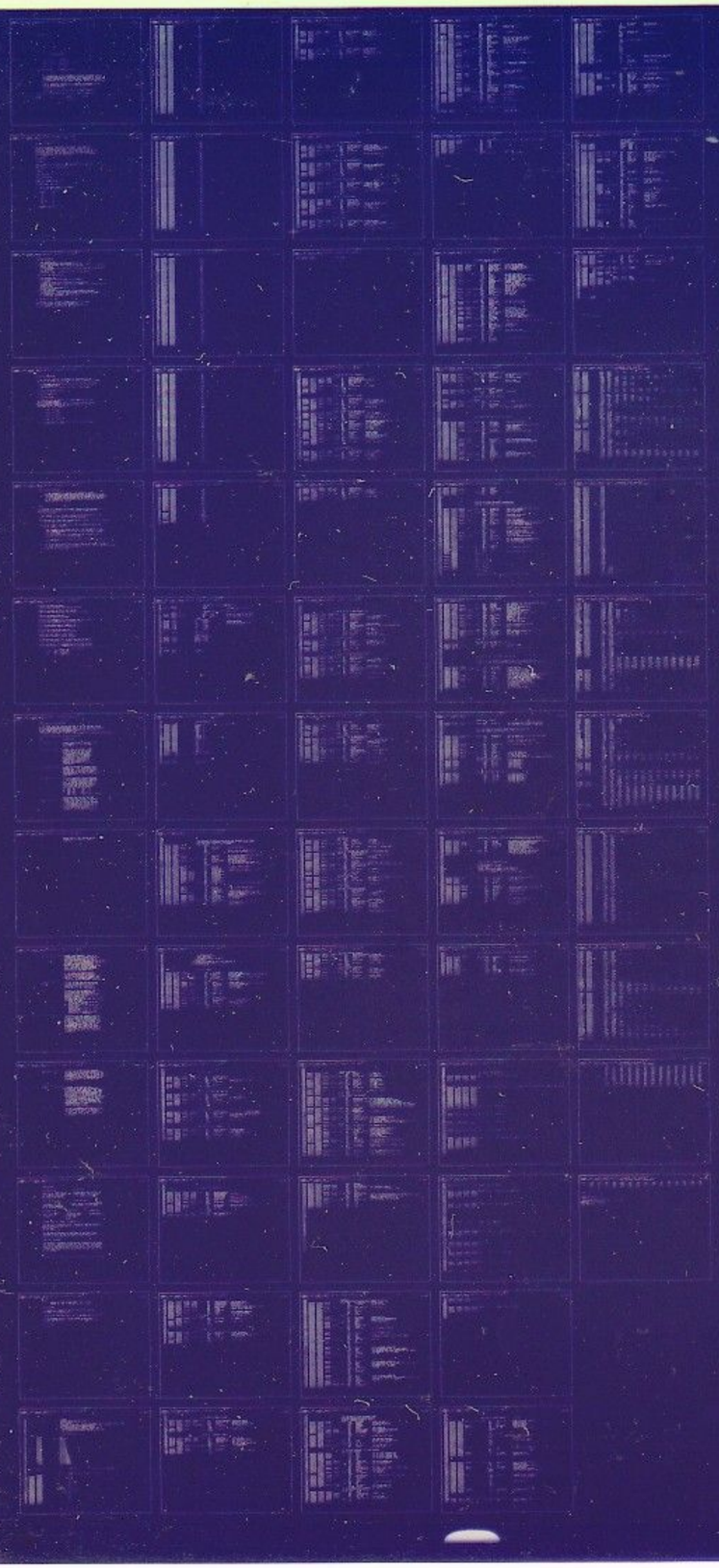
DN11

DIALEX
CZDNAC0

AH-8569C-MC

FICHE 1 OF 1

JAN 1979
digital
MADE IN USA



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IDENTIFICATION

PRODUCT CODE: AC-8568C-MC

PRODUCT NAME: CZDNAC0 DN11 DIALEX

DATE : MAY, 1978

MAINTAINER: DIAGNOSTIC GROUP

1. ABSTRACT

THE DN11 DIAGNOSTIC CONSISTS OF TWO PARTS. THE FIRST IS A SERIES OF INCREMENTAL TESTS WHICH STATICLY CHECK OUT THE DN11 USING THE MAINTENANCE MODE. THE SECOND PART IS THE ON LINE EXCERCISER WHICH ALLOWS THE USER TO DIAL ANY GIVEN PHONE IN HIS DIALING RANGE, UPON THE COMPLETION OF THE CALL THE PROGRAM WILL TERMINATE THE CALL AND TRY AGAIN.

2. REQUIREMENTS

2.1 EQUIPMENT

PDP-11 (MIN.4K)-WITH OR WITHOUT A HARDWARE SWITCH REGISTER
TELETYPE
DN11 (MAX.OF4 USED AT ONE ANY TIME)

2.2 STORAGE

DIALEX OCCUPIES THE FIRST 4K OF CORE.

3. LOADING PROCEDURE

3.1 METHOD OF LOADING DIALEX TAPE

PROGRAM FORMAT ABSOLUTE

A. VERIFY THE BOOT LOADER IS IN MEMORY
B. SET SWITCH REGISTER EQUAL TO *500

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

C. DEPRESS LOAD ADDRESS
D. DEPRESS START

4. STARTING PROCEDURE

A. LOAD ADDRESS 200.
B. SET SWITCH REGISTER CORRESPONDING TO SEC 5.2
-SEE D. FOR SOFTWARE SWITCH REGISTER LOADING-
C. DEPRESS START.
D. IF THE SOFTWARE SWITCH REGISTER IS SELECTED THEN THE FOLLOWING
WILL BE TYPED:
SWR=XXXXXX NEW= (REFER TO SECTION 5.2 FOR OPTIONS)

4.1 SCOPE LOOP STARTING PROCEDURE

A. LOAD ADDRESS 204.
B. SET THE SWITCH REGISTER EQUAL TO THE ADDRESS
OF THE DN11.
****WHEN SOFTWARE SWITCH REGISTER IS SELECTED THE
OPERATOR WILL BE ABLE TO LOAD THE DN11 ADDRESS AFTER DEPRESSING START.
C. DEPRESS START.
D. SET SWITCH TO CORRESPOND TO SEC. 5.3
E. DEPRESS CONTINUE.
****IF THE SOFTWARE SWITCH REGISTER IS USED DEPRESS CONTINUE,
THE MACHINE WILL THEN ASK FOR SOFTWARE SWITCH REGISTER CHANGE
BY TYPING THE FOLLOWING: SWR=XXXXXX NEW= (REFER TO SECTION
5.2 FOR OPERATOR OPTIONS)****

4.2 RESTARTING AT LOC. 200

RESTARTING AT LOC. 200 WILL AUTOMATICALLY USE THE ADDRESS
AND VECTOR ENTERED AT THE INITIAL START-UP.
IF IT IS DESIRED, TO ENTER A NEW ADDRESS UPON RESTART,
CLEAR LOCATION 1064 AND START AT LOC. 200.

5. OPERATING PROCEDURE

AT THE INITIAL START OF THE PROGRAM THE OPERATOR WILL BE
ASKED FOR THE ADDRESS OF THE FIRST DN11, AND ITS VECTOR ASSIGNMENT.

****IF SOFTWARE SWITCH REGISTER IS SELECTED THEN THE FOLLOWING
WILL BE TYPED FIRST:
SWR=XXXXXX NEW= (REFER TO SECTION 5.2 FOR OPTIONS)

DN11 REGISTER ADDRESS?XXXXXX

VECTOR ASSIGNMENT?XXX

5.1 DIALING PROCEDURES

THE OPERATOR WILL BE ASKED FOR A PHONE NUMBER FOR EACH DN11,
IN THE FOLLOWING MANNER:
WHEN THE MAXIMUM NUMBER OF DN11'S IS REACHED FOR THE SYSTEM
THE OPERATOR MUST DEPRESS THE CARRIAGE-RETURN KEY WITHOUT
DEPRESSING ANY OTHER CHARACTER.

PHONE #1? XXXXX

PHONE #2? XXXXXX

PHONE #3? XXXXXX

PHONE #4? XXXXXX

NOTE: DO NOT TYPE <^G> DURING THE INPUTING OF PHONE NUMBERS
OR ERROR WILL OCCUR.

5.2 CONTROL SWITCH SETTINGS

IF THE DIAGNOSTIC IS RUN ON A CPU WITHOUT A SWITCH REGISTER THEN A SOFTWARE SWITCH REGISTER IS USED WHICH ALLOWS THE USER THE SAME SWITCH OPTIONS AS THE HARDWARE SWITCH REGISTER. IF THE HARDWARE SWITCH REGISTER DOES NOT EXIST OR IF ONE DOES AND IT CONTAINS ALL ONES (177777) THEN THE SOFTWARE SWITCH REGISTER (LOC. 176) IS USED.

CONTROL:

THIS PROGRAM ALSO SUPPORTS THE DYNAMIC LOADING OF THE SOFTWARE SWITCH REGISTER (LOC. 176) FROM THE TTY. THIS CAN BE ACCOMPLISHED BY DOING THE FOLLOWING:

1) TYPE CONTROL G <^G>; THIS WILL ALLOW THE TTY TO ENTER DATA INTO LOC. 176 AT SELECTED POINTS WITHIN THE PROGRAM.

2) THE MACHINE WILL THEN TYPE: SWR=XXXXXXNEW= (XXXXXX IS THE OCTAL CONTENTS OF THE SOFTWARE SWITCH REGISTER.)

3) AFTER THE ''NEW='' HAS BEEN TYPED THEN THE OPERATOR CAN DO ONE OF THE FOLLOWING AT THE TTY:

   A) TYPE A NUMBER TO BE LOADED INTO LOC. 176 FOLLOWED BY A <CR>. (ONLY NUMBERS BETWEEN 0-7 WILL BE ACCEPTED AND ONLY 6 NUMBERS WILL BE ALLOWED)
   IF A <CR> IS THE FIRST KEY DEPRESSED THE SOFTWARE SWITCH REGISTER CONTENTS WILL NOT BE CHANGED.

   B) IF A CONTROL U <^U> IS DEPRESSED THEN THE PROGRAM WILL SEND YOU BACK TO STEP 2.

NOTE: DUE TO THE USE OF RESET INSTUCTION IT MAY BE NECESSARY TO DEPRESS <^G> MORE THAN ONCE. THIS IS CAUSED BY THE RESET INSTRUCTION NOT ALLOWING THE LOADING OF THE TTY RECEIVER BUFFER DURING THE RESET EXECUTION.

```
                SR BIT15 SET=HALT ON ERROR
                SR BIT15 RESET=CONTINUE AFTER REPORTING ERROR

                SR BIT14 SET=LOOP ON STATIC TEST SUB-SET
                SR BIT14 RESET=DO EACH STATIC TEST SUB-SET 15 TIMES.

                SR BIT13 SET=DELET TYPE-OUT
                SR BIT13 RESET=REPORT EACH ERROR

                SR BIT12 SET=TERMINATE CALL BY LOWERING CRQ (CALL REQUEST)
                SR BIT12 RESET=TERMINATE CALL BY ISSUING RESET

                BIT11 SET=801 NEEDS EON TO COMPLETE CALL
                BIT11 RESET=EON NOT NEEDED TO COMPLETE CALL

                SR BIT10 SET=LOOP ON ON-LINE TEST
                SR BIT10 RESET=SEQUENCE THROUGH PROGRAM

                SR BIT9 SET=LOOP ON ALL STATIC TESTS
                SR BIT9 RESET=SEQUENCE THROUGH PROGRAM

                SR BIT8 SET=RUN STATIC TEST ON DN11 SELECTED BY SR0-1
                SR BIT8 RESET=PROGRAM WILL SEQUENCE THROUGH ALL DN11'S

                SR BIT7 SET=DELETE TTY CONVERSATION FOR DIALING SEQUENCE
                SR BIT7 RESET=ENTER TTY CONVERSATION FOR DIALING SEQUENCE

                SR      1       0    =SELECT DN11 FOR STATIC TEST
                       RESET   RESET=FIRST DN11
                       RESET   SET  =SECOND DN11
                       SET     RESET=THIRD DN11
                       SET     SET  =FOURTH DN11
```

5.3 SCOPE LOOP SWITCH SELECTION

IN THE SCOPE LOOP THE USER MAY SET ANY OR ALL OF THE DN11 STATUS BITS IN THE MAINTENANCE OR DYNAMIC MODE. IF THE USER SETS THE BITS IN THE DYNAMIC MODE THE PROGRAM WILL AUTOMATICALLY STICK IN THE CORRECT TIME DELAYS FOR THE PHONE LINE.
*****REFER TO SECTIONS 4.1 AND 5.2 FOR SOFTWARE SWITCH REGISTER OPERATION*****

THE DETAILED DESCRIPTION OF DN11 STATUS BITS

BIT	NAME	DESCRIPTION
00	CALL REQUEST (FCRQ)	CONTROL LEAD TO ACU. THIS BIT STARTS THE AUTOMATIC CALLING SEQUENCE. (WRITE ONLY)
01	DIGIT PRESENT (FDPR)	CONTROL LEAD TO THE ACU. THIS BIT MUST BE SET BY THE PROGRAM AFTER IT LOADS THE NEXT DIGIT (IN RESPONSE TO A PND REQUEST) TO INFORM THE ACU TO CONTINUE WITH DIALING. THE INTERFACE AUTOMATICALLY CLEARS THIS BIT WHEN THE ACU CLEARS PND TO INDICATE ACCEPTANCE OF THE DIGIT. (READ/WRITE)
02	MASTER ENABLE (MINAB)	ALLOWS THE PROGRAM TO DISABLE THEN REENABLE ALL 4 ACU INTERRUPTS EASILY WITH ONE BIT. THIS BIT IS CONNECTED FOR ONLY ONE OF THE FOUR POSSIBLE LINES WHICH MOUNT IN ONE SYSTEM UNIT. (READ/WRITE)
03	MAINTENANCE (MAINT)	THIS BIT, WHEN SET, ALLOWS CHECKING OF THE INTERFACE WITHOUT A CONNECTED ACU. IT ALLOWS FCRQ TO BE READ AND SWITCHES THE ACU RESPONSE LINES-- PND,DSS,PWI AND ACR TO THE OUTPUT OF THE DIGIT LINES FOR TESTING PURPOSES. BIT DIGIT ACU LINE CTL BIT # 08 NB1 PND FPND 04 09 NB2 DSS FDSS 05 10 NB4 PWI PWO 13 11 NB8 ACR FACR 14 ALSO FORCES CRQ (TO ACU) OFF AND FORCES FDLD (BIT 12) ON. (READ/WRITE)
04	PRESENT NEXT DIGIT (FPND)	CONTROL LEAD FROM THE ACU. THIS IS A REQUEST BY THE ACU FOR THE PROGRAM TO LOAD ANOTHER DIGIT DURING DIALING. IT IS ACCOMPANIED BY THE SETTING OF DONE TO OBTAIN AN INTERRUPT. IT IS CLEARED BY THE ACU WHEN THE DIGIT IS ACCEPTED (AFTER DPR IS SET) AND WILL

REMAIN OFF AT LEAST 600 MS BEFORE
COMMING UP FOR THE NEXT REQUEST.
(READ ONLY)

05	DATA SET STATUS (FDSS)	CONTROL LEAD FROM ACU. THIS IS A STATEMENT BY THE ACU THAT THE CALLED PARTY HAS ANSWERED AND THAT THE ASSOCIATED DATA SET NOW HAS CONTROL OF THE THE LINE. IT IS ACCOMPANIED BY THE SETTING OF DONE TO OBTAIN AN INTERRUPT. IT REMAINS SET UNTIL AFTER THE END OF THE CALL. (OR UNTIL THE DATA TERMINAL READY LEAD TO THE ASSOCIATED MODEM IS DROPPED WHICH THEN DROPS FDSS). IF THE ASSOCIATED MODEM ANSWERS A CALL WHILE THE DIALER IS IN USE (CRQ=1) THEN DSS WILL BE ENABLED AND DONE SET. IF INTERRUPT ENABLE IS SET THERE WILL BE AN INTERRUPT. (READ ONLY)
06	INTERRUPT ENABLE (INTENB)	THIS BIT ALLOWS THE SETTING OF DONE TO CAUSE AN INTERRUPT IF THE MASTER ENABLE BIT (BIT 02 LINE #1 OF A SYSTEM UNIT) IS SET. (READ/WRITE)
07	DONE	THIS BIT, IS SET TO INDICATE THAT THE ACU IS DONE WITH THE PREVIOUSLY REQUESTED ACTION AND READY TO ACCEPT NEW DATA, USUALLY THE NEXT DIGIT IN A SEQUENCE TO BE DIALED. THE CONDITIONS THAT SET DONE ARE LISTED (CRQ MUST BE A ONE): 1. TRANS. OF PND TO ONE (AFTER LAST SET OR PREV. DPR SET) 2. TRANS. OF DSS TO ONE (AFTER LAST DPR OR EON) 3. TRANS. OF ACR TO ONE (IF TIMEOUT ERR--ANYTIME) 4. TRANS. OF PLO TO ONE (IF POWER SWITCHED OFF) (READ/WRITE)
08-11	DIGIT BITS (NB1-4)	THESE FOUR BITS ARE CONTROL LEADS TO THE ACU. THESE LOW ORDEP BITS OF THE SECOND BYTE MAKE UP THE BCD DIGIT TO BE DIALED. SINCE THE HIGH-ORDER FOUR ARE READ ONLY, IT DOESN'T MATTER WHAT IS IN THEM DURING A LOAD, AND THE PROGRAMMER MAY USE THEM AS HE WISHES. IN MAINT MODE, THESE BITS ARE USED TO THE FOUR CONTROL LINES THAT CAN CAUSE INTERRUPTS. SEE BIT 03 FOR DESCRIPTION. (READ/WRITE)

12	DATA LINE OCCUPIED (FDLO)	THIS BIT IS SET BY THA ACU WHENEVER THE LINE TO THE TELEPHONE CENTRAL OFFICE IS BEING USED BY THE ACU. IT ALLOWS THE PROGRAMMER TO TEST THE ACU TO SEE IF THE LAST CALL WAS USCCESSFULLY TERMINATED BEFORE HE TRIES TO USE IT FOR THE NEXT ONE. (READ ONLY)
13	NOT USED	
14	ABANDON CALL AND RETRY (ACR)	A CONTROL LEAD FROM THE ACU. THIS BIT IS SET BY THE ACU WHENEVER AN INTERNAL TIMER TIMES OUT. THE TIMER IS RESET BY THE ACU WHENEVER IT GIVES PBD AND IS FOR DETECTING WRONG NUMBERS AND BUSY SIGNALS. IT IS INHIBITED BY THE PRESENECE OF DSS EXCEPT IF THE 801 OPTION 'Y' IS IN USE IN WHICH CASE IT TIMES OUT EVEN THEN AND GIVES AN INTERRUPT (BY SETTING DONE). THIS IS USED WHEN THE PROGRAMMER WANTS A TIMER TO DETECT WRONG NUMBERS AND BUSY SIGNALS.
15	POWER IN (PWI)	THIS BIT IS NORMALLY ZERO AND IS SET BY THE ACU WHENEVER POWER IS SWITCHED OFF AT THE UNIT. IF A CALL IS IN PROGRESS AT THAT TIME, DONE IS SET. (THIS CAUSES AN INTERRUPT IF ITENB AND MINAB=1). (READ ONLY)

6.1 ERROR REPORTS

6.1.1 XXX ERROR COUNT

EQUAL TO THE ERROR TAG IN THE LISTING. THIS ENABLES THE USER TO FOLLOW THE EXACT CODE THAT FAILED.

XXXXXX DN11

DEFINES WHICH DN11 FAILED THE STATIC TESTS. THIS IS EQUAL TO THE ADDRESS ASSIGNMENT.

6.1.2 XXXXXX GD DATA

THIS EQUALS THE DATA LOADED INTO A REGISTER BY THE PROGRAM.

XXXXXX BD DATA

THIS EQUALS THE DATA READ FROM A REGISTER BY THE PROGRAM.

6.1.3 XXX ERROR COUNT

EQUAL TO THE ERROR TAG IN PROGRAM LISTING

XXXXXX DNCSR

CONTENTS OF DN11 STATUS REGISTER AT THE TIME ERROR

XXXXXX DN11

DEFINES WHICH DN11 THAT FAILED

6.2 PROGRAM TIMED OUT UNABLE TO COMPLETE CALL

THIS MESSAGE IS REPORTED AFTER A PERIOD OF TIME HAS PASSED IN WHICH THE PROGRAM HAD EXPECTED TO HAVE RECEIVED DATA SET STATUS AND DID NOT.

6.2.1 THE 801 IS OFF LINE

THIS MESSAGE IS REPORTED AT THE START OF THE STATIC TEST WHENEVER THE DN11 IN USE HAS NO 801 DAILING UNIT CONNECTED TO IT. THE TESTS THAT DO NOT NEED AN 801 WILL BE EXECUTED.

6.3 POWER FAIL OCCURRED

THIS MESSAGE IS REPORTED IN THE RESTART SEQUENCE OF THE POWER FAIL ROUTINE. WHENEVER A POWER FAIL HAS OCCURRED THE PROGRAM TRAPS TO 24 AND RESETS THE VECTOR AND HALTS. ON THE RESTART SEQUENCE THE PROGRAM REPORTS THE MESSAGE AND WAITS TWO SECONDS FOR THE PHONE LINES TO SETTLE DOWN, THEN IT JUMPS TO THE START OF THE PROGRAM.

6.4 END

THIS MESSAGE IS REPORTED AT THE END OF EACH PASS OF THE PROGRAM:

7. TIME

AMOUNT OF TIME TO RUN STATIC TEST 1.5 MIN.
AMOUNT OF TIME TO RUN ON-LINE TEST 3 MIN.

8. RESTRICTIONS

THE POWER FAIL CAPABILITY OF THIS DEVICE MUST ONLY BE
PERFORMED IN THE ON-LINE TEST.

9. **RECOVERING FROM ERROR HALTS WITH A SOFTWARE SWITCH REGISTER**

IF THE SOFTWARE SWITCH IS TO BE CHANGE AFTER A HALT
THEN THE OPERATOR SHOULD DEPRESS A <^G>BEFORE DEPRESSING
THE CONTINUE SWITCH.

10. LISTING

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```
                                        ;CZDNA-C
                                        ;DZDNA-A OBSOLETED MD-11-D9J
                                        ;DN11 DIALEX
                                        ;COPYRIGHT 1976,1977, DIGITAL EQUIPMENT CORP., MAYNARD, MASS. 01754
                                        ;RELEASED 21 MAY 76 BY SAM CARPENTER
                                        ;REV B RELEASED BY R. KIMBALL, AUGUST,1977.
                                        ; SUPPORTS SOFTWARE SWITCH REGISTER ,LOC.  176
                                        ;ALSO, SUPPORTS THE DYNAMIC LODING OF LOC.176
                                        ;
                                        ;*****DIALEX-11*****
                                        ;
000000                                  N=0
000240                                  NOP=240
000001                                  BIT0=1
000002                                  BIT1=2
000004                                  BIT2=4
000010                                  BIT3=10
000020                                  BIT4=20
000040                                  BIT5=40
000100                                  BIT6=100
000200                                  BIT7=200
000400                                  BIT8=400
001000                                  BIT9=1000
002000                                  BIT10=2000
004000                                  BIT11=4000
010000                                  BIT12=10000
020000                                  BIT13=20000
040000                                  BIT14=40000
100000                                  BIT15=100000
                                        ;
                                        ;
        000004                                  SCOPE=IOT               ;TRAP CALL FOR SCOPE LOOP
                                        ;
                                        ;
                                                ;TRAP CATCHER LOC.0-200 ***********
        000000                                  .=0
000000  000002                                  .+2
000002  000000                                  HALT
000004  000006                                  .+2
000006  000000                                  HALT
000010  000012                                  .+2
000012  000000                                  HALT
000014  000016                                  .+2
000016  000000                                  HALT
000020  000022                                  .+2
000022  000000                                  HALT
000024  000026                                  .+2
000026  000000                                  HALT
000030  000032                                  .+2
000032  000000                                  HALT
000034  000036                                  .+2
000036  000000                                  HALT
000040  000042                                  .+2
000042  000000                                  HALT
```

```
                                                                    B 2
  489  000044  000046                    .+2
  490  000046  000000                    HALT
  491  000050  000052                    .+2
  492  000052  000000                    HALT
  493  000054  000056                    .+2
  494  000056  000000                    HALT
  495  000060  000062                    .+2
  496  000062  000000                    HALT
  497  000064  000066                    .+2
  498  000066  000000                    HALT
  499  000070  000072                    .+2
  500  000072  000000                    HALT
  501  000074  000076                    .+2
  502  000076  000000                    HALT
  503  000100  000102                    .+2
  504  000102  000000                    HALT
  505  000104  000106                    .+2
  506  000106  000000                    HALT
  507  000110  000112                    .+2
  508  000112  000000                    HALT
  509  000114  000116                    .+2
  510  000116  000000                    HALT
  511  000120  000122                    .+2
  512  000122  000000                    HALT
  513  000124  000126                    .+2
  514  000126  000000                    HALT
  515  000130  000132                    .+2
  516  000132  000000                    HALT
  517  000134  000136                    .+2
  518  000136  000000                    HALT
  519  000140  000142                    .+2
  520  000142  000000                    HALT
  521  000144  000146                    .+2
  522  000146  000000                    HALT
  523  000150  000152                    .+2
  524  000152  000000                    HALT
  525  000154  000156                    .+2
  526  000156  000000                    HALT
  527  000160  000162                    .+2
  528  000162  000000                    HALT
  529  000164  000166                    .+2
  530  000166  000000                    HALT
  531  000170  000172                    .+2
  532  000172  000000                    HALT
  533  000174  000176                    .+2
  534  000176  000000                    HALT
  535  000200  000202                    .+2
  536  000202  000000                    HALT
  537  000204  000206                    .+2
  538  000206  000000                    HALT
  539  000210  000212                    .+2
  540  000212  000000                    HALT
  541  000214  000216                    .+2
  542  000216  000000                    HALT
  543  000220  000222                    .+2
  544  000222  000000                    HALT
```

```
545  000224  000226                  .+2
546  000226  000000                  HALT
547  000230  000232                  .+2
548  000232  000000                  HALT
549  000234  000236                  .+2
550  000236  000000                  HALT
551  000240  000242                  .+2
552  000242  000000                  HALT
553  000244  000246                  .+2
554  000246  000000                  HALT
555  000250  000252                  .+2
556  000252  000000                  HALT
557  000254  000256                  .+2
558  000256  000000                  HALT
559  000260  000262                  .+2
560  000262  000000                  HALT
561  000264  000266                  .+2
562  000266  000000                  HALT
563  000270  000272                  .+2
564  000272  000000                  HALT
565  000274  000276                  .+2
566  000276  000000                  HALT
567  000300  000302                  .+2
568  000302  000000                  HALT
569  000304  000306                  .+2
570  000306  000000                  HALT
571  000310  000312                  .+2
572  000312  000000                  HALT
573  000314  000316                  .+2
574  000316  000000                  HALT
575  000320  000322                  .+2
576  000322  000000                  HALT
577  000324  000326                  .+2
578  000326  000000                  HALT
579  000330  000332                  .+2
580  000332  000000                  HALT
581  000334  000336                  .+2
582  000336  000000                  HALT
583  000340  000342                  .+2
584  000342  000000                  HALT
585  000344  000346                  .+2
586  000346  000000                  HALT
587  000350  000352                  .+2
588  000352  000000                  HALT
589  000354  000356                  .+2
590  000356  000000                  HALT
591  000360  000362                  .+2
592  000362  000000                  HALT
593  000364  000366                  .+2
594  000366  000000                  HALT
595  000370  000372                  .+2
596  000372  000000                  HALT
597  000374  000376                  .+2
598  000376  000000                  HALT
599  000400  000402                  .+2
600  000402  000000                  HALT
```

```
  601  000404  000406                    .+2
  602  000406  000000                    HALT
  603  000410  000412                    .+2
  604  000412  000000                    HALT
  605  000414  000416                    .+2
  606  000416  000000                    HALT
  607  000420  000422                    .+2
  608  000422  000000                    HALT
  609  000424  000426                    .+2
  610  000426  000000                    HALT
  611  000430  000432                    .+2
  612  000432  000000                    HALT
  613  000434  000436                    .+2
  614  000436  000000                    HALT
  615  000440  000442                    .+2
  616  000442  000000                    HALT
  617  000444  000446                    .+2
  618  000446  000000                    HALT
  619  000450  000452                    .+2
  620  000452  000000                    HALT
  621  000454  000456                    .+2
  622  000456  000000                    HALT
  623  000460  000462                    .+2
  624  000462  000000                    HALT
  625  000464  000466                    .+2
  626  000466  000000                    HALT
  627  000470  000472                    .+2
  628  000472  000000                    HALT
  629  000474  000476                    .+2
  630  000476  000000                    HALT
  631  000500  000502                    .+2
  632  000502  000000                    HALT
  633  000504  000506                    .+2
  634  000506  000000                    HALT
  635  000510  000512                    .+2
  636  000512  000000                    HALT
  637  000514  000516                    .+2
  638  000516  000000                    HALT
  639  000520  000522                    .+2
  640  000522  000000                    HALT
  641  000524  000526                    .+2
  642  000526  000000                    HALT
  643  000530  000532                    .+2
  644  000532  000000                    HALT
  645  000534  000536                    .+2
  646  000536  000000                    HALT
  647  000540  000542                    .+2
  648  000542  000000                    HALT
  649  000544  000546                    .+2
  650  000546  000000                    HALT
  651  000550  000552                    .+2
  652  000552  000000                    HALT
  653  000554  000556                    .+2
  654  000556  000000                    HALT
  655  000560  000562                    .+2
  656  000562  000000                    HALT
```

```
  657  000564  000566                          .+2
  658  000566  000000                          HALT
  659  000570  000572                          .+2
  660  000572  000000                          HALT
  661  000574  000576                          .+2
  662  000576  000000                          HALT
  663  000600  000602                          .+2
  664  000602  000000                          HALT
  665  000604  000606                          .+2
  666  000606  000000                          HALT
  667  000610  000612                          .+2
  668  000612  000000                          HALT
  669  000614  000616                          .+2
  670  000616  000000                          HALT
  671  000620  000622                          .+2
  672  000622  000000                          HALT
  673  000624  000626                          .+2
  674  000626  000000                          HALT
  675  000630  000632                          .+2
  676  000632  000000                          HALT
  677  000634  000636                          .+2
  678  000636  000000                          HALT
  679  000640  000642                          .+2
  680  000642  000000                          HALT
  681  000644  000646                          .+2
  682  000646  000000                          HALT
  683  000650  000652                          .+2
  684  000652  000000                          HALT
  685  000654  000656                          .+2
  686  000656  000000                          HALT
  687  000660  000662                          .+2
  688  000662  000000                          HALT
  689  000664  000666                          .+2
  690  000666  000000                          HALT
  691  000670  000672                          .+2
  692  000672  000000                          HALT
  693  000674  000676                          .+2
  694  000676  000000                          HALT
  695  000700  000702                          .+2
  696  000702  000000                          HALT
  697  000704  000706                          .+2
  698  000706  000000                          HALT
  699  000710  000712                          .+2
  700  000712  000000                          HALT
  701  000714  000716                          .+2
  702  000716  000000                          HALT
  703  000720  000722                          .+2
  704  000722  000000                          HALT
  705  000724  000726                          .+2
  706  000726  000000                          HALT
  707  000730  000732                          .+2
  708  000732  000000                          HALT
  709  000734  000736                          .+2
  710  000736  000000                          HALT
  711  000740  000742                          .+2
  712  000742  000000                          HALT
```

```
713  000744  000746                  .+2
714  000746  000000                  HALT
715  000750  000752                  .+2
716  000752  000000                  HALT
717  000754  000756                  .+2
718  000756  000000                  HALT
719  000760  000762                  .+2
720  000762  000000                  HALT
721  000764  000766                  .+2
722  000766  000000                  HALT
723  000770  000772                  .+2
724  000772  000000                  HALT
725  000774  000776                  .+2
726  000776  000000                  HALT
727          000020                  .=20
728  000020  006606                  LOOP
729  000022  000340                  340
730  000024  006662                  PWRDWN
731  000026  000340                  340
732          000030                  .=30
733  000030  006574                  EMTRP
734  000032  000340                  340
735
```

```
                                        ;SOFTWRE SWITCH REGISTER***********
            000176                      .=176
000176      000000                      SWREG:  0               ;SOFTWARE SWITCH REGISTER

                                        ;PROGRAM START**********************
            000200                      .=200
000200      000137  001104              JMP     START           ;GO TO THE START OF THE TEST
000204      000137  006012              JMP     MASTER          ;ENTER THE SCOPE LOOP ROUTINE
            001000                  .=1000
                                    ;I/O REGISTERS
001000      177570                  SR:     177570              ;SWITCH REGISTER
001002      177776                  CSR:    177776              ;PROCESSOR STATUS REGISTER
001004      177566                  TPB:    177566              ;TELETYPE REGISTERS
001006      177562                  TKB:    177562
001010      177564                  TPS:    177564
001012      177560                  TKS:    177560

            005562                  INDEX=SELECT+2

                                    ;DN11 REGISTERS
001014      175200                  DNCSR1: 175200
001016      175202                  DNCSR2: 175202
001020      175204                  DNCSR3: 175204
001022      175206                  DNCSR4: 175206

001024      000300                  VECTOR: 300
001026      000004                  PRIORITY:       4
```

```
                                        ;PROGRAM WORK REGISTER
                                        ;
001030  177777                          FTITLE: 177777          ;TITLE PRINTED FLAG
001032  000000                          DSSCNT: 0
001034  000000                          WORK:   0
001036  000000                          WORK1:  0
001040  000000                          COUNT:  0
001042  000000                          TIME:   0
001044  000000                          TIME1:  0
001046  000000                          SAVE:   0
001050  000000                          ERCOUNT:0
001052  175200                          STATUS: 175200
001054  000000                          PNT1:   0
001056  000000                          PNT2:   0
001060  000000                          PNT3:   0
001062  000000                          PNT4:   0
001064  000000                          FLAG:   0
001066  000000                          PASS:   0
001070  000000                          MASK:   0
001072  011700                          STKLINK: STACK
001074     000      000      000        MAP:    .BYTE 0,0,0,0
001077     000
                                        ;
                                        ;
                                        ;
001100  001054                          ENTRY:  PNT1
001102  006340                          POINT:  PH01
```

```
 796                                    ;
 797                                    ;
 798                                    ;THIS ROUTINE IS USED TO INITIALIZE THE PROGRAM TO THE CORRECT
 799                                    ;DN11 REGISTER ASSIGNMENTS THIS ROUTINE IS ONLY ENTERED ONCE
 800                                    ;UPON THE FIRST START OF THE PROGRAM
 801  001104  000005                   START:  RESET
 802  001106  013706  001072                   MOV     STKLINK,%6      ;SET UP THE STACK
 803  001112  005237  001030                   INC     FTITLE
 804  001116  001002                           BNE     1$              ;SKIP TITLE IF ALREADY PRINTED
 805  001120  104001                           EMT+1                   ;GO TYPE OUT THE TITLE
 806  001122  010646                           MTITLE
 807  001124  004737  010200           1$:     JSR     PC,SUSWR        ;GO TO SWITCH REGISTER SIZING ROUTINE
 808  001130  005737  001064                   TST     FLAG            ;TEST FOR THE PASS
 809  001134  001071                           BNE     NOTFIRST        ;BRANCH NOT THE FIRST PASS
 810  001136  052737  177777  001064           BIS     #177777,FLAG    ;SET PASS INDICATOR
 811  001144  012703  006316                   MOV     #TEXBUF,%3      ;SET UP TO RECEIVE DATA FROM TTY
 812  001150  104001                           EMT     +1              ;ASK OPERATOR FOR FIRST DN11 ADDRESS
 813  001152  007447                           DNADDR
 814  001154  004737  006170                   JSR     %7,TYST         ;GO FETCH ADDRESS FROM TTY
 815  001160  012702  001014                   MOV     #DNCSR1,%2
 816  001164  004737  007122                   JSR     %7,NEXCHAR      ;CONVERT OCTAL TO ASCII
 817  001170  013737  001014  001016           MOV     DNCSR1,DNCSR2   ;SET UP ALL DN11 ADDRESSES
 818  001176  062737  000002  001016           ADD     #2,DNCSR2
 819  001204  013737  001016  001020           MOV     DNCSR2,DNCSR3
 820  001212  062737  000002  001020           ADD     #2,DNCSR3
 821  001220  013737  001020  001022           MOV     DNCSR3,DNCSR4
 822  001226  062737  000002  001022           ADD     #2,DNCSR4
 823  001234  013737  001014  001052           MOV     DNCSR1,STATUS   ;
 824  001242  012703  006316           GETVEC: MOV     #TEXBUF,%3      ;SET UP TO ASK FOR VECTOR ASSIGNMEMT
 825  001246  104001                           EMT     +1
 826  001250  007477                           VECDN
 827  001252  004737  006170                   JSR     %7,TYST         ;FETCH VECTOR ADDRESS FROM TTY
 828  001256  012702  001024                   MOV     #VECTOR,%2
 829  001262  004737  007122                   JSR     %7,NEXCHAR      ;CONVERT OCTAL TO ASCII
 830  001266  022737  001000  001024           CMP     #1000,VECTOR    ;IS VECTOR ADDRESS LESS THAN 1000
 831  001274  101762                           BLOS    GETVEC          ;BRANCH THE ADDRESS IS GREATER THAN 1000
 832  001276  062737  000002  001024           ADD     #2,VECTOR       ;POINT TO VECTOR PSW
 833  001304  012777  000200  177512           MOV     #200,@VECTOR    ;SET PRIORITY AT 4
 834  001312  162737  000002  001024           SUB     #2,VECTOR       ;ADJ. VECTOR
 835  001320  013737  001014  001052 NOTFIRST: MOV     DNCSR1,STATUS
 836  001326  032777  002000  177444           BIT     #BIT10,@SR      ;TESTTO ENTER ON-LINE TEST ONLY
 837  001334  001402                           BEQ     .+6             ;ENTER STATIC
 838  001336  000137  004266                   JMP     BEGIN           ;ENTER ON-LINE TEST
```

```
839
840                                     ;*****DIALEX-11*****
841                                     ;DN11 TEST PART1
842                                     ;AUTOMATIC DIALER INTERFACE
843                                     ;
844                                     ;THE FIRST PART OF THIS TEST CONSISTS OF
845                                     ;INTER-ACTION BETWEEN THE OPERATOR AND
846                                     ;THE PROGRAM
847                                     ;
848                                     ;
849                                     ;IS PWO CLEARED
850                                     ;
851  001342  004737  010304             ST1:    JSR     PC,CKSWR        ;CHECK FOR <^G>
852  001346  032777  000400  177424             BIT     #BIT8,@SR       ;DOES THE OPERATOR WANT TO SELECT ONE DN11
853  001354  001417                             BEQ     ST1X            ;NO RUN NORMAL
854  001356  017737  177416  001034             MOV     @SR,WORK        ;FETCH WHICH DN11 HE WANTS TO RUN
855  001364  042737  177774  001034             BIC     #177774,WORK    ;MASK COUNT
856  001372  000241                             CLC
857  001374  006137  001034                     ROL     WORK            ;COUNT TIMES 2
858  001400  042737  000007  001052             BIC     #7,STATUS       ;CLEAR DN11 NUMBER SELECTED PREVIOUSLY
859  001406  063737  001034  001052             ADD     WORK,STATUS     ;SET UP SELECTED DN11
860  001414  005777  177432             ST1X:   TST     @STATUS         ;TEST FOR 801
861  001420  100404                             BMI     .+12            ;NO 801 PRESENT
862  001422  012737  177777  001070             MOV     #177777,MASK
863  001430  000405                             BR      .+14
864  001432  012737  077777  001070             MOV     #77777,MASK
865  001440  104001                             EMT     +1
866  001442  007156                             MES1
867  001444  042777  177777  177400  ST1XE:    BIC     #177777,@STATUS
868  001452  033777  001070  177372             BIT     MASK,@STATUS            ;TEST STATUS BIT
869  001460  100005                             BPL     ST2XE           ;BRANCH IF POWER OFF
870  001462  012737  000000  001050  ERR0:     MOV     #0,ERCOUNT      ;*** ERROR 0 ***
871          000001                             N=N+1
872  001470  004537  007674                     JSR     %5,STAER        ;REPORT ERROR
873  001474  000004                     ST2XE:  SCOPE
874  001476  001444                             ST1XE
```

```
                                        ;
                                        ;
                                        ;IS ACR CLEARED
                                        ;
                                        ;
001500  042777  177777  177344  ST2X:   BIC     #177777,@STATUS
001506  032777  040000  177336          BIT     #BIT14,@STATUS
001514  001405                          BEQ     ST3E            ;BRANCH IF ACR IS CLEARED
001516  012737  000001  001050  ERR1:   MOV     #1,ERCOUNT      ;*** ERROR 1 ***
        000002                          N=N+1
001524  004537  007674                  JSR     %5,STAER
001530  000004                  ST3E:   SCOPE
001532  001500                          ST2X
                                        ;
                                        ;IS BIT 13 CLEARED (BIT NOT USED)
                                        ;
001534  042777  177777  177310  ST3:    BIC     #177777,@STATUS
001542  032777  020000  177302          BIT     #BIT13,@STATUS
001550  001405                          BEQ     ST4E            ;BIT 13 CLEAR EXIT
001552  012737  000002  001050  ERR2:   MOV     #2,ERCOUNT      ;*** ERROR 2 ***
        000003                          N=N+1
001560  004537  007674                  JSR     %5,STAER
001564  000004                  ST4E:   SCOPE
001566  001534                          ST3
                                        ;
                                        ;IS DLO CLEARED
                                        ;
001570  042777  177777  177254  ST4:    BIC     #177777,@STATUS                 ;CLEAR THE WORLD
001576  032777  010000  177246          BIT     #BIT12,@STATUS  ;TEST FOR DATA LINE NOT OCCUPIED
001604  001405                          BEQ     ST5E            ;BRANCH IF LINE NOT OCCUPIED
001606  012737  000003  001050  ERR3:   MOV     #3,ERCOUNT      ;*** ERROR 3 ***
        000004                          N=N+1
001614  004537  007674                  JSR     %5,STAER        ;REPROT ERROR
001620  000004                  ST5E:   SCOPE
001622  001570                          ST4
                                        ;
                                        ;ARE THE BCD BITS CLEARED
                                        ;
001624  042777  177777  177220  ST5:    BIC     #177777,@STATUS ;CLEAR THE WORLD
001632  032777  007400  177212          BIT     #7400,@STATUS   ;TEST BCD DIGITS
001640  001405                          BEQ     ST6E            ;BITS SHOULD BE CLEARED
001642  012737  000004  001050  ERR4:   MOV     #4,ERCOUNT      ;*** ERROR 4 ***
        000005                          N=N+1
001650  004537  007674                  JSR     %5,STAER        ;REPORT ERROR
001654  000004                  ST6E:   SCOPE
001656  001624                          ST5
```

```
                                        ;
                                        ;
                                        ;CAN WE SET ALL BCD BITS
                                        ;
                                        ;
001660  042777  177777  177164  ST6:    BIC     #177777,@STATUS
001666  012777  007400  177156           MOV     #7400,@STATUS   ;SET BITS
001674  017737  177152  001034           MOV     @STATUS,WORK
001702  042737  170377  001034           BIC     #170377,WORK    ;MASK ALL OTHER BITS
001710  022737  007400  001034           CMP     #7400,WORK
001716  001412                           BEQ     ST7E            ;BRANCH IF BITS ALL SET
001720  012737  000005  001050  ERR5:    MOV     #5,ERCOUNT      ;*** ERROR 5 ***
        000006                           N=N+1
001726  012737  007400  001036           MOV     #7400,WORK1     ;BCD BITS THAT SHOULD BE SET
001734  004537  007772                   JSR     %5,STAER1       ;REPORT ERROR
001740  004537  007674                   JSR     %5,STAER
001744  000004                  ST7E:    SCOPE
001746  001660                           ST6
                                        ;CAN WE FLOAT A ONE THROUGH THE BCD BITS
001750  042777  177777  177074  ST7:    BIC     #177777,@STATUS
001756  012737  000400  001036           MOV     #400,WORK1
```

```
942
943  001764  013777  001036  177060  ST7X:   MOV     WORK1,@STATUS   ;SET UP BCD BITS
944  001772  017737  177054  001034          MOV     @STATUS,WORK    ;READ BACK BCD BITS
945  002000  042737  170377  001034          BIC     #170377,WORK    ;MASK BITS
946  002006  023737  001036  001034          CMP     WORK1,WORK      ;DO THE BITS EQUAL WHAT WAS LOADED
947  002014  001007                          BNE     ST7ER           ;ERROR IN BITS READ BACK
948  002016  022737  007400  001034          CMP     #7400,WORK
949  002024  001412                          BEQ     ST10E           ;EXIT PATTERN COMPLETE
950  002026  105237  001037                  INCB    WORK1+1         ;SETUP NEXT PATTERN
951  002032  000754                          BR      ST7X            ;LOAD THE NEXT PATTERN
952  002034                          ST7ER:
953  002034  012737  000006  001050  ERR6:   MOV     #6,ERCOUNT      ;*** ERROR 6 ***
954           000007                          N=N+1
955  002042  004537  007772                  JSR     %5,STAER1       ;REPORT ERROR
956  002046  004537  007674                  JSR     %5,STAER
957  002052  000004                  ST10E:  SCOPE
958  002054  001750                          ST7
959                                  ;
960                                  ;IS DONE CLEARED
961                                  ;
962  002056  042777  177777  176766  ST10:   BIC     #177777,@STATUS ;CLEAR THE WORLD
963  002064  105777  176762                  TSTB    @STATUS         ;TEST FOR NOT DONE
964  002070  100005                          BPL     ST11E           ;BRANCH IF DONE NOT SET
965  002072  012737  000007  001050  ERR7:   MOV     #7,ERCOUNT      ;*** ERROR 7 ***
966           000010                          N=N+1
967  002100  004537  007674                  JSR     %5,STAER        ;REPORT DONE SET
968  002104  000004                  ST11E:  SCOPE
969  002106  002056                          ST10
```

```
970                                     ;
971                                     ;IS INTERRUPT ENABLE CLEARED
972                                     ;
973  002110  042777  177777  176734  ST11:   BIC     #177777,@STATUS ;CLEAR THE WORLD
974  002116  032777  000100  176726          BIT     #BIT6,@STATUS   ;WAS BIT6 CLEARED
975  002124  001405                          BEQ     ST12E           ;BRANCH IF BIT6 CLEARED
976  002126  012737  000010  001050  ERR10:  MOV     #10,ERCOUNT     ;*** ERROR 10 ***
977          000011                          N=N+1
978  002134  004537  007674                  JSR     %5,STAER        ;REPORT BIT6 SET
979  002140  000004                  ST12E:  SCOPE
980  002142  002110                          ST11
981                                     ;
982                                     ;CAN WE SET INTERRUPT ENABLE
983                                     ;
984  002144  012777  000340  176630  ST12:   MOV     #340,@CSR       ;LOCK UP CPU
985  002152  052777  000100  176672          BIS     #BIT6,@STATUS   ;SET INTERRUPT ENABLE
986  002160  032777  000100  176664          BIT     #BIT6,@STATUS   ;WAS THE BIT SET
987  002166  001006                          BNE     ST12EX          ;BIT SET CLEAR INTERRUPT
988  002170  000005                          RESET                   ;CLEAR INTERRUPTS
989  002172  012737  000011  001050  ERR11:  MOV     #11,ERCOUNT     ;*** ERROR 11 ***
990          000012                          N=N+1
991  002200  004537  007674                  JSR     %5,STAER        ;REPORT ERROR
992  002204  005077  176642          ST12EX: CLR     @STATUS                 ;CLEAR INTERRUPTS
993  002210  000004                          SCOPE
994  002212  002144                          ST12
```

```
 995
 996                                        ;
 997                                        ;IS DSS CLEARED
 998                                        ;
 999  002214  042777  177777  176630  ST13:  BIC     #177777,@STATUS ;CLEAR THE WORLD
1000  002222  032777  000040  176622         BIT     #BIT5,@STATUS   ;IS DSS SET
1001  002230  001405                        BEQ     ST14E           ;BRANCH IF DSS IS NOT SET
1002  002232  012737  000012  001050  ERR12: MOV     #12,ERCOUNT     ;*** ERROR 12 ***
1003          000013                        N=N+1
1004  002240  004537  007674                JSR     %5,STAER        ;REPORT DSS SET
1005  002244  000004                 ST14E: SCOPE
1006  002246  002214                        ST13
1007                                        ;
1008                                        ;IS PND CLEARED
1009                                        ;
1010  002250  042777  177777  176574  ST14:  BIC     #177777,@STATUS ;CLEAR THE WORLD
1011  002256  032777  000020  176566         BIT     #BIT4,@STATUS   ;IS PND SET
1012  002264  001405                        BEQ     ST15E           ;BRANCH IF PND NOT SET
1013  002266  012737  000013  001050  ERR13: MOV     #13,ERCOUNT     ;*** ERROR 13 ***
1014          000014                        N=N+1
1015  002274  004537  007674                JSR     %5,STAER        ;REPORT PND SET
1016  002300  000004                 ST15E: SCOPE
1017  002302  002250                        ST14
```

```
1018                                    ;
1019                                    ;IS THE MAINTENANCE BIT CLEARED
1020                                    ;
1021  002304  042777  177777  176540  ST15:   BIC     #177777,@STATUS ;CLEAR THE WORLD
1022  002312  032777  000010  176532          BIT     #BIT3,@STATUS   ;IS MAINTENANCE BIT CLEAR
1023  002320  001405                          BEQ     ST15XE          ;BRANCH IF MAINTENANCE CLEAR
1024  002322  012737  000014  001050  ERR14:  MOV     #14,ERCOUNT     ;*** ERROR 14 ***
1025          000015                          N=N+1
1026  002330  004537  007674                  JSR     %5,STAER        ;REPORT MAINTENANCE SET
1027  002334  000004                  ST15XE: SCOPE
1028  002336  002304                          ST15
1029                                    ;
1030                                    ;CAN WE SET THE MAINTENANCE BIT
1031                                    ;
1032  002340  042777  177777  176504  ST15X:  BIC     #177777,@STATUS
1033  002346  052777  000010  176476          BIS     #BIT3,@STATUS   ;CAN WE SET MAINTENANCE
1034  002354  032777  000010  176470          BIT     #BIT3,@STATUS   ;IS MAINTENANCE SET
1035  002362  001005                          BNE     ST16E           ;YES EXIT
1036  002364  012737  000015  001050  ERR15:  MOV     #15,ERCOUNT     ;*** ERROR 15 ***
1037          000016                          N=N+1
1038  002372  004537  007674                  JSR     %5,STAER
1039  002376  000004                  ST16E:  SCOPE
1040  002400  002340                          ST15X
1041                                    ;
1042                                    ;IS MASTER ENABLE CLEARED
1043                                    ;
1044  002402  042777  177777  176442  ST16:   BIC     #177777,@STATUS ;CLEAR THE WORLD
1045  002410  032777  000004  176434          BIT     #BIT2,@STATUS   ;IS MASTER ENABLE CLEARED
1046  002416  001405                          BEQ     ST16XE          ;BRANCH IF CLEARED
1047  002420  012737  000016  001050  ERR16:  MOV     #16,ERCOUNT     ;*** ERROR 16 ***
1048          000017                          N=N+1
1049  002426  004537  007674                  JSR     %5,STAER        ;REPORT MASTER ENABLE STILL SET
1050  002432  000004                  ST16XE: SCOPE
1051  002434  002402                          ST16
1052                                    ;
1053                                    ;CAN WE SET MASTER ENABLE
1054                                    ;
1055  002436  042777  177777  176406  ST16X:  BIC     #177777,@STATUS
1056  002444  012777  000340  176330          MOV     #340,@CSR
1057  002452  052777  000004  176372          BIS     #BIT2,@STATUS   ;CAN WE SET MASTER ENABLE
1058  002460  032777  000004  176364          BIT     #BIT2,@STATUS   ;IS MASTER ENABLE SET
1059  002466  001005                          BNE     ST17E           ;YES EXIT
1060  002470  012737  000017  001050  ERR17:  MOV     #17,ERCOUNT     ;*** ERROR 17 ***
1061          000020                          N=N+1
1062  002476  004537  007674                  JSR     %5,STAER        ;REPORT ERROR
1063  002502  000004                  ST17E:  SCOPE
1064  002504  002436                          ST16X
1065                                    ;
1066                                    ;IS DPR CLEARED
1067                                    ;
1068  002506  042777  177777  176336  ST17:   BIC     #177777,@STATUS ;CLEAR THE WORLD
1069  002514  032777  000002  176330          BIT     #BIT1,@STATUS   ;IS DATA PRESENT CLEARED
1070  002522  001405                          BEQ     ST17XE          ;BRANCH IF DATA PRESENT AS CLEARED
1071  002524  012737  000020  001050  ERR20:  MOV     #20,ERCOUNT     ;*** ERROR 20 ***
1072          000021                          N=N+1
1073  002532  004537  007674                  JSR     %5,STAER        ;REPORT DATA PRESENT IS SET
```

```
1074  002536  000004                    ST17XE: SCOPE
1075  002540  002506                            ST17
```

```
1076                                    ;
1077                                    ;CAN WE SET DPR (DIGIT PRESENT)
1078                                    ;
1079  002542  042777  177777  176302  ST17X:  BIC     #177777,@STATUS
1080  002550  012777  000410  176274          MOV     #BIT8!BIT3,@STATUS ;SET PND
1081  002556  052777  000002  176266          BIS     #BIT1,@STATUS   ;SET DPR
1082  002564  032777  000002  176260          BIT     #BIT1,@STATUS
1083  002572  001005                         BNE     ST20E
1084  002574  012737  000021  001050  ERR21:  MOV     #21,ERCOUNT     ;*** ERROR 21 ***
1085          000022                         N=N+1
1086  002602  004537  007674                 JSR     %5,STAER
1087  002606  000004                 ST20E:  SCOPE
1088  002610  002542                         ST17X
1089                                    ;
1090                                    ;IS CRQ (CALL REQUEST) CLEARED
1091                                    ;
1092  002612  042777  177777  176232  ST20:   BIC     #177777,@STATUS
1093  002620  032777  000001  176224          BIT     #BIT0,@STATUS   ;IS CALL REQUEST SET
1094  002626  001405                         BEQ     ST21E           ;NO! IT SHOULD NEVER BE SET
1095  002630  012737  000022  001050  ERR22:  MOV     #22,ERCOUNT     ;*** ERROR 22 ***
1096          000023                         N=N+1
1097  002636  004537  007674                 JSR     %5,STAER        ;REPORT ERROR
1098  002642  000004                 ST21E:  SCOPE
1099  002644  002612                         ST20
1100                                  ;TEST THE ABILITY OF SETTING CRQ
1101  002646  042777  177777  176176  ST21:   BIC     #177777,@STATUS ;CLEAR THE WORLD
1102  002654  033777  001070  176170          BIT     MASK,@STATUS            ;IS THE DN11 CLEAR
1103  002662  001406                         BEQ     ST22            ;DN11 OK
1104  002664  012737  000023  001050  ERR23:  MOV     #23,ERCOUNT     ;*** ERROR 23 ***
1105          000024                         N=N+1
1106  002672  004537  007674                 JSR     %5,STAER        ;REPORT ERROR ''STATUS REG. NOT CLEAR''
1107  002676  000425                         BR      ST22E           ;EXIT ERROR OCCOURRED
1108  002700  052777  000001  176144  ST22:   BIS     #BIT0,@STATUS   ;SET CALL REQUEST
1109  002706  032777  000001  176136          BIT     #BIT0,@STATUS   ;IS CALL REQUEST SET
1110  002714  001006                         BNE     ST22X           ;YES! EXIT
1111  002716  012737  000024  001050  ERR24:  MOV     #24,ERCOUNT     ;*** ERROR 24 ***
1112          000025                         N=N+1
1113  002724  004537  007674                 JSR     %5,STAER        ;REPORT ERROR
1114  002730  000410                         BR      ST22E           ;LOOP ON ERRO
1115  002732  105777  176114          ST22X:  TSTB    @STATUS         ;DONE SHOULD NOT BE SET
1116  002736  100005                         BPL     ST22E           ;BRANCH IF DONE NOT SET
1117  002740  012737  000025  001050  ERR25:  MOV     #25,ERCOUNT     ;*** ERROR 25 ***
1118          000026                         N=N+1
1119  002746  004537  007674                 JSR     %5,STAER        ;REPORT THE ERROR
1120  002752  000004                 ST22E:  SCOPE
1121  002754  002646                         ST21
1122                                  ;
1123                                  ;DOES MAINTENANCE SET DLO
1124                                  ;
1125  002756  042777  177777  176066  ST23:   BIC     #177777,@STATUS ;CLEAR THE WORLD
1126  002764  033777  001070  176060          BIT     MASK,@STATUS            ;IS REG CLR
1127  002772  001406                         BEQ     ST24            ;YES! EXIT
1128  002774  012737  000026  001050  ERR26:  MOV     #26,ERCOUNT     ;*** ERROR 26 ***
1129          000027                         N=N+1
1130  003002  004537  007674                 JSR     %5,STAER        ;REPORT ERROR
1131  003006  000414                         BR      ST25E
```

```
1132  003010  052777  000010  176034  ST24:   BIS     #BIT3,@STATUS
1133  003016  032777  010000  176026          BIT     #BIT12,@STATUS  ;IS DLO SET
1134  003024  001005                  BNE     ST25E                   ;YES EXIT
1135  003026  012737  000027  001050  ERR27:  MOV     #27,ERCOUNT     ;*** ERROR 27 ***
1136          000030                  N=N+1
1137  003034  004537  007674                  JSR     %5,STAER        ;REPORT ERROR
1138  003040  000004                  ST25E:  SCOPE
1139  003042  002756                          ST23
1140
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1141
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1143
1144                                    ;
1145                                    ;CAN WE SET PND IN MAINTENANCE MODE
1146                                    ;
1147  003044  042777  177777  176000    ST25:   BIC     #177777,@STATUS
1148  003052  033777  001070  175772            BIT     MASK,@STATUS            ;IS REG CLEAR
1149  003060  001406                    BEQ     ST25X           ;YES! REG CLEAR
1150  003062  012737  000030  001050    ERR30:  MOV     #30,ERCOUNT     ;*** ERROR 30 ***
1151          000031                    N=N+1
1152  003070  004537  007674            JSR     %5,STAER
1153  003074  000425                    BR      ST26E           ;LOOP ON ERROR
1154  003076  052777  000411  175746    ST25X:  BIS     #BIT8!BIT3!BIT0,@STATUS ;SET PND IN MAINTENANCE MODE.
1155  003104  032777  000020  175740            BIT     #BIT4,@STATUS
1156  003112  001016                    BNE     ST26E           ;PND SET
1157  003114  012737  000031  001050    ERR31:  MOV     #31,ERCOUNT     ;*** ERROR 31 ***
1158          000032                    N=N+1
1159  003122  004537  007674            JSR     %5,STAER        ;PND NOT SET
1160  003126  000410                    BR      ST26E           ;EXIT ERROR OCCURRED
1161                                    ;
1162                                    ;DOES PND SET DONE
1163                                    ;
1164  003130  105777  175716    ST26:   TSTB    @STATUS         ;IS DONE SET
1165  003134  100405                    BMI     ST26E           ;BRANCH IF DONE SET
1166  003136  012737  000032  001050    ERR32:  MOV     #32,ERCOUNT     ;*** ERROR 32 ***
1167          000033                    N=N+1
1168  003144  004537  007674            JSR     %5,STAER
1169  003150  000004            ST26E:  SCOPE
1170  003152  003044                    ST25
1171                                    ;
1172                                    ;CAN WE SET DSS IN MAINTENENCE MODE
1173                                    ;
1174  003154  042777  177777  175670    ST26X:  BIC     #177777,@STATUS
1175  003162  033777  001070  175662            BIT     MASK,@STATUS            ;IS REG. CLEAR
1176  003170  001406                    BEQ     ST27            ;BRANCH IF CLEAR
1177  003172  012737  000033  001050    ERR33:  MOV     #33,ERCOUNT     ;*** ERROR 33 ***
1178          000034                    N=N+1
1179  003200  004537  007674            JSR     %5,STAER
1180  003204  000425                    BR      ST27E           ;REPORT ERROR
1181  003206  052777  001011  175636    ST27:   BIS     #BIT9!BIT3!BIT0,@STATUS ;SET DSS IN MAINTENANCE MODE
1182  003214  032777  000040  175630            BIT     #BIT5,@STATUS
1183  003222  001006                    BNE     ST30
1184  003224  012737  000034  001050    ERR34:  MOV     #34,ERCOUNT     ;*** ERROR 34 ***
1185          000035                    N=N+1
1186  003232  004537  007674            JSR     %5,STAER
1187  003236  000410                    BR      ST27E           ;LOOP ON ERROR
```

```
1188                                    ;
1189                                    ;DOES DSS SET DONE
1190                                    ;
1191  003240  105777  175606            ST30:   TSTB    @STATUS         ;WAS DONE SET BY DSS
1192  003244  100405                            BMI     ST27E           ;BRANCH IF YES
1193  003246  012737  000035  001050    ERR35:  MOV     #35,ERCOUNT     ;*** ERROR 35 ***
1194          000036                            N=N+1
1195  003254  004537  007674                    JSR     %5,STAER        ;REPORT ERROR
1196  003260  000004                    ST27E:  SCOPE
1197  003262  003154                            ST26X
1198                                    ;CAN WE SET PWO IN MAINTENANCE MODE
1199  003264  042777  177777  175560    ST31:   BIC     #177777,@STATUS
1200  003272  033777  001070  175552            BIT     MASK,@STATUS            ;IS STATUS REG CLEAR
1201  003300  001406                            BEQ     ST31X           ;BRANCH IF REG CLEAR
1202  003302  012737  000036  001050    ERR36:  MOV     #36,ERCOUNT     ;*** ERROR 36 ***
1203          000037                            N=N+1
1204  003310  004537  007674                    JSR     %5,STAER        ;REPORT ERROR
1205  003314  000432                            BR      ST32E           ;
1206  003316  052777  000010  175526    ST31X:  BIS     #BIT3,@STATUS           ;SET MAINTENANCE
1207  003324  042777  177760  175520            BIC     #177760,@STATUS
1208  003332  052777  002001  175512            BIS     #BIT10!BIT0,@STATUS     ;SET PWO
1209  003340  005777  175506                    TST     @STATUS
1210  003344  100406                            BMI     ST32
1211  003346  012737  000037  001050    ERR37:  MOV     #37,ERCOUNT     ;*** ERROR 37 ***
1212          000040                            N=N+1
1213  003354  004537  007674                    JSR     %5,STAER
1214  003360  000410                            BR      ST32E           ;REPORT ERROR
```

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1215
1216                                        ;WAS DONE SET
1217  003362  105777  175464          ST32:  TSTB    @STATUS          ;TEST DONE
1218  003366  100405                        BMI     ST32E            ;YES EXIT
1219  003370  012737  000040  001050  ERR40: MOV     #40,ERCOUNT      ;*** ERROR 40 ***
1220          000041                        N=N+1
1221  003376  004537  007674                JSR     %5,STAER         ;DONE NOT SET REPORT ERROR
1222  003402  000004                ST32E: SCOPE
1223  003404  003264                        ST31
1224                                        ;CAN WE SET ABANDON CALL AND RETRY IN MAINTENANCE MODE
1225  003406  042777  177777  175436  ST32X: BIC     #177777,@STATUS
1226  003414  033777  001070  175430        BIT     MASK,@STATUS             ;IS REG. CLEAR
1227  003422  001406                        BEQ     ST33             ;YES EXIT
1228  003424  012737  000041  001050  ERR41: MOV     #41,ERCOUNT      ;*** ERROR 41 ***
1229          000042                        N=N+1
1230  003432  004537  007674                JSR     %5,STAER
1231  003436  000425                        BR      ST34E            ;REPORT REG. NOT CLEAR
1232  003440  052777  004011  175404  ST33:  BIS     #BIT11!BIT3!BIT0,@STATUS ;SET ACR IN MAINTENANCE MODE
1233  003446  032777  040000  175376        BIT     #BIT14,@STATUS
1234  003454  001006                        BNE     ST34
1235  003456  012737  000042  001050  ERR42: MOV     #42,ERCOUNT      ;*** ERROR 42 ***
1236          000043                        N=N+1
1237  003464  004537  007674                JSR     %5,STAER         ;ACR NOT SET
1238  003470  000410                        BR      ST34E
1239                                        ;DID ACR SET DONE
1240  003472  105777  175354          ST34:  TSTB    @STATUS          ;WAS DONE SET BY ABANDON CALL AND RETRY
1241  003476  100405                        BMI     ST34E            ;YES EXIT
1242  003500  012737  000043  001050  ERR43: MOV     #43,ERCOUNT      ;*** ERROR 43 ***
1243          000044                        N=N+1
1244  003506  004537  007674                JSR     %5,STAER         ;DONE NOT SET
1245  003512  000004                ST34E: SCOPE
1246  003514  003406                        ST32X
1247                                        ;DOES PND CLEAR DIGIT PRESENT
1248  003516  042777  177777  175326  ST34X: BIC     #177777,@STATUS
1249  003524  033777  001070  175320        BIT     MASK,@STATUS             ;IS REG CLR
1250  003532  001406                        BEQ     ST35             ;YES BRANCH
1251  003534  012737  000044  001050  ERR44: MOV     #44,ERCOUNT      ;*** ERROR 44 ***
1252          000045                        N=N+1
1253  003542  004537  007674                JSR     %5,STAER
1254  003546  000434                        BR      ST35E            ;LOOP ON ERROR
1255  003550  052777  000410  175274  ST35:  BIS     #BIT8!BIT3,@STATUS       ;SET PND
1256  003556  052777  000002  175266        BIS     #BIT1,@STATUS    ;SET DIGIT PRESENT
1257  003564  032777  000002  175260        BIT     #BIT1,@STATUS    ;IS IT SET
1258  003572  001006                        BNE     ST35X            ;YES BRANCH
1259  003574  012737  000045  001050  ERR45: MOV     #45,ERCOUNT      ;*** ERROR 45 ***
1260          000046                        N=N+1
1261  003602  004537  007674                JSR     %5,STAER         ;REPORT DIGIT PRESENT NOT SET
1262  003606  000414                        BR      ST35E            ;LOOP ON ERROR
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1265                                    ;WAS DIGIT PRESENT CLEARED
1266  003610  042777  000410  175234  ST35X:  BIC     #BIT8!BIT3,@STATUS ;CLEAR PND
1267  003616  032777  000002  175226          BIT     #BIT1,@STATUS      ;WAS DIGIT PRESENT CLEARED
1268  003624  001405                          BEQ     ST35E              ;YES BRANCH
1269  003626  012737  000046  001050  ERR46:  MOV     #46,ERCOUNT        ;*** ERROR 46 ***
1270          000047                          N=N+1
1271  003634  004537  007674                  JSR     %5,STAER           ;REPORT ERROR
1272  003640  000004                  ST35E:  SCOPE
1273  003642  003516                          ST34X
1274                                  ;CAN WE SET AND CLEAR DONE
1275  003644  105777  175202          ST36:   TSTB    @STATUS            ;TEST DONE
1276  003650  100006                          BPL     ST36X              ;DONE CLEAR BRANCH
1277  003652  012737  000047  001050  ERR47:  MOV     #47,ERCOUNT        ;*** ERROR 47 ***
1278          000050                          N=N+1
1279  003660  004537  007674                  JSR     %5,STAER           ;REPORT ERROR
1280  003664  000427                          BR      ST36E              ;LOOP ON ERROR
1281  003666  052777  000200  175156  ST36X:  BIS     #BIT7,@STATUS      ;SET DONE
```

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1284                                        ;CAN WE CLEAR DONE
1285  003674  105777  175152                CLRDON: TSTB    @STATUS         ;IS DONE SET
1286  003700  100406                                BMI     DONSET          ;YES DONE SET
1287  003702  012737  000050  001050        ERR50:  MOV     #50,ERCOUNT     ;*** ERROR 50 ***
1288          000051                                N=N+1
1289  003710  004537  007674                        JSR     %5,STAER        ;REPORT ERROR
1290  003714  000413                                BR      ST36E           ;LOOP ON ERROR
1291  003716  042777  000200  175126        DONSET: BIC     #BIT7,@STATUS   ;CLR DONE
1292  003724  105777  175122                        TSTB    @STATUS         ;IS DONE CLEARED
1293  003730  100005                                BPL     ST36E           ;YES EXIT
1294  003732  012737  000051  001050        ERR51:  MOV     #51,ERCOUNT     ;*** ERROR 51 ***
1295          000052                                N=N+1
1296  003740  004537  007674                        JSR     %5,STAER        ;DONE NOT CLEARED
1297  003744  000004                        ST36E:  SCOPE
1298  003746  003644                                ST36
1299                                        ;CAN WE GENERATE AN INTERRUPT
1300  003750  000005                        ST37:   RESET
1301  003752  012777  004002  175044                MOV     #INTER,@VECTOR  ;SET UP INTERRUPT VECTOR
1302  003760  012777  000240  175014                MOV     #240,@CSR       ;SET CPU PRIORITY LEVEL TO BR5
1303  003766  052777  000300  175056                BIS     #BIT6!BIT7,@STATUS ;SET INTERRUPT ENABLE AND DONE
1304  003774  000240                                NOP                     ;NO INTERRUPT SHOULD MASTER ENABLE NOT SET
1305  003776  000137  004030                        JMP     ST37X           ;GO SET MASTER ENABLE TO SEE IF WE CAN INTERRUPT
1306                                                                        ;REPORT AN INTERRUPT OCCURRED THAT IS AN ERROR
1307  004002  012777  000340  174772        INTER:  MOV     #340,@CSR
1308  004010  005077  175036                        CLR     @STATUS
1309  004014  012737  000052  001050        ERR52:  MOV     #52,ERCOUNT     ;*** ERROR 52 ***
1310          000053                                N=N+1
1311  004022  004537  007674                        JSR     %5,STAER
1312  004026  000441                                BR      ST38E
1313  004030  012777  004052  174766        ST37X:  MOV     #SECINT,@VECTOR ;SET UP INTERRRUPT VECTOR
1314  004036  052777  000004  174750                BIS     #BIT2,@DNCSR1   ;SET MASTER ENABLE
1315  004044  000240                                NOP                     ;NO INTTERRUPT SHOULD OCCUR PROCESSOR IS AT LEVEL 5
1316  004046  000137  004066                        JMP     ST38            ;WE SHOULD NOT INTERRUPT LEVEL TO HIGH
1317  004052                                SECINT:
1318  004052  012737  000053  001050        ERR53:  MOV     #53,ERCOUNT     ;*** ERROR 53 ***
1319          000054                                N=N+1
1320  004060  004537  007674                        JSR     %5,STAER        ;REPORT THE DN11 INTERRUPTED
1321  004064  000422                                BR      ST38E           ;ENTER SCOPE LOOP
1322  004066  012777  004132  174730        ST38:   MOV     #ST38E,@VECTOR  ;SET UP FOR INTERRUPT
1323  004074  005077  174702                        CLR     @CSR            ;LOWER PROCESSOR PRIORITY
1324  004100  005037  001042                        CLR     TIME            ;SET UP TIMER
1325  004104  005237  001042                        INC     TIME            ;WAIT FOR INTERRUPT
1326  004110  001375                                BNE     .-4
1327  004112  012777  000340  174662                MOV     #340,@CSR       ;LOCK UP CPU DN11 DID NOT INTERRUPT
1328  004120  012737  000054  001050        ERR54:  MOV     #54,ERCOUNT     ;*** ERROR 54 ***
1329          000055                                N=N+1
1330  004126  004537  007674                        JSR     %5,STAER        ;REPORT DN11 DID NOT INTERRUPT AT BR0
1331  004132  013706  001072                ST38E:  MOV     STKLINK,%6      ;RESET STACK
1332  004136  000004                                SCOPE
1333  004140  003750                                ST37
1334  004142  032777  000400  174630        ST40:   BIT     #BIT8,@SR       ;DID THE OPERATOR SELECTED A DN11
1335  004150  001402                                BEQ     .+6             ; NO! NORMAL RUN
1336  004152  000137  001342                        JMP     ST1             ;THE OPERATOR DID SELECTED A DN11
1337  004156  023737  001022  001052                CMP     DNCSR4,STATUS
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1338  004164  001414                          BEQ     RESTART
1339  004166  062737  000002  001052          ADD     #2,STATUS
1340  004174  052777  000100  174650          BIS     #BIT6,@STATUS   ;SET INTERRUPT ENABLE
1341  004202  032777  000100  174642          BIT     #BIT6,@STATUS   ;IF SET DN11 IS POSSABILE THERE
1342  004210  001402                          BEQ     .+6
1343  004212  000137  001342                  JMP     ST1
1344  004216  013737  001014  001052  RESTART: MOV     DNCSR1,STATUS
1345  004224  032777  001000  174546          BIT     #BIT9,@SR       ;TEST IF THE OPERATOR WANTS TO LOOP ON STATIC TESTS
1346  004232  001402                          BEQ     MYCNT           ;BRANCH TO ON-LINE TEST IF BIT 9 NOT SET
1347  004234  000137  001414                  JMP     ST1X            ;LOOP ON STATIC TESTS BIT9 SET
1348  004240  012737  177770  001044  MYCNT:  MOV     #177770,TIME1   ;WAIT FOR PHONE LINE TO SETTLE
1349  004246  005037  001042                  CLR     TIME
1350  004252  005237  001042                  INC     TIME
1351  004256  001375                          BNE     .-4
1352  004260  005237  001044                  INC     TIME1
1353  004264  001372                          BNE     .-12
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1381                                        ;DIALEX 11
1382                                        ;THE OPERATOR MUST ASSIGN PHONE NUMBER TO EACH DN11
1383  004266  013706  001072          BEGIN: MOV     STKLINK,%6       ;SET UP STACK
1384  004272  004737  010304                 JSR     PC,CKSWR         ;CHECK FOR CNTL G
1385  004276  000005                        RESET
1386  004300  012777  005410  174516        MOV     #INT,@VECTOR     ;SET UP VECTOR
1387  004306  005004                        CLR     %4
1388  004310  005737  004320                TST     NOFLAG
1389  004314  001002                        BNE     .+6
1390  004316  000407                        BR      NEWNO
1391  004320  000000                NOFLAG: 0
1392  004322  004737  010304                JSR     PC,CKSWR         ;CHECK FOR <^G>
1393  004326  032777  000200  174444        BIT     #BIT7,@SR        ;TEST FOR TTY CONVERSATION
1394  004334  001104                        BNE     DNDIAL           ;BRANCH IF NO CONVERSATION
1395  004336  005037  001074          NEWNO: CLR     MAP              ;CLEAR PHONE MAP
1396  004342  005037  001076                 CLR     MAP+2
1397  004346  052737  177777  004320        BIS     #177777,NOFLAG
1398  004354  005037  001040                CLR     COUNT
1399  004360  012703  006340          NO0:   MOV     #PH01,%3         ;SET UP PHONE #1 BUFFER
1400  004364  104001                        EMT     +1
1401  004366  007313                        PH1
1402  004370  004737  006170                JSR     %7,TYST          ;FETCH KEYBOARD CHAR
1403  004374  105737  006340                TSTB    PH01
1404  004400  001405                        BEQ     NO1              ;OPERATOR FAILED TO TYPE A PHONE NUMBER
1405  004402  005237  001040                INC     COUNT
1406  004406  152764  000377  001074        BISB    #377,MAP(4)      ;LOAD MAP
1407  004414  005204                NO1:   INC     %4
1408  004416  012703  006362                MOV     #PH02,%3
1409  004422  104001                        EMT     +1
1410  004424  007326                        PH2
1411  004426  004737  006170                JSR     %7,TYST          ;FETCH KEYBOARD CHARACTER
1412  004432  105737  006362                TSTB    PH02             ;DID THE OPERATOR TYPE A PHONE NUMBER
1413  004436  001405                        BEQ     NO2              ;THE OPERATOR ONLY GAVE THE PROGRAM ONE NUMBER
1414  004440  005237  001040                INC     COUNT            ;THE OPERATOR TYPED AN NUMBER
1415  004444  152764  000377  001074        BISB    #377,MAP(4)      ;LOAD MAP
1416  004452  005204                NO2:   INC     %4
1417  004454  012703  006404                MOV     #PH03,%3
1418  004460  104001                        EMT     +1
1419  004462  007341                        PH3
1420  004464  004737  006170                JSR     %7,TYST          ;FETCH KEYBOARD CHARACTER
1421  004470  105737  006404                TSTB    PH03             ;DID THE OPERATOR TYPE A NUMBER FOR LINE THREE
1422  004474  001405                        BEQ     NO3              ;NO NUMBER FOR LINE THREE
1423  004476  005237  001040                INC     COUNT            ;OPERATOR TYPE D A NUMBER
1424  004502  152764  000377  001074        BISB    #377,MAP(4)      ;LOAD MAP
1425  004510  005204                NO3:   INC     %4
1426  004512  012703  006426                MOV     #PH04,%3
1427  004516  104001                        EMT     +1
1428  004520  007354                        PH4
1429  004522  004737  006170                JSR     %7,TYST          ;FETCH KEYBOARD CHARACTER
1430  004526  105737  006426                TSTB    PH04             ;TEST IF THE OPERATOR TYPED A NUMBER FOR THIS LINE
1431  004532  001405                        BEQ     DNDIAL           ;OPERATOR DID NOT TYPE A NUMBER
1432  004534  152764  000377  001074        BISB    #377,MAP(4)      ;LOAD MAP
1433  004542  005237  001040                INC     COUNT
1434  004546  013737  001014  001052  DNDIAL: MOV    DNCSR1,STATUS
1435  004554  013737  001040  001046        MOV     COUNT,SAVE
1436  004562  005004                        CLR     %4
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1437
1438                                    ;TEST FOR DN11'S TO BE IN READY STATE
1439                                    ;REGISTERS SHOULD BE CLEARED BECAUSE
1440                                    ;OF RESET COMMAND ISSUED AT START
1441  004564  004737  010304            RINGO:  JSR     PC,CKSWR        ;CHECK FOR CNTL G
1442  004570  105764  001074                    TSTB    MAP(4)          ;IS THIS LINE ACTIVE
1443  004574  001423                            BEQ     EXMODOK         ;BRANCH NOT ACTIVE
1444  004576  005777  174250                    TST     @STATUS
1445  004602  001415                            BEQ     MODOK           ;DN11 READY OK
1446  004604  017737  174242  001034            MOV     @STATUS,WORK    ;FETCH CONTENTS OF REGISTER
1447  004612  013737  001052  001036            MOV     STATUS,WORK1    ;FETCH ADDRESS OF REGISTER
1448  004620  012737  000055  001050  ERR55:    MOV     #55,ERCOUNT     ;*** ERROR 55 ***
1449          000056                            N=N+1
1450  004626  004537  010060                    JSR     %5,STAER2       ;REPORT DN11 NOT READY
1451  004632  000000                            HALT
1452  004634  000777                            BR      .               ;YOU CAN NOT CONTINUE
1453  004636  005337  001046            MODOK:  DEC     SAVE            ;ON UNTIL DN11 IS MADE READY
1454  004642  001405                            BEQ     SETPT           ;GO SET CALL REQUEST
1455  004644  005204            EXMODOK: INC     %4
1456  004646  062737  000002  001052            ADD     #2,STATUS       ;SET UP FOR NEXT DN11
1457  004654  000743                            BR      RINGO           ;TEST NEXT DN11
1458                                    ;
1459                                    ;SET UP DIGIT POINTERS FOR PHONE NUMBERS
1460                                    ;FOR DAILING SEQUENCE
1461  004656  005037  001054            SETPT:  CLR     PNT1            ;SET UP DIGIT POINTER ONE
1462  004662  005037  001056                    CLR     PNT2            ;SET UP DIGIT POINTER TWO
1463  004666  005037  001060                    CLR     PNT3            ;SET UP DIGIT POINTER THREE
1464  004672  005037  001062                    CLR     PNT4            ;SET UP DIGIT POINTER FOUR
1465  004676  005004                            CLR     %4
1466  004700  013737  001040  001046            MOV     COUNT,SAVE      ;SET UP TO ENABLE CRQ
1467  004706  013737  001014  001052            MOV     DNCSR1,STATUS   ;SET UP DN11 POINTER
1468  004714  105764  001074            SETCRQ: TSTB    MAP(4)          ;IS THIS ACTIVE
1469  004720  001423                            BEQ     EXCRQ
1470  004722  012777  000101  174122            MOV     #101,@STATUS    ;SET CRQ - INT. ENABLE - MASTER ENABLE
1471  004730  032777  010000  174114            BIT     #BIT12,@STATUS  ;TEST FOR DLO SET
1472  004736  001411                            BEQ     DLOTST          ;DLO SET OK!
1473  004740  012737  000056  001050  ERR56:    MOV     #56,ERCOUNT     ;*** ERROR 56 ***
1474          000057                            N=N+1
1475  004746  017737  174100  001034            MOV     @STATUS,WORK    ;FETCH CONTENTS OF STATUS REGISTER
1476  004754  004537  010060                    JSR     %5,STAER2
1477  004760  000755                            BR      SETCRQ
1478  004762  005337  001046            DLOTST: DEC     SAVE
1479  004766  001405                            BEQ     WAITIN          ;GO WAIT FOR INTERRUPTS
1480  004770  005204            EXCRQ:  INC     %4
1481  004772  062737  000002  001052            ADD     #2,STATUS       ;SET UP FOR NEXT DN11
1482  005000  000745                            BR      SETCRQ          ;SET UP NEXT DN11
1483                                    ;SET UP TO COUNT DSS INTERRUPTS AND TIME OUT IF ALL
1484                                    ;DSS INTERRUPTS DO NOT OCCUR
1485  005002  005077  173774            WAITIN: CLR     @CSR
1486  005006  013737  001040  001032            MOV     COUNT,DSSCNT    ;NUMBER OF DN11
1487  005014  012737  177700  001044            MOV     #177700,TIME1
1488  005022  012737  000000  001042            MOV     #0,TIME         ;SET UP TIMER
1489  005030  052777  000004  173756            BIS     #BIT2,@DNCSR1   ;SET MASTER ENABLE
1490  005036  005237  001042            TWOSEC: INC     TIME            ;WAIT FOR DSS
1491  005042  001375                            BNE     .-4
1492  005044  005237  001044                    INC     TIME1
```

```
1493  005050  001372                        BNE     TWOSEC
1494  005052  012777  000340  173722        MOV     #340,@CSR       ;LOCK UP CPU
1495  005060  104001                        EMT     +1              ;REPORT TIME OUT
1496  005062  007367                        TIMO
1497  005064  005004                        CLR     %4
1498  005066  012737  000057  001050  ERR57: MOV     #57,ERCOUNT     ;*** ERROR 57 ***
1499          000060                        N=N+1
1500  005074  013737  001040  001046        MOV     COUNT,SAVE
1501  005102  013737  001014  001052        MOV     DNCSR1,STATUS   ;SET UP TO FETCH DN11 REGISTERS
1502  005110  105764  001074        DNSTATE:TSTB    MAP(4)          ;TEST IF THE LINE IS ACTIVE
1503  005114  001410                        BEQ     MPDN            ;LINE NOT ACTIVE CHECK NEXT
1504  005116  017737  173730  001034        MOV     @STATUS,WORK    ;FETCH DN11 STATUS
1505  005124  004537  010060                JSR     %5,STAER2       ;REPORT STATUS
1506  005130  005337  001046                DEC     SAVE
1507  005134  001521                        BEQ     REPEND          ;GO REPORT END
1508  005136  005204                MPDN:   INC     %4
1509  005140  062737  000002  001052        ADD     #2,STATUS       ;SET UP TO TEST NEXT DN11
1510  005146  000760                        BR      DNSTATE
1511  005150  012737  177770  001044  END:   MOV     #177770,TIME1   ;SET UP TIME TO LET PHONE RING
1512  005156  005037  001042                CLR     TIME
1513  005162  005237  001042                INC     TIME
1514  005166  001375                        BNE     .-4
1515  005170  005237  001044                INC     TIME1
1516  005174  001372                        BNE     .-12
1517  005176  032777  010000  173574        BIT     #BIT12,@SR      ;TEST HOW DO WE TERMINATE THE CALL
1518  005204  001457                        BEQ     NOTCRQ          ;CALL TERMINATED BY RESET
1519  005206  013737  001040  001046        MOV     COUNT,SAVE
1520  005214  013737  001014  001052        MOV     DNCSR1,STATUS
1521  005222  005004                CLRDN:  CLR     %4
1522  005224  105764  001074                TSTB    MAP(4)          ;IS THIS LINE ACTIVE
1523  005230  001440                        BEQ     EXCLRDN         ;LINE IS NOT ACTIVE
1524  005232  042777  000001  173612        BIC     #BIT0,@STATUS   ;CLEAR CRQ
1525  005240  013737  177770  001044        MOV     177770, TIME1
1526  005246  005037  001042                CLR     TIME
1527  005252  005237  001042                INC     TIME            ;WIAT FOR DSS TO COME BACK
1528  005256  001375                        BNE     .-4
1529  005260  005237  001044                INC     TIME1
1530  005264  001372                        BNE     .-12
1531  005266  032777  000040  173556        BIT     #BIT5,@STATUS   ;TEST FOR DSS
1532  005274  001413                        BEQ     DSSCLR          ;DSS CLEARED BY CRQ
1533  005276  013737  001052  001036        MOV     STATUS,WORK1    ;SET UP FOR ERROR REPORT
1534  005304  017737  173542  001034        MOV     @STATUS,WORK
1535  005312  012737  000060  001050  ERR60: MOV     #60,ERCOUNT     ;*** ERROR 60 ***
1536          000061                        N=N+1
1537  005320  004537  010060                JSR     %5,STAER2       ;REPORT ERROR
1538  005324  005337  001046        DSSCLR: DEC     SAVE
1539  005330  001423                        BEQ     REPEND          ;RECYCLE
1540  005332  005204                EXCLRDN: INC    %4
1541  005334  062737  000002  001052        ADD     #2,STATUS       ;GO CLEAR NEXT DN11
1542  005342  000730                        BR      CLRDN+2
1543                                ;
1544                                ;
1545                                ;DN11'S MUST BE CLEARED BY RESET IN THIS TEST
1546                                ;
1547  005344  004737  010304        NOTCRQ: JSR     PC,CKSWR        ;CHECK FOR CNTL G
1548  005350  000005                        RESET                   ;CLEAR THE WORLD
```

```
1549  005352  012737  177770  001044          MOV     #177770,TIME1   ;SET UP TO WAIT  FOR LINES TO SETTLE DOWN
1550  005360  005037  001042                  CLR     TIME
1551  005364  005237  001042                  INC     TIME
1552  005370  001375                          BNE     .-4
1553  005372  005237  001044                  INC     TIME1
1554  005376  001372                          BNE     .-12
1555  005400  104001                REPEND:   EMT     +1
1556  005402  007442                          MESEND                  ;REPORT END
1557  005404  000137  001320                  JMP     NOTFIRST                ;RECYCLE TEST
1558                                  ;
1559                                  ;
1560                                  ;
```

```
1561
1562                                    ;
1563                                    ;INTERRUPT HANDLER FOR DIALEX
1564                                    ;       ON LINE TEST
1565                                    ;
1566  005410  042777  000004  173376    INT:    BIC     #BIT2,@DNCSR1   ;CLEAR MASTER ENABLE
1567  005416  013737  001040  001046            MOV     COUNT,SAVE      ;SET UP TO COUNT DN11'S
1568  005424  013737  001014  001052            MOV     DNCSR1,STATUS   ;SET UP ADDRESS ASSIGNMENT
1569  005432  012737  006340  001102            MOV     #PH01,POINT     ;FETCH NUMBER POINT
1570  005440  012737  001054  001100            MOV     #PNT1,ENTRY
1571  005446  005004                            CLR     %4
1572  005450  105764  001074          DNTST:    TSTB    MAP(4)          ;IS THE LINE ACTIVE
1573  005454  001511                            BEQ     EXINC           ;BRANCH THE LINE IS NOT ACTIVE
1574  005456  105777  173370                    TSTB    @STATUS         ;IS THE DONE FLAG SET
1575  005462  100077                            BPL     INCDN           ;NO INTERRUPT FROM THIS DN11
1576  005464  032777  160000  173360            BIT     #160000,@STATUS ; ERROR ? (PWO-ACR-BIT13 UNUSED)
1577  005472  001404                            BEQ     NOERROR         ;BRANCH NO ERROR
1578  005474  005777  173400                    TST     @ENTRY          ;IS IT THE END OF CALL
1579  005500  100525                            BMI     DSSSET          ;YES ACR SET END OF CALL
1580  005502  000532                            BR      REPORR          ;REPORT ERROR OCCURRED
1581  005504  032777  000040  173340  NOERROR:  BIT     #BIT5,@STATUS   ;IS DSS SET
1582  005512  001120                            BNE     DSSSET          ;BRANCH IF DSS SET
1583  005514  032777  000020  173330            BIT     #BIT4,@STATUS   ;TEST FOR PND
1584  005522  001006                            BNE     PNDSET          ;PND SET OK!
1585  005524  012737  000061  001050  ERR61:    MOV     #61,ERCOUNT     ;*** ERROR 61 ***
1586          000062                            N=N+1
1587  005532  004537  010060                    JSR     %5,STAER2
1588  005536  000451                            BR      INCDN
1589  005540  013737  001102  005562  PNDSET:   MOV     POINT,INDEX     ;SET UP TO FETCH DIGIT
1590  005546  017703  173326                    MOV     @ENTRY,%3       ;SET UP DIGIT POINTER
1591  005552  005777  173322                    TST     @ENTRY
1592  005556  100441                            BMI     INCDN
1593  005560  116337  000000  001034  SELECT:   MOVB    0(3),WORK       ;FETCH DIGIT
1594  005566  032737  000377  001034            BIT     #377,WORK       ;IS THIS THE LAST DIGIT
1595  005574  001012                            BNE     LASTDG          ;BRANCH IF NOT LAST DIGIT
1596  005576  052777  100000  173274            BIS     #BIT15,@ENTRY   ;SET END OF CALL FLAG
1597  005604  032777  004000  173166            BIT     #BIT11,@SR      ;TEST FOR EON OPTION
1598  005612  001060                            BNE     DSSSET          ;801 DOES NOT HAVE EON OPTION
1599  005614  012737  000012  001034            MOV     #12,WORK        ;LOAD END OF NUMBER CODE
1600  005622  042737  000360  001034  LASTDG:   BIC     #360,WORK
1601  005630  013700  001052                    MOV     STATUS, %0      ;LOAD DIGIT INTO TOP BYTE OF DN11 REGISTER
1602  005634  005200                            INC     %0
1603  005636  113710  001034                    MOVB    WORK,@%0        ;LOAD BCD DIGIT
1604  005642  042777  000200  173202  SETDPR:   BIC     #BIT7,@STATUS   ;CLEAR DONE
1605  005650  052777  000002  173174            BIS     #BIT1,@STATUS   ;SET DPR
1606  005656  005277  173216                    INC     @ENTRY
1607  005662  023737  001052  001022  INCDN:    CMP     STATUS,DNCSR4   ;TEST FOR LAST DN11
1608  005670  001416                            BEQ     EXDSS           ;BRANCH ALL DN11 OPERATING
1609  005672  005337  001046                    DEC     SAVE
1610  005676  001413                            BEQ     EXDSS
1611  005700  005204                  EXINC:    INC     %4
1612  005702  062737  000002  001100            ADD     #2,ENTRY        ;SET UP FOR NEXT DN11 POLE
1613  005710  062737  000002  001052            ADD     #2,STATUS       ;
1614  005716  062737  000022  001102            ADD     #22,POINT
1615  005724  000651                            BR      DNTST           ;TEST NEXT DN11
1616                                    ;
```

```
1617                                    ;TEST DSS FOR OVERFLOW AND EXIT
1618  005726  005737  001032            EXDSS:  TST     DSSCNT          ;DID WE RECEIVE DSS FROM ALL
1619  005732  001404                            BEQ     RESTE           ;YES EXIT
1620  005734  052777  000004  173052            BIS     #BIT2,@DNCSR1   ;SET MASTER ENABLE
1621  005742  000002                            RTI
1622  005744  012706  001000            RESTE:  MOV     #1000,%6        ;RESET STACK
1623  005750  000137  005150                    JMP     END             ;RECYCLE PROGRAM
1624                                    ;
1625                                    ;
1626                                    ;
1627                                    ;ROUTINE DEC DSS COUNT
1628  005754  005337  001032            DSSSET:         DEC     DSSCNT
1629  005760  042777  000200  173064            BIC     #BIT7,@STATUS   ;CLEAR DONE
1630  005766  000735                            BR      INCDN
1631                                    ;
1632                                    ;ROUTINE TO REPORT DN11 ERROR
1633                                    ;
1634  005770                            REPORR:
1635  005770  012737  000062  001050    ERR62:  MOV     #62,ERCOUNT     ;*** ERROR 62 ***
1636          000063                            N=N+1
1637  005776  004537  010060                    JSR     %5,STAER2
1638  006002  042777  000201  173042            BIC     #BIT7!BIT0,@STATUS      ;CLEAR DONE AND CRQ
1639  006010  000724                            BR      INCDN           ;GO TEST NEXT DN11
1640                                    ;
1641                                    ;
1642                                    ;
1643                                    ;
1644                                    ;
1645                                    ;MAINTENANCE ROUTINE FOR SETTING PULSER
1646                                    ;
1647                                    ;
1648  006012  012737  000340  001002    MASTER: MOV     #340,CSR        ;LOOK UP CPU. PRIORITY
1649  006020  013706  001072                    MOV     STKLINK,%6
1650  006024  004737  010200                    JSR     PC,SUSWR        ;CHECK FOR HARDWARE SWITCH REGISTER
1651  006030  017737  172744  001052            MOV     @SR,STATUS      ;STORE ADDRESS
1652  006036  000000                            HALT                    ;LOADSR FROM DOC. 5.3
1653  006040  004737  010304            EXMAST: JSR     PC,CKSWR        ;CHECK FOR <^G>
1654  006044  017777  172730  173000            MOV     @SR,@STATUS     ;MOVE SR INTO DN11 REGISTER     ;
1655  006052  000240                            NOP
1656  006054  000240                            NOP
1657  006056  000240                            NOP
1658  006060  000240                            NOP
1659  006062  032777  000010  172710            BIT     #BIT3,@SR       ;TEST FOR MAINTENANCE MODE
1660  006070  001015                            BNE     CLRWAT          ;BRANCH WE ARE IN MAINTENANCE MODE
1661  006072  012737  177770  001040            MOV     #177770,COUNT   ;WAIT 2 SECONDS FOR 801 SIGNALS
1662  006100  005037  001042                    CLR     TIME
1663  006104  005237  001042            TIMW:   INC     TIME
1664  006110  001375                            BNE     TIMW
1665  006112  005237  001040                    INC     COUNT
1666  006116  001370                            BNE     TIMW-4
1667  006120  005077  172726                    CLR     @STATUS         ;CLEAR DN11
1668  006124  032777  000010  172646    CLRWAT: BIT     #BIT3,@SR       ;ARE WE IN MAINTENANCE MODE
1669  006132  001013                            BNE     CLRREG          ;BRANCH NO NEED TO WAIT
1670  006134  012737  177770  001040            MOV     #177770,COUNT   ;WAIT FOR 801
1671  006142  005037  001042                    CLR     TIME
1672  006146  005237  001042            CLRTIM: INC     TIME
```

```
1673  006152  001375                        BNE     CLRTIM
1674  006154  005237  001040                INC     COUNT
1675  006160  001370                        BNE     CLRTIM-4
1676  006162  005077  172664        CLRREG: CLR     @STATUS         ;RECYCLE
1677  006166  000724                        BR      EXMAST
1678                                  ;
1679                                  ;
1680                                  ;
1681                                  ;
1682                                  ;ROUTINE TO HANDLE KEYBOARD CONVERSATION
1683                                  ;ROUTINE ACCEPTS NUM. OR ALPHA CHARACTERS
1684                                  ;
1685
1686  006170  010337  006450          TYST:   MOV     %3,BUFLIM       ;SAVE FIRST ADDRESS OF INPUT BUFFER
1687  006174  012777  000340  172600          MOV     #340,@CSR       ;LOCK UP INTERRUPTS
1688  006202  105777  172604          TSTFLG: TSTB    @TKS            ;CHECK FOR FLAG
1689  006206  100375                        BPL     TSTFLG          ;
1690  006210  117777  172572  172566        MOVB    @TKB,@TPB       ;CHARACTER IN BUFFER
1691  006216  105777  172566                TSTB    @TPS            ;ECHO CHARACTER
1692  006222  100375                        BPL     .-4
1693  006224  122777  000377  172554        CMPB    #377,@TKB       ;CHECK FOR RUB-OUT
1694  006232  001007                        BNE     CKCH            ;EXIT IF NOT RUB-OUT
1695  006234  020337  006450                CMP     %3,BUFLIM       ;HAVE WE RUBBED-OUT BACK TO BEGINNING?
1696  006240  001760                        BEQ     TSTFLG          ;YES, DO NOT RUBOUT ANYMORE
1697  006242  104001                        EMT     +1
1698  006244  007520                        MES8                    ;REPORT RUB-OUT ACKNOWLEDGED
1699  006246  005303                        DEC     %3
1700  006250  000754                        BR      TSTFLG          ;GO WAIT FOR NEW CHAR.
1701  006252  105737  010302          CKCH: TSTB    TTIN            ;CHECK TO SEE IF LOADING SWREG
1702  006256  001016                        BNE     1$              ;IF SO GET OUT
1703  006260  022777  000215  172520        CMP     #215,@TKB       ;CHECK FOR CARRIAGE RETURN
1704  006266  001411                        BEQ     2$
1705  006270  020327  006450                CMP     %3,#BUFLIM      ;ARE WE RUNNING OUT OF BUFFER SPACE?
1706  006274  001003                        BNE     3$              ;NO, SKIP OVER ERROR MESSAGE
1707  006276  104001                        EMT+1                   ;YES, REPORT ERROR
1708  006300  007205                        MES2
1709  006302  000737                        BR      TSTFLG
1710  006304  117723  172476          3$:   MOVB    @TKB,(3)+       ;LOAD CHARACTER IN BUFFER
1711  006310  000734                        BR      TSTFLG
1712  006312  105023                  2$:   CLRB    (3)+
1713  006314  000207                  1$:   RTS     %7              ;EXIT DELIMITER TYPED
1714  006316  000000                  TEXBUF: 0
1715          006340                        .=.+20
1716  006340  000000                  PH01:   0
1717          006362                        .=.+20
1718  006362  000000                  PH02:   0
1719          006404                        .=.+20
1720  006404  000000                  PH03:   0
1721          006426                        .=.+20
1722  006426  000000                  PH04:   0
1723          006450                        .=.+20
1724  006450  000000                  BUFLIM: 0
1725                                        .EVEN
1726
1727                                  ;SUBROUTINE TO OUTPUT ASCII MESSAGE ON TELETYPE PRINTER.
1728
```

```
1729  006452  011600                    TYP:    MOV     @%6,%0          ;GET ADDRESS THAT CONTAINS MESSAGE ADDRESS
1730  006454  062716  000002                    ADD     #2,@%6          ;SET UP EXIT.
1731  006460  011000                            MOV     @%0,%0          ;ADDRESS OF MESSAGE TO R0.
1732  006462  112037  006572              TYPA: MOVB    (0)+,TYPDAT     ;GET CHARACTER
1733  006466  122737  000100  006572            CMPB    #100,TYPDAT     ;CHECK FOR '@' CHARACTER
1734  006474  001001                            BNE     TYPC            ;BRANCH IF NOT '@'.
1735  006476  000002                            RTI                     ;TERMINATOR CHAR. DONE.  EXIT.
1736  006500  122737  000045  006572  TYPC:     CMPB    #45,TYPDAT      ;CHECK FOR '%'.
1737  006506  001416                            BEQ     TYPF            ;BRANCH IF '%'.
1738  006510  122737  000042  006572            CMPB    #42,TYPDAT      ;NOT '%'.  CHECK FOR '#'.
1739  006516  001417                            BEQ     TYPG            ;BRANCH IF '#'.
1740  006520  004737  006526                    JSR     %7,TYPD         ;TYPE CHAR IN TYPDAT
1741  006524  000756                            BR      TYPA
1742  006526  113777  006572  172250  TYPD:     MOVB    TYPDAT,@TPB     ;OUTPUT CHARACTER TO PRINTER
1743  006534  105777  172250                    TSTB    @TPS            ;WAIT FOR DONE FLAG.
1744  006540  100375                            BPL     .-4
1745  006542  000207                    TYEXIT: RTS     %7              ;EXIT
1746  006544  112737  000015  006572  TYPF:     MOVB    #15,TYPDAT      ;MOVE CARRIAGE RETURN CODE TO TYPDAT
1747  006552  004737  006526                    JSR     %7,TYPD         ;GO TYPE CHAR.
1748  006556  112737  000012  006572  TYPG:     MOVB    #12,TYPDAT      ;MOVE LF CODE TO TYPDAT.
1749  006564  004737  006526                    JSR     %7,TYPD         ;GO TYPE CHAR.
1750  006570  000734                            BR      TYPA
1751  006572  000000                    TYPDAT: 0
1752
1753                                    ;ROUTINE TO DECODE EMT CALLS FOR TTY
1754  006574  011600                    EMTRP:  MOV     (6),%0
1755  006576  022740  104001                    CMP     #EMT+1,-(0)     ;WAS CALL EMT+1
1756  006602  001101                            BNE     TYPS            ;EMT+0
1757  006604  000722                            BR      TYP
1758
1759                                    ;
1760                                    ;
1761                                    ;
1762                                    ;INDIVIUAL STATIC TEST SCOPE LOOP ROUTINE
1763                                    ;
1764                                    ;
1765                                    ;IF BIT 14 IS SET BYPASS THIS ROUTINE AND JUST LOOP ON THE TEST
1766                                    ;IF BIT 14 IS NOT SET LOOP ON EACH TEST 15 TIMES THEN GO TO THE NEXT TEST
1767                                    ;
1768                                    ;
1769  006606  004737  010304            LOOP:   JSR     PC,CKSWR        ;CHECK FOR <^G>
1770  006612  032777  040000  172160            BIT     #BIT14,@SR      ;TEST IF BIT 14 IS SET
1771  006620  001402                            BEQ     .+6             ;BRANCH IF BIT 14 IS NOT SET
1772  006622  013646                            MOV     @(6)+,-(6)      ;PLAYING WITH THE STACK
1773  006624  000002                            RTI                     ;LOOP ON TEST WITHOUT ENTERING THIS ROUTINE
1774  006626  005737  001066                    TST     PASS            ;TEST IF THE PASS COUNT IS ZERO
1775  006632  001003                            BNE     .+10            ;PASS COUNT NOT ZERO KEEP COUNTING
1776  006634  012737  000035  001066            MOV     #35,PASS        ;SET UP PASS COUNT FIRST TIME THROUGH
1777  006642  005337  001066                    DEC     PASS            ;-1 PASS THIS TIME THROUGH
1778  006646  001402                            BEQ     .+6             ;PASS ZERO ENTER NEXT TEST
1779  006650  013646                            MOV     @(6)+,-(6)      ;PLAYING WITH THE STACK AGAIN
1780  006652  000002                            RTI                     ;RE-ENTER TEST
1781  006654  062716  000002                    ADD     #2,(6)          ;INC.STACK FOR THE NEXT TEST
1782  006660  000002                            RTI                     ;EXIT TO THE NEXT TEST
1783
1784                                    ;
```

```
1785                                    ;POWER FAIL SEQUENCE
1786                                    ;
1787  006662  012737  006672  000024    PWRDWN: MOV     #PWRUP,24       ;SET UP POWER FAIL VECTOR FOR RESTART
1788  006670  000000                            HALT                    ;HALT AND WAIT FOR POWER TO COME BACK
1789                                    ;
1790                                    ;
1791                                    ;THIS THE POWER UP SEQUENCE REPORT POWER HAS FAILED AND
1792                                    ;WAIT TWO SECONDS FOR THE PHONE LINES TO SETTLE
1793                                    ;
1794                                    ;
1795  006672  012737  006662  000024    PWRUP:  MOV     #PWRDWN,24      ;SET UP POWER FAIL VECTOR FOR POWER DOWN
1796  006700  012706  001000                    MOV     #1000,%6        ;SET UP THE STACK
1797  006704  104000                            EMT     +0
1798  006706  007646                            HED6                    ;REPORT THE POWER HAS FAILED
1799  006710  177777                            -1
1800  006712  012737  177770  001044            MOV     #177770,TIME1   ;SET THE TWO SECOND TIMER
1801  006720  005237  001042            INCTM:  INC     TIME
1802  006724  001375                            BNE     INCTM
1803  006726  005237  001044                    INC     TIME1
1804  006732  001372                            BNE     INCTM
1805  006734  022737  000176  001000            CMP     #SWREG,SR       ;CHECK FOR SWREG USE
1806  006742  001002                            BNE     1$              ;IF NOT GO TO 1$
1807  006744  004737  010354                    JSR     PC,CNTLU        ;GO LOAD SWREG FROM TTY
1808  006750  000137  001104            1$:     JMP     START           ;GO TO THE BEGINNING OF  THE PROGRAM AND RESTART
1809                                    ;ROUTINE TO SAVE REGISTERS
1810  006754  010046                    SAVEREG: MOV    %0,-(6)         ;SAVE REGISTER 0
1811  006756  010146                             MOV    %1,-(6)         ;SAVE REGISTER 1
1812  006760  010246                             MOV    %2,-(6)         ;SAVE REGISTER 2
1813  006762  010346                             MOV    %3,-(6)         ;SAVE REGISTER 3
1814  006764  010446                             MOV    %4,-(6)         ;SAVE REGISTER 4
1815  006766  000115                             JMP    (5)             ;EXIT  ROUTINE
1816
1817                                    ;ROUTINE TO RESTORE REGISTERS
1818  006770  005726                    RESTORE: TST    (6)+
1819  006772  012604                             MOV    (6)+,%4         ;RESTORE REGISTER 4
1820  006774  012603                             MOV    (6)+,%3         ;RESTORE REGISTER 3
1821  006776  012602                             MOV    (6)+,%2         ;RESTORE REGISTER 2
1822  007000  012601                             MOV    (6)+,%1         ;RESTORE REGISTER 1
1823  007002  012600                             MOV    (6)+,%0         ;RESTORE REGISTER 0
1824  007004  000205                             RTS    %5              ;EXIT ROUTINE
1825                                    ;
1826                                    ;
```

```
1827
1828                                    ;SUBROUTINE TO OUTPUT A SERIES OF ASCII MESSAGES ON TELETYPE PRINTER
1829
1830  007006  011600                    TYPS:   MOV     @%6,%0          ;GET ADDRESS THAT CONTAINS MESSAGE ADDRESS
1831  007010  062716  000002                    ADD     #2,@%6          ;UPDATE TO NEXT MESSAGE ADDRESS
1832  007014  011037  007034                    MOV     @%0,TYPSB       ;ADDRESS OF MESSAGE TO TYPSB
1833  007020  022737  177777  007034            CMP     #-1,TYPSB       ;CHECK FOR TERMINATOR
1834  007026  001001                            BNE     TYPSA           ;BRANCH IF NOT TERMINATOR.
1835  007030  000002                            RTI                     ;TERMINATOR.  EXIT.
1836  007032  104001                    TYPSA:  EMT     +1              ;CALL ON TYP SUB TO TYPE MESSAGE
1837  007034  000000                    TYPSB:  0                       ;ADDRESS OF MESSAGE GOES HERE
1838  007036  000763                            BR      TYPS            ;GO PROCESS NEXT MESSAGE
1839                                    ;
1840                                    ;
1841                                    ;
1842                                    ;
1843                                    ;OCTAL TO ASCII CONVERT ROUTINE
1844                                    ;
1845                                    ;ENTER ROUTINE AS FOLLOWS
1846                                    ;JSR %5,CONV
1847                                    ;ADDR# = ADDRESS OF NUMBER TO BE CONVERTED
1848                                    ;ADDR BYTE = LSB OF WHERE ASCII IS GOING
1849                                    ;ASCII# = THE NUMBER OF ASCII CHAR. TO BE CONVERTED
1850                                    ;
1851                                    ;
1852
1853  007040  013537  007120            CONV:   MOV     @(5)+,ACNVX     ;VALUE OF # TO BE CONVERTED
1854  007044  012501                            MOV     (5)+,%1         ;ASCII ADDR
1855  007046  012502                            MOV     (5)+,%2         ;# OF ASCII CHAR
1856  007050  060201                            ADD     %2,%1
1857
1858  007052  013703  007120            ACVN:   MOV     ACNVX,%3
1859  007056  042703  177770                    BIC     #177770,%3      ;ISOLATE LEAST SIGNIFICANT OCTAL #
1860  007062  062703  000060                    ADD     #60,%3          ;SET UP ASCII #
1861  007066  110341                            MOVB    %3,-(1)         ;STORE ASCII CHAR
1862  007070  042737  000007  007120            BIC     #7,ACNVX
1863  007076  006037  007120                    ROR     ACNVX           ;ROTATE OCTAL #
1864  007102  006037  007120                    ROR     ACNVX
1865  007106  006037  007120                    ROR     ACNVX
1866  007112  005302                            DEC     %2              ;-1 FROM ASCII CHAR COUNT
1867  007114  001356                            BNE     ACVN
1868  007116  000205                            RTS     %5              ;EXIT # CONVERTED
1869  007120  000000                    ACNVX:  0                       ;WORK REGISTER
```

```
1870                                    ;THIS ROUTINES IS USED TO CONVERT ASCII INPUT TO OCTAL
1871                                    ;
1872                                    ;
1873  007122  012703  006316           NEXCHAR: MOV    #TEXBUF,%3      ;FETCH ASCII POINTER
1874  007126  005012                            CLR    @%2
1875  007130  105713                            TSTB   @%3             ;TEST FOR LAST CHACTER
1876  007132  001410                            BEQ    EXNEX           ;LAST CHACTER EXIT
1877  007134  000241                            CLC
1878  007136  006312                            ASL    @%2
1879  007140  006312                            ASL    @%2
1880  007142  006312                            ASL    @%2
1881  007144  142713  000370                    BICB   #370,@%3        ;MASK OUT HI ORDER BITS
1882  007150  152312                            BISB   (3)+,@%2        ;LOAD OCTAL VALUE
1883  007152  000766                            BR     NEXCHAR+6
1884  007154  000207                   EXNEX:   RTS    %7              ;EXIT LAST CHARACTER PROCESSED
```

```
1885
1886
1887                                    ;
1888                                    ;TTY OUTPUT FOR DIALEX-11
1889                                    ;
1890  007156  020045  044124  020105    MES1:   .ASCII  /% THE 801 IS OFF LINE.@/
1891  007164  030070  020061  051511
1892  007172  047440  043106  046040
1893  007200  047111  027105     100
1894                                    ;
1895                                    ;
1896                                    ;
1897  007205     045  042524  052130    MES2:   .ASCII  /%TEXT BUFFER IS FULL.  NO MORE INPUT ALLOWED EXCEPT <RUBOUT> OR <CR>.@/
1898  007212  041040  043125  042506
1899  007220  020122  051511  043040
1900  007226  046125  027114  020040
1901  007234  047516  046440  051117
1902  007242  020105  047111  052520
1903  007250  020124  046101  047514
1904  007256  042527  020104  054105
1905  007264  042503  052120  036040
1906  007272  052522  047502  052125
1907  007300  020076  051117  036040
1908  007306  051103  027076     100
1909  007313     045  044120  047117    PH1:    .ASCII  /%PHONE #1?@/
1910  007320  020105  030443  040077
1911                                    ;
1912                                    ;
1913                                    ;
1914  007326  050045  047510  042516    PH2:    .ASCII  /%PHONE #2?@/
1915  007334  021440  037462     100
1916                                    ;
1917                                    ;
1918                                    ;
1919  007341     045  044120  047117    PH3:    .ASCII  /%PHONE #3?@/
1920  007346  020105  031443  040077
1921                                    ;
1922                                    ;
1923                                    ;
1924  007354  050045  047510  042516    PH4:    .ASCII  /%PHONE #4?@/
1925  007362  021440  037464     100
1926                                    ;
1927                                    ;
1928                                    ;
1929  007367     045  051120  043517    TIMO:   .ASCII  /%PROGRAM TIMED OUT UNABLE TO COMPLETE CALL@/
1930  007374  040522  020115  044524
1931  007402  042515  020104  052517
1932  007410  020124  047125  041101
1933  007416  042514  052040  020117
1934  007424  047503  050115  042514
1935  007432  042524  041440  046101
1936  007440  040114
1937                                    ;
1938                                    ;
1939                                    ;
1940                                    ;
```

```
1941                                                    ;
1942  007442  042445  042116     100  MESEND: .ASCII  /%END@/
1943                                                    ;
1944                                                    ;
1945                                                    ;
1946  007447     045  047104  030461  DNADDR: .ASCII  /%DN11 REGISTER ADDRESS?@/
1947  007454  051040  043505  051511
1948  007462  042524  020122  042101
1949  007470  051104  051505  037523
1950  007476     100
1951                                                    ;
1952                                                    ;
1953                                                    ;
1954  007477     045  042526  052103  VECDN:  .ASCII  /%VECTOR ADDRESS?@/
1955  007504  051117  040440  042104
1956  007512  042522  051523  040077
1957                                                    ;
1958                                                    ;
1959                                                    ;
1960                                                    ;
1961                                                    ;
1962                                                    ;
1963                                                    ;
1964                                                    ;
1965  007520  040057     047          MES8:   .ASCII  %/@'%
1966                                                    ;
1967  007523     045     100          HEDO:   .ASCII  /%@/
1968                                                    ;
1969                                                    ;
1970                                                    ;
1971  007525     040  020040  042440  HED1:   .ASCII  /    ERROR COUNT   @/
1972  007532  051122  051117  041440
1973  007540  052517  052116  020040
1974  007546  040040
1975                                                    ;
1976                                                    ;
1977                                                    ;
1978  007550  020040  020040  020040  HED2:   .ASCII  /       GD DATA   @/
1979  007556  043440  020104  040504
1980  007564  040524  020040  040040
1981                                                    ;
1982                                                    ;
1983                                                    ;
1984  007572  020040  020040  020040  HED3:   .ASCII  /       BD DATA@/
1985  007600  041040  020104  040504
1986  007606  040524     100
1987                                                    ;
1988                                                    ;
1989                                                    ;
1990  007611     040  020040  020040  HED4:   .ASCII  /      DN11   @/
1991  007616  042040  030516  020061
1992  007624  020040     100
1993                                                    ;
1994                                                    ;
1995                                                    ;
1996  007627     040  020040  020040  HED5:   .ASCII  /      DNCSR   @/
```

```
 1997  007634  042040  041516  051123
 1998  007642  020040  040040
 1999                                  ;
 2000                                  ;
 2001                                  ;
 2002  007646  050045  053517  051105  HED6:   .ASCII  /%POWER FAIL OCCURRED@/
 2003  007654  043040  044501  020114
 2004  007662  041517  052503  051122
 2005  007670  042105     100
 2006                                  ;
 2007                                  ;
 2008                                  ;
 2009          007674                          .EVEN
```

```
2010
2011                                    ;
2012                                    ;ROUTINE TO REPORT ERRORS
2013                                    ;
2014  007674  032777  020000  171076  STAER:  BIT     #BIT13,@SR      ;TEST TO DELETE TYPE-OUT
2015  007702  001401                          BEQ     .+4             ;BRANCH TO TYPE
2016  007704  000205                          RTS     %5              ;DELETE TYPE-OUT
2017  007706  004537  006754                  JSR     %5,SAVEREG      ;SAVE REGISTERS
2018  007712  004537  007040                  JSR     %5,CONV         ;CONVERT OCTAL TO ASCII
2019  007716  001050                          ERCOUNT
2020  007720  007525                          HED1
2021  007722  000003                          3
2022  007724  004537  007040                  JSR     %5,CONV
2023  007730  001052                          STATUS
2024  007732  007611                          HED4
2025  007734  000006                          6
2026  007736  104000                          EMT     +0              ;REPORT ERROR NUMBER
2027  007740  007523                          HED0
2028  007742  007525                          HED1
2029  007744  007611                          HED4
2030  007746  177777                          -1
2031  007750  005777  171024                  TST     @SR             ;TEST TO HALT ON ERROR
2032  007754  100001                          BPL     1$
2033  007756  000000                          HALT
2034  007760  004737  010304          1$:     JSR     PC,CKSWR        ;CHECK FOR <^G>
2035  007764  004537  006770                  JSR     %5,RESTORE      ;RESTORE REGISTERS
2036  007770  000205                          RTS     %5              ;EXIT
2037                                    ;
2038                                    ;
2039                                    ;
2040  007772  032777  020000  171000  STAER1: BIT     #BIT13,@SR      ;TEST TO DELETE TYPE-OUT
2041  010000  001401                          BEQ     .+4             ;BRANCH TO TYPE
2042  010002  000205                          RTS     %5              ;BIT13 SET DELETE TYPE-OUT
2043  010004  004537  006754                  JSR     %5,SAVEREG      ;SAVE REGISTERS
2044  010010  004537  007040                  JSR     %5,CONV         ;CONVERT OCTAL TO ASCII
2045  010014  001036                          WORK1                   ;WHAT REGISTER SHOULD CONTAIN
2046  010016  007550                          HED2
2047  010020  000006                          6
2048  010022  004537  007040                  JSR     %5,CONV         ;CONVERT OCTAL TO ASCII
2049  010026  001034                          WORK                    ;WHAT REGISTER CONTAINED
2050  010030  007572                          HED3
2051  010032  000006                          6
2052  010034  104000                          EMT     +0              ;REPORT MESSAGE
2053  010036  007523                          HED0
2054  010040  007550                          HED2
2055  010042  007572                          HED3
2056  010044  177777                          -1
2057  010046  004537  006770                  JSR     %5,RESTORE      ;RESTORE REGISTERS
2058  010052  004737  010304                  JSR     PC,CKSWR        ;CHECK FOR <^G>
2059  010056  000205                          RTS     %5
2060                                    ;
2061                                    ;
2062                                    ;
2063  010060  032777  020000  170712  STAER2: BIT     #BIT13,@SR      ;TEST TO DELETE TYPE-OUT
2064  010066  001401                          BEQ     .+4             ;BRANCH TO TYPE
2065  010070  000205                          RTS     %5              ;DELETE TYPE-OUT
```

```
2066  010072  004537  006754                JSR     %5,SAVEREG      ;SAVE REGISTERS
2067  010076  004537  007040                JSR     %5,CONV         ;CONVERT OCTAL TO ASCII
2068  010102  001050                       ERCOUNT
2069  010104  007525                       HED1
2070  010106  000003                       3
2071  010110  017737  170736  001034       MOV     @STATUS,WORK
2072  010116  004537  007040                JSR     %5,CONV         ;CONVERT OCTAL TO ASCII
2073  010122  001034                       WORK
2074  010124  007627                       HED5
2075  010126  000006                       6
2076  010130  004537  007040                JSR     %5,CONV ;CONVERT OCTAL TO ASCII
2077  010134  001052                       STATUS
2078  010136  007611                       HED4
2079  010140  000006                       6
2080  010142  104000                       EMT     +0
2081  010144  007523                       HED0
2082  010146  007525                       HED1
2083  010150  007627                       HED5
2084  010152  007611                       HED4
2085  010154  177777                       -1
2086  010156  005777  170616                TST     @SR             ;TEST TO DELETE HALT ON ERROR
2087  010162  100001                       BPL     1$              ;BRANCH IF NO HALT WANTED
2088  010164  000000                       HALT
2089  010166  004737  010304        1$:     JSR     PC,CKSWR        ;CHECK FOR <^G>
2090  010172  004537  006770                JSR     %5,RESTORE      ;RESTORE REGISTERS
2091  010176  000205                       RTS     %5
2092
2093
2094                                        ;HARDWARE SWITCH REGISTER SIZING ROUTINE*********
2095
2096
2097  010200  012737  177570  001000  SUSWR:  MOV     #177570,SR      ;INITIALIZE SWITCH REGISTER ADDRESS
2098  010206  013746  000006                MOV     @#6,-(SP)       ;SAVE VECTORS
2099  010212  013746  000004                MOV     @#4,-(SP)
2100  010216  012737  010236  000004        MOV     #64$,@#4        ;SET UP FOR TIMEOUT
2101  010224  022777  177777  170546        CMP     #-1,@SR ;REFERENCE HARDWARE SWITCH REGISTER
2102  010232  001402                       BEQ     65$
2103  010234  000404                       BR      66$
2104  010236  022626                64$:    CMP     (SP)+,(SP)+     ;ADJUST STACK
2105  010240  012737  000176  001000  65$:    MOV     #SWREG,SR       ;POINT TO SOFTWARE SWITCH REG
2106  010246  012637  000004          66$:    MOV     (SP)+,@#4       ;RESTORE VECTORS
2107  010252  012637  000006                MOV     (SP)+,@#6
2108  010256  022737  000176  001000        CMP     #SWREG,SR       ;IS SWREG USED
2109  010264  001002                       BNE     67$
2110  010266  004737  010354                JSR     PC,CNTLU        ;ALLOW SWREG TO BE LOADED
2111  010272  000207                67$:    RTS     PC
2112
2113
```

```
                                        ;CHECK SWITCH REGISTER ROUTINE. CHECKS FOR ^G TO ALLOW CHANGING
                                        ;OF LOC.176.
                                        ;LOCATIONS USED:
010274  000000                          TEMPST: .WORD   0
010276  000000                          WCOUNT: .WORD   0
010300  000000                          TIB:    .WORD   0
010302  000000                          TTIN:   .WORD   0

010304  022737  000176  001000  CKSWR:  CMP     #SWREG,SR       ;SOFTWARE SWITCH REGISTER PRESENT
010312  001132                          BNE     OUT             ;NO, GET OUT
010314  032777  004000  170470  69$:    BIT     #BIT11,@TKS     ;SEE IF TTY IS BUSY
010322  001374                          BNE     69$             ;IF BUSY WAIT TILL DONE
010324  017737  170456  010300          MOV     @TKB,TIB        ;AND STRIP OFF
010332  042737  000200  010300          BIC     #200,TIB        ;THE GARBAGE
010340  122737  000007  010300          CMPB    #7,TIB          ;IS IT A <^G>
010346  001114                          BNE     OUT
010350  104001                          EMT     +1              ;TYPE <^G>
010352  010606                          MCNTLG
010354  104001                  CNTLU:  EMT     +1              ;TYPE SWR=
010356  010613                          MSWR
010360  004537  006754                  JSR     %5,SAVEREG      ;SAVE REGISTERS
010364  004537  007040                  JSR     %5,CONV         ;GET CONTENTS OF SWREG
010370  000176                          SWREG
010372  010621                          MNEW
010374  000006                          6
010376  004537  006770                  JSR     %5,RESTORE      ;RESTORE REGISTERS
010402  104001                          EMT     +1              ;TYPE OUT CONTENTS OF SWREG
010404  010621                          MNEW                    ;AND NEW=
010406  005037  010274          $READ:  CLR     TEMPST
010412  012737  000007  010276          MOV     #7,WCOUNT
010420  005237  010302                  INC     TTIN
010424  004737  006170          1$:     JSR     PC,TYST         ;GO  READ A CHARACTER
010430  017737  170352  010300          MOV     @TKB,TIB
010436  042737  177600  010300          BIC     #177600,TIB     ;STRIP OFF GARBAGE
010444  122737  000025  010300          CMPB    #25,TIB         ;IS IT A ^U?
010452  001001                          BNE     2$              ;BRANCH IF NOT
010454  000737                  3$:     BR CNTLU                ;START OVER
010456  122737  000015  010300  2$:     CMPB    #15,TIB         ;IS IT A <CR>?
010464  001007                          BNE     4$              ;BRANCH IF NOT
010466  104001                          EMT     +1              ;TYPE CRLF
010470  010640                          MCRLF
010472  022737  000007  010276          CMP     #7,WCOUNT       ;WAS IT FIRST CHARACTER
010500  001034                          BNE     7$              ;CHANGE SWR IF NOT FIRST ONE
010502  000436                          BR      OUT             ;GET OUT
010504  122737  000060  010300  4$:     CMPB    #60,TIB
010512  003004                          BGT     5$
010514  122737  000067  010300          CMPB    #67,TIB
010522  002003                          BGE     6$
010524  104001                  5$:     EMT     +1              ;TYPE ?
010526  010642                          MQUEST
010530  000751                          BR      3$              ;START OVER IF NOT LEGAL CHARACTER
010532  006337  010274          6$:     ASL     TEMPST
010536  006337  010274                  ASL     TEMPST
010542  006337  010274                  ASL     TEMPST
010546  142737  000060  010300          BICB    #60,TIB         ;GET NITTY-GRITTY
010554  153737  010300  010274          BISB    TIB,TEMPST
```

```
 2170  010562  005337  010276                    DEC     WCOUNT          ;ONLY WANT 6   DIGITS
 2171  010566  001756                            BEQ     5$
 2172  010570  000715                            BR      1$
 2173  010572  013777  010274  170200  7$:       MOV     TEMPST,@SR      ;CHANGE SWITCH REGISTER CONTENTS
 2174  010600  005037  010302            OUT:    CLR     TTIN
 2175  010604  000207                            RTS     PC              ;RETURN TO PROGRAM
 2176
 2177  010606  057045  022507     100  MCNTLG: .ASCII  /%^G%@/
 2178  010613     045  053523  036522  MSWR:   .ASCII  /%SWR=@/
 2179  010620     100
 2180  010621     040  020040  020040  MNEW:   .ASCII  /          NEW=@/
 2181  010626  020040  020040  047040
 2182  010634  053505  040075
 2183  010640  040045                    MCRLF:  .ASCII  /%@/
 2184  010642  037445  040045            MQUEST: .ASCII  /%?%@/
 2185  010646  041445  042132  040516    MTITLE: .ASCII  /%CZDNA-C    DN11 DIALEX%@/
 2186  010654  041455  020040  020040
 2187  010662  047104  030461  042040
 2188  010670  040511  042514  022530
 2189  010676     100
 2190
 2191          010700                    .EVEN
 2192
 2193
 2194
 2195          011700                    .=.+1000
 2196  011700  000000            STACK:  0
 2197          000001                    .END
```

```
ACNVX   007120          1853* 1858  1862* 1863* 1864* 1865* 1869#
ACVN    007052          1858# 1867
BEGIN   004266           838  1383#
BIT0  = 000001           448# 1093  1108  1109  1154  1181  1208  1232  1524  1638
BIT1  = 000002           449# 1069  1081  1082  1256  1257  1267  1605
BIT10 = 002000           458#  836  1208
BIT11 = 004000           459# 1232  1597  2124
BIT12 = 010000           460#  903  1133  1471  1517
BIT13 = 020000           461#  892  2014  2040  2063
BIT14 = 040000           462#  881  1233  1770
BIT15 = 100000           463# 1596
BIT2  = 000004           450# 1045  1057  1058  1314  1489  1566  1620
BIT3  = 000010           451# 1022  1033  1034  1080  1132  1154  1181  1206  1232  1255  1266  1659
                        1668
BIT4  = 000020           452# 1011  1155  1583
BIT5  = 000040           453# 1000  1182  1531  1581
BIT6  = 000100           454#  974   985   986  1303  1340  1341
BIT7  = 000200           455# 1281  1291  1303  1393  1604  1629  1638
BIT8  = 000400           456#  852  1080  1154  1255  1266  1334
BIT9  = 001000           457# 1181  1345
BUFLIM  006450          1686* 1695  1705  1724#
CKCH    006252          1694  1701#
CKSWR   010304           851  1384  1392  1441  1547  1653  1769  2034  2058  2089  2122#
CLRDN   005222          1521# 1542
CLRDON  003674          1285#
CLRREG  006162          1669  1676#
CLRTIM  006146          1672# 1673  1675
CLRWAT  006124          1660  1668#
CNTLU   010354          1807  2110  2132# 2150
CONV    007040          1853# 2018  2022  2044  2048  2067  2072  2076  2135
COUNT   001040           775# 1398* 1405* 1414* 1423* 1433* 1435  1466  1486  1500  1519  1567  1661*
                        1665* 1670* 1674*
CSR     001002           747# 984*  1056* 1302* 1307* 1323* 1327* 1485* 1494* 1648* 1687*
DLOTST  004762          1472  1478#
DNADDR  007447           813  1946#
DNCSR1  001014           756# 815   817   823   835  1314* 1344  1434  1467  1489* 1501  1520  1566*
                        1568  1620*
DNCSR2  001016           757# 817*  818*  819
DNCSR3  001020           758# 819*  820*  821
DNCSR4  001022           759# 821*  822*  1337  1607
DNDIAL  004546          1394  1431  1434#
DNSTAT  005110          1502# 1510
DNTST   005450          1572# 1615
DONSET  003716          1286  1291#
DSSCLR  005324          1532  1538#
DSSCNT  001032           772# 1486* 1618  1628*
DSSSET  005754          1579  1582  1598  1628#
EMTRP   006574           733  1754#
END     005150          1511# 1623
ENTRY   001100           794# 1570* 1578  1590  1591  1596* 1606* 1612*
ERCOUN  001050           779#  870*  883*  894*  905*  916*  932*  953*  965*  976*  989*  1002* 1013*
                        1024* 1036* 1047* 1060* 1071* 1084* 1095* 1104* 1111* 1117* 1128* 1135* 1150*
                        1157* 1166* 1177* 1184* 1193* 1202* 1211* 1219* 1228* 1235* 1242* 1251* 1259*
                        1269* 1277* 1287* 1294* 1309* 1318* 1328* 1448* 1473* 1498* 1535* 1585* 1635*
                        2019  2068
ERRO    001462           870#
```

ERR1	001516	883#		
ERR10	002126	976#		
ERR11	002172	989#		
ERR12	002232	1002#		
ERR13	002266	1013#		
ERR14	002322	1024#		
ERR15	002364	1036#		
ERR16	002420	1047#		
ERR17	002470	1060#		
ERR2	001552	894#		
ERR20	002524	1071#		
ERR21	002574	1084#		
ERR22	002630	1095#		
ERR23	002664	1104#		
ERR24	002716	1111#		
ERR25	002740	1117#		
ERR26	002774	1128#		
ERR27	003026	1135#		
ERR3	001606	905#		
ERR30	003062	1150#		
ERR31	003114	1157#		
ERR32	003136	1166#		
ERR33	003172	1177#		
ERR34	003224	1184#		
ERR35	003246	1193#		
ERR36	003302	1202#		
ERR37	003346	1211#		
ERR4	001642	916#		
ERR40	003370	1219#		
ERR41	003424	1228#		
ERR42	003456	1235#		
ERR43	003500	1242#		
ERR44	003534	1251#		
ERR45	003574	1259#		
ERR46	003626	1269#		
ERR47	003652	1277#		
ERR5	001720	932#		
ERR50	003702	1287#		
ERR51	003732	1294#		
ERR52	004014	1309#		
ERR53	004052	1318#		
ERR54	004120	1328#		
ERR55	004620	1448#		
ERR56	004740	1473#		
ERR57	005066	1498#		
ERR6	002034	953#		
ERR60	005312	1535#		
ERR61	005524	1585#		
ERR62	005770	1635#		
ERR7	002072	965#		
EXCLRD	005332	1523	1540#	
EXCRQ	004770	1469	1480#	
EXDSS	005726	1608	1610	1618#
EXINC	005700	1573	1611#	
EXMAST	006040	1653#	1677	
EXMODO	004644	1443	1455#	

```
EXNEX   007154          1876    1884#
FLAG    001064           785#    808     810*
FTITLE  001030           771#    803*
GETVEC  001242           824#    831
HED0    007523          1967#   2027    2053    2081
HED1    007525          1971#   2020    2028    2069    2082
HED2    007550          1978#   2046    2054
HED3    007572          1984#   2050    2055
HED4    007611          1990#   2024    2029    2078    2084
HED5    007627          1996#   2074    2083
HED6    007646          1798    2002#
INCDN   005662          1575    1588    1592    1607#   1630    1639
INCTM   006720          1801#   1802    1804
INDEX = 005562           753#   1589*
INT     005410          1386    1566#
INTER   004002          1301    1307#
LASTDG  005622          1595    1600#
LOOP    006606           728    1769#
MAP     001074           789#   1395*   1396*   1406*   1415*   1424*   1432*   1442    1468    1502    1522    1572
MASK    001070           787#    862*    864*    868    1102    1126    1148    1175    1200    1226    1249
MASTER  006012           743    1648#
MCNTLG  010606          2131    2177#
MCRLF   010640          2154    2183#
MESEND  007442          1556    1942#
MES1    007156           866    1890#
MES2    007205          1708    1897#
MES8    007520          1698    1965#
MNEW    010621          2137    2141    2180#
MODOK   004636          1445    1453#
MPDN    005136          1503    1508#
MQUEST  010642          2163    2184#
MSWR    010613          2133    2178#
MTITLE  010646           806    2185#
MYCNT   004240          1346    1348#
N       000063           446#    870     871#    883     884#    894     895#    905     906#    916     917#    932     933#
                         952     954#    965     966#    976     977#    989     990#   1002    1003#   1013    1014#   1024
                        1025#   1036    1037#   1047    1048#   1060    1061#   1071    1072#   1084    1085#   1095    1096#
                        1104    1105#   1111    1112#   1117    1118#   1128    1129#   1135    1136#   1150    1151#   1157
                        1158#   1166    1167#   1177    1178#   1184    1185#   1193    1194#   1202    1203#   1211    1212#
                        1219    1220#   1228    1229#   1235    1236#   1242    1243#   1251    1252#   1259    1260#   1269
                        1270#   1277    1278#   1287    1288#   1294    1295#   1309    1310#   1317    1319#   1328    1329#
                        1448    1449#   1473    1474#   1498    1499#   1535    1536#   1585    1586#   1634    1636#
NEWNO   004336          1390    1395#
NEXCHA  007122           816    829     1873#   1883
NOERRO  005504          1577    1581#
NOFLAG  004320          1388    1391#   1397*
NOP     000240           447#
NOTCRQ  005344          1518    1547#
NOTFIR  001320           809    835#    1557
NOO     004360          1399#
NO1     004414          1404    1407#
NO2     004452          1413    1416#
NO3     004510          1422    1425#
OUT     010600          2123    2129    2157    2174#
PASS    001066           786#   1774    1776*   1777*
PHO1    006340           795    1399    1403    1569    1716#
```

```
PHO2    006362          1408    1412    1718#
PHO3    006404          1417    1421    1720#
PHO4    006426          1426    1430    1722#
PH1     007313          1401    1909#
PH2     007326          1410    1914#
PH3     007341          1419    1919#
PH4     007354          1428    1924#
PNDSET  005540          1584    1589#
PNT1    001054           781#    794    1461*   1570
PNT2    001056           782#   1462*
PNT3    001060           783#   1463*
PNT4    001062           784#   1464*
POINT   001102           795#   1569*   1589    1614*
PRIORI  001026           765#
PWRDWN  006662           730    1787#   1795
PWRUP   006672          1787    1795#
REPEND  005400          1507    1539    1555#
REPORR  005770          1580    1634#
RESTAR  004216          1338    1344#
RESTE   005744          1619    1622#
RESTOR  006770          1818#   2035    2057    2090    2139
RINGO   004564          1441#   1457
SAVE    001046           778#   1435*   1453*   1466*   1478*   1500*   1506*   1519*   1538*   1567*   1609*
SAVERE  006754          1810#   2017    2043    2066    2134
SCOPE = 000004           466#    873     886     897     908     919     937     957     968     979     993    1005    1016
                        1027    1039    1050    1063    1074    1087    1098    1120    1138    1169    1196    1222    1245
                        1272    1297    1332
SECINT  004052          1313    1317#
SELECT  005560           753    1593#
SETCRQ  004714          1468#   1477    1482
SETDPR  005642          1604#
SETPT   004656          1454    1461#
SR      001000           746#    836     852     854    1334    1345    1393    1517    1597    1651    1654    1659    1668
                        1770    1805    2014    2031    2040    2063    2086    2097*   2101    2105*   2108    2122    2173*
STACK   011700           788    2196#
STAER   007674           872     885     896     907     918     936     956     967     978     991    1004    1015    1026
                        1038    1049    1062    1073    1086    1097    1106    1113    1119    1130    1137    1152    1159
                        1168    1179    1186    1195    1204    1213    1221    1230    1237    1244    1253    1261    1271
                        1279    1289    1296    1311    1320    1330    2014#
STAER1  007772           935     955    2040#
STAER2  010060          1450    1476    1505    1537    1587    1637    2063#
START   001104           742     801#   1808
STATUS  001052           780#    823*    835*    858*    859*    860     867*    868     880*    881     891*    892     902*
                         903     913*    914     926*    927*    928     940*    943*    944     962*    963     973*    974
                         985*    986     992*    999*   1000    1010*   1011    1021*   1022    1032*   1033*   1034    1044*
                        1045    1055*   1057*   1058    1068*   1069    1079*   1080*   1081*   1082    1092*   1093    1101*
                        1102    1108*   1109    1115    1125*   1126    1132*   1133    1147*   1148    1154*   1155    1164
                        1174*   1175    1181*   1182    1191    1199*   1200    1206*   1207*   1208*   1209    1217    1225*
                        1226    1232*   1233    1240    1248*   1249    1255*   1256*   1257    1266*   1267    1275    1281*
                        1285    1291*   1292    1303*   1308*   1337    1339*   1340*   1341    1344*   1434*   1444    1446
                        1447    1456*   1467*   1470*   1471    1475    1481*   1501*   1504    1509*   1520*   1524*   1531
                        1533    1534    1541*   1568*   1574    1576    1581    1583    1601    1604*   1605*   1607    1613*
                        1629*   1638*   1651*   1654*   1667*   1676*   2023    2071    2077
STKLIN  001072           788#    802    1331    1383    1649
ST1     001342           851#   1336    1343
ST1X    001414           853     860#   1347
```

```
ST1XE   001444            867#    874
ST10    002056            962#    969
ST10E   002052            949     957#
ST11    002110            973#    980
ST11E   002104            964     968#
ST12    002144            984#    994
ST12E   002140            975     979#
ST12EX  002204            987     992#
ST13    002214            999#   1006
ST14    002250           1010#   1017
ST14E   002244           1001    1005#
ST15    002304           1021#   1028
ST15E   002300           1012    1016#
ST15X   002340           1032#   1040
ST15XE  002334           1023    1027#
ST16    002402           1044#   1051
ST16E   002376           1035    1039#
ST16X   002436           1055#   1064
ST16XE  002432           1046    1050#
ST17    002506           1068#   1075
ST17E   002502           1059    1063#
ST17X   002542           1079#   1088
ST17XE  002536           1070    1074#
ST2X    001500            880#    887
ST2XE   001474            869     873#
ST20    002612           1092#   1099
ST20E   002606           1083    1087#
ST21    002646           1101#   1121
ST21E   002642           1094    1098#
ST22    002700           1103    1108#
ST22E   002752           1107    1114    1116    1120#
ST22X   002732           1110    1115#
ST23    002756           1125#   1139
ST24    003010           1127    1132#
ST25    003044           1147#   1170
ST25E   003040           1131    1134    1138#
ST25X   003076           1149    1154#
ST26    003130           1164#
ST26E   003150           1153    1156    1160    1165    1169#
ST26X   003154           1174#   1197
ST27    003206           1176    1181#
ST27E   003260           1180    1187    1192    1196#
ST3     001534            891#    898
ST3E    001530            882     886#
ST30    003240           1183    1191#
ST31    003264           1199#   1223
ST31X   003316           1201    1206#
ST32    003362           1210    1217#
ST32E   003402           1205    1214    1218    1222#
ST32X   003406           1225#   1246
ST33    003440           1227    1232#
ST34    003472           1234    1240#
ST34E   003512           1231    1238    1241    1245#
ST34X   003516           1248#   1273
ST35    003550           1250    1255#
ST35E   003640           1254    1262    1268    1272#
```

```
ST35X   003610            1258    1266#
ST36    003644            1275#   1298
ST36E   003744            1280    1290    1293    1297#
ST36X   003666            1276    1281#
ST37    003750            1300#   1333
ST37X   004030            1305    1313#
ST38    004066            1316    1322#
ST38E   004132            1312    1321    1322    1331#
ST4     001570             902#    909
ST4E    001564             893     897#
ST40    004142            1334#
ST5     001624             913#    920
ST5E    001620             904     908#
ST6     001660             926#    938
ST6E    001654             915     919#
ST7     001750             940#    958
ST7E    001744             931     937#
ST7ER   002034             947     952#
ST7X    001764             943#    951
SUSWR   010200             807     1650    2097#
SWREG   000176             738#    1805    2105    2108    2122    2136
TEMPST  010274            2117#   2142*   2165*   2166*   2167*   2169*   2173
TEXBUF  006316             811     824     1714#   1873
TIB     010300            2119#   2126*   2127*   2128    2146*   2147*   2148    2151    2158    2160    2168*   2169
TIME    001042             776#   1324*   1325*   1349*   1350*   1488*   1490*   1512*   1513*   1526*   1527*   1550*   1551*
                          1662*   1663*   1671*   1672*   1801*
TIME1   001044             777#   1348*   1352*   1487*   1492*   1511*   1515*   1525*   1529*   1549*   1553*   1800*   1803*
TIMO    007367            1496    1929#
TIMW    006104            1663#   1664    1666
TKB     001006             749#   1690    1693    1703    1710    2126    2146
TKS     001012             751#   1688    2124
TPB     001004             748#   1690*   1742*
TPS     001010             750#   1691    1743
TSTFLG  006202            1688#   1689    1696    1700    1709    1711
TTIN    010302            1701    2120#   2144*   2174*
TWOSEC  005036            1490#   1493
TYEXIT  006542            1745#
TYP     006452            1729#   1757
TYPA    006462            1732#   1741    1750
TYPC    006500            1734    1736#
TYPD    006526            1740    1742#   1747    1749
TYPDAT  006572            1732*   1733    1736    1738    1742    1746*   1748*   1751#
TYPF    006544            1737    1746#
TYPG    006556            1739    1748#
TYPS    007006            1756    1830#   1838
TYPSA   007032            1834    1836#
TYPSB   007034            1832*   1833    1837#
TYST    006170             814     827    1402    1411    1420    1429    1686#   2145
VECDN   007477             826    1954#
VECTOR  001024             764#    828     830     832*    833*    834*    1301*   1313*   1322*   1386*
WAITIN  005002            1479    1485#
WCOUNT  010276            2118#   2143*   2155    2170*
WORK    001034             773#    854*    855*    857*    859     928*    929*    930     944*    945*    946     948     1446*
                          1475*   1504*   1534*   1593*   1594    1599*   1600*   1603    2049    2071*   2073
WORK1   001036             774#    934*    941*    943     946     950*    1447*   1533*   2045
$READ   010406            2142#
```

```
.     = 011702   470#  471   473   475   477   479   481   483   485   487   489   491   493
                 495   497   499   501   503   505   507   509   511   513   515   517   519
                 521   523   525   527   529   531   533   535   537   539   541   543   545
                 547   549   551   553   555   557   559   561   563   565   567   569   571
                 573   575   577   579   581   583   585   587   589   591   593   595   597
                 599   601   603   605   607   609   611   613   615   617   619   621   623
                 625   627   629   631   633   635   637   639   641   643   645   647   649
                 651   653   655   657   659   661   663   665   667   669   671   673   675
                 677   679   681   683   685   687   689   691   693   695   697   699   701
                 703   705   707   709   711   713   715   717   719   721   723   725   727#
                 732#  737#  741#  744#  837   861   863   1326  1335  1342  1351  1353  1389
                1452  1491  1514  1516  1528  1530  1552  1554  1692  1715#  1717#  1719#  1721#
                1723#  1744  1771  1775  1778  2009#  2015  2041  2064  2191#  2195#
```

```
ERROR    744#    870    883    894    905    916    932    952    965    976    989   1002   1013   1024   1036
        1047   1060   1071   1084   1095   1104   1111   1117   1128   1135   1150   1157   1166   1177   1184
        1193   1202   1211   1219   1228   1235   1242   1251   1259   1269   1277   1287   1294   1309   1317
        1328   1448   1473   1498   1535   1585   1634

. ABS.  011702     000


 ERRORS DETECTED:  0

 CZDNAC.BIN,CZDNAC.LST/CRF/SOL/NL:TOC=CZDNAC.P11
 RUN-TIME: 2 4 .8 SECONDS
 RUN-TIME RATIO: 51/7=6.7
 CORE USED:  8K  (15 PAGES)
```