865                                          ;*USING THE CRC16 POLYNOMIAL, SINGLE CLOCK THE CHARACTER
3866                                          ;*252, VERIFY THE LSB OF THE BCC ON EACH SHIFT
3867                                          ;*TEST TRANSMITTER FIRST THEN THE RECEIVER BCC
3868                                          ;:***************************************************************
3869
3870                                          ;  TEST 45
3871                                          ;--------------
3872  021304  012737  000045  001226  TST45:  MOV     #45,TSTNO
3873  021312  012737  021620  001216          MOV     #TST46,NEXT
3874  021320  012737  021334  001220          MOV     #64$,LOCK
3875                                                                  ;R1 CONTAINS BASE DMC11 ADDRESS
3876  021326  104412                          MSTCLR                  ;MASTER CLEAR DMC11
3877  021330  012711  004000                  MOV     #BIT11,(R1)     ;SET LU LOOP
3878  021334  004737  030214          64$:    JSR     PC,CLRIO        ;CLEAR BCC REGISTERS
3879  021340  005000                          CLR     R0              ;START SHIFT COUNTER AT ZERO
3880  021342  012737  120001  027650          MOV     #CRC16,XPOLY    ;LOAD POLYNOMIAL FOR SOFTWARE BCC
3881  021350  012737  000252  021410          MOV     #252,66$;       ;LOAD CHAR FOR SOFTWARE BCC
3882  021356  005037  021412                  CLR     67$             ;CLEAR OLD SOFTWARE BCC
3883  021362  004737  027654                  JSR     PC,BCCLD        ;LOAD OUT SILO WITH 2 SYNCS
3884  021366  000252                          252                     ;AND THE CHARACTER 252
3885  021370  104415  000021                  DATACLK,        21      ;GET TRANSMITTER ACTIVE
3886  021374  104415  000001          65$:    DATACLK,        1       ;SHIFT BCC ONCE
3887  021400  005200                          INC     R0              ;BUMP SHIFT COUNT
3888  021402  004537  027544                  JSR     R5,SIMBCC       ;CALCULATE SOFTWARE BCC LSB
3889  021406  000001                          1                       ;ONE SHIFT
3890  021410  000000                  66$:    0                       ;DATA CHARACTER
3891  021412  000000                  67$:    0                       ;OLD BCC
3892  021414  103405                          BCS     68$             ;BR IF SOFT BCC LSB IS SET
3893  021416  004737  027766                  JSR     PC,GETQO        ;GET HARDWARE TRANSMITTER BCC LSB
3894  021422  103006                          BCC     69$             ;BR IF HARD BCC LSB IS CLEAR
3895  021424  104012                          HLT     12              ;ERROR, BCC LSB IS SET
3896  021426  000404                          BR      69$             ;CONTINUE
3897  021430  004737  027766          68$:    JSR     PC,GETQO        ;GET HARDWARE TRANSMITTER BCC LSB
3898  021434  103401                          BCS     69$             ;BR IF HARD BCC LSB IS SET
3899  021436  104016                          HLT     16              ;ERROR, HARD BCC LSB IS CLEAR
```

```
3900  021440                          69$:
3901  021440  006037  021410                  ROR     66$             ;SHIFT SOFT DATA
3902  021444  013737  027652  021412          MOV     CALBCC,67$      ;LOAD OLD SOFT BCC
3903  021452  022700  000010                  CMP     #10,R0          ;DONE YET?
3904  021456  001346                          BNE     65$             ;BR IF NOT DONE
3905  021460  104401                          SCOP1                   ;SCOPE SUBTEST (SW09=1)
3906  021462  012737  021470  001220          MOV     #71$,LOCK       ;NEW SCOPE1
3907  021470  004737  030214          71$:    JSR     PC,CLRIO        ;CLEAR BCC REGISTERS
3908  021474  005000                          CLR     R0              ;START SHIFT COUNTER AT ZERO
3909  021476  012737  120001  027650          MOV     #CRC16,XPOLY    ;LOAD POLYNOMIAL FOR SOFTWARE BCC
3910  021504  012737  000252  021544          MOV     #252,73$;       ;LOAD CHAR FOR SOFTWARE BCC
3911  021512  005037  021546                  CLR     74$             ;CLEAR OLD SOFTWARE BCC
3912  021516  004737  027654                  JSR     PC,BCCLD        ;LOAD OUT SILO WITH 2 SYNCS
3913  021522  000252                          252                     ;AND THE CHARACTER 252
3914  021524  104415  000032                  DATACLK,        32      ;GET RECEIVER ACTIVE
3915  021530  104415  000001          72$:    DATACLK,        1       ;SHIFT BCC ONCE
3916  021534  005200                          INC     R0              ;BUMP SHIFT COUNT
3917  021536  004537  027544                  JSR     R5,SIMBCC       ;CALCULATE SOFTWARE BCC LSB
3918  021542  000001                          1                       ;ONE SHIFT
3919  021544  000000          73$:    0                               ;DATA CHARACTER
3920  021546  000000          74$:    0                               ;OLD BCC
3921  021550  103405                          BCS     75$             ;BR IF SOFT BCC LSB IS SET
3922  021552  004737  030000                  JSR     PC,GETQI        ;GET HARDWARE RECEIVER BCC LSB
3923  021556  103006                          BCC     76$             ;BR IF HARD BCC LSB IS CLEAR
3924  021560  104013                          HLT     13              ;ERROR, BCC LSB IS SET
3925  021562  000404                          BR      76$             ;CONTINUE
3926  021564  004737  030000          75$:    JSR     PC,GETQI        ;GET HARDWARE RECEIVER BCC LSB
3927  021570  103401                          BCS     76$             ;BR IF HARD BCC LSB IS SET
3928  021572  104017                          HLT     17              ;ERROR, BCC LSB IS CLEAR
3929  021574                          76$:
3930  021574  006037  021544                  ROR     73$             ;SHIFT SOFT DATA
3931  021600  013737  027652  021546          MOV     CALBCC,74$      ;LOAD OLD SOFT BCC
3932  021606  022700  000010                  CMP     #10,R0          ;DONE YET?
3933  021612  001346                          BNE     72$             ;BR IF NOT DONE
3934  021614  104401                          SCOP1                   ;SCOPE SUBTEST (SW09=1)
3935  021616  104400          77$:    SCOPE                           ;SCOPE THIS TEST
3936
3937
3938                                  ;*************************** TEST 46 ****************************
3939                                  ;*TRANSMITTER CRC TEST
3940                                  ;*USING THE CRC16 POLYNOMINAL, SINGLE CLOCK A BINARY
3941                                  ;*COUNT PATTERN, VERIFY THE LSB OF THE TRANSMITTER BCC ON EACH SHIFT
3942                                  ;:************************************************************************
3943
3944                                  ;  TEST 46
3945                                  ;--------------
3946  021620  012737  000046  001226  TST46:  MOV     #46,TSTNO
3947  021626  012737  022056  001216          MOV     #TST47,NEXT
3948                                                          ;R1 CONTAINS BASE DMC11 ADDRESS
3949  021634  104412                  MSTCLR                  ;MASTER CLEAR DMC11
3950  021636  012711  004000                  MOV     #BIT11,(R1)     ;SET LINE UNIT LOOP
3951  021642  005003                          CLR     R3              ;ZERO BIT COUNT
3952  021644  005004                          CLR     R4              ;R4 CONTAINS CHAR TO BE LOADED IN SILO
3953  021646  005005                          CLR     R5              ;R5 CONTAINS CHAR CURRENTLY BEING SHIFTED OUT
3954  021650  005037  021752                  CLR     4$              ;CLEAR SOFT BCC
3955  021654  012737  120001  027650          MOV     #CRC16,XPOLY    ;LOAD POLYNOMINAL
```

```
3956  021662  004737  030016              JSR     PC,SYNLD        ;LOAD SILO WITH 2 SYNCS, SOM SET
3957  021666  010461  000004              MOV     R4,4(R1)        ;PORT4 CHAR
3958  021672  104414                      ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3959  021674  122110                      122110                  ;LOAD OUT DATA
3960  021676  005204                      INC     R4              ;INCREMENT TO NEXT CHARACTER
3961  021700  010461  000004              MOV     R4,4(R1)        ;PORT4 CHAR
3962  021704  104414                      ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3963  021706  122110                      122110                  ;LOAD OUT DATA
3964  021710  005204                      INC     R4              ;INCREMENT TO NEXT CHARACTER
3965  021712  010461  000004              MOV     R4,4(R1)        ;PORT4 CHAR
3966  021716  104414                      ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3967  021720  122110                      122110                  ;LOAD OUT DATA
3968  021722  004737  026702              JSR     PC,OCOR         ;WAIT FOR OCOR
3969  021726  104415  000021              DATACLK,21              ;CLOCK DATA
3970  021732  010537  021750      1$:     MOV     R5,3$           ;LOAD CHAR FOR SOFT CRC
3971  021736  104415  000001      2$:     DATACLK,1               ;SHIFT BCC ONCE
3972  021742  004537  027544              JSR     R5,SIMBCC       ;CALCULATE SOFT BCC
3973  021746  000001                      1                       ;SOFT SHIFT COUNT
3974  021750  000000              3$:     0                       ;SOFT CHARACTER
3975  021752  000000              4$:     0                       ;OLD SOFT BCC
3976  021754  103405                      BCS     5$              ;BR IF SOFT BCC LSB IS SET
3977  021756  004737  027766              JSR     PC,GETQO                ;GET HARDWARE TRANSMITTER BCC LSB
3978  021762  103006                      BCC     6$              ;BR IF OK (CLEARED)
3979  021764  104020                      HLT     20              ;ERROR, BCC LSB WAS SET
3980  021766  000404                      BR      6$              ;CONTINUE WITH TEST
3981  021770  004737  027766      5$:     JSR     PC,GETQO                ;GET HARDWARE TRANSMITTER BCC LSB
3982  021774  103401                      BCS     6$              ;BR IF OK (SET)
3983  021776  104021                      HLT     2'              ;ERROR, BCC LSB WAS CLEAR
3984
3985  022000              6$:
3986  022000  006037  021750              ROR     3$              ;SHIFT SOFT DATA
3987  022004  013737  027652  021752      MOV     CALBCC,4$       ;LOAD OLD SOFT BCC
3988  022012  005203                      INC     R3              ;INCREMENT BIT COUNTER
3989  022014  022703  000010              CMP     #10,R3          ;DONE A FULL CHARACTER YET?
3990  022020  001346                      BNE     2$              ;BR IF NO
3991  022022  005003                      CLR     R3              ;RESTART BIT COUNTER
3992  022024  005204                      INC     R4              ;INCREMENT DATA FOR SILO
3993  022026  022704  000400              CMP     #400,R4         ;DONE BINARY COUNT YET?
3994  022032  003404                      BLE     9$              ;BR IF YES
3995  022034  010461  000004              MOV     R4,4(R1)        ;PORT4 DATA
3996  022040  104414                      ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
3997  022042  122110                      122110                  ;LOAD OUT DATA
3998  022044  005205              9$:     INC     R5              ;INCREMENT DATA
3999  022046  022705  000400              CMP     #400,R5         ;DONE BINARY PATTERN YET?
4000  022052  001327                      BNE     1$              ;BR IF NO
4001  022054  104400              7$:     SCOPE                   ;SCOPE THIS TEST
4002
4003
4004                                      ;***************************** TEST 47 *****************************
4005                                      ;*RECEIVER CRC TEST
4006                                      ;*USING THE CRC16 POLYNOMINAL, SINGLE CLOCK A BINARY
4007                                      ;*COUNT PATTERN, VERIFY THE LSB OF THE RECEIVER BCC ON EACH SHIFT
4008                                      ;:*************************************************************
4009
4010                                      ;  TEST 47
4011                                      ;--------------
```

```
 4012  022056  012737  000047  001226  TST47:  MOV     #47,TSTNO
 4013  022064  012737  022314  001216          MOV     #TST50,NEXT
 4014                                                    ;R1 CONTAINS BASE DMC11 ADDRESS
 4015  022072  104412                          MSTCLR                  ;MASTER CLEAR DMC11
 4016  022074  012711  004000                  MOV     #BIT11,(R1)     ;SET LINE UNIT LOOP
 4017  022100  005003                          CLR     R3              ;ZERO BIT COUNT
 4018  022102  005004                          CLR     R4              ;R4 CONTAINS CHAR TO BE LOADED IN SILO
 4019  022104  005005                          CLR     R5              ;R5 CONTAINS CHAR CURRENTLY BEING SHIFTED OUT
 4020  022106  005037  022210                  CLR     4$              ;CLEAR SOFT BCC
 4021  022112  012737  120001  027650          MOV     #CRC16,XPOLY    ;LOAD POLYNOMINAL
 4022  022120  004737  030016                  JSR     PC,SYNLD        ;LOAD SILO WITH 2 SYNCS, SOM SET
 4023  022124  010461  000004                  MOV     R4,4(R1)        ;PORT4 CHAR
 4024  022130  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
 4025  022132  122110                          122110                  ;LOAD OUT DATA
 4026  022134  005204                          INC     R4              ;INCREMENT TO NEXT CHARACTER
 4027  022136  010461  000004                  MOV     R4,4(R1)        ;PORT4 CHAR
 4028  022142  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
 4029  022144  122110                          122110                  ;LOAD OUT DATA
 4030  022146  005204                          INC     R4              ;INCREMENT TO NEXT CHARACTER
 4031  022150  010461  000004                  MOV     R4,4(R1)        ;PORT4 CHAR
 4032  022154  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
 4033  022156  122110                          122110                  ;LOAD OUT DATA
 4034  022160  004737  026702                  JSR     PC,OCOR         ;WAIT FOR OCOR
 4035  022164  104415  000032                  DATACLK,32              ;CLOCK DATA
 4036  022170  010537  022206          1$:     MOV     R5,3$           ;LOAD CHAR FOR SOFT CRC
 4037  022174  104415  000001          2$:     DATACLK,1               ;SHIFT BCC ONCE
 4038  022200  004537  027544                  JSR     R5,SIMBCC       ;CALCULATE SOFT BCC
 4039  022204  000001                          1                       ;SOFT SHIFT COUNT
 4040  022206  000000          3$:     0                               ;SOFT CHARACTER
 4041  022210  000000          4$:     0                               ;OLD SOFT BCC
 4042  022212  103405                  BCS     5$                      ;BR IF SOFT BCC LSB IS SET
 4043  022214  004737  030000                  JSR     PC,GETQI                ;GET HARDWARE RECEIVER BCC LSB
 4044  022220  103006                  BCC     6$              ;BR IF OK (CLEARED)
 4045  022222  104022                  HLT     22              ;ERROR, BCC LSB WAS SET
 4046  022224  000404                  BR      6$              ;CONTINUE WITH TEST
 4047  022226  004737  030000          5$:     JSR     PC,GETQI                ;GET HARDWARE RECEIVER BCC LSB
 4048  022232  103401                  BCS     6$              ;BR IF OK (SET)
 4049  022234  104023                  HLT     23              ;ERROR, BCC LSB WAS CLEAR
 4050
 4051  022236          6$:
 4052  022236  006037  022206                  ROR     3$              ;SHIFT SOFT DATA
 4053  022242  013737  027652  022210          MOV     CALBCC,4$       ;LOAD OLD SOFT BCC
 4054  022250  005203                          INC     R3              ;INCREMENT BIT COUNTER
 4055  022252  022703  000010                  CMP     #10,R3          ;DONE A FULL CHARACTER YET?
 4056  022256  001346                          BNE     2$              ;BR IF NO
 4057  022260  005003                          CLR     R3              ;RESTART BIT COUNTER
 4058  022262  005204                          INC     R4              ;INCREMENT DATA FOR SILO
 4059  022264  022704  000400                  CMP     #400,R4         ;DONE BINARY COUNT YET?
 4060  022270  003404                          BLE     9$              ;BR IF YES
 4061  022272  010461  000004                  MOV     R4,4(R1)        ;PORT4 DATA
 4062  022276  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
 4063  022300  122110                          122110                  ;LOAD OUT DATA
 4064  022302  005205          9$:     INC     R5              ;INCREMENT DATA
 4065  022304  022705  000400                  CMP     #400,R5         ;DONE BINARY PATTERN YET?
 4066  022310  001327                          BNE     1$              ;BR IF NO
 4067  022312  104400          7$:     SCOPE                           ;SCOPE THIS TEST
```

```
                                        ;***************************** TEST 50 *****************************
                                        ;*TRANSMITTER DDCMP CRC TEST
                                        ;*THIS TEST TRANSMITS A FOUR CHARACTER MESSAGE WITH CRC
                                        ;*BOTH DATA AND THE BCC ARE VERIFIED IN THE BIT
                                        ;*WINDOW. THE FOUR CHARACTERS ARE 0,125,252,377
                                        ;*THE TRANSMITTER IS CHECKED FOR GOING TO A MARK STATE AFTER THE BCC
                                        ;:*************************************************************

                                        ;  TEST 50
                                        ;--------------
022314  012737  000050  001226  TST50:  MOV     #50,TSTNO
022322  012737  022646  001216         MOV     #TST51,NEXT
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
022330  104412                         MSTCLR                  ;MASTER CLEAR DMC11

                                        ;LOAD OUT DATA SILO

022332  012711  004000                 MOV     #BIT11,(R1)     ;SET LINE UNIT LOOP
022336  012704  030434                 MOV     #MESDAT,R4      ;LOAD POINTER TO DATA
022342  005037  022436                 CLR     10$             ;CLEAR SOFT BCC
022346  012700  000004                 MOV     #4,R0           ;LOAD CHARACTER COUNT
022352  004737  030016                 JSR     PC,SYNLD        ;LOAD 2 SYNCS IN OUT SILO
022356  004737  027034                 JSR     PC,OUTRDY       ;WAIT FOR OUTRDY
022362  004537  030152                 JSR     R5,MESLD        ;LOAD SILO WITH 4 CHAR MESS
022366  030434                         MESDAT                  ;ADDRESS OF MESSAGE
022370  000004                         4                       ;NUMBER OF CHARACTERS
022372  004737  030126                 JSR     PC,EOM          ;LOAD GARBAGE CHARACTER, WITH EOM SET
022376  004737  026702                 JSR     PC,OCOR         ;WAIT FOR OCOR
022402  005003                         CLR     R3              ;CLEAR BIT COUNTER
022404  104415  000022                 DATACLK,22              ;CLOCK DATA
022410  112405                 12$:    MOVB    (R4)+,R5        ;LOAD R5 WITH CHAR
022412  010502                         MOV     R5,R2           ;LOAD R2 WITH CHAR

                                        ;CHECK FIRST FOUR CHARACTER MESSAGE
                                        ;IN THE BIT WINDOW (0,125,252,377)

022414  012737  120001  027650         MOV     #CRC16,XPOLY    ;LOAD POLYNOMIAL
022422  010537  022434                 MOV     R5,67$          ;LOAD SOFT CHAR FOR BCC
022426  004537  027544                 JSR     R5,SIMBCC       ;CALCULATE SOFT BCC
022432  000010                         10                      ;SHIFT COUNT
022434  000000                 67$:    0                       ;CHARACTER
022436  000000                 10$:    0                       ;OLD BCC
022440  013737  027652  022436         MOV     CALBCC,10$      ;LOAD SOFT BCC FOR NEXT SHIFT
022446  104415  000001         64$:    DATACLK,        1       ;SHIFT DATA IN TO BIT WINDOW
022452  106002                         RORB    R2              ;SHIFT SOFT DATA
022454  103005                         BCC     65$             ;BR IF A SPACE
022456  004737  026650                 JSR     PC,GETSI        ;LOOK AT BIT WINDOW
022462  103406                         BCS     66$             ;BR IF OK (MARK)
022464  104006                         HLT     6               ;ERROR, BIT WINDOW WAS A SPACE
022466  000404                         BR      66$             ;CONTINUE
022470  004737  026650         65$:    JSR     PC,GETSI        ;LOOK AT BIT WINDOW
022474  103001                         BCC     66$             ;BR IF OK (SPACE)
022476  104006                         HLT     6               ;ERROR, BIT WINDOW WAS A MARK
022500                         66$:
```

```
4124  022500  005203                        INC     R3              ;BUMP BIT COUNTER
4125  022502  022703  000010                CMP     #10,R3          ;DONE FULL 8 BITS YET
4126  022506  001357                        BNE     64$             ;BR IF NO
4127  022510  005003                        CLR     R3              ;CLEAR BIT COUNTER
4128  022512  005300                        DEC     R0              ;DEC CHARACTER COUNT
4129  022514  001335                        BNE     12$             ;BR IF NOT DONE YET
4130
4131                                        ;CHECK BCC FOR PRECEDING MESSAGE IN THE BIT WINDOW
4132
4133  022516  013700  027652                MOV     CALBCC,R0       ;PUT BCC IN R0
4134  022522  104415  000001        68$:    DATACLK,1               ;SHIFT HARDWARE BCC
4135  022526  006000                        ROR     R0              ;SHIFT SOFT BCC
4136  022530  103005                        BCC     69$             ;BR IF CARRY CLEAR
4137  022532  004737  026650                JSR     PC,GETSI        ;LOOK AT BIT WINDOW
4138  022536  103406                        BCS     70$             ;BR IF OK (MARK)
4139  022540  104014                        HLT     14              ;ERROR, CRC WRONG (SPACE)
4140  022542  000404                        BR      70$             ;CONTINUE
4141  022544  004737  026650        69$:    JSR     PC,GETSI        ;LOOK AT BIT WINDOW
4142  022550  103001                        BCC     70$             ;BR IF OK (SPACE)
4143  022552  104014                        HLT     14              ;ERROR, CRC WRONG (MARK)
4144  022554                        70$:
4145  022554  005203                        INC     R3              ;BUMP BIT COUNTER
4146  022556  022703  000020                CMP     #20,R3          ;FINISHED BCC YET?
4147  022562  001357                        BNE     68$             ;BR IF NO
4148  022564  005003                        CLR     R3              ;CLEAR BIT COUNTER
4149
4150                                        ;CHECK TO SEE IF TRANSMITTER IS MARKING
4151
4152  022566  104415  000001        2$:     DATACLK,        1       ;CLOCK TRANSMITTER
4153  022572  004737  026650                JSR     PC,GETSI        ;LOOK AT WINDOW
4154  022576  103401                        BCS     3$              ;IT SHOULD BE MARKING
4155  022600  104024                        HLT     24              ;ERROR, BIT WAS A SPACE
4156  022602  005203                3$:     INC     R3              ;BUMP BIT COUNTER
4157  022604  022703  000007                CMP     #7,R3           ;DONE YET
4158  022610  001366                        BNE     2$              ;BR IF NO
4159  022612  104415  000010                DATACLK,        10      ;GIVE ENOUGH TICKS TO CLEAR OUT ACTIVE
4160  022616  005003                        CLR     R3              ;CLEAR BIT COUNTER
4161  022620  104415  000001        4$:     DATACLK,        1       ;SHIFT OUT NEXT BIT
4162  022624  004737  026650                JSR     PC,GETSI        ;LOOK AT BIT WINDOW
4163  022630  103401                        BCS     .+4             ;BR IF IT IS A MARK
4164  022632  104024                        HLT     24              ;ERROR, TRANSMITTER IS NOT MARKING
4165  022634  005203                        INC     R3              ;INC BIT COUNT
4166  022636  022703  000020                CMP     #20,R3          ;DONE YET?
4167  022642  001366                        BNE     4$              ;BR IF NO
4168  022644  104400                5$:     SCOPE                   ;SCOPE THIS TEST
4169
4170
4171                                        ;***************************** TEST 51 *****************************
4172                                        ;*RECEIVER DDCMP CRC TEST
4173                                        ;*THIS TEST CLOCKS A FOUR CHARACTER MESSAGE WITH BCC
4174                                        ;*AND VERIFYS CORRECT DATA RECEPTION AND BCC MATCH.
4175                                        ;*IN BCC MATCH IS CHECKED TO SEE THAT IT IS NOT ASSERTED
4176                                        ;*UNTIL THE LAST HALF OF THE CRC IS RECEIVED
4177                                        ;*THE FOUR CHARACTER MESSAGE IS 0,125,252,377
4178                                        ;;**************************************************************
4179
```

```
                                        ;  TEST 51
                                        ;--------------
022646  012737  000051  001226  TST51:  MOV     #51,TSTNO
022654  012737  023074  001216          MOV     #TST52,NEXT
                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
022662  104412                          MSTCLR          ;MASTER CLEAR DMC11

022664  012711  004000                  MOV     #BIT11,(R1)     ;SET LINE UNIT LOOP
022670  012702  030434                  MOV     #MESDAT,R2      ;LOAD POINTER TO DATA
022674  012700  000004                  MOV     #4,R0           ;LOAD CHARACTER COUNT
022700  004737  030016                  JSR     PC,SYNLD        ;LOAD 2 SYNCS IN OUT SILO
022704  004737  027034                  JSR     PC,OUTRDY       ;WAIT FOR OUTRDY
022710  004537  030152                  JSR     R5,MESLD        ;LOAD SILO WITH 4 CHAR MESS
022714  030434                          MESDAT                  ;ADDRESS OF MESSAGE
022716  000004                          4                       ;NUMBER OF CHARACTERS
022720  004737  030126                  JSR     PC,EOM          ;LOAD GARBAGE CHARACTER, WITH EOM SET
022724  004737  026702                  JSR     PC,OCOR         ;WAIT FOR OCOR
022730  104415  000114                  DATACLK,114             ;CLOCK DATA
022734  004737  027510          3$:     JSR     PC,INRDY        ;WAIT FOR INRDY
022740  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
022742  021204                          021204                  ;GET IN DATA
022744  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" IN R4
022750  112205                          MOVB    (R2)+,R5        ;PUT "EXPECTED" IN R5

022752  120504                          CMPB    R5,R4           ;COMPARE RECEIVED DATA
022754  001401                          BEQ     1$              ;BR IF OK
022756  104010                          HLT     10              ;DATA ERROR
022760                          1$:
022760  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
022762  021244                          021244
022764  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" IN R4
022770  042704  000376                  BIC     #376,R4         ;CLEAR UNWANTED BITS
022774  005005                          CLR     R5              ;PUT "EXPECTED" IN R5
022776  120504                          CMPB    R5,R4           ;IS IN BCC MATCH STILL CLEAR?
023000  001401                          BEQ     4$
023002  104015                          HLT     15              ;IN BCC MATCH ERROR

023004  005300                  4$:     DEC     R0              ;DEC CHARACTER COUNT
023006  001352                          BNE     3$              ;BR IF NOT DONE YET

                                        ;CHECK TO SEE THAT IN BCC MATCH IS SET

023010  004737  027510                  JSR     PC,INRDY        ;WAIT FOR INRDY
023014  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
023016  021204                          021204                  ;GET FIRST HALF OF CRC
023020  116137  000004  001252          MOVB    4(R1),TEMP3     ;PUT IN TEMP3
023026  042737  177400  001252          BIC     #177400,TEMP3   ;CLEAR HI BYTE
023034  004737  027510                  JSR     PC,INRDY        ;WAIT FOR INRDY
023040  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
023042  021244                          021244
023044  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" IN R4
023050  042704  000376                  BIC     #376,R4         ;CLEAR UNWANTED BITS
023054  012705  000001                  MOV     #1,R5           ;PUT "EXPECTED" IN R5
023060  120504                          CMPB    R5,R4           ;IS IN BCC MATCH SET?
023062  001401                          BEQ     25$
023064  104015                          HLT     15              ;IN BCC MATCH ERROR
```

```
 4236  023066                          25$:
 4237  023066  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
 4238  023070  021204                          021204                  ;GET LAST HALF
 4239  023072  104400                  2$:     SCOPE                   ;SCOPE THIS TEST
 4240
 4241
 4242                                          ;*************************** TEST 52 ****************************
 4243                                          ;*DDCMP EOM FUNCTION TEST
 4244                                          ;*THIS TEST LOADS OUT SILO WITH: 2 SYNCS,4 CHAR MESSAGE,EOM
 4245                                          ;*4 CHARACTER MESS,EOM. THE DATA STREAM IS CHECKED TO BE
 4246                                          ;*4 CHAR,BCC,4 CHAR,BCC,MARKS. THIS TEST VERIFYS THAT
 4247                                          ;*THE CHARCTERS LOADED WITH EOM SET ARE LOST
 4248                                          ;*ALL DATA AND BCC'S ARE CHECKED IN THE BIT WINDOW
 4249                                          ;*THE FOUR CHARACTER MESSAGE IS 0,125,252,377
 4250                                          ;*RECEIVED DATA IS VERIFIED, AND IN BCC MATCH IS CHECKED
 4251                                          ;:*************************************************************
 4252
 4253                                          ;  TEST 52
 4254                                          ;--------------
 4255  023074  012737  000052  001226  TST52:  MOV     #52,TSTNO
 4256  023102  012737  024174  001216          MOV     #TST53,NEXT
 4257                                                                  ;R1 CONTAINS BASE DMC11 ADDRESS
 4258  023110  104412                          MSTCLR                  ;MASTER CLEAR DMC11
 4259
 4260                                          ;LOAD OUT DATA SILO
 4261
 4262  023112  012711  004000                  MOV     #BIT11,(R1)     ;SET LINE UNIT LOOP
 4263  023116  012704  030434                  MOV     #MESDAT,R4      ;LOAD POINTER TO DATA
 4264  023122  005037  023232                  CLR     10$             ;CLEAR SOFT BCC
 4265  023126  012700  000004                  MOV     #4,R0           ;LOAD CHARACTER COUNT
 4266  023132  004737  030016                  JSR     PC,SYNLD        ;LOAD 2 SYNCS IN OUT SILO
 4267  023136  004737  027034                  JSR     PC,OUTRDY       ;WAIT FOR OUTRDY
 4268  023142  004537  030152                  JSR     R5,MESLD        ;LOAD SILO WITH 4 CHAR MESS
 4269  023146  030434                          MESDAT                  ;ADDRESS OF MESSAGE
 4270  023150  000004                          4                       ;NUMBER OF CHARACTERS
 4271  023152  004737  030126                  JSR     PC,EOM          ;LOAD GARBAGE CHARACTER, WITH EOM SET
 4272  023156  004537  030152                  JSR     R5,MESLD        ;LOAD FOUR MORE CHARACTERS
 4273  023162  030434                          MESDAT                  ;ADDRESS OF MESSAGE
 4274  023164  000004                          4                       ;NUMBER OF CHACTERS
 4275  023166  004737  030126                  JSR     PC,EOM          ;SET EOM
 4276  023172  004737  026702                  JSR     PC,OCOR         ;WAIT FOR OCOR
 4277  023176  005003                          CLR     R3              ;CLEAR BIT COUNTER
 4278  023200  104415  000022                  DATACLK,22              ;CLOCK DATA
 4279  023204  112405                  12$:    MOVB    (R4)+,R5        ;LOAD R5 WITH CHAR
 4280  023206  010502                          MOV     R5,R2           ;LOAD R2 WITH CHAR
 4281
 4282                                          ;CHECK FIRST FOUR CHARACTER MESSAGE
 4283                                          ;IN THE BIT WINDOW (0,125,252,377)
 4284
 4285  023210  012737  120001  027650          MOV     #CRC16,XPOLY    ;LOAD POLYNOMIAL
 4286  023216  010537  023230                  MOV     R5,67$          ;LOAD SOFT CHAR FOR BCC
 4287  023222  004537  027544                  JSR     R5,SIMBCC       ;CALCULATE SOFT BCC
 4288  023226  000010                          10                      ;SHIFT COUNT
 4289  023230  000000                  67$:    0                       ;CHARACTER
 4290  023232  000000                  10$:    0                       ;OLD BCC
 4291  023234  013737  027652  023232          MOV     CALBCC,10$      ;LOAD SOFT BCC FOR NEXT SHIFT
```

```
4292  023242  104415  000001          64$:    DATACLK,        1       ;SHIFT DATA IN TO BIT WINDOW
4293  023246  106002                          RORB    R2              ;SHIFT SOFT DATA
4294  023250  103005                          BCC     65$             ;BR IF A SPACE
4295  023252  004737  026650                  JSR     PC,GETSI        ;LOOK AT BIT WINDOW
4296  023256  103406                          BCS     66$             ;BR IF OK (MARK)
4297  023260  104006                          HLT     6               ;ERROR, BIT WINDOW WAS A SPACE
4298  023262  000404                          BR      66$             ;CONTINUE
4299  023264  004737  026650          65$:    JSR     PC,GETSI        ;LOOK AT BIT WINDOW
4300  023270  103001                          BCC     66$             ;BR IF OK (SPACE)
4301  023272  104006                          HLT     6               ;ERROR, BIT WINDOW WAS A MARK
4302  023274                          66$:
4303  023274  005203                          INC     R3              ;BUMP BIT COUNTER
4304  023276  022703  000010                  CMP     #10,R3          ;DONE FULL 8 BITS YET
4305  023302  001357                          BNE     64$             ;BR IF NO
4306  023304  005003                          CLR     R3              ;CLEAR BIT COUNTER
4307  023306  005300                          DEC     R0              ;DEC CHARACTER COUNT
4308  023310  001335                          BNE     12$             ;BR IF NOT DONE YET
4309
4310                                          ;CHECK BCC FOR PRECEDING MESSAGE IN THE BIT WINDOW
4311
4312  023312  013700  027652                  MOV     CALBCC,R0       ;PUT BCC IN R0
4313  023316  104415  000001          68$:    DATACLK,1               ;SHIFT HARDWARE BCC
4314  023322  006000                          ROR     R0              ;SHIFT SOFT BCC
4315  023324  103005                          BCC     69$             ;BR IF CARRY CLEAR
4316  023326  004737  026650                  JSR     PC,GETSI        ;LOOK AT BIT WINDOW
4317  023332  103406                          BCS     70$             ;BR IF OK (MARK)
4318  023334  104014                          HLT     14              ;ERROR, CRC WRONG (SPACE)
4319  023336  000404                          BR      70$             ;CONTINUE
4320  023340  004737  026650          69$:    JSR     PC,GETSI        ;LOOK AT BIT WINDOW
4321  023344  103001                          BCC     70$             ;BR IF OK (SPACE)
4322  023346  104014                          HLT     14              ;ERROR, CRC WRONG (MARK)
4323  023350                          70$:
4324  023350  005203                          INC     R3              ;BUMP BIT COUNTER
4325  023352  022703  000020                  CMP     #20,R3          ;FINISHED BCC YET?
4326  023356  001357                          BNE     68$             ;BR IF NO
4327  023360  005003                          CLR     R3              ;CLEAR BIT COUNTER
4328  023362  012700  000004                  MOV     #4,R0           ;RESET CHARACTER COUNTER
4329  023366  012704  030434                  MOV     #MESDAT,R4      ;LOAD MESSAGE POINTER
4330  023372  005037  023424                  CLR     11$             ;CLR SOFT BCC
4331  023376  112405                  13$:    MOVB    (R4)+,R5        ;LOAD CHAR IN R5
4332  023400  010502                          MOV     R5,R2           ;LOAD CHAR IN R2
4333
4334                                          ;CHECK SECOND MESSAGE IN THE BIT WINDOW (0,125,252,377)
4335
4336  023402  012737  120001  027650          MOV     #CRC16,XPOLY    ;LOAD POLYNOMIAL
4337  023410  010537  023422                  MOV     R5,76$          ;LOAD SOFT CHAR FOR BCC
4338  023414  004537  027544                  JSR     R5,SIMBCC       ;CALCULATE SOFT BCC
4339  023420  000010                          10                      ;SHIFT COUNT
4340  023422  000000                  76$:    0                       ;CHARACTER
4341  023424  000000                  11$:    0                       ;OLD BCC
4342  023426  013737  027652  023424          MOV     CALBCC,11$      ;LOAD SOFT BCC FOR NEXT SHIFT
4343  023434  104415  000001          73$:    DATACLK,        1       ;SHIFT DATA IN TO BIT WINDOW
4344  023440  106002                          RORB    R2              ;SHIFT SOFT DATA
4345  023442  103005                          BCC     74$             ;BR IF A SPACE
4346  023444  004737  026650                  JSR     PC,GETSI        ;LOOK AT BIT WINDOW
4347  023450  103406                          BCS     75$             ;BR IF OK (MARK)
```

```
 4348  023452  104006                        HLT     6               ;ERROR, BIT WINDOW WAS A SPACE
 4349  023454  000404                        BR      75$             ;CONTINUE
 4350  023456  004737  026650        74$:    JSR     PC,GETSI        ;LOOK AT BIT WINDOW
 4351  023462  103001                        BCC     75$             ;BR IF OK (SPACE)
 4352  023464  104006                        HLT     6               ;ERROR, BIT WINDOW WAS A MARK
 4353  023466                        75$:
 4354  023466  005203                        INC     R3              ;BUMP BIT COUNTER
 4355  023470  022703  000010                CMP     #10,R3          ;DONE FULL 8 BITS YET
 4356  023474  001357                        BNE     73$             ;BR IF NO
 4357  023476  005003                        CLR     R3              ;CLEAR BIT COUNTER
 4358  023500  005300                        DEC     R0              ;DEC CHARACTER COUNT
 4359  023502  001335                        BNE     13$             ;BR IF NOT DONE YET
 4360
 4361                                        ;CHECK BCC FOR PRECEDING MESSAGE IN THE BIT WINDOW
 4362
 4363  023504  013700  027652                MOV     CALBCC,R0       ;PUT BCC IN R0
 4364  023510  104415  000001        77$:    DATACLK,1               ;SHIFT HARDWARE BCC
 4365  023514  006000                        ROR     R0              ;SHIFT SOFT BCC
 4366  023516  103005                        BCC     78$             ;BR IF CARRY CLEAR
 4367  023520  004737  026650                JSR     PC,GETSI        ;LOOK AT BIT WINDOW
 4368  023524  103406                        BCS     79$             ;BR IF OK (MARK)
 4369  023526  104014                        HLT     14              ;ERROR, CRC WRONG (SPACE)
 4370  023530  000404                        BR      79$             ;CONTINUE
 4371  023532  004737  026650        78$:    JSR     PC,GETSI        ;LOOK AT BIT WINDOW
 4372  023536  103001                        BCC     79$             ;BR IF OK (SPACE)
 4373  023540  104014                        HLT     14              ;ERROR, CRC WRONG (MARK)
 4374  023542                        79$:
 4375  023542  005203                        INC     R3              ;BUMP BIT COUNTER
 4376  023544  022703  000020                CMP     #20,R3          ;FINISHED BCC YET?
 4377  023550  001357                        BNE     77$             ;BR IF NO
 4378  023552  005003                        CLR     R3              ;CLEAR BIT COUNTER
 4379
 4380                                        ;CHECK TO SEE IF TRANSMITTER IS MARKING
 4381
 4382  023554  104415  000001        2$:     DATACLK,        1       ;CLOCK TRANSMITTER
 4383  023560  004737  026650                JSR     PC,GETSI        ;LOOK AT WINDOW
 4384  023564  103401                        BCS     3$              ;IT SHOULD BE MARKING
 4385  023566  104024                        HLT     24              ;ERROR, BIT WAS A SPACE
 4386  023570  005203                3$:     INC     R3              ;BUMP BIT COUNTER
 4387  023572  022703  000007                CMP     #7,R3           ;DONE YET
 4388  023576  001366                        BNE     2$              ;BR IF NO
 4389  023600  104415  000010                DATACLK,        10      ;GIVE ENOUGH TICKS TO CLEAR OUT ACTIVE
 4390  023604  005003                        CLR     R3              ;CLEAR BIT COUNTER
 4391  023606  104415  000001        4$:     DATACLK,        1       ;SHIFT OUT NEXT BIT
 4392  023612  004737  026650                JSR     PC,GETSI        ;LOOK AT BIT WINDOW
 4393  023616  103401                        BCS     .+4             ;BR IF IT IS A MARK
 4394  023620  104024                        HLT     24              ;ERROR, TRANSMITTER IS NOT MARKING
 4395  023622  005203                        INC     R3              ;INC BIT COUNT
 4396  023624  022703  000020                CMP     #20,R3          ;DONE YET?
 4397  023630  001366                        BNE     4$              ;BR IF NO
 4398
 4399                                        ;CHECK TO SEE THAT FIRST FOUR CHARACTER MESSAGE
 4400                                        ;WAS RECEIVED CORRECTLY (0,125,252,377)
 4401
 4402  023632  104415  000001                DATACLK,        1       ;GET LAST BIT IN RECEIVER
 4403  023636  012703  000004                MOV     #4,R3           ;R3=CHARACTER COUNT
```

```
4404  023642  012702  030434              MOV     #MESDAT,R2      ;LOAD MESSAGE POINTER IN R2
4405  023646  004737  027510      40$:    JSR     PC,INRDY        ;WAIT FOR INRDY
4406  023652  104414                      ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
4407  023654  021204                      021204
4408  023656  016104  000004              MOV     4(R1),R4        ;PUT "FOUND" IN R4
4409  023662  112205                      MOVB    (R2)+,R5        ;PUT "EXPECTED" IN R5
4410  023664  120504                      CMPB    R5,R4           ;IS RECEIVED DATA CORRECT?
4411  023666  001401                      BEQ     41$             ;BR IF YES
4412  023670  104010                      HLT     10              ;RECEIVE DATA ERROR
4413  023672  005303              41$:    DEC     R3              ;DEC CHARACTER COUNT
4414  023674  001364                      BNE     40$             ;BR IF NOT DONE YET
4415
4416                                      ;CHECK TO SEE THAT IN BCC MATCH IS SET
4417                                      ;AND THAT THE BCC WAS RECEIVED CORRECTLY
4418
4419  023676  004737  027510              JSR     PC,INRDY        ;WAIT FOR INRDY
4420  023702  104414                      ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
4421  023704  021204                      021204                  ;GET FIRST HALF OF CRC
4422  023706  116137  000004  001252      MOVB    4(R1),TEMP3     ;PUT IN TEMP3
4423  023714  042737  177400  001252      BIC     #177400,TEMP3   ;CLEAR HI BYTE
4424  023722  004737  027510              JSR     PC,INRDY        ;WAIT FOR INRDY
4425  023726  104414                      ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
4426  023730  021244                      021244
4427  023732  016104  000004              MOV     4(R1),R4        ;PUT "FOUND" IN R4
4428  023736  042704  000376              BIC     #376,R4         ;CLEAR UNWANTED BITS
4429  023742  012705  000001              MOV     #1,R5           ;PUT "EXPECTED" IN R5
4430  023746  120504                      CMPB    R5,R4           ;IS IN BCC MATCH SET?
4431  023750  001401                      BEQ     50$
4432  023752  104015                      HLT     15              ;IN BCC MATCH ERROR
4433  023754                      50$:
4434  023754  104414                      ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
4435  023756  021204                      021204                  ;GET LAST HALF
4436  023760  116137  000004  001251      MOVB    4(R1),TEMP2+1   ;PUT IN TEMP2
4437  023766  042737  000377  001250      BIC     #377,TEMP2      ;CLEAR LO BYTE
4438  023774  053737  001250  001252      BIS     TEMP2,TEMP3     ;16 BIT BCC NOW IN TEMP3
4439  024002  023737  027652  001252      CMP     CALBCC,TEMP3    ;IS IT CORRECT?
4440  024010  001401                      BEQ     42$             ;BR IF OK
4441  024012  104027                      HLT     27
4442
4443                                      ;CHECK TO SEE THAT SECOND FOUR CHARACTER MESSAGE
4444                                      ;WAS RECEIVED CORRECTLY (0,125,252,377)
4445
4446  024014  012703  000004      42$:    MOV     #4,R3           ;R3=CHARACTER COUNT
4447  024020  012702  030434              MOV     #MESDAT,R2      ;LOAD MESSAGE POINTER IN R2
4448  024024  004737  027510      43$:    JSR     PC,INRDY        ;WAIT FOR INRDY
4449  024030  104414                      ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
4450  024032  021204                      021204
4451  024034  016104  000004              MOV     4(R1),R4        ;PUT "FOUND" IN R4
4452  024040  112205                      MOVB    (R2)+,R5        ;PUT "EXPECTED" IN R5
4453  024042  120504                      CMPB    R5,R4           ;IS RECEIVED DATA CORRECT?
4454  024044  001401                      BEQ     44$             ;BR IF YES
4455  024046  104010                      HLT     10              ;RECEIVE DATA ERROR
4456  024050  005303              44$:    DEC     R3              ;DEC CHARACTER COUNT
4457  024052  001364                      BNE     43$             ;BR IF NOT DONE YET
4458
4459                                      ;CHECK TO SEE THAT IN BCC MATCH IS SET
```

```
                                        ;AND THAT THE BCC WAS RECEIVED CORRECTLY
                                        JSR     PC,INRDY        ;WAIT FOR INRDY
                                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
                                        021204                  ;GET FIRST HALF OF CRC
                                        MOVB    4(R1),TEMP3     ;PUT IN TEMP3
                                        BIC     #177400,TEMP3   ;CLEAR HI BYTE
                                        JSR     PC,INRDY        ;WAIT FOR INRDY
                                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
                                        021244
                                        MOV     4(R1),R4        ;PUT "FOUND" IN R4
                                        BIC     #376,R4         ;CLEAR UNWANTED BITS
                                        MOV     #1,R5           ;PUT "EXPECTED" IN R5
                                        CMPB    R5,R4           ;IS IN BCC MATCH SET?
                                        BEQ     51$
                                        HLT     15              ;IN BCC MATCH ERROR
                                51$:
                                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
                                        021204                  ;GET LAST HALF
                                        MOVB    4(R1),TEMP2+1   ;PUT IN TEMP2
                                        BIC     #377,TEMP2      ;CLEAR LO BYTE
                                        BIS     TEMP2,TEMP3     ;16 BIT BCC NOW IN TEMP3
                                        CMP     CALBCC,TEMP3    ;IS IT CORRECT?
                                        BEQ     5$              ;BR IF OK
                                        HLT     27
                                5$:     SCOPE                   ;SCOPE THIS TEST

                                        ;***************************** TEST 53 ****************************
                                        ;*DDCMP EOM FUNCTION TEST
                                        ;*THIS TEST LOADS OUT SILO WITH: 2 SYNCS,4 CHAR MESSAGE,EOM
                                        ;*SOM,4 CHAR MESS,EOM. THE DATA STREAM IS CHECKED TO BE
                                        ;*4 CHAR,BCC,4 CHAR,BCC,MARKS. THIS TEST VERIFYS THAT
                                        ;*THE CHARCTERS LOADED WITH EOM SET ARE LOST
                                        ;*ALSO THAT THE CHAR LOADED WITH SOM IS NOT IN THE BCC
                                        ;*ALL DATA AND BCC'S ARE CHECKED IN THE BIT WINDOW
                                        ;*THE FOUR CHARACTER MESSAGE IS 0,125,252,377
                                        ;*RECEIVED DATA IS VERIFIED, AND IN BCC MATCH IS CHECKED
                                        ;:**************************************************************

                                        ;  TEST 53
                                        ;--------------
001226  012737  000053  001216  TST53:  MOV     #53,TSTNO
001216  012737  025374  001216          MOV     #TST54,NEXT
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
                                        MSTCLR                  ;MASTER CLEAR DMC11

                                        ;LOAD OUT DATA SILO

004000                                  MOV     #BIT11,(R1)     ;SET LINE UNIT LOOP
030434                                  MOV     #MESDAT,R4      ;LOAD POINTER TO DATA
024336                                  CLR     10$             ;CLEAR SOFT BCC
000004                                  MOV     #4,R0           ;LOAD CHARACTER COUNT
030016                                  JSR     PC,SYNLD        ;LOAD 2 SYNCS IN OUT SILO
027034                                  JSR     PC,OUTRDY       ;WAIT FOR OUTRDY
030152                                  JSR     R5,MESLD        ;LOAD SILO WITH 4 CHAR MESS
```

```
4516  024246  030434                        MESDAT                  ;ADDRESS OF MESSAGE
4517  024250  000004                        4                       ;NUMBER OF CHARACTERS
4518  024252  004737  030126                JSR     PC,EOM          ;LOAD GARBAGE CHARACTER, WITH EOM SET
4519  024256  004737  030076                JSR     PC,SOM          ;LOAD GARBAGE CHAR WITH SOM SET
4520  024262  004537  030152                JSR     R5,MESLD        ;LOAD FOUR MORE CHARACTERS
4521  024266  030434                        MESDAT                  ;ADDRESS OF MESSAGE
4522  024270  000004                        4                       ;NUMBER OF CHACTERS
4523  024272  004737  030126                JSR     PC,EOM          ;SET EOM
4524  024276  004737  026702                JSR     PC,OCOR         ;WAIT FOR OCOR
4525  024302  005003                        CLR     R3              ;CLEAR BIT COUNTER
4526  024304  104415  000022                DATACLK,22              ;CLOCK DATA
4527  024310  112405                12$:    MOVB    (R4)+,R5        ;LOAD R5 WITH CHAR
4528  024312  010502                        MOV     R5,R2           ;LOAD R2 WITH CHAR
4529
4530                                        ;CHECK FIRST FOUR CHARACTER MESSAGE
4531                                        ;IN THE BIT WINDOW (0,125,252,377)
4532
4533  024314  012737  120001  027650        MOV     #CRC16,XPOLY    ;LOAD POLYNOMIAL
4534  024322  010537  024334                MOV     R5,67$          ;LOAD SOFT CHAR FOR BCC
4535  024326  004537  027544                JSR     R5,SIMBCC       ;CALCULATE SOFT BCC
4536  024332  000010                        10                      ;SHIFT COUNT
4537  024334  000000                67$:    0                       ;CHARACTER
4538  024336  000000                10$:    0                       ;OLD BCC
4539  024340  013737  027652  024336        MOV     CALBCC,10$      ;LOAD SOFT BCC FOR NEXT SHIFT
4540  024346  104415  000001        64$:    DATACLK,        1       ;SHIFT DATA IN TO BIT WINDOW
4541  024352  106002                        RORB    R2              ;SHIFT SOFT DATA
4542  024354  103005                        BCC     65$             ;BR IF A SPACE
4543  024356  004737  026650                JSR     PC,GETSI        ;LOOK AT BIT WINDOW
4544  024362  103406                        BCS     66$             ;BR IF OK (MARK)
4545  024364  104006                        HLT     6               ;ERROR, BIT WINDOW WAS A SPACE
4546  024366  000404                        BR      66$             ;CONTINUE
4547  024370  004737  026650        65$:    JSR     PC,GETSI        ;LOOK AT BIT WINDOW
4548  024374  103001                        BCC     66$             ;BR IF OK (SPACE)
4549  024376  104006                        HLT     6               ;ERROR, BIT WINDOW WAS A MARK
4550  024400                        66$:
4551  024400  005203                        INC     R3              ;BUMP BIT COUNTER
4552  024402  022703  000010                CMP     #10,R3          ;DONE FULL 8 BITS YET
4553  024406  001357                        BNE     64$             ;BR IF NO
4554  024410  005003                        CLR     R3              ;CLEAR BIT COUNTER
4555  024412  005300                        DEC     R0              ;DEC CHARACTER COUNT
4556  024414  001335                        BNE     12$             ;BR IF NOT DONE YET
4557
4558                                        ;CHECK BCC FOR PRECEDING MESSAGE IN THE BIT WINDOW
4559
4560  024416  013700  027652                MOV     CALBCC,R0       ;PUT BCC IN R0
4561  024422  104415  000001        68$:    DATACLK,1               ;SHIFT HARDWARE BCC
4562  024426  006000                        ROR     R0              ;SHIFT SOFT BCC
4563  024430  103005                        BCC     69$             ;BR IF CARRY CLEAR
4564  024432  004737  026650                JSR     PC,GETSI        ;LOOK AT BIT WINDOW
4565  024436  103406                        BCS     70$             ;BR IF OK (MARK)
4566  024440  104014                        HLT     14              ;ERROR, CRC WRONG (SPACE)
4567  024442  000404                        BR      70$             ;CONTINUE
4568  024444  004737  026650        69$:    JSR     PC,GETSI        ;LOOK AT BIT WINDOW
4569  024450  103001                        BCC     70$             ;BR IF OK (SPACE)
4570  024452  104014                        HLT     14              ;ERROR, CRC WRONG (MARK)
4571  024454                        70$:
```

```
4572  024454  005203                          INC     R3              ;BUMP BIT COUNTER
4573  024456  022703  000020                  CMP     #20,R3          ;FINISHED BCC YET?
4574  024462  001357                          BNE     68$             ;BR IF NO
4575  024464  005003                          CLR     R3              ;CLEAR BIT COUNTER
4576
4577                                          ;CHECK CHARACTER LOADED WITH SOM (000), IN THE BIT WINDOW
4578
4579  024466  005005                          CLR     R5              ;CHARACTER LOADED WITH SOM
4580  024470  010502                          MOV     R5,R2           ;LOAD R2 WITH CHAR
4581  024472  104415  000001          32$:    DATACLK,        1       ;CLOCK TRANSMITTER
4582  024476  106002                          RORB    R2              ;SHIFT SOFT DATA
4583  024500  103005                          BCC     30$             ;BR IF SPACE
4584  024502  004737  026650                  JSR     PC,GETSI        ;LOOK AT BIT WINDOW
4585  024506  103406                          BCS     31$             ;BR IF OK (MARK)
4586  024510  104006                          HLT     6               ;ERROR,BIT WINDOW WAS A SPACE
4587  024512  000404                          BR      31$             ;CONTINUE
4588  024514  004737  026650          30$:    JSR     PC,GETSI        ;LOOK AT BIT WINDOW
4589  024520  103001                          BCC     31$             ;BR IF OK (SPACE)
4590  024522  104006                          HLT     6               ;ERROR,BIT WINDOW WAS A MARK
4591  024524  005203                  31$:    INC     R3              ;BUMP BIT COUNTER
4592  024526  022703  000010                  CMP     #10,R3          ;DONE CHARACTER YET?
4593  024532  001357                          BNE     32$             ;BR IF NO
4594  024534  005003                          CLR     R3              ;RESET BIT COUNTER
4595  024536  012700  000004                  MOV     #4,R0           ;RESET CHARACTER COUNTER
4596  024542  012704  030434                  MOV     #MESDAT,R4      ;LOAD MESSAGE POINTER
4597  024546  005037  024600                  CLR     11$             ;CLR SOFT BCC
4598  024552  112405                  13$:    MOVB    (R4)+,R5        ;LOAD CHAR IN R5
4599  024554  010502                          MOV     R5,R2           ;LOAD CHAR IN R2
4600
4601                                          ;CHECK SECOND MESSAGE IN THE BIT WINDOW (0,125,252,377)
4602
4603  024556  012737  120001  027650          MOV     #CRC16,XPOLY    ;LOAD POLYNOMIAL
4604  024564  010537  024576                  MOV     R5,76$          ;LOAD SOFT CHAR FOR BCC
4605  024570  004537  027544                  JSR     R5,SIMBCC       ;CALCULATE SOFT BCC
4606  024574  000010                          10                      ;SHIFT COUNT
4607  024576  000000                  76$:    0                       ;CHARACTER
4608  024600  000000                  11$:    0                       ;OLD BCC
4609  024602  013737  027652  024600          MOV     CALBCC,11$      ;LOAD SOFT BCC FOR NEXT SHIFT
4610  024610  104415  000001          73$:    DATACLK,        1       ;SHIFT DATA IN TO BIT WINDOW
4611  024614  106002                          RORB    R2              ;SHIFT SOFT DATA
4612  024616  103005                          BCC     74$             ;BR IF A SPACE
4613  024620  004737  026650                  JSR     PC,GETSI        ;LOOK AT BIT WINDOW
4614  024624  103406                          BCS     75$             ;BR IF OK (MARK)
4615  024626  104006                          HLT     6               ;ERROR, BIT WINDOW WAS A SPACE
4616  024630  000404                          BR      75$             ;CONTINUE
4617  024632  004737  026650          74$:    JSR     PC,GETSI        ;LOOK AT BIT WINDOW
4618  024636  103001                          BCC     75$             ;BR IF OK (SPACE)
4619  024640  104006                          HLT     6               ;ERROR, BIT WINDOW WAS A MARK
4620  024642                          75$:
4621  024642  005203                          INC     R3              ;BUMP BIT COUNTER
4622  024644  022703  000010                  CMP     #10,R3          ;DONE FULL 8 BITS YET
4623  024650  001357                          BNE     73$             ;BR IF NO
4624  024652  005003                          CLR     R3              ;CLEAR BIT COUNTER
4625  024654  005300                          DEC     R0              ;DEC CHARACTER COUNT
4626  024656  001335                          BNE     13$             ;BR IF NOT DONE YET
4627
```

```
                                        ;CHECK BCC FOR PRECEDING MESSAGE IN THE BIT WINDOW

024660  013700  027652          MOV     CALBCC,R0       ;PUT BCC IN R0
024664  104415  000001  77$:    DATACLK,1               ;SHIFT HARDWARE BCC
024670  006000                  ROR     R0              ;SHIFT SOFT BCC
024672  103005                  BCC     78$             ;BR IF CARRY CLEAR
024674  004737  026650          JSR     PC,GETSI        ;LOOK AT BIT WINDOW
024700  103406                  BCS     79$             ;BR IF OK (MARK)
024702  104014                  HLT     14              ;ERROR, CRC WRONG (SPACE)
024704  000404                  BR      79$             ;CONTINUE
024706  004737  026650  78$:    JSR     PC,GETSI        ;LOOK AT BIT WINDOW
024712  103001                  BCC     79$             ;BR IF OK (SPACE)
024714  104014                  HLT     14              ;ERROR, CRC WRONG (MARK)
024716                  79$:
024716  005203                  INC     R3              ;BUMP BIT COUNTER
024720  022703  000020          CMP     #20,R3          ;FINISHED BCC YET?
024724  001357                  BNE     77$             ;BR IF NO
024726  005003                  CLR     R3              ;CLEAR BIT COUNTER

                                        ;CHECK TO SEE IF TRANSMITTER IS MARKING

024730  104415  000001  2$:     DATACLK,        1       ;CLOCK TRANSMITTER
024734  004737  026650          JSR     PC,GETSI        ;LOOK AT WINDOW
024740  103401                  BCS     3$              ;IT SHOULD BE MARKING
024742  104024                  HLT     24              ;ERROR, BIT WAS A SPACE
024744  005203          3$:     INC     R3              ;BUMP BIT COUNTER
024746  022703  000007          CMP     #7,R3           ;DONE YET
024752  001366                  BNE     2$              ;BR IF NO
024754  104415  000010          DATACLK,        10      ;GIVE ENOUGH TICKS TO CLEAR OUT ACTIVE
024760  005003                  CLR     R3              ;CLEAR BIT COUNTER
024762  104415  000001  4$:     DATACLK,        1       ;SHIFT OUT NEXT BIT
024766  004737  026650          JSR     PC,GETSI        ;LOOK AT BIT WINDOW
024772  103401                  BCS     .+4             ;BR IF IT IS A MARK
024774  104024                  HLT     24              ;ERROR, TRANSMITTER IS NOT MARKING
024776  005203                  INC     R3              ;INC BIT COUNT
025000  022703  000020          CMP     #20,R3          ;DONE YET?
025004  001366                  BNE     4$              ;BR IF NO

                                        ;CHECK TO SEE THAT FIRST FOUR CHARACTER MESSAGE
                                        ;WAS RECEIVED CORRECTLY (0,125,252,377)

025006  104415  000001          DATACLK,        1       ;GET LAST BIT IN RECEIVER
025012  012703  000004          MOV     #4,R3           ;R3=CHARACTER COUNT
025016  012702  030434          MOV     #MESDAT,R2      ;LOAD MESSAGE POINTER IN R2
025022  004737  027510  40$:    JSR     PC,INRDY        ;WAIT FOR INRDY
025026  104414                  ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
025030  021204                  021204
025032  016104  000004          MOV     4(R1),R4        ;PUT "FOUND" IN R4
025036  112205                  MOVB    (R2)+,R5        ;PUT "EXPECTED" IN R5
025040  120504                  CMPB    R5,R4           ;IS RECEIVED DATA CORRECT?
025042  001401                  BEQ     41$             ;BR IF YES
025044  104010                  HLT     10              ;RECEIVE DATA ERROR
025046  005303          41$:    DEC     R3              ;DEC CHARACTER COUNT
025050  001364                  BNE     40$             ;BR IF NOT DONE YET

                                        ;CHECK TO SEE THAT IN BCC MATCH IS SET
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                                                ;AND THAT THE BCC WAS RECEIVED CORRECTLY
                                                
025052  004737  027510                          JSR     PC,INRDY        ;WAIT FOR INRDY
025056  104414                                  ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
025060  021204                                  021204                  ;GET FIRST HALF OF CRC
025062  116137  000004  001252                  MOVB    4(R1),TEMP3     ;PUT IN TEMP3
025070  042737  177400  001252                  BIC     #177400,TEMP3   ;CLEAR HI BYTE
025076  004737  027510                          JSR     PC,INRDY        ;WAIT FOR INRDY
025102  104414                                  ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
025104  021244                                  021244
025106  016104  000004                          MOV     4(R1),R4        ;PUT "FOUND" IN R4
025112  042704  000376                          BIC     #376,R4         ;CLEAR UNWANTED BITS
025116  012705  000001                          MOV     #1,R5           ;PUT "EXPECTED" IN R5
025122  120504                                  CMPB    R5,R4           ;IS IN BCC MATCH SET?
025124  001401                                  BEQ     50$
025126  104015                                  HLT     15              ;IN BCC MATCH ERROR
025130                                  50$:
025130  104414                                  ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
025132  021204                                  021204                  ;GET LAST HALF
025134  116137  000004  001251                  MOVB    4(R1),TEMP2+1   ;PUT IN TEMP2
025142  042737  000377  001250                  BIC     #377,TEMP2      ;CLEAR LO BYTE
025150  053737  001250  001252                  BIS     TEMP2,TEMP3     ;16 BIT BCC NOW IN TEMP3
025156  023737  027652  001252                  CMP     CALBCC,TEMP3    ;IS IT CORRECT?
025164  001401                                  BEQ     45$             ;BR IF OK
025166  104027                                  HLT     27
                                                
                                                ;CHECK THAT CHARACTER LOADED WITH SOM WAS RECEIVED (000)
                                                
025170  004737  027510          45$:    JSR     PC,INRDY        ;WAIT FOR INRDY
025174  104414                                  ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
025176  021204                                  021204                  ;GET RECEIVE DATA
025200  016104  000004                          MOV     4(R1),R4        ;PUT "FOUND" IN R4
025204  005005                                  CLR     R5              ;PUT "EXPECTED" IN R5
025206  120504                                  CMPB    R5,R4           ;IS RECEVIED DATA CORRECT?
025210  001401                                  BEQ     42$             ;BR IF YES
025212  104010                                  HLT     10              ;RECEIVE DATA ERROR
                                                
                                                ;CHECK TO SEE THAT SECOND FOUR CHARACTER MESSAGE
                                                ;WAS RECEIVED CORRECTLY (0,125,252,377)
                                                
025214  012703  000004          42$:    MOV     #4,R3           ;R3=CHARACTER COUNT
025220  012702  030434                  MOV     #MESDAT,R2      ;LOAD MESSAGE POINTER IN R2
025224  004737  027510          43$:    JSR     PC,INRDY        ;WAIT FOR INRDY
025230  104414                                  ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
025232  021204                                  021204
025234  016104  000004                          MOV     4(R1),R4        ;PUT "FOUND" IN R4
025240  112205                                  MOVB    (R2)+,R5        ;PUT "EXPECTED" IN R5
025242  120504                                  CMPB    R5,R4           ;IS RECEIVED DATA CORRECT?
025244  001401                                  BEQ     44$             ;BR IF YES
025246  104010                                  HLT     10              ;RECEIVE DATA ERROR
025250  005303          44$:    DEC     R3              ;DEC CHARACTER COUNT
025252  001364                  BNE     43$             ;BR IF NOT DONE YET
                                                
                                                ;CHECK TO SEE THAT IN BCC MATCH IS SET
                                                ;AND THAT THE BCC WAS RECEIVED CORRECTLY
```

```
4740  025254  004737  027510                    JSR     PC,INRDY        ;WAIT FOR INRDY
4741  025260  104414                            ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
4742  025262  021204                            021204                  ;GET FIRST HALF OF CRC
4743  025264  116137  000004  001252            MOVB    4(R1),TEMP3     ;PUT IN TEMP3
4744  025272  042737  177400  001252            BIC     #177400,TEMP3   ;CLEAR HI BYTE
4745  025300  004737  027510                    JSR     PC,INRDY        ;WAIT FOR INRDY
4746  025304  104414                            ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
4747  025306  021244                            021244
4748  025310  016104  000004                    MOV     4(R1),R4        ;PUT "FOUND" IN R4
4749  025314  042704  000376                    BIC     #376,R4         ;CLEAR UNWANTED BITS
4750  025320  012705  000001                    MOV     #1,R5           ;PUT "EXPECTED" IN R5
4751  025324  120504                            CMPB    R5,R4           ;IS IN BCC MATCH SET?
4752  025326  001401                            BEQ     51$
4753  025330  104015                            HLT     15              ;IN BCC MATCH ERROR
4754  025332                          51$:
4755  025332  104414                            ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
4756  025334  021204                            021204                  ;GET LAST HALF
4757  025336  116137  000004  001251            MOVB    4(R1),TEMP2+1   ;PUT IN TEMP2
4758  025344  042737  000377  001250            BIC     #377,TEMP2      ;CLEAR LO BYTE
4759  025352  053737  001250  001252            BIS     TEMP2,TEMP3     ;16 BIT BCC NOW IN TEMP3
4760  025360  023737  027652  001252            CMP     CALBCC,TEMP3    ;IS IT CORRECT?
4761  025366  001401                            BEQ     5$              ;BR IF OK
4762  025370  104027                            HLT     27
4763  025372  104400                    5$:     SCOPE                   ;SCOPE THIS TEST
4764
4765
4766                                            ;***************************** TEST 54 *****************************
4767                                            ;*EMPTY SILO TEST
4768                                            ;*LOAD SILO WITH 2 SYNCS, 4 CHAR MESSAGE, SINGLE CLOCK
4769                                            ;*UNTIL THE SILO IS EMPTY, LOAD 4 MORE CHARACTERS IN THE
4770                                            ;*SILO. GIVE MORE TICKS, AND VERIFY THAT ONLY THE FIRST
4771                                            ;*4 CHARACTER MESSAGE WAS RECEIVED AND THAT RTS IS CLEAR
4772                                            ;:***************************************************************
4773
4774                                            ;  TEST 54
4775                                            ;--------------
4776  025374  012737  000054  001226  TST54:    MOV     #54,TSTNO
4777  025402  012737  025626  001216            MOV     #TST55,NEXT
4778                                                                    ;R1 CONTAINS BASE DMC11 ADDRESS
4779  025410  104412                            MSTCLR                  ;MASTER CLEAR DMC11
4780  025412  012711  004000                    MOV     #BIT11,(R1)     ;SET LINE UNIT LOOP
4781  025416  012702  030434                    MOV     #MESDAT,R2      ;R2 POINTS TO MESSAGE
4782  025422  012700  000004                    MOV     #4,R0           ;R0 = CHAR COUNT
4783  025426  004737  030016                    JSR     PC,SYNLD        ;LOAD SILO WITH TWO SYNCS
4784  025432  004737  027034                    JSR     PC,OUTRDY       ;WAIT FOR OUTRDY
4785  025436  004537  030152                    JSR     R5,MESLD        ;LOAD MESSAGE IN SILO
4786  025442  030434                            MESDAT                  ;START OF MESSAGE
4787  025444  000004                            4                       ;CHARACTER COUNT
4788  025446  004737  026702                    JSR     PC,OCOR         ;WAIT FOR OCOR
4789  025452  104415  000065                    DATACLK,        65      ;CLOCK DATA (EMPTY SILO)
4790  025456  004537  030152                    JSR     R5,MESLD        ;PUT MORE CHARACTERS IN SILO
4791  025462  030434                            MESDAT
4792  025464  000004                            4
4793  025466  004737  026702                    JSR     PC,OCOR
4794  025472  104415  000005                    DATACLK,        5       ;CLOCK UNTIL RTS IS CLEARED
4795  025476  104414                            ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
```

```
                                                021264                  ;GET RTS
                                                BIT     #BIT5,4(R1)     ;IS IT CLEAR?
                                                BEQ     5$              ;BR IF YES
                                                HLT     34              ;ERROR, RTS NOT CLEAR
                                        5$:     DATACLK,        41      ;CLOCK XMITTER SOME MORE
                                        1$:     JSR     PC,INRDY        ;OK LETS CHECK WHAT WAS RECEIVED
                                                ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
                                                021204                  ;GET RECEIVE DATA
                                                MOV     4(R1),R4        ;PUT IT IN R4
                                                MOVB    (R2)+,R5        ;R5 = "EXPECTED"
                                                CMPB    R5,R4           ;IS DATA CORRECT?
                                                BEQ     2$              ;BR IF OK
                                                HLT     10              ;DATA ERROR
                                        2$:     DEC     R0              ;DEC CHAR COUNT
                                                BNE     1$              ;BR IF NOT DONE YET
                                        3$:     JSR     PC,INRDY        ;WAIT FOR INRDY
                                                ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
                                                021204                  ;GET RECEIVE DATA
                                                MOV     4(R1),R4        ;PUT IT IN "FOUND"
                                                MOV     #377,R5         ;R5 = "EXPECTED"
                                                CMPB    R5,R4           ;SHOULD SEE 377
                                                BEQ     4$              ;BR IF OK
                                                HLT     10              ;ERROR, TRANSMITTER DID NOT ABORT
                                        4$:     JSR     PC,INRDY        ;WAIT FOR INRDY
                                                ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
                                                021204                  ;GET RECEIVE DATA
                                                MOV     4(R1),R4        ;PUT IT IN "FOUND"
                                                MOV     #377,R5         ;R5 = "EXPECTED"
                                                CMPB    R5,R4           ;SHOULD SEE 377
                                                BEQ     10$             ;BR IF OK
                                                HLT     10              ;ERROR, TRANSMITTER DID NOT ABORT
                                        10$:
                                                SCOPE                   ;SCOPE THIS TEST


                                                ;***************************** TEST 55 *****************************
                                                ;*HALF DUPLEX TEST
                                                ;*SET LINE UNIT LOOP AND HALF DUPLEX, SEND SYNCS AND A
                                                ;*MESSAGE. VERIFY THAT IN-ACTIVE AND IN-READY ARE CLEAR
                                                ;:*************************************************************


                                                ;  TEST 55
                                                ;--------------
                                        TST55:  MOV     #55,TSTNO
                                                MOV     #TST56,NEXT
                                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
                                                MSTCLR                  ;MASTER CLEAR DMC11
                                                MOV     #12,R2          ;SAVE R2 FOR TYPEOUT
                                                MOV     #BIT11,(R1)     ;SET LINE UNIT LOOP
                                                MOV     #BIT4,4(R1)     ;LOAD PORT4
                                                ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
                                                122113                  ;SET H/D BIT
                                                JSR     PC,SYNLD        ;LOAD 2 SYNCS
                                                JSR     PC,OUTRDY       ;WAIT FOR OUTRDY
                                                JSR     R5,MESLD        ;LOAD 4 CHAR MESSAGE
                                                MESDAT                  ;ADDRESS OF MESSAGE
```

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4852  025704  000004                        4                       ;CHARACTER COUNT
4853  025706  004737  026702                JSR     PC,OCOR         ;WAIT FOR OCOR
4854  025712  104415  000073                DATACLK,        73      ;SEND MESSAGE
4855  025716  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
4856  025720  021244                        021244                  ;READ LU-12
4857  025722  016104  000004                MOV     4(R1),R4        ;PUT "FOUND" IN R4
4858  025726  042704  000257                BIC     #257,R4         ;CLEAR UNWANTED BITS
4859  025732  005005                        CLR     R5              ;R5 = "EXPECTED"
4860  025734  120504                        CMPB    R5,R4           ;IN-ACTIVE AND IN-RDY SHOULD BE CLEAR
4861  025736  001401                        BEQ     1$              ;BR IF OK
4862  025740  104035                        HLT     35              ;ERROR BOTH ARE NOT CLEAR
4863  025742  104400                1$:     SCOPE
4864
4865
4866                                        ;***************************** TEST 56 *****************************
4867                                        ;*DDCMP CABLE DATA TEST
4868                                        ;*THIS TEST LOADS OUT SILO WITH THE FOLLOWING:
4869                                        ;*4 SYNCS,16 CHAR,EOM,16 CHAR,EOM,16 CHAR,EOM
4870                                        ;*THE 16 CHARACTERS INCLUDE A FLOATING ONE AND ZERO
4871                                        ;*THE DATA IS TRANSMITTED OVER THE CABLE USING THE INTERNAL CLOCK
4872                                        ;*RECEIVED DATA IS VERIFIED AS IS IN BCC MATCH
4873                                        ;*LOOP-BACK CONNECTOR MUST BE ON TO RUN THIS TEST
4874                                        ;;*************************************************************************
4875
4876                                        ;  TEST 56
4877                                        ;--------------
4878  025744  012737  000056  001226  TST56: MOV     #56,TSTNO
4879  025752  012737  026332  001216        MOV     #TST57,NEXT
4880                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
4881  025760  104412                        MSTCLR                  ;MASTER CLEAR DMC11
4882
4883  025762  032737  040000  001366        BIT     #BIT14,STAT1    ;SKIP TEST IF NO
4884  025770  001557                        BEQ     3$              ;LOOPBACK CONNECTOR ON
4885  025772  012711  004000                MOV     #BIT11,(R1)     ;SET LINE UNIT LOOP
4886  025776  004737  030016                JSR     PC,SYNLD        ;LOAD 2 SYNCS
4887  026002  004737  030016                JSR     PC,SYNLD        ;LOAD 2 MORE SYNCS
4888  026006  012737  120001  027650        MOV     #CRC16,XPOLY    ;LOAD POLYNOMIAL FOR SOFT CRC CALC
4889  026014  005037  026044                CLR     6$              ;CLEAR OLD BCC
4890  026020  012703  000020                MOV     #16.,R3         ;CHARACTER COUNT
4891  026024  012702  030440                MOV     #FLTDAT,R2      ;R2= POINTER
4892  026030  112237  026042        7$:     MOVB    (R2)+,5$        ;LOAD CHAR FOR SOFT BCC CALC.
4893  026034  004537  027544                JSR     R5,SIMBCC       ;CALC SOFT BCC
4894  026040  000010                        10                      ;SHIFT COUNT
4895  026042  000000                5$:     0                       ;CHARACTER
4896  026044  000000                6$:     0                       ;OLD BCC
4897  026046  013737  027652  026044        MOV     CALBCC,6$       ;LOAD OLD BCC
4898  026054  005303                        DEC     R3              ;DEC COUNT
4899  026056  001364                        BNE     7$              ;BR IF NOT DONE YET
4900  026060  004537  030152                JSR     R5,MESLD        ;LOAD SILO
4901  026064  030440                        FLTDAT                  ;MESSAGE ADDRESS
4902  026066  000020                        16.                     ;CHARACTER COUNT
4903  026070  004737  030126                JSR     PC,EOM          ;LOAD AN EOM
4904  026074  004537  030152                JSR     R5,MESLD        ;LOAD SILO
4905  026100  030440                        FLTDAT                  ;MESSAGE ADDRESS
4906  026102  000020                        16.                     ;CHARACTER COUNT
4907  026104  004737  030126                JSR     PC,EOM          ;LOAD AN EOM
```

```
4908  026110  004537  030152          JSR     R5,MESLD        ;LOAD SILO
4909  026114  030440                  FLTDAT                  ;MESSAGE ADDRESS
4910  026116  000020                  16.                     ;CHARACTER COUNT
4911  026120  004737  030126          JSR     PC,EOM          ;LOAD AN EOM
4912  026124  004737  026702          JSR     PC,OCOR         ;WAIT FOR OCOR
4913  026130  005011                  CLR     (R1)            ;CLEAR LINE UNIT LOOP
4914  026132  012700  000003          MOV     #3,R0           ;R0 = MESSAGE COUNT
4915  026136  012703  000020          MOV     #16.,R3         ;R3= CHARACTER COUNT
4916  026142  012702  030440          MOV     #FLTDAT,R2      ;LOAD MESSAGE POINTER IN R2
4917  026146  004737  027510  1$:     JSR     PC,INRDY        ;WAIT FOR INRDY
4918  026152  104414                  ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
4919  026154  021204                  021204                  ;GET DATA FROM IN SILO
4920  026156  016104  000004          MOV     4(R1),R4        ;PUT CHARACTER IN "FOUND"
4921  026162  112205                  MOVB    (R2)+,R5        ;PUT "EXPECTED" IN R5
4922  026164  120504                  CMPB    R5,R4           ;IS RECEIVED DATA CORRECT
4923  026166  001401                  BEQ     2$              ;BR IF OK
4924  026170  104025                  HLT     25              ;DATA ERROR
4925  026172                  2$:
4926  026172  005303                  DEC     R3              ;DEC CHARACTER COUNT
4927  026174  001364                  BNE     1$              ;BR IF NOT DONE THIS MESSAGE
4928  026176  012703  000020          MOV     #16.,R3         ;RESET CHARACTER COUNT
4929
4930                                  ;CHECK TO SEE THAT IN BCC MATCH IS SET
4931                                  ;AND THAT THE BCC WAS RECEIVED CORRECTLY
4932
4933  026202  004737  027510          JSR     PC,INRDY        ;WAIT FOR INRDY
4934  026206  104414                  ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
4935  026210  021204                  021204                  ;GET FIRST HALF OF CRC
4936  026212  116137  000004  001252  MOVB    4(R1),TEMP3     ;PUT IN TEMP3
4937  026220  042737  177400  001252  BIC     #177400,TEMP3   ;CLEAR HI BYTE
4938  026226  004737  027510          JSR     PC,INRDY        ;WAIT FOR INRDY
4939  026232  104414                  ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
4940  026234  021244                  021244
4941  026236  016104  000004          MOV     4(R1),R4        ;PUT "FOUND" IN R4
4942  026242  042704  000376          BIC     #376,R4         ;CLEAR UNWANTED BITS
4943  026246  012705  000001          MOV     #1,R5           ;PUT "EXPECTED" IN R5
4944  026252  120504                  CMPB    R5,R4           ;IS IN BCC MATCH SET?
4945  026254  001401                  BEQ     25$
4946  026256  104015                  HLT     15              ;IN BCC MATCH ERROR
4947  026260                  25$:
4948  026260  104414                  ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
4949  026262  021204                  021204                  ;GET LAST HALF
4950  026264  116137  000004  001251  MOVB    4(R1),TEMP2+1   ;PUT IN TEMP2
4951  026272  042737  000377  001250  BIC     #377,TEMP2      ;CLEAR LO BYTE
4952  026300  053737  001250  001252  BIS     TEMP2,TEMP3     ;16 BIT BCC NOW IN TEMP3
4953  026306  023737  027652  001252  CMP     CALBCC,TEMP3    ;IS IT CORRECT?
4954  026314  001401                  BEQ     4$              ;BR IF OK
4955  026316  104027                  HLT     27
4956  026320  012702  030440  4$:     MOV     #FLTDAT,R2      ;RESET MESSAGE POINTER
4957  026324  005300                  DEC     R0              ;DECREMENT COUNTER
4958  026326  001307                  BNE     1$              ;BR IF NOT DONE
4959  026330  104400          3$:     SCOPE                   ;SCOPE THIS TEST
4960
4961
4962                                  ;****************************** TEST 57 ****************************
4963                                  ;*DDCMP CABLE DATA TEST
```

```
                                        ;*THIS TEST LOADS OUT SILO WITH THE FOLLOWING:
                                        ;*4 SYNCS,59 DATA CHARACTERS,EOM WITH GARBAGE CHARACTER
                                        ;*THE DATA IS TRANSMITTED OVER THE CABLE USING THE INTERNAL CLOCK
                                        ;*RECEIVED DATA IS VERIFIED AS IS IN BCC MATCH
                                        ;*LOOP-BACK CONNECTOR MUST BE ON TO RUN THIS TEST
                                        ;;*****************************************************************

                                        ;  TEST 57
                                        ;--------------
026332  012737  000057  001226  TST57:  MOV     #57,TSTNO
026340  012737  003364  001216          MOV     #.EOP,NEXT
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
026346  104412                          MSTCLR                  ;MASTER CLEAR DMC11

026350  032737  040000  001366          BIT     #BIT14,STAT1    ;SKIP TEST IF NO
026356  001533                          BEQ     3$              ;LOOPBACK CONNECTOR ON
026360  012711  004000                  MOV     #BIT11,(R1)     ;SET LINE UNIT LOOP
026364  004737  030016                  JSR     PC,SYNLD        ;LOAD 2 SYNCS
026370  004737  030016                  JSR     PC,SYNLD        ;LOAD 2 MORE SYNCS
026374  012737  120001  027650          MOV     #CRC16,XPOLY    ;LOAD POLYNOMIAL FOR SOFT CRC CALC
026402  005037  026432                  CLR     6$              ;CLEAR OLD BCC
026406  012703  000073                  MOV     #59.,R3         ;CHARACTER COUNT
026412  012702  030434                  MOV     #MESDAT,R2      ;R2= POINTER
026416  112237  026430          7$:     MOVB    (R2)+,5$        ;LOAD CHAR FOR SOFT BCC CALC.
026422  004537  027544                  JSR     R5,SIMBCC       ;CALC SOFT BCC
026426  000010                          10                      ;SHIFT COUNT
026430  000000                  5$:     0                       ;CHARACTER
026432  000000                  6$:     0                       ;OLD BCC
026434  013737  027652  026432          MOV     CALBCC,6$       ;LOAD OLD BCC
026442  005303                          DEC     R3              ;DEC COUNT
026444  001364                          BNE     7$              ;BR IF NOT DONE YET
026446  004537  030152                  JSR     R5,MESLD        ;LOAD SILO
026452  030434                          MESDAT                  ;MESSAGE ADDRESS
026454  000073                          59.                     ;CHARACTER COUNT
026456  004737  030126                  JSR     PC,EOM          ;LOAD AN EOM
026462  004737  026702                  JSR     PC,OCOR         ;WAIT FOR OCOR
026466  005011                          CLR     (R1)            ;CLEAR LINE UNIT LOOP
026470  012700  000073                  MOV     #59.,R0         ;R0= CHARACTER COUNT
026474  012702  030434                  MOV     #MESDAT,R2      ;LOAD MESSAGE POINTER IN R2
026500  004737  027510          1$:     JSR     PC,INRDY        ;WAIT FOR INRDY
026504  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
026506  021204                          021204                  ;GET DATA FROM IN SILO
026510  016104  000004                  MOV     4(R1),R4        ;PUT CHARACTER IN ''FOUND''
026514  112205                          MOVB    (R2)+,R5        ;PUT ''EXPECTED'' IN R5
026516  120504                          CMPB    R5,R4           ;IS RECEIVED DATA CORRECT
026520  001401                          BEQ     2$              ;BR IF OK
026522  104025                          HLT     25              ;DATA ERROR
026524                          2$:
026524  005300                          DEC     R0              ;DECREMENT COUNTER
026526  001364                          BNE     1$              ;BR IF NOT DONE

                                        ;CHECK TO SEE THAT IN BCC MATCH IS SET
                                        ;AND THAT THE BCC WAS RECEIVED CORRECTLY

026530  004737  027510                  JSR     PC,INRDY        ;WAIT FOR INRDY
026534  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
```

```
5020  026536  021204                          021204                  ;GET FIRST HALF OF CRC
5021  026540  116137  000004  001252          MOVB    4(R1),TEMP3     ;PUT IN TEMP3
5022  026546  042737  177400  001252          BIC     #177400,TEMP3   ;CLEAR HI BYTE
5023  026554  004737  027510                  JSR     PC,INRDY        ;WAIT FOR INRDY
5024  026560  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5025  026562  021244                          021244
5026  026564  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" IN R4
5027  026570  042704  000376                  BIC     #376,R4         ;CLEAR UNWANTED BITS
5028  026574  012705  000001                  MOV     #1,R5           ;PUT "EXPECTED" IN R5
5029  026600  120504                          CMPB    R5,R4           ;IS IN BCC MATCH SET?
5030  026602  001401                          BEQ     25$
5031  026604  104015                          HLT     15              ;IN BCC MATCH ERROR
5032  026606                          25$:
5033  026606  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5034  026610  021204                          021204                  ;GET LAST HALF
5035  026612  116137  000004  001251          MOVB    4(R1),TEMP2+1   ;PUT IN TEMP2
5036  026620  042737  000377  001250          BIC     #377,TEMP2      ;CLEAR LO BYTE
5037  026626  053737  001250  001252          BIS     TEMP2,TEMP3     ;16 BIT BCC NOW IN TEMP3
5038  026634  023737  027652  001252          CMP     CALBCC,TEMP3    ;IS IT CORRECT?
5039  026642  001401                          BEQ     3$              ;BR IF OK
5040  026644  104027                          HLT     27
5041  026646  104400                  3$:     SCOPE                   ;SCOPE THIS TEST
5042
5043
5044                                  ;SUBROUTINES
5045                                  ;-----------
5046
5047  026650                          GETSI:
5048                                  ;THIS SUBROUTINE READS LU 17, AND PUTS IT INTO NITCH.
5049                                  ;NITCH IS ROTATED LEFT UNTILL THE SI BIT IS IN CARRY
5050
5051  026650  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5052  026652  021364                          021364                  ;PORT4_LU 17
5053  026654  017737  152532  026700          MOV     @DMP04,NITCH    ;STORE LU 17
5054  026662  106137  026700                  ROLB    NITCH
5055  026666  106137  026700                  ROLB    NITCH
5056  026672  106137  026700                  ROLB    NITCH           ;PUT SI IN THE CARRY BIT
5057  026676  000207                          RTS     PC
5058  026700  000000                  NITCH:  0
5059
5060
5061  026702                          OCOR:
5062                                  ;THIS SUBROUTINE SPINS ON OCOR
5063
5064  026702  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5065  026704  021364                          021364                  ;PORT4_LU 17
5066  026706  032777  000020  152476          BIT     #BIT4,@DMP04    ;IS OCOR SET?
5067  026714  001772                          BEQ     OCOR            ;BR IF NO
5068  026716  000207                          RTS     PC              ;OK OCOR IS SET, GO BACK
5069
5070
5071  026720                          SYNC:
5072                                  ;THIS SUBROUNTINE LOADS THE SILO WITH THE NUMBER OF SYNC
5073                                  ;CHARACTERS PASSED TO IT IN THE WORD AFTER THE JSR CALL
5074                                  ;AND A NON-SYNC CHARACTER (301)
5075
```

```
5076  026720  013637  001246                 MOV     @(SP)+,TEMP1    ;GET COUNT
5077  026724  062746  000002                 ADD     #2,-(SP)        ;ADJUST STACK
5078  026730  012761  000026  000004         MOV     #26,4(R1)       ;LOAD PORT4
5079  026736  104414                         ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5080  026740  122114                         122114                  ;LOAD SYNC REGISTER
5081  026742  004737  027034           1$:    JSR     PC,OUTRDY       ;WAIT FOR OUTRDY
5082  026746  012761  000001  000004         MOV     #1,4(R1)        ;LOAD PORT4
5083  026754  104414                         ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5084  026756  122111                         122111                  ;SET SOM
5085  026760  012761  000026  000004         MOV     #26,4(R1)       ;LOAD PORT4
5086  026766  104414                         ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5087  026770  122110                         122110                  ;LOAD OUT DATA
5088  026772  005337  001246                 DEC     TEMP1           ;ALL DONE?
5089  026776  001361                         BNE     1$              ;BR IF NOT
5090  027000  004737  027034                 JSR     PC,OUTRDY       ;WAIT FOR OUTRDY
5091  027004  005061  000004                 CLR     4(R1)           ;LOAD PORT4
5092  027010  104414                         ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5093  027012  122111                         122111                  ;SET SOM
5094  027014  012761  000301  000004         MOV     #301,4(R1)      ;LOAD PORT4
5095  027022  104414                         ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5096  027024  122110                         122110                  ;LOAD OUT DATA
5097  027026  004737  026702                 JSR     PC,OCOR         ;WAIT FOR OCOR
5098  027032  000207                         RTS     PC
5099
5100
5101  027034                         OUTRDY:
5102                                         ;THIS SUBROUTINE SPINS ON OUT READY
5103
5104  027034  005037  001256                 CLR     TEMP5           ;CLEAR TIMER
5105  027040                         1$:
5106  027040  104414                         ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5107  027042  021224                         021224                  ;PORT4 LU11
5108  027044  032777  000020  152340         BIT     #BIT4,@DMP04    ;IS OUT RDY SET?
5109  027052  001004                         BNE     2$              ;BR IF YES
5110  027054  005237  001256                 INC     TEMP5           ;INC TIMER
5111  027060  001367                         BNE     1$              ;KEEP CHECKING IF NOT DONE
5112  027062  104036                         HLT     36              ;ERROR, OUT READY NOT SET
5113  027064  000207                 2$:     RTS     PC
5114
5115
5116  027066                         CHAR:
5117                                         ;THIS SUBROUTINE LOADS THE SILO WITH 3 SYNCS
5118                                         ;AND THE CHARACTER PASSED TO IT.
5119
5120  027066  013637  001250                 MOV     @(SP)+,TEMP2    ;GET CHARACTER
5121  027072  062746  000002                 ADD     #2,-(SP)        ;ADJUST STACK
5122  027076  012737  000003  001246         MOV     #3,TEMP1        ;SET FOR 3 SYNCS
5123  027104  012761  000026  000004         MOV     #26,4(R1)       ;LOAD PORT4
5124  027112  104414                         ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5125  027114  122114                         122114                  ;LOAD SYNC REGISTER
5126  027116  004737  027034           1$:    JSR     PC,OUTRDY       ;WAIT FOR OUTRDY
5127  027122  012761  000001  000004         MOV     #1,4(R1)        ;LOAD PORT4
5128  027130  104414                         ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5129  027132  122111                         122111                  ;SET SOM
5130  027134  012761  000026  000004         MOV     #26,4(R1)       ;LOAD PORT4
5131  027142  104414                         ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
```

```
5132  027144  122110                          122110                  ;LOAD OUT DATA
5133  027146  005337  001246                  DEC     TEMP1           ;ALL DONE?
5134  027152  001361                          BNE     1$              ;BR IF NOT
5135  027154  004737  027034                  JSR     PC,OUTRDY       ;WAIT FOR OUTRDY
5136  027160  013761  001250  000004          MOV     TEMP2,4(R1)     ;LOAD PORT4
5137  027166  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5138  027170  122110                          122110                  ;LOAD OUT DATA
5139  027172  004737  026702                  JSR     PC,OCOR         ;WAIT FOR OCOR
5140  027176  000207                          RTS     PC
5141
5142
5143  027200                          CHARSD:
5144                                          ;THIS SUBROUTINE LOADS THE SILO WITH THE CHARACTER PASSED TO IT.
5145
5146  027200  013637  001250                  MOV     @(SP)+,TEMP2    ;GET CHARACTER
5147  027204  062746  000002                  ADD     #2,-(SP)        ;ADJUST STACK
5148  027210  004737  027034                  JSR     PC,OUTRDY       ;WAIT FOR OUTRDY
5149  027214  013761  001250  000004          MOV     TEMP2,4(R1)     ;LOAD PORT4
5150  027222  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5151  027224  122110                          122110                  ;LOAD OUT DATA
5152  027226  004737  027034                  JSR     PC,OUTRDY       ;WAIT FOR OUTRDY
5153  027232  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5154  027234  122110                          122110                  ;LOAD GARBAGE CHAR
5155  027236  004737  026702                  JSR     PC,OCOR         ;WAIT FOR OCOR
5156  027242  000207                          RTS     PC
5157
5158
5159  027244                          SILOLD:
5160                                          ;THIS SUBROUTINE FILLS THE OUT SILO
5161                                          ; WITH A BINARY COUNT PATTERN
5162
5163  027244  012737  000073  001250          MOV     #73,TEMP2       ;LOAD COUNT
5164  027252  005737  027504                  TST     SCHAR           ;FIRST TIME HERE?
5165  027256  100470                          BMI     4$              ;BR IF BITSTUFF
5166  027260  001032                          BNE     2$              ;BR IF NO
5167  027262  062737  000002  001250          ADD     #2,TEMP2        ;ADD 2 TO CHARACTER COUNT
5168  027270  012737  000003  001246          MOV     #3,TEMP1        ;SET FOR 3 SYNCS
5169  027276  012761  000026  000004          MOV     #26,4(R1)       ;LOAD PORT4
5170  027304  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5171  027306  122114                          122114                  ;LOAD SYNC REGISTER
5172  027310  004737  027034          1$:     JSR     PC,OUTRDY       ;WAIT FOR OUTRDY
5173  027314  012761  000001  000004          MOV     #1,4(R1)        ;LOAD PORT4
5174  027322  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5175  027324  122111                          122111                  ;SET SOM
5176  027326  012761  000026  000004          MOV     #26,4(R1)       ;LOAD PORT4
5177  027334  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5178  027336  122110                          122110                  ;LOAD OUT DATA
5179  027340  005337  001246                  DEC     TEMP1           ;ALL DONE?
5180  027344  001361                          BNE     1$              ;BR IF NOT
5181  027346  004737  027034          2$:     JSR     PC,OUTRDY       ;WAIT FOR OUTRDY
5182  027352  013761  027504  000004          MOV     SCHAR,4(R1)     ;LOAD PORT4
5183  027360  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5184  027362  122110                          122110                  ;LOAD OUT DATA
5185  027364  005737  027506                  TST     STUFLG          ;BITSTUFF???
5186  027370  001407                          BEQ     6$              ;BR IF NO
5187  027372  013737  027504  027404          MOV     SCHAR,5$        ;IT IS SDLD SO CHECK BITSTUFFING
```

```
5188  027400  004537  030234          JSR     R5,STFFCL       ;ADD ANY BIT STUFF CLOCK TICKS
5189  027404  000000              5$: 0                       ;CHARACTER
5190  027406  000010                  10                      ;CHIFT COUNT
5191  027410  005237  027504      6$: INC     SCHAR           ;NEXT CHARACTER
5192  027414  022737  000400  027504  CMP     #400,SCHAR      ;ALL DONE?
5193  027422  001403                  BEQ     3$
5194  027424  005337  001250          DEC     TEMP2           ;DECREMENT COUNT
5195  027430  001346                  BNE     2$              ;BR IF NOT DONE
5196  027432  004737  026702      3$: JSR     PC,OCOR         ;WAIT FOR OCOR
5197  027436  000207                  RTS     PC
5198  027440  005037  027504      4$: CLR     SCHAR           ;START PATTERN AT ZERO
5199  027444  012737  177777  027506  MOV     #-1,STUFLG      ;SET BITSTUFF FLAG
5200  027452  005037  030432          CLR     BITCON          ;CLEAR STUFF COUNT
5201  027456  062737  000002  001250  ADD     #2,TEMP2        ;ADD 2 TO CHARACTER COUNT
5202  027464  012761  000001  000004  MOV     #1,4(R1)        ;SET BITO IN PORT4
5203  027472  104414                  ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5204  027474  122111                  122111                  ;SET SOM!
5205  027476  104414                  ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5206  027500  122110                  122110                  ;LOAD GARBAGE CHAR
5207  027502  000721                  BR      2$              ;GO LOAD SILO
5208  027504  000000              SCHAR:  0
5209  027506  000000              STUFLG: 0
5210
5211
5212  027510                      INRDY:
5213                                      ;THIS SUBROUTINE SPINS ON INRDY
5214                                      ;IF INRDY FAILS TO SET THE DELAY TIMES OUT AND AN
5215                                      ;ERROR IS REPORTED. FOR BETTER SCOPE LOOPS THIS
5216                                      ;DELAY CAN BE MADE SHORTER BY ALTERING THE NUMBER
5217                                      ;INITIALLY LOADED INTO TEMP1, THE SMALLER THE NUMBER
5218                                      ;THE SHORTER THE DELAY. 0 IS THE LONGEST DELAY.
5219
5220  027510  012737  000000  001246      MOV     #0,TEMP1        ;SET UP DELAY COUNTER
5221  027516                      1$:
5222  027516  104414                  ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5223  027520  021244                  021244                  ;PORT4 LU12
5224  027522  032777  000020  151662  BIT     #BIT4,@DMP04    ;IS INRDY SET?
5225  027530  001004                  BNE     2$              ;BR IF YES
5226  027532  005237  001246          INC     TEMP1           ;INC DELAY
5227  027536  001367                  BNE     1$              ;TRY AGAIN
5228  027540  104037                  HLT     37              ;ERROR,NO INRDY
5229  027542  000207              2$: RTS     PC              ;RETURN
5230
5231
5232  027544                      SIMBCC:
5233                                      ;THIS SUBROUTINE CALCULATES THE CRC USING POLYNOMIAL GIVEN
5234                                      ;IN XPOLY. THE CORRECT CRC IS RETURNED IN CALBCC, AND THE
5235                                      ;STATE OF THE LSB OF THE BCC IS RETURNED IN THE C BIT.
5236
5237  027544  010046                  MOV     R0,-(SP)        ;SAVE R0 ON STACK
5238  027546  012537  001246          MOV     (R5)+,TEMP1     ;TEMP1 = SHIFT COUNT
5239  027552  012537  001250          MOV     (R5)+,TEMP2     ;TEMP2 = CHARACTER
5240  027556  012537  027652          MOV     (R5)+,CALBCC    ;CALBCC = OLD BCC
5241  027562  013700  027652      1$: MOV     CALBCC,R0       ;PUT OLD BCC IN R0
5242  027566  000241                  CLC
5243  027570  006037  027652          ROR     CALBCC          ;SHIFT OLD BCC
```

```
5244  027574  006037  001250            ROR     TEMP2           ;SHIFT CHARACTER
5245  027600  005500                    ADC     R0              ;ADD CHAR CARRY TO OLD BCC
5246  027602  006000                    ROR     R0              ;PUT BIT0 TO CARRY BIT
5247  027604  103011                    BCC     2$              ;CARRY IS FEEDBACK BIT
5248  027606  013700  027650            MOV     XPOLY,R0        ;IF FEEDBACK = 1
5249  027612  043700  027652            BIC     CALBCC,R0       ;EXCLUSIVLY OR XPOLY TO CALBCC
5250  027616  043737  027650  027652    BIC     XPOLY,CALBCC
5251  027624  050037  027652            BIS     R0,CALBCC
5252  027630  005337  001246    2$:     DEC     TEMP1           ;DEC SHIFT COUNT
5253  027634  001352                    BNE     1$              ;BR IF NOT DONE
5254  027636  013700  027652            MOV     CALBCC,R0       ;PUT RESULT IN R0
5255  027642  006000                    ROR     R0              ;SHIFT BIT0 TO CARRY
5256  027644  012600                    MOV     (SP)+,R0        ;RESTORE R0
5257  027646  000205                    RTS     R5              ;RETURN
5258  027650  000000            XPOLY:  0
5259  027652  000000            CALBCC: 0
5260           000200            LRC8=200
5261           120001            CRC16=120001
5262           102010            CRC.CCITT=102010
5263
5264
5265  027654                    BCCLD:
5266                                    ;THIS SUBROUTINE LOADS THE OUT SILO WITH 2 SYNCS
5267                                    ;WITH SOM SET, AND ONE CHARACTER PASSED TO IT
5268                                    ;WITH THE SOM BIT CLEAR (ENABLE CRC)
5269
5270  027654  013637  001250            MOV     @(SP)+,TEMP2    ;GET CHARACTER
5271  027660  062746  000002            ADD     #2,-(SP)        ;ADJUST STACK
5272  027664  012737  000002  001246    MOV     #2,TEMP1        ;SET FOR 2 SYNCS
5273  027672  012761  000026  000004    MOV     #26,4(R1)       ;LOAD PORT4
5274  027700  104414                    ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5275  027702  122114                    122114                  ;LOAD SYNC REGISTER
5276  027704  004737  027034    1$:     JSR     PC,OUTRDY       ;WAIT FOR OUTRDY
5277  027710  012761  000001  000004    MOV     #1,4(R1)        ;LOAD PORT4
5278  027716  104414                    ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5279  027720  122111                    122111                  ;SET SOM
5280  027722  012761  000026  000004    MOV     #26,4(R1)       ;LOAD PORT4
5281  027730  104414                    ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5282  027732  122110                    122110                  ;LOAD OUT DATA
5283  027734  005337  001246            DEC     TEMP1           ;ALL DONE?
5284  027740  001361                    BNE     1$              ;BR IF NOT
5285  027742  004737  027034            JSR     PC,OUTRDY       ;WAIT FOR OUTRDY
5286  027746  013761  001250  000004    MOV     TEMP2,4(R1)     ;LOAD PORT4
5287  027754  104414                    ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5288  027756  122110                    122110                  ;LOAD OUT DATA
5289  027760  004737  026702            JSR     PC,OCOR         ;WAIT FOR OCOR
5290  027764  000207                    RTS     PC
5291
5292
5293  027766                    GETQO:
5294                                    ;THIS SUBROUTINE READS THE STATE OF THE TRANSMIT
5295                                    ;BCC LSB AND PUTS IT IN THE CARRY BIT
5296
5297  027766  104414                    ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5298  027770  021364                    021364                  ;PORT4 LU-17
5299  027772  106177  151414            ROLB    @DMP04          ;PUT Q0 IN CARRY
```

```
5300  027776  000207                          RTS     PC              ;RETURN
5301
5302
5303  030000                          GETQI:
5304                                          ;THIS SUBROUTINE READS THE STATE OF THE RECEIVE
5305                                          ;BCC LSB AND PUTS IT IN THE CARRY BIT
5306
5307  030000  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5308  030002  021364                          021364                  ;PORT4 LU-17
5309  030004  106177  151402                ROLB    @DMP04          ;PUT QO IN CARRY
5310  030010  106177  151376                ROLB    @DMP04          ;PUT QI IN CARRY
5311  030014  000207                          RTS     PC              ;RETURN
5312
5313
5314  030016                          SYNLD:
5315                                          ;THIS SUBROUTINE LOADS OUT SILO WITH
5316                                          ;2 SYNC CHARACTERS WITH SOM SET
5317
5318  030016  012737  000002  001246          MOV     #2,TEMP1        ;LOAD COUNTER FOR 2 SYNCS
5319  030024  012761  000026  000004          MOV     #26,4(R1)       ;PORT4 26
5320  030032  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5321  030034  122114                          122114                  ;LOAD SYNC REG
5322  030036  004737  027034          1$:     JSR     PC,OUTRDY       ;WAIT FOR OUTRDY
5323  030042  012761  000001  000004          MOV     #1,4(R1)        ;LOAD PORT4
5324  030050  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5325  030052  122111                          122111                  ;SET SOM
5326  030054  012761  000026  000004          MOV     #26,4(R1)       ;PORT 26
5327  030062  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5328  030064  122110                          122110                  ;LOAD OUT DATA WITH SYNC
5329  030066  005337  001246                  DEC     TEMP1           ;DECREMENT COUNTER
5330  030072  001361                          BNE     1$              ;BR IF NOT DONE
5331  030074  000207                          RTS     PC              ;RETURN
5332
5333
5334  030076                          SOM:
5335                                          ;THIS SUBROUTINE LOADS SOM AND OUT DATA WITH A
5336                                          ;GARBAGE CHARACTER (0)
5337
5338  030076  004737  027034                  JSR     PC,OUTRDY       ;WAIT FOR OUTRDY
5339  030102  012761  000001  000004          MOV     #1,4(R1)        ;PORT4 1
5340  030110  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5341  030112  122111                          122111                  ;SET SOM
5342  030114  005061  000004                  CLR     4(R1)           ;CLEAR DATA CHAR
5343  030120  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5344  030122  122110                          122110                  ;LOAD GARBAGE CHARACTER
5345  030124  000207                          RTS     PC              ;RETURN
5346
5347
5348  030126                          EOM:
5349                                          ;THIS SUBROUTINE LOADS EOM AND OUT DATA WITH A
5350                                          ;GARBAGE CHARACTER (2) TO ENABLE TRANSMISSION OF BCC
5351
5352  030126  004737  027034                  JSR     PC,OUTRDY       ;WAIT FOR OUTRDY
5353  030132  012761  000002  000004          MOV     #2,4(R1)        ;PORT4 2
5354  030140  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5355  030142  122111                          122111                  ;SET EOM
```

```
5356  030144  104414                    ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5357  030146  122110                    122110                  ;LOAD GARBAGE CHARACTER
5358  030150  000207                    RTS     PC              ;RETURN
5359
5360
5361  030152                      MESLD:
5362                                    ;THIS SUBROUTINE LOADS SILO WITH MESSAGE
5363                                    ;THE FIRST ARUGUMENT IS THE ADDRESS OF THE MESSAGE
5364                                    ;THE SECOND ARGUMENT IS THE NUMBER OF CHARACTERS IN THE MESSAGE
5365
5366  030152  010046                    MOV     R0,-(SP)        ;SAVE R0
5367  030154  012500                    MOV     (R5)+,R0        ;R0=MESSAGE POINTER
5368  030156  012537  001246            MOV     (R5)+,TEMP1     ;TEMP1=CHARACTER COUNT
5369  030162  004737  027034      1$:   JSR     PC,OUTRDY       ;WAIT FOR OUT RDY
5370  030166  112061  000004            MOVB    (R0)+,4(R1)     ;LOAD PORT4 WITH CHARACTER
5371  030172  104414                    ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5372  030174  122110                    122110                  ;LOAD OUT DATA SILO
5373  030176  005337  001246            DEC     TEMP1           ;DEC CHAR COUNT
5374  030202  001367                    BNE     1$              ;BR IF NOT DONE
5375  030204  004737  026702            JSR     PC,OCOR         ;WAIT FOR OCOR
5376  030210  012600                    MOV     (SP)+,R0        ;RESTORE R0
5377  030212  000205                    RTS     R5              ;RETURN
5378
5379
5380  030214                      CLRIO:
5381                                    ;THIS SUBROUTINE SETS IN CLR AND OUT CLR TO
5382                                    ;CLEAR THE TRANSMIT AND RECEIVE BCC REGISTERS
5383
5384  030214  012761  000200  000004    MOV     #BIT7,4(R1)     ;LOAD PORT4
5385  030222  104414                    ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5386  030224  122112                    122112                  ;SET IN CLR!
5387  030226  104414                    ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
5388  030230  122111                    122111                  ;SET OUT CLR!
5389  030232  000207                    RTS     PC              ;RETURN
5390
5391
5392  030234                      STFFCL:
5393                                    ;THIS SUBROUTINE ADDS ANY NECESSSARY BIT STUFF CLOCK TICKS
5394                                    ;FIRST ARGUMENT IS CHAR, SECOND ARGUMENT IS SHIFT COUNT.
5395
5396  030234  010046                    MOV     R0,-(SP)        ;SAVE R0
5397  030236  012500                    MOV     (R5)+,R0        ;PUT CHAR IN R0
5398  030240  012537  001252            MOV     (R5)+,TEMP3     ;PUT SHIFT COUNT IN TEMP3
5399  030244  106000              1$:   RORB    R0              ;LOOK AT NEXT BIT
5400  030246  103403                    BCS     2$              ;BR IF A MARK
5401  030250  005037  030432            CLR     BITCON          ;IT WAS A SPACE, CLEAR 1'S COUNTER
5402  030254  000412                    BR      3$              ;CONTINUE
5403  030256  005237  030432      2$:   INC     BITCON          ;INC CONSECUTIVE 1'S COUNTER
5404  030262  022737  000005  030432    CMP     #5,BITCON       ;IS IT 5 YET?
5405  030270  001004                    BNE     3$              ;BR IF NO
5406  030272  005037  030432            CLR     BITCON          ;YES!  SO START AGAIN
5407  030276  104415  000001            DATACLK,        1       ;GIVE EXTRA TICK TO STUFF ZERO
5408  030302  005337  001252      3$:   DEC     TEMP3           ;DEC SHIFT COUNT
5409  030306  001356                    BNE     1$              ;BR IF NOT DONE
5410  030310  012600                    MOV     (SP)+,R0        ;RESTORE R0
5411  030312  000205                    RTS     R5              ;RETURN
```

```
5412
5413
5414  030314                          STFFCK:
5415                                          ;THIS SUBROUTINE CHECKS TO SEE IF TRANSMITTER
5416                                          ;IS STUFFING ZEROS WHEN IT SHOULD. FIRST ARGUMENT
5417                                          ;IS THE CHARACTER, SECOND ARGUMENT IS SHIFT COUNT.
5418
5419  030314  010046                        MOV     R0,-(SP)        ;SAVE R0
5420  030316  012500                        MOV     (R5)+,R0        ;PUT CHAR IN R0
5421  030320  012537  001252                MOV     (R5)+,TEMP3     ;PUT SHIFT COUNT IN TEMP3
5422  030324  106000                  1$:   RORB    R0              ;SHIFT OUT NEXT BIT
5423  030326  103403                        BCS     2$              ;BR IF IT IS A MARK
5424  030330  005037  030432                CLR     BITCON          ;IT WAS A SPACE, CLEAR 1'S COUNTER
5425  030334  000416                        BR      3$              ;CONTINUE
5426  030336  005237  030432          2$:   INC     BITCON          ;INC CONSECUTIVE I'S COUNTER
5427  030342  022737  000005  030432        CMP     #5,BITCON       ;5 IN A ROW YET?
5428  030350  001010                        BNE     3$              ;BR IF NO
5429  030352  005037  030432                CLR     BITCON          ;YES, SO START OVER
5430  030356  104415  000001                DATACLK,        1       ;EXTRA TICK TO STUFF ZERO
5431  030362  004737  026650                JSR     PC,GETSI        ;LOOK AT WINDOW
5432  030366  103001                        BCC     3$              ;IS IT A ZERO, BR IF YES
5433  030370  104030                        HLT     30              ;NO, ERROR ZERO WAS NOT STUFFED
5434  030372  005337  001252          3$:   DEC     TEMP3           ;DEC SHIFT COUNT
5435  030376  001352                        BNE     1$              ;BR IF NOT DONE
5436  030400  012600                        MOV     (SP)+,R0        ;RESTORE R0
5437  030402  000205                        RTS     R5              ;RETURN
5438
5439
5440  030404                          CTSDLY:
5441                                          ;THIS SUBROUTINE WASTES TIME UNTIL CTS SETS,
5442                                          ;BUT HOPEFULLY NOT SO LONG THAT THE SILO RUNS O.T
5443
5444  030404  010046                        MOV     R0,-(SP)        ;SAVE R0
5445  030406  012700  000032                MOV     #32,R0          ;LOAD R0 WITH COUNT
5446  030412  027777  150566  150564  1$:   CMP     @TKCSR,@TKCSR   ;WASTE TIME
5447  030420  005300                        DEC     R0              ;DECREMENT COUNTER
5448  030422  001373                        BNE     1$              ;DO IT AGAIN IF NOT = 0
5449  030424  012600                        MOV     (SP)+,R0        ;RESTORE R0
5450  030426  000207                        RTS     PC              ;RETURN
5451
5452
5453  030430  000176                  FLAG:   ^B<01111110>            ;FLAG CHARACTER
5454  030432  000000                  BITCON: 0
5455  030434     000     125     252  MESDAT: .BYTE   0,125,252,377
5456  030437     377
5457  030440     001     002     004  FLTDAT: .BYTE   1,2,4,10,20,40,100,200,376,375,373,367,357,337,277,177
5458  030443     010     020     040
5459  030446     100     200     376
5460  030451     375     373     367
5461  030454     357     337     277
5462  030457     177
5463  030460     100     140     160  STUFDT: .BYTE   100,140,160,170,3,300,174,176,177,1
5464  030463     170     003     300
5465  030466     174     176     177
5466  030471     001
5467  030472     363     347     317          .BYTE   363,347,317,200,0,377,377,377,200,37
```

```
 5468  030475    200     000     377
 5469  030500    377     377     200
 5470  030503    037
 5471                                  .EVEN
 5472  030504 046377  047111  020105  EM1:    .ASCIZ  <377>/LINE UNIT INITALIZATION TEST/
       030542 046377  047111  020105  EM2:    .ASCIZ  <377>^LINE UNIT REGISTER READ/ONLY TEST^
       030605    377  044514  042516  EM3:    .ASCIZ  <377>^LINE UNIT REGISTER WRITE/READ TEST^
       030651    377  044514  042516  EM4:    .ASCIZ  <377>/LINE UNIT INTERNAL CLOCK FAILURE/
       030713    377  051124  047101  EM5:    .ASCIZ  <377>/TRANSMITTER DATA ERROR/
       030743    377  042522  042503  EM6:    .ASCIZ  <377>/RECEIVER TEST/
       030762 051377  041505  044505  EM7:    .ASCIZ  <377>/RECEIVER DATA ERROR/
       031007    377  047515  042504  EM10:   .ASCII  <377>/MODEM SIGNAL ERROR/
       031032 052377  044510  020123          .ASCII  <377>/THIS ERROR COULD BE CAUSED IF YOU HAVE V.35 AND/
       031112 040777  052125  051517          .ASCII  <377>/AUTOSIZED.  YOU MUST MANUALLY ANSWER QUESTIONS IF/
       031174 054777  052517  044040          .ASCIZ  <377>/YOU HAVE V.35 (DMC11-FA)/
       031226 052377  040522  051516  EM11:   .ASCIZ  <377>/TRANSMITTER CRC ERROR/
       031255    377  042522  042503  EM12:   .ASCIZ  <377>/RECEIVER CRC ERROR/
       031301    377  047111  041040  EM13:   .ASCIZ  <377>/IN BCC MATCH ERROR (LU REG 12)/
       031341    377  051124  047101  EM14:   .ASCIZ  <377>/TRANSMITTER FAILED TO GO TO MARK STATE/
       031411    377  040503  046102  EM15:   .ASCIZ  <377>/CABLE DATA TEST/
       031432 043377  040514  020107  EM16:   .ASCIZ  <377>/FLAG ERROR/
       031446 052377  040522  051516  EM17:   .ASCIZ  <377>/TRANSMITTER FAILED TO STUFF A ZERO/
       031512 051777  044527  041524  EM20:   .ASCIZ  <377>/SWITCH PAC TEST/
       031533    377  041101  051117  EM21:   .ASCIZ  <377>/ABORT ERROR/
       031550 052377  040522  051516  EM22:   .ASCIZ  <377>/TRANSMITTER ERROR/
       031573    377  040510  043114  EM23:   .ASCIZ  <377>/HALF DUPLEX TEST/
       031615    377  052517  020124  EM24:   .ASCIZ  <377>/OUT READY NOT SET/
       031640 044777  020116  042522  EM25:   .ASCIZ  <377>/IN READY NOT SET/

       031662 042777  050130  041505  DH1:    .ASCIZ  <377>/EXPECTED  FOUND/
       031703    377  054105  042520  DH2:    .ASCIZ  <377>/EXPECTED  FOUND  LU-REGISTER/
       031741    377  044103  051101  DH3:    .ASCIZ  <377>/CHARACTER    BIT THAT FAILED/
       031777    377  047503  051122  DH4:    .ASCIZ  <377>/CORRECT CRC    BIT THAT FAILED/
       032037    377  054105  042520  DH5:    .ASCIZ  <377>/EXPECTED   FOUND   SHIFT/
       032071    377  054105  042520  DH6:    .ASCIZ  <377>/EXPECTED   FOUND   CHARACTER   SHIFT/
       032137    377  046102  041517  DH7:    .ASCIZ  <377>/BLOCK END NOT SET/
       032162 051377  051524  042040  DH10:   .ASCIZ  <377>/RTS DID NOT CLEAR/
              032206                  .EVEN

       032206 000002                  DT1:    2
       032210    003     007                  .BYTE   3,7
       032212 001272                         SAVR5
       032214    003     002                  .BYTE   3,2
       032216 001270                         SAVR4
       032220 000003                  DT2:    3
       032222    003     007                  .BYTE   3,7
       032224 001272                         SAVR5
       032226    003     010                  .BYTE   3,10
       032230 001270                         SAVR4
       032232    003     002                  .BYTE   3,2
       032234 001264                         SAVR2
       032236 000002                  DT3:    2
       032240    003     017                  .BYTE   3,17
       032242 001272                         SAVR5
       032244    002     002                  .BYTE   2,2
       032246 001266                         SAVR3
```

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032250  000002                  DT4:    2
032252      006     021                 .BYTE   6,21
032254  027652                          CALBCC
032256      002     002                 .BYTE   2,2
032260  001266                          SAVR3
032262  000003                  DT5:    3
032264      001     011                 .BYTE   1,11
032266  001300                          ZERO
032270      001     011                 .BYTE   1,11
032272  001302                          ONE
032274      002     002                 .BYTE   2,2
032276  001260                          SAVR0
032300  000003                  DT6:    3
032302      001     011                 .BYTE   1,11
032304  001302                          ONE
032306      001     011                 .BYTE   1,11
032310  001300                          ZERO
032312      002     002                 .BYTE   2,2
032314  001260                          SAVR0
032316  000004                  DT7:    4
032320      001     011                 .BYTE   1,11
032322  001300                          ZERO
032324      001     011                 .BYTE   1,11
032326  001302                          ONE
032330      003     007                 .BYTE   3,7
032332  001272                          SAVR5
032334      002     001                 .BYTE   2,1
032336  001266                          SAVR3
032340  000004                  DT10:   4
032342      001     011                 .BYTE   1,11
032344  001302                          ONE
032346      001     011                 .BYTE   1,11
032350  001300                          ZERO
032352      003     007                 .BYTE   3,7
032354  001272                          SAVR5
032356      002     001                 .BYTE   2,1
032360  001266                          SAVR3
032362  000002                  DT11:   2
032364      003     007                 .BYTE   3,7
032366  030430                          FLAG
032370      002     002                 .BYTE   2,2
032372  001266                          SAVR3
032374  000002                  DT12:   2
032376      006     004                 .BYTE   6,4
032400  027652                          CALBCC
032402      006     002                 .BYTE   6,2
032404  001252                          TEMP3

032406                          .ERRTAB:
032406  000000                          0
032410  000000                          0
032412  000000                          0
032414  030504                  EM1
032416  031703                  DH2     ;HLT    1
032420  032220                  DT2
032422  030542                  EM2
```

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        032424  031703                  DH2     ;HLT    2
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```
032426  032220                  DT2
032430  030605                  EM3
032432  031703                  DH2     ;HLT    3
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032434  032220                  DT2
032436  030651                  EM4
032440  000000                  0       ;HLT    4
032442  000000                  0
032444  030713                  EM5
032446  031703                  DH2     ;HLT    5
032450  032220                  DT2
032452  030713                  EM5
032454  031741                  DH3     ;HLT    6
032456  032236                  DT3
032460  030743                  EM6
032462  031662                  DH1     ;HLT    7
032464  032206                  DT1
032466  030762                  EM7
032470  031662                  DH1     ;HLT    10
032472  032206                  DT1
032474  031007                  EM10
032476  031662                  DH1     ;HLT    11
032500  032206                  DT1
032502  031226                  EM11
032504  032037                  DH5     ;HLT    12
032506  032262                  DT5
032510  031255                  EM12
032512  032037                  DH5     ;HLT    13
032514  032262                  DT5
032516  031226                  EM11
032520  031777                  DH4     ;HLT    14
032522  032250                  DT4
032524  031301                  EM13
032526  031662                  DH1     ;HLT    15
032530  032206                  DT1
032532  031226                  EM11
032534  032037                  DH5     ;HLT    16
032536  032300                  DT6
032540  031255                  EM12
032542  032037                  DH5     ;HLT    17
032544  032300                  DT6
032546  031226                  EM11
032550  032071                  DH6     ;HLT    20
032552  032316                  DT7
032554  031226                  EM11
032556  032071                  DH6     ;HLT    21
032560  032340                  DT10
032562  031255                  EM12
032564  032071                  DH6     ;HLT    22
032566  032316                  DT7
032570  031255                  EM12
032572  032071                  DH6     ;HLT    23
032574  032340                  DT10
032576  031341                  EM14
032600  000000                  0       ;HLT    24
032602  000000                  0
032604  031411                  EM15
032606  031662                  DH1     ;HLT    25
032610  032206                  DT1
032612  031432                  EM16
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032614  031741                  DH3     ;HLT    26
032616  032362                  DT11
032620  031255                  EM12
032622  031662                  DH1     ;HLT    27
032624  032374                  DT12
032626  031446                  EM17
032630  000000                  0       ;HLT    30
032632  000000                  0
032634  031512                  EM20
032636  031662                  DH1     ;HLT    31
032640  032206                  DT1
032642  031533                  EM21
032644  032137                  DH7     ;HLT    32
032646  000000                  0
032650  031533                  EM21
032652  031741                  DH3     ;HLT    33
032654  032236                  DT3
032656  031550                  EM22
032660  032162                  DH10    ;HLT    34
032662  000000                  0
032664  031573                  EM23
032666  031703                  DH2     ;HLT    35
032670  032220                  DT2
032672  031615                  EM24
032674  000000                  0       ;HLT    36
032676  000000                  0
032700  031640                  EM25
032702  000000                  0       ;HLT    37
032704  000000                  0
032706  030743                  EM6
032710  031703                  DH2     ;HLT    40
032712  032220                  DT2
032714  030713                  EM5
032716  032037                  DH5     ;HLT    41
032720  032262                  DT5
032722  031301                  EM13
032724  031662                  DH1     ;HLT    42
032726  032206                  DT1


032730                          CORMAX:
        000001                  .END
```

```
ADRCNT= 004373  1492* 1528* 1537#
AUDONE  003024  1182  1221  1226  1272#
AUSTRT  002446  1181#  1276
AUTO.S  010640  1139  1981#
BCCLD   027654  3658  3687  3733  3762  3808  3837  3883  3912  5265#
BINWRD  004714  1578*  1581*  1582  1619#
BITCON  030432  5200*  5401*  5403*  5404  5406*  5424*  5426*  5427  5429*  5454#
BIT0  = 000001   705#  1768  1769
BIT1  = 000002   704#  1144  1762  1768  1769  2062  2170  2183
BIT10 = 002000   695#  2151  2162
BIT11 = 004000   694#  2691  2724  2768  2826  2877  2928  2979  3031  3089  3117  3145  3173
                3203  3251  3288  3325  3362  3402  3483  3601  3652  3727  3802  3877  3950
                4016  4087  4187  4262  4509  4780  4844  4885  4980
BIT12 = 010000   693#  2079  2181
BIT13 = 020000   692#  2082  2094  2154  2185  2394  3527  3541  3569  3597  3623
BIT14 = 040000   691#  1394  2093  2118  2185  2196  2396  3529  3599  4883  4978
BIT15 = 100000   690#  1098  1185  1188  1209  1212  2064  2157
BIT2  = 000004   703#  1144  1325  1769  2104  2114  3545  3572  3620
BIT3  = 000010   702#  2187  2194  3571
BIT4  = 000020   701#  1752  1775  1777  2804  3212  3260  3297  3334  3371  4845  5066  5108
                5224
BIT5  = 000040   700#  2299  2399  2747  2857  2908  2959  3010  3444  4797
BIT6  = 000100   699#  1757  1758  2189  3126  3182
BIT7  = 000200   698#  1758  1878  2299  2776  3217  3543  3548  3574  3622  3625  5384
BIT8  = 000400   697#  2161  2176  2178  2191  2193  2199  2202  2260
BIT9  = 001000   696#  2159  2161  2173  2199  2202  2258  2260
BM      007054  1800#  2130
BRLVL   012460  2255  2265  2273  2285#
BRW     003730  1331  1417#
BRX     003732  1332  1418#
CALBCC  027652  3677  3706  3752  3781  3827  3856  3902  3931  3987  4053  4112  4133  4291
                4312  4342  4363  4439  4482  4539  4560  4609  4630  4706  4760  4897  4953
                4992  5038  5240*  5241  5243*  5249  5250*  5251*  5254  5259#  5472
CHAR    027066  3204  3252  3289  3326  3363  3484  5116#
CHARSD  027200  5143#
CHRCNT  004712  1576*  1579  1583  1599*  1617#  1618
CKSWR   007734  1125  1392  1424  1639  1825#
CKSWR1  010014  1838#  1850
CKSWR2  010026  1841#
CKSWR3  010032  1843#
CKSWR4  010036  1844#  1852  1859
CKSWR5  010142  1826  1833  1868#
CLKX    001242   781#
CLRIO   030214  3653  3682  3728  3757  3803  3832  3878  3907  5380#
CNERR   007277  1239  1800#
CNT.MA  001702   806   974#  1097  1099  1101  1906
CNVRT = 104411   843#  1236  1351  1353  1355  1357  1673  1675  1735  1841
CONERR  007223  1234  1800#
CONN    007114  1800#  2084
CONTAB  002776  1243  1256#
CONVRT= 104410   841#  1156  1242  1689  2004
CORMAX  032730  5472#
CRAM    006606  1800#  2043
CRC.CC= 102010  5262#
CRC16 = 120001  3655  3684  3730  3759  3805  3834  3880  3909  3955  4021  4106  4285  4336
                4533  4603  4888  4983  5261#
```

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CREAM   001320   805#  1096*  1902*  1903   1905*  1909
CSR     006510  1800#  2008
CSRMAP  010642  1983#
CTSDLY  030404  5440#
CYCLE   010206  1333   1374   1375   1893#
DATABP  005216  1662*  1665   1687   1690#
DATACL= 104415   851#  2731   2775   2779   2839   2840   2854   2890   2891   2905   2941   2942   2956
                2992   2993   3007   3049   3052   3093   3121   3149   3177   3206   3254   3291   3328
                3365   3404   3405   3448   3449   3486   3660   3661   3689   3690   3735   3736   3764
                3765   3810   3811   3839   3840   3885   3886   3914   3915   3969   3971   4035   4037
                4099   4113   4134   4152   4159   4161   4197   4278   4292   4313   4343   4364   4382
                4389   4391   4402   4526   4540   4561   4581   4610   4631   4649   4656   4658   4669
                4789   4794   4800   4854   5407   5430
DATAHD  005204  1661*  1683   1686#
DELAY = 104413   847#
DEVADR  004370  1490*  1525   1535#
DEVTAB  003010  1196   1261#
DH1     031662  5472#
DH10    032162  5472#
DH2     031703  5472#
DH3     031741  5472#
DH4     031777  5472#
DH5     032037  5472#
DH6     032071  5472#
DH7     032137  5472#
DISPLA  001200   752#  1111*  1117*  1348*
DISPRE  000174   738#  1117
DMACTV  001306   799#  1134   1289*  1290   1893   1907   1989*  2215*  2221*  2222*  2226   2251
DMCM    007320  1247   1800#
DMCR00  001500   889#
DMCR01  001510   894#
DMCR02  001520   899#
DMCR03  001530   904#
DMCR04  001540   909#
DMCR05  001550   914#
DMCR06  001560   919#
DMCR07  001570   924#
DMCR10  001600   929#
DMCR11  001610   934#
DMCR12  001620   939#
DMCR13  001630   944#
DMCR14  001640   949#
DMCR15  001650   954#
DMCR16  001660   959#
DMCR17  001670   964#
DMCSR   001404   872#  1181*  1215   1220*  1225*  1260   1378   1415   1707   1730   1776   1911*  1920
                1969   2316*
DMCSRH  001406   873#  1757*  1758*  1762*  1768*  1769*  1775*  1777*  1920*  1921*  1922
DMCTL   001410   874#  1922*  1923*  1924
DMNUM   001310   800#  1092   1364   1987*  2002*  2206*  2207   2216   2218
DMPO4   001412   875#  1746*  1752   1789   1794   1924*  1925*  1926   5053   5066   5108   5224   5299*
                5309*  5310*
DMPO6   001414   876#  1763*  1926*  1927*
DMRLVL  001376   869#  1929*  1930*  1931
DMRVEC  001374   868#  1381   1912*  1913*  1929
DMS100  001502   890#
```

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DMS101  001512            895#
DMS102  001522            900#
DMS103  001532            905#
DMS104  001542            910#
DMS105  001552            915#
DMS106  001562            920#
DMS107  001572            925#
DMS110  001602            930#
DMS111  001612            935#
DMS112  001622            940#
DMS113  001632            945#
DMS114  001642            950#
DMS115  001652            955#
DMS116  001662            960#
DMS117  001672            965#
DMS200  001504            891#
DMS201  001514            896#
DMS202  001524            901#
DMS203  001534            906#
DMS204  001544            911#
DMS205  001554            916#
DMS206  001564            921#
DMS207  001574            926#
DMS210  001604            931#
DMS211  001614            936#
DMS212  001624            941#
DMS213  001634            946#
DMS214  001644            951#
DMS215  001654            956#
DMS216  001664            961#
DMS217  001674            966#
DMS300  001506            892#
DMS301  001516            897#
DMS302  001526            902#
DMS303  001536            907#
DMS304  001546            912#
DMS305  001556            917#
DMS306  001566            922#
DMS307  001576            927#
DMS310  001606            932#
DMS311  001616            937#
DMS312  001626            942#
DMS313  001636            947#
DMS314  001646            952#
DMS315  001656            957#
DMS316  001666            962#
DMS317  001676            967#
DMTLVL  001402            871#   1933*   1934*
DMTVEC  001400            870#   1931*   1932*   1933
DM.END  001700            969#   1985
DM.MAP  001500             805    888#   1096    1149    1159    1275    1903    1905    1983    1988    2243
DONE    003734           1397   1399*   1419#   1829*
DT1     032206           5472#
DT10    032340           5472#
DT11    032362           5472#
DT12    032374           5472#
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DT2     032220            5472#
DT3     032236            5472#
DT4     032250            5472#
DT5     032262            5472#
DT6     032300            5472#
DT7     032316            5472#
EM1     030504            5472#
EM10    031007            5472#
EM11    031226            5472#
EM12    031255            5472#
EM13    031301            5472#
EM14    031341            5472#
EM15    031411            5472#
EM16    031432            5472#
EM17    031446            5472#
EM2     030542            5472#
EM20    031512            5472#
EM21    031533            5472#
EM22    031550            5472#
EM23    031573            5472#
EM24    031615            5472#
EM25    031640            5472#
EM3     030605            5472#
EM4     030651            5472#
EM5     030713            5472#
EM6     030743            5472#
EM7     030762            5472#
EOM     030126            4096    4195    4271    4275    4518    4523    4903    4907    4911    4998    5348#
ERCT00  001704             976#
ERCT01  001710             979#
ERCT02  001714             982#
ERCT03  001720             985#
ERCT04  001724             988#
ERCT05  001730             991#
ERCT06  001734             994#
ERCT07  001740             997#
ERCT10  001744            1000#
ERCT11  001750            1003#
ERCT12  001754            1006#
ERCT13  001760            1009#
ERCT14  001764            1012#
ERCT15  001770            1015#
ERCT16  001774            1018#
ERCT17  002000            1021#
ERR     002700            1205    1231#   1235
ERRCNT  001232             773#   1360    1387    1700*   1918*
ERRFLG  001325             812#   1094*   1346*   1408*   1650*   1663    1677*   1736*
ERRMSG  005172            1660*   1678    1681#
ERRPC   002770            1237    1253#
ERTABO  005322            1675    1710#
EXIT  = 000205             706#
EXITER  005252            1695    1700#
FLAG    030430            5453#   5472
FLOAT   002536            1198#   1204
FLTDAT  030440            4891    4901    4905    4909    4916    4956    5457#
FY      002566            1207#   1218    1222    1228
```

```
GETQI   030000          3697    3701    3772    3776    3847    3851    3922    3926    4043    4047    5303#
GETQO   027766          3668    3672    3743    3747    3818    3822    3893    3897    3977    3981    5293#
GETSI   026650          2843    2847    2894    2898    2945    2949    2996    3000    3055    3059    4116    4120    4137
                        4141    4153    4162    4295    4299    4316    4320    4346    4350    4367    4371    4383    4392
                        4543    4547    4564    4568    4584    4588    4613    4617    4634    4638    4650    4659    5047#
                        5431
HALTS   005222          1646    1692#
HILIM   004366          1489*   1516    1534#
ICOUNT  001222           769#   1406    1411*
INBUF   007630          1459    1495    1815#
INCHAR  010146          1844    1872#
INIFLG  001324           811#   1120    1140    1147*
INRDY   027510          3406    3450    3487    3495    3503    4198    4222    4227    4405    4419    4424    4448    4462
                        4467    4672    4686    4691    4712    4726    4740    4745    4801    4811    4819    4917    4933
                        4938    5003    5018    5023    5212#
INSTER= 104404           833#   1510
INSTR = 104403           831#   1942    1994    2007    2016    2120    2129
INSTR2  004166          1466    1478#
INTTY   012474          2027    2044    2054    2069    2085    2100    2293#
KMCM    007330          1250    1800#
LIMITS  004314          1505    1516#
LINE    007016          1800#   2121
LOBITS  004372          1491*   1520    1536#   1537
LOCK    001220           768#   1410*   1427    1429    1669    2417*   2433*   2459*   2475*   2501*   2524*   2559*   2579*
                        3649*   3681*   3724*   3756*   3799*   3831*   3874*   3906*
LOKFLG  001326           813#
LOLIM   004364          1488*   1518    1533#
LPCNT   001224           770#   1405*   1406    1409*
LRC8  = 000200          5260#
LSTERR  001234           774#   1103*   1345*   1647    1649*   1737*
LUTYPE= ****** U         611    5232
MASKX   001244           782#
MASTEK  006142          1671    1800#
MCRLF   005672          1444    1567    1667    1668    1676    1800#   1941    2003
MCSRX   006072          1350    1800#
MDATA   007672          1597    1607    1817#
MEMLIM  001304           798#   1313*
MEPASS  005733          1349    1800#
MERRPC  006217          1674    1800#
MERRX   006117          1356    1800#
MERR2   005760          1800#   2228
MERR3   006005          1286    1800#
MESDAT  030434          3610    4088    4094    4188    4193    4263    4269    4273    4329    4404    4447    4510    4516
                        4521    4596    4671    4725    4781    4786    4791    4851    4986    4996    5002    5455#
MESLD   030152          3609    4093    4192    4268    4272    4515    4520    4785    4790    4850    4900    4904    4908
                        4995    5361#
MILK    001322           806#   1097*   1358    1901*   1906*   1910
MLOCK   006043          1327    1800#
MNEW    006144          1281    1800#
MODU    006704          1800#   2068
MPASSX  006106          1354    1800#
MPFAIL  005675          1734    1800#
MQM     005666          1474    1800#   1965    2040    2050    2060    2077    2091    2111
MR      005755          1336    1800#   1959
MRESET= 004000           706#
MSTCLR= 104412           845#   1739    2363    2387    2419    2461    2503    2561    2612    2634    2656    2690    2723
```

```
                    2767    2825    2876    2927    2978    3030    3088    3116    3144    3172    3201    3249    3286
                    3323    3360    3397    3438    3482    3526    3596    3651    3726    3801    3876    3949    4015
                    4083    4185    4258    4505    4779    4842    4881    4976
MTITLE  001000       746#    1124
MTSTN   006130      1672    1800#    1943
MTSTPC  006031      1800#
MVECX   006100      1352    1800#
MV35    007454      1800#    2099
NEXT    001216       767#    1412    1705    2314*   2338*   2361*   2385*   2416*   2458*   2500*   2558*   2610*   2632*
                    2654*   2688*   2721*   2765*   2823*   2874*   2925*   2976*   3028*   3086*   3114*   3142*   3170*
                    3199*   3247*   3284*   3321*   3358*   3395*   3436*   3480*   3524*   3594*   3648*   3723*   3798*
                    3873*   3947*   4013*   4081*   4183*   4256*   4503*   4777*   4840*   4879*   4974*
NITCH   026700      5053*   5054*   5055*   5056*   5058#
NOACT   007154      1136    1800#    1895
NODEV   002674      1190    1229#
NUM     006450      1800#    1995
OCOR    026702      2730    2774    2836    2887    2938    2989    3048    3968    4034    4097    4196    4276    4524
                    4788    4793    4853    4912    4999    5061#   5067    5097    5139    5155    5196    5289    5375
OK      002646      1216    1223#    1252
ONE     001302       797#    5472
OUTRDY  027034      2827    2832    2878    2883    2929    2934    2980    2985    3035    3039    3044    3067    4092
                    4191    4267    4514    4784    4849    5081    5090    5101#   5126    5135    5148    5152    5172
                    5181    5276    5285    5322    5338    5352    5369
PACT00  001702       975#
PACT01  001706       978#
PACT02  001712       981#
PACT03  001716       984#
PACT04  001722       987#
PACT05  001726       990#
PACT06  001732       993#
PACT07  001736       996#
PACT10  001742       999#
PACT11  001746      1002#
PACT12  001752      1005#
PACT13  001756      1008#
PACT14  001762      1011#
PACT15  001766      1014#
PACT16  001772      1017#
PACT17  001776      1020#
PARAM = 104405       835#    1944    1996    2009    2018    2122    2131
PARAM1  004234      1494#    1511
PARBIT= 040000       706#
PARERR  004310      1497    1499    1501    1510#   1517    1519    1521
PASCNT  001230       772#    1347*   1348    1359    1384    1917*
PERFOR= 004537       706#
PFTAB   005430      1735    1741#
POPR0 = 012600       682#    1699
POP1SP= 005726       680#
POP2SP= 022626       684#    1414
PRIO    006547      1800#    2026
PS    = 177776       673#    1089*   1324*   2255*   2265*
PUSHR0= 010046       681#    1696
PUSH1S= 005746       679#
PUSH2S= 024646       683#
QV.FLG  001327       814#    1095*   1363*   1403
RESREG  005220      1688    1691#
```

```
RESTAR  005350          1721    1727#
RESTRT  003534          1362    1366    1374#
RESO5 = 104407           839#   1691
RETURN  001214           766#   1105*   1333*   1337    1374*   1412*   1416    1705*   1708    1740    1958*   1968*   1970
ROMCLK= 104414           849#   1747    1750    1787    1792    2318    2341    2365    2389    2422    2424    2435    2437
                        2464    2466    2477    2479    2509    2511    2530    2532    2566    2568    2584    2586    2613
                        2635    2659    2668    2693    2695    2699    2726    2728    2733    2743    2770    2772    2777
                        2781    2791    2801    2829    2834    2855    2880    2885    2906    2931    2936    2957    2982
                        2987    3008    3037    3041    3046    3069    3094    3122    3150    3178    3208    3218    3220
                        3256    3265    3293    3302    3330    3339    3367    3376    3407    3445    3451    3488    3496
                        3504    3533    3536    3561    3564    3603    3607    3615    3958    3962    3966    3996    4024
                        4028    4032    4062    4199    4208    4223    4228    4237    4406    4420    4425    4434    4449
                        4463    4468    4477    4673    4687    4692    4701    4713    4727    4741    4746    4755    4795
                        4802    4812    4820    4846    4855    4918    4934    4939    4948    5004    5019    5024    5033
                        5051    5064    5079    5083    5086    5092    5095    5106    5124    5128    5131    5137    5150
                        5153    5170    5174    5177    5183    5203    5205    5222    5274    5278    5281    5287    5297
                        5307    5320    5324    5327    5340    5343    5354    5356    5371    5385    5387
RUN     001316           803#   1098*   1899*   1900*   1907
SAVACT  001312           801#   1284    2226*
SAVNUM  001314           802#   1092*   1361*   1364*   2219*
SAVPC   001276           795#   1235*   1255    1542*   1712
SAVR0   001260           788#   1551*   1556    5472
SAVR1   001262           789#   1241*   1550*   1557
SAVR2   001264           790#   1549*   1558    5472
SAVR3   001266           791#   1548*   1559    5472
SAVR4   001270           792#   1547*   1560    5472
SAVR5   001272           793#   1546*   1561    5472
SAVSP   001274           794#
SAVO5 = 104406           837#   1651
SCHAR   027504          3398*   3439*   5164    5182    5187    5191*   5192    5198*   5208#
SCOPE = 104400           825#   2326    2349    2373    2404    2446    2488    2546    2598    2620    2642    2675    2708
                        2752    2809    2860    2911    2962    3013    3074    3102    3130    3158    3186    3235    3272
                        3309    3346    3383    3422    3466    3511    3582    3635    3710    3785    3860    3935    4001
                        4067    4168    4239    4485    4763    4828    4863    4959    5041
SCOP1 = 104401           827#   2432    2445    2474    2487    2520    2541    2575    2593    3680    3709    3755    3784
                        3830    3859    3905    3934
SILOLD  027244          3403    3419    3447    3463    5159#
SIMBCC  027544          3663    3692    3738    3767    3813    3842    3888    3917    3972    4038    4108    4287    4338
                        4535    4605    4893    4988    5232#
SKIP    002632          1186    1189    1210    1213    1219#
SOFTSW  010200          1842    1881#
SOM     030076          4519    5334#
SPACNT= 004713          1577*   1601    1604*   1618#
SPEED   007340          1800#   2053
STACK = 001200           674#   1090    1303    1706    1729
STAT    001240           780#
STAT1   001366           861#   1914*   2394    2396    3527    3529    3541    3569    3597    3599    3623    4883    4978
STAT2   001370           862#   1915*   2616    2638
STAT3   001372           863#   1916*   3545    3572    3620
STFFCK  030314          5414#
STFFCL  030234          5188    5392#
STRTSW  001236           779#   1126*   1129*   1130    1132    1142    1144    1279    1325    1334    1936    1960*   1990
                        2239
STUFDT  030460          5463#
STUFLG  027506          3399*   3440*   5185    5199*   5209#
SVO5    004402          1546#
```

```
SWFLG   010144          1093* 1438  1837* 1864* 1870#
SWMES   007205          1800# 1840
SWMES1  007215          1800# 1843
SWR     001202           753# 1110* 1112  1116* 1126  1284  1289  1394  1401  1425  1440  1640  1645
                        1694  1701  1703  1765  1825  1863*
SWREG   000176           739# 1116  1825  1883
SW00  = 000001           655# 1130  1990  2239
SW01  = 000002           654# 1334  1936  1960
SW02  = 000004           653#
SW03  = 000010           652# 1279
SW04  = 000020           651#
SW05  = 000040           650#
SW06  = 000100           649# 1765
SW07  = 000200           648#
SW08  = 000400           647# 1701
SW09  = 001000           646# 1425
SW10  = 002000           645# 1703
SW11  = 004000           644# 1401
SW12  = 010000           643# 1440  1640
SW13  = 020000           642# 1645
SW14  = 040000           641#
SW15  = 100000           640#
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SYNLD   030016          3956  4022  4091  4190  4266  4513  4783  4848  4886  4887  4981  4982  5314#
TEMP    001416           881# 1584  1731* 1732* 1773* 1778* 1784* 1796* 2657* 2663* 2666* 2672*
TEMP1   001246           783# 1150* 1802  2251* 2252* 5076* 5088* 5122* 5133* 5168* 5179* 5220* 5226*
                        5238* 5252* 5272* 5283* 5318* 5329* 5368* 5373*
TEMP2   001250           784# 1151* 1804  4436* 4437* 4438  4479* 4480* 4481  4703* 4704* 4705  4757*
                        4758* 4759  4950* 4951* 4952  5035* 5036* 5037  5120* 5136  5146* 5149  5163*
                        5167* 5194* 5201* 5239* 5244* 5270* 5286
TEMP3   001252           785# 1153* 1179* 1231  1240* 1806  1999  2002  2139* 4225* 4226* 4422* 4423*
                        4438* 4439  4465* 4466* 4481* 4482  4689* 4690* 4705* 4706  4743* 4744* 4759*
                        4760  4936* 4937* 4952* 4953  5021* 5022* 5037* 5038  5398* 5408* 5421* 5434*
                        5472
TEMP4   001254           786# 1154* 1808  2012  2015  2021  2024  2125  2128  2134  2137
TEMP5   001256           787# 1155* 1810  1993* 2006* 2237  5104* 5110*
TIMER = 104416           853# 2697  3207  3255  3292  3329  3366  3535  3563  3605
TKCSR   001204           758# 1461  1827  1872  2293  5446
TKDBR   001206           759# 1463  1469  1830  1832  1874  2295
TLAST = 026332          1963  5042#
TPCSR   001210           760# 1445  1467  1642  1875  2296
TPDBR   001212           761# 1447* 1469* 1644* 1877* 2298*
TRPOK   004730          1630#
TSTNO   001226           771# 1104* 1715  1743  1947  1954  1956  2313* 2337* 2360* 2384* 2415* 2457*
                        2499* 2557* 2609* 2631* 2653* 2687* 2720* 2764* 2822* 2873* 2924* 2975* 3027*
                        3085* 3113* 3141* 3169* 3198* 3246* 3283* 3320* 3357* 3394* 3435* 3479* 3523*
                        3593* 3647* 3722* 3797* 3872* 3946* 4012* 4080* 4182* 4255* 4502* 4776* 4839*
                        4878* 4973*
TST1    012526          1950  1968  2313#
TST10   013534          2500  2557#
TST11   013710          2558  2609#
TST12   013752          2610  2631#
TST13   014014          2632  2653#
TST14   014114          2654  2687#
TST15   014214          2688  2720#
TST16   014352          2721  2764#
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TST17   014550            2765    2822#
TST2    012602            2314    2337#
TST20   014732            2823    2873#
TST21   015114            2874    2924#
TST22   015276            2925    2975#
TST23   015460            2976    3027#
TST24   015666            3028    3085#
TST25   015754            3086    3113#
TST26   016044            3114    3141#
TST27   016132            3142    3169#
TST3    012650            2338    2360#
TST30   016222            3170    3198#
TST31   016374            3199    3246#
TST32   016510            3247    3283#
TST33   016626            3284    3320#
TST34   016744            3321    3357#
TST35   017062            3358    3394#
TST36   017212            3395    3435#
TST37   017352            3436    3479#
TST4    012722            2361    2384#
TST40   017512            3480    3523#
TST41   017744            3524    3593#
TST42   020140            3594    3647#
TST43   020454            3648    3722#
TST44   020770            3723    3797#
TST45   021304            3798    3872#
TST46   021620            3873    3946#
TST47   022056            3947    4012#
TST5    013024            2385    2415#
TST50   022314            4013    4080#
TST51   022646            4081    4182#
TST52   023074            4183    4255#
TST53   024174            4256    4502#
TST54   025374            4503    4776#
TST55   025626            4777    4839#
TST56   025744            4840    4878#
TST57   026332            4879    4973#   5042
TST6    013164            2416    2457#
TST160 =  ******  U       4974
TST7    013324            2458    2499#
TTST    003612            1328*   1329*   1331*   1332*   1395#
TWOSYN= 010000             706#
TYPDAT  005206            1666    1684    1687#
TYPE   = 104402            829#   1124    1136    1148    1233    1238    1246    1249    1281    1286    1327    1336    1349
                          1350    1352    1354    1356    1444    1457    1474    1567    1607    1667    1668    1671    1672
                          1674    1676    1680    1685    1734    1840    1843    1895    1941    1959    1965    2003    2025
                          2039    2042    2049    2052    2059    2067    2076    2083    2090    2098    2110    2228
TYPMSG  005106            1664    1667#
VEC     006526            1800#   2017
VECMAP  012216            2227    2239#
WHICH   012210            2005    2235#
WRDCNT  004710            1575*   1608*   1616#
WRKO.F  005174            1679    1682#
XBX     005000            1641    1643    1645#
XCSR    003546            1351    1376#
XERR    003570            1357    1385#
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XLOC    003022            1206* 1224* 1227  1258  1271#
XPASS   003562            1355  1382#
XPOLY   027650            3655* 3684* 3730* 3759* 3805* 3834* 3880* 3909* 3955* 4021* 4106* 4285* 4336*
                          4533* 4603* 4888* 4983* 5248  5250  5258#
XSTATQ  007602            1157  1800#
XTSTN   005330            1673  1713#
XVEC    003554            1353  1379#
ZERO    001300             796# 5472
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                          4008# 4068# 4071  4076# 4169# 4172  4178# 4240# 4243  4251# 4486# 4489  4498#
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                          2455  2461  2462# 2489  2495  2497  2503  2504# 2547  2553  2555  2561  2562#
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                          847# 849#  851#  853# 855#
.     = 032730             718# 719   722#  729# 734# 737#  741# 745#  747# 799#  800# 801#  802#
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.CONVR  004466      842   1567#
.DATAC  005552      852   1772#
.DELAY  005436      848   1745#
.EOP    003364     1344#  4974
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.INSTE  004154      834   1474#
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.INST1  004070     1457#  1477
.MSG    004072     1455*  1458#
.MSTCL  005466      846   1756#
.PARAM  004174      836   1485#
.PFAIL  005336      723   1091   1720#  1728
.RESO5  004434      840   1556#
.ROMCL  005504      850   1761#
.SAVO5  004374      838   1542#
.SCOPE  003576      826   1392#
.SCOP1  003736      828   1424#
.START  002002      742   1089#  1105   1860
.TIMER  005616      854   1783#
.TRPSR  004716      727   1627#
.TRPTA  001330      824#  1632
.TYPE   003766      830   1435#
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DMFRNT    611#
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         2951  2961  2998  3002  3012  3057  3061  3101  3129  3157  3185  3215  3227  3234  3263
         3271  3300  3308  3337  3345  3374  3382  3413  3457  3494  3502  3510  3559  3581  3631
         3670  3674  3699  3703  3745  3749  3774  3778  3820  3824  3849  3853  3895  3899  3924
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         5112  5228  5433
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$FINI     611#  5042
$FLAG     611#
$FLOAT    611#  2505  2525  2563  2580
$GETPA    611#
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$HEADE    611#
$INACT    611#  3075  3103  3131  3159
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$LU1      611#  2303  2327  2350  2374
$LU12     611#  2405
$LU17     611#  2447
$MARHI    611#
$MARK     611#  3467
$MATCH    611#  4219  4415  4458  4682  4736  4929  5014
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$MSG      611#  1800
$MULT     611#
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        4846    4855    4918    4934    4939    4948    5004    5019    5024    5033    5051    5064    5079    5083    5086
        5092    5095    5106    5124    5128    5131    5137    5150    5153    5170    5174    5177    5183    5203    5205
        5222    5274    5278    5281    5287    5297    5307    5320    5324    5327    5340    5343    5354    5356    5371
        5385    5387
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$SWPAC   611#    2599    2621
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$TRANW   611#    4106    4285    4336    4533    4603
$TRAN1   611#    2676    2709    2753
$TRPDE   611#     825     827     829     831     833     835     837     839     841     843     845     847     849     851
          853
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        2820    2871    2922    2973    3025    3083    3111    3139    3167    3196    3244    3281    3318    3355    3392
        3433    3477    3521    3591    3645    3720    3795    3870    3944    4010    4078    4180    4253    4500    4774
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$VARIA   611#     744
$WINDO   611#    2810    2861    2912    2963
$XZ      611#    2303    2309    2327    2333    2350    2356    2374    2380    2405    2411    2447    2453    2489    2495
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        2818    2861    2869    2912    2920    2963    2971    3014    3023    3075    3081    3103    3109    3131    3137
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$ZEROS   611#


. ABS.  032730     000


 ERRORS DETECTED:  0

 CZDME,CZDME.SEQ/SOL/CRF/NL:TOC=CZDME.P11
 RUN-TIME: 15 21 1 SECONDS
 RUN-TIME RATIO: 64/39=1.6
 CORE USED:  32K  (63 PAGES)
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