

DN11

DIALEX
CZDNAC0

AH-8569C-MC

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IDENTIFICATION

PRODUCT CODE: AC-8568C-MC
PRODUCT NAME: CZDNACO DN11 D:ALEX
DATE : MAY, 1978
MAINTAINER: DIAGNOSTIC GROUP

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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 EXERCISER 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

PDF-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 INSTRUCTION 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 SRO-1
SR BIT8 RESET=PROGRAM WILL SEQUENCE THROUGH ALL DN11'S

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

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

5.3 SCOPE LOOP SWITCH SELECTION

IN THE SCOPE LOOP THE USER MAY SET ANY OR ALL OF THE DN11 STATUS BITS IN THE MAINTENANCE OR DYNAMIC MODE. IF THE USER SETS THE BITS IN THE DYNAMIC MODE THE PROGRAM WILL AUTOMATICALLY STICK IN THE CORRECT TIME DELAYS FOR THE PHONE LINE.

*****REFER TO SECTIONS 4.1 AND 5.2 FOR SOFTWARE SWITCH REGISTER OPERATION*****

THE DETAILED DESCRIPTION OF DN11 STATUS BITS

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

CZDNA-C, DN11 DIALEX MACY11 30A(1052) 07-SEP-78 15:25 PAGE 8^I 1
CZDNAC.P11 09-MAY-78 15:36

SEQ 0008

REMAIN OFF AT LEAST 600 MS BEFORE
COMING 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 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 SUCCESSFULLY 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 PRESENCE 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 XXXXXX DN11
EQUAL TO THE ERROR TAG IN THE LISTING. THIS ENABLES THE USER TO FOLLOW THE EXACT CODE THAT FAILED. DEFINES WHICH DN11 FAILED THE STATIC TESTS. THIS IS EQUAL TO THE ADDRESS ASSIGNMENT.

6.1.2 XXXXXX GD DATA XXXXXX BD DATA
THIS EQUALS THE DATA LOADED INTO A REGISTER BY THE PROGRAM. THIS EQUALS THE DATA READ FROM A REGISTER BY THE PROGRAM.

6.1.3 XXX ERROR COUNT XXXXXX DNCSR XXXXXX DN11
EQUAL TO THE ERROR TAG IN PROGRAM LISTING CONTENTS OF DN11 STATUS REGISTER AT THE TIME ERROR 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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435 ;CZDNA-C
436 ;DZDNA-A OBSOLETE MD-11-D9J
437 ;DN11 DIALEX
438 ;COPYRIGHT 1976,1977, DIGITAL EQUIPMENT CORP., MAYNARD, MASS. 01754
439 ;RELEASED 21 MAY 76 BY SAM CARPENTER
440 ;REV B RELEASED BY R. KIMBALL, AUGUST,1977.
441 ; SUPPORTS SOFTWARE SWITCH REGISTER, LOC. 176
442 ;ALSO, SUPPORTS THE DYNAMIC LODING OF LOC.176
443 ;
444 ;*****DIALEX-11*****
445 ;
446 000000 N-0
447 000240 NOP=240
448 000001 BIT0-1
449 000002 BIT1=2
450 000004 BIT2=4
451 000010 BIT3-10
452 000020 BIT4=20
453 000040 BIT5=40
454 000100 BIT6-100
455 000200 BIT7=200
456 000400 BIT8=400
457 001000 BIT9=1000
458 002000 BIT10=2000
459 004000 BIT11=4000
460 010000 BIT12=10000
461 020000 BIT13=20000
462 040000 BIT14=40000
463 100000 BIT15=100000
464 ;
465 ;
466 000004 SCOPE=IOT ;TRAP CALL FOR SCOPE LOOP
467 ;
468 ;
469 ;TRAP CATCHER LOC.0-200 *****
470 000000 .-0
471 000000 000002 .+2
472 000002 000000 HALT
473 000004 000006 .+2
474 000006 000000 HALT
475 000010 000012 .+2
476 000012 000000 HALT
477 000014 000016 .+2
478 000016 000000 HALT
479 000020 000022 .+2
480 000022 000000 HALT
481 000024 000026 .+2
482 000026 000000 HALT
483 000030 000032 .+2
484 000032 000000 HALT
485 000034 000036 .+2
486 000036 000000 HALT
487 000040 000042 .+2
488 000042 000000 HALT
```

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

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

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

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

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

```
736 ;SOFTWARE SWITCH REGISTER*****
737 ;=176
738 000176 000176 SWREG: 0 ;SOFTWARE SWITCH REGISTER
739 000000
740 ;PROGRAM START*****
741 ;=200
742 000200 000137 001104 JMP START ;GO TO THE START OF THE TEST
743 000204 000137 006012 JMP MASTER ;ENTER THE SCOPE LOOP ROUTINE
744 001000
745 ;=1000
746 001000 177570 ;I/O REGISTERS
747 001002 177776 SR: 177570 ;SWITCH REGISTER
748 001004 177566 CSR: 177776 ;PROCESSOR STATUS REGISTER
749 001006 177562 TPB: 177566 ;TELETYPE REGISTERS
750 001010 177564 TKB: 177562
751 001012 177560 TPS: 177564
752 TKS: 177560
753 005562 INDEX=SELECT+2
754 ;
755 ;DN11 REGISTERS
756 001014 175200 DNCSR1: 175200
757 001016 175202 DNCSR2: 175202
758 001020 175204 DNCSR3: 175204
759 001022 175206 DNCSR4: 175206
760 ;
761 ;
762 ;
763 ;
764 001024 000300 VECTOR: 300
765 001026 000004 PRIORITY: 4
766 ;
767 ;
768 ;
```

```
769 ;PROGRAM WORK REGISTER
770 :
771 001030 177777 FTITLE: 177777 ;TITLE PRINTED FLAG
772 001032 000000 DSSCNT: 0
773 001034 000000 WORK: 0
774 001036 000000 WORK1: 0
775 001040 000000 COUNT: 0
776 001042 000000 TIME: 0
777 001044 000000 TIME1: 0
778 001046 000000 SAVE: 0
779 001050 000000 ERCOUNT: 0
780 001052 175200 STATUS: 175200
781 001054 000000 PNT1: 0
782 001056 000000 PNT2: 0
783 001060 000000 PNT3: 0
784 001062 000000 PNT4: 0
785 001064 000000 FLAG: 0
786 001066 000000 PASS: 0
787 001070 000000 MASK: 0
788 001072 011700 STKLINK: STACK
789 001074 000 000 000 MAP: .BYTE 0,0,0,0
790 001077 000
791 :
792 :
793 :
794 001100 001054 ENTRY: PNT1
795 001102 006340 POINT: PH01
```

```

796
797
798
799
800
801 001104 000005
802 001106 013706 001072
803 001112 005237 001030
804 001116 001002
805 001120 104001
806 001122 010646
807 001124 004737 010200
808 001130 005737 001064
809 001134 001071
810 001136 052737 177777 001064
811 001144 012703 006316
812 001150 104001
813 001152 007447
814 001154 004737 006170
815 001160 012702 001014
816 001164 004737 007122
817 001170 013737 001014 001016
818 001176 062737 000002 001016
819 001204 013737 001016 001020
820 001212 062737 000002 001020
821 001220 013737 001020 001022
822 001226 062737 000002 001022
823 001234 013737 001014 001052
824 001242 012703 006316
825 001246 104001
826 001250 007477
827 001252 004737 006170
828 001256 012702 001024
829 001262 004737 007122
830 001266 022737 001000 001024
831 001274 101762
832 001276 062737 000002 001024
833 001304 012777 000200 177512
834 001312 162737 000002 001024
835 001320 013737 001014 001052
836 001326 032777 002000 177444
837 001334 001402
838 001336 000137 004266
  
```

```

: 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
START: RESET
      MOV     STKLINK,%6      ;SET UP THE STACK
      INC     FTITLE
      BNE     1$              ;SKIP TITLE IF ALREADY PRINTED
      EMT+1                    ;GO TYPE OUT THE TITLE
      MTITLE
1$:   JSR     PC,SUSWR        ;GO TO SWITCH REGISTER SIZING ROUTINE
      TST     FLAG           ;TEST FOR THE PASS
      BNE     NOTFIRST       ;BRANCH NOT THE FIRST PASS
      BIS     #177777,FLAG    ;SET PASS INDICATOR
      MOV     #TEXBUF,%3     ;SET UP TO RECEIVE DATA FROM TTY
      EMT     +1             ;ASK OPERATOR FOR FIRST DN11 ADDRESS
      DNADDR
      JSR     %7,TYST        ;GO FETCH ADDRESS FROM TTY
      MOV     #DNCSR1,%2
      JSR     %7,NEXCHAR     ;CONVERT OCTAL TO ASCII
      MOV     DNCSR1,DNCSR2  ;SET UP ALL DN11 ADDRESSES
      ADD     #2,DNCSR2
      MOV     DNCSR2,DNCSR3
      ADD     #2,DNCSR3
      MOV     DNCSR3,DNCSR4
      ADD     #2,DNCSR4
      MOV     DNCSR1,STATUS
GETVEC: MOV     #TEXBUF,%3   ;SET UP TO ASK FOR VECTOR ASSIGNMENT
      EMT     +1
      VECDN
      JSR     %7,TYST        ;FETCH VECTOR ADDRESS FROM TTY
      MOV     #VECTOR,%2
      JSR     %7,NEXCHAR     ;CONVERT OCTAL TO ASCII
      CMP     #1000,VECTOR   ;IS VECTOR ADDRESS LESS THAN 1000
      BLOS   GETVEC         ;BRANCH THE ADDRESS IS GREATER THAN 1000
      ADD     #2,VECTOR      ;POINT TO VECTOR PSW
      MOV     #200,@VECTOR   ;SET PRIORITY AT 4
      SUB     #2,VECTOR      ;ADJ. VECTOR
NOTFIRST: MOV    DNCSR1,STATUS
      BIT     #BIT10,@SR     ;TEST TO ENTER ON-LINE TEST ONLY
      BEQ    .+6            ;ENTER STATIC
      JMP    BEGIN          ;ENTER ON-LINE TEST
  
```

```

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

```

875
876
877
878
879
880 001500 042777 177777 177344 ST2X: BIC #177777,@STATUS
881 001506 032777 040000 177336 BIT #BIT14,@STATUS
882 001514 001405 BEQ ST3E ;BRANCH IF ACR IS CLEARED
883 001516 012737 000001 001050 ERR1: MOV #1,ERCOUNT ;*** ERROR 1 ***
884 000002 N=N+1
885 001524 004537 007674 JSR %5,STAER
886 001530 000004 ST3E: SCOPE
887 001532 001500 ST2X
888
889
890
891 001534 042777 177777 177310 ST3: BIC #177777,@STATUS
892 001542 032777 020000 177302 BIT #BIT13,@STATUS
893 001550 001405 BEQ ST4E ;BIT 13 CLEAR EXIT
894 001552 012737 000002 001050 ERR2: MOV #2,ERCOUNT ;*** ERROR 2 ***
895 000003 N=N+1
896 001560 004537 007674 JSR %5,STAER
897 001564 000004 ST4E: SCOPE
898 001566 001534 ST3
899
900
901
902 001570 042777 177777 177254 ST4: BIC #177777,@STATUS ;CLEAR THE WORLD
903 001576 032777 010000 177246 BIT #BIT12,@STATUS ;TEST FOR DATA LINE NOT OCCUPIED
904 001604 001405 BEQ ST5E ;BRANCH IF LINE NOT OCCUPIED
905 001606 012737 000003 001050 ERR3: MOV #3,ERCOUNT ;*** ERROR 3 ***
906 000004 N=N+1
907 001614 004537 007674 JSR %5,STAER ;REPROT ERROR
908 001620 000004 ST5E: SCOPE
909 001622 001570 ST4
910
911
912
913 001624 042777 177777 177220 ST5: BIC #177777,@STATUS ;CLEAR THE WORLD
914 001632 032777 007400 177212 BIT #7400,@STATUS ;TEST BCD DIGITS
915 001640 001405 BEQ ST6E ;BITS SHOULD BE CLEARED
916 001642 012737 000004 001050 ERR4: MOV #4,ERCOUNT ;*** ERROR 4 ***
917 000005 N=N+1
918 001650 004537 007674 JSR %5,STAER ;REPORT ERROR
919 001654 000004 ST6E: SCOPE
920 001656 001624 ST5
  
```



```

921
922
923          :CAN WE SET ALL BCD BITS
924
925
926 001660 042777 177777 177164 ST6:  BIC    #177777,@STATUS
927 001666 012777 007400 177156      MOV    #7400,@STATUS      ;SET BITS
928 001674 017737 177152 001034      MOV    @STATUS,WORK
929 001702 042737 170377 001034      BIC    #170377,WORK      ;MASK ALL OTHER BITS
930 001710 022737 007400 001034      CMP    #7400,WORK
931 001716 001412                      BEQ    ST7E              ;BRANCH IF BITS ALL SET
932 001720 012737 000005 001050 ERR5: MOV    #5,ERCOUNT        ;*** ERROR 5 ***
933          000006                      N=N+1
934 001726 012737 007400 001036      MOV    #7400,WORK1      ;BCD BITS THAT SHOULD BE SET
935 001734 004537 007772                      JSR    %5,STAER1        ;REPORT ERROR
936 001740 004537 007674                      JSR    %5,STAER
937 001744 000004                      ST7E: SCOPE
938 001746 001660                      ST6
939          :CAN WE FLOAT A ONE THROUGH THE BCD BITS
940 001750 042777 177777 177074 ST7:  BIC    #177777,@STATUS
941 001756 012737 000400 001036      MOV    #400,WORK1
  
```

```

942
943 001764 013777 001036 177060 ST7X:  MOV    WORK1,@STATUS ;SET UP BCD BITS
944 001772 017737 177054 001034      MOV    @STATUS,WORK ;READ BACK BCD BITS
945 002000 042737 170377 001034      BIC    #170377,WORK ;MASK BITS
946 002006 023737 001036 001034      CMP    WORK1,WORK ;DO THE BITS EQUAL WHAT WAS LOADED
947 002014 001007                BNE    ST7ER ;ERROR IN BITS READ BACK
948 002016 022737 007400 001034      CMP    #7400,WORK
949 002024 001412                BEQ    ST10E ;EXIT PATTERN COMPLETE
950 002026 105237 001037                INCB   WORK1+1 ;SETUP NEXT PATTERN
951 002032 000754                BR     ST7X ;LOAD THE NEXT PATTERN
952 002034
953 002034 012737 000006 001050 ST7ER:  MOV    #6,ERCOUNT ;*** ERROR 6 ***
954 000007                ERR6:  N=N+1
955 002042 004537 007772                JSR    %5,STAER1 ;REPORT ERROR
956 002046 004537 007674                JSR    %5,STAER
957 002052 000004                ST10E: SCOPE
958 002054 001750                ST7
959
960                ;IS DONE CLEARED
961
962 002056 042777 177777 176766 S110:  BIC    #177777,@STATUS ;CLEAR THE WORLD
963 002064 105777 176762                TSTB   @STATUS ;TEST FOR NOT DONE
964 002070 100005                BPL    ST11E ;BRANCH IF DONE NOT SET
965 002072 012737 000007 001050 ERR7:  MOV    #7,ERCOUNT ;*** ERROR 7 ***
966 000010                N=N+1
967 002100 004537 007674                JSR    %5,STAER ;REPORT DONE SET
968 002104 000004                ST11E: SCOPE
969 002106 002056                ST10
  
```

```

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

```

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

```

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

1074 002536 000004
1075 002540 002506

ST17XE: SCOPE
ST17

```

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

1132	003010	052777	000010	176034	ST24:	BIS	#BIT3,@STATUS	
1133	003016	032777	010000	176026		BIT	#BIT12,@STATUS	;IS DLO SET
1134	003024	001005				BNE	ST25E	;YES EXIT
1135	003026	012737	000027	001050	ERR27:	MOV	#27,ERCOUNT	;*** ERROR 27 ***
1136		000030				N=N+1		
1137	003034	004537	007674			JSR	%5,STAER	;REPORT ERROR
1138	003040	000004			ST25E:	SCOPE		
1139	003042	002756				ST23		
1140								


```

1141
1142
1143
1144
1145      ; CAN WE SET PND IN MAINTENANCE MODE
1146
1147 003044 042777 177777 176000 ST25: BIC #177777,@STATUS
1148 003052 033777 001070 175772 BIT MASK,@STATUS ; IS REG CLEAR
1149 003060 001406 BEQ ST25X ; YES. REG CLEAR
1150 003062 012737 000030 001050 ERR30: MOV #30,ERCOUNT ; *** ERROR 30 ***
1151 000031 N=N+1
1152 003070 004537 007674 JSR %5,STAER
1153 003074 000425 BR ST26E ; LOOP ON ERROR
1154 003076 052777 000411 175746 ST25X: BIS #BIT8!BIT3!BIT0,@STATUS ; SET PND IN MAINTENANCE MODE.
1155 003104 032777 000020 175740 BIT #BIT4,@STATUS
1156 003112 001016 BNE ST26E ; PND SET
1157 003114 012737 000031 001050 ERR31: MOV #31,ERCOUNT ; *** ERROR 31 ***
1158 000032 N=N+1
1159 003122 004537 007674 JSR %5,STAER ; PND NOT SET
1160 003126 000410 BR ST26E ; EXIT ERROR OCCURRED
1161
1162      ; DOES PND SET DONE
1163
1164 003130 105777 175716 ST26: TSTB @STATUS ; IS DONE SET
1165 003134 100405 BMI ST26E ; BRANCH IF DONE SET
1166 003136 012737 000032 001050 ERR32: MOV #32,ERCOUNT ; *** ERROR 32 ***
1167 000033 N=N+1
1168 003144 004537 007674 JSR %5,STAER
1169 003150 000004 ST26E: SCOPE
1170 003152 003044 ST25
1171
1172      ; CAN WE SET DSS IN MAINTENANCE MODE
1173
1174 003154 042777 177777 175670 ST26X: BIC #177777,@STATUS
1175 003162 033777 001070 175662 BIT MASK,@STATUS ; IS REG. CLEAR
1176 003170 001406 BEQ ST27 ; BRANCH IF CLEAR
1177 003172 012737 000033 001050 ERR33: MOV #33,ERCOUNT ; *** ERROR 33 ***
1178 000034 N=N+1
1179 003200 004537 007674 JSR %5,STAER
1180 003204 000425 BR ST27E ; REPORT ERROR
1181 003206 052777 001011 175636 ST27: BIS #BIT9!BIT3!BIT0,@STATUS ; SET DSS IN MAINTENANCE MODE
1182 003214 032777 000040 175630 BIT #BIT5,@STATUS
1183 003222 001006 BNE ST30
1184 003224 012737 000034 001050 ERR34: MOV #34,ERCOUNT ; *** ERROR 34 ***
1185 000035 N=N+1
1186 003232 004537 007674 JSR %5,STAER
1187 003236 000410 BR ST27E ; LOOP ON ERROR
    
```

```

1188
1189
1190
1191 003240 105777 175606
1192 003244 100405
1193 003246 012737 000035 001050 ERR35:
1194 000036
1195 003254 004537 007674
1196 003260 000004
1197 003262 003154
1198
1199 003264 042777 177777 175560
1200 003272 033777 001070 175552
1201 003300 001406
1202 003302 012737 000036 001050 ERR36:
1203 000037
1204 003310 004537 007674
1205 003314 000432
1206 003316 052777 000010 175526
1207 003324 042777 177760 175520
1208 003332 052777 002001 175512
1209 003340 005777 175506
1210 003344 100406
1211 003346 012737 000037 001050 ERR37:
1212 000040
1213 003354 004537 007674
1214 003360 000410

:DOES DSS SET DONE
:
ST30: TSTB @STATUS ;WAS DONE SET BY DSS
      BMI ST27E ;BRANCH IF YES
ERR35: MOV #35,ERCOUNT ;*** ERROR 35 ***
      N=N+1
      JSR %5,STAER ;REPORT ERROR
ST27E: SCOPE
      ST26X
:CAN WE SET PWO IN MAINTENANCE MODE
ST31: BIC #177777,@STATUS
      BIT MASK,@STATUS ;IS STATUS REG CLEAR
      BEQ ST31X ;BRANCH IF REG CLEAR
ERR36: MOV #36,ERCOUNT ;*** ERROR 36 ***
      N=N+1
      JSR %5,STAER ;REPORT ERROR
      BR ST32E
ST31X: BIS #BIT3,@STATUS ;SET MAINTENANCE
      BIC #177760,@STATUS
      BIS #BIT10!BIT0,@STATUS ;SET PWO
      TST @STATUS
      BMI ST32
ERR37: MOV #37,ERCOUNT ;*** ERROR 37 ***
      N=N+1
      JSR %5,STAER
      BR ST32E ;REPORT ERROR
  
```

```

1215
1216
1217 003362 105777 175464      ;WAS DONE SET
1218 003366 100405      ST32:  TSTB  @STATUS      ;TEST DONE
1219 003370 012737 000040 001050 ERR40:  MOV   #40,ERCOUNT ;YES EXIT
1220      000041      N=N+1      ;*** ERROR 40 ***
1221 003376 004537 007674      JSR   %5,STAER      ;DONE NOT SET REPORT ERROR
1222 003402 000004      ST32E: SCOPE
1223 003404 003264      ST31
1224      ;CAN WE SET ABANDON CALL AND RETRY IN MAINTENANCE MODE
1225 003406 042777 177777 175436 ST32X:  BIC   #177777,@STATUS
1226 003414 033777 001070 175430      BIT   MASK,@STATUS      ;IS REG. CLEAR
1227 003422 001406      BEQ   ST33      ;YES EXIT
1228 003424 012737 000041 001050 ERR41:  MOV   #41,ERCOUNT ;*** ERROR 41 ***
1229      000042      N=N+1
1230 003432 004537 007674      JSR   %5,STAER
1231 003436 000425      BR    ST34E      ;REPORT REG. NOT CLEAR
1232 003440 052777 004011 175404 ST33:  BIS   #BIT11!BIT3!BIT0,@STATUS ;SET ACR IN MAINTENANCE MODE
1233 003446 032777 040000 175376      BIT   #BIT14,@STATUS
1234 003454 001006      BNE   ST34
1235 003456 012737 000042 001050 ERR42:  MOV   #42,ERCOUNT ;*** ERROR 42 ***
1236      000043      N=N+1
1237 003464 004537 007674      JSR   %5,STAER      ;ACR NOT SET
1238 003470 000410      BR    ST34E
1239      ;DID ACR SET DONE
1240 003472 105777 175354      ST34:  TSTB  @STATUS      ;WAS DONE SET BY ABANDON CALL AND RETRY
1241 003476 100405      BMI   ST34E      ;YES EXIT
1242 003500 012737 000043 001050 ERR43:  MOV   #43,ERCOUNT ;*** ERROR 43 ***
1243      000044      N=N+1
1244 003506 004537 007674      JSR   %5,STAER      ;DONE NOT SET
1245 003512 000004      ST34E: SCOPE
1246 003514 003406      ST32X
1247      ;DOES PND CLEAR DIGIT PRESENT
1248 003516 042777 177777 175326 ST34X:  BIC   #177777,@STATUS
1249 003524 033777 001070 175320      BIT   MASK,@STATUS      ;IS REG CLR
1250 003532 001406      BEQ   ST35      ;YES BRANCH
1251 003534 012737 000044 001050 ERR44:  MOV   #44,ERCOUNT ;*** FRROR 44 ***
1252      000045      N=N+1
1253 003542 004537 007674      JSR   %5,STAER
1254 003546 000434      BR    ST35E      ;LOOP ON ERROR
1255 003550 052777 000410 175274 ST35:  BIS   #BIT8!BIT3,@STATUS ;SET PND
1256 003556 052777 000002 175266      BIS   #BIT1,@STATUS ;SET DIGIT PRESENT
1257 003564 032777 000002 175260      BIT   #BIT1,@STATUS ;IS IT SET
1258 003572 001006      BNE   ST35X      ;YES BRANCH
1259 003574 012737 000045 001050 ERR45:  MOV   #45,ERCOUNT ;*** ERROR 45 ***
1260      000046      N=N+1
1261 003602 004537 007674      JSR   %5,STAER      ;REPORT DIGIT PRESENT NOT SET
1262 003606 000414      BR    ST35E      ;LOOP ON ERROR
1263
1264
    
```

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1265                                     :WAS DIGIT PRESENT CLEARED
1266 003610 042777 000410 175234 ST35X: BIC #BIT8!BIT3,@STATUS :CLEAR PND
1267 003616 032777 000002 175226      BIT #BIT1,@STATUS :WAS DIGIT PRESENT CLEARED
1268 003624 001405                                     BEQ ST35E :YES BRANCH
1269 003626 012737 000046 001050 ERR46: MOV #46,ERCOUNT :*** ERROR 46 ***
1270                                     N=N+1
1271 003634 004537 007674      JSR %5,STAER :REPORT ERROR
1272 003640 000004      ST35E: SCOPE
1273 003642 003516      ST34X
1274                                     :CAN WE SET AND CLEAR DONE
1275 003644 105777 175202      ST36: TSTB @STATUS :TEST DONE
1276 003650 100006      BPL ST36X :DONE CLEAR BRANCH
1277 003652 012737 000047 001050 ERR47: MOV #47,ERCOUNT :*** ERROR 47 ***
1278                                     N=N+1
1279 003660 004537 007674      JSR %5,STAER :REPORT ERROR
1280 003664 000427      BR ST36E :LOOP ON ERROR
1281 003666 052777 000200 175156 T36X: BIS #BIT7,@STATUS :SET DONE
  
```

```

1282
1283
1284
1285 003674 105777 175152      :CAN WE CLEAR DONE
1286 003700 100406      CLRDN: TSTB @STATUS      :IS DONE SET
1287 003702 012737 000050 001050 ERR50: BMI DONSET      :YES DONE SET
1288 000051      MOV #50,ERCOUNT      :*** ERROR 50 ***
1289 003710 004537 007674      N=N+1
1290 003714 000413      JSR %5,STAER      :REPORT ERROR
1291 003716 042777 000200 175126 DONSET: BR ST36E      :LOOP ON ERROR
1292 003724 105777 175122      BIC #BIT7,@STATUS :CLR DONE
1293 003730 100005      TSTB @STATUS      :IS DONE CLEARED
1294 003732 012737 000051 001050 ERR51: BPL ST36E      :YES EXIT
1295 000052      MOV #51,ERCOUNT      :*** ERROR 51 ***
1296 003740 004537 007674      N=N+1
1297 003744 000004      JSR %5,STAER      :DONE NOT CLEARED
1298 003746 003644      ST36E: SCOPE
1299      ST36
1300 003750 000005      :CAN WE GENERATE AN INTERRUPT
1301 003752 012777 004002 175044 ST37: RESET
1302 003760 012777 000240 175014      MOV #INTER,@VECTOR :SET UP INTERRUPT VECTOR
1303 003766 052777 000300 175056      MOV #240,@CSR      :SET CPU PRIORITY LEVEL TO BR5
1304 003774 000240      BIS #BIT6!BIT7,@STATUS :SET INTERRUPT ENABLE AND DONE
1305 003776 000137 004030      NOP
1306      JMP ST37X      :NO INTERRUPT SHOULD MASTER ENABLE NOT SET
1307 004002 012777 000340 174772 INTER: MOV #340,@CSR      :GO SET MASTER ENABLE TO SEE IF WE CAN INTERRUPT
1308 004010 005077 175036      CLR @STATUS      :REPORT AN INTERRUPT OCCURRED THAT IS AN ERROR
1309 004014 012737 000052 001050 ERR52: MOV #52,ERCOUNT      :*** ERROR 52 ***
1310 000053      N=N+1
1311 004022 004537 007674      JSR %5,STAER
1312 004026 000441      BR ST38E
1313 004030 012777 004052 174766 ST37X: MOV #SECINT,@VECTOR :SET UP INTERRUPT VECTOR
1314 004036 052777 000004 174750      BIS #BIT2,@DNCSR1 :SET MASTER ENABLE
1315 004044 000240      NOP
1316 004046 000137 004066      JMP ST38      :NO INTERRUPT SHOULD OCCUR PROCESSOR IS AT LEVEL 5
1317 004052      SECINT:
1318 004052 012737 000053 001050 ERR53: MOV #53,ERCOUNT      :WE SHOULD NOT INTERRUPT LEVEL TO HIGH
1319 000054      N=N+1
1320 004060 004537 007674      JSR %5,STAER      :REPORT THE DN11 INTERRUPTED
1321 004064 000422      BR ST38E      :ENTER SCOPE LOOP
1322 004066 012777 004132 174730 ST38: MOV #ST38E,@VECTOR :SET UP FOR INTERRUPT
1323 004074 005077 174702      CLR @CSR      :LOWER PROCESSOR PRIORITY
1324 004100 005037 001042      CLR TIME      :SET UP TIMER
1325 004104 005237 001042      INC TIME      :WAIT FOR INTERRUPT
1326 004110 001375      BNE -4
1327 004112 012777 000340 174662      MOV #340,@CSR      :LOCK UP CPU DN11 DID NOT INTERRUPT
1328 004120 012737 000054 001050 ERR54: MOV #54,ERCOUNT      :*** ERROR 54 ***
1329 000055      N=N+1
1330 004126 004537 007674      JSR %5,STAER      :REPORT DN11 DID NOT INTERRUPT AT BRO
1331 004132 013706 001072      ST38E: MOV STKLINK,%6 :RESET STACK
1332 004136 000004      SCOPE
1333 004140 003750      ST37
1334 004142 032777 000400 174630 ST40: BIT #BIT8,@SR      :DID THE OPERATOR SELECTED A DN11
1335 004150 001402      BEQ +6      :NO! NORMAL RUN
1336 004152 000137 001342      JMP S-1      :THE OPERATOR DID SELECTED A DN11
1337 004156 023737 001022 001052      CMP DNCSR4,STATUS
    
```

1338	004164	001414			BEQ	RESTART	
1339	004166	062737	000002	001052	ADD	#2,STATUS	
1340	004174	052777	000100	174650	BIS	#BIT6,@STATUS	:SET INTERRUPT ENABLE
1341	004202	032777	000100	174642	BIT	#BIT6,@STATUS	:IF SET DN11 IS POSSABILE THERE
1342	004210	001402			BEQ	+.6	
1343	004212	000137	001342		JMP	ST1	
1344	004216	013737	001014	001052	RESTART: MOV	DNCSR1,STATUS	
1345	004224	032777	001000	174546	BIT	#BIT9,@SR	:TEST IF THE OPERATOR WANTS TO LOOP ON STATIC TESTS
1346	004232	001402			BEQ	MYCNT	:BRANCH TO ON-LINE TEST IF BIT 9 NOT SET
1347	004234	000137	001414		JMP	ST1X	:LOOP ON STATIC TESTS BIT9 SET
1348	004240	012737	177770	001044	MYCNT: MOV	#177770,TIME1	:WAIT FOR PHONE LINE TO SETTLE
1349	004246	005037	001042		CLR	TIME	
1350	004252	005237	001042		INC	TIME	
1351	004256	001375			BNE	.-4	
1352	004260	005237	001044		INC	TIME1	
1353	004264	001372			BNE	.-12	
1354							
1355							
1356							
1357							
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1371							
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1381 ;DIALEX 11
1382 ;THE OPERATOR MUST ASSIGN PHONE NUMBER TO EACH DN11
1383 004266 013706 001072 BEGIN: MOV STKLINK,%6 ;SET UP STACK
1384 004272 004737 010304 JSR PC,CKSWR ;CHECK FOR CNTL G
1385 004276 000005 RESET
1386 004300 012777 005410 174516 MOV #INT,@VECTOR ;SET UP VECTOR
1387 004306 005004 CLR %4
1388 004310 005737 004320 TST NOFLAG
1389 004314 001002 BNE .+6
1390 004316 000407 BR NEWNO
1391 004320 000000 NOFLAG: 0
1392 004322 004737 010304 JSR PC,CKSWR ;CHECK FOR <^G>
1393 004326 032777 000200 174444 BIT #BIT7,@SR ;TEST FOR TTY CONVERSATION
1394 004334 001104 BNE DNDIAL ;BRANCH IF NO CONVERSATION
1395 004336 005037 001074 NEWNO: CLR MAP ;CLEAR PHONE MAP
1396 004342 005037 001076 CLR MAP+2
1397 004346 052737 177777 004320 BIS #177777,NOFLAG
1398 004354 005037 001040 CLR COUNT
1399 004360 012703 006340 NO0: MOV #PH01,%3 ;SET UP PHONE #1 BUFFER
1400 004364 104001 EMT +1
1401 004366 007313 PH1
1402 004370 004737 006170 JSR %7,TYST ;FETCH KEYBOARD CHAR
1403 004374 105737 006340 TSTB PH01
1404 004400 001405 BEQ NO1 ;OPERATOR FAILED TO TYPE A PHONE NUMBER
1405 004402 005237 001040 INC COUNT
1406 004406 152764 000377 001074 NO1: BISB #377,MAP(4) ;LOAD MAP
1407 004414 005204 INC %4
1408 004416 012703 006362 MOV #PH02,%3
1409 004422 104001 EMT +1
1410 004424 007326 PH2
1411 004426 004737 006170 JSR %7,TYST ;FETCH KEYBOARD CHARACTER
1412 004432 105737 006362 TSTB PH02 ;DID THE OPERATOR TYPE A PHONE NUMBER
1413 004436 001405 BEQ NO2 ;THE OPERATOR ONLY GAVE THE PROGRAM ONE NUMBER
1414 004440 005237 001040 INC COUNT ;THE OPERATOR TYPED AN NUMBER
1415 004444 152764 000377 001074 NO2: BISB #377,MAP(4) ;LOAD MAP
1416 004452 005204 INC %4
1417 004454 012703 006404 MOV #PH03,%3
1418 004460 104001 EMT +1
1419 004462 007341 PH3
1420 004464 004737 006170 JSR %7,TYST ;FETCH KEYBOARD CHARACTER
1421 004470 105737 006404 TSTB PH03 ;DID THE OPERATOR TYPE A NUMBER FOR LINE THREE
1422 004474 001405 BEQ NO3 ;NO NUMBER FOR LINE THREE
1423 004476 005237 001040 INC COUNT ;OPERATOR TYPE D A NUMBER
1424 004502 152764 000377 001074 NO3: BISB #377,MAP(4) ;LOAD MAP
1425 004510 005204 INC %4
1426 004512 012703 006426 MOV #PH04,%3
1427 004516 104001 EMT +1
1428 004520 007354 PH4
1429 004522 004737 006170 JSR %7,TYST ;FETCH KEYBOARD CHARACTER
1430 004526 105737 006426 TSTB PH04 ;TEST IF THE OPERATOR TYPED A NUMBER FOR THIS LINE
1431 004532 001405 BEQ DNDIAL ;OPERATOR DID NOT TYPE A NUMBER
1432 004534 152764 000377 001074 DNDIAL: BISB #377,MAP(4) ;LOAD MAP
1433 004542 005237 001040 INC COUNT
1434 004546 013737 001014 001052 MOV DNCSR1,STATUS
1435 004554 013737 001040 001046 MOV COUNT,SAVE
1436 004562 005004 CLR %4
  
```

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1437
1438
1439
1440
1441 004564 004737 010304
1442 004570 105764 001074
1443 004574 001423
1444 004576 005777 174250
1445 004602 001415
1446 004604 017737 174242 001034
1447 004612 013737 001052 001036
1448 004620 012737 000055 001050 ERR55:
1449 000056
1450 004626 004537 010060
1451 004632 000000
1452 004634 000777
1453 004636 005337 001046 MODOK:
1454 004642 001405
1455 004644 005204 EXMODOK:
1456 004646 062737 000002 001052 ADD
1457 004654 000743 BR
1458
1459
1460
1461 004656 005037 001054
1462 004662 005037 001056
1463 004666 005037 001060
1464 004672 005037 001062
1465 004676 005004
1466 004700 013737 001040 001046
1467 004706 013737 001014 001052
1468 004714 105764 001074 SETCRQ:
1469 004720 001423
1470 004722 012777 000101 174122
1471 004730 032777 010000 174114
1472 004736 001411
1473 004740 012737 000056 001050 ERR56:
1474 000057
1475 004746 017737 174100 001034
1476 004754 004537 010060
1477 004760 000755
1478 004762 005337 001046 DLOTST:
1479 004766 001405
1480 004770 005204 EXCRQ:
1481 004772 062737 000002 001052 ADD
1482 005000 000745 BR
1483
1484
1485 005002 005077 173774
1486 005006 013737 001040 001032 WAITIN:
1487 005014 012737 177700 001044 MOV
1488 005022 012737 000000 001042 MOV
1489 005030 052777 000004 173756 MOV
1490 005036 005237 001042 TWOSEC:
1491 005042 001375 BIS
1492 005044 005237 001044 INC

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```

:TEST FOR DN11'S TO BE IN READY STATE
:REGISTERS SHOULD BE CLEARED BECAUSE
:OF RESET COMMAND ISSUED AT START
RINGO: JSR PC,CKSWR ;CHECK FOR CNTL G
TSTB MAP(4) ;IS THIS LINE ACTIVE
BEQ EXMODOK ;BRANCH NOT ACTIVE
TST @STATUS
BEQ MODOK ;DN11 READY OK
MOV @STATUS,WORK ;FETCH CONTENTS OF REGISTER
MOV STATUS,WORK1 ;FETCH ADDRESS OF REGISTER
ERR55: MOV #55,ERCOUNT ;*** ERROR 55 ***
N=N+1
JSR %5,STAER2 ;REPORT DN11 NOT READY
HALT
BR
MODOK: DEC SAVE ;YOU CAN NOT CONTINUE
BEQ SETPT ;ON UNTIL DN11 IS MADE READY
EXMODOK: INC %4 ;GO SET CALL REQUEST
ADD #2,STATUS ;SET UP FOR NEXT DN11
BR RINGO ;TEST NEXT DN11

:SET UP DIGIT POINTERS FOR PHONE NUMBERS
:FOR DAILING SEQUENCE
SETPT: CLR PNT1 ;SET UP DIGIT POINTER ONE
CLR PNT2 ;SET UP DIGIT POINTER TWO
CLR PNT3 ;SET UP DIGIT POINTER THREE
CLR PNT4 ;SET UP DIGIT POINTER FOUR
CLR %4
MOV COUNT,SAVE ;SET UP TO ENABLE CRQ
MOV DNCSR1,STATUS ;SET UP DN11 POINTER
SETCRQ: TSTB MAP(4) ;IS THIS ACTIVE
BEQ EXCRQ
MOV #101,@STATUS ;SET CRQ - INT. ENABLE - MASTER ENABLE
BIT #BIT12,@STATUS ;TEST FOR DLO SET
BEQ DLOTST ;DLO SET OK!
ERR56: MOV #56,ERCOUNT ;*** FRROR 56 ***
N=N+1
MOV @STATUS,WORK ;FETCH CONTENTS OF STATUS REGISTER
JSR %5,STAER2
BR SETCRQ
DLOTST: DEC SAVE ;GO WAIT FOR INTERRUPTS
BEQ WAITIN
EXCRQ: INC %4 ;SET UP FOR NEXT DN11
ADD #2,STATUS ;SET UP NEXT DN11
BR SETCRQ
:SET UP TO COUNT DSS INTERRUPTS AND TIME OUT IF ALL
:DSS INTERRUPTS DO NOT OCCUR
WAITIN: CLR @CSR
MOV COUNT,DSSCNT ;NUMBER OF DN11
MOV #177700,TIME1
MOV #0,TIME ;SET UP TIMER
BIS #BIT2,@DNCSR1 ;SET MASTER ENABLE
TWOSEC: INC TIME ;WAIT FOR DSS
BNE
INC TIME1

```



```

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

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

```

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

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1617      ;TEST DSS FOR OVERFLOW AND EXIT
1618 005726 005737 001032      EXDSS: TST      DSSCNT      ;DID WE RECEIVE DSS FROM ALL
1619 005732 001404              BEQ      RESTE      ;YES EXIT
1620 005734 052777 000004 17305L  BIS      #BIT2,@DNCSR1 ;SET MASTER ENABLE
1621 005742 000002              RTI
1622 005744 012706 001000      RESTE: MCV      #1000,%6 ;RESET STACK
1623 005750 000137 005150      JMP      END           ;RECYCLE PROGRAM
1624
1625      ;
1626
1627      ;ROUTINE DEC DSS COUNT
1628 005754 005337 001032      DSSSET: DEC      DSSCNT
1629 005760 042777 000200 173064  BIC      #BIT7,@STATUS ;CLEAR DONE
1630 005766 000735              BR       INCDN
1631
1632      ;ROUTINE TO REPORT DN11 ERROR
1633
1634 005770
1635 005770 012737 000062 001050  ERR62: MOV      #62,ERCOUNT ;*** ERROR 62 ***
1636      N=N+1
1637 005776 004537 010060      JSR      %5,STAER2
1638 006002 042777 000201 173042  BIC      #BIT7!BIT0,@STATUS ;CLEAR DONE AND CRQ
1639 006010 000724              BR       INCDN      ;GO TEST NEXT DN11
1640
1641      ;
1642
1643
1644
1645      ;MAINTENANCE ROUTINE FOR SETTING PULSER
1646
1647
1648 006012 012737 000340 001002  MASTER: MOV      #340,CSR ;LOOK UP CPU. PRIORITY
1649 006020 013706 001072      MOV      STKLINK,%6
1650 006024 004737 010200      JSR      PC,SUSWR ;CHECK FOR HARDWARE SWITCH REGISTER
1651 006030 017737 172744 001052  MOV      @SR,STATUS ;STORE ADDRESS
1652 006036 000000              HALT ;LOADSR FROM DOC. 5.3
1653 006040 004737 010304      EXMAST: JSR      PC,CKSWR ;CHECK FOR <^G>
1654 006044 017777 172730 173000  MOV      @SR,@STATUS ;MOVE SR INTO DN11 REGISTER
1655 006052 000240              NOP
1656 006054 000240              NOP
1657 006056 000240              NOP
1658 006060 000240              NOP
1659 006062 032777 000010 172710  BIT      #BIT3,@SR ;TEST FOR MAINTENANCE MODE
1660 006070 001015              BNE     CLRWAT ;BRANCH WE ARE IN MAINTENANCE MODE
1661 006072 012737 177770 001040  MOV      #177770,COUNT ;WAIT 2 SECONDS FOR 801 SIGNALS
1662 006100 005037 001042      CLR     TIME
1663 006104 005237 001042      TIMW: INC     TIME
1664 006110 001375              BNE     TIMW
1665 006112 005237 001040      INC     COUNT
1666 006116 001370              BNE     TIMW-4
1667 006120 005077 172726      CLR     @STATUS ;CLEAR DN11
1668 006124 032777 000010 172646  CLRWAT: BIT      #BIT3,@SR ;ARE WE IN MAINTENANCE MODE
1669 006132 001013              BNE     CLRREG ;BRANCH NO NEED TO WAIT
1670 006134 012737 177770 001040  MOV      #177770,COUNT ;WAIT FOR 801
1671 006142 005037 001042      CLR     TIME
1672 006146 005237 001042      CLRTIM: INC     TIME
    
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1673 006152 001375          BNE    CLRTIM
1674 006154 005237 001040  INC    COUNT
1675 006160 001370          BNE    CLRTIM-4
1676 006162 005077 172664 CLRREG: CLR  @STATUS      ;RECYCLE
1677 006166 000724          BR     EXMAST
1678
1679
1680
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1685
1686 006170 010337 006450  TYST:  MOV    %3,BUFLIM    ;SAVE FIRST ADDRESS OF INPUT BUFFER
1687 006174 012777 000340 172600  MOV    #340,@CSR        ;LOCK UP INTERRUPTS
1688 006202 105777 172604  TSTFLG: TSTB @TKS        ;CHECK FOR FLAG
1689 006206 100375          BPL    TSTFLG
1690 006210 117777 172572 172566  MOVB  @TKB,@TPB        ;CHARACTER IN BUFFER
1691 006216 105777 172566  TSTB  @TPS            ;ECHO CHARACTER
1692 006222 100375          BPL    .-4
1693 006224 122777 000377 172554  CMPB  #377,@TKB        ;CHECK FOR RUB-OUT
1694 006232 001007          BNE    CKCH            ;EXIT IF NOT RUB-OUT
1695 006234 020337 006450  CMP    %3,BUFLIM        ;HAVE WE RUBBED-OUT BACK TO BEGINNING?
1696 006240 001760          BEQ    TSTFLG          ;YES, DO NOT RUBOUT ANYMORE
1697 006242 104001          EMT    +1
1698 006244 007520          MESB
1699 006246 005303          DEC    %3
1700 006250 000754          BR     TSTFLG
1701 006252 105737 010302  CKCH:  TSTB  TTIN        ;GO WAIT FOR NEW CHAR.
1702 006256 001016          BNE    1$
1703 006260 022777 000215 172520  CMP    #215,@TKB        ;CHECK TO SEE IF LOADING SWREG
1704 006266 001411          BEQ    2$
1705 006270 020327 006450  CMP    %3,#BUFLIM        ;CHECK FOR CARRIAGE RETURN
1706 006274 001003          BNE    3$
1707 006276 104001          EMT+1
1708 006300 007205          MES2
1709 006302 000737          BR     TSTFLG
1710 006304 117723 172476  3$:   MOVB  @TKB,(3)+      ;LOAD CHARACTER IN BUFFER
1711 006310 000734          BR     TSTFLG
1712 006312 105023          2$:   CLRB  (3)+
1713 006314 000207          1$:   RTS    %7
1714 006316 000000          TEXBUF: 0
1715          006340          .-.+20
1716 006340 000000          PH01: 0
1717          006362          .=.+20
1718 006362 000000          PH02: 0
1719          006404          .=.+20
1720 006404 000000          PH03: 0
1721          006426          .=.+20
1722 006426 000000          PH04: 0
1723          006450          .-.+20
1724 006450 000000          BUFLIM: 0
1725          .EVEN
1726
1727
1728 ;SUBROUTINE TO OUTPUT ASCII MESSAGE ON TELETYPE PRINTER.
  
```

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1729 006452 011600          TYP:  MOV    @%6,%0      ;GET ADDRESS THAT CONTAINS MESSAGE ADDRESS
1730 006454 062716 000002    ADD    #2,@%6      ;SET UP EXIT.
1731 006460 011000          MOV    @%0,%0      ;ADDRESS OF MESSAGE TO RO.
1732 006462 112037 006572    TYPA: MOVB   (0)+,TYPDAT ;GET CHARACTER
1733 006466 122737 000100 006572    CMPB   #100,TYPDAT ;CHECK FOR 'a' CHARACTER
1734 006474 001001          BNE    TYPC        ;BRANCH IF NOT 'a'.
1735 006476 000002          RTI                    ;TERMINATOR CHAR. DONE. EXIT.
1736 006500 122737 000045 006572    TYPC: CMPB   #45,TYPDAT ;CHECK FOR 'z'.
1737 006506 001416          BEQ    TYPF        ;BRANCH IF 'z'.
1738 006510 122737 000042 006572    CMPB   #42,TYPDAT ;NOT 'z'. CHECK FOR '#'.
1739 006516 001417          BEQ    TYPG        ;BRANCH IF '#'.
1740 006520 004737 006526          JSR    %7,TYPD     ;TYPE CHAR IN TYPDAT
1741 006524 000756          BR     TYPA
1742 006526 113777 006572 172250    TYPD: MOVB  TYPDAT,@TPB ;OUTPUT CHARACTER TO PRINTER
1743 006534 105777 172250          TSTB   @TPS        ;WAIT FOR DONE FLAG.
1744 006540 100375          BPL    -4
1745 006542 000207          YEXIT: RTS    %7      ;EXIT
1746 006544 112737 000015 006572    TYPF: MOVB  #15,TYPDAT ;MOVE CARRIAGE RETURN CODE TO TYPDAT
1747 006552 004737 006526          JSR    %7,TYPD     ;GO TYPE CHAR.
1748 006556 112737 000012 006572    TYPG: MOVB  #12,TYPDAT ;MOVE LF CODE TO TYPDAT.
1749 006564 004737 006526          JSR    %7,TYPD     ;GO TYPE CHAR.
1750 006570 000734          BR     TYPA
1751 006572 000000          TYPDAT: 0
1752
1753          ;ROUTINE TO DECODE EMT CALLS FOR TTY
1754 006574 011600          EMTRP: MOV    (6),%0
1755 006576 022740 104001    CMP    #EMT+1,-(0) ;WAS CALL EMT+1
1756 006602 001101          BNE    TYP5        ;EMT+0
1757 006604 000722          BR     TYP
1758
1759          :
1760          ;INDIVIDUAL STATIC TEST SCOPE LOOP ROUTINE
1761          :
1762          ;IF BIT 14 IS SET BYPASS THIS ROUTINE AND JUST LOOP ON THE TEST
1763          ;IF BIT 14 IS NOT SET LOOP ON EACH TEST 15 TIMES THEN GO TO THE NEXT TEST
1764          :
1765          ;
1766          ;
1767          ;
1768          ;
1769 006606 004737 010304          LOOP: JSR    PC,CKSWR    ;CHECK FOR <^G>
1770 006612 032777 040000 172160    BIT    #BIT14,@SR  ;TEST IF BIT 14 IS SET
1771 006620 001402          BEQ    +6          ;BRANCH IF BIT 14 IS NOT SET
1772 006622 013646          MOV    @(%)+,-(6) ;PLAYING WITH THE STACK
1773 006624 000002          RTI                    ;LOOP ON TEST WITHOUT ENTERING THIS ROUTINE
1774 006626 005737 001066          TST    PASS        ;TEST IF THE PASS COUNT IS ZERO
1775 006632 001003          BNE    +10        ;PASS COUNT NOT ZERO KEEP COUNTING
1776 006634 012737 000035 001066    MOV    #35,PASS    ;SET UP PASS COUNT FIRST TIME THROUGH
1777 006642 005337 001066          DEC    PASS        ;-1 PASS THIS TIME THROUGH
1778 006646 001402          BEQ    +6          ;PASS ZERO ENTER NEXT TEST
1779 006650 013646          MOV    @(%)+,-(6) ;PLAYING WITH THE STACK AGAIN
1780 006652 000002          RTI                    ;RE-ENTER TEST
1781 006654 062716 000002          ADD    #2,(6)      ;INC.STACK FOR THE NEXT TEST
1782 006660 000002          RTI                    ;EXIT TO THE NEXT TEST
1783          :
1784          :
  
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1785      ;POWER FAIL SEQUENCE
1786
1787 006662 012737 006672 000024 PWRDWN: MOV    #PWRUP,24      ;SET UP POWER FAIL VECTOR FOR RESTART
1788 006670 000000                HALT                ;HALT AND WAIT FOR POWER TO COME BACK
1789
1790
1791      ;
1792      ;THIS THE POWER UP SEQUENCE REPORT POWER HAS FAILED AND
1793      ;WAIT TWO SECONDS FOR THE PHONE LINES TO SETTLE
1794
1795 006672 012737 006662 000024 PWRUP:  MOV    #PWRDWN,24      ;SET UP POWER FAIL VECTOR FOR POWER DOWN
1796 006700 012706 001000                MOV    #1000,%6      ;SET UP THE STACK
1797 006704 104000                EMT    +0
1798 006706 007646                HED6
1799 006710 177777                -1                ;REPORT THE POWER HAS FAILED
1800 006712 012737 177770 001044 .NCTM: MOV    #177770,TIME1 ;SET THE TWO SECOND TIMER
1801 006720 005237 001042                INC    TIME
1802 006724 001375                BNE   INCTM
1803 006726 005237 001044                INC    TIME1
1804 006732 001372                BNE   INCTM
1805 006734 022737 000176 001000                CMP    #SWREG,SR    ;CHECK FOR SWREG USE
1806 006742 001002                BNE   1$            ;IF NOT GO TO 1$
1807 006744 004737 010354                JSR   PC,CNTLU     ;GO LOAD SWREG FROM TTY
1808 006750 000137 001104                1$:  JMP    START    ;GO TO THE BEGINNING OF THE PROGRAM AND RESTART
1809      ;ROUTINE TO SAVE REGISTERS
1810 006754 010046                SAVEREG: MOV   %0,-(6) ;SAVE REGISTER 0
1811 006756 010146                MOV   %1,-(6) ;SAVE REGISTER 1
1812 006760 010246                MOV   %2,-(6) ;SAVE REGISTER 2
1813 006762 010346                MOV   %3,-(6) ;SAVE REGISTER 3
1814 006764 010446                MOV   %4,-(6) ;SAVE REGISTER 4
1815 006766 000115                JMP   (5)       ;EXIT ROUTINE
1816
1817      ;ROUTINE TO RESTORE REGISTERS
1818 006770 005726                RESTORE: TST   (6)+
1819 006772 012604                MOV   (6)+,%4    ;RESTORE REGISTER 4
1820 006774 012603                MOV   (6)+,%3    ;RESTORE REGISTER 3
1821 006776 012602                MOV   (6)+,%2    ;RESTORE REGISTER 2
1822 007000 012601                MOV   (6)+,%1    ;RESTORE REGISTER 1
1823 007002 012600                MOV   (6)+,%0    ;RESTORE REGISTER 0
1824 007004 000205                RTS    %5        ;EXIT ROUTINE
1825
1826      ;
  
```

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1827
1828 ;SUBROUTINE TO OUTPUT A SERIES OF ASCII MESSAGES ON TELETYPE PRINTER
1829
1830 007006 011600 TYP5: MOV @%6,%0 ;GET ADDRESS THAT CONTAINS MESSAGE ADDRESS
1831 007010 062716 000002 ADD #2,@%6 ;UPDATE TO NEXT MESSAGE ADDRESS
1832 007014 011037 007034 MOV @%0,TYP5B ;ADDRESS OF MESSAGE TO TYP5B
1833 007020 022737 177777 007034 CMP #-1,TYP5B ;CHECK FOR TERMINATOR
1834 007026 001001 BNE TYP5A ;BRANCH IF NOT TERMINATOR.
1835 007030 000002 RTI ;TERMINATOR. EXIT.
1836 007032 104001 TYP5A: EMT +1 ;CALL ON TYP SUB TO TYPE MESSAGE
1837 007034 000000 TYP5B: 0 ;ADDRESS OF MESSAGE GOES HERE
1838 007036 000763 BR TYP5 ;GO PROCESS NEXT MESSAGE
1839
1840
1841
1842
1843 ;OCTAL TO ASCII CONVERT ROUTINE
1844
1845 ;ENTER ROUTINE AS FOLLOWS
1846 ;JSR %5,CONV
1847 ;ADDR# = ADDRESS OF NUMBER TO BE CONVERTED
1848 ;ADDR BYTE = LSB OF WHERE ASCII IS GOING
1849 ;ASCII# = THE NUMBER OF ASCII CHAR. TO BE CONVERTED
1850
1851
1852
1853 007040 013537 007120 CONV: MOV @(%5)+,ACNVX ;VALUE OF # TO BE CONVERTED
1854 007044 012501 MOV (%5)+,%1 ;ASCII ADDR
1855 007046 012502 MOV (%5)+,%2 ;# OF ASCII CHAR
1856 007050 060201 ADD %2,%1
1857
1858 007052 013703 007120 ACVN: MOV ACNVX,%3
1859 007056 042703 177770 BIC #177770,%3 ;ISOLATE LEAST SIGNIFICANT OCTAL #
1860 007062 062703 000060 ADD #60,%3 ;SET UP ASCII #
1861 007066 110341 MOVB %3,-(1) ;STORE ASCII CHAR
1862 007070 042737 000007 007120 BIC #7,ACNVX
1863 007076 006037 007120 ROR ACNVX ;ROTATE OCTAL #
1864 007102 006037 007120 ROR ACNVX
1865 007106 006037 007120 ROR ACNVX
1866 007112 005302 DEC %2 ;-1 FROM ASCII CHAR COUNT
1867 007114 001356 BNE ACVN
1868 007116 000205 RTS %5 ;EXIT # CONVERTED
1869 007120 000000 ACNVX: 0 ;WORK REGISTER
  
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1870           ;THIS ROUTINES IS USED TO CONVERT ASCII INPUT TO OCTAL
1871           ;
1872           ;
1873 007122 012703 006316 NEXCHAR: MOV #TEXBUF,%3 ;FETCH ASCII POINTER
1874 007126 005012          CLR @%2
1875 007130 105713          TSTB @%3 ;TEST FOR LAST CHACTER
1876 007132 001410          BEQ EXNEX ;LAST CHACTER EXIT
1877 007134 000241          CLC
1878 007136 006312          ASL @%2
1879 007140 006312          ASL @%2
1880 007142 006312          ASL @%2
1881 007144 142713 000370 BICB #370,@%3 ;MASK OUT HI ORDER BITS
1882 007150 152312          BISB (3)+,@%2 ;LOAD OCTAL VALUE
1883 007152 000766          BR NEXCHAR+6
1884 007154 000207 EXNEX: RTS %7 ;EXIT LAST CHARACTER PROCESSED
  
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007156	020045	044124	020105
007164	030070	020061	051511
007172	047440	043106	046040
007200	047111	027105	100
007205	045	042524	052130
007212	041040	043125	042506
007220	020122	051511	043040
007226	046125	027114	020040
007234	047516	046440	051117
007242	020105	047111	052520
007250	020124	046101	047514
007256	042527	020104	054105
007264	042503	052120	036040
007272	052522	047502	052125
007300	020076	051117	036040
007306	051103	027076	100
007313	045	044120	047117
007320	020105	030443	040077
007326	050045	047510	042516
007334	021440	037462	100
007341	045	044120	047117
007346	020105	031443	040077
007354	050045	047510	042516
007362	021440	037464	100
007367	045	051120	043517
007374	040522	020115	044524
007402	042515	020104	052517
007410	020124	047125	041101
007416	042514	052040	020117
007424	047503	050115	042514
007432	042524	041440	046101
007440	040114		

:
:TTY OUTPUT FOR DIALEX-11
:

MES1: .ASCII /% THE 801 IS OFF LINE.@/

MES2: .ASCII /%TEXT BUFFER IS FULL. NO MORE INPUT ALLOWED EXCEPT <RUBOUT> OR <CR>.@/

PH1: .ASCII /%PHONE #1?@/

PH2: .ASCII /%PHONE #2?@/

PH3: .ASCII /%PHONE #3?@/

PH4: .ASCII /%PHONE #4?@/

TIME: .ASCII /%PROGRAM TIMED OUT UNABLE TO COMPLETE CALL@/

1941					
1942	007442	042445	042116	100	MESEND: .ASCII /%END@/
1943					
1944					
1945					
1946	007447	045	047104	030461	DNADDR: .ASCII /%DN11 REGISTER ADDRESS?@/
1947	007454	051040	043505	051511	
1948	007462	042524	020122	042101	
1949	007470	051104	051505	037523	
1950	007476	100			
1951					
1952					
1953					
1954	007477	045	042526	052103	VECDN: .ASCII /%VECTOR ADDRESS?@/
1955	007504	051117	040440	042104	
1956	007512	042522	051523	040077	
1957					
1958					
1959					
1960					
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1962					
1963					
1964					
1965	007520	040057	047		MES8: .ASCII %/@'%
1966					
1967	007523	045	100		HED0: .ASCII /%@/
1968					
1969					
1970					
1971	007525	040	020040	042440	HED1: .ASCII / ERROR COUNT @/
1972	007532	051122	051117	041440	
1973	007540	052517	052116	020040	
1974	007546	040040			
1975					
1976					
1977					
1978	007550	020040	020040	020040	HED2: .ASCII / GD DATA @/
1979	007556	043440	020104	040504	
1980	007564	040524	020040	040040	
1981					
1982					
1983					
1984	007572	020040	020040	020040	HED3: .ASCII / BD DATA@/
1985	007600	041040	020104	040504	
1986	007606	040524	100		
1987					
1988					
1989					
1990	007611	040	020040	020040	HED4: .ASCII / DN1' @/
1991	007616	042040	030516	020061	
1992	007624	020040	100		
1993					
1994					
1995					
1996	007627	040	020040	020040	HED5: .ASCII / DNCSR @/

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

```

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

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

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2114                                     :CHECK SWITCH REGISTER ROUTINE. CHECKS FOR ^G TO ALLOW CHANGING
2115                                     :OF LOC.176.
2116                                     :LOCATIONS USED:
2117 010274 000000                       TEMPST: .WORD 0
2118 010276 000000                       WCOUNT: .WORD 0
2119 010300 000000                       TIB: .WORD 0
2120 010302 000000                       TTIN: .WORD 0
2121
2122 010304 022737 000176 001000 CKSWR: CMP #SWREG,SR ;SOFTWARE SWITCH REGISTER PRESENT
2123 010312 001132                       BNE OUT ;NO, GET OUT
2124 010314 032777 004000 170470 69$: BIT #BIT11,@TKS ;SEE IF TTY IS BUSY
2125 010322 001374                       BNE 69$ ;IF BUSY WAIT TILL DONE
2126 010324 017737 170456 010300 MOV @TKB,TIB ;AND STRIP OFF
2127 010332 042737 000200 010300 BIC #200,TIB ;THE GARBAGE
2128 010340 122737 000007 010300 CMPB #7,TIB ;IS IT A <^G>
2129 010346 001114                       BNE OUT
2130 010350 104001                       EMT +1 ;TYPE <^G>
2131 010352 010606                       MCNTLG
2132 010354 104001                       CNTLU: EMT +1 ;TYPE SWR=
2133 010356 010613                       MSWR
2134 010360 004537 006754 JSR %5,SAVEREG ;SAVE REGISTERS
2135 010364 004537 007040 JSR %5,CONV ;GET CONTENTS OF SWREG
2136 010370 000176                       SWREG
2137 010372 010621                       MNEW
2138 010374 000006                       6
2139 010376 004537 006770 JSR %5,RESTORE ;RESTORE REGISTERS
2140 010402 104001                       EMT +1 ;TYPE OUT CONTENTS OF SWREG
2141 010404 010621                       MNEW ;AND NEW=
2142 010406 005037 010274 $READ: CLR TEMPST
2143 010412 012737 000007 010276 MOV #7,WCOUNT
2144 010420 005237 010302 INC TTIN
2145 010424 004737 006170 1$: JSR PC,TYST ;GO READ A CHARACTER
2146 010430 017737 170352 010300 MOV @TKB,TIB
2147 010436 042737 177600 010300 BIC #177600,TIB ;STRIP OFF GARBAGE
2148 010444 122737 000025 010300 CMPB #25,TIB ;IS IT A ^U?
2149 010452 001001                       BNE 2$ ;BRANCH IF NOT
2150 010454 000737 3$: BR CNTLU ;START OVER
2151 010456 122737 000015 010300 2$: CMPB #15,TIB ;IS IT A <CR>?
2152 010464 001007                       BNE 4$ ;BRANCH IF NOT
2153 010466 104001                       EMT +1 ;TYPE CRLF
2154 010470 010640                       MCRLF
2155 010472 022737 000007 010276 CMP #7,WCOUNT ;WAS IT FIRST CHARACTER
2156 010500 001034                       BNE 7$ ;CHANGE SWR IF NOT FIRST ONE
2157 010502 000436                       BR OUT ;GET OUT
2158 010504 122737 000060 010300 4$: CMPB #60,TIB
2159 010512 003004                       BGT 5$
2160 010514 122737 000067 010300 CMPB #67,TIB
2161 010522 002003                       BGE 6$
2162 010524 104001                       5$: EMT +1 ;TYPE ?
2163 010526 010642                       MQUEST
2164 010530 000751                       BR 3$ ;START OVER IF NOT LEGAL CHARACTER
2165 010532 006337 010274 6$: ASL TEMPST
2166 010536 006337 010274 ASL TEMPST
2167 010542 006337 010274 ASL TEMPST
2168 010546 142737 000060 010300 BICB #0,TIB ;GET NITTY-GRITTY
2169 010554 153737 010300 010274 BICB TIB,TEMPST
  
```

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


ERR1	001516	883#	
ERR10	002126	976#	
ERR11	002172	989#	
ERR12	002232	1002#	
ERR13	002266	1013#	
ERR14	002322	1024#	
ERR15	002364	1036#	
ERR16	002420	1047#	
ERR17	002470	1060#	
ERR2	001552	894#	
ERR20	002524	1071#	
ERR21	002574	1084#	
ERR22	002630	1095#	
ERR23	002664	1104#	
ERR24	002716	1111#	
ERR25	002740	1117#	
ERR26	002774	1128#	
ERR27	003026	1135#	
ERR3	001606	905#	
ERR30	003062	1150#	
ERR31	003114	1157#	
ERR32	003136	1166#	
ERR33	003172	1177#	
ERR34	003224	1184#	
ERR35	003246	1193#	
ERR36	003302	1202#	
ERR37	003346	1211#	
ERR4	001642	916#	
ERR40	003370	1219#	
ERR41	003424	1228#	
ERR42	003456	1235#	
ERR43	003500	1242#	
ERR44	003534	1251#	
ERR45	003574	1259#	
ERR46	003626	1269#	
ERR47	003652	1277#	
ERR5	001720	932#	
ERR50	003702	1287#	
ERR51	003732	1294#	
ERR52	004014	1309#	
ERR53	004052	1318#	
ERR54	004120	1328#	
ERR55	004620	1448#	
ERR56	004740	1473#	
ERR57	005066	1498#	
ERR6	002034	953#	
ERR60	005312	1535#	
ERR61	005524	1585#	
ERR62	005770	1635#	
ERR7	002072	965#	
EXCLRD	005332	1523	1540#
EXCRQ	004770	1469	1480#
EXDSS	005726	1608	1610 1618#
EXINC	005700	1573	1611#
EXMAST	006040	1653#	1677
EXMOD0	004644	1443	1455#

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

. = 011702

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

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

. ABS. 011702 000

ERRORS DETECTED: 0

CZDNAC.BIN,CZDNAC.LST/CRF/SOL/NL:TOC=CZDNAC.P11

RUN-TIME: 24.8 SECONDS

RUN-TIME RATIO: 51/7-6.7

CORE USED: 8k (15 PAGES)