DN11

DN11 DIALEX

MD-11-DZDNA-B

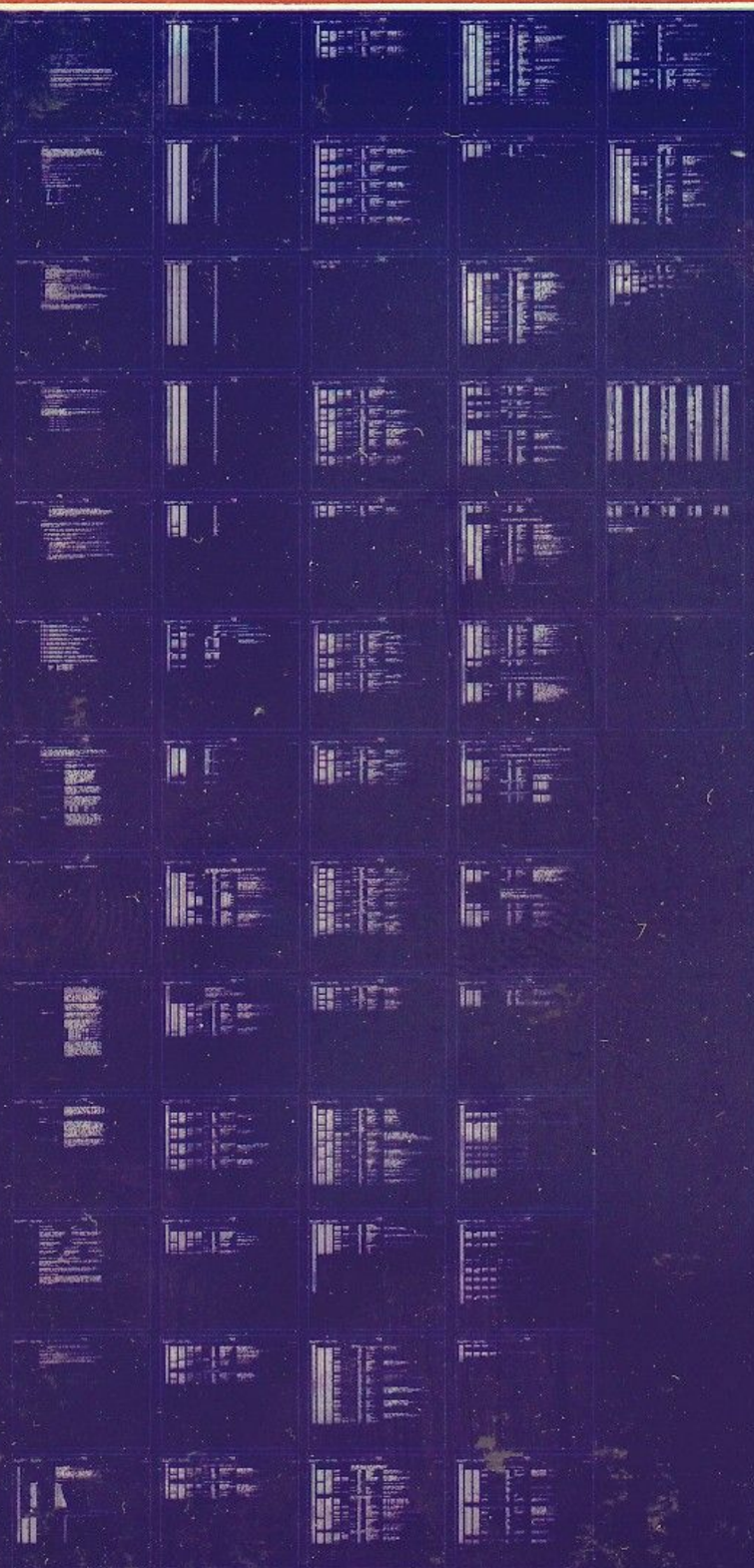
EP-DZDNA-B-DL-B

FICHE 1 OF 1

DEC 1977

digital

MADE IN USA



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IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DZDNA-B-D
PRODUCT NAME: DN11 DIALEX
DATE : AUGUST, 1977
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 N81 PND FPND 04 09 N82 DSS FDSS 05 10 N84 PWI PWO 13 11 N88 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 ORDER 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 THE 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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:

```
                                ;MD-11-DZDNA-B
                                ;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
```

```
554  000324  000326                  .+2
555  000326  000000                  HALT
556  000330  000332                  .+2
557  000332  000000                  HALT
560  000334  000336                  .+2
561  000336  000000                  HALT
562  000340  000342                  .+2
563  000342  000000                  HALT
564  000344  000346                  .+2
565  000346  000000                  HALT
566  000350  000352                  .+2
567  000352  000000                  HALT
570  000354  000356                  .+2
571  000356  000000                  HALT
572  000360  000362                  .+2
573  000362  000000                  HALT
574  000364  000366                  .+2
575  000366  000000                  HALT
576  000370  000372                  .+2
577  000372  000000                  HALT
578  000374  000376                  .+2
579  000376  000000                  HALT
580  000400  000402                  .+2
581  000402  000000                  HALT
582  000404  000406                  .+2
583  000406  000000                  HALT
584  000410  000412                  .+2
585  000412  000000                  HALT
586  000414  000416                  .+2
587  000416  000000                  HALT
588  000420  000422                  .+2
589  000422  000000                  HALT
590  000424  000426                  .+2
591  000426  000000                  HALT
592  000430  000432                  .+2
593  000432  000000                  HALT
594  000434  000436                  .+2
595  000436  000000                  HALT
596  000440  000442                  .+2
597  000442  000000                  HALT
598  000444  000446                  .+2
599  000446  000000                  HALT
```

```
000600  000424  000426                  .+2
000601  000426  000000                  HALT
000602  000430  000432                  .+2
000603  000432  000000                  HALT
000604  000434  000436                  .+2
000605  000436  000000                  HALT
000606  000440  000442                  .+2
000607  000442  000000                  HALT
000610  000444  000446                  .+2
000611  000446  000000                  HALT
000612  000450  000452                  .+2
000613  000452  000000                  HALT
000614  000454  000456                  .+2
000615  000456  000000                  HALT
000616  000460  000462                  .+2
000617  000462  000000                  HALT
000620  000464  000466                  .+2
000621  000466  000000                  HALT
000622  000470  000472                  .+2
000623  000472  000000                  HALT
000624  000474  000476                  .+2
000625  000476  000000                  HALT
000626  000500  000502                  .+2
000627  000502  000000                  HALT
000630  000504  000506                  .+2
000631  000506  000000                  HALT
000632  000510  000512                  .+2
000633  000512  000000                  HALT
000634  000514  000516                  .+2
000635  000516  000000                  HALT
000636  000520  000522                  .+2
000637  000522  000000                  HALT
000640  000524  000526                  .+2
000641  000526  000000                  HALT
000642  000530  000532                  .+2
000643  000532  000000                  HALT
000644  000534  000536                  .+2
000645  000536  000000                  HALT
000646  000540  000542                  .+2
000647  000542  000000                  HALT
000650  000544  000546                  .+2
000651  000546  000000                  HALT
000652  000550  000552                  .+2
000653  000552  000000                  HALT
000654  000554  000556                  .+2
000655  000556  000000                  HALT
000656  000560  000562                  .+2
000657  000562  000000                  HALT
```

```
656  000564  000566                .+2
657  000566  000000                HALT
658  000570  000572                .+2
659  000572  000000                HALT
660  000574  000576                .+2
661  000576  000000                HALT
662  000600  000602                .+2
663  000602  000000                HALT
664  000604  000606                .+2
665  000606  000000                HALT
666  000610  000612                .+2
667  000612  000000                HALT
668  000614  000616                .+2
669  000616  000000                HALT
670  000620  000622                .+2
671  000622  000000                HALT
672  000624  000626                .+2
673  000626  000000                HALT
674  000630  000632                .+2
675  000632  000000                HALT
676  000634  000636                .+2
677  000636  000000                HALT
678  000640  000642                .+2
679  000642  000000                HALT
680  000644  000646                .+2
681  000646  000000                HALT
682  000650  000652                .+2
683  000652  000000                HALT
684  000654  000656                .+2
685  000656  000000                HALT
686  000660  000662                .+2
687  000662  000000                HALT
688  000664  000666                .+2
689  000666  000000                HALT
690  000670  000672                .+2
691  000672  000000                HALT
692  000674  000676                .+2
693  000676  000000                HALT
694  000700  000702                .+2
695  000702  000000                HALT
696  000704  000706                .+2
697  000706  000000                HALT
698  000710  000712                .+2
699  000712  000000                HALT
700  000714  000716                .+2
701  000716  000000                HALT
702  000720  000722                .+2
703  000722  000000                HALT
704  000724  000726                .+2
705  000726  000000                HALT
706  000730  000732                .+2
707  000732  000000                HALT
708  000734  000736                .+2
709  000736  000000                HALT
710  000740  000742                .+2
711  000742  000000                HALT
```

```
712  000744  000746                  .+2
713  000746  000000                  HALT
714  000750  000752                  .+2
715  000752  000000                  HALT
716  000754  000756                  .+2
717  000756  000000                  HALT
718  000760  000762                  .+2
719  000762  000000                  HALT
720  000764  000766                  .+2
721  000766  000000                  HALT
722  000770  000772                  .+2
723  000772  000000                  HALT
724  000774  000776                  .+2
725  000776  000000                  HALT
726          000020                  .=20
727  000020  006630                  LOOP
728  000022  000340                  340
729  000024  006704                  PWRDWN
730  000026  000340                  340
731          000030                  .=30
732  000030  006616                  EMTRP
733  000032  000340                  340
734
```

```
                                        ;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  006034              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
                                    ;
            005604                  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  011722                          STKLINK: STACK
001074      000     000     000         MAP:    .BYTE 0,0,0,0
001077      000
                                        ;
                                        ;
                                        ;
001100  001054                          ENTRY:  PNT1
001102  006362                          POINT:  PH01
```

```
                                        ;
                                        ;
                                        ;THIS ROUTINE IS USED TO INITIALIZE THE PROGRAM TO THE CORRECT
                                        ;DN11 REGISTER ASSIGNMENTS THIS ROUTINE IS ONLY ENTERED ONCE
                                        ;UPON THE FIRST START OF THE PROGRAM
001104  000005                  START:  RESET
001106  013706  001072                  MOV     STKLINK,%6      ;SET UP THE STACK
001112  005237  001030                  INC     FTITLE
001116  001002                          BNE     1$              ;SKIP TITLE IF ALREADY PRINTED
001120  104001                          EMT+1                   ;GO TYPE OUT THE TITLE
001122  010670                          MTITLE
001124  004737  010222          1$:     JSR     PC,SUSWR        ;GO TO SWITCH REGISTER SIZING ROUTINE
001130  005737  001064                  TST     FLAG            ;TEST FOR THE PASS
001134  001071                          BNE     NOTFIRST        ;BRANCH NOT THE FIRST PASS
001136  052737  177777  001064          BIS     #177777,FLAG    ;SET PASS INDICATOR
001144  012703  006340                  MOV     #TEXBUF,%3      ;SET UP TO RECEIVE DATA FROM TTY
001150  104001                          EMT     +1              ;ASK OPERATOR FOR FIRST DN11 ADDRESS
001152  007471                          DNADDR
001154  004737  006212                  JSR     %7,TYST         ;GO FETCH ADDRESS FROM TTY
001160  012702  001014                  MOV     #DNCSR1,%2
001164  004737  007144                  JSR     %7,NEXCHAR      ;CONVERT OCTAL TO ASCII
001170  013737  001014  001016          MOV     DNCSR1,DNCSR2   ;SET UP ALL DN11 ADDRESSES
001176  062737  000002  001016          ADD     #2,DNCSR2
001204  013737  001016  001020          MOV     DNCSR2,DNCSR3
001212  062737  000002  001020          ADD     #2,DNCSR3
001220  013737  001020  001022          MOV     DNCSR3,DNCSR4
001226  062737  000002  001022          ADD     #2,DNCSR4
001234  013737  001014  001052          MOV     DNCSR1,STATUS   ;
001242  012703  006340          GETVEC: MOV     #TEXBUF,%3      ;SET UP TO ASK FOR VECTOR ASSIGNMENT
001246  104001                          EMT     +1
001250  007521                          VECDN
001252  004737  006212                  JSR     %7,TYST         ;FETCH VECTOR ADDRESS FROM TTY
001256  012702  001024                  MOV     #VECTOR,%2
001262  004737  007144                  JSR     %7,NEXCHAR      ;CONVERT OCTAL TO ASCII
001266  022737  001000  001024          CMP     #1000,VECTOR    ;IS VECTOR ADDRESS LESS THAN 1000
001274  101762                          BLOS    GETVEC          ;BRANCH THE ADDRESS IS GREATER THAN 1000
001276  062737  000002  001024          ADD     #2,VECTOR       ;POINT TO VECTOR PSW
001304  012777  000200  177512          MOV     #200,@VECTOR    ;SET PRIORITY AT 4
001312  162737  000002  001024          SUB     #2,VECTOR       ;ADJ. VECTOR
001320  013737  001014  001052  NOTFIRST: MOV   DNCSR1,STATUS
001326  032777  002000  177444          BIT     #BIT10,@SR      ;TESTTO ENTER ON-LINE TEST ONLY
001334  001402                          BEQ     .+6             ;ENTER STATIC
001336  000137  004310                  JMP     BEGIN           ;ENTER ON-LINE TEST
```

```
                                        ;*****DIALEX-11*****
                                        ;DN11 TEST PART1
                                        ;AUTOMATIC DIALER INTERFACE
                                        ;
                                        ;THE FIRST PART OF THIS TEST CONSISTS OF
                                        ;INTER-ACTION BETWEEN THE OPERATOR AND
                                        ;THE PROGRAM
                                        ;
                                        ;
                                        ;IS PWO CLEARED
                                        ;
001342  004737  010326          ST1:    JSR     PC,CKSWR        ;CHECK FOR (^G)
001346  032777  000400  177424          BIT     #BIT8,@SR       ;DOES THE OPERATOR WANT TO SELECT ONE DN11
001354  001417                          BEQ     ST1X            ;NO RUN NORMAL
001356  017737  177416  001034          MOV     @SR,WORK        ;FETCH WHICH DN11 HE WANTS TO RUN
001364  042737  177774  001034          BIC     #177774,WORK    ;MASK COUNT
001372  000241                          CLC
001374  006137  001034                  ROL     WORK            ;COUNT TIMES 2
001400  042737  000007  001052          BIC     #7,STATUS       ;CLEAR DN11 NUMBER SELECTED PREVIOUSLY
001406  063737  001034  001052          ADD     WORK,STATUS     ;SET UP SELECTED DN11
001414  005777  177432          ST1X:   TST     @STATUS         ;TEST FOR 801
001420  100404                          BMI     .+12            ;NO 801 PRESENT
001422  012737  177777  001070          MOV     #177777,MASK
001430  000405                          BR      .+14
001432  012737  077777  001070          MOV     #77777,MASK
001440  104001                          EMT     +1
001442  007200                          MES1
001444  042777  177777  177400  ST1XE:  BIC     #177777,@STATUS
001452  033777  001070  177372          BIT     MASK,@STATUS            ;TEST STATUS BIT
001460  100005                          BPL     ST2XE           ;BRANCH IF POWER OFF
001462  012737  000000  001050  ERR0:   MOV     #0,ERCOUNT      ;*** ERROR 0 ***
        000001                          N=N+1
001470  004537  007716                  JSR     %5,STAER        ;REPORT ERROR
001474  000004                  ST2XE:  SCOPE
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  007716                  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  007716                  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  007716                  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  007716                  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  ERRS:   MOV     #5,ERCOUNT      ;*** ERROR 5 ***
        000006                         N=N+1
001726  012737  007400  001036          MOV     #7400,WORK1     ;BCD BITS THAT SHOULD BE SET
001734  004537  010014                  JSR     %5,STAER1       ;REPORT ERROR
001740  004537  007716                  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
```

```
941
942  001764  013777  001036  177060  ST7X:   MOV     WORK1,@STATUS   ;SET UP BCD BITS
943  001772  017737  177054  001034          MOV     @STATUS,WORK    ;READ BACK BCD BITS
944  002000  042737  170377  001034          BIC     #170377,WORK    ;MASK BITS
945  002006  023737  001036  001034          CMP     WORK1,WORK      ;DO THE BITS EQUAL WHAT WAS LOADED
946  002014  001007                          BNE     ST7ER           ;ERROR IN BITS READ BACK
947  002016  022737  007400  001034          CMP     #7400,WORK
948  002024  001412                          BEQ     ST10E           ;EXIT PATTERN COMPLETE
949  002026  105237  001037                  INCB    WORK1+1         ;SETUP NEXT PATTERN
950  002032  000754                          BR      ST7X            ;LOAD THE NEXT PATTERN
951  002034                          ST7ER:
952  002034  012737  000006  001050  ERR6:   MOV     #6,ERCOUNT      ;*** ERROR 6 ***
953          000007                          N=N+1
954  002042  004537  010014                  JSR     %5,STAER1       ;REPORT ERROR
955  002046  004537  007716                  JSR     %5,STAER
956  002052  000004                  ST10E:  SCOPE
957  002054  001750                          ST7
958                                  ;
959                                  ;IS DONE CLEARED
960                                  ;
961  002056  042777  177777  176786  ST10:   BIC     #177777,@STATUS ;CLEAR THE WORLD
962  002064  105777  176762                  TSTB    @STATUS         ;TEST FOR NOT DONE
963  002070  100005                          BPL     ST11E           ;BRANCH IF DONE NOT SET
964  002072  012737  000007  001050  ERR7:   MOV     #7,ERCOUNT      ;*** ERROR 7 ***
965          000010                          N=N+1
966  002100  004537  007716                  JSR     %5,STAER        ;REPORT DONE SET
967  002104  000004                  ST11E:  SCOPE
968  002106  002056                          ST10
```

```
                                        ;IS INTERRUPT ENABLE CLEARED
                                        ;
002110  042777  177777  176734  ST11:   BIC     #177777,@STATUS ;CLEAR THE WORLD
002116  032777  000100  176726          BIT     #BIT6,@STATUS   ;WAS BIT6 CLEARED
002124  001405                          BEQ     ST12E           ;BRANCH IF BIT6 CLEARED
002126  012737  000010  001050  ERR10:  MOV     #10,ERCOUNT     ;*** ERROR 10 ***
        000011                          N=N+1
002134  004537  007716                  JSR     %5,STAER        ;REPORT BIT6 SET
002140  000004                  ST12E:  SCOPE
002142  002110                          ST11
                                        ;
                                        ;CAN WE SET INTERRUPT ENABLE
                                        ;
002144  012777  000340  176630  ST12:   MOV     #340,@CSR       ;LOCK UP CPU
002152  052777  000100  176672          BIS     #BIT6,@STATUS   ;SET INTERRUPT ENABLE
002160  032777  000100  176664          BIT     #BIT6,@STATUS   ;WAS THE BIT SET
002166  001006                          BNE     ST12EX          ;BIT SET CLEAR INTERRUPT
002170  000005                          RESET                   ;CLEAR INTERRUPTS
002172  012737  000011  001050  ERR11:  MOV     #11,ERCOUNT     ;*** ERROR 11 ***
        000012                          N=N+1
002200  004537  007716                  JSR     %5,STAER        ;REPORT ERROR
002204  005077  176642          ST12EX: CLR     @STATUS                 ;CLEAR INTERRUPTS
002210  000004                          SCOPE
002212  002144                          ST12
```

```
                                        ;
                                        ;IS DSS CLEARED
                                        ;
002214  042777  177777  176630  ST13:   BIC     #177777,@STATUS ;CLEAR THE WORLD
002222  032777  000040  176622          BIT     #BIT5,@STATUS   ;IS DSS SET
002230  001405                          BEQ     ST14E           ;BRANCH IF DSS IS NOT SET
002232  012737  000012  001050  ERR12:  MOV     #12,ERCOUNT     ;*** ERROR 12 ***
002236  000013                          N=N+1
002240  004537  007716                  JSR     %5,STAER        ;REPORT DSS SET
002244  000004                  ST14E:  SCOPE
002246  002214                          ST13
                                        ;
                                        ;IS PND CLEARED
                                        ;
002250  042777  177777  176574  ST14:   BIC     #177777,@STATUS ;CLEAR THE WORLD
002256  032777  000020  176566          BIT     #BIT4,@STATUS   ;IS PND SET
002264  001405                          BEQ     ST15E           ;BRANCH IF PND NOT SET
002266  012737  000013  001050  ERR13:  MOV     #13,ERCOUNT     ;*** ERROR 13 ***
002274  000014                          N=N+1
002300  004537  007716                  JSR     %5,STAER        ;REPORT PND SET
002302  000004                  ST15E:  SCOPE
002304  002250                          ST14
```

```
                                        ;
                                        ;IS THE MAINTENANCE BIT CLEARED
                                        ;
002304  042777  177777  176540  ST15:   BIC     #177777,@STATUS ;CLEAR THE WORLD
002312  032777  000010  176532          BIT     #BIT3,@STATUS   ;IS MAINTENANCE BIT CLEAR
002320  001405                          BEQ     ST15XE          ;BRANCH IF MAINTENANCE CLEAR
002322  012737  000014  001050  ERR14:  MOV     #14,ERCOUNT     ;*** ERROR 14 ***
        000015                          N=N+1
002330  004537  007716                  JSR     %5,STAER        ;REPORT MAINTENANCE SET
002334  000004                  ST15XE: SCOPE
002336  002304                          ST15
                                        ;
                                        ;CAN WE SET THE MAINTENANCE BIT
                                        ;
002340  042777  177777  176504  ST15X:  BIC     #177777,@STATUS
002346  052777  000010  176476          BIS     #BIT3,@STATUS   ;CAN WE SET MAINTENANCE
002354  032777  000010  176470          BIT     #BIT3,@STATUS   ;IS MAINTENANCE SET
002362  001005                          BNE     ST16E           ;YES EXIT
002364  012737  000015  001050  ERR15:  MOV     #15,ERCOUNT     ;*** ERROR 15 ***
        000016                          N=N+1
002372  004537  007716                  JSR     %5,STAER
002376  000004                  ST16E:  SCOPE
002400  002340                          ST15X
                                        ;
                                        ;IS MASTER ENABLE CLEARED
                                        ;
002402  042777  177777  176442  ST16:   BIC     #177777,@STATUS ;CLEAR THE WORLD
002410  032777  000004  176434          BIT     #BIT2,@STATUS   ;IS MASTER ENABLE CLEARED
002416  001405                          BEQ     ST16XE          ;BRANCH IF CLEARED
002420  012737  000016  001050  ERR16:  MOV     #16,ERCOUNT     ;*** ERROR 16 ***
        000017                          N=N+1
002426  004537  007716                  JSR     %5,STAER        ;REPORT MASTER ENABLE STILL SET
002432  000004                  ST16XE: SCOPE
002434  002402                          ST16
                                        ;
                                        ;CAN WE SET MASTER ENABLE
                                        ;
002436  042777  177777  176406  ST16X:  BIC     #177777,@STATUS
002444  012777  000340  176330          MOV     #340,@CSR
002452  052777  000004  176372          BIS     #BIT2,@STATUS   ;CAN WE SET MASTER ENABLE
002460  032777  000004  176364          BIT     #BIT2,@STATUS   ;IS MASTER ENABLE SET
002466  001005                          BNE     ST17E           ;YES EXIT
002470  012737  000017  001050  ERR17:  MOV     #17,ERCOUNT     ;*** ERROR 17 ***
        000020                          N=N+1
002476  004537  007716                  JSR     %5,STAER        ;REPORT ERROR
002502  000004                  ST17E:  SCOPE
002504  002436                          ST16X
                                        ;
                                        ;IS DPR CLEARED
                                        ;
002506  042777  177777  176336  ST17:   BIC     #177777,@STATUS ;CLEAR THE WORLD
002514  032777  000002  176330          BIT     #BIT1,@STATUS   ;IS DATA PRESENT CLEARED
002522  001405                          BEQ     ST17XE          ;BRANCH IF DATA PRESENT AS CLEARED
002524  012737  000020  001050  ERR20:  MOV     #20,ERCOUNT     ;*** ERROR 20 ***
        000021                          N=N+1
002532  004537  007716                  JSR     %5,STAER        ;REPORT DATA PRESENT IS SET
```

```
1073  002536  000004                STRXE: SCOPE
1074  002540  002506                       STR
```

```
                                        ;
                                        ;CAN WE SET DPR (DIGIT PRESENT)
                                        ;
002542  042777  177777  176302  ST17X:  BIC     #177777,@STATUS
002550  012777  000410  176274          MOV     #BIT8!BIT3,@STATUS ;SET PND
002556  052777  000002  176266          BIS     #BIT1,@STATUS      ;SET DPR
002564  032777  000002  176260          BIT     #BIT1,@STATUS
002572  001005                         BNE     ST20E
002574  012737  000021  001050  ERR21:  MOV     #21,ERCOUNT        ;*** ERROR 21 ***
        000022                          N=N+1
002602  004537  007716                  JSR     %5,STAER
002606  000004                  ST20E:  SCOPE
002610  002542                          ST17X
                                        ;
                                        ;IS CRQ (CALL REQUEST) CLEARED
                                        ;
002612  042777  177777  176232  ST20:   BIC     #177777,@STATUS
002620  032777  000001  176224          BIT     #BIT0,@STATUS      ;IS CALL REQUEST SET
002626  001405                         BEQ     ST21E              ;NO! IT SHOULD NEVER BE SET
002630  012737  000022  001050  ERR22:  MOV     #22,ERCOUNT        ;*** ERROR 22 ***
        000023                          N=N+1
002636  004537  007716                  JSR     %5,STAER           ;REPORT ERROR
002642  000004                  ST21E:  SCOPE
002644  002612                          ST20
                                        ;TEST THE ABILITY OF SETTING CRQ
002646  042777  177777  176176  ST21:   BIC     #177777,@STATUS ;CLEAR THE WORLD
002654  033777  001070  176170          BIT     MASK,@STATUS           ;IS THE DN11 CLEAR
002662  001406                         BEQ     ST22               ;DN11 OK
002664  012737  000023  001050  ERR23:  MOV     #23,ERCOUNT        ;*** ERROR 23 ***
        000024                          N=N+1
002672  004537  007716                  JSR     %5,STAER           ;REPORT ERROR "STATUS REG. NOT CLEAR"
002676  000425                         BR      ST22E              ;EXIT ERROR OCCOURRED
002700  052777  000001  176144  ST22:   BIS     #BIT0,@STATUS      ;SET CALL REQUEST
002706  032777  000001  176136          BIT     #BIT0,@STATUS      ;IS CALL REQUEST SET
002714  001006                         BNE     ST22X              ;YES! EXIT
002716  012737  000024  001050  ERR24:  MOV     #24,ERCOUNT        ;*** ERROR 24 ***
        000025                          N=N+1
002724  004537  007716                  JSR     %5,STAER           ;REPORT ERROR
002730  000410                         BR      ST22E              ;LOOP ON ERRO
002732  105777  176114          ST22X:  TSTB    @STATUS            ;DONE SHOULD NOT BE SET
002736  100005                         BPL     ST22E              ;BRANCH IF DONE NOT SET
002740  012737  000025  001050  ERR25:  MOV     #25,ERCOUNT        ;*** ERROR 25 ***
        000026                          N=N+1
002746  004537  007716                  JSR     %5,STAER           ;REPORT THE ERROR
002752  000004                  ST22E:  SCOPE
002754  002646                          ST21
                                        ;
                                        ;DOES MAINTENANCE SET DLO
                                        ;
002756  042777  177777  176066  ST23:   BIC     #177777,@STATUS ;CLEAR THE WORLD
002764  033777  001070  176060          BIT     MASK,@STATUS           ;IS REC CLR
002772  001406                         BEQ     ST24               ;YES! EXIT
002774  012737  000026  001050  ERR26:  MOV     #26,ERCOUNT        ;*** ERROR 26 ***
        000027                          N=N+1
003002  004537  007716                  JSR     %5,STAER           ;REPORT ERROR
003006  000414                         BR      ST25E
```

```
1131  003010  052777  000010  176034  ST24:   BIS     #BIT3,@STATUS
1132  003016  032777  010000  176026          BIT     #BIT12,@STATUS  ;IS DLO SET
1133  003024  001005                          BNE     ST25E           ;YES EXIT
1134  003026  012737  000027  001050  ERR27:  MOV     #27,ERCOUNT     ;*** ERROR 27 ***
1135          000030                          N=N+1
1136  003034  004537  007716                  JSR     %5,STAER        ;REPORT ERROR
1137  003040  000004                  ST25E:  SCOPE
1138  003042  002756                          ST23
1139
```

```
1140
1141
1142
1143                                        ;
1144                                        ;CAN WE SET PND IN MAINTENANCE MODE
1145                                        ;
1146  003044  042777  177777  176000  ST25:   BIC     #177777,@STATUS
1147  003052  033777  001070  175772          BIT     MASK,@STATUS            ;IS REG CLEAR
1148  003060  001406                          BEQ     ST25X                   ;YES! REG CLEAR
1149  003062  012737  000030  001050  ERR30:  MOV     #30,ERCOUNT             ;*** ERROR 30 ***
1150          000031                          N=N+1
1151  003070  004537  007716                  JSR     %5,STAER
1152  003074  000425                          BR      ST26E                   ;LOOP ON ERROR
1153  003076  052777  000411  175746  ST25X:  BIS     #BIT8!BIT3!BIT0,@STATUS ;SET PND IN MAINTENANCE MODE.
1154  003104  032777  000020  175740          BIT     #BIT4,@STATUS
1155  003112  001016                          BNE     ST26E                   ;PND SET
1156  003114  012737  000031  001050  ERR31:  MOV     #31,ERCOUNT             ;*** ERROR 31 ***
1157          000032                          N=N+1
1158  003122  004537  007716                  JSR     %5,STAER                ;PND NOT SET
1159  003126  000410                          BR      ST26E                   ;EXIT ERROR OCCURRED
1160                                        ;
1161                                        ;DOES PND SET DONE
1162                                        ;
1163  003130  105777  175716  ST26:   TSTB    @STATUS                 ;IS DONE SET
1164  003134  100405                          BMI     ST26E                   ;BRANCH IF DONE SET
1165  003136  012737  000032  001050  ERR32:  MOV     #32,ERCOUNT             ;*** ERROR 32 ***
1166          000033                          N=N+1
1167  003144  004537  007716                  JSR     %5,STAER
1168  003150  000004          ST26E:  SCOPE
1169  003152  003044                          ST25
1170                                        ;
1171                                        ;CAN WE SET DSS IN MAINTENENCE MODE
1172                                        ;
1173  003154  042777  177777  175670  ST26X:  BIC     #177777,@STATUS
1174  003162  033777  001070  175662          BIT     MASK,@STATUS            ;IS REG. CLEAR
1175  003170  001406                          BEQ     ST27                    ;BRANCH IF CLEAR
1176  003172  012737  000033  001050  ERR33:  MOV     #33,ERCOUNT             ;*** ERROR 33 ***
1177          000034                          N=N+1
1178  003200  004537  007716                  JSR     %5,STAER
1179  003204  000425                          BR      ST27E                   ;REPORT ERROR
1180  003206  052777  001011  175636  ST27:   BIS     #BIT9!BIT3!BIT0,@STATUS ;SET DSS IN MAINTENANCE MODE
1181  003214  032777  000040  175630          BIT     #BIT5,@STATUS
1182  003222  001006                          BNE     ST30
1183  003224  012737  000034  001050  ERR34:  MOV     #34,ERCOUNT             ;*** ERROR 34 ***
1184          000035                          N=N+1
1185  003232  004537  007716                  JSR     %5,STAER
1186  003236  000410                          BR      ST27E                   ;LOOP ON ERROR
```

```
                                        ;
                                        ;DOES DSS SET DONE
                                        ;
003240  105777  175606          ST30:  TSTB    @STATUS          ;WAS DONE SET BY DSS
003244  100405                         BMI     ST27E            ;BRANCH IF YES
003246  012737  000035  001050  ERR35: MOV     #35,ERCOUNT      ;*** ERROR 35 ***
        000036                         N=N+1
003254  004537  007716                 JSR     %5,STAER         ;REPORT ERROR
003260  000004                 ST27E:  SCOPE
003262  003154                         ST26X
                                        ;CAN WE SET PWO IN MAINTENANCE MODE
003264  042777  177777  175560  ST31:  BIC     #177777,@STATUS
003272  033777  001070  175552         BIT     MASK,@STATUS             ;IS STATUS REG CLEAR
003300  001406                         BEQ     ST31X            ;BRANCH IF REG CLEAR
003302  012737  000036  001050  ERR36: MOV     #36,ERCOUNT      ;*** ERROR 36 ***
        000037                         N=N+1
003310  004537  007716                 JSR     %5,STAER         ;REPORT ERROR
003314  000432                         BR      ST32E            ;
003316  052777  000010  175526  ST31X: BIS     #BIT3,@STATUS            ;SET MAINTENANCE
003324  042777  177760  175520         BIC     #177760,@STATUS
003332  052777  002001  175512         BIS     #BIT10!BIT0,@STATUS      ;SET PWO
003340  005777  175506                 TST     @STATUS
003344  100406                         BMI     ST32
003346  012737  000037  001050  ERR37: MOV     #37,ERCOUNT      ;*** ERROR 37 ***
        000040                         N=N+1
003354  004537  007716                 JSR     %5,STAER
003360  000410                         BR      ST32E            ;REPORT ERROR
```

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1214
1215                                        ;WAS DONE SET
1216  003362  105777  175464        ST32:  TSTB    @STATUS          ;TEST DONE
1217  003366  100405                       BMI     ST32E            ;YES EXIT
1218  003370  012737  000040  001050 ERR40: MOV     #40,ERCOUNT      ;*** ERROR 40 ***
1219          000041                       N=N+1
1220  003376  004537  007716               JSR     %5,STAER         ;DONE NOT SET REPORT ERROR
1221  003402  000004                ST32E: SCOPE
1222  003404  003264                       ST31
1223                                        ;CAN WE SET ABANDON CALL AND RETRY IN MAINTENANCE MODE
1224  003406  042777  177777  175436 ST32X: BIC     #177777,@STATUS
1225  003414  033777  001070  175430       BIT     MASK,@STATUS             ;IS REG. CLEAR
1226  003422  001406                       BEQ     ST33             ;YES EXIT
1227  003424  012737  000041  001050 ERR41: MOV     #41,ERCOUNT      ;*** ERROR 41 ***
1228          000042                       N=N+1
1229  003432  004537  007716               JSR     %5,STAER
1230  003436  000425                       BR      ST34E            ;REPORT REG. NOT CLEAR
1231  003440  052777  004011  175404 ST33:  BIS     #BIT11!BIT3!BIT0,@STATUS ;SET ACR IN MAINTENANCE MODE
1232  003446  032777  040000  175376       BIT     #BIT14,@STATUS
1233  003454  001006                       BNE     ST34
1234  003456  012737  000042  001050 ERR42: MOV     #42,ERCOUNT      ;*** ERROR 42 ***
1235          000043                       N=N+1
1236  003464  004537  007716               JSR     %5,STAER         ;ACR NOT SET
1237  003470  000410                       BR      ST34E
1238                                        ;DID ACR SET DONE
1239  003472  105777  175354        ST34:  TSTB    @STATUS          ;WAS DONE SET BY ABANDON CALL AND RETRY
1240  003476  100405                       BMI     ST34E            ;YES EXIT
1241  003500  012737  000043  001050 ERR43: MOV     #43,ERCOUNT      ;*** ERROR 43 ***
1242          000044                       N=N+1
1243  003506  004537  007716               JSR     %5,STAER         ;DONE NOT SET
1244  003512  000004                ST34E: SCOPE
1245  003514  003406                       ST32X
1246                                        ;DOES PND CLEAR DIGIT PRESENT
1247  003516  042777  177777  175326 ST34X: BIC     #177777,@STATUS
1248  003524  033777  001070  175320       BIT     MASK,@STATUS             ;IS REG CLR
1249  003532  001406                       BEQ     ST35             ;YES BRANCH
1250  003534  012737  000044  001050 ERR44: MOV     #44,ERCOUNT      ;*** ERROR 44 ***
1251          000045                       N=N+1
1252  003542  004537  007716               JSR     %5,STAER
1253  003546  000434                       BR      ST35E            ;LOOP ON ERROR
1254  003550  052777  000410  175274 ST35:  BIS     #BIT8!BIT3,@STATUS       ;SET PND
1255  003556  052777  000002  175266       BIS     #BIT1,@STATUS    ;SET DIGIT PRESENT
1256  003564  032777  000002  175260       BIT     #BIT1,@STATUS    ;IS IT SET
1257  003572  001006                       BNE     ST35X            ;YES BRANCH
1258  003574  012737  000045  001050 ERR45: MOV     #45,ERCOUNT      ;*** ERROR 45 ***
1259          000046                       N=N+1
1260  003602  004537  007716               JSR     %5,STAER         ;REPORT DIGIT PRESENT NOT SET
1261  003606  000414                       BR      ST35E            ;LOOP ON ERROR
1262
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1264                                            ;WAS DIGIT PRESENT CLEARED
1265  003610  042777  000410  175234  ST35X:    BIC     #BIT8!BIT3,@STATUS ;CLEAR PND
1266  003616  032777  000002  175226            BIT     #BIT1,@STATUS   ;WAS DIGIT PRESENT CLEARED
1267  003624  001405                            BEQ     ST35E           ;YES BRANCH
1268  003626  012737  000046  001050  ERR46:    MOV     #46,ERCOUNT     ;*** ERROR 46 ***
1269          000047                            N=N+1
1270  003634  004537  007716                    JSR     %5,STAER        ;REPORT ERROR
1271  003640  000004                  ST35E:    SCOPE
1272  003642  003516                            ST34X
1273                                  ;CAN WE SET AND CLEAR DONE
1274  003644  105777  175202          ST36:     TSTB    @STATUS         ;TEST DONE
1275  003650  100006                            BPL     ST36X           ;DONE CLEAR BRANCH
1276  003652  012737  000047  001050  ERR47:    MOV     #47,ERCOUNT     ;*** ERROR 47 ***
1277          000050                            N=N+1
1278  003660  004537  007716                    JSR     %5,STAER        ;REPORT ERROR
1279  003664  000427                            BR      ST36E           ;LOOP ON ERROR
1280  003666  052777  000200  175156  ST36X:    BIS     #BIT7,@STATUS   ;SET DONE
```

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1283                                        ;CAN WE CLEAR DONE
1284  003674  105777  175152        CLRDON: TSTB    @STATUS         ;IS DONE SET
1285  003700  100406                BMI     DONSET          ;YES DONE SET
1286  003702  012737  000050  001050 ERR50:  MOV     #50,ERCOUNT     ;*** ERROR 50 ***
1287          000051                N=N+1
1288  003710  004537  007716                JSR     %5,STAER        ;REPORT ERROR
1289  003714  000413                BR      ST36E           ;LOOP ON ERROR
1290  003716  042777  000200  175126 DONSET: BIC     #BIT7,@STATUS   ;CLR DONE
1291  003724  105777  175122                TSTB    @STATUS         ;IS DONE CLEARED
1292  003730  100005                BPL     ST36E           ;YES EXIT
1293  003732  012737  000051  001050 ERR51:  MOV     #51,ERCOUNT     ;*** ERROR 51 ***
1294          000052                N=N+1
1295  003740  004537  007716                JSR     %5,STAER        ;DONE NOT CLEARED
1296  003744  000004                ST36E:  SCOPE
1297  003746  003644                ST36
1298                                        ;CAN WE GENERATE AN INTERRUPT
1299  003750  000005                ST37:   RESET
1300  003752  012777  004002  175044        MOV     #INTER,@VECTOR  ;SET UP INTERRUPT VECTOR
1301  003760  012777  000240  175014        MOV     #240,@CSR       ;SET CPU PRIORITY LEVEL TO BR5
1302  003766  052777  000300  175056        BIS     #BIT6!BIT7,@STATUS ;SET INTERRUPT ENABLE AND DONE
1303  003774  000240                NOP                     ;NO INTERRUPT SHOULD MASTER ENABLE NOT SET
1304  003776  000137  004030                JMP     ST37X           ;GO SET MASTER ENABLE TO SEE IF WE CAN INTERRUPT
1305                                                        ;REPORT AN INTERRUPT OCCURRED THAT IS AN ERROR
1306  004002  012777  000340  174772 INTER:  MOV     #340,@CSR
1307  004010  005077  175036                CLR     @STATUS
1308  004014  012737  000052  001050 ERR52:  MOV     #52,ERCOUNT     ;*** ERROR 52 ***
1309          000053                N=N+1
1310  004022  004537  007716                JSR     %5,STAER
1311  004026  000441                BR      ST38E
1312  004030  012777  004052  174766 ST37X:  MOV     #SECINT,@VECTOR ;SET UP INTERRRUPT VECTOR
1313  004036  052777  000004  174750        BIS     #BIT2,@DNCSR1   ;SET MASTER ENABLE
1314  004044  000240                NOP                     ;NO INTTERRUPT SHOULD OCCUR PROCESSOR IS AT LEVEL 5
1315  004046  000137  004066                JMP     ST38            ;WE SHOULD NOT INTERRUPT LEVEL TO HIGH
1316  004052                        SECINT:
1317  004052  012737  000053  001050 ERR53:  MOV     #53,ERCOUNT     ;*** ERROR 53 ***
1318          000054                N=N+1
1319  004060  004537  007716                JSR     %5,STAER        ;REPORT THE DN11 INTERRUPTED
1320  004064  000422                BR      ST38E           ;ENTER SCOPE LOOP
1321  004066  012777  004132  174730 ST38:   MOV     #ST38E,@VECTOR  ;SET UP FOR INTERRUPT
1322  004074  005077  174702                CLR     @CSR            ;LOWER PROCESSOR PRIORITY
1323  004100  005037  001042                CLR     TIME            ;SET UP TIMER
1324  004104  005237  001042                INC     TIME            ;WAIT FOR INTERRUPT
1325  004110  001375                BNE     .-4
1326  004112  012777  000340  174662        MOV     #340,@CSR       ;LOCK UP CPU DN11 DID NOT INTERRUPT
1327  004120  012737  000054  001050 ERR54:  MOV     #54,ERCOUNT     ;*** ERROR 54 ***
1328          000055                N=N+1
1329  004126  004537  007716                JSR     %5,STAER        ;REPORT DN11 DID NOT INTERRUPT AT BR0
1330  004132  013706  001072        ST38E:  MOV     STKLINK,%6      ;RESET STACK
1331  004136  000004                SCOPE
1332  004140  003750                ST37
1333  004142  032777  000400  174630 ST40:   BIT     #BIT8,@SR       ;DID THE OPERATOR SELECTED A DN11
1334  004150  001402                BEQ     .+6             ;  NO! NORMAL RUN
1335  004152  000137  001342                JMP     ST1             ;THE OPERATOR DID SELECTED A DN11
1336  004156  023737  001022  001052        CMP     DNCSR4,STATUS
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1337  004164  001414                          BEQ     RESTART
1338  004166  062737  000002  001052          ADD     #2,STATUS
1339  004174  052777  000100  174650          BIS     #BIT6,@STATUS   ;SET INTERRUPT ENABLE
1340  004202  032777  000100  174642          BIT     #BIT6,@STATUS   ;IF SET DN11 IS POSSABILE THERE
1341  004210  001402                          BEQ     .+6
1342  004212  000137  001342                  JMP     ST1
1343  004216  013737  001014  001052  RESTART: MOV     DNCSR1,STATUS
1344  004224  032777  001000  174546          BIT     #BIT9,@SR       ;TEST IF THE OPERATOR WANTS TO LOOP ON STATIC TESTS
1345  004232  001410                          BEQ     MYCNT+2         ;BRANCH TO ON-LINE TEST IF BIT 9 NOT SET
1346  004234  005737  004252                  TST     MYCNT
1347  004240  001405                          BEQ     MYCNT+2
1348  004242  005337  004252                  DEC     MYCNT
1349  004246  000137  001414                  JMP     ST1X            ;LOOP ON STATIC TESTS BIT9 SET
1350  004252  000100          MYCNT:  100
1351  004254  012737  000100  004252          MOV     #100,MYCNT
1352  004262  012737  177770  001044          MOV     #177770,TIME1   ;WAIT FOR PHONE LINE TO SETTLE
1353  004270  005037  001042                  CLR     TIME
1354  004274  005237  001042                  INC     TIME
1355  004300  001375                          BNE     .-4
1356  004302  005237  001044                  INC     TIME1
1357  004306  001372                          BNE     .-12
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1385                                        ;DIALEX 11
1386                                        ;THE OPERATOR MUST ASSIGN PHONE NUMBER TO EACH DN11
1387  004310  013706  001072          BEGIN:  MOV     STKLINK,%6      ;SET UP STACK
1388  004314  004737  010326                  JSR     PC,CKSWR        ;CHECK FOR CNTL G
1389  004320  000005                         RESET
1390  004322  012777  005432  174474          MOV     #INT,@VECTOR    ;SET UP VECTOR
1391  004330  005004                         CLR     %4
1392  004332  005737  004342                  TST     NOFLAG
1393  004336  001002                         BNE     .+6
1394  004340  000407                         BR      NEWNO
1395  004342  000000                 NOFLAG: 0
1396  004344  004737  010326                  JSR     PC,CKSWR        ;CHECK FOR <^G>
1397  004350  032777  000200  174422          BIT     #BIT7,@SR       ;TEST FOR TTY CONVERSATION
1398  004356  001104                         BNE     DNDIAL          ;BRANCH IF NO CONVERSATION
1399  004360  005037  001074          NEWNO:  CLR     MAP             ;CLEAR PHONE MAP
1400  004364  005037  001076                  CLR     MAP+2
1401  004370  052737  177777  004342          BIS     #177777,NOFLAG
1402  004376  005037  001040                  CLR     COUNT
1403  004402  012703  006362          NO0:    MOV     #PH01,%3        ;SET UP PHONE #1 BUFFER
1404  004406  104001                         EMT     +1
1405  004410  007335                         PH1
1406  004412  004737  006212                  JSR     %7,TYST         ;FETCH KEYBOARD CHAR
1407  004416  105737  006362                  TSTB    PH01
1408  004422  001405                         BEQ     NO1             ;OPERATOR FAILED TO TYPE A PHONE NUMBER
1409  004424  005237  001040                  INC     COUNT
1410  004430  152764  000377  001074          BISB    #377,MAP(4)     ;LOAD MAP
1411  004436  005204                 NO1:    INC     %4
1412  004440  012703  006404                  MOV     #PH02,%3
1413  004444  104001                         EMT     +1
1414  004446  007350                         PH2
1415  004450  004737  006212                  JSR     %7,TYST         ;FETCH KEYBOARD CHARACTER
1416  004454  105737  006404                  TSTB    PH02            ;DID THE OPERATOR TYPE A PHONE NUMBER
1417  004460  001405                         BEQ     NO2             ;THE OPERATOR ONLY GAVE THE PROGRAM ONE NUMBER
1418  004462  005237  001040                  INC     COUNT           ;THE OPERATOR TYPED AN NUMBER
1419  004466  152764  000377  001074          BISB    #377,MAP(4)     ;LOAD MAP
1420  004474  005204                 NO2:    INC     %4
1421  004476  012703  006426                  MOV     #PH03,%3
1422  004502  104001                         EMT     +1
1423  004504  007363                         PH3
1424  004506  004737  006212                  JSR     %7,TYST         ;FETCH KEYBOARD CHARACTER
1425  004512  105737  006426                  TSTB    PH03            ;DID THE OPERATOR TYPE A NUMBER FOR LINE THREE
1426  004516  001405                         BEQ     NO3             ;NO NUMBER FOR LINE THREE
1427  004520  005237  001040                  INC     COUNT           ;OPERATOR TYPE D A NUMBER
1428  004524  152764  000377  001074          BISB    #377,MAP(4)     ;LOAD MAP
1429  004532  005204                 NO3:    INC     %4
1430  004534  012703  006450                  MOV     #PH04,%3
1431  004540  104001                         EMT     +1
1432  004542  007376                         PH4
1433  004544  004737  006212                  JSR     %7,TYST         ;FETCH KEYBOARD CHARACTER
1434  004550  105737  006450                  TSTB    PH04            ;TEST IF THE OPERATOR TYPED A NUMBER FOR THIS LINE
1435  004554  001405                         BEQ     DNDIAL          ;OPERATOR DID NOT TYPE A NUMBER
1436  004556  152764  000377  001074          BISB    #377,MAP(4)     ;LOAD MAP
1437  004564  005237  001040                  INC     COUNT
1438  004570  013737  001014  001052  DNDIAL: MOV     DNCSR1,STATUS
1439  004576  013737  001040  001046          MOV     COUNT,SAVE
1440  004604  005004                         CLR     %4
```

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1441
1442                                        ;TEST FOR DN11'S TO BE IN READY STATE
1443                                        ;REGISTERS SHOULD BE CLEARED BECAUSE
1444                                        ;OF RESET COMMAND ISSUED AT START
1445  004606  004737  010326          RINGO:  JSR     PC,CKSWR        ;CHECK FOR CNTL C
1446  004612  105764  001074                  TSTB    MAP(4)          ;IS THIS LINE ACTIVE
1447  004616  001423                          BEQ     EXMODOK         ;BRANCH NOT ACTIVE
1448  004620  005777  174226                  TST     @STATUS
1449  004624  001415                          BEQ     MODOK           ;DN11 READY OK
1450  004626  017737  174220  001034          MOV     @STATUS,WORK    ;FETCH CONTENTS OF REGISTER
1451  004634  013737  001052  001036          MOV     STATUS,WORK1    ;FETCH ADDRESS OF REGISTER
1452  004642  012737  000055  001050  ERR55:  MOV     #55,ERCOUNT     ;*** ERROR 55 ***
1453          000056                          N=N+1
1454  004650  004537  010102                  JSR     %5,STAER2       ;REPORT DN11 NOT READY
1455  004654  000000                          HALT
1456  004656  000777                          BR                      ;YOU CAN NOT CONTINUE
1457  004660  005337  001046          MODOK:  DEC     SAVE            ;ON UNTIL DN11 IS MADE READY
1458  004664  001405                          BEQ     SETPT           ;GO SET CALL REQUEST
1459  004666  005204                  EXMODOK: INC    %4
1460  004670  062737  000002  001052          ADD     #2,STATUS       ;SET UP FOR NEXT DN11
1461  004676  000743                          BR      RINGO           ;TEST NEXT DN11
1462                                        ;
1463                                        ;SET UP DIGIT POINTERS FOR PHONE NUMBERS
1464                                        ;FOR DAILING SEQUENCE
1465  004700  005037  001054          SETPT:  CLR     PNT1            ;SET UP DIGIT POINTER ONE
1466  004704  005037  001056                  CLR     PNT2            ;SET UP DIGIT POINTER TWO
1467  004710  005037  001060                  CLR     PNT3            ;SET UP DIGIT POINTER THREE
1468  004714  005037  001062                  CLR     PNT4            ;SET UP DIGIT POINTER FOUR
1469  004720  005004                          CLR     %4
1470  004722  013737  001040  001046          MOV     COUNT,SAVE      ;SET UP TO ENABLE CRQ
1471  004730  013737  001014  001052          MOV     DNCSR1,STATUS   ;SET UP DN11 POINTER
1472  004736  105764  001074          SETCRQ: TSTB    MAP(4)          ;IS THIS ACTIVE
1473  004742  001423                          BEQ     EXCRQ
1474  004744  012777  000101  174100          MOV     #101,@STATUS    ;SET CRQ - INT. ENABLE   MASTER ENABLE
1475  004752  032777  010000  174072          BIT     #BIT12,@STATUS  ;TEST FOR DLO SET
1476  004760  001411                          BEQ     DLOTST          ;DLO SET OK!
1477  004762  012737  000056  001050  ERR56:  MOV     #56,ERCOUNT     ;*** ERROR 56 ***
1478          000057                          N=N+1
1479  004770  017737  174056  001034          MOV     @STATUS,WORK    ;FETCH CONTENTS OF STATUS REGISTER
1480  004776  004537  010102                  JSR     %5,STAER2
1481  005002  000755                          BR      SETCRQ
1482  005004  005337  001046          DLOTST: DEC     SAVE
1483  005010  001405                          BEQ     WAITIN          ;GO WAIT FOR INTERRUPTS
1484  005012  005204                  EXCRQ:  INC     %4
1485  005014  062737  000002  001052          ADD     #2,STATUS       ;SET UP FOR NEXT DN11
1486  005022  000745                          BR      SETCRQ          ;SET UP NEXT DN11
1487                                        ;SET UP TO COUNT DSS INTERRUPTS AND TIME OUT IF ALL
1488                                        ;DSS INTERRUPTS DO NOT OCCUR
1489  005024  005077  173752          WAITIN: CLR     @CSR
1490  005030  013737  001040  001032          MOV     COUNT,DSSCNT    ;NUMBER OF DN11
1491  005036  012737  177700  001044          MOV     #177700,TIME1
1492  005044  012737  000000  001042          MOV     #0,TIME         ;SET UP TIMER
1493  005052  052777  000004  173734          BIS     #BIT2,@DNCSR1   ;SET MASTER ENABLE
1494  005060  005237  001042          TWCSEC: INC     TIME            ;WAIT FOR DSS
1495  005064  001375                          BNE     .-4
1496  005066  005237  001044                  INC     TIME1
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1497  005072  001372                        BNE     TWOSEC
1498  005074  012777  000340  173700        MOV     #340,@CSR       ;LOCK UP CPU
1499  005102  104001                        EMT     +1              ;REPORT TIME OUT
1500  005104  007411                        TIMO
1501  005106  005004                        CLR     %4
1502  005110  012737  000057  001050  ERR57: MOV     #57,ERCOUNT     ;*** ERROR 57 ***
1503                  000060                N=N+1
1504  005116  013737  001040  001046        MOV     COUNT,SAVE
1505  005124  013737  001014  001052        MOV     DNCSR1,STATUS   ;SET UP TO FETCH DN11 REGISTERS
1506  005132  105764  001074        DNSTATE:TSTB    MAP(4)          ;TEST IF THE LINE IS ACTIVE
1507  005136  001410                        BEQ     MPDN            ;LINE NOT ACTIVE CHECK NEXT
1508  005140  017737  173706  001034        MOV     @STATUS,WORK    ;FETCH DN11 STATUS
1509  005146  004537  010102                JSR     %5,STAER2       ;REPORT STATUS
1510  005152  005337  001046                DEC     SAVE
1511  005156  001521                        BEQ     REPEND          ;GO REPORT END
1512  005160  005204                MPDN:   INC     %4
1513  005162  062737  000002  001052        ADD     #2,STATUS       ;SET UP TO TEST NEXT DN11
1514  005170  000760                        BR      DNSTATE
1515  005172  012737  177770  001044  END:   MOV     #177770,TIME1   ;SET UP TIME TO LET PHONE RING
1516  005200  005037  001042                CLR     TIME
1517  005204  005237  001042                INC     TIME
1518  005210  001375                        BNE     .-4
1519  005212  005237  001044                INC     TIME1
1520  005216  001372                        BNE     .-12
1521  005220  032777  010000  173552        BIT     #BIT12,@SR      ;TEST HOW DO WE TERMINATE THE CALL
1522  005226  001457                        BEQ     NOTCRQ          ;CALL TERMINATED BY RESET
1523  005230  013737  001040  001046        MOV     COUNT,SAVE
1524  005236  013737  001014  001052        MOV     DNCSR1,STATUS
1525  005244  005004                CLRDN:  CLR     %4
1526  005246  105764  001074        TSTB    MAP(4)          ;IS THIS LINE ACTIVE
1527  005252  001440                        BEQ     EXCLRDN         ;LINE IS NOT ACTIVE
1528  005254  042777  000001  173570        BIC     #BIT0,@STATUS   ;CLEAR CRQ
1529  005262  013737  177770  001044        MOV     #177770, TIME1
1530  005270  005037  001042                CLR     TIME
1531  005274  005237  001042                INC     TIME            ;WAIT FOR DSS TO COME BACK
1532  005300  001375                        BNE     -4
1533  005302  005237  001044                INC     TIME1
1534  005306  001372                        BNE     .-12
1535  005310  032777  000040  173534        BIT     #BIT5,@STATUS   ;TEST FOR DSS
1536  005316  001413                        BEQ     DSSCLR          ;DSS CLEARED BY CRQ
1537  005320  013737  001052  001036        MOV     STATUS,WORK1    ;SET UP FOR ERROR REPORT
1538  005326  017737  173520  001034        MOV     @STATUS,WORK
1539  005334  012737  000060  001050  ERR60: MOV     #60,ERCOUNT     ;*** ERROR 60 ***
1540                  000061                N=N+1
1541  005342  004537  010102                JSR     %5,STAER2       ;REPORT ERROR
1542  005346  005337  001046        DSSCLR: DEC     SAVE
1543  005352  001423                        BEQ     REPEND          ;RECYCLE
1544  005354  005204                EXCLRDN: INC    %4
1545  005356  062737  000002  001052        ADD     #2,STATUS       ;GO CLEAR NEXT DN11
1546  005364  000730                        BR      CLRDN+2
1547                                ;
1548                                ;
1549                                ;DN11'S MUST BE CLEARED BY RESET IN THIS TEST
1550                                ;
1551  005366  004737  010326        NOTCRQ: JSR     PC,CKSWR        ;CHECK FOR CNTL G
1552  005372  000005                        RESET                   ;CLEAR THE WORLD
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 1553  005374  012737  177770  001044          MOV     #177770,TIME1   ;SET UP TO WAIT  FOR LINES TO SETTLE DOWN
 1554  005402  005037  001042                  CLR     TIME
 1555  005406  005237  001042                  INC     TIME
 1556  005412  001375                          BNE     .-4
 1557  005414  005237  001044                  INC     TIME1
 1558  005420  001372                          BNE     .-12
 1559  005422  104001                  REPEND: EMT     +1
 1560  005424  007464                          MESEND                  ;REPORT END
 1561  005426  000137  001320                  JMP     NOTFIRST                ;RECYCLE TEST
 1562                                  ;
 1563                                  ;
 1564                                  ;
```

```
                                        ;INTERRUPT HANDLER FOR DIALEX
                                        ;       ON LINE TEST
                                        ;
005432  042777  000004  173354  INT:    BIC     #BIT2,@DNCSR1   ;CLEAR MASTER ENABLE
005440  013737  001040  001046          MOV     COUNT,SAVE      ;SET UP TO COUNT DN11'S
005446  013737  001014  001052          MOV     DNCSR1,STATUS   ;SET UP ADDRESS ASSIGNMENT
005454  012737  006362  001102          MOV     #PHO1,POINT     ;FETCH NUMBER POINT
005462  012737  001054  001100          MOV     #PNT1,ENTRY
005470  005004                          CLR     %4
005472  105764  001074          DNTST:  TSTB    MAP(4)          ;IS THE LINE ACTIVE
005476  001511                          BEQ     EXINC           ;BRANCH THE LINE IS NOT ACTIVE
005500  105777  173346                  TSTB    @STATUS         ;IS THE DONE FLAG SET
005504  100077                          BPL     INCDN           ;NO INTERRUPT FROM THIS DN11
005506  032777  160000  173336          BIT     #160000,@STATUS ; ERROR ? (PWO-ACR-BIT13 UNUSED.
005514  001404                          BEQ     NOERROR         ;BRANCH NO ERROR
005516  005777  173356                  TST     @ENTRY          ;IS IT THE END OF CALL
005522  100525                          BMI     DSSSET          ;YES ACR SET END OF CALL
005524  000533                          BR      REPORR          ;REPORT ERROR OCCURRED
005526  032777  000040  173316  NOERROR:BIT     #BIT5,@STATUS   ;IS DSS SET
005534  001120                          BNE     DSSSET          ;BRANCH IF DSS SET
005536  032777  000020  173306          BIT     #BIT4,@STATUS   ;TEST FOR PND
005544  001006                          BNE     PNDSET          ;PND SET OK!
005546  012737  000061  001050  ERR61:  MOV     #61,ERCOUNT     ;*** ERROR 61 ***
                000062                  N=N+1
005554  004537  010102                  JSR     %5,STAER2
005560  000451                          BR      INCDN
005562  013737  001102  005604  PNDSET: MOV     POINT,INDEX     ;SET UP TO FETCH DIGIT
005570  017703  173304                  MOV     @ENTRY,%3       ;SET UP DIGIT POINTER
005574  005777  173300                  TST     @ENTRY
005600  100441                          BMI     INCDN
005602  116337  000000  001034  SELECT: MOVB    0(3),WORK       ;FETCH DIGIT
005610  032737  000377  001034          BIT     #377,WORK       ;IS THIS THE LAST DIGIT
005616  001012                          BNE     LASTDG          ;BRANCH IF NOT LAST DIGIT
005620  052777  100000  173252          BIS     #BIT15,@ENTRY   ;SET END OF CALL FLAG
005626  032777  004000  173144          BIT     #BIT11,@SR      ;TEST FOR EON OPTION
005634  001060                          BNE     DSSSET          ;801 DOES NOT HAVE EON OPTION
005636  012737  000012  001034          MOV     #12,WORK        ;LOAD END OF NUMBER CODE
005644  042737  000360  001034  LASTDG: BIC     #360,WORK
005652  013700  001052                  MOV     STATUS,%0       ;LOAD DIGIT INTO TOP BYTE OF DN11 REGISTER
005656  005200                          INC     %0
005660  113710  001034                  MOVB    WORK,@%0        ;LOAD BCD DIGIT
005664  042777  000200  173160  SETDPR: BIC     #BIT7,@STATUS   ;CLEAR DONE
005672  052777  000002  173152          BIS     #BIT1,@STATUS   ;SET DPR
005700  005277  173174                  INC     @ENTRY
005704  023737  001052  001022  INCDN:  CMP     STATUS,DNCSR4   ;TEST FOR LAST DN11
005712  001416                          BEQ     EXDSS           ;BRANCH ALL DN11 OPERATING
005714  005337  001046                  DEC     SAVE
005720  001413                          BEQ     EXDSS
005722  005204                  EXINC:  INC     %4
005724  062737  000002  001100          ADD     #2,ENTRY        ;SET UP FOR NEXT DN11 POLE
005732  062737  000002  001052          ADD     #2,STATUS       ;
005740  062737  000022  001102          ADD     #22,POINT
005746  000651                          BR      DNTST           ;TEST NEXT DN11
                                        ;
```

```
                                        ;TEST DSS FOR OVERFLOW AND EXIT
005750  005737  001032          EXDSS:  TST     DSSCNT          ;DID WE RECEIVE DSS FROM ALL
005754  001404                          BEQ     RESTE           ;YES EXIT
005756  052777  000004  173030          BIS     #BIT2,@DNCSR1   ;SET MASTER ENABLE
005764  000002                          RTI
005766  012706  001000          RESTE:  MOV     #1000,%6        ;RESET STACK
005772  000137  005172                  JMP     END             ;RECYCLE PROGRAM
                                        ;
                                        ;
                                        ;
                                        ;ROUTINE DEC DSS COUNT
005776  005337  001032          DSSSET:         DEC     DSSCNT
006002  042777  000200  173042          BIC     #BIT7,@STATUS   ;CLEAR DONE
006010  000735                          BR      INCDN
                                        ;
                                        ;ROUTINE TO REPORT DN11 ERROR
                                        ;
006012                          REPORR:
006012  012737  000062  001050  ERR62:  MOV     #62,ERCOUNT     ;*** ERROR 62 ***
        000063                          N=N+1
006020  004537  010102                  JSR     %5,STAER2
006024  042777  000201  173020          BIC     #BIT7!BIT0,@STATUS      ;CLEAR DONE AND CRQ
006032  000724                          BR      INCDN           ;GO TEST NEXT DN11
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;MAINTENANCE ROUTINE FOR SETTING PULSER
                                        ;
006034  012737  000340  001002  MASTER: MOV     #340,CSR        ;LOOK UP CPU. PRIORITY
006042  013706  0C1072                  MOV     STKLNK,%6
006046  004737  010222                  JSR     PC,SUSWR        ;CHECK FOR HARDWARE SWITCH REGISTER
006052  017737  172722  001052          MOV     @SR,STATUS      ;STORE ADDRESS
006060  000000                          HALT                    ;LOADSR FROM DOC. 5.3
006062  004737  010326          EXMAST: JSR     PC,CKSWR        ;CHECK FOR <!G>
006066  017777  172706  172756          MOV     @SR,@STATUS     ;MOVE SR INTO DN11 REGISTER     :
006074  000240                          NOP
006076  000240                          NOP
006100  000240                          NOP
006102  000240                          NOP
006104  032777  000010  172666          BIT     #BIT3,@SR       ;TEST FOR MAINTENANCE MODE
006112  001015                          BNE     CLRWAT          ;BRANCH WE ARE IN MAINTENANCE MODE
006114  012737  177770  001040          MOV     #177770,COUNT   ;WAIT 2 SECONDS FOR 801 SIGNALS
006122  005037  001042                  CLR     TIME
006126  005237  001042          TIMW:   INC     TIME
006132  001375                          BNE     TIMW
006134  005237  001040                  INC     COUNT
006140  001370                          BNE     TIMW-4
006142  005077  172704                  CLR     @STATUS         ;CLEAR DN11
006146  032777  000010  172624  CLRWAT: BIT     #BIT3,@SR       ;ARE WE IN MAINTENANCE MODE
006154  001013                          BNE     CLRREG          ;BRANCH NO NEED TO WAIT
006156  012737  177770  001040          MOV     #177770,COUNT   ;WAIT FOR 801
006164  005037  001042                  CLR     TIME
006170  005237  001042          CLRTIM: INC     TIME
```

```
1677  006174  001375                        BNE     CLRTIM
1678  006176  005237  001040                INC     COUNT
1679  006202  001370                        BNE     CLRTIM-4
1680  006204  005077  172642        CLRREG: CLR     @STATUS         ;RECYCLE
1681  006210  000724                        BR      EXMAST
1682                                ;
1683                                ;
1684                                ;
1685                                ;
1686                                ;ROUTINE TO HANDLE KEYBOARD CONVERSATION
1687                                ;ROUTINE ACCEPTS NUM. OR ALPHA CHARACTERS
1688                                ;
1689
1690  006212  010337  006472        TYST:   MOV     %3,BUFLIM       ;SAVE FIRST ADDRESS OF INPUT BUFFER
1691  006216  012777  000340  172556        MOV     #340,@CSR       ;LOCK UP INTERRUPTS
1692  006224  105777  172562        TSTFLG: TSTB    @TKS            ;CHECK FOR FLAG
1693  006230  100375                        BPL     TSTFLG          ;
1694  006232  117777  172550  172544        MOVB    @TKB,@TPB       ;CHARACTER IN BUFFER
1695  006240  105777  172544                TSTB    @TPS            ;ECHO CHARACTER
1696  006244  100375                        BPL     .-4
1697  006246  122777  000377  172532        CMPB    #377,@TKB       ;CHECK FOR RUB-OUT
1698  006254  001007                        BNE     CKCH            ;EXIT IF NOT RUB-OUT
1699  006256  020337  006472                CMP     %3,BUFLIM       ;HAVE WE RUBBED-OUT BACK TO BEGINNING?
1700  006262  001760                        BEQ     TSTFLG          ;YES, DO NOT RUBOUT ANYMORE
1701  006264  104001                        EMT     +1
1702  006266  007542                        MESB                    ;REPORT RUB-OUT ACKNOWLEDGED
1703  006270  005303                        DEC     %3
1704  006272  000754                        BR      TSTFLG          ;GO WAIT FOR NEW CHAR.
1705  006274  105737  010324        CKCH:   TSTB    TTIN            ;CHECK TO SEE IF LOADING SWREG
1706  006300  001016                        BNE     1$              ;IF SO GET OUT
1707  006302  022777  000215  172476        CMP     #215,@TKB       ;CHECK FOR CARRIAGE RETURN
1708  006310  001411                        BEQ     2$
1709  006312  020327  006472                CMP     %3,#BUFLIM      ;ARE WE RUNNING OUT OF BUFFER SPACE?
1710  006316  001003                        BNE     3$              ;NO, SKIP OVER ERROR MESSAGE
1711  006320  104001                        EMT+1                   ;YES, REPORT ERROR
1712  006322  007227                        MES2
1713  006324  000737                        BR      TSTFLG
1714  006326  117723  172454        3$:     MOVB    @TKB,(3)+       ;LOAD CHARACTER IN BUFFER
1715  006332  000734                        BR      TSTFLG
1716  006334  105023                2$:     CLRB    (3)+
1717  006336  000207                1$:     RTS     %7              ;EXIT DELIMITER TYPED
1718  006340  000000                TEXBUF: 0
1719          006362                        .=.+20
1720  006362  000000                PH01:   0
1721          006404                        .=.+20
1722  006404  000000                PH02:   0
1723          006426                        .=.+20
1724  006426  000000                PH03:   0
1725          006450                        .=.+20
1726  006450  000000                PH04:   0
1727          006472                        .=.+20
1728  006472  000000                BUFLIM: 0
1729                                        .EVEN
1730
1731                                ;SUBROUTINE TO OUTPUT ASCII MESSAGE ON TELETYPE PRINTER.
1732
```

```
1733  006474  011600                TYP:    MOV     @%6,%0          ;GET ADDRESS THAT CONTAINS MESSAGE ADDRESS
1734  006476  062716  000002                ADD     #2,@%6          ;SET UP EXIT.
1735  006502  011000                        MOV     @%0,%0          ;ADDRESS OF MESSAGE TO R0.
1736  006504  112037  006614        TYPA:   MOVB    (0)+,TYPDAT     ;GET CHARACTER
1737  006510  122737  000100  006614        CMPB    #100,TYPDAT     ;CHECK FOR "@" CHARACTER
1738  006516  001001                        BNE     TYPC            ;BRANCH IF NOT "@"
1739  006520  000002                        RTI                     ;TERMINATOR CHAR. DONE.  EXIT.
1740  006522  122737  000045  006614  TYPC: CMPB    #45,TYPDAT      ;CHECK FOR "%".
1741  006530  001416                        BEQ     TYPF            ;BRANCH IF "%".
1742  006532  122737  000042  006614        CMPB    #42,TYPDAT      ;NOT "%"  CHECK FOR "#".
1743  006540  001417                        BEQ     TYPG            ;BRANCH IF "#".
1744  006542  004737  006550                JSR     %7,TYPD         ;TYPE CHAR IN TYPDAT
1745  006546  000756                        BR      TYPA
1746  006550  113777  006614  172226  TYPD: MOVB    TYPDAT,@TPB     ;OUTPUT CHARACTER TO PRINTER
1747  006556  105777  172226                TSTB    @TPS            ;WAIT FOR DONE FLAG.
1748  006562  100375                        BPL     .-4
1749  006564  000207                TYEXIT: RTS     %7              ;EXIT
1750  006566  112737  000015  006614  TYPF: MOVB    #15,TYPDAT      ;MOVE CARRIAGE RETURN CODE TO TYPDAT
1751  006574  004737  006550                JSR     %7,TYPD         ;GO TYPE CHAR.
1752  006600  112737  000012  006614  TYPG: MOVB    #12,TYPDAT      ;MOVE LF CODE TO TYPDAT.
1753  006606  004737  006550                JSR     %7,TYPD         ;GO TYPE CHAR.
1754  006612  000734                        BR      TYPA
1755  006614  000000                TYPDAT: 0
1756
1757                                        ;ROUTINE TO DECODE EMT CALLS FOR TTY
1758  006616  011600                EMTRP:  MOV     (6),%0
1759  006620  022740  104001                CMP     #EMT+1,-(0)     ;WAS CALL EMT+1
1760  006624  001101                        BNE     TYPS            ;EMT+0
1761  006626  000722                        BR      TYP
1762
1763                                        ;
1764                                        ;
1765                                        ;
1766                                        ;INDIVIUAL STATIC TEST SCOPE LOOP ROUTINE
1767                                        ;
1768                                        ;
1769                                        ;IF BIT 14 IS SET BYPASS THIS ROUTINE AND JUST LOOP ON THE TEST
1770                                        ;IF BIT 14 IS NOT SET LOOP ON EACH TEST 15 TIMES THEN GO TO THE NEXT TEST
1771                                        ;
1772                                        ;
1773  006630  004737  010326        LOOP:   JSR     PC,CKSWR        ;CHECK FOR (^G)
1774  006634  032777  040000  172136        BIT     #BIT14,@SR      ;TEST IF BIT 14 IS SET
1775  006642  001402  /                     BEQ     .+6             ;BRANCH IF BIT 14 IS NOT SET
1776  006644  013646                        MOV     @(6)+,-(6)      ;PLAYING WITH THE STACK
1777  006646  000002                        RTI                     ;LOOP ON TEST WITHOUT ENTERING THIS ROUTINE
1778  006650  005737  001066                TST     PASS            ;TEST IF THE PASS COUNT IS ZERO
1779  006654  001003                        BNE     .+10            ;PASS COUNT NOT ZERO KEEP COUNTING
1780  006656  012737  000035  001066        MOV     #35,PASS        ;SET UP PASS COUNT FIRST TIME THROUGH
1781  006664  005337  001066                DEC     PASS            ;-1 PASS THIS TIME THROUGH
1782  006670  001402                        BEQ     .+6             ;PASS ZERO ENTER NEXT TEST
1783  006672  013646                        MOV     @(6)+,-(6)      ;PLAYING WITH THE STACK AGAIN
1784  006674  000002                        RTI                     ;RE-ENTER TEST
1785  006676  062716  000002                ADD     #2,(6           ;INC.STACK FOR THE NEXT TEST
1786  006702  000002                        RTI                     ;EXIT TO THE NEXT TEST
1787
1788                                        ;
```

```
                                        ;POWER FAIL SEQUENCE
                                        ;
006704  012737  006714  000024  PWRDWN: MOV     #PWRUP,24       ;SET UP POWER FAIL VECTOR FOR RESTART
006712  000000                          HALT                    ;HALT AND WAIT FOR POWER TO COME BACK
                                        ;
                                        ;
                                        ;THIS THE POWER UP SEQUENCE REPORT POWER HAS FAILED AND
                                        ;WAIT TWO SECONDS FOR THE PHONE LINES TO SETTLE
                                        ;
                                        ;
006714  012737  006704  000024  PWRUP:  MOV     #PWRDWN,24      ;SET UP POWER FAIL VECTOR FOR POWER DOWN
006722  012706  001000                  MOV     #1000,%6        ;SET UP THE STACK
006726  104000                          EMT     +0
006730  007670                          HED6                    ;REPORT THE POWER HAS FAILED
006732  177777                          -1
006734  012737  177770  001044          MOV     #177770,TIME1   ;SET THE TWO SECOND TIMER
006742  005237  001042          INCTM:  INC     TIME
006746  001375                          BNE     INCTM
006750  005237  001044                  INC     TIME1
006754  001372                          BNE     INCTM
006756  022737  000176  001000          CMP     #SWREG,SR       ;CHECK FOR SWREG USE
006764  001002                          BNE     1$              ;IF NOT GO TO 1$
006766  004737  010376                  JSR     PC,CNTLU        ;GO LOAD SWREG FROM TTY
006772  000137  001104          1$:     JMP     START           ;GO TO THE BEGINNING OF THE PROGRAM AND RESTART
                                        ;ROUTINE TO SAVE REGISTERS
006776  010046                  SAVEREG: MOV    %0,-(6)         ;SAVE REGISTER 0
007000  010146                          MOV     %1,-(6)         ;SAVE REGISTER 1
007002  010246                          MOV     %2,-(6)         ;SAVE REGISTER 2
007004  010346                          MOV     %3,-(6)         ;SAVE REGISTER 3
007006  010446                          MOV     %4,-(6)         ;SAVE REGISTER 4
007010  000115                          JMP     (5)             ;EXIT  ROUTINE
                                        ;
                                        ;ROUTINE TO RESTORE REGISTERS
007012  OC 726                 RESTORE: TST    (6)+
007014  012604                          MOV     (6)+,%4         ;RESTORE REGISTER 4
007016  012603                          MOV     (6)+,%3         ;RESTORE REGISTER 3
007020  012602                          MOV     (6)+,%2         ;RESTORE REGISTER 2
007022  012601                          MOV     (6)+,%1         ;RESTORE REGISTER 1
007024  012600                          MOV     (6)+,%0         ;RESTORE REGISTER 0
007026  000205                          RTS     %5              ;EXIT ROUTINE
                                        ;
                                        ;
```

```
1831
1832                                    ;SUBROUTINE TO OUTPUT A SERIES OF ASCII MESSAGES ON TELETYPE PRINTER
1833
1834  007030  011600                    TYPS:   MOV     @%6,%0          ;GET ADDRESS THAT CONTAINS MESSAGE ADDRESS
1835  007032  062716  000002                    ADD     #2,@%6          ;UPDATE TO NEXT MESSAGE ADDRESS
1836  007036  011037  007056                    MOV     @%0,TYPSB       ;ADDRESS OF MESSAGE TO TYPSB
1837  007042  022737  177777  007056            CMP     #-1,TYPSB       ;CHECK FOR TERMINATOR
1838  007050  001001                            BNE     TYPSA           ;BRANCH IF NOT TERMINATOR.
1839  007052  000002                            RTI                     ;TERMINATOR.  EXIT.
1840  007054  104001                    TYPSA:  EMT     +1              ;CALL ON TYP SUB TO TYPE MESSAGE
1841  007056  000000                    TYPSB:  0                       ;ADDRESS OF MESSAGE GOES HERE
1842  007060  000763                            BR      TYPS            ;GO PROCESS NEXT MESSAGE
1843                                    ;
1844                                    ;
1845                                    ;
1846                                    ;
1847                                    ;OCTAL TO ASCII CONVERT ROUTINE
1848                                    ;
1849                                    ;ENTER ROUTINE AS FOLLOWS
1850                                    ;JSR %5,CONV
1851                                    ;ADDR# = ADDRESS OF NUMBER TO BE CONVERTED
1852                                    ;ADDR BYTE = LSB OF WHERE ASCII IS GOING
1853                                    ;ASCII# = THE NUMBER OF ASCII CHAR. TO BE CONVERTED
1854                                    ;
1855                                    ;
1856
1857  007062  013537  007142            CONV:   MOV     @(5)+,ACNVX     ;VALUE OF # TO BE CONVERTED
1858  007066  012501                            MOV     (5)+,%1         ;ASCII ADDR
1859  007070  012502                            MOV     (5)+,%2         ;# OF ASCII CHAR
1860  007072  060201                            ADD     %2,%1
1861
1862  007074  013703  007142            ACVN:   MOV     ACNVX,%3
1863  007100  042703  177770                    BIC     #177770,%3      ;ISOLATE LEAST SIGNIFICANT OCTAL #
1864  007104  062703  000060                    ADD     #60,%3          ;SET UP ASCII #
1865  007110  110341                            MOVB    %3,-(1)         ;STORE ASCII CHAR
1866  007112  042737  000007  007142            BIC     #7,ACNVX
1867  007120  006037  007142                    ROR     ACNVX           ;ROTATE OCTAL #
1868  007124  006037  007142                    ROR     ACNVX
1869  007130  006037  007142                    ROR     ACNVX
1870  007134  005302                            DEC     %2              ;-1 FROM ASCII CHAR COUNT
1871  007136  001356                            BNE     ACVN
1872  007140  000205                            RTS     %5              ;EXIT # CONVERTED
1873  007142  000000                    ACNVX:  0                       ;WORK REGISTER
```

```
1874                                    ;THIS ROUTINES IS USED TO CONVERT ASCII INPUT TO OCTAL
1875                                    ;
1876                                    ;
1877  007144  012703  006340            NEXCHAR: MOV     #TEXBUF,R3      ;FETCH ASCII POINTER
1878  007150  005012                             CLR     @R2
1879  007152  105713                             TSTB    @R3             ;TEST FOR LAST CHACTER
1880  007154  001410                             BEQ     EXNEX           ;LAST CHACTER EXIT
1881  007156  000241                             CLC
1882  007160  006312                             ASL     @R2
1883  007162  006312                             ASL     @R2
1884  007164  006312                             ASL     @R2
1885  007166  142713  000370                    BICB    #370,@R3        ;MASK OUT HI ORDER BITS
1886  007172  152312                             BISB    (3)+,@R2        ;LOAD OCTAL VALUE
1887  007174  000766                             BR      NEXCHAR+6
1888  007176  000207                 EXNEX:      RTS     PC              ;EXIT LAST CHARACTER PROCESSED
```

```
                                        ;TTY OUTPUT FOR DIALEX-11
                                        ;
007200 020045 044124 020105 MES1:   .ASCII  /% THE 801 IS OFF LINE.@/
007206 030070 020061 051511
007214 047440 043106 046040
007222 047111 027105    100
                                        ;
                                        ;
                                        ;
007227    045 042524 052130 MES2:   .ASCII  /%TEXT BUFFER IS FULL.  NO MORE INPUT ALLOWED EXCEPT <RUBOUT> OR <CR>.@/
007234 041040 043125 042506
007242 020122 051511 043040
007250 046125 027114 020040
007256 047516 046440 051117
007264 020105 047111 052520
007272 020124 046101 047514
007300 042527 020104 054105
007306 042503 052120 036040
007314 052522 047502 052125
007322 020076 051117 036040
007330 051103 027076    100
007335    045 044120 047117 PH1:    .ASCII  /%PHONE #1?@/
007342 020105 030443 040077
                                        ;
                                        ;
                                        ;
007350 050045 047510 042516 PH2:    .ASCII  /%PHONE #2?@/
007356 021440 037462    100
                                        ;
                                        ;
                                        ;
007363    045 044120 047117 PH3:    .ASCII  /%PHONE #3?@/
007370 020105 031443 040077
                                        ;
                                        ;
                                        ;
007376 050045 047510 042516 PH4:    .ASCII  /%PHONE #4?@/
007404 021440 037464    100
                                        ;
                                        ;
                                        ;
007411    045 051120 043517 TIMO:   .ASCII  /%PROGRAM TIMED OUT UNABLE TO COMPLETE CALL@
007416 040522 020115 044524
007424 042515 020104 052517
007432 020124 047125 041101
007440 042514 052040 020117
007446 047503 050115 042514
007454 042524 041440 046101
007462 040114
                                        ;
                                        ;
                                        ;
                                        ;
```

```
                                                ;
007464  042445  042116      100   MESEND: .ASCII  /%END@/
                                                ;
                                                ;
                                                ;
007471     045  047104  030461   DNADDR: .ASCII  /%DN11 REGISTER ADDRESS?@/
007476  051040  043505  051511
007504  042524  020123  042101
007512  051104  051505  037523
007520     100
                                                ;
                                                ;
                                                ;
007521     045  042526  052103   VECDN:  .ASCII  /%VECTOR ADDRESS?@/
007526  051117  040440  042104
007534  042522  051523  040077
                                                ;
                                                ;
                                                ;
                                                ;
                                                ;
                                                ;
                                                ;
007542  040057     047            MESB:   .ASCII  %/@'%
                                                ;
007545     045     100            HEDO:   .ASCII  /%@/
                                                ;
                                                ;
                                                ;
007547     040  020040  042440   HED1:   .ASCII  /    ERROR COUNT   @/
007554  051122  051117  041440
007562  052517  052116  020040
007570  040040
                                                ;
                                                ;
                                                ;
007572  020040  020040  020040   HED2:   .ASCII  /       GD DATA   @/
007600  043440  020104  040504
007606  040524  020040  040040
                                                ;
                                                ;
                                                ;
007614  020040  020040  020040   HED3:   .ASCII  /       BD DATA@/
007622  041040  020104  040504
007630  040524     100
                                                ;
                                                ;
                                                ;
007633     040  020040  020040   HED4:   .ASCII  /       DN11   @/
007640  042040  030516  020061
007646  020040     100
                                                ;
                                                ;
                                                ;
007651     040  020040  020040   HED5:   .ASCII  /       DNCSR   @'
```

```
 2001  007656  042040  041516  051123
 2002  007664  020040  040040
 2003                                  ;
 2004                                  ;
 2005                                  ;
 2006  007670  050045  053517  051105  MED6:   .ASCII  /%POWER FAIL OCCURRED@/
 2007  007676  043040  044501  020114
 2008  007704  041517  052503  051122
 2009  007712  042105     100
 2010                                  ;
 2011                                  ;
 2012                                  ;
 2013          007716                          .EVEN
```

```
2014
2015
2016                                    ;ROUTINE TO REPORT ERRORS
2017                                    ;
2018  007716  032777  020000  171054  STAER:  BIT     #BIT13,@SR      ;TEST TO DELETE TYPE-OUT
2019  007724  001401                          BEQ     .+4             ;BRANCH TO TYPE
2020  007726  000205                          RTS     %5              ;DELETE TYPE-OUT
2021  007730  004537  006776                  JSR     %5,SAVEREG      ;SAVE REGISTERS
2022  007734  004537  007062                  JSR     %5,CONV         ;CONVERT OCTAL TO ASCII
2023  007740  001050                          ERCOUNT
2024  007742  007547                          HED1
2025  007744  000003                          3
2026  007746  004537  007062                  JSR     %5,CONV
2027  007752  001052                          STATUS
2028  007754  007633                          HED4
2029  007756  000006                          6
2030  007760  104000                          EMT     +0              ;REPORT ERROR NUMBER
2031  007762  007545                          HED0
2032  007764  007547                          HED1
2033  007766  007633                          HED4
2034  007770  177777                          -1
2035  007772  005777  171002                  TST     @SR             ;TEST TO HALT ON ERROR
2036  007776  100001                          BPL     1$
2037  010000  000000                          HALT
2038  010002  004737  010326          1$:     JSR     PC,CKSWR        ;CHECK FOR <^G>
2039  010006  004537  007012                  JSR     %5,RESTORE      ;RESTORE REGISTERS
2040  010012  000205                          RTS     %5              ;EXIT
2041
2042                                    ;
2043                                    ;
2044  010014  032777  020000  170756  STAER1: BIT     #BIT13,@SR      ;TEST TO DELETE TYPE-OUT
2045  010022  001401                          BEQ     .+4             ;BRANCH TO TYPE
2046  010024  000205                          RTS     %5              ;BIT13 SET DELETE TYPE-OUT
2047  010026  004537  006776                  JSR     %5,SAVEREG      ;SAVE REGISTERS
2048  010032  004537  007062                  JSR     %5,CONV         ;CONVERT OCTAL TO ASCII
2049  010036  001036                          WORK1                   ;WHAT REGISTER SHOULD CONTAIN
2050  010040  007572                          HED2
2051  010042  000006                          6
2052  010044  004537  007062                  JSR     %5,CONV         ;CONVERT OCTAL TO ASCII
2053  010050  001034                          WORK                    ;WHAT REGISTER CONTAINED
2054  010052  007614                          HED3
2055  010054  000006                          6
2056  010056  104000                          EMT     +0              ;REPORT MESSAGE
2057  010060  007545                          HED0
2058  010062  007572                          HED2
2059  010064  007614                          HED3
2060  010066  177777                          -1
2061  010070  004537  007012                  JSR     %5,RESTORE      ;RESTORE REGISTERS
2062  010074  004737  010326                  JSR     PC,CKSWR        ;CHECK FOR <^G>
2063  010100  000205                          RTS     %5
2064                                    ;
2065                                    ;
2066                                    ;
2067  010102  032777  020000  170670  STAER2: BIT     #BIT13,@SR      ;TEST TO DELETE TYPE-OUT
2068  010110  001401                          BEQ     .+4             ;BRANCH TO TYPE
2069  010112  000205                          RTS     %5              ;DELETE TYPE-OUT
```

```
                                        JSR     %5,SAVEREG      ;SAVE REGISTERS
                                        JSR     %5,CONV         ;CONVERT OCTAL TO ASCII
                                        ERCOUNT
                                        MED1
                                        3
                                        MOV     @STATUS,WORK
                                        JSR     %5,CONV         ;CONVERT OCTAL TO ASCII
                                        WORK
                                        MED5
                                        6
                                        JSR     %5,CONV ;CONVERT OCTAL TO ASCII
                                        STATUS
                                        MED4
                                        5
                                        EMT     +0
                                        MED0
                                        MED1
                                        MED5
                                        MED4
                                        -1
                                        TST     @SR             ;TEST TO DELETE HALT ON ERROR
                                        BPL     1$              ;BRANCH IF NO HALT WANTED
                                        HALT
                        1$:             JSR     PC,CKSWR        ;CHECK FOR (^G)
                                        JSR     %5,RESTORE      ;RESTORE REGISTERS
                                        RTS     %5


                                        ;HARDWARE SWITCH REGISTER SIZING ROUTINE*********

                        SUSWR:          MOV     #177570,SR      ;INITIALIZE SWITCH REGISTER ADDRESS
                                        MOV     @#6,-(SP)       ;SAVE VECTORS
                                        MOV     @#4,-(SP)
                                        MOV     #64$,@#4        ;SET UP FOR TIMEOUT
                                        CMP     @-1,@SR ;REFERENCE HARDWARE SWITCH REGISTER
                                        BEQ     65$
                                        BR      66$
                        64$:            CMP     (SP)+,(SP)+     ;ADJUST STACK
                        65$:            MOV     #SWREG,SR       ;POINT TO SOFTWARE SWITCH REG
                        66$:            MOV     (SP)+,@#4       ;RESTORE VECTORS
                                        MOV     (SP)+,@#6
                                        CMP     #SWREG,SR       ;IS SWREG USED
                                        BNE     67$
                                        JSR     PC,CNTLL        ;ALLOW SWREG TO BE LOADED
                        67$.            RTS     PC
```