

BM792YB

DECTAPE + DISK BOOTSTRAP
MD-11-DZBMB-A
LOADER

EP-DZBMB-A-DL
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FICHE 1 OF 1

MAY 1978
digital
MADE IN USA

Microfiche strip containing 12 frames of data. The text on the frames is too small to be legible.

Small blue square marker.

IDENTIFICATION

PRODUCT CODE: KATNDEC-11-DEPLY-2-1
REPLACES: KATN.EC-11-DIRA-2

PRODUCT NAME: R07-32Y- DECTAPE & DISK
BOOTSTRAP LOADER

DATE CREATED: JUNE 30, 1972

CONTAINER: DIAGNOSTIC TROU

ARTICLE: 1. PAGES

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1. ABSTRACT

THE DERN9 DIAGNOSTIC PROGRAM IS WRITTEN TO BE USED AS AN AID TO HARDWARE DEBUGGING AND MAINTENANCE OF THE 047024B DFC9APE AND DISK BOOTSTRAP LOADER). THESE PROGRAMS MAY ALSO BE USED AS A DATA RELIABILITY TEST.

THE AVAILABLE TESTS ARE

- PG00 • LOGIC TESTS
- PG01 • ROM DATA DUMP
- PG02 • SINGLE ROM ADDRESS READ DATA LOOP

2. REQUIREMENTS

2.1 EQUIPMENT

- A. PDP 11 FAMILY CENTRAL PROCESSOR
- B. 047024B MODULE

2.2 STORAGE

THIS PROGRAM USES CORE 0-410P(8)

3. LOADING AND STARTING PROCEDURE

LOAD PROGRAM INTO MEMORY USING ABS LOADER,
 LOAD ADDRESS = 00200
 SET SW 0 DESIRED STANDARD PDP-11 DIAGNOSTIC OPTIONS (SEE SECT 0.0)
 NOTE! ALL SWITCHES AUTOMATICALLY SELECTS AND STARTS PROGRAM
 P.
 DEPRESS START THE PROGRAM WILL TYPE OUT INSTRUCTIONS. ALL USER RESPONSES ARE VIA THE KEYBOARD (CARRIAGE RETURN TERMINATES THE RESPONSE)
 TO RESTART THE SELECTED PROGRAM LOAD ADDRESS 0 0P021P AND DEPRESS START

4.0 SWITCH SETTINGS

SW15 1 OR UP	HALT ON ERROR
SW14 1 OR UP	SCOPE LOOP
SW13 1 OR UP	INHIBIT PRINTOUT
SW12 1 OR UP	INHIBIT TRACE TRAPPING (NOT USED)
SW11 1 OR UP	INHIBIT ITERATION

5. PROGRAM DESCRIPTIONS

5.1 PRG0 - LOGIC TESTS

THE LOGIC TESTS CONSIST OF 4 ROUTINES TO TEST THE 047024B LOGIC

5.1.1 ROUTINE DESCRIPTIONS

ROUTINE	TESTS
T1	ADDRESSABILITY OF 047024B
T2	DATA RELIABILITY
T3	THAT 047024B TIMES OUT WHEN REFERENCED BY A DATA BUS CYCLE
T4	THAT DATA READ IS CORRECT

5.1.2 ERROR PRINTOUT

IF A ROUTINE FAILS AND THE INHIBIT PRINTOUT SWITCH IS NOT ENABLED (SR13) A PRINTOUT RESULTS; THE PC AT THE TIME OF FAILURE IS TYPED;

IF AN ERROR OCCURS IN T4 THE ROM DATA AND CORRECT DATA AND THE ADDRESS OF EACH IS TYPED OUT (THE ERROR TYPEOUT CANNOT BE DISABLED); THE FORMAT IS

ROM ADDRESS/ROM DATA
IMAGE ADDRESS-CORRECT DATA

5.2 PRG1 - ROM DATA DUMP

THIS PROGRAM TYPES OUT THE 32 WORDS OF ROM DATA AND HALTS.

5.3 PRG2 - SINGLE ROM ADDRESS READ DATA LOOP

THIS PROGRAM CONTINUOUSLY READS DATA FROM A TYPED IN ROM ADDRESS, TO CHANGE THE ADDRESS TYPE IN A NEW ADDRESS, (MUST BE EVEN)

1

.TITLE TEST DEBMB DECTAPE & DISK BOOT LDR
.NLIST SEQ,MC
.LIST ME
.ABS
ILOAD ADDRESS=7200
IDEPRESS START
IRESTART ADDRESS=0021F
ISTACK POINTER IS AT 500

000030 P00030
000032 P02362
000034 000340
000036 002278
000038 000000
104000
104400
177960
177962
177964
177966
177970
177972
177974
000900
000902
000904
P00200 P00167 P00024
000210 P00167 000054
P01000

.030
ERROR
SAP
SCOPEC
P
IEQUATE STATEMENTS
MLY02MY
SCOPY0TRAP
TKCSR0177960
TKDR0177962
TPCSR0177964
TPDR0177966
PSW0177776
BR0177970
DISPLAY=177970
SYNDR0500
TKIN7000
TKIN7002
START11 JMP PRMTR5
START31 JMP RESTART
.01000

ADDRESS OF DISPLAY REGISTER
INITIAL STACK SETTING

Address	Label	Value	Code	Instruction	Comment	
P01000	P00000		ICNTI	,WORD P	ICONTAINS PASS COUNT	
P01002	P00040		WORDSI	32,		
P01004	P04000		IMAGEI	4000		
P01006	P00000		DUMPI	P		
P01010	P00000		LASTI	P		
P01012	P00000		CHARI	P		
P01014	P00000		TERMI	P		
P01016	P00000		BRTI	P		
P01020	P00000		ROMADDI	P		
P01022	P01110		PRCTABI	PRC0		
P01024	P01640			PRC1		
P01026	P01760			PRC2		
P01030	P12706	P00500	PRMTRSI	MOV OSTKPTR,X6	ISRT STACK PTR	
P01034	005067	P00070		CLR PRNUM		
P01040	005737	177570		TST OBR		
P01044	P01411			BCD RESTART		
P01046	P04567	001012		JSR S,TYPEH	ISRT MESSAGE IPR000	
P01052	P02542			P6		
P01054	P04567	P01122		JSR S,RECD	IRECEIVE DATA AND PUT	
001060	000000		PRNUMI	P	II' HERE	
P01062	P04567	000796		JSR S,TYPEH		
P01066	P02566			H0		
P01070	P12767	173100	177722	RESTART:MOV	0173100,ROMADD	IGET FIRST ROM ADDRESS
P01076	P16700	177750		MOV	PRNUM,XR	IGET PROGRAM 0
P01102	P06300			ASL	X0	ISRT PROGRAM 0
P01104	P00170	P01022		JMP	0PRCTAB(P)	IGO TO PROGRAM
PROGRAM 0 LOGIC TESTS						
P01110	P05067	177060		PR00I CLR	ICNT	ICLEAR PASS COUNT
P01114	012706	P00500		PR00R: MOV	OSTKPTR,X6	
001120	012767	001114	001220	MOV	0PR00R,RETURN	ISRT RETURN ADDRESS FOR SCOPE
P01126	P16737	177060	177570	MOV	ICNT,00DISPLAY	IDISPLAY PASS COUNT
ITEST1 TEST ABILITY TO REFERENCE ROM WITHOUT TIMING OUT						
001134	016700	177060		T1I MOV	ROMADD,XR	IGET ROM ADDRESS
P01140	P16701	177030		MOV	WORDS,X1	IGET ADDRESS COUNTER
P01144	P12767	001200	170632	MOV	0ERROR1,4	ISRT UP TIME OUT VECTOR
001152	P11003			T1AI MOV	(0),X3	REFERENCE
P01154	005720			TST	(0),	IROM
P01156	064067	177624		ADD	=(0),DUMP	I
001162	P21010			CMP	(0),(0)	I
P01164	132020			BITS	(0)+,(0)+	I
P01166	000005			RESET		IDELAY
P01170	164067	177612		SUB	=(0),DUMP	
P01174	762700	P00002		ADD	02,XP	IINCREMENT POINTER
P01200	705371			DEC	X1	IINCREMENT ADDRESS COUNTER
P01202	701363			BNE	T1A	IBRANCH IF NOT FINISHED
P01204	700473			BR	T10	IGO TO SCOPE LOOP
P01206	722626			ERROR1: CMP	(0)+,(0)+	IREPOSITION STACK
P01210	104000			MLT		INERT IF ERROR
P01212	P00757			BR	T1A	ILOOP ON ERROR

701214 104400
 001216 716700 177996
 001222 716701 177994
 001226 012767 000000 176950
 001234 009067 177946
 001240 011003
 001242 062067 177948
 001246 166723 177934
 001292 001402
 001294 104000
 001296 000766
 001260 000029
 001262 044067 177928
 001266 001402
 001270 104000
 001272 000772
 001274 021010
 001276 001402
 001300 104000
 001302 000774
 001304 122040
 001306 001402
 001310 104000
 001312 000774
 001314 009780
 001316 009301
 001320 001345
 001322 104400

T101 SCOPE
 ITEST2 TEST THAT ROM DATA CAN BE READ RELIABLY.
 T21 MOV ROMADD,X0 IGET ROM ADDRESS
 MOV WORDS,X1 IGET ADDRESS COUNTER
 MOV #0,4 INITIALIZE TIME OUT VECTOR
 T2A1 CLR DUMP INITIALIZE DUMP
 MOV (0),X3 IGET DATA
 ADD (0),DUMP IADD DATA TO DUMP
 SUB DUMP,X3 ISUBTRACT DATA FROM DATA
 BEQ T20 IBRANCH IF EQUAL
 ERROR21 MVT IDATA ERROR
 OR T2A ILOOP ON ERROR
 T201 RESET IDELAY
 BIC =(0),DUMP ICLEAR DUMP BITS
 BEQ T2C IBRANCH IF EQUAL TO 0
 MVT IDATA ERROR
 OR T20 ILOOP ON ERROR
 T2C1 CMP (0),(0) ICCMPARE DATA
 BEQ T20 IBRANCH IF EQUAL
 MVT IDATA ERROR
 OR T2C ILOOP ON ERROR
 T201 CMPS (0)+,(0) ICCMPARE DATA (BYTE OPERATION)
 BEQ T2E IBRANCH IF EQUAL
 MVT IDATA ERROR
 OR T20 ILOOP ON ERROR
 T2E1 TST (0)+ IINCREMENT ADDRESS POINTER
 DEC X1 IDECREMENT ADDRESS COUNTER
 ONE T2A IRETURN IF NOT DONE
 SCOPE

ITEST3 TEST THAT ROM TIMES OUT IF REFERENCED BY OTHER
 ITHAN DATA BUS CYCLE

001324 012706 000500
 001330 016700 177464
 001334 016701 177442
 001340 012767 001304 176436
 001346 010010
 001350 104000
 001352 000775
 001394 012767 001392 176422
 001362 022626
 001364 005210
 001366 104000
 001370 000775
 001372 012767 001412 176404
 001400 022626
 001402 005077 177412
 001406 104000
 001410 000774
 001412 009780
 001414 022626

T31 MOV STKPTR,X6 ISET STACK PTR
 MOV ROMADD,X0 ISET ROM ADDRESS
 MOV WORDS,X1 IGET ADDRESS COUNTER
 T3A1 MOV ST30,4 ISET UP TIME OUT VECTOR
 MOV X0,(0) IATTEMPT TO ALTER DATA
 MVT IHERE IF DID NOT TIME OUT
 OR T3A ILOOP ON ERROR
 T301 MOV ST30,4 ISET UP TIME OUT VECTOR
 CMP (0)+,(0)+ IREPOSITION STACK
 T3C1 INC (0) IATTEMPT TO ALTER DATA
 MVT IHERE IF DID NOT TIME OUT
 OR T3C ILOOP ON ERROR
 T301 MOV ST30,4 ISET UP TIME OUT VECTOR
 CMP (0)+,(0)+ IREPOSITION STACK
 T3E1 CLR OROMADD IATTEMPT TO ALTER DATA
 MVT IHERE IF DID NOT TIME OUT
 OR T3E ILOOP ON ERROR
 T301 TST (0)+ IINCREMENT ADDRESS POINTER
 CMP (0)+,(0)+ IREPOSITION STACK

PC	PC+1	PC+2	PC+3	PC+4	PC+5	PC+6	PC+7	PC+8	PC+9	PC+10	PC+11	PC+12	PC+13	PC+14	PC+15	PC+16	PC+17	PC+18	PC+19	PC+20	PC+21	PC+22	PC+23	PC+24	PC+25	PC+26	PC+27	PC+28	PC+29	PC+30	PC+31	PC+32	PC+33	PC+34	PC+35	PC+36	PC+37	PC+38	PC+39	PC+40	PC+41	PC+42	PC+43	PC+44	PC+45	PC+46	PC+47	PC+48	PC+49	PC+50	PC+51	PC+52	PC+53	PC+54	PC+55	PC+56	PC+57	PC+58	PC+59	PC+60	PC+61	PC+62	PC+63	PC+64	PC+65	PC+66	PC+67	PC+68	PC+69	PC+70	PC+71	PC+72	PC+73	PC+74	PC+75	PC+76	PC+77	PC+78	PC+79	PC+80	PC+81	PC+82	PC+83	PC+84	PC+85	PC+86	PC+87	PC+88	PC+89	PC+90	PC+91	PC+92	PC+93	PC+94	PC+95	PC+96	PC+97	PC+98	PC+99	PC+100																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
001416	001417	001418	001419	001420	001421	001422	001423	001424	001425	001426	001427	001428	001429	001430	001431	001432	001433	001434	001435	001436	001437	001438	001439	001440	001441	001442	001443	001444	001445	001446	001447	001448	001449	001450	001451	001452	001453	001454	001455	001456	001457	001458	001459	001460	001461	001462	001463	001464	001465	001466	001467	001468	001469	001470	001471	001472	001473	001474	001475	001476	001477	001478	001479	001480	001481	001482	001483	001484	001485	001486	001487	001488	001489	001490	001491	001492	001493	001494	001495	001496	001497	001498	001499	001500	001501	001502	001503	001504	001505	001506	001507	001508	001509	001510	001511	001512	001513	001514	001515	001516	001517	001518	001519	001520	001521	001522	001523	001524	001525	001526	001527	001528	001529	001530	001531	001532	001533	001534	001535	001536	001537	001538	001539	001540	001541	001542	001543	001544	001545	001546	001547	001548	001549	001550	001551	001552	001553	001554	001555	001556	001557	001558	001559	001560	001561	001562	001563	001564	001565	001566	001567	001568	001569	001570	001571	001572	001573	001574	001575	001576	001577	001578	001579	001580	001581	001582	001583	001584	001585	001586	001587	001588	001589	001590	001591	001592	001593	001594	001595	001596	001597	001598	001599	001600	001601	001602	001603	001604	001605	001606	001607	001608	001609	001610	001611	001612	001613	001614	001615	001616	001617	001618	001619	001620	001621	001622	001623	001624	001625	001626	001627	001628	001629	001630	001631	001632	001633	001634	001635	001636	001637	001638	001639	001640	001641	001642	001643	001644	001645	001646	001647	001648	001649	001650	001651	001652	001653	001654	001655	001656	001657	001658	001659	001660	001661	001662	001663	001664	001665	001666	001667	001668	001669	001670	001671	001672	001673	001674	001675	001676	001677	001678	001679	001680	001681	001682	001683	001684	001685	001686	001687	001688	001689	001690	001691	001692	001693	001694	001695	001696	001697	001698	001699	001700	001701	001702	001703	001704	001705	001706	001707	001708	001709	001710	001711	001712	001713	001714	001715	001716	001717	001718	001719	001720	001721	001722	001723	001724	001725	001726	001727	001728	001729	001730	001731	001732	001733	001734	001735	001736	001737	001738	001739	001740	001741	001742	001743	001744	001745	001746	001747	001748	001749	001750	001751	001752	001753	001754	001755	001756	001757	001758	001759	001760	001761	001762	001763	001764	001765	001766	001767	001768	001769	001770	001771	001772	001773	001774	001775	001776	001777	001778	001779	001780	001781	001782	001783	001784	001785	001786	001787	001788	001789	001790	001791	001792	001793	001794	001795	001796	001797	001798	001799	001800	001801	001802	001803	001804	001805	001806	001807	001808	001809	001810	001811	001812	001813	001814	001815	001816	001817	001818	001819	001820	001821	001822	001823	001824	001825	001826	001827	001828	001829	001830	001831	001832	001833	001834	001835	001836	001837	001838	001839	001840	001841	001842	001843	001844	001845	001846	001847	001848	001849	001850	001851	001852	001853	001854	001855	001856	001857	001858	001859	001860	001861	001862	001863	001864	001865	001866	001867	001868	001869	001870	001871	001872	001873	001874	001875	001876	001877	001878	001879	001880	001881	001882	001883	001884	001885	001886	001887	001888	001889	001890	001891	001892	001893	001894	001895	001896	001897	001898	001899	001900	001901	001902	001903	001904	001905	001906	001907	001908	001909	001910	001911	001912	001913	001914	001915	001916	001917	001918	001919	001920	001921	001922	001923	001924	001925	001926	001927	001928	001929	001930	001931	001932	001933	001934	001935	001936	001937	001938	001939	001940	001941	001942	001943	001944	001945	001946	001947	001948	001949	001950	001951	001952	001953	001954	001955	001956	001957	001958	001959	001960	001961	001962	001963	001964	001965	001966	001967	001968	001969	001970	001971	001972	001973	001974	001975	001976	001977	001978	001979	001980	001981	001982	001983	001984	001985	001986	001987	001988	001989	001990	001991	001992	001993	001994	001995	001996	001997	001998	001999

ITMIS PROGRAM TYPES CUT ROM DATA

PC1640 P12776 P00500
 PC1644 P04567 P00214
 PC1690 P02552
 PC1692 P16721 177124
 PC1696 P16720 177136
 PC1662 P12772 P00012
 PC1666 105767 175672
 PC1672 100375
 PC1674 P10067 P00324
 PC1700 P04767 P00322
 PC1704 P04567 P00194
 PC1710 P02566
 PC1712 P12067 P00326
 PC1716 P04767 P00324
 PC1722 105767 175636
 PC1726 100375
 PC1730 P12767 P00040 175638
 PC1736 P05321
 PC1740 P01410
 PC1742 P05322
 PC1744 P01362
 PC1746 P12722 P00012
 PC1752 P04567 P00100
 PC1756 P02566
 PC1760 P00745
 PC1762 P00167 177042

PRG11 MOV 05TKPTR,X6 INITIALIZE STACK
 JSR 9,TYPEH ITYPE MESSAGE
 M7 IFROM DATAI
 MOV WORDS,X1 IGET # OF WORDS
 PRG1A1 MOV ROMADD,X7 IGET STARTING ADDRESS
 MOV 012,X2 IGET ADDRESS INDICATOR
 TSTB TPCSR INAIT FOR
 BPL ,04 ITELEPRINTER FLAG
 PRG1B1 MOV X0,DZBTYP IGET ADDRESS
 JSR 7,02A IAND TYPE IT
 JSR 9,TYPEH ITYPE
 M0 ICR/LF
 PRG1C1 MOV (0)+,DZBTYP ITYPE
 JSR 7,02A IDATA
 TSTB TPCSR INAIT FOR
 BPL ,04 ITELEPRINTER FLAG
 MOV 01 ,TPDBR ITYPE SPACE
 DEC X1 IALL DATA TYPED
 BEQ PRB1D IGO TO FINISH
 DEC X2
 ONE PRG1C IRETURN TO PRG1B
 MOV 012,X2 IGET ADDRESS INDICATOR
 JSR 9,TYPEH ITYPE
 M0 ICR/LF
 BR PRB1D IRETURN TO PRG1B
 PRG1D1 JMP PRMTRS IGO GET NEXT TEST

ITMIS PROGRAM CYCLES A SINGLE ADDRESS (ADDRESS MUST BE EVEN) TO CHANGE
 THE ADDRESS TYPE NEW ADDRESS ON THE TTY.

PC1766 P12706 P00500
 PC1772 P12737 P02060 P00004
 PC2000 P05067 175772
 PC2004 P12767 P02036 176046
 PC2012 P12767 P00360 176042
 PC2020 P12767 P00100 175532
 PC2026 P16700 176766
 PC2032 P05710
 PC2034 P00776
 PC2036 P04567 P00140
 PC2042 P00000
 PC2044 P16720 177772
 PC2050 P04567 P00010
 PC2054 P02566
 PC2056 P00022
 PC2060 104000
 PC2062 P00777

PRG21 MOV 05TKPTR,X6 INITIALIZE STACK POINTER
 MOV 0PRG2C,004 ILOAD TRAP ERROR VECTOR
 CLR PSH ICLR PROCESSOR STATUS
 MOV 0PRG2A,TKINTA ILOAD KEYBOARD INTERRUPT VECTOR
 MOV 0340,TKINTP ILOAD KEYBOARD PRIORITY
 MOV 0100,TKCSR ISET INTERRUPT ENABLE BIT
 MOV ROMADD,XE IGET ROM ADDRESS
 TST (0) IREAD ROM ADDRESS
 BR ,02 ILOOP
 PRG2A1 JSR 9,RECD IGO GET ADDRESS &
 PRG2B1 B IPUT IT HERE
 MOV PRG2B,X0
 JSR 9,TYPEH ITYPE
 M0 ICR/LF
 RTI IEXIT KEYBOARD INTERRUPT SERVICE
 PRG2C1 MLE IERROR! DID YOU TYPE AN ODD ADDRESS?
 BR IBIT HERE UNTIL CORRECT ADDRESS IS TYPED IN

ROUTINE TO TYPE A MESSAGE

PC2064 P10026
 PC2066 P12570

TYPEH1 MOV X0,(0)+ ISAVE REGISTER B
 MOV (5)+,X0 IPLACE MESSAGE ADDRESS IN B0

002070	112067	176720			MOV	(0),TERM	I GET TERMINATOR CHARACTER
002074	112067	176712			MOV	(0),CHAR	I GET NEXT CHARACTER
002100	126767	176700	1767P6		COMP	CHAR,TERM	INLS NEXT CHARACTER THE TERM
002106	001005				BNE	TYPEMB	IC CHARACTER
002110	014600				MOV	=(0),XB	IRESPOND NO
002112	105767	175440			TSTB	TPCSR	
002116	100375				BPL	,04	
002120	000205				BYS	5	I AND EXIT
002122	126727	176664	000045		COMP	CHAR,01X	I HAS CHARACTER X
002130	001015				BNE	TYPEMC	
002132	105767	175426			TSTB	TPCSR	I TEST TELEPRINTER FLAG
002136	100375				BPL	,04	I AND WAIT FOR DONE
002140	012767	000215	175420		MOV	0215,TPDRR	I LOAD TELEPRINTER WITH CAR; RET
002146	105767	175412			TSTB	TPCSR	I TEST TELEPRINTER FLAG
002152	100375				BPL	,04	I AND WAIT FOR DONE
002154	012767	000212	175424		MOV	0212,TPDRR	I LOAD TELEPRINTER WITH LINE FEED
002162	000766				OR	TYPEMA	I GET NEXT CHARACTER
002164	105767	175374			TSTB	TPCSR	I TEST TELEPRINTER FLAG
002170	100375				BPL	,04	I AND WAIT FOR DONE
002172	016767	176614	175366		MOV	CHAR,TPDRR	I LOAD TELEPRINTER BUFFER
002200	000735				OR	TYPEMA	I AND GET NEXT CHARACTER

I ROUTINE TO RECEIVE DATA TYPED IN ON THE KEYBOARD; THE DATA IS PLACED IN
 I THE ADDRESS FOLLOWING THE JSR CALL I

002202	005015				JSR	5,RECD	I CALL RECEIVE DATA ROUTINE
002204	105767	175300			B		I DATA IS PLACED HERE
002210	100375				BPL	,04	I CLEAR OUT OLD DATA
002212	116767	175344	176572		MOV	TKDRR,CHAR	I TEST KEYBOARD FLAG
002220	016767	176566	175340		MOV	CHAR,TPDRR	I AND WAIT FOR CHARACTER
002226	126727	176560	000215		COMP	CHAR,0215	I GET CHARACTER
002234	001005				BNE	RECD0	I ECHO CHARACTER
002236	005725				TST	(5),0	I HAS CHARACTER CARRIAGE RETURN
002240	105767	175320			TSTB	TPCSR	
002244	100375				BPL	,04	
002246	000205				BYS	5	I INCREMENT RETURN ADDRESS
002250	042767	177770	176534		BIC	0177770,CHAR	I AND EXIT
002256	006315				ASL	(5)	I STRIP AWAY ALL BUT 3 LSR
002260	006315				ASL	(5)	I ROTATE
002262	006315				ASL	(5)	I PREVIOUS
002264	056715	176522			BIS	CHAR,(5)	I DATA
002270	000745				OR	RECD0	I AND INSERT CHARACTER
							I GET NEXT CHARACTER

I SCOPE ROUTINE, THIS ROUTINE IS ENTERED AT THE END OF EACH SUBTEST;

002272	032767	040000	175270		BIF	040000,SR	I TEST SR FOR SCOPE
002300	001023				BNE	SCOPEB	I YES SCOPE
002302	032767	004000	175260		BIF	040000,SR	I TEST FOR ITERATION
002310	001007				BNE	SCOPEG	I INHIBIT ITERATION
002312	026767	000026	000022		COMP	SCOPEF,ICOUNT	I ITERATION COMPLETE
002320	001403				REQ	SCOPEG	I ITERATION COMPLETE GO TO SCOPEG
002322	005267	000016			INC	SCOPEF	I INCREMENT ITERATION COUNT
002326	000410				RR	SCOPEB	I GO TO SCOPEB
002330	005067	000010			SCOPEG	SCOPEF	I CLEAR ITERATION COUNT

002334 R11607 200000
 002340 R000F2
 002342 R000F3
 002344 R000F0
 002346 R000F0
 002350 R05726
 002352 R12667 175420
 002356 R00177 177764

MOV 0X0,RETURN
 RTI
 ICOUNTI 5
 SCOPEFI 0
 RETURNI ,WORD 0
 SCOPEBI TST (0)
 MOV (0),PSW
 JMP 0RETURN

IGET ADDRESS OF NEXT TEST
 IEXIT
 ICONTAINS SUBTEST ITERATION COUNT
 ICONTAINS RETURN PC FOR SCOPE
 IPOP PC
 IRESTORE CONDITION CODES

002362 R36727 1752P2 P200FE
 002370 R01401
 002372 R000F2
 002374 R04567 177464
 002400 R02532
 002402 R11607 000016
 002406 R04767 R00014
 002412 R05767 175152
 002416 100001
 002420 R000F0
 002422 R000F2

ERROR ROUTINE; THIS ROUTINE IS ENTERED WHEN AN ERROR IS DETECTED.
 ERRORI BIT SR,020F0P
 BEO ,04
 RTI
 JSR X5,TYPEH
 ERRORH
 MOV (0),D20TVP
 JSR 7,02A
 TST SR
 BPL ,04
 HALT
 RTI

IINHIBIT PRINTOUT
 IBRANCH IF ERROR PRINT OUT
 IRETURN TO TEST
 ITYPE ERROR MESSAGE
 I/PC
 ITYPE PROGRAM COUNTER
 IHALT ON ERROR
 IYES HALT
 IRETURN TO TEST

002424 R00000
 002426 R16746 175132
 002432 R10246
 002434 R10146
 002436 R10046
 002440 R16770 177760
 002444 R12771 R000F6
 002450 R050F2
 002492 R061F0
 002494 R061F2
 002496 R06272 R00260
 002462 105767 175076
 002466 100375
 002470 R10207 175072
 002474 R050F2
 002476 R061F0
 002500 R061F2
 002502 R061F0
 002504 R061F2
 002506 R061F0
 002510 R061F2
 002512 R053F1
 002514 R01300
 002516 R12600
 002520 R12671
 002522 R12682
 002524 R12667 175034
 002530 R00207

THIS ROUTINE CONVERTS AN OCTAL NUMBER TO ASCII AND TYPES IT ON THE TTY.
 D20TVPI 0
 02A1 MOV TPCSR,(0)
 MOV X2,(0)
 MOV X1,(0)
 MOV X0,(0)
 MOV D20TVP,X7
 MOV 00,X1
 CLR X2
 ROL X0
 ROL X2
 02AA1 ADD 0260,X2
 TSTB TPCSR
 BPL ,04
 MOV X2,TPDBR
 CLR X2
 ROL X0
 ROL X2
 ROL X0
 ROL X2
 ROL X0
 ROL X2
 DEC X1
 ONE 02AA
 MOV (0),X0
 MOV (0),X1
 MOV (0),X2
 MOV (0),TPCSR
 RTS 7

ISAVE TPCSR
 ISAVE X2
 ISAVE X1
 ISAVE X0
 IGET DATA TO BE TYPED
 IGET COUNTER
 ICLEAR WORKING REGISTER
 IMOV FIRST BIT (MSB) INTO
 IR?
 IFORM ASCII CODE
 ITEST TELEPRINTER
 IFLAG AND WAIT UNTIL DONE
 ILOAD TELEPRINTER BUFFER
 ICLEAR WORKING REGISTER
 IROTATE THE
 INEXT
 IOCTAL CHARACTER
 IINTO
 IREGISTER
 ITWO
 IDECREMENT COUNTER
 IGO TO 02AA IF NOT 0
 IFINISHED; RESTORE REGISTERS
 I
 I
 IAND TPCSR
 IAND EXIT

```
ASCII MESSAGES
ERRORM1 ,ASCII '0X PC= 0'
M61 ,ASCII '0XPRG0001'
M71 ,ASCII '0XROM DATA01'
M81 ,ASCII '0X0'
M91 ,ASCII '0XROM ADDRESS/IMAGE ADDRESS ROM DATA01IMAGE DATA01'

M121 ,ASCII '0/0'
M111 ,ASCII '0 0'
M121 ,ASCII '000'

,03776
,WORD
!DATA CUT INTO THE 04792-YN
M137P1,17797P,00P0P5,01010P
P12710,17740P,02P027,177944
001007,012740,0040P2,0P571P
100376,005740,10P363,022P2P
012740,000005,105710,1P0576
005710,100794,105010,000139
0000P0,000001,177777,177777
177777,177777,177777,177777

,END
```

CHAN	001012	DISPLA	17757F	DONE	001002	DONE1	001034
NUMP	001006	72BTVP	002424	END	001362	FRORP	002362
ERRORH	002932	ERROR1	001206	ERROR2	001254	WLY	104000
ICNT	001000	ICOUNT	002342	IMAGE	001704	LANT	001010
M10	002652	M11	002659	M12	002660	M6	002542
M7	002552	M8	002560	M9	002571	2A	002420
O2AA	002456	PRNUM	001060	PRGTAB	001022	PR00	001110
PRGR	001114	PRG1	001640	PRG1A	001656	PR010	001070
PRG1C	001712	PR01D	001762	PRG2	001766	PR02A	002030
PRG2B	002042	PR02C	002060	PRMTR5	001030	PSM	177770
RECD	002202	RECD0	002204	RECD0	002250	RESTAR	001070
RETURN	002546	ROMADD	001020	SCOPE	104000	SCOPE0	002350
SCOPEC	002272	SCOPEF	002344	SCOPEG	002330	9R	177970
SRY	001010	START1	000200	START3	000210	QYMPTR	000900
TERM	001014	TKCSR	177560	TKDBR	177562	TKINTA	000060
TKINTP	000062	TPCSR	177564	TPDBR	177566	TYPEW	002064
TYPLMA	002074	TYPEMB	002122	TYPEMC	002164	91	001134
Y1A	001152	Y1B	001214	Y2	001216	92A	001234
Y2B	001260	Y2C	001274	Y2D	001304	92E	001316
Y3	001324	Y3A	001346	Y3AA	001360	93E	001354
Y3C	001364	Y3D	001372	Y3E	001402	93P	001412
Y4	001432	Y4B	001452	Y4C	001456	940	001466
Y4E	001960	WORDS	001002	.	004100		

ERRORS DETECTED: 0