

DN11

DIALEX
CZDNAC0

AH-8569C-MC

COPYRIGHT 71-78

FICHE 1 OF 1

JAN 1979

digital

MADE IN USA

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25
26	27	28	29	30
31	32	33	34	35
36	37	38	39	40
41	42	43	44	45
46	47	48	49	50
51	52	53	54	55
56	57	58	59	60
61	62	63	64	65
66	67	68	69	70
71	72	73	74	75
76	77	78	79	80
81	82	83	84	85
86	87	88	89	90
91	92	93	94	95
96	97	98	99	100

.REM %

IDENTIFICATION

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

THE INFORMATION IN THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE AND SHOULD NOT BE CONSTRUED AS A COMMITMENT BY DIGITAL EQUIPMENT CORPORATION. DIGITAL EQUIPMENT CORPORATION ASSUMES NO RESPONSIBILITY FOR ANY ERRORS THAT MAY APPEAR IN THIS DOCUMENT.

DIGITAL EQUIPMENT CORPORATION ASSUMES NO RESPONSIBILITY FOR THE USE OR RELIABILITY OF ITS SOFTWARE ON EQUIPMENT THAT IS NOT SUPPLIED BY DIGITAL.

COPYRIGHT (C) 1971,1978 BY DIGITAL EQUIPMEN CORPORATION

THE FOLLOWING ARE TRADEMARKS OF DIGITAL EQUIPMENT CORPORATION

DIGITAL
DEC

PDP
DECUS

UNIBUS
DECTAPE

MASSBUS

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

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 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 SR0-1
SR BIT8 RESET=PROGRAM WILL SEQUENCE THROUGH ALL DN11'S

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

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

5.3 SCOPE LOOP SWITCH SELECTION

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

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

THE DETAILED DESCRIPTION OF DN11 STATUS BITS

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

- %

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		000176		.=176
738	000176	000000		SWREG: 0 ;SOFTWARE SWITCH REGISTER
739				
740				;PROGRAM START*****
741		000200		.=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		.=1000
745				;I/O REGISTERS
746	001000	177570		SR: 177570 ;SWITCH REGISTER
747	001002	177776		CSR: 177776 ;PROCESSOR STATUS REGISTER
748	001004	177566		TPB: 177566 ;TELETYPE REGISTERS
749	001006	177562		TkB: 177562
750	001010	177564		TPS: 177564
751	001012	177560		TKS: 177560
752				.
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	000C04		PRIORITY: 4
766				.
767				:
768				:


```

769                                     ;PROGRAM WORK REGISTER
770                                     ;
771 001030 177777                      ;TITLE: 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 000 000 000 000 000 000 000 000 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,@STATUS :TEST STATUS BIT
869 001460 100005 BPL ST2XE :BRANCH IF POWER OFF
870 001462 012737 000000 001050 ERR0: MOV #0,ERCOUNT :*** ERROR 0 ***
871 000001 N=N+1
872 001470 004537 007674 JSR %5,STAER :REPORT ERROR
873 001474 000004 ST2XE: SCOPE
874 001476 001444 ST1XE
  
```

```

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      :
924      : CAN WE SET ALL BCD BITS
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 N=N+1
955 002042 004537 007772 JSR %5,STAER1 ;REPORT ERROR
956 002046 004537 007674 JSR %5,STAER
957 002052 000004 ST10E: SCOPE
958 002054 001750 ST7
959
960 ;IS DONE CLEARED
961
962 002056 042777 177777 176766 ST10: BIC #177777,@STATUS ;CLEAR THE WORLD
963 002064 105777 176762 TSTB @STATUS ;TEST FOR NOT DONE
964 002070 100005 BPL ST11E ;BRANCH IF DONE NOT SET
965 002072 012737 000007 001050 ERR7: MOV #7,ERCOUNT ;*** ERROR 7 ***
966 000010 N=N+1
967 002100 004537 007674 JSR %5,STAER ;REPORT DONE SET
968 002104 000004 ST11E: SCOPE
969 002106 002056 ST10
  
```



```

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

```

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



```

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

CZDNA-C, DN11 DIALEX MACY11 30A(1052) 07-SEP-78 15:25 PAGE 29^{D 3}
CZDNAC.P11 09-MAY-78 15:36

SEQ 0029

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 ST30: TSTB @STATUS ;WAS DONE SET BY DSS
1192 003244 100405 BMI ST27E ;BRANCH IF YES
1193 003246 012737 000035 001050 ERR35: MOV #35,ERCOUNT ;*** ERROR 35 ***
1194 000036 N=N+1
1195 003254 004537 007674 JSR %5,STAER ;REPORT ERROR
1196 003260 000004 ST27E: SCOPE
1197 003262 003154 ST26X
1198
1199 003264 042777 177777 175560 ;CAN WE SET PWO IN MAINTENANCE MODE
1200 003272 033777 001070 175552 ST31: BIC #177777,@STATUS
1201 003300 001406 BIT MASK,@STATUS ;IS STATUS REG CLEAR
1202 003302 012737 000036 001050 ERR36: BEQ ST31X ;BRANCH IF REG CLEAR
1203 000037 MOV #36,ERCOUNT ;*** ERROR 36 ***
1204 003310 004537 007674 N=N+1
1205 003314 000432 JSR %5,STAER ;REPORT ERROR
1206 003316 052777 000010 175526 BR ST32E ;
1207 003324 042777 177760 175520 ST31X: BIS #BIT3,@STATUS ;SET MAINTENANCE
1208 003332 052777 002001 175512 BIC #177760,@STATUS
1209 003340 005777 175506 BIS #BIT10!BIT0,@STATUS ;SET PWO
1210 003344 100406 TST @STATUS
1211 003346 012737 000037 001050 ERR37: BMI ST32
1212 000040 MOV #37,ERCOUNT ;*** ERROR 37 ***
1213 003354 004537 007674 N=N+1
1214 003360 000410 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 ;*** ERROR 44 ***
1252      000045      N=N+1
1253 003542 004537 007674      JSR  %5,STAER
1254 003546 000434      BR  ST35E      ;LOOP ON ERROR
1255 003550 052777 000410 175274 ST35:  BIS  #BIT8!BIT3,@STATUS ;SET PND
1256 003556 052777 000002 175266      BIS  #BIT1,@STATUS ;SET DIGIT PRESENT
1257 003564 032777 000002 175260      BIT  #BIT1,@STATUS ;IS IT SET
1258 003572 001006      BNE  ST35X      ;YES BRANCH
1259 003574 012737 000045 001050 ERR45: MOV  #45,ERCOUNT ;*** ERROR 45 ***
1260      000046      N=N+1
1261 003602 004537 007674      JSR  %5,STAER      ;REPORT DIGIT PRESENT NOT SET
1262 003606 000414      BR  ST35E      ;LOOP ON ERROR
1263
1264

```

```

1265                                     :WAS DIGIT PRESENT CLEARED
1266 003610 042777 000410 175234 ST35X: BIC #BIT8!BIT3,@STATUS ;CLEAR PND
1267 003616 032777 000002 175226      BIT #BIT1,@STATUS ;WAS DIGIT PRESENT CLEARED
1268 003624 001405                BEQ ST35E ;YES BRANCH
1269 003626 012737 000046 001050 ERR46: MOV #46,ERCOUNT ;*** ERROR 46 ***
1270                000047          N=N+1
1271 003634 004537 007674          JSR %5,STAER ;REPORT ERROR
1272 003640 000004          ST35E: SCOPE
1273 003642 003516          ST34X
1274                :CAN WE SET AND CLEAR DONE
1275 003644 105777 175202          ST36: TSTB @STATUS ;TEST DONE
1276 003650 100006          BPL ST36X ;DONE CLEAR BRANCH
1277 003652 012737 000047 001050 ERR47: MOV #47,ERCOUNT ;*** ERROR 47 ***
1278                000050          N=N+1
1279 003660 004537 007674          JSR %5,STAER ;REPORT ERROR
1280 003664 000427          BR ST36E ;LOOP ON ERROR
1281 003666 052777 000200 175156 ST36X: BIS #BIT7,@STATUS ;SET DONE
  
```



```

1282
1283
1284
1285 003674 105777 175152      :CAN WE CLEAR DONE
1286 003700 100406      CLRDON: 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      :NO INTERRUPT SHOULD MASTER ENABLE NOT SET
1306      JMP ST37X      :GO SET MASTER ENABLE TO SEE IF WE CAN INTERRUPT
1307 004002 012777 000340 174772 INTER: MOV #340,@CSR      :REPORT AN INTERRUPT OCCURRED THAT IS AN ERROR
1308 004010 005077 175036      CLR @STATUS
1309 004014 012737 000052 001050 ERR52: MOV #52,ERCOUNT      :*** ERROR 52 ***
1310 000053      N=N+1
1311 004022 004537 007674      JSR %5,STAER
1312 004026 000441      BR ST38E
1313 004030 012777 004052 174766 ST37X: MOV #SECINT,@VECTOR      :SET UP INTERRUPT VECTOR
1314 004036 052777 000004 174750      BIS #BIT2,@DNCSR1      :SET MASTER ENABLE
1315 004044 000240      NOP      :NO INTERRUPT SHOULD OCCUR PROCESSOR IS AT LEVEL 5
1316 004046 000137 004066      JMP ST38      :WE SHOULD NOT INTERRUPT LEVEL TO HIGH
1317 004052
1318 004052 012737 000053 001050 SECINT: ERR53: MOV #53,ERCOUNT      :*** ERROR 53 ***
1319 000054      N=N+1
1320 004060 004537 007674      JSR %5,STAER      :REPORT THE DN11 INTERRUPTED
1321 004064 000422      BR ST38E      :ENTER SCOPE LOOP
1322 004066 012777 004132 174730 ST38: MOV #ST38E,@VECTOR      :SET UP FOR INTERRUPT
1323 004074 005077 174702      CLR @CSR      :LOWER PROCESSOR PRIORITY
1324 004100 005037 001042      CLR TIME      :SET UP TIMER
1325 004104 005237 001042      INC TIME      :WAIT FOR INTERRUPT
1326 004110 001375      BNE -4
1327 004112 012777 000340 174662      MOV #340,@CSR      :LOCK UP CPU DN11 DID NOT INTERRUPT
1328 004120 012737 000054 001050 ERR54: MOV #54,ERCOUNT      :*** ERROR 54 ***
1329 000055      N=N+1
1330 004126 004537 007674      JSR %5,STAER      :REPORT DN11 DID NOT INTERRUPT AT 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 ST1      :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						
1358						
1359						
1360						
1361						
1362						
1363						
1364						
1365						
1366						
1367						
1368						
1369						
1370						
1371						
1372						
1373						
1374						
1375						
1376						
1377						
1378						
1379						
1380						


```

1381
1382 ;DIALEX 11
1383 ;THE OPERATOR MUST ASSIGN PHONE NUMBER TO EACH DN11
1384 BEGIN: MOV STKLINK,%6 ;SET UP STACK
1385 JSR PC,CKSWR ;CHECK FOR CNTL G
1386 RESET
1387 MOV #INT,@VECTOR ;SET UP VECTOR
1388 CLR %4
1389 TST NOFLAG
1390 BNE .+6
1391 BR NEWNO
1392 NOFLAG: 0
1393 JSR PC,CKSWR ;CHECK FOR <^G>
1394 BIT #BIT7,@SR ;TEST FOR TTY CONVERSATION
1395 BNE DNDIAL ;BRANCH IF NO CONVERSATION
1396 CLR MAP ;CLEAR PHONE MAP
1397 CLR MAP+2
1398 BIS #177777,NOFLAG
1399 CLR COUNT
1400 NO0: MOV #PH01,%3 ;SET UP PHONE #1 BUFFER
1401 EMT +1
1402 PH1
1403 JSR %7,TYST ;FETCH KEYBOARD CHAR
1404 TSTB PH01
1405 BEQ NO1 ;OPERATOR FAILED TO TYPE A PHONE NUMBER
1406 INC COUNT
1407 BISB #377,MAP(4) ;LOAD MAP
1408 NO1: INC %4
1409 MOV #PH02,%3
1410 EMT +1
1411 PH2
1412 JSR %7,TYST ;FETCH KEYBOARD CHARACTER
1413 TSTB PH02 ;DID THE OPERATOR TYPE A PHONE NUMBER
1414 BEQ NO2 ;THE OPERATOR ONLY GAVE THE PROGRAM ONE NUMBER
1415 INC COUNT ;THE OPERATOR TYPED AN NUMBER
1416 BISB #377,MAP(4) ;LOAD MAP
1417 NO2: INC %4
1418 MOV #PH03,%3
1419 EMT +1
1420 PH3
1421 JSR %7,TYST ;FETCH KEYBOARD CHARACTER
1422 TSTB PH03 ;DID THE OPERATOR TYPE A NUMBER FOR LINE THREE
1423 BEQ NO3 ;NO NUMBER FOR LINE THREE
1424 INC COUNT ;OPERATOR TYPE D A NUMBER
1425 BISB #377,MAP(4) ;LOAD MAP
1426 NO3: INC %4
1427 MOV #PH04,%3
1428 EMT +1
1429 PH4
1430 JSR %7,TYST ;FETCH KEYBOARD CHARACTER
1431 TSTB PH04 ;TEST IF THE OPERATOR TYPED A NUMBER FOR THIS LINE
1432 BEQ DNDIAL ;OPERATOR DID NOT TYPE A NUMBER
1433 BISB #377,MAP(4) ;LOAD MAP
1434 DNDIAL: INC COUNT
1435 MOV DNCSR1,STATUS
1436 CLR COUNT,SAVE
  
```

```

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: MOV #55,ERCOUNT
1449 000056
1450 004626 004537 010060
1451 004632 000000
1452 004634 000777
1453 004636 005337 001046 MODOK: DEC SAVE
1454 004642 001405 BEQ SETPT
1455 004644 005204 EXMODOK: INC %4
1456 004646 062737 000002 001052 ADD #2,STATUS
1457 004654 000743 BR RINGO
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
1469 004720 001423
1470 004722 012777 000101 174122
1471 004730 032777 010000 174114
1472 004736 001411
1473 004740 012737 000056 001050 ERR56: MOV #56,ERCOUNT
1474 000057
1475 004746 017737 174100 001034
1476 004754 004537 010060
1477 004760 000755
1478 004762 005337 001046 DLOTST: DEC SAVE
1479 004766 001405 BEQ WAITIN
1480 004770 005204 EXCRQ: INC %4
1481 004772 062737 000002 001052 ADD #2,STATUS
1482 005000 000745 BR SETCRQ
1483
1484
1485 005002 005077 173774
1486 005006 013737 001040 001032
1487 005014 012737 177700 001044
1488 005022 012737 000000 001042
1489 005030 052777 000004 173756
1490 005036 005237 001042 TWOSEC: INC TIME
1491 005042 001375 BNE
1492 005044 005237 001044 INC TIME1

```

: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
 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!
 MOV #56,ERCOUNT :*** ERROR 56 ***
 N=N+1

:FETCH CONTENTS OF STATUS REGISTER

DLOTST: DEC SAVE
 BEQ WAITIN :GO WAIT FOR INTERRUPTS

EXCRQ: INC %4
 ADD #2,STATUS :SET UP FOR NEXT DN11
 BR SETCRQ :SET UP NEXT DN11

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

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


```

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

```

```

1617      ;TEST DSS FOR OVERFLOW AND EXIT
1618      EXDSS: TST      DSSCNT      ;DID WE RECEIVE DSS FROM ALL
1619      BEQ      RESTE      ;YES EXIT
1620      BIS      #BIT2,@DNCSR1 ;SET MASTER ENABLE
1621      RTI
1622      RESTE: MOV      #1000,%6      ;RESET STACK
1623      JMP      END      ;RECYCLE PROGRAM
1624
1625      :
1626      :
1627      :ROUTINE DEC DSS COUNT
1628      DSSSET: DEC      DSSCNT
1629      BIC      #BIT7,@STATUS ;CLEAR DONE
1630      BR      INCDN
1631
1632      :ROUTINE TO REPORT DN11 ERROR
1633      :
1634      REPORR:
1635      ERR62: MOV      #62,ERCOUNT ;*** ERROR 62 ***
1636      N=N+1
1637      JSR      %5,STAER2
1638      BIC      #BIT7!BIT0,@STATUS ;CLEAR DONE AND CRQ
1639      BR      INCDN ;GO TEST NEXT DN11
1640
1641      :
1642      :
1643      :
1644      :
1645      :MAINTENANCE ROUTINE FOR SETTING PULSER
1646      :
1647      :
1648      MASTER: MOV      #340,CSR      ;LOOK UP CPU. PRIORITY
1649      MOV      STKLINK,%6
1650      JSR      PC,SUSWR      ;CHECK FOR HARDWARE SWITCH REGISTER
1651      MOV      @SR,STATUS ;STORE ADDRESS
1652      HALT      ;LOADSR FROM DOC. 5.3
1653      EXMAST: JSR      PC,CKSWR ;CHECK FOR <^G>
1654      MOV      @SR,@STATUS ;MOVE SR INTO DN11 REGISTER
1655      NOP
1656      NOP
1657      NOP
1658      NOP
1659      BIT      #BIT3,@SR ;TEST FOR MAINTENANCE MODE
1660      BNE      CLRWAT ;BRANCH WE ARE IN MAINTENANCE MODE
1661      MOV      #177770,COUNT ;WAIT 2 SECONDS FOR 801 SIGNALS
1662      CLR      TIME
1663      TIMW: INC      TIME
1664      BNE      TIMW
1665      INC      COUNT
1666      BNE      TIMW-4
1667      CLR      @STATUS ;CLEAR DN11
1668      CLRWAT: BIT      #BIT3,@SR ;ARE WE IN MAINTENANCE MODE
1669      BNE      CLRREG ;BRANCH NO NEED TO WAIT
1670      MOV      #177770,COUNT ;WAIT FOR 801
1671      CLR      TIME
1672      CLRTIM: INC      TIME
  
```



```

1673 006152 001375
1674 006154 005237 001040
1675 006160 001370
1676 006162 005077 172664
1677 006166 000724
1678
1679
1680
1681
1682
1683
1684
1685
1686 006170 010337 006450
1687 006174 012777 000340 172600
1688 006202 105777 172604
1689 006206 100375
1690 006210 117777 172572 172566
1691 006216 105777 172566
1692 006222 100375
1693 006224 122777 000377 172554
1694 006232 001007
1695 006234 020337 006450
1696 006240 001760
1697 006242 104001
1698 006244 007520
1699 006246 005303
1700 006250 000754
1701 006252 105737 010302
1702 006256 001016
1703 006260 022777 000215 172520
1704 006266 001411
1705 006270 020327 006450
1706 006274 001003
1707 006276 104001
1708 006300 007205
1709 006302 000737
1710 006304 117723 172476
1711 006310 000734
1712 006312 105023
1713 006314 000207
1714 006316 000000
1715 006340 006340
1716 006340 000000
1717 006362 006362
1718 006362 000000
1719 006404 006404
1720 006404 000000
1721 006426 006426
1722 006426 000000
1723 006450 006450
1724 006450 000000
1725
1726
1727
1728

      BNE CLRTIM
      INC COUNT
      BNE CLRTIM-4
      CLR @STATUS
      BR EXMAST
      :RECYCLE

      :
      :
      :ROUTINE TO HANDLE KEYBOARD CONVERSATION
      :ROUTINE ACCEPTS NUM. OR ALPHA CHARACTERS
      :

TYST: MOV %3,BUFLIM ;SAVE FIRST ADDRESS OF INPUT BUFFER
      MOV #340,@CSR ;LOCK UP INTERRUPTS
TSTFLG: TSTB @TKS ;CHECK FOR FLAG
      BPL TSTFLG
      MOV @TKB,@TPB ;CHARACTER IN BUFFER
      TSTB @TPS ;ECHO CHARACTER
      BPL -4
      CMPB #377,@TKB ;CHECK FOR RUB-OUT
      BNE CKCH ;EXIT IF NOT RUB-OUT
      CMP %3,BUFLIM ;HAVE WE RUBBED-OUT BACK TO BEGINNING?
      BEQ TSTFLG ;YES, DO NOT RUBOUT ANYMORE
      EMT +1
      MES8 ;REPORT RUB-OUT ACKNOWLEDGED
      DEC %3
      BR TSTFLG
      CKCH: TSTB TTIN ;GO WAIT FOR NEW CHAR.
      BNE 1$ ;CHECK TO SEE IF LOADING SWREG
      CMP #215,@TKB ;IF SO GET OUT
      BEQ 2$ ;CHECK FOR CARRIAGE RETURN
      CMP %3,#BUFLIM ;ARE WE RUNNING OUT OF BUFFER SPACE?
      BNE 3$ ;NO, SKIP OVER ERROR MESSAGE
      EMT+1 ;YES, REPORT ERROR
      MES2
      BR TSTFLG
      3$: MOV @TKB,(3)+ ;LOAD CHARACTER IN BUFFER
      BR TSTFLG
      2$: CLRB (3)+
      1$: RTS %7 ;EXIT DELIMITER TYPED
      TEXBUF: 0
      PH01: 0
      PH02: 0
      PH03: 0
      PH04: 0
      BUFLIM: 0
      .EVEN

      ;SUBROUTINE TO OUTPUT ASCII MESSAGE ON TELETYPE PRINTER.

```

```

1729 006452 011600          TYP:  MOV    @%6,%0      ;GET ADDRESS THAT CONTAINS MESSAGE ADDRESS
1730 006454 062716 000002      ADD    #2,@%6      ;SET UP EXIT.
1731 006460 011000          MOV    @%0,%0      ;ADDRESS OF MESSAGE TO R0.
1732 006462 112037 006572      TYPA:  MOVB   (0)+,TYPDAT ;GET CHARACTER
1733 006466 122737 000100 006572  CMPB   #100,TYPDAT ;CHECK FOR '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 '%'.
1737 006506 001416          BEQ     TYPF      ;BRANCH IF '%'.
1738 006510 122737 000042 006572  CMPB   #42,TYPDAT ;NOT '%'. CHECK FOR '#'.
1739 006516 001417          BEQ     TYPG      ;BRANCH IF '#'.
1740 006520 004737 006526          JSR     %7,TYPD      ;TYPE CHAR IN TYPDAT
1741 006524 000756          BR      TYPA
1742 006526 113777 006572 172250  TYPD:  MOVB   TYPDAT,@TPB ;OUTPUT CHARACTER TO PRINTER
1743 006534 105777 172250          TSTB   @TPS      ;WAIT FOR DONE FLAG.
1744 006540 100375          BPL     -4
1745 006542 000207          TYEXIT: RTS     %7      ;EXIT
1746 006544 112737 000015 006572  TYPF:  MOVB   #15,TYPDAT ;MOVE CARRIAGE RETURN CODE TO TYPDAT
1747 006552 004737 006526          JSR     %7,TYPD      ;GO TYPE CHAR.
1748 006556 112737 000012 006572  TYPG:  MOVB   #12,TYPDAT ;MOVE LF CODE TO TYPDAT.
1749 006564 004737 006526          JSR     %7,TYPD      ;GO TYPE CHAR.
1750 006570 000734          BR      TYPA
1751 006572 000000          TYPDAT: 0
1752
1753          ;ROUTINE TO DECODE EMT CALLS FOR TTY
1754 006574 011600          EMTRP:  MOV    (6),%0
1755 006576 022740 104001      CMP     #EMT+1,-(0) ;WAS CALL EMT+1
1756 006602 001101          BNE     TYP5      ;EMT+0
1757 006604 000722          BR      TYP
1758
1759          :
1760          :
1761          :
1762          :INDIVIDUAL STATIC TEST SCOPE LOOP ROUTINE
1763          :
1764          :
1765          :IF BIT 14 IS SET BYPASS THIS ROUTINE AND JUST LOOP ON THE TEST
1766          :IF BIT 14 IS NOT SET LOOP ON EACH TEST 15 TIMES THEN GO TO THE NEXT TEST
1767          :
1768          :
1769 006606 004737 010304          LOOP:  JSR     PC,CKSWR ;CHECK FOR <^G>
1770 006612 032777 040000 172160  BIT     #BIT14,@SR ;TEST IF BIT 14 IS SET
1771 006620 001402          BEQ     +6      ;BRANCH IF BIT 14 IS NOT SET
1772 006622 013646          MOV    @ (6)+,-(6) ;PLAYING WITH THE STACK
1773 006624 000002          RTI              ;LOOP ON TEST WITHOUT ENTERING THIS ROUTINE
1774 006626 005737 001066          TST     PASS ;TEST IF THE PASS COUNT IS ZERO
1775 006632 001003          BNE     +10      ;PASS COUNT NOT ZERO KEEP COUNTING
1776 006634 012737 000035 001066  MOV     #35,PASS ;SET UP PASS COUNT FIRST TIME THROUGH
1777 006642 005337 001066          DEC     PASS ;-1 PASS THIS TIME THROUGH
1778 006646 001402          BEQ     +6      ;PASS ZERO ENTER NEXT TEST
1779 006650 013646          MOV    @ (6)+,-(6) ;PLAYING WITH THE STACK AGAIN
1780 006652 000002          RTI              ;RE-ENTER TEST
1781 006654 062716 000002          ADD     #2,(6) ;INC.STACK FOR THE NEXT TEST
1782 006660 000002          RTI              ;EXIT TO THE NEXT TEST
1783
1784          :

```



```

1785      :POWER FAIL SEQUENCE
1786
1787 006662 012737 006672 000024 PWRDWN: MOV    #PWRUP,24      ;SET UP POWER FAIL VECTOR FOR RESTART
1788 006670 000000                HALT          ;HALT AND WAIT FOR POWER TO COME BACK
1789
1790
1791      :
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 INCTM:  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      :

```

```

1827
1828
1829
1830 007006 011600
1831 007010 062716 000002
1832 007014 011037 007034
1833 007020 022737 177777 007034
1834 007026 001001
1835 007030 000002
1836 007032 104001
1837 007034 000000
1838 007036 000763
1839
1840
1841
1842
1843
1844
1845
1846
1847
1848
1849
1850
1851
1852
1853 007040 013537 007120
1854 007044 012501
1855 007046 012502
1856 007050 060201
1857
1858 007052 013703 007120
1859 007056 042703 177770
1860 007062 062703 000060
1861 007066 110341
1862 007070 042737 000007 007120
1863 007076 006037 007120
1864 007102 006037 007120
1865 007106 006037 007120
1866 007112 005302
1867 007114 001356
1868 007116 000205
1869 007120 000000

;SUBROUTINE TO OUTPUT A SERIES OF ASCII MESSAGES ON TELETYPE PRINTER
TYP5:  MOV    @%6,%0      ;GET ADDRESS THAT CONTAINS MESSAGE ADDRESS
      ADD    #2,@%6      ;UPDATE TO NEXT MESSAGE ADDRESS
      MOV    @%0,TYP5B    ;ADDRESS OF MESSAGE TO TYP5B
      CMP    #-1,TYP5B    ;CHECK FOR TERMINATOR
      BNE    TYP5A        ;BRANCH IF NOT TERMINATOR.
      RTI                    ;TERMINATOR. EXIT.
TYP5A:  EMT    +1          ;CALL ON TYP SUB TO TYPE MESSAGE
TYP5B:  0          ;ADDRESS OF MESSAGE GOES HERE
      BR     TYP5        ;GO PROCESS NEXT MESSAGE

:
:
:
:OCTAL TO ASCII CONVERT ROUTINE
:
:ENTER ROUTINE AS FOLLOWS
:JSR %5,CONV
:ADDR# = ADDRESS OF NUMBER TO BE CONVERTED
:ADDR BYTE = LSB OF WHERE ASCII IS GOING
:ASCII# = THE NUMBER OF ASCII CHAR. TO BE CONVERTED
:
:
CONV:  MOV    @(%5)+,ACNVX ;VALUE OF # TO BE CONVERTED
      MOV    (5)+,%1      ;ASCII ADDR
      MOV    (5)+,%2      ;# OF ASCII CHAR
      ADD    %2,%1

ACVN:  MOV    ACNVX,%3
      BIC    #177770,%3   ;ISOLATE LEAST SIGNIFICANT OCTAL #
      ADD    #60,%3       ;SET UP ASCII #
      MOVB   %3,-(1)      ;STORE ASCII CHAR
      BIC    #7,ACNVX
      ROR    ACNVX        ;ROTATE OCTAL #
      ROR    ACNVX
      ROR    ACNVX
      DEC    %2           ;-1 FROM ASCII CHAR COUNT
      BNE    ACVN
      RTS    %5          ;EXIT # CONVERTED
ACNVX:  0          ;WORK REGISTER
  
```



```

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

1885
 1886
 1887
 1888
 1889
 1890
 1891
 1892
 1893
 1894
 1895
 1896
 1897
 1898
 1899
 1900
 1901
 1902
 1903
 1904
 1905
 1906
 1907
 1908
 1909
 1910
 1911
 1912
 1913
 1914
 1915
 1916
 1917
 1918
 1919
 1920
 1921
 1922
 1923
 1924
 1925
 1926
 1927
 1928
 1929
 1930
 1931
 1932
 1933
 1934
 1935
 1936
 1937
 1938
 1939
 1940

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					:
1961					:
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 / DN11 @/
1991	007616	042040	030516	020061	
1992	007624	020040	100		
1993					:
1994					:
1995					:
1996	007627	040	020040	020040	HED5: .ASCII / DNCSR @/

1997 007634 042040 041516 051123

1998 007642 020040 040040

1999

2000

2001

2002 007646 050045 053517 051105

2003 007654 043040 044501 020114

2004 007662 041517 052503 051122

2005 007670 042105 100

2006

2007

2008

2009

007674

...

HED6: .ASCII /%POWER FAIL OCCURRED@/

...

.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          ;WHAT REGISTER CONTAINED
2050 010030 007572          HED3
2051 010032 000006          6
2052 010034 104000          EMT    +0          ;REPORT MESSAGE
2053 010036 007523          HED0
2054 010040 007550          HED2
2055 010042 007572          HED3
2056 010044 177777          -1
2057 010046 004537 006770   JSR    %5,RESTORE ;RESTORE REGISTERS
2058 010052 004737 010304   JSR    PC,CKSWR  ;CHECK FOR <^G>
2059 010056 000205          RTS    %5
2060
2061      :
2062      :
2063 010060 032777 020000 170712 STAER2: BIT    #BIT13,@SR    ;TEST TO DELETE TYPE-OUT
2064 010066 001401          BEQ    .+4          ;BRANCH TO TYPE
2065 010070 000205          RTS    %5          ;DELETE TYPE-OUT

```

Address	Hex	Hex	Hex	Label	Instruction	Comment
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		JSR	PC,CKSWR ;CHECK FOR ^<G>
2090	010172	004537	006770		JSR	%5,RESTORE ;RESTORE REGISTERS
2091	010176	000205			RTS	%5
2092						
2093						
2094						
2095						
2096						
2097	010200	012737	177570	001000	SUSWR: MOV	#177570,SR ;INITIALIZE SWITCH REGISTER ADDRESS
2098	010206	013746	000006		MOV	@#6,-(SP) ;SAVE VECTORS
2099	010212	013746	000004		MOV	@#4,-(SP)
2100	010216	012737	010236	000004	MOV	#64\$,@#4 ;SET UP FOR TIMEOUT
2101	010224	022777	177777	170546	CMP	#-1,@SR ;REFERENCE HARDWARE SWITCH REGISTER
2102	010232	001402			BEQ	65\$
2103	010234	000404			BR	66\$
2104	010236	022626			64\$: CMP	(SP)+,(SP)+ ;ADJUST STACK
2105	010240	012737	000176	001000	65\$: MOV	#SWREG,SR ;POINT TO SOFTWARE SWITCH REG
2106	010246	012637	000004		66\$: MOV	(SP)+,@#4 ;RESTORE VECTORS
2107	010252	012637	000006		MOV	(SP)+,@#6
2108	010256	022737	000176	001000	CMP	#SWREG,SR ;IS SWREG USED
2109	010264	001002			BNE	67\$
2110	010266	004737	010354		JSR	PC,CNTLU ;ALLOW SWREG TO BE LOADED
2111	010272	000207			67\$: RTS	PC
2112						
2113						


```

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 #60,TIB ;GET NITTY-GRITTY
2169 010554 153737 010300 010274 BISB TIB,TEMPST

```

2170	010562	005337	010276			DEC	WCOUNT		
2171	010566	001756				BEQ	5\$		: ONLY WANT 6 DIGITS
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%a/		
2178	010613	045	053523	036522	MSWR:	.ASCII	/%SWR=a/		
2179	010620	100							
2180	010621	040	020040	020040	MNEW:	.ASCII	/	NEW=a/	
2181	010626	020040	020040	047040					
2182	010634	053505	040075						
2183	010640	040045			MCRLF:	.ASCII	/%a/		
2184	010642	037445	040045		MQUEST:	.ASCII	/%?%a/		
2185	010646	041445	042132	040516	MTITLE:	.ASCII	/%CZDNA-C	DN11 DIALEX%a/	
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		

[illegible]

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
EXINC	005700	1573	1611#
EXMAST	006040	1653#	1677
EXMOD0	004644	1443	1455#

1618#

[illegible]

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

ST35X	003610	1258	1266#																	
ST36	003644	1275#	1298																	
ST36E	003744	1280	1290	1293	1297#															
ST36X	003666	1276	1281#																	
ST37	003750	1300#	1333																	
ST37X	004030	1305	1313#																	
ST38	004066	1316	1322#																	
ST38E	004132	1312	1321	1322	1331#															
ST4	001570	902#	909																	
ST4E	001564	893	897#																	
ST4O	004142	1334#																		
ST5	001624	913#	920																	
ST5E	001620	904	908#																	
ST6	001660	926#	938																	
ST6E	001654	915	919#																	
ST7	001750	940#	958																	
ST7E	001744	931	937#																	
ST7ER	002034	947	952#																	
ST7X	001764	943#	951																	
SUSWR	010200	807	1650	2097#																
SWREG	000176	738#	1805	2105	2108	2122	2136													
TEMPST	010274	2117#	2142*	2165*	2166*	2167*	2169*	2173												
TEXBUF	006316	811	824	1714#	1873															
TIB	010300	2119#	2126*	2127*	2128	2146*	2147*	2148	2151	2158	2160	2168*	2169							
TIME	001042	776#	1324*	1325*	1349*	1350*	1488*	1490*	1512*	1513*	1526*	1527*	1550*	1551*						
		1662*	1663*	1671*	1672*	1801*														
		777#	1348*	1352*	1487*	1492*	1511*	1515*	1525*	1529*	1549*	1553*	1800*	1803*						
TIME1	001044	1496	1929#																	
TIMO	007367	1663#	1664	1666																
TIMW	006104	749#	1690	1693	1703	1710	2126	2146												
TKB	001006	751#	1688	2124																
TKS	001012	748#	1690*	1742*																
TPB	001004	750#	1691	1743																
TPS	001010	1688#	1689	1696	1700	1709	1711													
TSTFLG	006202	1701	2120#	2144*	2174*															
TTIN	010302	1490#	1493																	
TWOSEC	005036	1745#																		
TYEXIT	006542	1729#	1757																	
TYP	006452	1732#	1741	1750																
TYPA	006462	1734	1736#																	
TYPC	006500	1740	1742#	1747	1749															
TYPD	006526	1732*	1733	1736	1738	1742	1746*	1748*	1751#											
TYPDAT	006572	1737	1746#																	
TYPF	006544	1739	1748#																	
TYPG	006556	1756	1830#	1838																
TYPS	007006	1834	1836#																	
TYPSA	007032	1832*	1833	1837#																
TYPSB	007034	814	827	1402	1411	1420	1429	1686#	2145											
TYST	006170	826	1954#																	
VECDN	007477	764#	828	830	832*	833*	834*	1301*	1313*	1322*	1386*									
VECTOR	001024	1479	1485#																	
WAITIN	005002	2118#	2143*	2155	2170*															
WCOUNT	010276	773#	854*	855*	857*	859	928*	929*	930	944*	945*	946	948	1446*						
WORK	001034	1475*	1504*	1534*	1593*	1594	1599*	1600*	1603	2049	2071*	2073								
		774#	934*	941*	943	946	950*	1447*	1533*	2045										
WORK1	001036	2142#																		
\$READ	010406																			

. = 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#		

CZDNA-C, DN11 DIALEX MACY11 30A(1052) 07-SEP-78 15:25 PAGE 65 L 5
CZDNAC.P11 09-MAY-78 15:36 CROSS REFERENCE TABLE -- MACRO NAMES

SEQ 0063

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)