IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DZQAB-B-D

PRODUCT NAME: MAINDEC USER REFERENCE
                     MANUAL

DATE CREATED: OCTOBER 1973

MAINTAINER: DIAGNOSTIC GROUP

PDP-11 MAINDECS

INTRODUCTION

Each option on the unibus that has an address assigned to it has a test or a set of tests.

There is another level of testing that is directed at detecting faulty unibus interaction between devices. These tests will be directed at market areas that create common configurations such as: DOS,RSTS,COMTEX and TYPESET.

For many of the systems we are now marketing there could be as many as forty (40) unique tests (diagnostic tapes).

In most cases it is not necessary to run all of these programs to determine if the system is operational. The test programs directed at testing unibus interaction and market areas should be adequate as a confidence check once the system has been operational. When an error has been detected by these programs, the unique test for that device should be adequate to correct the malfunction.

For systems with DECtape there is a diagnostic package DDP2 that will allow more rapid testing of systems.

The General Test Program (GTP) MAINDEC or the Communication Test Program (CTP) MAINDEC should be the initial program(s) run to determine the status of the system. However, neither of these programs should be considered a total check of the system.

For CTP to operate correctly all floating vector devices must be at the correct vectors.

CTP will check to see that starting at 300, all DC11's were assigned, then any extra KL11's, then any DP11's, then any DM11A's, Etc.

In GTP, it may be necessary to change the vector in the software to test option that have floating vectors.

The following pages contain:

1. INDEX OF MAINDECS, CPU TEST, MEMORY TEST, UNIBUS OPTION

2. SYSTEM CHECKLIST FOR PROBLEM ISOLATION

3. SEQUENTIAL LIST OF ABSTRACTS AND STARTING INSTRUCTION FOR ALL MAINDECS.
   Programs are in same sequence as in the index.

4.   EIGHT TABLES OF SYSTEM CONFIGURATION INFORMATION.

Execution times for tests are a function memory speed, processor type
baud rate for communication device and should be used only as a guide.

OPTION	NUMBER OF PROGRAMS	NUMBER OF MODULES
AA11	2	
AD01	1	
AFC11	1	
BM792YA	1	
BM792YB	1	
BM792YC	1	
CB11		
CD11	1	
CM11	1	
CR11	1	
DC11	2	
DH11		
DJ11		
DL11,A,B	1	
DL11CD	1	
DL11E	2	
DM11A	2	
DM11B	1	
DN11	1	
DP11	2	
DR11A	1	
DR11B	1	
DR11C	1	
DS11	2	
DT11	1	
DX11	1	
GT40		
KE11	2	
KG11	1	
KL11	1	
KW11L	1	
KW11P	1	
LC11(S)	1	
LC11(P)	1	
LP11	1	
LS11		
LPS11		
MR11DB	1	
PC11	1	
RC11	3	
RF11	3	
RK11	3	
TC11	5	
TM11	4	
UDC11	2	
VR20	1	
VT05	1	
VT06	1	

BASIC CPU TEST AND THE PROCESSORS THEY RUN ON

	NAME	NUMBER	05	15	20	40	45
EXERCISER	GTP COMMUNICATION	DZQCA	X	X	X	X	X
	GTP GENERAL	DZQGA	X	X	X	X	X
	GTP FPP	DZQGB	-	-	-	-	X
	TI7 CPU & I/O	DZQKB	X	X	X	X	X
HIGH LEVEL	TI5 Inst, Test	DZQKA	X	X	X	X	X
	MUL/DIZ Exer,	DCQKA	-	-	-	EIS	X
	States 11/45	DCKBO	-	-	-	-	X
	PIRC	DCKBN	-	-	-	-	X
	Traps 11/45	DCKBM	-	-	-	-	X
	Traps 05,20	DØNC	X	X	X	-	-
	Traps 11/40	DBKDM	-	-	-	X	-
LOW LEVEL	DIV	DCKBL	-	-	-	EIS	X
	MUL	DCKBK	-	-	-	EIS	X
	ASHC	DCKBJ	-	-	-	EIS	X
	ASH	DCKBI	-	-	-	EIS	X
	11/45 Registers	DCKBH	-	-	-	-	X
	SPL	DCKBG	-	-	-	-	X
	Stack Limit	DCKBF	-	-	-	KJ	X
	RTT	DCKBE	-	-	-	X	X
	MARK	DCKBD	-	-	-	X	X
	XOR	DCKBC	-	-	-	X	X
	SOB	DCKBB	-	-	-	X	X
	SXT	DCKBA	-	-	-	X	X
	RTS,RT1,JSR	DØMA	X	X	X	X	X
	JJMP	DØLA	X	X	X	X	X
	Subtract	DØKA	X	X	X	X	X
	Add	DØJA	X	X	X	X	X
	Bit Set, Clear Test	DØIA	X	X	X	X	X
	Move	DØHA	X	X	X	X	X
	CMP Equality	DØGA	X	X	X	X	X
	CMP Non-Equality	DØFA	X	X	X	X	X
	Rotate/Shift	DØEA	X	X	X	X	X
	Binary	DØDA	X	X	X	X	X
	Unary	DØCA	X	X	X	X	X
	Con Branch	DØBA	X	X	X	X	X
	Branch	DØAA	X	X	X	X	X
	MEMORY TEST						
	Address Test Up	DZMMA	X	X	X	X	X
	Address Test Down	DZMMB	X	X	X	X	X
	Up/Down for ACT-11	DZMMK	X	X	X	X	X
	No Dual Address Test	DZMMC	X	X	X	X	X
	Basic Patterns	DZMMD	X	X	X	X	X
	Moving 1's & Ø's	DZMME	X	X	X	X	X
	One's Susceptability	DZMMF	X	X	X	X	X
	Worse Case Noise	DZMMG	X	X	X	X	X

Core Heating	DZMMH	X	X	X	X	X
Random Data	DZMMI	X	X	X	X	X
Mem. Exp. (NPR TYPE)	DZQMA	X	X	X	X	X
Ext. Mem. (P to 124k) I/O)	DZQMB	X	X	X	X	X
Mem. Par.	DCMSA	•	•	•	•	X
Galomp	DCMSB	•	•	•	•	X

EIS = KE1IE OPTION
KJ = KJ11 OPTION

INTERNAL PROCESSOR OPTIONS

NAME	NUMBER	05	15	20	40	45
(Floating Point)						
Basic Test	DCFPA					X
STST	DCFPB					X
LDF,LDD,STF,STD	DCFPC					X
ADDF,ADDD,SUBF,SUBD	DCFPD					X
CMPF,CMPD	DCFPE					X
MULF,MULD	DCFPF					X
DIVF,DIVD	DCFPG					X
CLR,TST,ABS,NEG	DCFPH					X
CLR,TST	DCFPI					X
LDC,STC	DCFPJ					X
LDEXP,STEXP	DCFPK					X
MODF,MODD	DCFPL					X
Maintenance	DCFPM					X
						X
LDD/STD EXER	DCFPR					X
ADD & SUB EXER	DCFPS					X
MULT EXER	DCFPT					X
DIV EXER	DCFPU					X
Basic Inst Exer	DCFPO					X
Overlay	DCQOA					X
(Memory Management) KT11C						
Logic 1	DCKTA					X
Logic 2	DCKTB					X
Keys	DCKTC					X
MTPD/I	DCKTD					X
MFPD/I	DCKTE					X
Abort	DCKTF					X
KTEX	DCKTG					X
(Line Clock)						
KW11L	DZKWA	X	X	X	X	X
(KT11)						
Logic	DBKTA				X	
Keys	DBKTB				X	
MFPI/MTPI	DBKTC				X	
States	DBKTD				X	
KTEX	DBKTG				X	
(KE11F)						
Basic Inst.	DBKEA				X	
Exerciser	DBKEB				X	
GTP Overlay	DBKEC				X	

OPTION	NUMBER OF PROGRAMS	T	A	V	C
AA11	2	3-8	1	1	1
AD01	1	14	1	1	12
AFC11	1	1	X		X
BM792YA	1	1	X		X
BM792YB	1	1	X	X	X
BM792YC	1				
CB11					
CD11	1	16	1	1	4
CM11	1	1	X	X	X
CH11					
CR11	1	1	X	X	X
DJ11					
DC11	2				
DL11,A,B	1	5	X	X	X
DL11CD	1	1	X	X	
DL11E	2	1	X	X	X
DM11A	2	9	1	1	7
DM11B	1	6	1	1	4
DN11	1				
DP11	2	5+9	1	1	3
DQ11					
DR11A	1	3	1	1	1
DR11B	1	11	1	1	9
DR11C	1	1	X	X	X
DS11	2				
DT11	1				
DX11	1				
GT47					
KE11	2	5	A	-	4
KG11	1	1	X	X	X
KL11	1	3	1	1	1
KW11L	1	1	X	X	X
KW11P	1	1	X	X	X
LC11(s)	1	SEE DL11			
LC11(p)	1	1	X	X	X
LP11	1	1	X	X	X
LPS11					
MR11DB	1	2	X		X
PC11	1	1	X	X	X
RC11	3	8	1	1	6
RF11	3				
RP11					
RK11D	3	4	X	X	X
TC11	5				
TM11	4				
UDC11	2				
VR22	1	SEE DL11			
VT05	1	SEE DL11			
VT06	1	SEE DL11			
VT27					

T = Total Modules
A = User for Address
V = Used for Vectors
C = Used for Control

SYSTEM CHECKLIST FOR PROBLEM ISOLATION

WHEN CTP OR GTP FAILS

1. How close to one unibus option can you isolate the failure?

2. Can you determine if the problem is a device failure, or excessive noise on the bus, or a configuration problem if the system has been added to in the field?

3. Will the failure occur if only that device is selected?

4. If the CPU test is inhibited will the device fail?

5. Does the failure occur if memory expansion is inhibited?

6. Is the CPU doing the same or similar operation when the same failure occurs?

7. When a BR or NPR device is failing, replace the printout "halt" with a real "halt", then check the bits in the error register; which error bit is the real error?

8. Is the problem a NPR latency error?
   Is the position on the bus correct?
   Is no sack timeout occuring?

9. Is the problem a BR latency error?
   Is the position on the bus correct?

10. Are the devices at the standard BR level? If not at the standard level has the software been modified to test it at that level? It may be necessary to reconfigure to standard BR level before the software (DEC software) will operate.

11. If the program comes to a halt at Location 6, where was the program when the timeout occured; who did not raise slave sync?

12. If the program comes to a halt at location 12, where was the program when the program trapped? This failure on a known good program is a memory failure or the improper execution of an instruction by the processor.

13. If the system hangs, who is bus master? What are the C lines? What BR and NPR's are up? What "grant" is up? Where is the CPU when the hang occurs? Is the hanging a function of a device or CPU operation?

14. If an NPR device error is "Non existant memory", what is the content of that device's BUS Address Register (all eighteen

bits). Is it a valid address. Is the offset of the word count register equal indexed by the same amount? How long does that device wait before it times out?

15. Are there more than 20 unit loads on the system?

16. Is there more than 50 feet of unibus cable?

17. Are the terminators at the end of the bus?

18. If a power fail occurs, is any power supply over loaded? What is the line voltage?

19. Do all the diagnostics run with no error? Use the least complex test that fails to fix problems.

20. When an exerciser is the only test that fails, do you know what the exerciser does and does not test? Exerciser must give up some form of testing in order to achieve high data rates.

21. If you physically make the system smaller, does it still fail? How small can you make it and still have it fail? Sometimes the device that fails is not bad, but only the exhibited symptom of a separate problem.

22. Are there any bus buffers/switches between the failing device and the processor? If so do same errors occur when device is run on processor side of buffer?

23. Does failure occur when only running to particular BR level? I.e., level 4 device only fails when running level 5 devices.

24. Do failures only occur when system is heavily loaded?

25. Do "DATA REQUEST LATE" errors occur with NPR Devices? What is the worst case BG delay? Is that time plus processor worst case latency greater than device latency time?

OLD MAINDEC	MAINDEC NUMBER	DESCRIPTION
	DZAA	CPU T1 BRANCH
	DZBA	CPU T2 CON BRANCH
	DZCA	CPU T3 UNARY
	DZDA	CPU T4 BINARY
	DZEA	CPU T5 ROTATE/SHIFT
	DZFA	CPU T6 CMP EQUALITY
	DZGA	CPU T7 CMP NON-EQUALITY
	DZHA	CPU T8 MOVE
	DZIA	CPU T9 BIT SET CLEAR TEST
	DZJA	CPU T10 ADD
	DZKA	CPU T11 SUBTRACT
	DZLA	CPU T12 JUMP
	DZMA	CPU T13-JSR,RTS,RTI
	DZNC	CPU T14 FOR 11/05+11/20 TRAPS
	DBKDM	CPU T14/40 TRAPS TEST
D00B	DZQKA	CPU T15 INST. EXER.
D00E	DZQKB	CPU T17 SYSTEM EXERCISER
D0RA	DZKAQ	CPU POWER FAIL 11/05,20,40
	DCKRA	CPU SXT
	DCKBB	CPU SOB
	DCKBC	CPU XOR
	DCKBD	CPU MARK
	DCKBE	CPU RTT
	DCKBF	CPU STACK LIMIT
	DCKBG	CPU SPL
	DCKBH	CPU 11/45 REGISTERS
	DCKBI	CPU ASH
	DCKBJ	CPU ASHC
	DCKBK	CPU MUL
	DCKBL	CPU DIV
	DCKBM	CPU TRAPS 11/45
	DCKBN	CPU PIRQ
	DCKBO	CPU STATES 11/45
	DCKBP	CPU 11/45 POWER FAIL
	DCKBQ	11/45 CONSOLE TEST (WITH MEM.MGMT)
		11/45 CONSOLE TEST (WITH MEM.MGMT)
	DCFPA	FP11 DKFPS,STFPS,SETF/D,SETI/L CFCC
	DCFPB	FP11 STS,ILLEGAL INSTRUCTIONS
	DCFPC	FP11 LDF,LDD,STF STD
	DCFPD	FP11 ADDF,ADDD,SUBF,SUBD
	DCFPE	FP11 CMPF,CMPD
	DCFPF	FP11 MULF,MULD
	DCFPG	FP11 DIVF,DIVD
	DCFPH	FP11 CLR,TST,ABS,NEG
	DCFPI	FP11 LDCDF,LDCFP,STCFD,STCDF

	DCFPJ	FP11 LDCJX,STCXJ
	DCFPK	FP11 LDEXP,STEXP
	DCFPL	FP11 MODF,MODD
	DCFPM	FP11 MAINTENANCE
	DCFPO	FP11 BASIC INST EXER
	DCFPR	FP11 LDD/STD EXER
	DCFPS	FP11 ADD & SUB EXER
	DCFPT	FP11 MUL EXER
	DCFPU	FP11 DIV EXER
	DCQOA	FP11 OVERLAY
	DCKTA	KT11-C LOGIC 1
	DCKTB	KT11-C LOGIC 2
	DCKTC	KT11-C KEYS
	DCKTD	KT11-C MTPD/I
	DCKTE	KT11-C MTFD/I
	DCKTF	KT11-C ABORT
	DCKTG	KT11-C EXERCISER
	DRKTA	KT11-D LOGIC
	DRKTB	KT11-D KEYS
	DRKTC	KT11-D MOVES
	DRKTD	KT11-D STATES
	DRKTF	KT11-D ABORT
	DRKTG	KT11-D EXERCISER
*	DCMFA-B	MA11, MF11, & MS11 PARITY TEST

MEMORY

	D1AA	BASIC ADDRESS TEST UP
	D1BA	BASIC ADDRESS TEST DOWN
D1C*	DZMMC	NO DUAL ADDRESS TEST
D1D*	DZMMD	BASIC TEST PATTERNS
D1EA	DZMME	MOVING ONES AND ZEROS
D1F*	DZMMF	ONE'S SUSCEPTIBILITY
D1GC	DZMMG	WORSE CASE NOISE
D1H*	DZMMH	CORE HEATING
D1IB	DZMMI	RANDOM DATA
	DZMMJ	8K SPECIAL
	DZMMK-A	UP-DOWN ADDRESS TEST
	DZQMA	MEMORY I/O
	DZQMB	MEMORY EXERCISER

OPTIONS

OLD MAINDEC	UPDATED	MAINDEC NUMBER	DESCRIPTION
		D6BA	AA11 CALIBRATION
		D6CA	AA11 SCOPE CONTROL
D6AB		DZADB	AD01
		DZADA	AD02
D6EA		DZAFA	AFC11
D8CA		DZBM0	BM792 FACTORY ONLY
D1JA		DZBMA	BM792YA PAPER TAPE BTSTRP, LDR, JA
DIKA		DZBMB	BM792YB DECTAPE + DISK LDR,
		DZBMC	BM792YC CARD READER LDR,
		DZBMH-A	BM792YH CASSETTE BOOTSTRAP LDR JK
		DZCBA	CB11 LOGIC TEST
		DZCBO	CB11 OVERLAY
		DZCDA	CD11
		D2FA	CM11
	*	DZCMB-A	CM11F
D9C*		DZCRA	CR11
		D9AB	DC11 OFFLINE
D9BC		DZDCB	DC11 ON LINE
		DZDHA	DH11 STATIC LOGIC TEST
		DZDHB	DH11 MEMORY TEST
		DZDHC	DH11 TRANS + RECEIVER
		DZDHD	DH11 SPEED SELEC, LOGIC
		DZDHE	DH11 CHAR, LENGTH + BASIC DATA
		DZDHF	DH11 SINGLE LINE DATA
		DZDHG	DH11 MULTI-LINE DATA
		DZDHH	DH11 AUTO ECHO LOGIC
		DZDHI	DH11 BREAK + HALF DOP,
	*	DZDHO	DH11 OVERLAY
		DZDJA	DJ11 LOGIC TEST
		DZDJB	DJ11 EXERCISER
		DZDJC	DJ11 MASTER/SLAVE
		DZDJO	DJ11 OVERLAY GTP
		SEE KL11	DL11A,B
		DZDLA	DL11C,D,E
		DZDLB	DL11E
D9GB		DZDMB	DM11A DATA TEST
D9FB		DZDMA	DM11A LOGIC TEST
		D9KA	DM11BB
		D9JA	DN11 DIGITAL DIALER
		D8DB	DP11 SYNCHRONOUS INTERFACE DIAG,
		D8EB	DP11 (IN HOUSE ONLY)
		D8LA	DR11A (BR INTERFACE)
D8FA		DZDRB	DR11B (NPR INTERFACE)

C8RA		DZDRC	DR11C	
		DZDTA	DT11	
	*	DZDXA	DX11 MAINTENANCE CLOCK	1
	*	DZDXB	DX11 OVERLAY GTP	
	*	DZDXF	DX11 MAINTENANCE CLOCK	2
	*	DZDXG	DX11 OFFLINE EXERCISER	
	*	DZDXH	DX11 ONLINE MAINTEN, CABLED EXER,	
		DDGTA	GT40 INSTR, TEST I	
		DDGTB	GT40 INSTR, TEST II	
		DDGTC	GT40 VISUAL TEST	
		DDGTD	GT40 ROM BOOTSTRAP	
		DDGTE	GT40 QUICK VERIFY	
		DDGTF	GT40 OVERLAY-GTP-11	
		DØSA	KE11 LOGIC TEST	
		DØTA	KE11 EXERCISER	
		DBKEA	KE11F INSTRUCTION TESTS	
		DBKEB	KE11F EXERCISER	
		DBKED	KE11F OVERLAY	
		D8KA	KG11	
D2AB		DZKLA	KL11/DL11A TTY TESTS	
D2D*		DZKWA	KW11L	
D2G*		DZKWB	KW11P	
		D6F	LAB11	
		DZLAB	LC11(S)	
D2H*		DZLCA	LC11(P)/LA30	
D2C*		DZLPA	LP11	
	*	DZLPB	LPC11	
		DZLPC	LPS11 DIAG, TEST I	
		DZLPD	LPS11 DIAG, TEST II	
		DZLPE	LPS11 OVERLAY-GTP-11	
		DZLSA	LS11 (CENTRONICS LINE PRINTER)	
		DZLVA	LV11 PRINTER/PLOTTER TEST	
		DZMRA	MR11	
		DCMSA		
		DCMSB	MS11	
D8EA		DZPAA	PA611	
		DZPAB	PA611	
		DZPAC	PA611	
D2BC		DZPCA	PC11	
D5JA-1		DZRCA	RC11 STATIC	
D5JA-2		DZRCB	RC11 DISK DATA	
D5BA		DZRCC	RC11 MULTI DISK	
		DZRFA	RF11 STATIC	
		DZRFB	RF11 DISK DATA	
		DZRFC	RF11 MULTI DISK	
		DZRKA	R11 STATIC	
		DZRKB	RK11 DISK DATA	
D5GA		DZRKC	RK11 RANDOM EXERCISER	

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DZRPA        RP11C DISKLESS
DZRPB        RP11C RELIABILITY
DZRPC        RP11C MULTI DRIVE
DZRPD        RP11C DISK PACK FORMATTER
DZRPE        RP11 DISKLESS
DZRPF        RP11 RELIABILITY
DZRPG        RP11 MULTI DRIVE
DZRPH        RP11 DISK/PACK FORMATTER
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OLD MAINDEC	UPDATED	MAINDEC NUMBER	MCN LEVEL	DDP EXT.	DESCRIPTION
		DZRSA-A	X	,BIN	RS64 TESTER-FACTORY ONLY
		DZTAA-A-0		,BIC	TA11 LOGIC TEST (PART 1)
		DZTAB-A-1		,BIC	TA11 LOGIC TEST (PART 2)
		DZTAC-1-0		,BIC	TA11 MANUAL INTERVENTION
		DZTAD-A-0		,BIC	TA11 MOTION TEST
		DZTAE-A-0		,BIC	TA11 DATA RELIABILITY
		DZTAF-A-0		,BIC	TA11 CASSETTE LOADER
		DZTAG-A-0		,BIC	TA11 GTP OVERLAY

OLD MAINDEC	UPDATED	MAINDEC NUMBER	DESCRIPTION
D3AB		DZTCA	TC1 BASIC LOGIC
D3BB		DZTCB	TC2 BASIC LOGIC
D3CC		DZTCC	TC3 BASIC FUNCTIONS
D3DC		DZTCD	TC4 READ AND WRITE ALL
D3EB		DZTCE	TC5 EXERCISER
D4AB		DZTMA	TM INSTRUCTION TEST
D4B*		DZTMB	TM DATA RELIABILITY (9 TRACK)
D4C*		DZTMC	TM DATA RELIABILITY (7 TRACK)
D4DA		DZTMD	TM DRIVE FUNCTION TIMER
D8JA		DZUDA	UDC EXERCISER
D8HA		DZUDB	UDC CONTROL TEST
		D8AA	UNIBUS TESTER FACTORY ONLY
D6G*		DZVTB	VT05
		D6DB	VT06
	*	DBVTA	VT20

SYSTEMS DIAGNOSTICS

OLD MAINDEC	MAINDEC NUMBER	DESCRIPTION
D9D=	DZDCA	"CTP" COMMUNICATIONS TEST PROGRAM.
D7AA	DZDD3	DDP2=DECTAPE DIAG. PACKAGE
	DZDDE	RKDP=RK11 DIAG, PACK,
D9HC	DZDGA	"GTP" GENERAL TEST PROGRAM
	D9EA	MAINTENANCE LOADER
	DZSSA	SYSTEM SIZER

MAINDEC-11-D0AA to D2L -   NEW NUMBER - DZKAA to DZKAL

T1 to T12

ABSTRACT

This is a group of 12 tests that incrementally test and isolate simple malfunctions of the PDP-11. The tests should be run in the indicated numerical sequence. The sequence is:

        1.   Branch
        2.   Conditional Branch
        3.   Unary
        4.   Unary and Binarys
        5.   Rotate/Shift
        6.   Compare (Equality)
        7.   Compare (non equality)
        8.   Move
        9.   Bit Set, Clear and Test
       10.   Add
       11.   Subtract
       12.   Jump

REQUIREMENTS

        PDP-11

STORAGE - Use all of 4K except 17500 - 17776 (Reserved for boot and absolute loader).

LOADING - Absolute Loader

EXECUTION TIME - 2-6 min. depending on test - Bell will ring

STARTING PROCEDURE - Start and Restart at 200

PRINTOUTS - No

SWITCH REGISTER OPTIONS - No

MAINDEC-11-D0MA   NEW NUMBER = DZKAM

T13

ABSTRACT

This is a test of the JSR, RTS and RTI Instruction. It is also the
first time the Register 6 has been "PUSHED and POPPED".

REQUIREMENTS

        PDP-11

STORAGE = 0 - 5020

LOADING = Absolute Loader

EXECUTION TIME = 2 min. = Bell will Ring

STARTING PROCEDURE = Start and Restart at 200

PRINTOUTS = No

SWITCH REGISTER OPTIONS = No

MAINDEC=11=D0N=   NEW NUMBER = DAKAA

T14 TRAPS

ABSTRACT

This is a test of all operation and instruction that cause traps.
Also tested are trap overflow conditions, oddities of register 6,
interrupts and the reset instructions.

REQUIREMENTS

        PDP=11/20, 11/05, 11/10

STORAGE = 0 = 17500

LOADING = Absolute Loader

EXECUTION TIME = Function of core size = Bell will ring

STARTING PROCEDURE

        Start and Restart at   200 for a 4K System
                                     202 for an 8K System
                                     204 for a 12K System
                                     206 for a 16K System
                                     210 for a 20K System
                                     212 for a 24K System
                                     214 for a 28K System

PRINTOUTS = No

SWITCH REGISTER OPTIONS = No

This program should not be used to test 11/40 and 11/45's.

MAINDEC-11-D?0*   NEW NUMBER * DZQKA

T15 Instruction Exerciser

ABSTRACT *

This program is designed to be a comprehensive check of all 11 family
processor instructions, The program executed each instruction in all
address modes and includes tests for traps and the teletype interrupt
sequence, The program relocates the test code throughout memory
0-28K'.

REQUIREMENTS *

        PDP-11 family central processor
        Optional = KL11-L (line clock)

STORAGE - Program uses all the first 4K of memory (excluding that area
          of memory reserved for the loaders,)

LOADING - Absolute Loader

EXECUTION TIME - For 4K - 1 min, For 28K - 5 min,

STARTING PROCEDURE - 200

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

SW15 =   .,.. HALT ON ERROR
SW14 =   .,.. LOOP SUBTEST
SW13 =   .,.. INHIBIT ERROR PRINTOUT
SW12 =   .,.. INHIBIT TRACE TRAPPING
SW11 =   .,.. INHIBIT SUBTEST ITERATION
SW10 =   .,.. PING BELL ON ERROR
SW 8 =   .,.. LOAD PDP-11/45 MICRO BREAK REGISTER
SW 7-0 * .,.. WHEN SET LOADS THE MICRO BREAK REGISTER WITH THE VALUE
           SET INTO SW7-0 AT THE BEGINNING OF EACH SUBTEST, WITH
           THE VALUE SET INTO SW7-0 AT THE BEGINNING OF EACH
           SUBTEST,

                          NOTE

           WHEN ALL SWITCHES ARE DOWN NO TYPEOUTS
           WILL OCCUR AT THE END OF A PASS (errors
           will be typed), SETTING SW7 WILL CAUSE
           END OF PASS MESSAGE TO BE TYPED',

MAINDEC-11-D0P-   NEW NUMBER - DBKDM

T14 Trap Test (11/40 only)

ABSTRACT - This is a test of all operations and instructions that
cause traps, also tested are trap overflow conditions, oddities of
register 6, interrupts and the reset instructions.

REQUIREMENTS -

          PDP-11/40 Standard Computer

STORAGE - Program uses memory from 0000 to 17502.

LOADING -

EXECUTION TIME - 45 Seconds

STARTING PROCEDURE - 200

PRINTOUTS - No

SWITCH REGISTER OPTIONS - No switches are used.

MAINDEC=11=D2Q=   NEW NUMBER = DZKAP

T17

ABSTRACT

This program is a core expandable interactive bus exerciser for a
paper tape oriented PDP-11/20. It performs a test of instructions and
concurrent operations of I/O equipment simultaneously. It may also
perform the same operation independently. This program is not to be
considered a total check of the system. If an error is detected in an
I/O device, it will probably be necessary to correct the malfunction
with the respective diagnostic for that device.

REQUIREMENTS

        PDP=11

OPTIONAL HARDWARE

        MM11 = Up to 28KW of Memory
        RC,RF,RK,RP DISK
        TC11 = Dectape=Transport Zero
        KE11 = Extended Arith, Unit
        KW11L = Line Clock
        PC11 = High Speed Reader/Punch
        KL11 = ASR33 or ASR 35 Teleprinter
        LP11 = Line Printer

STORAGE = 0 - 17476

LOADING = Absolute Loader

EXECUTION TIME = 1 - 1.5 min, depending on test for a 4K system.
                Execution time increase with memory size.

STARTING PROCEDURE = Start and Restart at 200
                   = If Line Printer is used restart at 400

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS - Yes

        SW15 = HALT ON ERROR
        SW14 = SCOPE LOOP
        SW13 = INHIBIT PRINTOUT
        SW12 = INHIBIT TRACE TRAP,
        SW11 = INHIBIT ITERATION LOOP
        SW10 = INHIBIT PROCESSOR TEST
        SW09 = INHIBIT VARIABLE CORE EXPANSION
        SW08 = RESTART ON ERROR
        SW07 = LP11

```
SW06 = TC11
SW05 = RC,RF,RK and RP
SW04 = KW11L
SW03 = PC READER
SW02 = PC PUNCH
SW01 = TTY IN
SW00 = TTY OUT
```

MAINDEC=11=D0R=   NEW NUMBER = DZKAQ

Power Fall

ABSTRACT

The PDP=11 Power Fall Diagnostic consists of two parts, one of which
is an exerciser test which checks all facets of power fall. Part two
is made up of several small tests which enable the user to
troubleshoot the power fall module with small basic routines.

REQUIREMENTS

        PDP=11

STORAGE = 0 = 3066

LOADING = Absolute Loader

EXECUTION TIME = Continuous running = Printout will occur

STARTING PROCEDURE = Power Fall Exerciser = Start and Restart at 200

        Diagnostic Tests

                Power Fall Trap Capability = 204
                Power Fall Re-Start Capability (WAIT) = 210
                Power Fall Re-Start Capability (BR) = 214
                Power Fall Re-Start Capability (EMT) = 220
                2 Mill/Sec. Shut Down Cap./Power Fall = 224
                2 Mill/Sec. Up Time/Power Fall = 230

PRINTOUTS = No

SWITCH REGISTER OPTIONS = No

There is a super set tests for the Power Fall of the 11/45 that test
that processor.

MAINDEC-11-   NEW NUMBER - DCKBA to DCKBE

ABSTRACT -

This is the first 5 of 15 tests that incrementally test and isolate
simple malfunctions in the PDP-11. The tests should be run in the
indicated alphabetic sequence. There are additional tests for more
complex malfunctions. All tests are executed in kernel mode only,
except for test DCKBE (11/40 only).

        1. SXT
        2. SOB
        3. XOR
        4. MARK
        5. RTT

REQUIREMENTS -

        PDP-11/40, 11/45

STORAGE - The programs use all of a 4KW memory with the exception of
          17502 to 17776 (which is reserved for the boot and absolute
          loader).

LOADING - Absolute Loader

EXECUTION TIME - All tests take approximately 1 minute each on an 11
                 with core memory.

STARTING PROCEDURE - Load address 200, Press start. The program will
                     loop, and ring bell on completion. Pass count
                     may be monitored in the display register (11/45
                     only) and is stored in address 1000.

PRINTOUTS - No

SWITCH REGISTER OPTIONS - Yes

SW(08) = 1 Load PDP-11/45 micro break register with value in SW(00-7).
           (At start of test only).

MAINDEC-11   NEW NUMBER - DCKBF to DCKBO

ABSTRACT -

This is the last 10 of 15 tests that incrementally test and isolate
simple malfunctions in the PDP-11 option. The tests should be run in
the indicated alphabetic sequence. There are additional tests for
more complex malfunctions. All tests are executed in kernel mode only
except for test DCKBO. All these tests are needed for the 11/45. For
the 11/40 stack limits, if you have a KJ option. For
ASH,ASHC,MUL,DIV, if you have the KE11F option.

REQUIREMENTS -

        PDP-11/45, 11/40

STORAGE - The programs use all of a 4KW memory with the exception of
        17500 to 17776 (which is reserved for the boot and absolute
        loader).

LOADING - Absolute loader.

EXECUTION TIME - All tests take approximately 1 minute each on an 11
        with core memory

        STARTING PROCEDURE - Load address 200. Press start. The
        program will loop, and ring bell on completion. Pass
        count may be monitored in the display register (11/45
        only), and is stored in address 1000.

PRINTOUTS - No

SWITCH REGISTER OPTIONS - Yes

SW(08) = 1 Load PDP-11/45 micro break register with value in
        SW(00-07), (at start of test only)

SW(09) = 1 Use alternate register set (R10-R15) test DCKBI-DCKBL only,
        (PDP-11/45 only)

MAINDEC-11   NEW NUMBER = DCKBP

ABSTRACT =

This program is made up of 16 subtests to check out the power fail on
the 11/45. The 2 msec, power down and power up time is checked on
each power fail. A constant has to be changed for use in bipolar or
mos memories. Initially power fails are tried in all processor modes
than error conditions like red zone, yellow zone, time out, and odd
address in all the processor modes. Finally a power fail is done with
memory management aborts occurring and a memory volatility test is run
on all memory (up to 124K).

REQUIREMENTS =

         PDP-11/45 standard computer with up to 124K of memory.

STORAGE = The routines use memory Ø = 4244

LOADING = Absolute loader.

EXECUTION TIME = N/A

STARTING PROCEDURE = Load address 200 and start

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

         SW14 = 1 ... SCOPE LOOP
         SW10 = 1 ... INHIBIT BELL ON PASS COMPLETE

MAINDEC-11   NEW NUMBER - DCKBQ

PDP 11/45 CONSOLE SWITCH TEST

ABSTRACT -

This program is designed to test the PDP11/45 console switches. In
order to run, memory management must be available. Due to the nature
of the program, extensive operator intervention is required. The
operator instructions are fully described in the listings. The second
phase of this program allows the operator to test the micro-break
register and the PDP11/45 maintenance card.

REQUIREMENTS -

        PDP11/45 with memory management.

STORAGE - The program requires 4K of storage.

LOADING -

EXECUTION TIME -

STARTING PROCEDURE - The program should always be started at 200.

PRINTOUTS -

SWITCH REGISTER OPTIONS - None.

NEW NUMBER - DCFPA DCFPB   to   DCFPL

ABSTRACT -

These programs test the FP11 in all modes with fixed number patterns.
The programs should be run in order for at least 2 passes with all
switches down. The sequence of testing should be -

            LDFPS,STFPS,SETI,SETL,SETF,SETD,CFCC
            STST
            LDF,LDD,STF,STD
            ADDF,ADDD,SUBF,SUBD
            CMPF,CMPD
            MULF,MULD
            DIVF,DIVD
            CLRF,CLRD,TSTF,TSTD,ABSF,ABSD,NEGF,NEGD
            LDCFD,LCCDF,STCFD,STCDF
            LDCIF,LDCLF,LDCID,LDCLD,STCFI,STCFL,STCDI,STDCL
            LDEXP,STEXP
            MODF,MODD

REQUIREMENTS -

            PDP-11/45, FP11

STORAGE - The routines use memory 0 - 17776.

LOADING - Absolute loader.

EXECUTION TIME - Less than 1 minute.

STARTING PROCEDURE - Always start at 200

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

            SW15 = 1 ... HALT ON ERROR
            SW14 = 1 ... SCOPE LOOP
            SW13 = 1 ... INHIBIT PRINTOUT
            SW12 = 1 ... INHIBIT TRACE TRAPPING
            SW11 = 1 ... INHIBIT ITERATIONS OF SUBTEST
            SW10 = 1 ... BELL ON ERROR
                   0 ... BELL ON PASS COMPLETE
            SW09 = 1 ... BELL ON ERROR
            SW08 = 1 ... LOOP ON TEST IN SW(7:0)
                   0 ... LOAD SW(7:0) INTO UB REGISTER

NEW NUMBER = DCFPM

ABSTRACT =

The purpose of this program is three fold; First to test the maintenance features, second to trace MULD through its steps, third to trace DIVD;

REQUIREMENTS =

        PDP=11/45, FP11

STORAGE = The routines use memory 0 = 17776.

LOADING = Absolute loader.

EXECUTION TIME = A bell will ring within 15 seconds with all switches
                down.

STARTING PROCEDURE = Always start at 200.

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SW15 = 1 ... HALT ON ERROR
        SW14 = 1 ... SCOPE LOOP
        SW13 = 1 ... INHIBIT PRINTOUT
        SW12 = 1 ... INHIBIT TRACE TRAPPING
        SW11 = 1 ... INHIBIT ITERATIONS OF SUBTEST
        SW10 = 1 ... BELL ON ERROR
             0 ... BELL ON PASS COMPLETE
        SW09 = 1 ... LOOP ON ERROR
        SW08 = 1 ... LOOP ON TEST IN SW (710)
             0 ... LOAD SW (710) INTO UB REGISTER

NEW NUMBER = DCFPO

ABSTRACT =

This program tests the FP11 in all modes with fixed number patterns. It runs with interrupts both enabled and disabled and causes error conditions. The program should be run for at least 2 passes with all switches down.

REQUIREMENTS =

PDP-11/45 standard computer with FP11 option.

STORAGE = The routines use memory 0 = 17776.

LOADING = Use standard procedure for ABS tapes.

EXECUTION TIME = A bell will ring within 15 seconds with all switches down.

STARTING PROCEDURE = Always be started at 200.

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

```
        SW15 = 1 ... HALT ON ERROR
        SW14 = 1 ... SCOPE LOOP
        SW13 = 1 ... INHIBIT PRINTOUT
        SW12 = 1 ... INHIBIT TRACE TRAPPING
        SW11 = 1 ... INHIBIT ITERATIONS OF SUBTEST
        SW10 = 1 ... BELL ON ERROR
               0 ... BELL ON PASS COMPLETE
        SW09 = 1 ... LOOP ON ERROR
        SW08 = 1 ... LOOP ON TEST IN SW(710)
               0 ... LOAD SW(710) INTO UB REGISTER
```

NEW NUMBER = DCFPR

ABSTRACT =

This program is an exerciser of LDD/STD instructions. It uses random
numbers, floating 1/s, and floating 0's, and checks all memory with
LDF/STF into an AC.

REQUIREMENTS =

        PDP=11/45, FP11

STORAGE = The routines use memory 0 = 17776

LOADING = Absolute Loader

EXECUTION TIME = 15 secs.

STARTING PROCEDURE = Program should always be started at 200.

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

            SW15 = 1 ... HALT ON ERROR
            SW14 = 1 ... SCOPE LOOP
            SW13 = 1 ... INHIBIT PRINTOUT
            SW12 = 1 ... INHIBIT TRACE TRAPPING
            SW11 = 1 ... INHIBIT ITERATIONS OF SUBTEST
            SW10 = 1 ... BELL ON ERROR
                   0 ... BELL ON PASS COMPLETE
            SW09 = 1 ... LOOP ON ERROR
            SW08 = 1 ... LOOP ON TEST IN SW(7:0)
                   0 ... LOAD SW(7:0) INTO UB REGISTER

NEW NUMBER = DCFPS

ABSTRACT =

This program exercises the FP11 floating point add and subtract instructions (ADDF,ADDD,SUBF,SUBD) with random number patterns. The answers are checked against results obtained using the corresponding fortran software routines.

REQUIREMENTS =

        PDP=11/45, FP11

STORAGE = The routines use memory locations 0 = 17500.

LOADING = Absolute Loader

EXECUTION TIME =15 secs.

STARTING PROCEDURE = At 200

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SW15 = 1 ... HALT ON ERROR
        SW14 = 1 ... SCOPE LOOP
        SW13 = 1 ... INHIBIT PRINTOUT
        SW12 = 1 ... INHIBIT TRACE TRAPPING
        SW11 = 1 ... INHIBIT ITERATIONS OF SUBTEST
        SW10 = 1 ... BELL ON ERROR
               0 ... BELL ON PASS COMPLETE
        SW09 = 1 ... CORE IMAGE TYPE-OUT (16 BIT WORDS)
               0 ... FLOATING POINT TYPE-OUT (SIGN, EXPONENT,
                     MANTISSA)
        SW08 = 1 ... LOOP ON TEST IN SW(7:0)
               0 ... LOAD SW(7:0) INTO U6 REGISTER

NEW NUMBER = DCFPT

ABSTRACT =

This program exercises the FP11 floating point multiply instructions (MULF and MULD) with random number patterns. The answers are checked against results obtained using the corresponding fortran software routines.

REQUIREMENTS =

       PDP=11/45 standard computer with FP11 option

STORAGE = The routines use memory locations 0=17500. The map at the
            end of the listings shows the absolute locations of the
            fortran math routines which were assembled separately and
            linked to the main program via LNKX11 on a DECsystem=10.

LOADING = Absolute Loader

EXECUTION TIME = Bell will ring within 15 seconds with all switches
               down.

STARTING PROCEDURE = Always start at 200.

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SW15 = 1 ... HALT ON ERROR
        SW14 = 1 ... SCOPE LOOP
        SW13 = 1 ... INHIBIT PRINTOUT
        SW12 = 1 ... INHIBIT TRACE TRAPPING
        SW11 = 1 ... INHIBIT ITERATIONS OF SUBTEST
        SW10 = 1 ... BELL ON ERROR
            0 ... BELL ON PASS COMPLETE
        SW09 = 1 ... CORE IMAGE TYPE=OUT (16 BIT WORDS)
            0 ... FLOATING POINT TYPE=OUT (SIGN, EXPONENT,
     MANTISSA)
        SW08 = 1 ... LOOP ON TEST IN SW(7:0)
            0 ... LOAD SW(7:0) INTO UB REGISTER

NEW NUMBER = DCFPU

ABSTRACT =

This program exercises the FP11 floating point divide instructions
(DIVF and DIVD) with random number patterns, the answers are checked
against results obtained using the corresponding fortran software
routines.

REQUIREMENTS = PDP-11/45 standard computer with FP11 option.

STORAGE = The routines use memory locations 0 - 17500. The map at the
          end of the listings shows the absolute locations of the
          fortran math routines which were assembled separately and
          linked to the main program via LNKX11 on a DECsystem-10.

LOADING = Absolute Loader

EXECUTION TIME = Bell will ring within 15 seconds with all switches
          down.

STARTING PROCEDURE = Always start at 200.

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

                SW15 = 1 ... HALT ON ERROR
                SW14 = 1 ... SCOPE LOOP
                SW13 = 1 ... INHIBIT PRINTOUT
                SW12 = 1 ... INHIBIT TRACE TRAPPING
                SW11 = 1 ... INHIBIT ITERATIONS OF SUBTEST
                SW10 = 1 ... BELL ON ERROR
                       0 ... BELL ON PASS COMPLETE
                SW09 = 1 ... CORE IMAGE TYPE-OUT (16 BIT WORDS)
                       0 ... FLOATING POINT TYPE-OUT (SIGN, EXPONENT,
                MANTISSA)
                SW08 = 1 ... LOOP ON TEST IN SW(7:0)
                       0 ... LOAD SW(7:0) INTO UB REGISTER

NEW NUMBER = DCQOA

ABSTRACT = Floating point overlay for GTP.

This program is an overlay for GTP and tests the FP11 in all modes with fixed number patterns. It runs with interrupts both enabled and disabled and causes error conditions.

REQUIREMENTS =

    PDP=11/45 standard computer with FP11 option and a minimum of 12K of memory.

STORAGE = The routines use memory 40000 = 57776

LOADING = Absolute Loader (GTP)   = First load GTP
                                       = Then load FP overlay

EXECUTION TIME = See GTP

STARTING PROCEDURE = See GTP

PRINTOUTS = Same as GTP

SWITCH REGISTER OPTIONS = Yes

See GTP

NEW NUMBER = DCKTA

ABSTRACT =

This program and the next (DCKTB) incrementally test the basic logic
functions of the KT11=C memory management option for the PDP=11/45.
They fully test relocation direct and indirect addressing of the
memory management registers, and correct operation of all the bits in
the registers. The various aborts are tested, as is proper "locking"
and "unlocking" of the error tracking logic.

REQUIREMENTS =

        PDP=11/45 with KT11=C option.

STORAGE = Program requires memory locations 0 to 17474.

LOADING = Absolute Loader.

EXECUTION TIME = Each pass takes approximately 1 minute with core
                 memory.

STARTING PROCEDURE = Load address 200.

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

            SW15 = 1 or up ,,, HALT ON ERROR
            SW14 = 1 or up ,,, SCOPE LOOP
            SW13 = 1 or up ,,, INHIBIT PRINTOUT
            SW11 = 1 or up ,,, INHIBIT ITERATIONS
            SW08 = 1 or up ,,, LOAD MICROBREAK REGISTER WITH VALUE IN
                               SW 00=07.

NEW NUMBER - DCKTB

ABSTRACT -

This program and the previous one (DCKTA) incrementally tests the basic logic functions of the KT11-C memory management option for the PDP-11/45. They fully test relocation, direct and indirect addressing of the memory management registers and operation of all the bits in the registers. The various aborts are tested, as is proper "locking" and "unlocking" of the error tracking logic.

REQUIREMENTS -

        PDP-11/45 with KT11-C option.

STORAGE - Program requires memory locations 0 to 17474.

LOADING - Absolute loader.

EXECUTION TIME - Each pass takes approximately 1 minute with core
                memory.

STARTING PROCEDURE - Load address 200.

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

        SW15 = 1 or UP ,,, HALT OF ERROR
        SW14 = 1 or UP ,,, SCOPE LOOP
        SW13 = 1 or UP ,,, INHIBIT PRINTOUT
        SW11 = 1 or UP ,,, INHIBIT ITERATIONS
        SW08 = 1 or UP ,,, LOAD MICROBREAK REGISTER WITH VALUE IN SW
        00-07.

NEW NUMBER = 5CKTC

ABSTRACT = Keys test.

This program checks the operation of each access key for each of the
four Unibus cycles (or combination of cycles) which may reference an
address thru segmentation. These cycles are DATI, DATO (no DATIP),
DATIP=DATO and DATIP DATOB. Each of these cases is tested with and
without memory management enable set, thus eight cases are tested for
each key, SR2, SR1, SR, the corresponding PDR's, and the proper
execution or prevention of execution of the Instruction are checked In
each case.

REQUIREMENTS =

        PDP=11/45 with KT11=C option.

STORAGE = Program requires 5K of memory, starting at location 0.

LOADING = Absolute Loader.

EXECUTION TIME = Each pass takes approximately 1 minute with core
                memory.

STARTING PROCEDURE = Load address 200.

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

          SW15 = 1 or up ... HALT ON ERROR
          SW14 = 1 or up ... SCOPE LOOP
          SW13 = 1 or up ... INHIBIT PRINTOUT
          SW11 = 1 or up ... INHIBIT ITERATIONS
SW08 = 1 or up ... LOAD MICROBREAK REGISTER WITH
                VALUE IN SW00=SW07 (AT START OF TEST ONLY).

NEW NUMBER - DCKTD

ABSTRACT -

Program DCKTD tests the MTPD and MTPI instructions with memory management enabled. (See prog. DCKRO for tests of these instructions without memory management. These instructions are executed in all combinations of current modes and equal or lower heirarchy previous modes.

REQUIREMENTS -

PDP-11/45 with KT11-C (memory management) option installed.

STORAGE - Routine uses memory 0-17777

LOADING - Absolute Loader

EXECUTION TIME - 1 min.

STARTING PROCEDURE - Load address 200.

PRINTOUTS - No

SWITCH REGISTER OPTIONS - Yes

        SW8 = 1 or up ... Load PDP-11/45 micro break register
        SW7 - SW0 .... Value to be loaded

NEW NUMBER = DCKTE

ABSTRACT =

Program DCKTE tests the MFPD and MFPI Instructions with memory
management enabled. (See prog. DCKBO for tests of these Instructions
without MEM management) These Instructions are executed In all
combinations of current modes and equal or lower helrarchy previous
modes.

REQUIREMENTS =

       PDP=11/45 with KT11=C (MEM. management) option Installed.

STORAGE = Routine uses memory 0=17777.

LOADING = Absolute Loader.

EXECUTION TIME = 1 min.

STARTING PROCEDURE = Load address 200

PRINTOUTS = No

SWITCH REGISTER OPTIONS = Yes

       SW 8 = 1 or up ..., LOAD PDP=11/45 MICRO BREAK REGISTER
       SW 7 = SW0 ..,....,. VALUE TO BE LOADED

NEW NUMBER - DCKTF

ABSTRACT - Abort Test

Program DCKTF tests the memory management abort logic. The program is
written to cause a memory management abort at every PDP-11/45 micro
state where a memory reference (bust) is initiated. The program also
tests memory management aborts using floating point instructions.
Aborts are in all cases trapped to the kernel. However, the
instructions causing the abort are executed in all modes (kernel,
supervisor, and user).

REQUIREMENTS -

        PDP-11/45 with KT11-C

STORAGE - Routine uses memory 0 - 17777

LOADING - Absolute Loader

EXECUTION TIME - 1 min.

STARTING PROCEDURE - Load address 200

PRINTOUTS - No

SWITCH REGISTER OPTIONS - Yes

        SW 8 = 1 or up ... LOAD PDP-11/45 MICRO BREAK REGISTER
        SW 7 - SW 0 ....VALUE TO BE LOADED

NEW NUMBER - DCKTG

KT11-C Exerciser

ABSTRACT

This program is an interactive exerciser for a PDP-11/45 equipped with
the KT11-C option. It performs a test of instructions and concurrent
operations of I/O equipment while relocating thru memory. It provides
numerous modes of testing, from 4K execution with the KT11-C turned
off and only one kernel mode in use, to 128K execution with each user
page mapped sequentially to every 4K bank of memory, TC11 and RF11
buffer and code relocation thru all memory, and supervisor mapping of
other I/O devices. This program is not to be considered a total check
of the system. If an error is detected in an I/O device, it will
probably be necessary to correct the malfunction with the respective
diagnostic for that device.

REQUIREMENTS

> PDP-11/45 Standard Computer
> KT11-C Memory Management Option

STORAGE - 0 - 17760

LOADING - Absolute Loader

EXECUTION TIME - System Dependent

STARTING PROCEDURE - Start and Restart at 200

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - No

NEW NUMBER - DBKTA

ABSTRACT -

This program incrementally test the basic logic functions of the KT11-D memory management option for the PDP-11/40. It fully tests relocation direct and indirect addressing of the memory management registers, and correct operation of all the bits in the registers. The various aborts are tested, as is proper "locking" and "unlocking" of the error tracking logic.

REQUIREMENTS -

        PDP-11/40 with KT11-D option

STORAGE - Program requires memory locations 2 to 17474.

LOADING - Absolute Loader.

EXECUTION TIME - Each pass takes approximately 3 minutes with core
                memory.

STARTING PROCEDURE - Load address 200.

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

SW15 = 1 or up ... HALT ON ERROR
SW14 = 1 or up ... SCOPE LOOP
SW13 = 1 or up ... INHIBIT PRINTOUT
SW11 = 1 or up ... INHIBIT ITERATIONS
SW12 = 1 or up ... HALT AT END OF CURRENT TEST WITH NEXT TEST NUMBER
                IN DATA LIGHTS.

NEW NUMBER - DBKTB

ABSTRACT - Keys test.

This program checks the operation of each access key for each of the four Unibus cycles (or combinations of cycles) which may reference an address thru segmentation. These cycles are DATI; DATO (no DATIP); DATIP-DATO and DATIP, DATPB. Each of these cases is tested with and without memory management enable set, thus eight cases are tested for each key, SR0, SR2 and the corresponding PDR's, and the proper execution or prevention of execution of the instruction are checked in each case.

REQUIREMENTS -

        PDP-11/40 with KT11-D option

STORAGE - Program requires 4K of memory, starting at location 0.

LOADING - Absolute Loader.

EXECUTION TIME - Each pass takes approximately 10 seconds with core memory.

STARTING PROCEDURE - Load address 200

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

            SW15 = 1 or up ,,, HALT ON ERROR
            SW14 = 1 or up ,,, SCOPE LOOP
            SW13 = 1 or up ,,, INHIBIT PRINTOUT
            SW11 = 1 or up ,,, INHIBIT ITERATIONS
            SW10 = 1 or up ,,, HALT AT END OF CURRENT TEST WITH NEXT
                               TEST NUMBER IN DATA LIGHTS.

NEW NUMBER - DBKTC

ABSTRACT =

Program DBKTC tests the MTPI and MFPI Instructions with memory management enabled. These Instructions are executed In al combinations of current modes and equal or lower heirarchy previou modes.

REQUIREMENTS =

> PDP-11/40 with KT11-D (memory management) option Installed.

STORAGE = Routine uses memory 0 - 17777

LOADING - Apsolute Loader.

EXECUTION TIME = 3 seconds.

STARTING PROCEDURE = Load address 200

PRINTOUTS = No

SWITCH REGISTER OPTIONS = No

NEW NUMBER = ÕBKTD

ABSTRACT =   .

KT11=D PROCESSOR STATES TEST

This is a test that utilizes the KT11=D memory management   option   and
tests   that   in   two   PDP=11/40 states (kernel, user) instructions are
executed properly,   This test tests traps from one state to the   other
and uses the MFPI/MTPI instructions,

REQUIREMENTS =

PDP=11/4% with KT11=D (Mem',   Mgmt,) installed,

STORAGE = Utilizes 4K of memory,

LOADING =

EXECUTION TIME = One pass takes approximately 1Ø seconds,

STARTING PROCEDURE = 200',

PRINTOUTS =

SWITCH REGISTER OPTIONS = None

NEW NUMBER - DBKTF

ABSTRACT - Abort Test

Program DBKTF tests the memory management abort logic. The Program I
written to cause a memory management abort at every PDP-11/40 micr
state where a memory reference is initiated. Aborts are in all case
trapped to the kernel. However, the instructions causing the abor
are executed in both modes (kernel, and user).

REQUIREMENTS -

        PDP-11/40 with KT11-D

STORAGE - Routine uses memory 0 - 17777

LOADING - Absolute Loader

EXECUTION TIME - 15 seconds

STARTING PROCEDURE - Load address 200

PRINTOUTS - No

SWITCH REGISTER OPTIONS - No

NEW NUMBER = DBKTG

KT11=D Exerciser

ABSTRACT =

This program is an interactive exerciser for a PDP=11/40 equipped with
the KT11=D option. it performs a test of instructions and concurrent
operations of I/O equipment while relocating thru memory. It provides
numerous modes of testing, from 4K execution with the KT11=D turned
off and only kernel mode in use, to 124K execution with each user page
mapped sequentially to every 4K bank of memory, TC11 and RF11 buffer
and code relocation thru all memory.   This program is not to be
considered a total check of the system. If an error is detected in an
I/O device, it will probably be necessary to correct the malfunction
with the respective diagnostic for that device.

REQUIREMENTS =

        PDP=11/40 Standard Computer
        KT11=D Memory Management Option

STORAGE = 0 = 17760

LOADING = Absolute Loader

EXECUTION TIME = 4K about 3 min,, 32K less than an hour

STARTING PROCEDURE = Start and restart at 200

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS =

     At startup, SW settings are!

SW 0 = 1 or up ... RUN WITHOUT KT11=D
SW 1 = 1 or up ... RUN ALL IN KERNEL MODE (INHIBITS RUNNING 4K AS 32K
SW 2 = 1 or up ... INHIBIT RUNNING 28K USER KT11=D FROM EVERY 4K
                   ;BANK (ALLOW NORMAL CORE EXPANSION)
SW 5 = 1 or up ... INHIBIT VARIABLE CORE EXPANSION

     At Halt, SW settings are!

SW 15 = 1 or up ... HALT ON ERROR
SW 14 = 1 or up ... SCOPE LOOP
SW 13 = 1 or up ... INHIBIT PRINT OUT
SW 12 = 1 or up ... INHIBIT TRACE TRAPPING
SW 11 = 1 or up ... INHIBIT SUB=PROGRAM ITERATION AND INHIBIT TESTS
                    ;WHICH USE ALL COMBINATIONS OF NUMBERS
SW 10 = 1 or up ... INHIBIT PROCESSOR TEST

Special delete switches - set respective switch to
a 1 to inhibit initiation of device,

```
SW 0 = 1 ... INHIBIT TTY OUTPUT
SW 3 = 1 ... INHIBIT RK11 DISK
SW 4 = 1 ... INHIBIT LINE CLOCK
SW 5 = 1 ... INHIBIT RF11 DISK
SW 6 = 1 ... INHIBIT TC11 DECTAPE
SW 7 = 1 ... INHIBIT LINE PRINTER
```

MAINDEC-11-D1A-   NEW NUMBER - DZMMA

Basic Address Test (UP)

ABSTRACT

The PDP-11 Basic Address Test is Designed to provide elementary first
level test capable of verifying the operational status of a PDP-11
MM-11-E memory. The test writes the address of each location (within
the test limits) into itself and read verifies that the proper address
has been stored.

REQUIREMENTS -

        PDP-11

STORAGE - 200 - 240

LOADING - Loaded Manually or with Paper Tape

STARTING PROCEDURE - Start and Restart at 200 -
                                        - Lower Limit Location at 017500
                                        - Upper Limit Location at 000236

EXECUTION TIME - Less than one second per pass - no printout

PRINTOUTS - No

SWITCH REGISTER OPTIONS - No

MAINDEC-11-D1B-   NEW NUMBER - DZMMB

Basic Address Test (Down)

ABSTRACT

This test demonstrates that the selected memory test area is capable
of basic read and write operation when address propagation is downward
through memory. This test is a companion test to the basic address.

REQUIREMENTS

    PDP-11

STORAGE - 17307 - 17412

LOADING - Absolute Loader

STARTING PROCEDURE - Start and Restart at 17300

EXECUTION TIME - Approximately 2 sec, per pass no printout

PRINTOUTS - No

SWITCH REGISTER OPTIONS - No

MAINDEC-11-D1C-   NEW NUMBER = DZMMC

No Dual Address Test

ABSTRACT

The no dual address test checks the unique selection of each memory
address tested. The address of each failure location and its contents
are printed on the teletype. Scope loop options are provided to
facilitate any additional diagnostic procedures that may be used in
conjunction with this test.

REQUIREMENTS

        PDP-11

STORAGE = 200 = 3562

LOADING = Absolute Loader

EXECUTION TIME = 6.5 min, for 4K of memory - Bell will ring

STARTING PROCEDURE = Start at 200 for automatic test limits up to 28K
                     Start at 202 for selected test limits

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SW15 = HALT ON ERROR
        SW14 = SCOPE LOOP
        SW13 = INHIBIT PRINTOUT
        SW12 = HALT UPON COMPLETION OF A PASS

MAINDEC=11=D1D=   NEW NUMBER = DZMMD

Basic Memory Patterns Test

ABSTRACT

The basic memory patterns test verifies that the selected memory test
field is capable of writing and reading fixed data patterns. Scope
loop provisions are also available to facilitate further fault
isolation procedures or identifying intermittent failure conditions.

REQUIREMENTS

        PDP=11

STORAGE = 200 = 2352

LOADING = Absolute Loader

EXECUTION TIME = 1 min, = Bell will ring

STARTING PROCEDURE = 200 for automatic test limits = up to 28K
                   = 202 to select test limits
                   = 204 to select special test patterns

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SW15 = HALT ON ERROR
        SW14 = SCOPE LOOP
        SW13 = INHIBIT PRINTOUT
        SW12 = HALT ON END OF PROGRAM
        SW11 = PRINT PATTERN ON END OF PROGRAM

MAINDEC-11-D1E-   NEW NUMBER - DZMME

Memory Moving Ones and Zeroes Test

ABSTRACT

The moving ones and zeroes test verifies the following:

1. The selected test area is capable of writing and reading all
   configurations of a 0 bit moved sequentially through all bit
   positions of all test zone locations.

2. The selected test area is capable of writing and reading all
   configurations of a 1 bit moved sequentially through all bit
   positions of a test zone location.

3. The selected test area is free from regenerate noise
   disturbances for all of the forementioned moving 0 and 1
   conditions. Scope loop options are provided to facilitate
   any additional diagnostic procedures that may be used in
   conjunction with this test.

REQUIREMENTS

        PDP-11

STORAGE - 200 - 3154

LOADING - Absolute Loader

STARTING PROCEDURE - Start at 200 for automatic test limits
                   - up to 28K
                   - Start at 202 for selected test limits

EXECUTION TIME - 1 min. for part 1
               - 4 min. for part 2
               - Bell will ring

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

        SW15 = HALT ON ERROR
        SW14 = SCOPE LOOP
        SW13 = INHIBIT PRINTOUT
        SW12 = HALT ON END OF PROGRAM
        SW11 = PART 2 SWITCH

MAINDEC-11-D1F-   NEW NUMBER = DZMMF

1/s Susceptability Test

ABSTRACT

This test verifies that the cores of a Y axis address strings of the selected memory test zone are not sensitive to 0 read noise propagated along the address string. Scope loop options are provided to facilitate any additional diagnostic procedures that may be used in conjunction with this test.

REQUIREMENTS

        PDP-11

STORAGE = 200 = 2656

LOADING = Absolute Loader

EXECUTION TIME = 1 min. = Bell will ring

STARTING PROCEDURE = 200 with automatic test limits = up to 28K
                    = 202 with selected test limits

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SW15 = HALT ON ERROR
        SW14 = SCOPE LOOP
        SW13 = INHIBIT PRINTOUT
        SW12 = HALT ON END OF PROGRAM

MAINDEC-11-D1G-   NEW NUMBER - DZMMG

Worst Case Noise Test

ABSTRACT

This test generates the maximum amount of plane noise possible during
the execution of memory reference instructions. The noise generated
is distributed across the core plane as an algebraic supplement to the
normal dynamic noise present on the sense lines during memory
read-regenerate operations. Data modification as a result of noise
amplitudes is flagged as an error, with the location and contents
recorded on the teletype. Provisions have been added to include worst
case patterns for interleaved memories.

REQUIREMENTS

        PDP-11

STORAGE - 200 - 2671

LOADING - Absolute Loader

EXECUTION TIME - 1 min. - Bell will ring

STARTING PROCEDURE - 200 with automatic test limits
                   - 202 with selected test limits

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

        SW15 = HALT ON ERROR
        SW13 = INHIBIT PRINTOUT
        SW12 = HALT ON END OF PROGRAM

MAINDEC-11-D1H-   NEW NUMBER = DZMMH

Core Heating Test

ABSTRACT

The core heating test verifies the ability of memory cores within the
test zone to withstand both internal and external heat without
malfunctioning. Heating is limited to the amount of heat that can be
produced by the process of executing memory reference instructions at
the maximum rate. A test feature is provided in the fact that the
heating interval can be set to any specified period to facilitate
specialized heat tests. The test can be run independently of external
devices and does not rely on external interrupts for operational
continuity.

REQUIREMENTS

        PDP-11

STORAGE = 0 - 502

LOADING = Absolute Loader

EXECUTION TIME = 3.5 min, = Bell will ring

STARTING PROCEDURE = 200 with automatic test limits = up to 28K
                   = 202 with selected test limits

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SW12 = HALT ON END OF PROGRAM

MAINDEC-11-D1I-   NEW NUMBER = D2MMI

Randat

ABSTRACT

This test combines a random number generator with a random (location)
exerciser to demonstrate that the memory test zone is capable of
storing random data. The random exerciser provides a read loop
determined by the least significant octal bit of the data in the
location under test to demonstrate compatibility between locations
holding random data. Each error printout lists the error address,
error contents, and correct random data.

REQUIREMENTS

        PDP-11

STORAGE = 200 = 2541

LOADING = Absolute Loader

EXECUTION TIME = 1 min. = Bell will ring

STARTING PROCEDURE = 200 for automatic test limits = up to 28K
                   = 202 for selected test limits

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SW15 = HALT ON ERROR
        SW13 = INHIBIT PRINTOUT
        SW12 = HALT ON END OF PROGRAM

NEW NUMBER - MAINDEC-11-DZMMJ

PDP-11 MEMORY 8K SPECIAL

ABSTRACT

The "8K special" program is designed to allow all PDP-11 memory
diagnostics to reside in the first 4K bank of core. An executive
routine controls execution of all diagnostics selected via the switch
register.

REQUIREMENTS

> PDP-11 with at least 8K of core storage.

STORAGE - The first 4K of core memory is used by the program.

LOADING - Absolute Loader

EXECUTION TIME - Following is a list of approximate run times when
> testing 8K of memory under normal conditions. When testing
> other than 8K, the times expand linearly except for no dual
> addressing and core heating which expand exponentially.

Basic up and down	35 sec
Basic memory patterns	2 min
Moving 1's and 0's	2 min
1's susceptability	2 min
Worst case noise	3 min
Core heating	19 min
Randat	2 min
No dual addressing	40 min

STARTING PROCEDURE - Starting at address 200 and all switches down
> executes all tests.

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

> SW15 = HALT ON ERROR
> SW14 = SCOPE LOOP
> SW13 = INHIBIT PRINTOUT
> SW12 = INHIBIT TEST HEADER
> SW11 = BELL ON ERROR
> SW10 = HALT AT END OF PASS
> SW09 =
> SW08 = SKIP TEST 08 (NO DUAL ADDRESSING)
> SW07 = SKIP TEST 07 (RANDAT)
> SW06 = SKIP TEST 06 (CORE HEATING)
> SW05 = SKIP TEST 05 (WORST CASE NOISE)
> SW04 = SKIP TEST 04 (1's SUSCEPTABILITY)

SW03 = SKIP TEST 03 (MOVING 1's AND 0's)
SW02 = SKIP TEST 02 (BASIC MEM PAT'S)
SW01 = SKIP TEST 01 (BASIC UP AND DOWN)

SEE MAINDEC FOR FURTHER INFORMATION.

NEW NUMBER = DZMMK

ABSTRACT

UP=DOWN ADDRESS TEST

This test demonstrates that the selected memory test area   is   capable
of   basic   read   and write operations when address propagation is both
upward and downward through memory,

REQUIREMENTS

        PDP=11

STORAGE - Routine occupies memory from 100 to 560

LOADING -

EXECUTION TIME - The program will ring the teletype   bell   after   four
                    (4)   passes   through   the   program   which   is
                    approximately once per minute with 4K of memory   and
                    test limits set under program control.

STARTING PROCEDURE - 200

PRINTOUTS - No

SWITCH REGISTER OPTIONS - Yes

        SW12 = 1 OR UP,,,HALT AT END OF TEST

NEW NUMBER =

MAINDEC=11=DZQMA

MEMORY EXERCISER using input-output devices

ABSTRACT

This program checks bank selection, EA bits, and memory using any NPR device with EA bits. It runs stand alone or with KT11C or KT11D to access extend memory. Worst case noise patterns are used with the NPR device to test the memory.

REQUIREMENTS

PDP-11 standard computer with a minimum of 8K of memory KT11C/D for memory expansion (optional).

STORAGE - The routines use memory 0 - 17776

LOADING - Absolute Loader

EXECUTION TIME - The execution time is dependant on the amount of memory and the device used. The bell should ring within 20 minutes (using DM11 at 110 BAUD in 124K).

STARTING PROCEDURE -

1. Start at 200
2. Type device (RF11,RK11,RP11,RC11,TC11,TM11,DM11, or DR11B) and RETURN.

3. Test will start (+C will return to step 2 and restore the loader).
         OR
1. Start at 200
2. Type a RETURN
3. Type a lower bank to be tested ,. 1=20000-37777 etc.
4. Type the upper bank to be tested
5. Type device (RF11,RK11,RP11,RC11,TC11,TM11,DM11, or DR11B) and RETURN
6. Test will start (+C will return to step 2 and restore the loader)

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

        SW15 = HALT ON ERROR
        SW14 = HANG ON CURRENT BANK
        SW13 = INHIBIT PRINTOUT
        SW10 = INHIBIT BELL ON PASS COMPLETE
        SW09 = INHIBIT USE OF MEMORY EXPANSION DEVICE

SW28 = TRACE BANK UNDER TEST

MAINDEC-11-DZQMB

0-124K MEMORY EXERCISER

ABSTRACT

Program DZQMB tests contiguous memory address from 000000 to 757776.
It verifies that each address is unique (an address test) and that
each memory location can be read/written reliably (worst case noise
tests).

REQUIREMENTS

        PDP-11 family processor
        optional...
        KT11-C or KT11-D memory management option

STORAGE - The routine uses memory 0-17777

LOADING - Absolute Loader

EXECUTION TIME = 4K - 1 min, 128K -32 min.

STARTING PROCEDURE - Start at 200
                     The program will loop and ring bell on completion

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

        SW15 = 1 OR UP ,., HALT ON ERROR

                        NOTE
            IF SW15=1 WHEN AN ERROR OCCURS THE
            PROGRAM WILL HALT;   IF SW15 IS RAISED
            AFTER THE ERROR TYPEOUT BEGINS   THE
            PROGRAM WILL HALT WHEN THE TYPEOUT
            COMPLETES.

        SW19 = 1 OR UP ,., LOOP SUBTEST
        SW13 = 1 OR UP ,., INHIBIT ERROR TYPEOUT
        SW11 = 1 OR UP ,., INHIBIT SUBTEST ITERATION
        SW10 = 1 OR UP ,., RING BELL ON ERROR
        SW08 = 1 OR UP ,., LOAD PDP-11/45 MICRO BREAK REGISTER
        SW07 - SW00   ,., VALUE TO BE LOADED

MAINDEC-11-D6B-   NEW NUMBER - DZAAA

AA11 DAC Calibration

ABSTRACT

This program assists in the testing and calibration of the AA11
Digital to Analog Converter. Provisions are included for a PDP-11
System with up to 4 AA-11 DAC's. The program is divided into four
sections: DAC Test, RAMP, Square Wave, and Calibrate.

REQUIREMENTS

        PDP-11
        AA11 Digital to Analog Converter Subsystem with up to 4
        Converter Modules

STORAGE - 0 - 1510

LOADING - Absolute Loader

EXECUTION TIME - Not applicable

STARTING PROCEDURE - 200 for DAC Test
                   - 204 for RAMP
                   - 210 for Square Wave
                   - 214 for Calibrate

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - NO

MAINDEC-11-D6C-   NEW NUMBER - DZAAB

AA11-A,B,C Scope Control Test

ABSTRACT

This program tests the AA1-A,B,C Scope Control, X and Y axis DAC's and
each of the three available scopes (TEKTRONIX 611 Storage display
unit, TEKTRONIX RM503 Oscilloscope, or VR12 Point Plot Display).

REQUIREMENTS

        PDP-11
        AA11-D DAC control with an AA11-A,B or C scope control

STORAGE - 0 - 4222

LOADING - Absolute Loader

EXECUTION TIME - Bell will ring - Phosphor & Erase Test
                               - 2 Min, 15 sec
                               - CSR Test - 30 Sec,
                               - All other tests - Not applicable

STARTING PROCEDURE

        Non Store Scopes   Storage Scopes

200 - Command & Status Register   234 - Display Horizontal Line
204 - Display Horizontal Line   240 - Display Vertical Line
210 - Display Vertical Line   244 - Display Square
214 - Display Square   250 - Display X
220 - Display X   254 - Display Alpha-Numeric Charac,
224 - Display Low & High Intensity   260 - Phosphor & Erase (1st, Quad,)
230 - Display Alpha-Numeric Charac,264 - Phosphor & Erase (3rd Quad,)

PRINTOUTS - No

SWITCH REGISTER OPTIONS - No

MAINDEC-11-D6A-   NEW NUMBER - DZABD

AD01-D Diagnostic Test

ABSTRACT

This test is to be used as an A/D Diagnostic for the PDP-11 with the
AD01-D Converter. It tests all logic functions of the converter with
previsions for testing drift, calibration, differential linearity, and
repeatability as well.

REQUIREMENTS

        PDP-11.
        AD01-D A/D Converter
        Calibrated DC Voltage Source

STORAGE - 0 - 16520

LOADING - Absolute Loader

EXECUTION TIME - When trace trapping, one pass takes about 90 sec.
               - When not trace trapping, one pass takes about 30 sec.
               - Bell rings at end of each pass.

STARTING PROCEDURE

        200 - Normal (Worst Case) Test
        210 - Restart Address (Normal)
        220 - Display Conversion Loop
        230 - External Conversion Loop
        240 - Fast Ext. Conversion Loop
        250 - Conversion Print Loop
        260 - Single Test Loop
        270 - Multiplexer Channel & Repeatability Test
        300 - Statistical Repeatability Test

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

        SW15 - HALT ON ERROR
        SW14 - SCOPE
        SW13 - INHIBIT PRINTOUT
        SW12 - INHIBIT TRACE TRAPPING
        SW11 - INHIBIT SUB-PROGRAM ITERATION
        SW10 - INHIBIT AVERAGING
        SW09 - INHIBIT + OR -1 LSB TESTING
        SW08 - TEST SIGN OPTION

NEW NUMBER = DZADA

AD02/AD11 Diagnostic Test

ABSTRACT =

This diagnostic tests and exercises the AD02/AD11. The program is
self-starting and when loaded, will type out the program title and
then request and A/D length. The program will accept a 10 to 13 bit
unipolar or bipolar input. Example: 10(CR)* would indicate a 10 bit
unipolar A/D; typing 11+ (CR) would indicate an 11 bit bipolar A/D. A
sentence is then typed giving the letter designators to be typed to
run any one of the six (6) separate tests of which this program is
comprised. The program then types a "CR" and then waits in a keyboard
monitor mode for a letter to be typed. Although these tests may be
run in any order, it is imperative that the "logic" test is run first
and proved fully operational.

The program is set up to give the operator as much control over the
program as possible via the teletype. Typing a "*C" (obtained via
typing the "CNTR" and "C" keys simultaneously) while running any test
will enable the program to return to the keyboard monitor and await a
new letter designator to be typed. Typing a "*A" while in monitor
mode will enable the letter designators to be retyped.

REQUIREMENTS

        PDP=11
        AD02/AD11 Analog to Digital Converter

STORAGE =

LOADING = Absolute Loader

EXECUTION TIME = 1 min.

STARTING PROCEDURE = Start at 200, Restart at 174

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = No

MAINDEC-11-D6E-   NEW NUMBER - DZAFA

AFC11 Diagnostic

ABSTRACT

This program is a diagnostic and exerciser for the AFC-11 low level
analog multiplexer system. The program is composed of four sections:

         1. AFC-11 Interface Logic Test
         2. AFC-11 Data Repeatability Test
         3. Calibration and Adjustment Routines
         4. Data Collection Routines

REQUIREMENTS

         PDP-11 with ASR-33 Teletype (or equivalent)
         Adjustable precision voltage source, EDC   MV100M,   or
         equivalent
         Oscilloscope, Textronix 453 or equivalent with direct probes
         Digital test cable must be installed
         Triangle wave generator, WAVETEC VCG 111, or equivalent
         (Optional - required to monotonicity test)

STORAGE - Requires 4K of memory and will use up to 8K if available

LOADING - Absolute Loader

STARTING PROCEDURE

         Load Address 200
         Clear Switches
         Press Start Key

The program will respond by typing "AFC-11 DIAGNOSTIC XXXX CHANNELS
CAN BE TESTED -A-D LENGTH!" The program will wait for the operator to
enter the number of data bits (not including sign) of the A-D
converter followed by altmode. When this has been done, the program
will type "." to indicate that it has entered the keyboard monitor
mode.

XXXX = Maximum number of channels that can be tested sequentially by
the data repeatability test.

Type Logic (ALTMOD)

Program will begin execution of logic test. Program types logic at
end of pass.

EXECUTION TIME = Approximately 3 min. for 2 typeouts or logic

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

MAINDEC-11-D8C- (For In-House Use Only)   NEW NUMBER - DZBM0

M792 (ROM Diode Matrix)

ABSTRACT

The M792 diagnostic programs are written to be used as an aid to
hardware debugging and maintenance of the M792 ROM Diode Matrix Board.
These programs may also be used as a data reliability test. The
available tests are:

        PRG0 - Logic Tests
        PRG1 - ROM Data Dump
        PRG2 - Single ROM Address Read Data Loop

REQUIREMENTS

        PDP-11
        M792

STORAGE - 0 - 4040 (8)

LOADING - Absolute Loader

EXECUTION TIME - 4 sec. - Printout will occur

STARTING PROCEDURE - Start at 200
                     Restart at 204

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - No

MAINDEC-11-D1J-   NEW NUMBER - DZBMA

M792-YA Paper Tape Bootstrap Loader

ABSTRACT

The M792-YA Diagnostic Programs are written to be used as an aid to
hardware debugging and maintenance of the M792-YA (paper tape
bootstrap loader). These programs may also be used as a data
reliability test.

The available tests are:

        PRG0 - Logic Tests
        PRG1 - ROM DATA DUMP
        PRG2 - Single ROM address read data loop

REQUIREMENTS

        PDP-11
        M792-YA

STORAGE - 0 - 4040

LOADING - Absolute Loader

EXECUTION TIME - 5 sec. - Printout will occur

STARTING PROCEDURE - START AT 200
                     RESTART AT 210

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

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

MAINDEC-11-D1K-   NEW NUMBER - DZBMB

M792-YB (Dectape & Disk Bootstrap Loader)

ABSTRACT

The M792-YB Diagnostic Programs are written to be used as an aid to
hardware debugging and maintenance of the M792-YB (dectape and disk
bootstrap loader). These programs may also be used as a data
reliability test.

The available tests are:

        PRG0 - Logic Tests
        PRG1 - ROM DATA DUMP
        PRG2 - Single ROM Address Read Data Loop

REQUIREMENTS

        PDP-11
        M792-YB

STORAGE - 0 - 4040

LOADING - Absolute Loader

EXECUTION TIME - 4 sec. - Printout will occur.

STARTING PROCEDURE - Start at 200
                     Restart at 210

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

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

NEW NUMBER = MAINDEC=11=DZBMC

BM792YC (CARD READER BOOTSTRAP LOADER)

ABSTRACT

The DZBMC diagnostic program is written to be used as an aid to hardware debugging and maintenance of the BM792YC module (card reader bootstrap loader). These programs may also be used as a data reliability test.

The available tests are

           PRG0 = Logic Tests
           PRG1 = ROM DATA DUMP
           PRG2 = Single ROM Address Read Data Loop

REQUIREMENTS

           PDP=11, M792YC

STORAGE = Core 2=4040(8)

LOADING = Absolute Loader

EXECUTION TIME = 5 sec. = Printout will occur

STARTING PROCEDURE = Start at 200
                     Restart at 210

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

           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

NEW NUMBER - DZMBH

BM792YH CASSETTE BOOTSTRAP LOADER

ABSTRACT

The DZBMH diagnostic program is written to be used as an aid to
hardware debugging and maintenance of the BM792YH CASSETTE BOOTSTRAP
LOADER. This program may also be used as a data reliability test

The available tests are:
     PRG0 - Logic Tests
     PRG1 - ROM DATA DUMP
     PRG2 - Single ROM Address Read Data Loop.

REQUIREMENTS

     1. PDP 11 FAMILY CENTRAL PROCESSOR
     2. BM792-YH MODULE

STORAGE - This program uses core 0-4100 (8)

LOADING -

EXECUTION TIME -

STARTING PROCEDURE - 200

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

          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

NEW NUMBER = DZCBA

CB11 Teleplant Monitor Diagnostic

ABSTRACT

This program tests the CB11 system scan modules are explicitly tested
via maintenance mode (which is therefore also explicitly tested).
Distribute modules are explicitly tested in a direct read/write
manner.

In addition, both scan and distribute boards may be implicitly tested
whenever two distribute boards are jumped in such a way as to drive
one scan board and when the program is called to run this type of
testing.

REQUIREMENTS

    1. Any PDP-11, a TTY, and a line clock KW11L or KW11P.
    2. A CB11 device.
    3. The user inputs to scan and distribute modules must be
       disconnected ***
       *** If item 3 is not strictly adhered to, the results to the
       program or to the hardware is unspecified. ***

STORAGE = 0-17776

LOADING = Absolute Loader

EXECUTION TIME = Function of Hardware

STARTING PROCEDURE = 200

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SW15 = HALT ON ERROR
        SW14 = SCOPE LOOP
        SW13 = INHIBIT PRINTOUT
        SW12 = INHIBIT TRACE TRAPPING
        SW11 = INHIBIT ITERATION
        SW06 = INHIBIT STATUS TYPEOUTS IN SCOPE LOOP
        SW05 = RING BELL AND PASS COUNT AT END OF EACH PASS
        SW04 = DYNAMIC STATUS TYPEOUT
        SW03 = INHIBIT TTY QUERIES
        SW02 = SHORTEN ALL TIME DELAYS BY 10%
        SW01 = LENGTHEN ALL TIME DELAYS BY 10%
        SW00 = PRINT ONLY PROGRAM COUNTER ON ERROR

NEW NUMBER - DZCBO

CB11 GTR/CTP Overlay

ABSTRACT

This program runs as a background (non-interrupting) overlay, supported by CTP or GTP test program,

This program tests the CB11 system, Scan modules are explicitly tested via maintenance mode; (maintenance mode is also explicitly tested) distribute modules are explicitly tested in a direct read/write manner,

REQUIREMENTS

        PDP-11 standard computer
        12K of memory
        Console TTY
        CB11

STORAGE - 40002 to 57002

LOADING - Absolute Loader

EXECUTION TIME - a function of the PDP-11 processor used and the number of devices selected for testing

STARTING PROCEDURE - 200

PRINTOUTS - Same as GTP/CTP

SWITCH REGISTER OPTIONS - Same as GTP/CTP

NEW NUMBER - MAINDEC-11-DZCDA

CD11 CARD READER DIAGNOSTIC

ABSTRACT

This program is to be used as a card reader diagnostic for the PDP-11 with the DC11 card reader interface to the Documentation M 1000 punched card reader. It tests all logic functions of the card reader, and includes an exerciser for alphanumeric and binary test decks. A separate starting address allows the error sensing functions of the Documentation M 1000 reader to be checked. Another starting address tests special decks which have all columns and cards punched identically, to aid in diagnosing special problems.

REQUIREMENTS

         PDP-11
         CD11 Card Reader

STORAGE - Memory 0 to 15000.

LOADING - Absolute Loader

EXECUTION TIME = 30 sec.

STARTING PROCEDURE - Load adr 200
                     Set dynamic switch settings
                     Start

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

SW15 = 1 OR UP HALT ON ERROR
SW14 = 1 OR UP SCOPE LOOP
SW13 = 1 OR UP INHIBIT PRINT OUT
SW12 = 1 OR UP INHIBIT TRACE TRAPPING
SW11 = 1 OR UP INHIBIT SUB-PROGRAM ITERATION
SW07 = 1 OR UP LOOP THRU THE INSTRUCTION TEST PORTION (NOTE THAT THE
                PROCESSOR MAY HANG LEGITIMATELY WHEN THE INPUT HOPPER
                GOES EMPTY IF SW7 IS SET)
SW06 = 1 OR UP RETURN TO THE BEGINNING OF THE INSTRUCTION TEST WHEN
                CONTINUING FROM ONE DECK TO ANOTHER
SW05 = 1 OR UP HALT BETWEEN TEST DECKS
SW04 = 1 OR UP RUN THE BINARY TEST DECK
SW03 = 1 OR UP RUN IN IMAGE MODE ONLY
SW02 = 1 OR UP RUN IN PACKING MODE ONLY

MAINDEC-11-D2F-   NEW NUMBER = DZCMA

CM11 Diagnostic Test

ABSTRACT

This test is to be used as a card reader diagnostic for the PDP-11
with the CM11 Card Reader. It tests all logic functions of the card
reader, and includes an exerciser for alphanumeric, binary, and
checkerboard test decks. A separate starting address allows the error
sensing functions of the reader to be checked. Another starting
address tests special decks which have all columns and cards punched
or marked identically, to aid in diagnosing special problems.

REQUIREMENTS

        PDP-11
        CM11 Card Reader

STORAGE - 0 - 15100

LOADING - Load with Absolute Loader

EXECUTION TIME - Depends on which test is being done. Easily monitored [
                watching the cards feed thru the reader.
                - Bell will ring at end of pass.

STARTING PROCEDURE -Load one test deck in the card reader input
                hopper.
                Press motor start and read start.
                Set switch register to starting address.
                Load address.
                Set switches all down.
                Press start.
                When the input hopper is empty the program will
                hang waiting for an interrupt from the card
                reader. Load one or more test decks into the
                input hopper. Pressing "MOTOR START" and "READ
                START" on the card reader should cause program
                execution to resume. This entire sequence is
                necessary to run the full test on the card
                reader.

COMMENTS - Note that certain switch settings may cause errors to occur
                although the reader is functioning correctly. See the
                document section (4.1) before using any switch register
                settings other than all switches down.

NEW NUMBER = DZCMB

CM11F Diagnostic Test with the documentation OM-200 Card Reader <80
column>

ABSTRACT

This test is to be used as a card reader diagnostic for the PDP-11
with the CM11F Card Reader. It tests all logic functions of the Card
Reader, and includes an exerciser for punch alphanumeric, punch
binary, and mark sense binary test decks.   A separate starting
address allows the error sensing functions of the reader to be
checked.   Another starting address tests special decks which have all
columns and cards punched or marked identically, to aid in diagnostic
special problems.

REQUIREMENTS

        PDP-11 STANDARD COMPUTER
        CM-11F CARD CONTROLLER
        CM-11FA,FB CARD READER DOCUMENTATION MODEL OM-200 <80
         COLUMN>.

STORAGE - THE ROUTINE USES MEMORY 0 TO 16000.

LOADING -

EXECUTION TIME = Not Applicable

STARTING PROCEDURE
        200 = INSTRUCTION AND DATA SET
        210 = PICK FUNCTION TEST
        220 = ERROR FUNCTION TEST
        240 = SINGLE SUBTEST LOOP
        250 = READ SINGLE DATA PATTERN TEST

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SW15=1 OR UP...HALT
        SW14=1 OR UP...SCOPE LOOP
        SW13=1 OR UP...INHIBIT PRINT OUT
        SW12=1 OR UP...INHIBIT TRACE TRAPPING
        SW11=1 OR UP...INHIBIT SUB-PROGRAM ITERATION
                (NOTE THAT IF SW11 IS SET, THE CARD COUNT
                WILL BE ALTERED, CAUSING FAILURES IN THE
                DATA TEST SECTION.
        SW07=1 OR UP...LOOP THRU THE INSTRUCTION TEST PORTION
                (NOTE THAT THE PROGRAM MAY HANG LEGITIMATELY
                WHEN THE INPUT HOPPER GOES EMPTY IF SW7 IS
                 SET)

SW06=1 OR UP'...RETURN TO THE BEGINNING OF THE INSTRUCTION
                TEST
                WHEN COUNTING FROM ONE DECK TO ANOTHER
SW05 OR UP,.'HALT BETWEEN TEST DECKS
                (SEE 5.2.1 FOR EXPLANATION OF SW5=0)
SW034=1 OR UP,,.RUN THE PUNCHED BINARY TEST DECK (UNLESS
                SW03 IS SET)
SW03=1 OR UP'...RUN THE MARKSENSE BINARY TEST DECK

MAINDEC-11-D9C-   NEW NUMBER - DZCRA

CR11 Diagnostic Test

ABSTRACT

This test is to be used as a card reader diagnostic for the PDP-11
with the CR11 card reader. It tests all logic functions of the card
reader and includes an exerciser for alphanumeric and binary test
decks. A separate starting address allows the error sensing functions
of the C.D.I. or Documentation Reader to be checked. Another starting
address tests special decks which have all columns and cards punched
identically, to aid in diagnosing special problems.

REQUIREMENTS

        PDP-11
        CR11 Card Reader

STORAGE - 0 - 15730

LOADING - Absolute Loader

EXECUTION TIME - Depends on test being run. Easily monitored by
                watching the cards feed thru the reader.
                - Bell will ring.

STARTING PROCEDURE - Load one test deck in the card reader input
                hopper.
                Press motor start and read start.
                Set switch register to starting address.
                Load Address.
                Set switches all down.
                Press start.
                When the input hopper is empty the program will
                hang waiting for an interrupt from the card
                reader. Load one or more test decks into the
                input hopper. Pressing "MOTOR START" and "READ
                START" on the card reader should cause program
                execution to resume. This entire sequence is
                necessary to run the full test on the card
                reader.

PRINTOUTS - No

SWITCH REGISTER OPTIONS - Yes

SW15 = HALT ON ERROR   SW7 = LOOP THRU INST. TEST
SW14 = SCOPE LOOP   SW6 = RETURN TO BEGINNING OF TEST
SW13 = INHIBIT PRINTOUT   SW5 = HALT BETWEEN TEST DECKS
SW12 = INHIBIT TRACE TRAP.   SW4 = RUN BINARY TEST DECK
SW11 = INHIBIT SUB-PROGRAM ITERATION

COMMENTS - Note that certain switch register settings may cause errors
to occur although the reader is functioning. See the
document (Section 4.1) for description of these effects;

MAINDEC-11-D9A-   NEW NUMBER = DZDCA

DCI1 Off Line Test

ABSTRACT

Two separate diagnostic programs are provided for the DC-11
(Asyncronous Modem Interface), MAINDEC-11-D9A- (DC-11 Off Line Tests)
and MAINDEC-11-D9B- (DC-11 On Line Tests). The Off Line Tests test all
DCI1 logic and may be used to individually test up to 16 DC-11's. The
Off Line Tests do not require the use of a modem; however, a special
Jumper connector is required. The on line tests are essentially data
reliability tests requiring the use of modems and a suitable terminal
device. Available tests are:

            PRG0 = Input/Output logic tests
            PRG1 = Transmitter scope loop
            PRG2 = Receiver scope loop
            PRG3 = Single character maint. mode data test
            PRG4 = Special binary countmaint. mode data test

REQUIREMENTS

            PDP-11
            DC11
            Special Jumper Connector (See DCI1 Maintenance Manual for
            detailed description)

STORAGE = All of 4K except area reserved for the bootstrap and
            absolute loaders

LOADING = Absolute Loader

STARTING PROCEDURE = Start and Restart at 200

EXECUTION TIME = 4 Min. (No Iterations)

PRINTOUTS = No

SWITCH REGISTER OPTIONS = Yes

            SW0 = 6 = ROUTINE TO BE RUN
            SW8 = DISABLE STALL MODE
            SW9 = LOOP SELECTED ROUTINE
            SW10 = HALT AT END OF PROGRAM
            SW11 = INHIBIT ITERATION
            SW13 = INHIBIT PRINTOUT
            SW14 = SCOPE
            SW15 = HALT ON ERROR

MAINDEC-11-D9B-   NEW NUMBER - DZDCB

DC11 On Line Tests

ABSTRACT

Two separate diagnostic programs are provided for the DC-11
(Asynchronous Modem Interface), MAINDEC-11-D9A- (DC-11 Off Line Tests)
and MAINDEC-11-D9B- (DC-11 On Line Tests). The Off Line Tests test all
DC11 logic and may be used to individually test up to 16 DC-11's. The
Off Line Tests do not require the use of a modem; however, a special
jumper connector is required. The on line tests are essentially data
reliability tests requiring the use of modems and a suitable terminal
device.

REQUIREMENTS

        PDP-11
        DC11 (s)

STORAGE - This program uses all of 4K except that area reserved for
          the bootstrap and absolute loaders.

LOADING - Absolute Loader

EXECUTION TIME - Dependent on baud rate selected in tests (2 min, 110
                 Baud).

STARTING PROCEDURE - Start and Restart at 200

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

        SW15 = HALT ON ERROR
        SW14 = SCOPE LOOP
        SW13 = INHIBIT PRINTOUT
        SW12 = INHIBIT TRACE TRAP
        SW11 = INHIBIT ITERATION

NEW NUMBER = DZDHA

DH11 Static Logic Test

ABSTRACT

The DH11 static logic test is designed to provide a means for testing
the correct function of all read/write bits in the following DH11
registers:

        DH11 system control register
        DH11 line parameter register
        DH11 break control register
        DH11 silo status register

In addition, tests are provided to check the function of those bits
that are read only in maintenance mode. Also provided are tests of
register addressability and of the function of master clear.

The diagnostic has been written so that the testing of each function
is contained in an individual test loop.

REQUIREMENTS

        PDP-11 family standard computer with 4KW of memory
        ASR-33 teletype or equivalent
        DH11 asynchronous multiplexer
        DH11 maintenance card installed

STORAGE - Programs loads into 4KW of memory

LOADING - Absolute Loader

EXECUTION TIME = 1 minute per device

STARTING PROCEDURE - start at 200
                     restart at 2000

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS -

        SW15 = HALT ON ERROR
        SW14 = LOOP ON CURRENT TEST
        SW13 = SUPPRESS ERROR TYPEOUT
        SW11 = INHIBIT ITERATIONS
        SW10 = ESCAPE TO NEXT TEST ON ERROR
        SW09 = FREEZE VARIABLE PARAMETER IN CURRENT TEST
        SW01 = START PROGRAM AT SELECTED TEST
        SW00 = CHANGE PARAMETERS AT PROGRAM RESTART

NEW NUMBER = DZDHB

DH11 Memory Test

ABSTRACT

The DH11 memory test is a test of the BYTE count and bus address
memories of the DH11. Each memory is tested for addressability and
data read/write capability.

Requirements

>   PDP-11 family standard computer with 4KW of memory
>   ASR-33 teletype or equivalent
>   DH11 asynchronous multiplexer
>   DM11 maintenance card installed

STORAGE - program loads into 4KW of memory

LOADING - Absolute Loader

EXECUTION TIME - Less than 30 minutes

STARTING PROCEDURE - start at 200
>   restart at 2000

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

>   SW15 = HALT ON ERROR
>   SW14 = LOOP ON CURRENT TEST
>   SW13 = SUPPRESS ERROR TYPEOUT
>   SW11 = INHIBIT ITERATIONS
>   SW10 = ESCAPE TO NEXT TEST ON ERROR
>   SW09 = FREEZE VARIABLE PARAMETER IN CURRENT TEST
>   SW01 = START PROGRAM AT SELECTED TEST
>   SW00 = CHANGE PARAMETERS AT PROGRAM RESTART

NEW NUMBER = DZDHC

DH11 Transmitter and Receiver Logic Test

ABSTRACT

The DH11 transmitter and receiver logic test checks the basic transmitter and receiver functions. Functions tested include interrupts, operation of transmitter NPR logic, and operation of receiver silo logic.

REQUIREMENTS

> PDP-11 family standard computer with 4KW of memory
> ASR-33 teletype or equivalent
> DH11 asynchronous multiplexer
> DM11 maintenance card installed

STORAGE = program loads into 4KW of memory

LOADING = Absolute Loader

EXECUTION TIME = 1 minute per device

STARTING PROCEDURE = start at 200
> restart at 2000

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

> SW15 = HALT ON ERROR
> SW14 = LOOP ON CURRENT TEST
> SW13 = SUPPRESS ERROR TYPEOUT
> SW11 = INHIBIT ITERATIONS
> SW10 = ESCAPE TO NEXT TEST ON ERROR
> SW09 = FREEZE VARIABLE PARAMETER IN CURRENT TEST
> SW01 = START PROGRAM AT SELECTED TEST
> SW00 = CHANGE PARAMETERS AT PROGRAM RESTART

NEW NUMBER = DZDHD

DH11 Speed Selection Logic Test

ABSTRACT

The DH11 speed selection logic test verifies that the speed selection
functions of the line parameter register operate properly for each
transmitter and receiver line. Transmitter timing is checked first,
and then receiver timing is tested.   The program uses a relative
timing comparison to determine if line speed selection is correct.

NOTE!
The external clock functions   (speed
codes 16 and 17) are not tested.

REQUIREMENTS

PDP=11 family standard computer with 4KW of memory
ASR=33 teletype or equivalent
DH11 asynchronous multiplexer
DM11 maintenance card installed

STORAGE = program loads into 4KW of memory

LOADING = Absolute Loader

EXECUTION TIME = Less than 30 minutes per device

STARTING PROCEDURE = start at 200
                     restart at 2000

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

SW15 = HALT ON ERROR
SW14 = LOOP ON CURRENT TEST
SW13 = SUPPRESS ERROR TYPEOUT
SW11 = INHIBIT ITERATIONS
SW10 = ESCAPE TO NEXT TEST ON ERROR
SW09 = FREEZE VARIABLE PARAMETER IN CURRENT TEST
SW01 = START PROGRAM AT SELECTED TEST
SW00 = CHANGE PARAMETERS AT PROGRAM RESTART

NEW NUMBER - DZDHE

DH11 Character Length and Basic Data Test

ABSTRACT

The DH11 character length and basic data test verifies that character
length can be selected correctly on each line and that the correct
line number and character status are received on each line selected
for transmission.

REQUIREMENTS

        PDP-11 family standard computer with 4KW of memory
        ASR-33 teletype or equivalent
        DH11 asynchronous multiplexer
        DM11 maintenance card installed

STORAGE - Program loads into 4KW of memory

LOADING - Absolute Loader

EXECUTION TIME -

STARTING PROCEDURE - starts at 200
                     restarts at 2000

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

        SW15 = HALT ON ERROR
        SW14 = LOOP ON CURRENT TEST
        SW13 = SUPPRESS ERROR TYPEOUT
        SW11 = INHIBIT ITERATIONS
        SW10 = ESCAPE TO NEXT TEST ON ERROR
        SW09 = FREEZE VARIABLE PARAMETER IN CURRENT TEST
        SW01 = START PROGRAM AT SELECTED TEST
        SW00 = CHANGE PARAMETERS AT PROGRAM RESTART

NEW NUMBER = DZDHF

DH11 Single Line Data Test

The DH11 single line data test verifies that all characters (0-377)
each line can transmit and recieve at all speeds (8 bits per
character) and all character lengths (at a speed of 9600 baud).

REQUIREMENTS

        PDP-11 family standard computer with 4KW of memory
        ASR-33 teletype or equivalent
        DH11 asynchronous multiplexer
        DH11 maintenance card installed

STORAGE - program loads into 4KW of memory

LOADING - Absolute Loader

EXECUTION TIME = 54 minutes per device

STARTING PROCEDURE - start at 200
                     restart at 2000

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

        SW15 = HALT ON ERROR
        SW14 = LOOP ON CURRENT TEST
        SW13 = SUPPRESS ERROR TYPEOUT
        SW11 = INHIBIT ITERATIONS
        SW10 = ESCAPE TO NEXT TEST ON ERROR
        SW09 = FREEZE VARIABLE PARAMETER IN CURRENT TEST
        SW01 = START PROGRAM AT SELECTED TEST
        SW00 = CHANGE PARAMETERS AT PROGRAM RESTART

NEW NUMBER = DZDHG

DH11 Multi-line Data Test

ABSTRACT

The DH11 multi-line data test transmits binary count patterns on all
16 lines simultaneously,

REQUIREMENTS

        PDP-11 family standard computer with 4KW of memory
        ASR-33 teletype or equivalent
        DH11 asynchronous multiplexer
        DM11 maintenance card installed

STORAGE = program loads into 4KW of memory

LOADING = Absolute Loader

EXECUTION TIME = 5 minutes per device

STARTING PROCEDURE = start at 200
                     restart at 2000

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SW15 = HALT ON ERROR
        SW14 = LOOP ON CURRENT TEST
        SW13 = SUPPRESS ERROR TYPEOUT
        SW11 = INHIBIT ITERATIONS
        SW10 = ESCAPE TO NEXT TEST ON ERROR
        SW09 = FREEZE VARIABLE PARAMETER IN CURRENT TEST
        SW01 = START PROGRAM AT SELECTED TEST
        SW00 = CHANGE PARAMETERS AT PROGRAM RESTART

NEW NUMBER = DZDHH

DH11 Auto-echo Test

ABSTRACT

The DH11 auto echo logic test verifies the functions of the auto echo
logic of the DH11 transmitter and receiver.

REQUIREMENTS

        PDP-11 family standard computer with 4KW of memory
        ASR-33 teletype or equivalent
        DH11 asynchronous multiplexer
        DM11 maintenance card installed

STORAGE = program loads into 4KW of memory

LOADING = Absolute Loader

EXECUTION TIME = In response to user command

STARTING PROCEDURE = start at 200
                     restart at 2000

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SW15 = HALT ON ERROR
        SW14 = LOOP ON CURRENT TEST
        SW13 = SUPPRESS ERROR TYPEOUT
        SW11 = INHIBIT ITERATIONS
        SW10 = ESCAPE TO NEXT TEST ON ERROR
        SW09 = FREEZE VARIABLE PARAMETER IN CURRENT TEST
        SW01 = START PROGRAM AT SELECTED TEST
        SW00 = CHANGE PARAMETERS AT PROGRAM RESTART

NEW NUMBER = DZDHI

DH11 Break and Half-Duplex Test

ABSTRACT

Checks the break control logic of the DH11 and verifies that the uarts receive only one break character on a given line no matter how long break is asserted. The test also verifies that no characters are received on a line if the half duplex function for that line is selected.

REQUIREMENTS

        PDP-11 family standard computer with 4KW of memory
        ASR-33 teletype or equivalent
        DH11 asynchronous multiplexer
        DM11 maintenance card installed

STORAGE - program loads into 4KW of memory

LOADING - Absolute Loader

EXECUTION TIME -

STARTING PROCEDURE - start at 200
                     restart at 2000

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

        SW15 = HALT ON ERROR
        SW14 = LOOP ON CURRENT TEST
        SW13 = SUPPRESS ERROR TYPEOUT
        SW11 = INHIBIT ITERATIONS
        SW10 = ESCAPE TO NEXT TEST ON ERROR
        SW09 = FREEZE VARIABLE PARAMETER IN CURRENT TEST
        SW01 = START PROGRAM AT SELECTED TEST
        SW00 = CHANGE PARAMETERS AT PROGRAM RESTART

NEW NUMBER = DZDHO

DHI1 GTP/CTP Overlay

Abstract

This program runs as a foreground (interrupting) overover, supported
by CTP   or   GTP test program, This program tests the DHI1
communications option(s) in maintenance mode at 9,6 k Baud (burst
mode); This program may be executed in monitor mode (test all devices
on system) or as a stand alone module, Refer to stand alone execution
annotation for operational procedures and actions,

REQUIREMENTS

        PDP=11 STANDARD COMPUTER 12K OF MEMORY (MINIMUM) CONSOLE TTY
        DH11(S)

STORAGE = 12K

LOADING

EXECUTION TIME = Under 03 minutes,

STARTING PROCEDURE = 200

PRINTOUTS = Same as GTP and CTP

SWITCH REGISTER OPTIONS = same as GTP and CTP

NEW NUMBER = DZDJA

DJ11 Logic Tests

This program tests the logic of the DJ11 asynchroneus multiplexer in
maintenance mode, It checks that all the control registers function
properly, that interrupts occur at the right level, and that data can
be transmitted and received correctly, This program does not test
that the input and output lead connections are functional,   (See
MAINDEC-11-DZDJB, programs 2 and 3 for on-line testing), The program
should be run for at least 2 passes with all switches down,

REQUIREMENTS

        PDP-11 standard computer with console teletype up to 8 DJ11
        asynchronous multiplexer,

STORAGE = 0 = 17500

LOADING = Absolute Loader

EXECUTION TIME = 15 seconds to 3 1/2 hours = Bell on pass complete

STARTING PROCEDURE = Start at 200
                     Restart at 1000

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SW15 = HALT ON ERROR
        SW14 = SCOPE LOOP
        SW13 = INHIBIT PRINTOUT
        SW12 = INHIBIT TRACE TRAPPING
        SW11 = INHIBIT ITERATIONS OF SUBTEST
        SW10 = BELL ON ERROR
           0 = BELL ON PASS COMPLETE
        SW09 = LOOP ON ERROR
        SW08 = LOOP ON TEST IN SW710

NEW NUMBER = DZDJB

DJ11 Exerciser and On-line Tests

ABSTRACT

This program consists of three sub-programs which exercise the DJ11 asyncronous multiplexer. Program 1 is an off-line exerciser. Program 2 is an on-line exerciser which continuously transmits the last character received. Program 3 is an echo test.

REQUIREMENTS

> PDP-11 standard computer with console teletype up to 8 DJ11 asyncronous multiplexers.

STORAGE = 0 - 17500

LOADING = Absolute Loader

EXECUTION TIME = 30 seconds per line

STARTING PROCEDURE = start at 200
restart at 1000

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

```
        SW15 = 1 ... HALT ON ERROR
        SW13 = 1 ... INHIBIT PRINTOUT
        SW12 = 1 ... INHIBIT TRACE TRAPPING (prog. 1 only)
        SW10 = 1 ... BELL ON ERROR
               0 ... BELL ON PASS COMPLETE (prog.1 only)
        SW09 = 1 ... INHIBIT MAINTENANCE (prog. 1 on-line)
        SW08 = 1 ... SELECT LINES FOR TEST

    Prog. 1 only!

    SW2!0 = 0 ... BINARY COUNT PATTERN
            1 ... "THE QUICK BROWN FOX..."
            2 ... ALPHA-NUMERIC (40-177)
          3-7 ... NOT USED
```

NEW NUMBER = DZDJC

DJ11 Master/Slave Exerciser

ABSTRACT

This program is designed to test the communications lines connected to
a DJ11 asynchronous multiplexer. Each line of the DJ11 can be
selected to act as either the "Master" line or the "Slave" line. A
"Slave" line will simply echo every character it receives, regardless
of the data. A "Master" line will transmit a fixed message and
expects to receive the same message back. This allows for high
throughput testing of a line which has this or a similar program
controlling both ends. The two ends of a particular line can be:

    1. on the same DJ11
    2. on two separate DJ11's on the same processor
    3. on DJ11's on different processors or
    4. on a DJ11 on one processor and another type asynchronous
       device on another processor with compatible software.

REQUIREMENTS

        PDP-11 standard computer with console teletype up to 8   DJ11
        asynchronous multiplexers.

STORAGE - 0 - 17500

LOADING - Absolute Loader

EXECUTION TIME = 1/2 minute - Bell on pass complete

STARTING PROCEDURE - start at 200
                    restart at 1000

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

        SW15 ... HALT ON ERROR
        SW13 ... INHIBIT PRINTOUT
        SW12 ... INHIBIT TRACE TRAPPING
        SW10 ... BELL ON ERROR

        SW2:0 = 0 ... BINARY COUNT PATTERN
                1 ... "THE QUICK BROWN FOX..."
                2 ... ALPHA-NUMERIC (40-177)
              3-7 ... NOT USED

NEW NUMBER = DZDJO

DJ11 overlay to GTP

ABSTRACT

This overlay allows the DJ11 to be tested with version of GTP that does not include the DJ11. This program has been assembled with the DJ11 at address 760020 and vector 300. These locations are at the end of the program and/or operator action note.

REQUIREMENTS

        PDP-11 standard computer
        12K of memory
        DJ11

STORAGE = uses memory from 40000 to 42000

LOADING = Absolute Loader

EXECUTION TIME = see GTP

STARTING PROCEDURE = Starting at 200 all switches should be down or
                     zero, will select only the DJ11 - to select other
                     devices refer to the GTP writeup.

PRINTOUTS = Same as GTP/CTP

SWITCH REGISTER OPTIONS = Same as GTP/CTP

NEW NUMBER = DZDLA

ABSTRACT =

Two separate diagnostic programs are provided for the DL11-E
(Asynchonous Modem Interface), MAINDEC-11-DZDLA-A (DL11-E off line
tests) and MAINDEC-11-DZDLB-A (DL11-E on line tests). The off line
test tests all DL11-E logic. The off line tests do not require the
use of a modem. However, a special jumper connector H315 is required.
The on line tests are essentially data reliability tests requiring the
use of modems and a suitable terminal device.

The DL11-C and DL11-D can also be tested with this off line test,
these are both tested in maintenance mode and only those tests marked
C,D in the test number are executed. In order to test C and D
versions it is necessary to modify the table at location 1300
according to the instructions contained there.

Tests which are not executed for DL11C-D can be performed by using the
select switch option (SR9). Test 56 is a data test which can be used
for cable testing DL11-D's - Warning -- A failure in this test may
occur due to a split baud rate of RCVTR/TXVTR.

This document describes the off line tests;
The available tests are:

        Prog. 0   Input/output logic tests
        Prog. 1   Transmitter scope loop
        Prog. 2   Receiver scope loop
        Prog. 3   Single character maint. mode data test
        Prog. 4   Special binary count maintenance mode data test

REQUIREMENTS =

        PDP-11, DL11-E or DL11-C or DL11-D, Special jumper connector
        H515 if DL11-E

STORAGE - Program uses all of core (4K) except that area reserved for
          the bootstrap and absolute loaders.

LOADING - Absolute Loader

EXECUTION TIME = Dependent on number of DL11's in system.

STARTING PROCEDURE - Load address at 000200

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SR 0 = 6 ROUTINE TO BE RUN (IF ENABLED BY SR9)
        SR 7   DISABLE STALL MODE

```
SR 9      LOOP SELECTED ROUTINE
SR10      HALT AT END OF CURRENT TEST
SR11      INHIBIT ITERATION
SR12      SELECT LINE NUMBER AND LOCK ON IT
SR13      INHIBIT PRINTOUT
SR14      SCOPE
SR15      HALT ON ERROR
```

NEW NUMBER = DZDLB

DL11=E On Line Tests

ABSTRACT

Two separate diagnostic programs are provided for the DL11=E
(asynchronous line interface), MAINDEC=11=DZDLA (DL11=E Off Line
Tests) and MAINDEC=11=DZDLBA (DL11=E On Line Tests). The Off Line
Tests test all DL11=E logic and may be used to individually test up to
31 DL11=E's. The Off Line Tests do not require the use of a modem;
however, a special jumper connector is required. The On Line Tests
are essentially data reliability tests requiring the use of modems and
a suitable terminal device.

This document describes the On Line Tests. The available tests are:

         PRG0 Single Character Line Mode Data Test
         PRG1 Binary Count Line Mode Data Test
         PRG2 Message Transmit Only W/W/O Parity
         PRG4 Message Transmit (Spiral) Only W/W/O Parity

REQUIREMENTS =

         PDP=11 System
         DK11=E(s)
         Modem type 103 or 202 or equivalent

STORAGE = All of core (4K)

LOADING = Absolute Loader

EXECUTION TIME

STARTING PROCEDURE

         200 = Normal Start
         204 = Remap devices present and restart
         210 = Modify device addresses if non standard instructions
               to do this are typed out.

PRINTOUTS = No

SWITCH REGISTER OPTIONS = No

MAINDEC=11=D9G=   NEW NUMBER = DZDMB

DM11 Data Tests

ABSTRACT

Two separate diagnostic programs are provided for testing the DM11
(asynchronous data multiplexer), MAINDEC=11DZDMA (DM11 logic tests),
and MAINDEC=11=DZDMB (DM11 multiple line data tests) the logic tests
individually test each of the 16 DM11 lines and all common logic. The
multiple line data tests run several lines concurrently and are used
to test line interaction and data transmission/reception reliability.
this document describes the multiple line data test.

The available tests are:

        PRG0 = Data Tests
        PRG1 = Data Test (all lines simultaneously)
        PRG2 = Transmit to Terminals
        PRG3 = Echo Received Data
        PRG4 = Transmit Message

REQUIREMENTS

        PDP=11
        DM11
        JUMPERS connecting 16 transmitters to their respective
        receivers
        Terminals (if available)
        DM11 Distribution panel

STORAGE = Uses all of core (4K) except that area reserved for the
          loaders.

LOADING = Absolute Loader

EXECUTION TIME = 10 min. (110 Baud) single iteration

STARTING PROCEDURE = Start and restart at 200

PRINTOUTS = No

SWITCH REGISTER OPTIONS = Yes

        SW0=6= ROUTINE TO BE RUN (IF ENABLED BY SW=9)
        SW9   = LOOP SELECTED ROUTINE
        SW11   = INHIBIT ITERATION (DO EACH ROUTINE ONCE)
        SW13   = INHIBIT PRINTOUT
        SW14   = SCOPE (LOOP ROUTINE)
        SW15   = HALT ON ERROR

MAINDEC-11-D9F: NEW NUMBER = D2DMA

DM11 Logic Tests

ABSTRACT

Two separate diagnostic programs are provided for testing the DM-11
(Asynchronous Data Multiplexer), MAINDEC-11-D9F= (DM11 Logic Tests),
and MAINDEC-11-D9G= (DM11 Multiple Line Data Tests). The logic tests
individually test each of the 16 DM11 lines and all common logic. The
multiple line data tests run several lines concurrently and are used
to test line interaction and data transmission/reception reliability.
This document describes the logic tests. The tests are:

            PRG0 = Logic Test
            PRG1 = Transmitter Scope Loop
            PRG2 = Transmit/Receive Scope Loop

REQUIREMENTS

            PDP-11
            DM11
            Jumpers connecting 16 transmitters to their respective
            receivers.

STORAGE = All of 4K except that area reserved for the loaders.

LOADING = Absolute Loader

EXECUTION TIME = 20 min. (110) Baud) Single Iteration.

STARTING PROCEDURE = Start and Restart at 200

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

            SW0-6 = ROUTINE TO BE RUN
            SW8   = RING BELL ON ERROR
            SW9   = LOOP SELECTED ROUTINE
            SW11 = INHIBIT ITERATION
            SW13 = INHIBIT PRINTOUT
            SW14 = SCOPE
            SW15 = HALT ON ERROR

MAINDEC-11-D9K

ABSTRACT

This program is a test of the DM11-BB Modem Control Multiplexer. The
program is divided into functional test groups as follows:

Group 0: All Line Scanner and Line Multiplexer functions are tested
          using the H861 Test Connector.
Group 1: A single line is tested using the modem cable and a DC11
          Test Connector.
Group 2: Connect-Disconnect Test for 103A Modems.
Group 3: Connect-Disconnect Test for 202C Modems.

REQUIREMENTS

          PDP-11
          DM11-BB

STORAGE - The routines use locations 0000-16600

LOADING - Absolute Loader

EXECUTION TIME - User dependent

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

          SW15 = 1 ... HALT ON ERROR
          SW14 = 1 ... LOOP ON CURRENT TEST
          SW13 = 1 ... SUPPRESS ERROR TYPEOUT
          SW12 = 1 ... SUPPRESS TRACE TRAPPING
          SW11 = 1 ... SUPPRESS ITERATIONS
          SW10 = 1 ... ESCAPE TO NEXT TEST ON ERROR

MAINDEC-11-D9J

ABSTRACT

The DN11 Diagnostic consists of two parts. The first is a series of
incremental tests which statically 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.

REQUIREMENTS

        PDP-11
        DN11 (max. No. 4 used at one any time)

STORAGE - The routines use the first 3K of core.

LOADING - Absolute Loader

EXECUTION TIME = 15 sec.

STARTING PROCEDURE = at 200

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = No

MAINDEC-11-D8D-   NEW NUMBER - D2DPB

DP11A Synchronous Line Unit

ABSTRACT

This Maindec consists of two programs. First, a DP11A exerciser which
is run with a test connector (DB25S) in place of the modem. This test
is run under a simulated (software) clock that runs at approximately
56KHZ. Second, there is the principle diagnostic for the DP11. This
program runs in the maintenance mode with the BC01R-25 cable removed
from the system unit. This test provides complete diagnostics for all
character modes of the DP11.

REQUIREMENTS

        PDP-11
        DB25S Test Connector (if cable test is to be run)
        DP11A/DP11DA

STORAGE - 4K of memory

LOADING - Absolute Loader

EXECUTION TIME - 4 min. - Bell will ring

STARTING PROCEDURE

        Start at 200 for maintenance mode diagnostics (Cable must be
                pulled from the system unit).
        Start at 210 for BC01R-25 cable test (DB25S Test connector
                must be plugged in).

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

        SW15 - HALT ON ERROR
        SW14 - SCOPE LOOP
        SW13 - INHIBIT PRINTOUT
        SW12 - INHIBIT ITERATION

MAINDEC=11-D8E=   NEW NUMBER = DZDP0

DP11 On=Line Test = For In=House Use Only

ABSTRACT

This "On=Line Test" Is primarily for confidence building In the DP11A
as a product,

REQUIREMENTS

        PDP=11
        DP11A

STORAGE = 4K

LOADING = Absolute Loader

EXECUTION TIME = 5 min, = Bell will ring

STARTING PROCEDURE = Start and Restart at 200

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SW15 = HALT ON ERROR
        SW14 = SCOPE (NOT USED)
        SW13 = INHIBIT PRINTOUT
        SW12 = INHIBIT ITERATION (NOT USED)

MAINDEC-11-DRL-   NEW NUMBER = DZDRA

DR11A Device Register Test

ABSTRACT

This is a logic test of the DR11A. For this test to operate, a special
maintenance module must be connected (M980). This test will check up
to 32 sequential DR11A's.

REQUIREMENTS

          PDP-11
          DR11A
          M980 for each DR11A

STORAGE - 0 - 5020

LOADING - Absolute Loader

EXECUTION TIME - About 2 min, for each DR11A - Bell will ring at end
          of pass.

STARTING PROCEDURE - Start at 200
                   - The low byte of the SR should contain the first
                     DR11A vector address.

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

          SW15 = HALT ON ERROR
          SW14 = SCOPE LOOP
          SW13 = INHIBIT PRINTOUT
          SW12 = INHIBIT TRACE TRAPPING
          SW11 = INHIBIT ITERATION LOOP
                 SW8 to 0 will be used as vector address if not
                 zero. (DR11A has floating vectors)

The assigned sequence for floating vectors are:

          1. Starting at 300 all DC11's will be assigned.
          2. Then any KL11 called for (VT05, VT06, LC11)
          3. Then any DP11 called for.
          4. Then any DM11A called for.
          5. Then any DM11 called for.
          6. Then any DM11BB called for.
          7. Then any DR11A called for.

The DR11A device address will be assigned in the user area of 767776
to 764020. The assignment of address will start at the high address
limit and proceed downward. Users and special systems should start

their assignment of special devices at the low address limit and work
up'.

```
767776 to 767770      DR11A #0
767766 to 767760      DR11A #1
767776 to 767700      DR11A #7
767676 to 767600      DR11A #15
```

MAINDEC-11-DRF-   NEW NUMBER - DZDRB

DR11B - PDP-11 General NPR Interface

ABSTRACT

This is a logic test of the "NPR General Interface" - DR11B. There is
a special maintenance feature that allows testing of NPRS without a
customers device attached.

REQUIREMENTS

        PDP-11
        DR11B

STORAGE - 0 - 13000

LOADING - Absolute Loader

EXECUTION TIME - 28 sec, - Bell will ring

STARTING PROCEDURE - Start at 200

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

        SW15 - HALT ON ERROR
        SW14 - SCOPE LOOP
        SW13 - INHIBIT PRINTOUT
        SW12 - INHIBIT TRACE TRAP
        SW11 - INHIBIT ITERATIONS

MAINDEC=11=DRR   NEW NUMBER = DZDCC

ABSTRACT

This is a logic test of the DR11C. For this test to operate a special
maintenance cable must be connected (BC08R). This test will check up
to 32 sequential DR11C's.

REQUIREMENTS

        PDP=11 standard computer
        DR11C
        BC08R for each DR11C

STORAGE = The routine uses memory from 0000 to 5200.

LOADING = Absolute Loader.

EXECUTION TIME = For each DR11C about 1 min.

STARTING PROCEDURE = Starting at SA 200 all switches should be down to
                     zero. (If not zero, bit 0 to 8 will be starting
                     vector)

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        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
        SW11 = 1 or up ,,, INHIBIT ITERATION LOOP
        SW10 = 1 or up ,,, INHIBIT ADVANCING TO NEXT DR11C
        SW08 = 0 will be used as vector address if not zero.
               (DR11A has floating vectors)

The assigned sequence for floating vectors are:

        1. Starting at 300 all DC11's will be assigned.
        2. Then any KL11/DL11A called for (VT05,VT06,LC11)
        3. Then any DP11 called for.
        4. Then any DM11A called for.
        5. Then any DM11 called for.
        6. Then any DM11BB called for.
        7. Then any DR11A called for.
        8. Then any DR11C called for.

The DR11A device address will be assigned in the user area of 767776
to 764000. The assignment of address will start at the high address
limit and proceed downward. Users and special systems should start
their assignment of special devices at the low address limit and work

up'.

```
767776 to 767770     DC11C  #0
767756 to 767762     DR11C  #1
767776 to 767702     DR11C  #7
767676 to 767600     DR11C  #15
```

NEW NUMBER - DZDTA

DT11 DIAGNOSTIC

ABSTRACT

This program is designed to test all the functions of the DT11-A and B bus switches which can be tested without assuming specific devices to be on the switched bus. A great deal of operator intervention is required due to the dual processor nature of the switch and the various modes of operation controlled by two two-position switches. A routine is also provided which allows the operator to scope the various one-shots for adjustment purposes.

REQUIREMENTS

        PDP-11 - 8K of memory
        DT11-A or B sub switches

STORAGE - The first 8K of memory

LOADING - Absolute Loader

EXECUTION TIME - Operator dependent. When done, the program prints
                out "end of pass".

STARTING PROCEDURE - Start at 200 for DT11-B
                     Start at 260 for DT11-A

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

        SW15 = 1 OR UP ... HALT ON ERROR
        SW14 = 1 OR UP ... SCOPE LOOP
        SW13 = 1 OR UP ... INHIBIT ERROR PRINTOUT IF SCOPE LOOP IS
                               REQUESTED
        SW12 = 1 OR UP ... INHIBIT TRACE TRAPPING
        SW11 = 1 OR UP ... INHIBIT SUB-PROGRAM ITERATION
        SW10 = 1 OR UP ... INHIBIT POWER FAIL TESTING
        SW09 = 1 OR UP ... INHIBIT MOST SWITCHED BUS POWER FAIL
                               TESTING
                           (ONLY CHECK TO SEE THAT AC LO sets)

        SW08 = 1 OR UP ... INHIBIT ALL SWITCHED BUS POWER FAIL
                               TESTING

NEW NUMBER - DZDXA

DX11B Diagnostic (maintenance clock 1)

ABSTRACT

The function of the DX11B diagnostics is to verify that the DX11B
implements the functional flow diagrams illustrated in the DX11B print
set. The DX11 diagnostic package consists of four tapes:

1. DZDXA-Crev] maintenance clock 1
2. DXDXF-Crev] maintenance clock 2
3. DZDXG-Crev] dx diagnostic exerciser
4. DZDXH-Crev] online-maintenance-clock exerciser

The diagnostics were divided into four tapes because of the 8K word
memory limit required to support minimum systems and for functional
safeguards. It was felt that safeguards should be taken to insure that
no one inadvertently ran the online- maintenance-cable exerciser while
connected online to IBM.   It was also felt that the functional
separation of tests would facilitate adaption to ACT11 and DDP
testing. There are also two other MAINDEC's supported by diagnostics
that run the DX11B:

1. Communication test program (CTP)
2. General test program (GTP) with DX overlay

Both of these tests operate in the maintenance mode and were designed
to detect unibus device interaction problems. Additionally CTP was a
"responder" mode so that interaction problems may be detected while
running online.

REQUIREMENTS

          PDP11 (minimum 8K words memory)
          ASR-33 (or equivalent)
          DX11B
          Maintenance cables (or equivalent)
              If online-maintenance-cabled exerciser is to be run.

STORAGE - Programs lead in 8K of memory

LOADING

EXECUTION TIME - In general they run 10 to 20 minutes

STARTING PROCEDURE - 200

PRINTOUTS

SWITCH REGISTER OPTIONS - yes

SR 15...HALT ON ERROR
SR 14...SCOPE ON TEST OR ERROR
SR 13...INHIBIT PRINTING
SR 12... TYPE SHORT ERROR REPORT
SR 11...INHIBIT INTERACTIONS
SR 17...CONTROL MAINTENANCE CLOCK (MAINT, CLK; TEST ONLY)
SR 9...DDT TRAP ON ERROR
SR 2...MULTIPLEXER CHANNEL
SR 1...SET BUSY ENABLE

NEW NUMBER = DZDXB

DX11 IBM END OVERLAY TO GTP

ABSTRACT

The principle reason for the existence of this overlay is to measure DX11 systems latency and interaction. The DX11 uses special maintenance logic to cause fast NPR's, This is the fast service-in, service-out and causes data to be transferred at rates up to the maximum allowable.

The transfer is implemented by loading an IBM channel simulator register with a write data pattern, Then the DX base address and byte count registers are initialized and the DX is to go. When the transfer is complete, the DX interrupts and checks for NPRTO and data errors.

REQUIREMENTS

1. PDP11 system (12K memory)
2. High Speed Reader
3. Console Terminal

STORAGE = Program loads in the 12th K bank

LOADING =

EXECUTION TIME = End of pass is determined by the host
program GTP,

STARTING PROCEDURE = Ref, GTP documentation on overlays,

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

At location DXINIT the program halts and expects the DX11'S vector address to be in the switches when "continue" is pressed,

NEW NUMBER - DZDXF

DX11B DIAGNOSTIC (MAINTENANCE CLOCK 2)

ABSTRACT

The function of the DX11B diagnostics is to verify that the DX11B implements the functional flow diagrams illustrated in the DX11B print set. The DX11 diagnostic package consists of four tapes:

        1. DZDXA-[rev] maintenance clock 1
        2. DXDXF-[rev] maintenance clock 2
        3. DZDXG-[rev] DX diagnostic exerciser
        4. DZDXH-[rev] online-maintenance-clock exerciser

The diagnostics were divided into four tapes because of the 8K word memory limit required to support minimum systems for functional safeguards. It was felt that safeguards should be taken to insure that no one inadvertently ran the online-maintenance-cable exerciser while connected online to IBM. It was also felt that the functional separation of tests would facilitate adaption to ACT11 and DDP testing. There are also two other MAINDEC's supported by diagnostics that run the DX11B:

        1. Communication Test Program (CTP)
        2. General Test Program (GTP) with DX overlay

Both of these tests operate in the maintenance mode and were designed to detect unibus device interaction problems. Additionally CTP has a "responder" mode so that interaction problems may be detected while running online.

REQUIREMENTS

        PDP11 (minimum 8K words memory)
        ASR-33 (or equivalent)
        DX11B
        Maintenance cables (or equivalent)
            if online-maintenance-cabled exerciser is to be run.

STORAGE - 8K

LOADING -

EXECUTION TIME - In general they run 10 to 20 minutes

STARTING PROCEDURE - 200

SWITCH REGISTER OPTIONS - Yes

        SR 15...HALT ON ERROR
        SR 14...SCOPE ON TEST OR ERROR

SR 13...INHIBIT PRINTING
SR 12...TYPE SHORT ERROR REPORT
SR 11...INHIBIT INTERACTIONS
SR 13...CONTROL MAINTENANCE CLOCK (MAINT, CLK, TEST ONLY)
SR 9...;DOT TRAP ON ERROR
SR 2...;MULTIPLEXER CHANNEL
SR 1...;SET BUSY ENABLE

NEW NUMBER - DZDXG

DX11B DIAGNOSTIC (OFF LINE EXERCISER)

ABSTRACT

The function of the DX11B diagnostics is to verify that the DX11B implements the functional flow diagrams illustrated in the DX11B print set. The DX11 diagnostic package consists of four tapes:

1. DZDXA-[rev] maintenance clock 1
2. DXDXF-[rev] maintenance clock 2
3. DZDXG-[rev] DX diagnostic exerciser
4. DZDXH-[rev] online-maintenance-clock exerciser

The diagnostics were divided into four tapes because of the 8K word memory limit required to support minimum systems and for functional safeguards. It was felt that safeguards should be taken to insure that no one inadvertently ran the online-maintenance-cable exerciser while connected online to IBM. It was also felt that the functional separation of tests would facilitate adaption to ACTII and DDP testing. There are also two other MAINDEC's supported by diagnostics that run the DX11B:

1. Communication Test Program (CTP)
2. General Test Program (GTP) with DX overlay

Both of these tests operate in the maintenance mode and were designed to detect unibus device interaction problems. Additionally CTP has a "responder" mode so that interaction problems may be detected while running online.

REQUIREMENTS

    PDP11 (minimum 8K words memory)
    ASR-33 (or equivalent)
    DX11B
    Maintenance cables (or equivalent)
        If online-maintenance-cabled exerciser is to be run.

STORAGE - 8K

LOADING -

EXECUTION TIME - In general they run 10 to 20 minutes

STARTING PROCEDURE - 200

PRINTOUTS -

SWITCH REGISTER OPTIONS - Yes

```
SR 15...HALT ON ERROR
SR 14...SCOPE ON TEST OR ERROR
SR 13...INHIBIT PRINTING
SR 12...TYPE SHORT ERROR REPORT
SR 11...INHIBIT INTERACTIONS
SR 10...CONTROL MAINTENANCE CLOCK (MAINT,CLK,TEST ONLY)
SR  9...DOT TRAP ON ERROR
SR  2...MULTIPLEXER CHANNEL
SR  1...SET BUSY ENABLE
```

NEW NUMBER = DZDXH

DX11B DIAGNOSTIC (ON LINE EXERCISER)

ABSTRACT

The function of the DX11B diagnostics is to verify that the DX11B
implements the functional flow diagrams illustrated in the DX11B print
set. The DX11 diagnostic package consists of four tapes:

    1. DZDXA=[rev] maintenance clock 1
    2. DXDXF=[rev] maintenance clock 2
    3. DZDXG=[rev] DX diagnostic exerciser
    4. DZDXH=[rev] online=maintenance=clock exerciser

The diagnostics were divided into four tapes because of the 8K word
memory limit required to support minimum systems and for functional
safeguards. It was felt that safeguards should be taken to insure
that no one inadvertently ran the online=maintenance=cable exerciser
while connected online to IBM. It was also felt that the functional
separation of tests would facilitate adaption to ACTII and DDP
testing. There are also two other MAINDEC's supported by diagnostics
that run the DX11B:

    1. Communication Test Program (CTP)
    2. General Test Program (GTP) with DX overlay

Both of these tests operate in the maintenance mode and were designed
to detect unibus device interaction problems. Additionally CTP has a
"responder" mode so that interaction problems may be detected while
running online.

REQUIREMENTS

    PDP11 (minimum 8K words memory)
    ASR=33 (or equivalent)
    DX11B
    Maintenance cables (or equivalent)
        if online=maintenance=cabled exerciser is to be run.

STORAGE = 8K

LOADING =

EXECUTION TIME = In general they run 10 to 20 minutes

STARTING PROCEDURE = 200

PRINTOUTS =

SWITCH REGISTER OPTIONS = Yes

```
SR 15...HALT ON ERROR
SR 14...SCOPE ON TEST OR ERROR
SR 13...INHIBIT PRINTING
SR 12...TYPE SHORT ERROR REPORT
SR 11...INHIBIT INTERACTIONS
SR 17...CONTROL MAINTENANCE CLOCK (MAINT, CLK, TEST ONLY)
SR  9...,DDT TRAP ON ERROR
SR  2...,MULTIPLEXER CHANNEL
SR  1...,SET BUSY ENABLE
```

NEW NUMBER = DDGTA

GT40 Instruction Test I

ABSTRACT

This is a two part logic test of the alphagraphic terminal for this
test the two maintenance switch will be used; This test is designed
to test all functional registers and interrupt vector in the
alphagraphic display control; This program does not type-out or
display any messages, The program will only halt on an error;

REQUIREMENTS

STORAGE - Program used memory locations 0-15000 less than 4K of memory

LOADING - Absolute Loader

EXECUTION TIME - Subtest 1 takes approx, 1 second
                 Subtest 2 takes approx, 30 seconds

STARTING PROCEDURE - 200

PRINTOUTS - No

SWITCH REGISTER OPTIONS - Yes

        SW14 = SCOPE LOOP

NEW NUMBER = DDGTB

GT42 Instruction Test II

ABSTRACT

This is a two part logic test of the alphagraphic terminal, for this test the two maintenance switch will not be used. This test is designed to test all functional registers and interrupt vector in the alphagraphic display control. The program will only halt on an error.

REQUIREMENTS

GT42 system (11/05, display processor and VT14 scope)

STORAGE = program used memory locations 1=15200 less than 4K of memory

LOADING = Absolute Loader

EXECUTION TIME = Subtest 1 takes approx. 15 seconds
                 Subtest 2 takes approx. 120 seconds

STARTING PROCEDURE = 200

PRINTOUTS = No

SWITCH REGISTER OPTIONS = Yes

SW14 = SCOPE LOOP

NEW NUMBER = DDGTC

GT40 Visual Display Test with VR14 Display

ABSTRACT

This program contains a series of patterns that are used as aids in the alignment and adjustment of the GT40 display. For this test the maintenance switches are not used normal position.

REQUIREMENTS

GT40 system with VR14 display scope

STORAGE = program used memory location 0-15020 less than 4K of memory

LOADING = Absolute Loader

EXECUTION TIME = NA

STARTING PROCEDURE = Start at 200

PRINTOUTS = No

SWITCH REGISTER OPTIONS = Yes

NEW NUMBER = DDGTD

GT40 ROM Verify Test

ABSTRACT

The DAGTD diagnostic program is written to be used as an aid to hardware debugging and maintenance of the GT40 ROM bootstrap loader. These programs may also be used as a data reliability test.

The available tests are:

        PRG0 = Logic Tests
        PRG1 = ROM data dump to the console teletype
        PRG2 = Single ROM address read data loop

REQUIREMENTS

        GT40 Display processor with ROM bootstrap

STORAGE = This program uses memory locations 0-7202(8).

LOADING = Absolute Loader

EXECUTION TIME = PRG0 takes approx. 5 seconds per pass
                 PRG1 N/A
                 PRG2 N/A

STARTING PROCEDURE = 0200 Program 0, ROM logic test
                     0204 Program 1, ROM data dump on console TTY
                     0210 Program 2, single ROM read

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SW15 = HALT ON ERROR
        SW14 = SCOPE LOOP
        SW13 = INHIBIT PRINTOUT
        SW12 = NOT USED
        SW11 = INHIBIT ITERATIONS

        SAME AS ALL Y972

NEW NUMBER - DDGTE

GT40 Quick Verify

ABSTRACT

This program is a quick go-nogo test of the GT40 system. The purpose of this test is to quickly identify any problem in the system. The program will start the display and then initiate the communication line.

Two background tasks are executed, the first is a GT-40 ROM verify test, the second task is a worse case noise test thru memory.

REQUIREMENTS

> GT40 system (11/05, display processor and VR14 Scope) Modem test connector which connects data out to data in.

STORAGE - This program used memory locations 0-7200 less than 2K of memory

LOADING - Absolute Loader

EXECUTION TIME - 10 seconds

STARTING PROCEDURE - Start at 200

PRINTOUTS - No

SWITCH REGISTER OPTIONS - None

NEW NUMBER = DDGTF

GT40 OVERLAY FOR GTP#11

ABSTRACT

This program is a quick gonnogo test of the GT40 system under GTP.
The purpose of this test is to quickly identify any problem in the
system. The program will start the display and the operator must
verify the display pattern.

REQUIREMENTS

GT40 system (11/05, display processor and VR14 scope) 12K of
memory.

STORAGE = this program used memory locations 40000=45000 <less than 2K
of memory>.

LOADING =

EXECUTION TIME = Like GTP

STARTING PROCEDURE = Like GTP

PRINTOUTS = Like GTP

SWITCH REGISTER OPTIONS

SW 15=1 INHIBIT GT=40 DISPLAY.

MAINDEC-11-D0S-   NEW NUMBER =

KE11 LOGIC TEST

ABSTRACT

This test is to be used as an EAE logic test for the PDP-11 with the
EAE option. It tests all the functions of the EAE with specific
number combinations.

REQUIREMENTS

         PDP-11, KE11A

STORAGE = 0 - 17200

LOADING = Absolute Loader

EXECUTION TIME = 40 sec. with all switches down
                 Bell will ring

STARTING PROCEDURE = Start and Restart at 200

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

         SW15 = HALT ON ERROR   SW11 = INHIBIT ITERATION LOOP
         SW14 = SCOPE LOOP   SW10 = 1 or UP ... BELL ON ERROR
         SW13 = INHIBIT PRINTOUT   0 or DWN ... BELL ON PASS
                                                         COMP.
         SW12 = INHIBIT TRACE TRAP,   SW01 = INHIBIT MULT/DIV TEST
                                      SW00 = INHIBIT SHIFT/NORM TEST

MAINDEC-11-D0T-   NEW NUMBER =

KE11 EXERCISER

ABSTRACT

This test is to be used as an EAE exerciser for the PDP-11 with the
EAE option. It tests the divide and multiply with random numbers.

REQUIREMENTS

          PDP-11, KE11A

STORAGE - 0 - 6000

LOADING - Absolute Loader

EXECUTION TIME = 65 sec, with all switches down
                = Bell will ring

STARTING PROCEDURE = Start and Restart at 200

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

          SW15 = HALT ON ERROR
          SW14 = SCOPE LOOP
          SW13 = INHIBIT PRINTOUT
          SW12 = INHIBIT TRACE LOOP
          SW11 = BELL ON ERROR
          SW10 = 1 or UP ,,, INHIBIT ITERATION LOOP
                 0 or DWN ,,, BELL ON 1000 PASSES

NEW NUMBER = DBKEA

ABSTRACT

This program tests the KE11F (PDP=11 Floating Instruction set<FADD,FMUL, and FDIV>) option with fixed number patterns, using each register at least once as the stack pointer. It also checks stack overflow and that the floating instructions can be interrupted (by the console teletype). The program should be run for at least 2 passes with all switches down.

REQUIREMENTS

PDP=11 (KD11A) standard computer with KE11F option

STORAGE - The routines use memory 0 - 17500

LOADING - Absolute Loader

EXECUTION TIME = 15 sec.

STARTING PROCEDURE - start at 200

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

```
        SW15 = 1 ... HALT ON ERROR
        SW14 = 1 ... SCOPE LOOP
        SW13 = 1 ... INHIBIT PRINTOUT
        SW12 = 1 ... INHIBIT TRACE TRAPPING
        SW11 = 1 ... INHIBIT ITERATIONS OF SUBTEST
        SW10 = 1 ... BELL ON ERROR
               0 ... BELL ON PASS COMPLETE
        SW09 = 1 ... LOOP ON ERROR
        SW08 = 1 ... LOOP ON TEST IN SW(7:0)
```

CAUTION! (SW(8:0) are also used for ROM word match with KM11 maintenance card.

NEW NUMBER = DBKEB

ABSTRACT

This program exercises the KE11F floating point instructions (FADD, FSUB, FMUL, FDIV) with random number patterns. The answers are checked against results obtained using the corresponding FORTRAN software routines. About 200 passes should be run to establish credability.

REQUIREMENTS

PDP-11 (KD11A) standard computer with KE11F option

STORAGE - The routines use memory location 0 - 17500

LOADING - Absolute Loader

EXECUTION TIME = 5 sec.

STARTING PROCEDURE - Always start at 200

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

```
SW15 = 1 ... HALT ON ERROR
SW14 = 1 ... SCOPE LOOP
SW13 = 1 ... INHIBIT PRINTOUT
SW12 = 1 ... INHIBIT TRACE TRAPPING
SW11 = 1 ... INHIBIT ITERATIONS OF SUBTEST
SW10 = 1 ... BELL ON ERROR
       0 ... BELL ON PASS COMPLETE
SW09 = 1 ... LOOP ON ERROR
SW08 = 1 ... LOOP ON TEST IN SW(6:0)
SW07 = 1 ... INPUT DATA FROM THE TELETYPE
```

NEW NUMBER = DBKE0

KE11F SYSTEM EXERCISER OVERLAY

ABSTRACT

This program is an overlay for GTP (MAINDEC-11-DZQGA) or CTP (MAINDEC-11-DZQCA) which tests the KE11F (PDP-11 Floating Instruction Set <FADD, FMUL, and FDIV>) using all registers with fixed number patterns. Overflow, underflow, and divide by zero are checked to insure that the error trap works.

REQUIREMENTS

PDP-11 (KD11A) standard computer with KE11F option and a minimum of 12K of memory.

STORAGE = GTP or CTP = 0 to 37500
KE11F Overlay = 40000 to 57500

LOADING

EXECUTION TIME =

STARTING PROCEDURE = See GTP or CTP

PRINTOUTS

SWITCH REGISTER OPTIONS

MAINDEC-11-D8K   NEW NUMBER = DZKGA

KG11

ABSTRACT

This program tests the logic of the cyclic redundancy check device
(KG11A).

REQUIREMENTS

        A standard PDP-11 and a KG11A.

STORAGE = Locs. 0 thru 4500.

LOADING = Absolute Loader

EXECUTION TIME = 2 min.

STARTING PROCEDURE = Start at SA200 with SWR15 set, SWR14=0 reset.

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SW15 = SET, HALT ON ERROR
               RESET, BYPASS ERROR
        SW14 = SET, SCOPE LOOP ON ERROR
               RESET, BYPASS ERROR
        SW13 = SET, INHIBIT PRINTOUTS DURING SCOPE LOOP
               RESET, ALLOW PRINTOUTS DURING SCOPE LOOP
        SW12 = SET, INHIBIT TRACE TRAPPING
               RESET, ALLOW TRACE TRAPPING
        SW11 = SET, INHIBIT ITERATIONS
               RESET, ALLOW ITERATIONS
        SW11 = SW6 and SW5 = SW0 are designed in the select test
                     mode section on pg. 6 & 7.

MAINDEC-11-D2A -   NEW NUMBER - D2KLA

KL11 or PL11 Teletype test

ABSTRACT

The KL11 Teletype Tests consist of a package of test programs designed
to test the teletype input-output logic, the paper tape reader and
punch, the printer, and the keyboard. All tests are included in one
object tape. The available test programs are listed here in numerical
order:

PGR0 - Combined input-output   PGR10 - Special Binary Count Pattern
       logic tests   Generator
PGR1 - Reader Test   PGR11 - Punch Clock Adjustment Routine
PGR2 - Printer Test   PGR12 - Reader Clock Adjustment Routine
PGR3 - Punch Test   PGR13 - Maintenance Mode Single Char-
PGR4 - Keyboard Test   acter Data Test
PGR5 - Combined Reader-Punch- PGR14 - Maintenance Mode Special
       Printer Test   Binary Count Pattern Test
PGR6 - Reader Exerciser
PGR7 - Printer Exerciser

        PRG0 through PRG5 are the actual Teletype tests,
        PRG6 through PRG14 are utility and maintenance routines.

REQUIREMENTS

        PDP-11
        ASR33, KSR33, ASR35, KSR35 Teletype

STORAGE - 200 - 15000

LOADING - Absolute Loader

EXECUTION TIME - Depends on program begin run, PR60 - PR64 halt at
                 end of pass at LOC 002026 if SW10 not set.

STARTING PROCEDURE - Start at 200

PRINTOUTS - No

SWITCH REGISTER OPTIONS - Yes

        SW15 = HALT
        SW14 = SCOPE
        SW13 = INHIBIT ITERATION COUNT
        SW12 = LOOP PROGRAM
        SW09 = SELECT ROUTINE
        SW08 = DISABLE STALL MODE

MAINDEC-11-D2D- KW11L   NEW NUMBER - DZKWA

Line Frequency Clock Test

ABSTRACT

This program tests the KW11L line frequency clock. It validates
proper operation under both interrupt and non-interrupt modes. It
requires the operator to monitor its operation with a clock capable of
measuring time in seconds.

REQUIREMENTS

        PDP-11 with KW11L

STORAGE - 0 - 2000

LOADING - Absolute Loader

EXECUTION TIME - 1 min.

STARTING PROCEDURE - 200 = 60 HZ, Line Frequency
                   - 202 = 50 HZ, Line Frequency

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - No

MAINDEC-11-D2GA   NEW NUMBER - DZKWB

KW11P Real Time Clock

ABSTRACT

This program tests the KW11-P real time clock. It contains a series of
incremental routines that test the control and status register, count
set buffer, counter, and interrupt vector address using 122KHZ, 12KHZ,
60HZ, and external frequencies.

REQUIREMENTS

        PDP-11
        KW11P

STORAGE - This program occupies memory from 0 to 4664

LOADING - Absolute Loader

EXECUTION TIME - Basic test requires 15 sec. per pass, timing test
                requires 4 min. per pass

STARTING PROCEDURE - 200 basic test
                     204 timing test

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

        SW15 = 1 OR UP ... HALT ON ERROR
        SW14 = 1 OR UP ... SCOPE LOOP
        SW13 = 1 OR UP ... INHIBIT PRINTOUT
        SW12 = 1 OR UP ... INHIBIT SUB-TEST ITERATIONS

MAINDEC-11-D6F-   NEW NUMBER -

LAB11

ABSTRACT

This program tests the LAB-11 scope control, X and Y axis dac's and
the VR20 (two color point plot display).

REQUIREMENTS

        PDP-11
        LAB-11 - VR20

STORAGE - The program occupies memory from 0 to 5700

LOADING - Absolute Loader

EXECUTION TIME - Sequence test - the teletype bell will ring after
                every pass approx. 90 sec.

STARTING PROCEDURE - Load 200

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

        SW15 = HALT ON ERROR
        SW14 = SCOPE
        SW13 = INHIBIT ERROR PRINTOUTS
        SW12 = INHIBIT TRACE TRAPPING/BACK GROUND TEST
        SW11 = INHIBIT ITERATION

NEW NUMBER = DZLAB

ABSTRACT

The LA30 terminal tests consists of a package of test programs
designed to test the LC11 input-output logic, the LA30 printer and
keyboard. All tests are included in one object tape. This test can
test the LA30 when interfreed by either a single (KL) or double
buffered (DL) controller communicating serial to 300 baud.

Under monitor load it will test the console device and all contiguous
extra devices.

This test is compatible for all configurations of PDP-11. The
available test programs are listed here in numerical order:

```
        PRG0 = Combined input-output logic tests
        PRG1 = Display test
        PRG2 = Keyboard test
        PRG3 = Printer Exerciser
        PRG4 = Clock adjustment routine
        PRG5 = Clock adjustment routine
        PRG6 = Maintenance mode single character data test
        PRG7 = Maintenance mode special binary count pattern test
        PRG10 = Non-printing character test
        PRG11 = Worst case noise
        PRG12 = Last character visibility
```

REQUIREMENTS

```
        PDP-11 System (4K core)
        LC11 Interface/LA30 Terminal
```

STORAGE - The routines use memory locations 200 - 14554

LOADING - Absolute Loader

EXECUTION TIME = 4 min.

STARTING PROCEDURE - at 200

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

```
        SW15 = HALT AT END OF ROUTINE
        SW14 = ENTER SCOPE MODE AFTER ERROR
        SW11 = INHIBIT ITERATION
        SW10 = LOOP PROGRAM
        SW09 = SELECT ROUTINE
        SW0-6 = Number of routine to be selected.
```

MAINDEC-11-D2H-   NEW NUMBER - D2LCA

LC11(P)/LA30

ABSTRACT

The LA30 terminal tests consists of a package of test programs
designed to test the LC11 input-output logic. The LA30 printer and
keyboard. All tests are included in one object tape. The available
test programs are listed here in numerical order:

            PRG 0 - Combined input-output logic tests
            PRG 1 - Display test
            PRG 2 - Keyboard test
            PRG 3 - Printer exerciser
            PRG 4 - Clock adjustment routine
            PRG 5 - Clock adjustment routine
            PRG 6 - Maintenance mode single character data test
            PRG 7 - Maintenance mode special binary count pattern test
            PRG10 - Roll-up display test
            PRG11 - Non-printing character test
            PRG12 - Worst case noise
            PRG13 - Last character visibility

REQUIREMENTS

            PDP-11
            LC11 parallel

STORAGE - 200 - 15000

LOADING - Absolute Loader

EXECUTION TIME - Depends on program being run.

STARTING PROCEDURE - Start at 200

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

            SW15 = HALT AT END OF ROUTINE
            SW14 = SCOPE
            SW13 = INHIBIT ERROR PRINTOUTS
            SW12 = INHIBIT TRACE TRAPPING/BACK GROUND TEST
            SW11 = INHIBIT ITERATION
            SW10 = LOOP PROGRAM
            SW09 = SELECT ROUTINE
            SW06 - SW00 = NUMBER OF ROUTINE TO BE SELECTED.

MAINDEC-11-D2C-   NEW NUMBER - DZLPA

LP11 Line Printer Test

ABSTRACT

The LP11 Line Printer Diagnostic Test Program is designed to provide a
thorough checkout of the printer control interface electronics as
well as the electronic and mechanical portions of the line printer
mechanism itself. The program consists of a series of seven test and
drive routines, each of which can be selected and operated
independently of the others using special entry points. Internally
detected error conditions are displayed on the teleprinter while
detailed descriptions of each error and what was happening at the time
the error occurred is presented in the listing. Print patterns used
in these tests have been chosen for ease of visual verification.

The first test is composed of several tests designed to checkout the
processor interface control electronics and intercommunications data
paths. Test 2, 3, and 4 use worst case patterns to test printer
performance and endurance while tests 5 and 6 provide drive for
printer hammer alignment and intensity adjustment procedures and a
test of the paper slew and clutch operations. Test 7 consists of
several sub-tests and maintenance aids among them a scope drive test
for helping the technician to debug the hardware.

REQUIREMENTS

        PDP-11
        DATA Products, Model 2310, Line Printer
        LP11 Line Printer Control Unit

STORAGE - 0 - 7200

LOADING - Absolute Loader

EXECUTION TIME - Continuous running - Printout will occur

STARTING PROCEDURE - Start at 200
                     Restart at 600

PRINTOUTS - Yes

SWTICH REGISTER OPTIONS - Yes

        SW15 = HALT ON ERROR
        SW14 = 132 COL. LINE PRINTER
        SW13 = 96 CHARACTER LINE PRINTER
        SW12 = LOOP ON ROUTINE

NEW NUMBER - DZLPB

LPC11 INTERFACE DIAGNOSTIC TEST

ABSTRACT

This diagnostic will exercise all logic functions and data capabilities of the LPC11 Interface. The program should be started at location 200 and will type out the program name and request input of vector address, register address, and interface mode setting.

The program consists of four (4) test groups: logic tests, data tests, maintenance mode tests, and line count mode. The logic and data tests are performed sequentially; (except logic test 22 which is entered via switch ten). The maintenance mode and line count mode are entered through the console switches.

The program is designed to provide the operator with as much flexibility as possible through the use of the console switch register. Use of the switches provides for control of error print, stop on error, iteration of data patterns, repeat loop, error status bit testing, maintenance mode entry, maintenance mode interrupt recognition, and line count mode entry.

REQUIREMENTS

1. PDP-11/05,15,20,45
2. Teletype
3. LPC11 Interface
4. PDP-11/45 and KL11-L line clock
   are required for the line count mode.

STORAGE -

LOADING -

EXECUTION TIME -

STARTING PROCEDURE - 200

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

    SW 15:   1=NO ERROR PRINTS
             0=PRINT ALL ERRORS

    SW 14:   1=STOP ON ERROR
             0=CONTINUE ON ERROR

    SW 13:   1=LOOP MODE
             0=SINGLE PASS

SW 12: 1=INHIBIT DATA ITERATIONS
        0=DO NOT INHIBIT ITERATIONS

SW 11: 1=GO TO MAINTENANCE MODE
        0=DO NOT ENTER MAINTENANCE MODE

SW 17: 1=DO ERROR BIT TEST
        0=DO NOT DO ERROR BIT TEST

SW 9: 1=USE TESTER INTERRUPT FOR MAINTENANCE MODE
        0=USE CONTROLLER INTERRUPT

SW 8: 1=ENTER LINE COUNT MODE (PDP=11/45 only)
        0=do not enter line count mode

NEW NUMBER - DZLPC

Laboratory Peripheral System Diagnostic Test I

ABSTRACT

This diagnostic tests and exercises the "LPS". The program is self-starting and when loaded will type out the program title; A sentence is then typed giving the letter designators to be typed to run any one of the seven (7) separate tests of which this program is comprised the program then types a "CR" and then waits in a keyboard monitor mode for a letter to be typed. Although these tests may be run in any order it is imperative that the logic tests are run first and proved fully operational. The program is set up to give the operator as much control over the program as possible via the teletype typing a "C" (obtained via typing the "CNTR" and "C" keys simultaneously), while running any test will enable the program to return to the keyboard monitor and await a new letter designator to be typed typing a "A" while in monitor mode will enable the letter designators to be retyped.

REQUIREMENTS

1. PDP-11
2. Teletype
3. LPS11 option box with
   LPSAD12 simple A to D control and
   LPSADNP DMA A to D control and/or
   LPSSH dual sample and held control.

STORAGE - 0 - 17500

LOADING - Absolute Loader

EXECUTION TIME - 1 minute for Logic Test

STARTING PROCEDURE - Program is self-starting with a restart address
of '174 re-initialization address of '200'
204 A - D Logic Test
210 DMA Logic Test
214 Dual sample logic
220 A - D Calibration test

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

SW15 = HALT ON ERROR
SW14 = SCOPE LOOP
SW13 = INHIBIT PRINTOUTS
SW11 = INHIBIT ITERATION

MAINDEC-11-   NEW NUMBER = DZLPD

Laboratory Peripheral System Diagnostic Test II

ABSTRACT

This diagnostic tests and exercises the "LPS". The program is
self-starting and when loaded will type out the program title. A
sentence is then typed giving the letter designators to be typed to
run any one of the seven (7) separate tests of which this program is
comprised. The program then types a "CR," and then waits in a
keyboard monitor mode for a letter to be typed. Although these tests
may be run in any order it is imperative that the "logic" tests are
run first and proved fully operational. The program is set up to give
the operator as much control over the program as possible via the
teletype typing a "C" (obtained via typing the "CNTR" and "C" keys
simultaneously) while running any test will enable the program to
return to the keyboard monitor and await a new letter designator to be
typed. Typing a "A" while in monitor mode will enable the letter
designators to be retyped.

REQUIREMENTS

        1. PDP-11
        2. Teletype
        3. LPS11 option box with:
            LPSKW real time clock control and/or
            LPSDR Digital input/output control and/or
            LPSVC point plot scope control

STORAGE = 0 17500

LOADING = Absolute Loader

EXECUTION TIME = Not greater than 2 minutes per subtest

STARTING PROCEDURE - Program is self-starting with a restart address
                     of '174' or re-initialized at address '200'

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SW15 = HALT ON ERROR
        SW14 = SCOPE LOOP
        SW13 = INHIBIT ERROR PRINTOUTS
        SW12 = INHIBIT TRACE TRAPPING
        SW11 = INHIBIT ITERATION

NEW NUMBER = DZLPE

LPS-11 Overlay for GTP-11

ABSTRACT

This program is a quick go-nogo test of the LPS-11 system under GTP.
The purpose of this test is to quickly identify any problem in the
system. The program will start the display, if selected, and the
operator must verify the display pattern.

REQUIREMENTS

STORAGE - This program used memory locations 40000-44000 Less than 2K
of memory.

LOADING - Absolute Loader - after loading GTP

EXECUTION TIME - Function of GTP

STARTING PROCEDURE - See switch register options

PRINTOUTS - Same as GTP

SWITCH REGISTER OPTIONS - Initialization

    SW15 = INHIBIT LPS-11 VC DISPLAY
    SW14 = INHIBIT LPS-11 CLOCK
    SW13 = INHIBIT LPS-11 DIGITAL I/O BACKGROUND
    SW12 = LPS-11 OR INPUT-OUTPUT CABLE NOT CONNECTED
    SW11 = INHIBIT LPS-11 A TO D CONVERTER
    SW10 = INHIBIT LPS-11 DMA A TO D OPTION

    Refer to GTP for dynamic switch settings.

NEW NUMBER = DZLSA

LS11 CENTRONICS PRINTER TEST

ABSTRACT

This program is designed to test and exercise centronics printers.
The basic logic tests executed and exercises performed are as follows:

1. Manual intervention (optional) to check
   hardware alarms. For further details see
   Test 0 under PROGRAM DESCRIPTION.

2. Status and buffer register addressability.

3. Done bit - clear and set; as well as mode
   and IE bits after RESET.

4. Interrupt enable bit - clear and set.

5. Interrupts with processor at levels 4 thru 7

6. Interrupt with processor at level 3.

7. Deselect interrupt

8. Format control characters

9. Bell

10. Relative timing technique for checking time to
    execute a certain line length (4 lengths in this
    program) and slewing rate.
    (see Section 8.4 to interpret relative time test
    results).

11. Data transfer lines

12. Character generation

13. Lower case letters forced to UPPER CASE

14. Switch register input (optional) to print
    lines of characters regular or elongated.
    For further details see Test 31 under
    PROGRAM DESCRIPTION.

15. Print time free pulse generator (optional).
    For further details see Test 31 under
    PROGRAM DESCRIPTION.

REQUIREMENTS

> PDP-11 standard computer with console teletype, A
> centronics printer and LS11 Interface.

STORAGE = 4K

LOADING =

EXECUTION TIME = 11 minutes

STARTING PROCEDURE = 200

PRINTOUTS =

SWITCH REGISTER OPTIONS = Yes

```
        SW<15>=1.....HALT ON ERROR
        SW<14>=1.....SCOPE LOOP
        SW<13>=1.....INHIBIT ERROR PRINTOUT
        SW<12>  .....SELECT "PRINT TIME FREE" PULSE GENERATOR
                     SEE PROGRAM DESCRIPTION OF TEST 31
        SW<11>  .....NOT USED
        SW<12>=1.....ELONGATION ON SWR input test
                     see program description of Test 31
        sw< 9>=1.....selection of a particular test
        sw< 8>=1.....select manual intervention
        sw<7 thru 0>..contains the test no, = used
                     with sw<9>
```

NEW NUMBER - DZLVA

LV11 PRINTER/PLOTTER TEST

ABSTRACT

This is a dynamic test of the LV-11 printer plotter hardware and interface. This test is used to determine the ability of the hardware to execute both alpha printed and graphic plotted data. The test is divided into two parts. The first is a manual intervention test where the operator must execute the operation typed on the console teletype. The second test the operator must visually inspect the printed pattern on the electrostatic paper from the printer.

REQUIREMENTS

    PDP-11 computer
    LV-11 interface module
    LV-11 printer plotter

STORAGE - Less than 4K of memory.

LOADING

EXECUTION TIME

    Manual intervention Test - N/A
    Dynamic Logic and Visual Test - 5 min.
    Upon completion of one pass, the console bell will ring.

STARTING PROCEDURE - 200

PRINTOUTS

SWITCH REGISTER OPTIONS - Yes

    SWITCH BIT 15 = 1.....HALT ON ERROR
    SWITCH BIT 14 = 1.....LOOP ON CURRENT TEST
    SWITCH BIT 13 = 1.....INHIBIT ERROR TYPEOUT
    SWITCH BIT 12 = 1.....LOOP ON A LINE
    SWITCH BIT 8 = 1.....SELECT FIRST TEST RUN BY SW 0-3

NEW NUMBER = DZMRA

ABSTRACT

The DZMRA diagnostic program is written to be used as an aid to hardware debugging and maintenance of the MR11-DB (64 word bulk storage bootstrap loader). These programs may also be used as a data reliability test.

REQUIREMENTS

        PDP-11
        MR11-DB (64 word bulk storage bootstrap loader)

STORAGE = This program uses core 0-4102(8)

LOADING = Absolute Loader

EXECUTION TIME = 1 min.

STARTING PROCEDURE = Load address = 00200

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        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

NEW NUMBER = DCMSA

ABSTRACT

This program tests all memory parity (max,28K) by exercising the register control logic then by writing a series of patterns. The program will map where memory parity is found and report this information on the teletype. The program will then proceed to test all of memory parity found.

REQUIREMENTS

PDP=11/45 with Memory Parity

STORAGE = The routines use memory locations 0 to 7777.

LOADING = Absolute Loader

EXECUTION TIME = 22 sec.

STARTING PROCEDURE = at 200

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

```
SW15=1 OR UP -- HALT ON ERROR
SW14=1 OR UP -- SCOPE LOOP
SW13=1 OR UP -- INHIBIT PRINTOUT
SW11=1 OR UP -- INHIBIT ITERATIONS
SW10=1 OR UP -- HALT AT END OF CURRENT TEST
SW 9=1 OR UP -- SELECT ROUTINE SPECIFIED BY SW7=SW0
SW 8=1 OR UP -- MANUAL INTERVENTION = PERFORM HALT ON ERROR
                   TEST
SW 7 THRU SW0 -- NUMBER OF TEST ROUTINE TO BE SELECTED
```

NEW NUMBER = DCMSB

ABSTRACT =

This program tests MOS/Bipolar Memory with a galloping pattern. This
test may be used on any memory however it is most effective on
MOS/Bipolar, Memory may be tested by starting at ADDRESS 204 and
inputting test limits or by starting at ADDRESS 200 and all available
memory (28K max,) will be tested,

REQUIREMENTS

        PDP-11/45 with Memory Parity

STORAGE = The routines use memory locations 0 to 7777

LOADING = Absolute Loader

EXECUTION TIME = 20 sec,

STARTING PROCEDURE = at 200

PRINTOUTS = No

SWITCH REGISTER OPTIONS = Yes

        SW15 = 1 OR UP == HALT ON ERROR
        SW14 = 1 OR UP == SCOPE LOOP
        SW13 = 1 OR UP == INHIBIT PRINTOUT

MAINDEC-11-D2E-   NEW NUMBER - D2PAA

Typeset-11 Reader-Punch Tests

ABSTRACT

The Typeset-11 Reader and Punch Tests consists of a package of test
programs designed to test the PA611 reader logic, reader, punch logic,
punch, and the reader and punch in combination. All tests are
included in one object tape. The available tests are listed
numerically:

             PRG0 - Reader test
             PRG1 - Punch test
             PRG2 - Punch verify routine
             PRG3 - Combined reader-punch test
             PRG4 - Punch tape with 2 characters set in sr routine
             PRG5 - Read and check tape punched with 2 characters set in
                     sr
             PRG6 - Read x characters, then stall y msecs
             PRG7 - Special binary count pattern tape generator
             PRG10 - Reader speed print routine
             PRG11 - Punch speed print routine

Programs PRG0 - PRG3 are the Reader and Punch Tests.
Programs PRG4 - PRG11 are utility routines that produce test tapes and
aid in making adjustments.

REQUIREMENTS

             PDP-11
             ASR33-35 Teletype
             PA611 Reader(s) and Punch(s)

STORAGE - 200 - 015600

LOADING - Absolute Loader

EXECUTION TIME - Depends on program being executed.
                 Printout will occur

STARTING PROCEDURE - Start at 200

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

SW15 = HALT ON ERROR   SW10 = HALT AT END OF CURRENT ROUTINE
SW14 = ENTER SCOPE MODE   SW 9 = SELECT SPECIFIC ROUTINE
SW13 = INHIBIT ERROR PRINT   SW 7 - SW0 = NUMBER OF TEST SELECTED
SW11 = INHIBIT ITERATION

NEW NUMBER - DZPAB

PA611 MULTI READER PUNCH EXERCISER

ABSTRACT

The function of this test is to detect malfunctions caused by the interaction of multiple pa611 typesetting systems. The program types out a sequence of message on the console TTY that ask the operator to select his test configuration. The punches generate a tape with a special binary count pattern and the readers expect to read a tape with this pattern. Therefore any punch can serve any reader so long as they are the same code level (6 bits vs. 8 bits).

REQUIREMENTS

1. PDP-11/20 system
2. High Speed Reader
3. 0 to 16 typesetting punches
4. 0 to 16 typesetting readers

STORAGE - 4K

LOADING

EXECUTION TIME - Program runs indefinitely. Execution time is
                determined by the tape length.

STARTING PROCEDURE - 200

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

The program will type the following sequence

    1. Message 1 - "set SR to vector of reader 0"

       The program then halts at which point the operator must
       load the console switches with the vector address of the
       first reader and press continue.

    2. Message 2 - "set SR to readers test"

       The program then halts at which point the operator
       must select readers to test and press continue.
            SW0=1 test reader 0
            SW1=1 test reader 1
            ETC.

3'. Message 3 = "set SR to code level=up=8 down=6

This message print and halt is executed only if
one or more readers is selected for test'. The operator
is required to indicate the code level of each reader
selected by using the console switches as follows and
press continue.
        SW011=5 level code for reader 0
        SW010=6 level code for reader 0
        SW111=8 level code for reader 1
        ETC.

4'. Message 4 = "set SR to punches to test"

The program then halts at which point the operator is
requested to select the punches to test and press
continue'.
        SW311=test punch 0
        ETC.

5'. Message 5 = "set SR to code level=up=8 down=6"

The program then halts. The switch interpretation
is the same as item 3 above.

6. Message 6 = "setup SR, normal SR=000000,
Press continue".

The operator then resets the switch register options
as follows!

        SR15=halt on all errors
        SR14=inhibit printing of error messages
        SR13=inhibit stall

At this time depressing continue will start the
exerciser.

NEW NUMBER - DZPAC

GTP OVERLAY FOR PA611

ABSTRACT

The function of this test is to detect malfunctions caused by the interaction of multiple pa611 typesetting systems with GTP. The program types out a sequence of messages on the console TTY that ask the operator to select his test configuration. The punches generate a tape with a special binary count pattern and the readers expect to read a tape with this pattern. Therefore any punch can service any reader so long as they are the same code level (6 bits vs 8 bits).

REQUIREMENTS

    1. PDP-11/20 system
    2. High Speed Reader
    3. 0 to 16 typesetting punches
    4. 0 to 16 typesetting readers
    5. GTP test program (MAINDEC 11-DZQGA)

STORAGE - Loads in 12K of core

LOADING

EXECUTION TIME - End of pass is controlled by the host program GTP.
                Run time is determined by the quantity of tape
                punched.

STARTING PROCEDURE - Refer to GTP's documentation on overlays

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

The program will type the following sequence

    1. Message 1 - "set SR to vector of reader 0"

       The program then halts at which point the
       operator must load the console switches with
       vector address of the first reader and press
       continue.

    2. Message 2 - "set SR to readers to test"

       The program then halts at which point the operator
       must select readers to test and press continue.
            SW0=1 test reader 0
            SW1=1 test reader 1
            ETC.

3. Message 3 = "set SR to code level-up=8 down=6"

This message print and halt is executed only if
one or more readers is selected for test. The
operator is required to indicate the code level of
each reader selected by using the console switches
as follows and press continue.
    SW011=5 level code for reader 0
    SW010=6 level code for reader 0
    SW111=5 level code for reader 1
    ETC.

4. Message 4 = "set SR to punches to test"

The program then halts at which point the
operator is requested to select the punches
to test and press continue.
    SW011= test punch 0
    ETC.

5. Message 5 = "set SR to code level-up=8, down=6

The program then halts. The switch interpretation
is the same as item 3 above.

6. Message 6 = "setup SR, normal SR=200000.
Press continue.

The operator then resets the switch register
options as follows:

    SR15 = HALT ON ALL ERRORS
    SR14 = INHIBIT PRINTING OF ERROR MESSAGES
    SR13 = INHIBIT STALL

At this time, depressing continue will start
the exerciser.

MAINDEC=11=D2B=   NEW NUMBER = DZPCA

PC11 High Speed Reader and Punch Tests

ABSTRACT

The PC11 High Speed Reader and Punch Tests consist of a package of
test programs designed to test the reader logic, reader, punch logic,
punch, and the reader and punch in combination. All tests are
included in one object tape. The tests are listed in numerical order:

PRG0   = Reader logic tests
PRG1   = Reader test
PRG2   = Punch logic tests
PRG3   = Punch test
PRG4   = Punch verify routine
PRG5   = Combined reader=punch test
PRG6   = Punch tape with 2 characters set in sr routine
PRG7   = Read and check tape punched with 2 characters in sr
PRG10 = Read x characters, then stall y msecs
PRG11 = Special binary count pattern tape generator
PRG12 = Reader speed print routine
PRG13 = Punch speed print routine

Program PRG0 = PRG5 are the reader and punch tests. Programs PRG6 =
PRG13 are utility routines that produce test tapes and aid in making
adjustments.

REQUIREMENTS

        PDP=11
        ASR33=35 Teletype
        PC11 Reader or PC11 Reader and Punch

STORAGE = 200 = #15600

LOADING = Absolute Loader

EXECUTION TIME = Depends on Program being executed.
                 Printout will occur.

STARTING PROCEDURE = Start at 200

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

SW15 = HALT ON ERROR   SW12 = INHIBIT ITERATION
SW14 = ENTER SCOPE MODE   SW10 = LOOP PROGRAM
SW13 = INHIBIT ERROR PRINT   SW 9 = SELECT A SPEC. ROUTINE

MAINDEC-11-D5J-
         D5J-1

RC11 Disk Data/Part one Static Test

ABSTRACT

The RC11 Disk Data Test is a series of static, address and data
reliability routines which verify to the user the disk control (RC11)
and disk (RS64) are operating correctly. This test used in
conjunction with the RC11 diskless and RC11 multi disk assures the
user of an error free system, when used in its entirety.

REQUIREMENTS

        PDP-11
        RC11 and RS64

STORAGE = 0 - 11250

LOADING = Absolute Loader

EXECUTION TIME = 22 sec. = Printout will occur

STARTING PROCEDURE = Start and Restart at 200

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

            SW15 = ENTER PROGRAM CONVERSATION
            SW14 = DELETE TYPEOUTS
            SW13 = HALT ON FLAG
            SW12 = DELETE DATA COMPARISONS
            SW11 = LOOP ON TEST
            SW10 = HALT AFTER ERROR
            SW 9 = WAIT FOR INTERRUPTS
            SW 8 = LOOP ON DISK ADDRESS
            SW 5 = SELECT TRACK FROM SW4 = SW0

MAINDEC-11-D5B-   NEW NUMBER - DZRCC

RC11 Multi Disk

ABSTRACT

Multi Disk was designed to insure the user that the disk system is capable of transferring data correctly while not destroying the users program on the disk surface. The program first reads from the disk. The length of the transfer is determined by the size of memory. If an error occurs while reading, the program will make up to three attempts at reading the data. If the error still exists, the program will then halt. If the program successfully reads from the disk within the three attempts, it will then generate a random buffer, write it on the disk, and read it back and verify it. After comparing the data, the program then writes the original data back on the disk, making up to three attempts to transfer if an error is encountered, before halting. If the data was successfully transferred, the program will go to the next buffer until the complete disk system is exercised.

REQUIREMENTS

      PDP-11
      Teletype
      RC11 and RS64 plus up to three additional RS64's

STORAGE - The main body of the program occupies the first 5K. Three
      data buffers occupy the rest of existing memory.

LOADING - Absolute Loader

EXECUTION TIME - 11 sec. - Printout will occur

STARTING PROCEDURE - Start and Restart at 200

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - No

SPECIAL INSTRUCTIONS

Type Control C to terminate and save old data.

MAINDEC=11=D50=   NEW NUMBER = DZRFA

RF11 Disk Data

ABSTRACT

The RF11 disk data test is a series of static, address and data
reliability routines which verify to the user the disk control (RF11)
and Disk (RS11) are operating correctly. This test used in
conjunction with the RF11 diskless and RF11 multi disk assures the
user of an error free system, when used in its entirety.

REQUIREMENTS

        PDP=11
        RF11 and RS11

STORAGE = 0 = 11134

LOADING = Absolute Loader

EXECUTION TIME = 1 hr. 15 min. = Printout will occur

STARTING PROCEDURE = Start and Restart at 200

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SW15 = ENTER PROGRAM CONVERSATION
        SW14 = DELETE TYPEOUTS
        SW13 = HALT ON FLAG
        SW12 = DELETE DATA COMPARISONS
        SW11 = LOOP ON TEST
        SW10 = HALT AFTER ERROR
        SW 9 = WAIT FOR INTERRUPTS
        SW 8 = LOOP ON DISK ADDRESS
        SW 7 = SELECT TRANS FROM SR

MAINDEC-11-D5A-   NEW NUMBER - DZRFB

RF11 MULTI DISK

ABSTRACT

Multi Disk was designed to insure the user that the disk system is
capable of transferring data correctly while not destroying the users
programs on the disk surface. The program first reads from the disk;
the length of the transfer is determined by the size of memory. If an
error occurs while reading, the program will make up to three attempts
at reading the data. If the error still exists, the program will then
halt. If the program successfully reads from the disk within the
three attempts, it will then generate a random buffer, write it on the
disk, and read it back and verify it. After comparing the data, the
program then writes the original data back on the disk, making up to
three attempts to transfer if an error is encountered, before halting.
If the data was successfully transferred, the program will go to the
next disk buffer until the complete disk system is exercised.

REQUIREMENTS

        PDP-11 - 4K to 28K of memory
        Teletype
        RF and RS11 plus up to seven additional RS11's

STORAGE - The main body of the program occupies the first 5K. Three
          data buffers occupy the rest of existing memory.

LOADING - Absolute Loader

EXECUTION TIME - 5 min. - Printout will occur

STARTING PROCEDURE - Start and Restart at 200

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - No

NEW NUMBER = DZRFC

RF11 MULTI DISK TEST

ABSTRACT

Multi disk is a high speed confidence test that assures the user that he can transfer data correctly, without destroying the data on the disk. Multi disk uses all existing memory on the system as buffer areas.

REQUIREMENTS

1. PDP-11 4K to 28K of memory
2. Teletype
3. RF11 and RS11 plus up to seven
   additional RS11's

STORAGE = First 5K Octal (bytes) of memory

LOADING

EXECUTION TIME

STARTING PROCEDURE = 230,

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS

NEW NUMBER - DZRKA

RK11 STATIC TEST

ABSTRACT

The RK11 disk data test is a series of address and data reliability routines which verify to the user the disk control (RK11) and disk (RK02 thru RK05) are operating correctly. This test used in conjunction with the RK11 data test and RK11 random drive exerciser assures the user of an error free system, when used in its entirety.

REQUIREMENTS
        PDP-11
        RK11 and (RK02 thru RK05)

STORAGE -

LOADING -

EXECUTION TIME -

STARTING PROCEDURE - 200

PRINTOUTS -

SWITCH REGISTER OPTIONS -

MAINDEC=11=D5H=   NEW NUMBER = DZRKB

RK11 Disk Data

ABSTRACT

The RK11 Disk Data Test is a series of address and data reliability
routines which verify to the user the disk control (RK11) and disk
(RK02 through RK05) are operating correctly. This test used in
conjunction with the RK11 static test and RK11 random drive exerciser
assures the user of an error free system, when used in its entirety.

REQUIREMENTS

        PDP=11 4K
        RK11 and (RK02 thru RK05)

STORAGE = All of memory

LOADING = Absolute Loader

EXECUTION TIME = 2 hrs = Printout will occur

STARTING PROCEDURE = Start and Restart at 200

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SW15 = ENTER PROGRAM CONVERSATION
        SW14 = DELETE TYPEOUTS
        SW13 = HALT ON FLAG
        SW12 = DELETE DATA COMPARISONS
        SW11 = LOOP ON TEST
        SW10 = HALT AFTER ERROR
        SW 9 = WAIT FOR INTERRUPTS
        SW 8 = LOOP ON DISK ADDRESS
        SW 7 = 0 = SELECT CYLINDER FROM SR

MAINDEC-11-D5G-   NEW NUMBER - DZRKC

RK11 Random Exercíser

ABSTRACT

The RK11 Random Exercíser is an attempt to simulate a users
environment of an RK11 system. This test is not meant to be a
diagnostic. If problems are encountered while running this program,
It is suggested that the operator revert back to the RK11 diagnostic
(Disk Data Maindec D5HA).

REQUIREMENTS

        PDP-11
        Teletype
        RK11 Disk Control
        RK (02, 03, 04, 05) Disk Drive (Max, 8)

STORAGE - All of memory of the lower limit of the absolute loader,

LOADING - Absolute Loader

EXECUTION TIME - 5 min, - Printout will occur

STARTING PROCEDURE - Start and Restart at 200

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - NO

NEW NUMBER = DZRPA

PRODUCT NAME = RP11C Diskless Diagnostic

ABSTRACT

The RP11C Diskless Diagnostic exercises the RP11C in the maintenance mode. It consists of two segments, the first segment verifies the logic contained in the RP11C by utilizing the three maintenance registers which simulate the signals passing between the RP11C and the RP03. Segment two operates in the normal mode and is used to verify the switches contained on the RP11C and the RP03.

REQUIREMENTS

HARDWARE = Standard PDP-11 configuration RP11C Disk Controller, One or more RP03 Disk Drives (switch test only);

SOFTWARE

STORAGE = 4K

LOADING = Absolute Loader

EXECUTION TIME = 4 minutes

STARTING PROCEDURE = 200

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS

```
        SW15 = 1 ... HALT ON ERROR
        SW14 = 1 ... LOOP ON ERROR
        SW13 = 1 ... INHIBIT PRINTOUT
        SW12     ... NOT USED
        SW11 = 1 ... RING BELL ON ERROR
```

NEW NUMBER = DZRPB

PRODUCT NAME = RP11C Reliability Diagnostic

ABSTRACT

This program tests both the addressing capability and the data
reliability of the RP11C and the RP03. The program consists of seven
tests any one of which is selectable by the operator. A conversation
mode exists which allows the operator to define test parameters.

REQUIREMENTS

HARDWARE = PDP-11 standard family processor
           RP11C disk pack controller with up to eight RP03
           drives ASR33 or equivalent.

SOFTWARE

STORAGE = 8K

LOADING = Absolute Loader

EXECUTION TIME = 8 hours

STARTING PROCEDURE = 200

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = SW15 = 1 ... HALT ON ERROR

            SW15 = 1 ... HALT ON ERROR
            SW14 = 1 ... INHIBIT PRINTOUT
            SW12 = 1 ... INHIBIT BACKGROUND TEST
            SW11 = 1 ... RING BELL ON ERROR
            SW10 = 1 ... LOOP ON TEST
            SW09 = 1 ... INHIBIT DATA COMPARISON

NEW NUMBER = DZRPC

PRODUCT NAME = RP11C Multi Drive Diagnostic

ABSTRACT

This program will test up to eight RP02/RP03 drives on an RP11C disk
controller. Basically, the program will seek to a random address and
then write and read random data. While data is being transferred,
seek operations will be in progress on the other drives. The purpose
of the test is to check for any interaction on the bus while trying to
keep all the drives busy.

REQUIREMENTS

HARDWARE = PDP=11 standard family processor
           RP11C disk controller with up to eight RP02/RP03 disk
           drives.

SOFTWARE

STORAGE = 4K

LOADING = Absolute Loader

EXECUTION TIME = 1/2 hour

STARTING PROCEDURE = 200

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS

        SW15 = 1 ... HALT ON ERROR
        SW14 =   ... NOT USED
        SW13 = 1 ... INHIBIT PRINTOUT
        SW12 =   ... NOT USED
        SW11 =   ... NOT USED
        SW10 = 1 ... BELL ON ERROR
        SW07 = thru SW00 = 1 ... SELECT UNIT FOR TEST

NEW NUMBER = DZRPD

PRODUCT NAME = RP11C Disk Pack Formatter

ABSTRACT

The RP11C formatter consists of three parts. Part 1 formats an RP03 Disk in the normal manner and checks all addresses for validity. Part 2 allows the operator to rewrite the header of any desired sector. Part 3 formats and verifies the disk with the sequence of sector addresses specified by the operator.

REQUIREMENTS

HARDWARE = Standard PDP-11 configuration
           RP11C Disk Controller
           One or more RP03 disk drives

SOFTWARE

STORAGE = 4K of storage

LOADING = Absolute Loader

EXECUTION TIME = 1/2 hour

STARTING PROCEDURE = 200

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS

```
        SW15 = 1 ... HALT ON ERROR
        SW14     ... NOT USED
        SW13 = 1 ... INHIBIT PRINTOUT
        SW12     ... NOT USED
        SW11     ... NOT USED
        SW10 = 1 ... BELL ON ERROR
```

NEW NUMBER = DZRPE

PRODUCT NAME = RP11 Diskless Diagnostic

ABSTRACT

The RP11 Diskless Diagnostic exercises the RP11 in the maintenance mode. It verifies the logic contained in the RP11 by utilizing the three maintenance registers which simulate the signals passing between the RP11 and the RP02.

REQUIREMENTS

HARDWARE = Standard PDP-11 configuration and a RP11 Disk Controller.

SOFTWARE

STORAGE = 4K of storage.

LOADING = Absolute Loader

EXECUTION TIME = 5 minutes

STARTING PROCEDURE =600

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS

        SW15 = 1 ... DELETE ERROR HALT
        SW14 = 1 ... DELETE PRINTOUT
        SW13 = 1 ... LOOP ON FAILING TEST
        SW12 = 1 ... LOOP ON TEST UNCONDITIONALLY

NEW NUMBER = DZRPF

PRODUCT NAME = RP11 Disk Data and Address Test

ABSTRACT

This program tests both the addressing capability and the data
reliability of the PR11 and the RP02. The program consists of seven
tests any one of which is selectable by the operator. A conversion
mode exists which allows the operator to define test parameters.

REQUIREMENTS

HARDWARE = PDP-11 standard family processor
          RP11 Disk pack controller with up to eight RP02 drives
          ASR33 or equivalent

SOFTWARE

STORAGE = 8K of storage

LOADING = Absolute Loader

EXECUTION TIME = 5 hours

STARTING PROCEDURE = The program must always be started at 200.

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS

```
        SW15 = 1 ... HALT ON ERROR
        SW14 = 1 ... LOOP ON ERROR
        SW13 = 1 ... INHIBIT PRINTOUT
        SW11 = 1 ... RING BELL ON ERROR
        SW10 = 1 ... LOOP ON TEST
        SW09 = 1 ... INHIBIT DATA COMPARISON
        SW08 = 1 ... ENTER CONVERSATION MODE
        SW05 = 1 ... USED TO CONTROL HOW MANY COMPARE ERRORS WILL BE
                     TYPED OUT AS A RESULT OF A READ OPERATION IN
                     THE DATA TEST.
        SW05 = 1 ... CHECK FOR UP TO THREE COMPARE ERRORS WITHIN THE
                     READ BUFFER AND TYPE ALL APPROPRIATE ERROR
                     INFORMATION FOR EACH ERROR.
        SW05 = 0 ... CHECK FOR ONLY ONE COMPARE ERROR WITHIN THE
                     READ BUFFER.
        SW04     ... USED TO CONTROL THE AMOUNT OF INFORMATION TYPED
                     ON REREAD ATTEMPTS
        SW04 = 1 ... TYPE ALL ERROR INFORMATION ON EACH REREAD
                     ATTEMPT.
        SW04 = 0 ... TYPE THE ERROR INFORMATION ON THE FIRST READ
                     ERROR ONLY. AFTER THE ERROR GOES AWAY OR IS
```

UNRECOVERABLE, THE NUMBER OF REREADS IS THEN
TYPED,

SW03 = 1 ,,, RUN TEST SELECTED BY SWITCH POSITIONS SW0 THRU
            SW2;
SW00 thru SW02 TEST SELECTED
        0   ADDRESS TEST 0
        1   ADDRESS TEST 1
        2   ADDRESS TEST 2
        3   TEST 3 = WRITE CHECK TEST
        4   TEST 4 = MEMORY ADDRESS TEST
        5   TEST 5 = DATA RELIABILITY
        6   TEST 6 = RANDOM TEST
        7   TEST 7 = POWER FAIL TEST

If it is desired to select an individual test, also set SW10
loop on test;

NEW NUMBER = DZRPG

PRODUCT NAME = RP11 Multi Drive Diagnostic

ABSTRACT

This program will test up to eight RP02 drives on an RP11 Disk
Controller. Basically, the program will seek to a random address and
then write and read random data. While data is being transferred,
seek operations will be in progress on the other drives. The purpose
of the test is to check for any interaction on the bus while trying to
keep all the drives busy.

REQUIREMENTS

HARDWARE = PDP-11 standard family processor
          RP11 Disk Controller with up to eight RP02 disk drives

SOFTWARE

STORAGE = 4K of storage

LOADING = Absolute Loader

EXECUTION TIME = It is recommended that the program should run for
                half an hour

STARTING PROCEDURE = The program should always be started at 200.

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS

```
          SW15 = 1 ... HALT ON ERROR
          SW14     ... NOT USED
          SW13 = 1 ... INHIBIT PRINTOUT
          SW12     ... NOT USED
          SW11     ... NOT USED
          SW10 = 1 ... BELL ON ERROR
          SW07 thru SW00 = 1 ... SELECT UNIT FOR TEST
          SW00 corresponds to unit 0
          SW07 corresponds to unit 7
```

NEW NUMBER = DZRPH

PRODUCT NAME = RP11 Disk Pack Formatter

ABSTRACT

The RP11 formatter consists of three parts. Part I formats an RP02 disk in the normal manner and checks all addresses for validity. Part II allows the operator to rewrite the header of any desired sector. Part III formats and verifies the disk with the sequence of sector addresses specified by the operator.

REQUIREMENTS

HARDWARE = Standard PDP-11 configuration
           RP11 Disk Controller
           One or more RP02 disk drives

SOFTWARE

STORAGE = Program requires 4K of storage

LOADING = Absolute Loader

EXECUTION TIME = 1/2 hour

STARTING PROCEDURE = 600

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS

        SW15 = 1 ... DELETE ERROR HALT
        SW14 = 1 ... DELETE PRINTOUTS

NEW NUMBER - DZRSA

RS64 TESTER MONITOR AND DISK EXERCISER

ABSTRACT

The RS64 tester monitor and exerciser is a time-sharing system which monitors and services multiple RS64 testers which exercise RS64 disks. The operator of each tester station has control over the monitoring of his station through the station's teletype. The operator has the ability to run an automatic acceptance program or any one of 20 tests for which he may choose the data and addressing parameters.

REQUIREMENTS

        PDP-11 standard processor
        KW11-L line frequency clock
        RS64 testers (up to 16)
        LT33-DC teletypes (one per RS64 tester).

STORAGE - 8K

LOADING

EXECUTION TIME - Auto Accept takes 12+1/2 hours

STARTING PROCEDURE - 200

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

Program control is my means of an interactive monitor and console teletype.

NEW NUMBER = DZTAA

TAI1 LOGIC TEST (PART 1)

ABSTRACT

This program contains a series of basic logic tests that check the TAI1 for proper operation.

REQUIREMENTS

        PDP-11 computer with console teletype,
        and a TAI1 cassette.

STORAGE = APPROX, 4K

LOADING

EXECUTION TIME = The first pass takes approximately 45 seconds. All
                subsequent passes take approximately 100 seconds.

STARTING PROCEDURE = 220

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SW<15>=1...HALT ON ERROR
        SW<14>=1...LOOP ON TEST
        SW<13>=1...INHIBIT ERROR TYPEOUTS
        SW<11>=1...INHIBIT ITERATIONS
        SW<10>=1...RING BELL ON ERROR
        SW<10>=0...RING BELL ON PASS COMPLETE
        SW<09>=1...LOOP ON ERROR
        SW<08>=1...LOOP ON TEST AS PER SW<07|00>
        SW<07>=1...LOCK ON CURRENT DRIVE (ONLY VALID
                FOR STARTING ADDRESSES 220 THRU 250),

NEW NUMBER = DZTAB

TA11 LOGIC TEST (PART 2)

ABSTRACT

This program contains a series of basic logic tests that check the
TA11 for proper operation.

REQUIREMENTS

        PDP-11 computer with console teletype,
        and a TA11 cassette.

STORAGE = Approx. 4K

EXECUTION TIME = The first pass takes approximately 107 seconds. All
                subsequent passes take approximately 475 seconds.

STARTING PROCEDURE = 200

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SW<15>=1...HALT ON ERROR
        SW<14>=1...LOOP ON TEST
        SW<13>=1...INHIBIT ERROR TYPEOUTS
        SW<11>=1...INHIBIT ITERATIONS
        SW<17>=1...RING BELL ON ERROR
        SW<17>=0...RING BELL ON PASS COMPLETE
        SW<09>=1...LOOP ON ERROR
        SW<08>=1...LOOP ON TEST AS PER SW<07I00>
        SW<07>=1...LOCK ON CURRENT DRIVE (ONLY VALID
                FOR STARTING ADDRESSES 220 THRU 250).

NEW NUMBER = DZTAC

TA11 MANUAL INTERVENTION TEST

ABSTRACT

This program contains a series of basic logic tests that check the TA11 for proper operation.

REQUIREMENTS

>   PDP-11 computer with console teletype,
>   and a TA11 cassette

STORAGE = APPROX. 4K

EXECUTION TIME = 2 minutes

STARTING PROCEDURE = 200

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

>   SW<15>=1,,,HALT ON ERROR
>   SW<14>=1,,,LOOP ON TEST
>   SW<13>=1,,,INHIBIT ERROR TYPEOUTS
>   SW<11>=1,,,INHIBIT ITERATIONS
>   SW<17>=1,,,RING BELL ON ERROR
>   SW<17>=0,,,RING BELL ON PASS COMPLETE
>   SW<09>=1,,,LOOP ON ERROR
>   SW<08>=1,,,LOOP ON TEST AS PER SW<07:00>
>   SW<07>=1,,,LOCK ON CURRENT DRIVE (ONLY VALID
>   FOR STARTING ADDRESSES 220 THRU 250),

NEW NUMBER = DZTAD

TA11 MOTION TEST

ABSTRACT

This program contains a series of tests that check the TU60 drive for proper operation.

REQUIREMENTS

        PDP=11 computer with console teletype,
        and a TA11 cassette

STORAGE = Approx, 4K

LOADING

EXECUTION TIME = The first pass takes approximately 4 minutes.   All
                subsequent passes take approximately 8 minutes,

STARTING PROCEDURE = 200

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SW<15>=1,,,HALT ON ERROR
        SW<14>=1,,,LOOP ON TEST
        SW<13>=1,,,INHIBIT ERROR TYPEOUTS
        SW<11>=1,,,INHIBIT ITERATIONS
        SW<12>=1,,,RING BELL ON ERROR
        SW<17>=0,,,RING BELL ON PASS COMPLETE
        SW<09>=1,,,LOOP ON ERROR
        SW<07>=1,,,LOCK ON CURRENT DRIVE
        SW<05>=1,,,DELAY AT END OF EACH FUNCTION
        SW<05>=1,,,RUN WITHOUT INTERRUPTS
        SW<04>=1,,,IGNORE BLOCK CHECK ERRORS
        SW<03>=1,,,INHIBIT DATA COMPARE

NEW NUMBER = DZTAE

TA11 DATA RELIABILITY

ABSTRACT

This program collects statistical information pertaining to the data reliability of the TA11/TU60 when run for extended periods of time. It uses a number of different parameters controlling the data patterns, the number of bytes per block (record) and the number of blocks per file.

REQUIREMENTS

        PDP-11 computer with console teletype,
        and a TA11 cassette.

STORAGE = Approx. 4K

LOADING

EXECUTION TIME = Testing the TA11/TU60 to specification takes
                approximately 2 hours, 30 minutes with each drive
                taking 75 minutes.

STARTING PROCEDURE = 200

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SW<15>=1...HALT ON ERROR
        SW<14>=1...LOOP ON TEST
        SW<13>=1...INHIBIT ERROR TYPEOUTS
        SW<12>=1...RING BELL ON ERROR
        SW<09>=1...HALT AFTER NEXT "END-OF-TEST" TYPEOUT
        SW<08>=1...AT NEXT "END-OF-TAPE" (EOT) GO TO "END-OF-TEST"
        SW<07>=1...PERFROM PASS AS PER SWR<1|0>
                SWR<1|0>=00=FORMAT
                SWR<1|0>=01=READ ONLY
                SWR<1|0>=10=WRITE ONLY
                SWR<1|0>=11=READ ONLY

TA11 CASSETTE ABSOLUTE LOADER (TALDR)

ABSTRACT

TALDR is a loader program designed to load MAINDEC-11 diagnostic programs from TA11 cassettes.

The TALDR loader is the first file stored on a TA11 MAINDEC-11 cassette. It is labelled "TALDRB.SYS". It is followed by one or more MAINDEC-11 diagnostic programs stored in abs loader format.

Each TA11 MAINDEC-11 cassette is provided with a directory, that lists the TALDR loader, and all the programs stored in the cassette.

Each file name in the cassette is numbered with an octal sequence number. TALDR has the sequence number of 1. The file number is used to specify to the TALDR loader which program is to be loaded.

In order to prevent accidental erasure of cassettes, each cassette to be loaded from, should be "write-locked". Write-locking of a cassette is accomplished by uncovering the small holes at the back of the cassette by filing the small plastic tabs out of the way.

Ability of the TALDR loader to successfully load a program depends on the size of the program to be loaded. TALDR can not load a program that infringes on its own storage area.

REQUIREMENTS

       Hardware

       A PDP11 processor
       BM792-YH cassette bootstrap ROM (may be simulated
       by a TA11 bootstrap loader program.)
       TA11 tape cassette control unit.
       TU60 tape cassette transport
       8K minimum storage

       Software

       MAINDEC-11 diagnostic tape cassettes
       TA11 bootstrap loader program (if BM792-YH is not installed)
       (this program must be manually toggled in.)

STORAGE - 2K

LOADING

EXECUTION TIME

STARTING PROCEDURE - Refer to DOC,

PRINTOUTS

SWITCH REGISTER OPTIONS - Yes

Is set to file number of program to be loaded,

NEW NUMBER - DZTAG

TA11 GTP OVERLAY

ABSTRACT

The function of this test is to detect interactive type of problems of the TA11 in a system environment.

The program exercises both drives simultaneously.

Program starts by rewinding both units; then the program writes one block, back space one block and reads a block on unit 2.

The same exercise is performed on unit 1.

When end leader is detected, the units are rewound and the write/back space/read sequence are repeated all over again.

REQUIREMENTS

        PDP-11 system with 12K of core. This overlay starts at
        40070
        High Speed Reader
        TA11
        GTP test program (MAINDEC-11-DZQGA)

STORAGE - This overlay loads in 12K of core with GTP

LOADING

EXECUTION TIME - Same as GTP overlay

STARTING PROCEDURE - Load address 40700 and start.

PRINTOUTS - Same as GTP overlay

SWITCH REGISTER OPTIONS - Same as GTP overlay

MAINDEC-11-D3A-   NEW NUMBER - DZTCA

TC1 - TC11 Test 1

ABSTRACT

TC1 - TC11 Test 1 is Part 1 of a five program package used to test the
TC11 DECtape Control. TC1 is a bit checker program that checks that
each of the control's registers can be referenced without causing bus
error traps, that read-write bits can be set and clear, that
read/write bits are cleared by reset instruction, and that read only
bits are set to their power clear state by reset instruction.

A special routine (Test 0) is available in the program as a
maintenance aid in adjusting the TC11 control delays.

REQUIREMENTS

          PDP-11
          ASR33-35 Teletype
          TC11 DECtape Control and at least one TU56 Dual Transport

STORAGE - 0 - 16700

LOADING - Absolute Loader

EXECUTION TIME - 1. One normal pass - 1 minute
                 2. Single iteration pass - 13 seconds.
                 - Printout will occur

STARTING PROCEDURE - Start at 200
                     Restart at 1000

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

          SW15 - HALT ON ERROR
          SW14 - SCOPE
          SW13 - INHIBIT ERROR PRINTOUT
          SW11 - INHIBIT ITERATION
          SW12 - HALT AT END OF CURRENT ROUTINE
          SW 9 - SELECT ROUTINE

MAINDEC=11-D3B=   NEW NUMBER = DZTCB

TC2 = TC11 Test 2

ABSTRACT

TC2 = TC11 Test 2 is part 2 of a five program package used to test the
TC11 DECtape control. TC2 uses the maintenance bit feature of the
TC11 control to check the TC11 control without depending on DECtape
transport movement. Prior to actual use of the maintenance bit
feature, correct operation of the interrupt circuits is checked, and
the maintenance bit itself is checked.

REQUIREMENTS

        PDP=11
        ASR33=35 Teletype
        TC11 DECtape Control and at least one TU56 Dual Transport

STORAGE = 0 = 17400

LOADING = Absolute Loader

EXECUTION TIME = 1. Normal pass = 4 min.
                 2. Single iteration pass = 5 sec.

                 Printout will occur

STARTING PROCEDURE = Start at 200
                     Restart at 1000

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SW15 = HALT ON ERROR
        SW14 = ENTER SCOPE MODE
        SW13 = INHIBIT ERROR PRINTOUT
        SW11 = INHIBIT ITERATION
        SW10 = HALT AT END OF TEST
        SW 9 = SELECT TEST SPECIFIED BY SW7 =SW0
        SW 7 = SW0 = NUMBER OF TEST SELECTED

MAINDEC-11-D3C-   NEW NUMBER - DZTCC

TC3 - TC11 Test 3

ABSTRACT

TC3 - TC11 Test 3 is part 3 of a five program package used to test the
TC11 DECtape Control. TC3 tests and exercises the TC11 control and
from one to eight selected transports. TC3 concentrates on testing
for correct operation of the up to speed bit (UPS), ability to read
block numbers and detect end zones, exercises RNUM command reading
forward and reverse block number, exercises the WDATA (Write Data) and
RDATA (Read Data) commands both forward and reverse, and with single,
double, and 4 block transfers.

REQUIREMENTS

        PDP-11
        ASR33/35 Teletype
        TC11 DECtape control and at least one TU56 Dual Transport

STORAGE - 0 - 17500

LOADING - Absolute Loader

EXECUTION TIME - 1. Normal pass - about 43 min.
                 2. Single iteration pass - about 15 min.
                 - Printout will occur

STARTING PROCEDURE - Start at 200
                     Restart at 1000

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

        SW15 = HALT ON ERROR
        SW14 = ENTER SCOPE MODE
        SW13 = INHIBIT ERROR PRINTOUT
        SW11 = INHIBIT ITERATION
        SW10 = HALT AT END OF TEST CURRENTLY EXECUTED
        SW 9 = SELECT THE TEST SPECIFIED BY SR7 - SR0
        SW 7 - SW0 = NUMBER OF TEST SPECIFIED

MAINDEC-11-D3D-   NEW NUMBER - DZTCD

TC4 - TC11 Test 4

ABSTRACT

TC4 - TC11 Test 4 is part 4 of a five program package used to test the
TC11 DECtape Control. TC4 tests and exercises the TC11 Control and
from one to eight selected transports. TC4 concentrates on testing
for correct operation of the READ ALL and WRITE ALL commands, and
checks for correct operation of the parity circuits.

REQUIREMENTS

        PDP-11
        ASR33-35 Teletype
        TC11 DECtape Control and at least one TU56 Dual Transport
        At least one standard PDP-11 Format DECtape; the guard
        areas of the tape blocks must be zero, if necessary,
        reformat tape,

STORAGE - 0 - 17502

LOADING - Absolute Loader

EXECUTION TIME - 1, Normal pass - about 36 min,
                 2, Single iteration pass - 7 min,
                 - Printout will occur

STARTING PROCEDURE - Start at 200
                     Restart at 1000

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

        SW15 = HALT ON ERROR
        SW14 = ENTER SCOPE MODE
        SW13 = INHIBIT ERROR PRINTOUT
        SW11 = INHIBIT ITERATION
        SW10 = HALT AT END OF TEST
        SW 9 = SELECT THE SPECIFIED SW7 - SW0
        SW 7 - SW0 = NUMBER OF TEST SELECTED

MAINDEC=11-D3E=   NEW NUMBER = D3TCE

TC5 = TC11 Test 5

ABSTRACT

TC5 = TC11 Test 5 is part 5 of a five program package used to test the
TC11 DECtape control. TC5 exercises the TC11 control and from one to
eight selected transports. All available core storage up to 28K is
used in order to execute the maximum number of data transfers
possible.

REQUIREMENTS

        PDP=11
        ASR33/35 Teletype
        TC11 DECtape Control and at least one TU56 Dual Transport
        One Standard PDP=11 Format DECtape for each transport to be
        tested. One of the tape blocks must be zero. If necessary
        reformat the tape.

STORAGE = 2 = 10014

LOADING = Absolute Loader

EXECUTION TIME = 1. Normal pass = max. 1 hour
                 2. Single iteration pass = 5 min.
        Note: Actual time dependent on number of transports and
              available core.
              = Printout will occur

STARTING PROCEDURE = Start at 200
                     Restart a 1000

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SW15 = HALT ON ERROR
        SW14 = ENTER SCOPE MODE
        SW13 = INHIBIT ERROR PRINTOUT
        SW11 = INHIBIT ITERATION
        SW10 = HALT AT END OF TEST
        SW 9 = SELECT THE TEST SPECIFIED BY SW7 = SW0
        SW 7 = SW0 = NUMBER OF TEST TO BE SELECTED

MAINDEC-11-D4A-   NEW NUMBER = DZTMA

TM11 Instruction Test

ABSTRACT

The TM11 instruction test contains a series of basic tests that check
TM11 registers for proper operation while not involving tape motion,
All tape motion functions, data transfers extended memory, and manual
intervention tests of the TU10 transport switches,

REQUIREMENTS

            PDP-11 with TM11 Control Unit and 1 TU10 Tape Unit

STORAGE = 4K of memory

LOADING = Absolute Loader

EXECUTION TIME = 1 min, = Bell will ring

STARTING PROCEDURE = Start at 200

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

            SW15 = HALT ON ERROR
            SW14 = SCOPE LOOP
            SW13 = INHIBIT PRINTOUT
            SW12 = INHIBIT SUB-TEST ITERATION
            SW10 = INHIBIT MANUAL INTERVENTION TEST
            SW 0 = TEST 7 CHANNEL TAPE UNIT

MAYNDEC=11=D4B=   NEW NUMBER = DZTMB

TMI1 Data Reliability (9 Track)

ABSTRACT

The TM11 Data Reliability Program collects statistical information
pertaining to the data reliability of the TM11, TU10 when run for
extended periods of time. It uses a number of different parameters
controlling data patterns, record lengths, writing and reading
sequences and stopping modes (NONSTOP, START=STOP, RANDOM STALL
DELAY).

REQUIREMENTS

        PDP=11 with TM11 and 1 to 8 TU10 Tape Units (9 Channel only)

STORAGE = 4K of memory

LOADING = Absolute Loader

EXECUTION TIME = Depends on length of tape. = Printout will occur

STARTING PROCEDURE = 200 for automatic parameter selection
                   = 204 to manually select parameters (with 4K)
                   = 210 to manually select parameters (with 8K)

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = No

MAINDEC=11=D4C=   NEW NUMBER = DZTMC

TM11 Data Reliability (7 Track)

ABSTRACT

The TM11 Data Reliability Program collects statistical Information
pertaining to the data reliability of the TM11. When TU10 runs for
extended periods of time, it uses a number of different parameters
controlling data patterns, parity, density record lengths, writing and
reading sequences and stopping modes (NONSTOP, START=STOP, RANDOM
STALL DELAY).

REQUIREMENTS

        PDP=11 with TM11 and 1 to 8 TU10 Tape Units (7 Channel only)

STORAGE = 4K of memory

LOADING = Absolute Loader

EXECUTION TIME = Depends on Length of Tape = Printout will occur

STARTING PROCEDURE = 200 for automatic parameter selection
                   = 204 to manually select parameters (with 4K)
                   = 210 to manually select parameters (with 8K)

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = No

MAINDEC-11-D4D-   NEW NUMBER = DZTMD

TM11 Drive Function Timer

ABSTRACT

The TM11 Drive Function Timer assists in the testing of the TM11
control unit and TU10 tape unit. Selected operations are executed,
timed, and the times are then printed (in milliseconds). There is no
limit or error testing facilities in the program. The decision on the
validity of times measured must be made by the operator. Any
configuration of up to 8 TU10 Tape Units (7 and 9 Channel) may be
selected.

REQUIREMENTS

        PDP-11 with TM11 control unit and 1 to 8 TU10 Tape Units
        (any combination of 7 and 9 channel units)

STORAGE = 4K of memory

LOADING = Absolute Loader

EXECUTION TIME = Non-applicable

STARTING PROCEDURE = Start at 200

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

MAINDEC=11=U8H=   NEW NUMBER = DZUDA

UDC11 Control Test

ABSTRACT

UDC11 Control Test tests virtually all of the control logic up to the
UDC Bus. Maintenance logic is used to generate UDC interrupts and to
single step the scan register. Note: the UDC Bus cable to the system
units can be removed from the control while this test is run if errors
result due to interrupt modules generating interrupts. If the modules
generating interrupts are in the first four addresses (0 - 006), the
modules must be removed since removing the bus cable will not
disconnect these modules from the UDC bus.

A power fail test is included, starting address = 000204. This test
will type a message that it is waiting for a power failure and will
type which one of two types of failures occur (UDC DC power or PDP=11)
when and if they happen.

REQUIREMENTS

        PDP=11
        ASR33/35 Teletype
        UDC11 Control

STORAGE = 0 - 212500

LOADING = Absolute Loader

EXECUTION TIME = 1 min. = Bell will ring

STARTING PROCEDURE = 200 = Control Diagnostic
                     204 = Power Fail Test
                     Restart at 1000

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SW15 = HALT ON ERROR
        SW14 = ENTER SCOPE MODE
        SW13 = INHIBIT ERROR PRINTOUT
        SW11 = INHIBIT ITERATION
        SW10 = HALT AT END OF TEST CURRENTLY EXECUTING
        SW 9 = SELECT THE TEST SPECIFIED BY SW7 = SW0
        SW 7 = SW0 = NUMBER OF TEST TO BE SELECTED

MAINDEC-11-DFJ*   NEW NUMBER = DZUOB

UDC-11 System Function Exerciser

ABSTRACT

This program allows the user to checkout, debug, or demonstrate the
universal digital controller. Thru a set of parameters the program
will input and/or output data on one or more I/O channels. The input
data is generated by and the output data is detected by some external
source such as switch or light panels. The parameters are entered via
a set of directives from the teletype keyboard. At any time, any one
or more of the parameters may be changed. The program contains 7 test
routines; all of the test routines do not necessarily use all of the
directives.

REQUIREMENTS

>   PDP-11
>   ASR33/35 Teletype
>   UDC11 Control
>   I/O Modules and some form of input generating device and
>   output detecting device such as switch or light panels.

STORAGE - 0 - 11700

LOADING - Absolute Loader

EXECUTION TIME = Variable, depending on parameters and test selected.

STARTING PROCEDURE - Start at 200
                   - Restart at 1000

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS -Yes

>   SW0 = INHIBIT TYPEOUT - Test 4

MAINDEC-11-D8A--L   NEW NUMBER - D2DUT

Unibus Tester Factory use only

ABSTRACT

This program tests the unibus tester which is used for in-house production line testing of the PDP-11 UNIBUS.

REQUIREMENTS

      PDP-11 and a UNIBUS Tester

STORAGE - All of 4K of memory

LOADING - Absolute Loader

EXECUTION TIME - Not Applicable

STARTING PROCEDURE - Start at 200

PRINTOUTS - No

SWITCH REGISTER OPTIONS No

MAINDEC-11-D6G-   NEW NUMBER = DZVTB

VT05

ABSTRACT

The VT05 display terminal tests consists of a package of test programs
designed to test the VT05 input-output logic, the VT05 display, and
the keyboard. All tests are included in one object tape. The
available test programs are listed here in numerical order:

            PRG 0 - Combined input-output logic tests
            PRG 1 - Display test
            PRG 2 - Keyboard test
            PRG 3 - Printer exerciser
            PRG 4 - Clock adjustment routine
            PRG 5 - Clock adjustment routine
            PRG 6 - Maintenance mode single character data test
            PRG 7 - Maintenance mode special binary count pattern test
            PRG 10 - Roll-up display test
            PRG 11 - Cursor address test

REQUIREMENTS

            PDP-11
            VT05

STORAGE - This program uses location 00200 through 15160.

LOADING - Absolute Loader

EXECUTION TIME - Depends on program selected and baud rate.

STARTING PROCEDURE -

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

            SW15 = HALT ON ERROR
            SW14 = SCOPE
            SW13 = INHIBIT ERROR PRINTOUTS
            SW12 = INHIBIT TRACE TRAPPING/BACK GROUND TEST
            SW11 = INHIBIT ITERATION

MAINDEC=11=D6D=   NEW NUMBER = DZVTA

VT06 Display Terminal Tests

ABSTRACT

The VT06 Display Terminal Tests consists of a package of test programs
designed to test the VT06 input=output logic, the VT06 display, and
the keyboard. All tests are included in one object tape. The
available test programs are listed in numerical order:

        PRG0 = Combined input=output logic tests
        PRG1 = Display Test
        PRG2 = Keyboard Test
        PRG3 = Printer Exerciser
        PRG4 = Clock Adjustment Routine
        PRG5 = Clock Adjustment Routine
        PRG6 = Maintenance Mode Single Character Data Test
        PRG7 = Maintenance Mode Special Binary Count Pattern Test
        PRG17= Roll=Up Display Test

REQUIREMENTS

        PDP=11
        VT06 Display Terminal
        High Speed Reader

STORAGE = 200 = 11672

LOADING = Absolute Loader

EXECUTION TIME = Depends on Program selected

STARTING PROCEDURE = Start and Restart at 200

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SW15 = HALT AT END OF ROUTINE
        SW14 = ENTER SCOPE MODE AFTER ERROR
        SW11 = INHIBIT ITERATION
        SW10 = LOOP PROGRAM
        SW 9 = SELECT ROUTINE
        SW 6 = 0 = NUMBER OF ROUTINE TO BE SELECTED

NEW NUMBER - DBVTA

VT20 DIAGNOSTIC TEST

ABSTRACT

This program tests, diagnosis and exercises the "VT20" system. The program is comprised of eighteen individual selectable tests to facilitate the checkout of the VT20 displays and keyboards. The program consists of two parts. Part I, the main diagnostic is to be loaded into the VT20. Part II is a DL11 data handling routine and is to be loaded into the VT20 host computer. The program is set up to operate "with" or "without" a teletype. If a teletype isn't available, program "halts" are used to report errors and collect needed information. The program responds functionally the same with or without the teletype. It is imperative that the display tests be run and proved fully operational before running the keyboard tests. This is necessary since the display is used in conjunction with the "KBD" (functional & ASCII keyboard) tests.

REQUIREMENTS

VT20
Host computer with console device.

STORAGE - 8K

LOADING

EXECUTION TIME -

TEST	PASS TIME	NOTES
0	7,5 MINS	
1	4 MINS	
2	N/A	*
3	30 secs	
4	25 secs	
5	6 mins	
6	6 mins	
7	N/A	*
10	N/A	*
11	N/A	*
12	6 mins	
13	N/A	*
14	total of above + test 15	
15	75 secs	
16	N/A	
17	N/A	
20	N/A	
21	N/A	

STARTING PROCEDURE - There are 2 starting addresses

1. With teletype, Load and start program at
   address 200
2. Without teletype, Load and start program at
   address 204,

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

SW10=0...REQUEST KEYBOARD INPUT
SW10=1...INHIBIT KEYBOARD INPUT REQUEST

SW11=0...NORMAL RUN (100 PASSES/TEST)
SW11=1...SUPPRESS SUBTEST ITERATIONS

SW13=0...PRINT ERROR MESSAGES
SW13=1...SUPPRESS ERROR MESSAGES

SW14=0...NORMAL RUN
SW14=1...LOOP ON CURRENT SUBTEST

SW15=0...CONTINUE ON ERROR
SW15=1...HALT ON ERROR

MAINDEC-11-D9D-   NEW NUMBER - DZQCA

Communication Test program (CTP)

ABSTRACT

The function of this test is to detect malfunctions caused by the
interaction of multiple communication devices. The test is designed
to run 32 DC11 asynchronous line interfaces, 16 KL11 user teletype
interfaces, 32 DP11 synchronous line interfaces, 16 DM11 asynchronous
multiplexers, 16 DN11 auto calling units (64 lines), one DX11 (IBM 360
or 370 interface), 31 DL11C, D or E asynchronous interfaces, one LP11
line printer, one TC11 DECtape, one RF11 disk, one RK11 disk, one RP11
disk and one KL11 console teletype interface. All devices are fully
interrupt driven. This allows a background program to monitor the
comm. devices (DC's, KL's, DP's, DM's, DL's, DN's) and continuously
check NPR data (RF,RK,RP,TC). On the first pass of this program the
user must generate the hardware configuration to be tested. This is
accomplished by leaving the start address in the console switches when
pressing START. A systems configuration of devices currently on the
system will be output on the CTY. The program then halts, permitting
the user to select the device to be tested. After the initial
configuring has been accomplished the restart procedure is to "LOAD
ADDRESS", zero switches, "START".

REQUIREMENTS - PDP-11 - 8K

STORAGE - Fixed core 0 - 026760
          Variable core 026762 and up

LOADING - Absolute Loader

EXECUTION TIME - The run time is a function of system overhead. With
                 no devices running it takes approximately 1 min. to
                 complete the background. As the number of devices
                 tested increases so does the background time.
                 Printout will occur.

STARTING PROCEDURE - Start at 200 (leave start ADRS in switches if
                     first run or new test configuration).
                     Start at 1000 if LPT was tested

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

        With start address in switches program halts with R0=1.
        Program halts R0=3 thru R0=16 allocation of line activity
        for devices selected on halts below.

     R0 -1 SWITCH SELECTIONS   R0 -2 SWITCH SELECTIONS
        (SET)   (TEST)   (SET)   (TEST)

```
SW0 =1, NON-COMM DEVICES        SW0 =1, CTY (CONSOLE TTY)
SW1 =1,DC11's                   SW1 =1, LP11 (LINE PRINTER)
SW2 =1, KL11's                  SW2 =1, TC11 (DECTAPE)
SW3 =1, DP11's                  SW3 =1, RF11 (DISK)
SW4 =1, DM11A's                 SW4 =1, RK11 (DISK)
SW5 =1, DN11's                  SW5 =1, RP11 (DISK)
SW6 =1, DM11BB's                SW6 =
SW7 =1, KG11's                  SW7 =
SW8 =1, DX11's                  SW8 = NOT USED
SW9 =1, DL11C,D or E's          SW9 =

                R0=177777 DYNAMIC SWITCH SELECTION
                (SET)          (FUNCTION)
                SW 8=1, INHIBIT MEM,TEST WORST CASE NOISE
                SW 9=1, INHIBIT MEM,TEST FAST READ WRITE
                SW10=1, BELL ON ERROR
                SW11=1, INHIBIT ITERATIONS
                SW12=   (NOT USED)
                SW13=1, INHIBIT ERROR TYPEOUT
                SW14=1, SCOPE LOOP
                SW15=1, HALT ON ERROR
```

MAINDEC-11-D7A   NEW NUMBER - DZQDD

ABSTRACT

DDP2 makes the PDP-11 family diagnostic programs available in the
DECtape medium, provides an easy and convenient means of loading and
running programs provides the means for updating and modifying the
programs, and makes possible sequential execution of Diagnostic
programs (chain mode).

The diagnostic programs are packaged in four DECtapes as follows:

        DECtape 1 - Processor and memory tests, EAE tests
        DECtape 2 - 11/45 and 11/40 processor options
        DECtape 3 - I/O diagnostics
        DECtape 4 - I/O diagnostics

The following documents are released with DDP2 to facilitate its use:

        1. MAINDEC-11-DZQAA   PDP-11 MAINDEC Index
        2. MAINDEC-11-DZQAB   MAINDEC user reference manual

REQUIREMENTS

HARDWARE - 1. standard PDP-11 system
           2. 8K minimum storage
           3. TC11 DECtape control and one TU56 DECtape transport
           4. BM792YB or MR11-DB bootstrap loader
           5. Console TTY or equivalent

SOFTWARE -DDP2 uses the uppermost 1K of storage of the system (up to
           28K). It either preserves or restores the bootstrap loader,
           programs to be loaded by DDP2 must not load into DDP2 space.

STORAGE - DDP2 uses the uppermost 1K of storage of the system (up to
          28K).

LOADING - Load via BM792YB bootstrap loader or by MR11-DB bootstrap
          loader.

EXECUTION TIME - Function of each individual program executed

PARTING PROCEDURE - Start at 200

PRINTOUTS - Yes

SWITCH REGISTER OPTION - No

    1. Faster Loading
    2. Seldom run programs more likely to be used.
    3. Very useful in preventative maintenance, especially when
       used in chain mode.

4. The compact storage medium minimizes loss of programs.
5. By keeping programs updated to latest MCN levels, no need to patch a program each time it is loaded.

NEW NUMBER = DZQDE

RKDP=RK11 Diagnostic Package

ABSTRACT

RKDP makes the PDP=11 family diagnostic program available on the RK11
disk, provides an easy and convenient means of loading and running
programs, provides the means for updating and modifying the programs
and makes possible sequential execution of diagnostic programs (chain
mode).

The following documents are released with RKDP to facilitate its use:

        1, MAINDEC=11=DZQAA PDP=11 MAINDEC INDEX
        2, MAINDEC=11=DZQAB MAINDEC USER REFERENCE MANUAL

REQUIREMENTS

HARDWARE = RKDP requires the following hardware environment:

        1, Standard PDP=11 system
        2, 8K minimum storage
        3, RK11 disk controller and one RK05 disk
        4, BM792YB or MR11=DB bootstrap loader
        5, Console TTY or equivalent

SOFTWARE = RKDP uses the uppermost 1K of storage of the system (up to
        28K) It either preserves or restores the bootstrap loader
        programs to be loaded by RKDP must not load into RKDP space,

STORAGE = 8K minimum

LOADING = loaded via bulk storage bootstrap ROM

EXECUTION TIME = function of individual program

STARTING PROCEDURE = self start with ROM Bootstrap

PRINTOUTS = Yes

SWITCH REGISTER OPTIONS = Yes

        SR 070001 = ABORT CHAIN MODE
        SR 070002 = SKIP TO NEXT PROGRAM IN CHAIN MONITOR ITERATIONS

MAINDEC-11-D9H-   NEW NUMBER - DZQGA

ABSTRACT

This program is an interactive bus exerciser for a paper tape oriented
PDP-11. It performs a test of instructions and concurrent operations
of I/O equipment simultaneously. It may also perform the same
operation independently. This program is not to be considered a total
check of the system. If an error is detected in an I/O device, it
will probably be necessary to correct the malfunction with the
respective diagnostic for that device.

REQUIREMENTS - PDP-11 and 8K of memory.

OPTION HARDWARE THAT THE PROGRAM WILL EXERCISE OR INTERACT WITH:

AA11	DAC/W/SCOPE	KE11	EAE OPTION
AD01	A/D	KG11	CRC OPTION
AFC11	A/D MUX	KL11	ASR33,35 (VT05,VT06,LC11)
BM792YA	PAPER TAPE BOOT	KW11-L	LINE CLOCK
BM792YB	MASS STORAGE BOOT	KW11-P	PROG CLOCK
CD11	CARD RDR (NPR)	LP11	LINE PRINTER
CM11	CARD RDR (BR)	MM11	UP TO 28KW MEMORY
CR11	CARD RDR (RB)	MR11	BULK STORAGE BOOT
DC11	ASYNC LINE UNIT	PC11	HSP/HSR
DM11	ASYNC LINE MUX	RC11	FIXED HEAD DISK
DM11BB	MODEM CONT MUX	RF11	FIXED HEAD DISK
DN11	DIGITAL DIALER	RK11	CARTRIDGE DISK
DP11	SYNC LINE UNIT	RP11	DISK PACK
DR11A	DEV INTERFACE (BR)	TC11	DECTAPE
DR11B	DEV INTERFACE (NPR)	TM11	MAGNETIC TAPE
DR11C	DEV INTERFACE (BR)	UDC11	UNIVERSAL DIGITAL CONT
DT11	BUS SWITCH	VR20	2 COLOR SCOPE

STORAGE - 0 -37476

LOADING - Absolute Loader

EXECUTION TIME - Varies with core size and number of devices.
                - Bell will ring - 8KW- about 5 min, for two bells.

STARTING PROCEDURE - Start at 200 (SW=0 runs processor test only - all
                      of core).

PRINTOUTS - Yes

SWITCH REGISTER OPTIONS - Yes

                SW15 = HALT ON ERROR
                SW14 = SCOPE LOOP
                SW13 = INHIBIT PRINTOUT
                SW12 = INHIBIT TRACE TRAPPING

```
SW11 = INHIBIT ITERATION LOOP
SW12 = INHIBIT PROCESSOR TEST
SW 9 = INHIBIT MEMORY
SW 8 = ISOLATION BY DROPOUT
SW 7 = SWITCH ERROR MESSAGE TO HIGH SPEED PUNCH
SW 6 = RESTART PROGRAM ON ERROR
```

DEVICE INHIBIT SWITCHES = SW = 1, INHIBIT DEVICE

SWITCH	AFTER ADRS LOAD	AFTER 1ST HALT	AFTER 2ND HALT
0	DT11	DC11 #1	KG11
1	MULTI-PROC	DC11 #2	CD11
2	PC11 HSP	AA11	DR11A,C
3	PC11 HSR	AFC11	DM11BB
4	KW11-L	RK11	VR20
5	CR11,CM11	DR11-B	RESERVED
6	KW11-P	KE11	RESERVED
7	LP11 (RESTRT 600)	AD01	RESERVED
8	FACTORY USE ONLY	PP11	RESERVED
9	FACTORY USE ONLY	FACTORY USE ONLY	RESERVED
10	RF11	DN11	RESERVED
11	UDC11	TM11	RESERVED
12	RC11	M792YA	RESERVED
13	TC11	M792YB,MR11	RESERVED
14	KL11 IN	DP11	RESERVED
15	KL11 OUT	DM11	RESERVED

MAINDEC-11-D9E-   NEW NUMBER - DZQML

Maintenance Loader

ABSTRACT

The purpose of this loader is to provide an alternate method of
loading diagnostics which may function when the absolute loader fails
to work due to a hardware failure. A description of the bootstrap
loader loading the maintenance loader is also provided to aid in
isolation of trouble should it be impossible to load even the
maintenance loader. This loader is not intended to replace the
absolute loader and should only be used for loading of diagnostic
programs if the absolute loader will not function.

REQUIREMENTS

         PDP-11

STORAGE - 17476 - 17742

LOADING - Normal Bootstrap

STARTING PROCEDURE - Start at 17500

PRINTOUTS - No

SWITCH REGISTER OPTIONS - No

NEW NUMBER = DZSSA

SYSTEM SIZER

ABSTRACT

This program will detect and list on the TTY all devices that exist on the system running it,

REQUIREMETNS

Any PDP11 with 4K of memory and a TTY (or equiv,)
will run this program,

STORAGE

LOADING

EXECUTION TIME = Depends on printouts

STARTING PROCEDURE = SA200

PRINTOUTS= Yes

SWITCH REGISTER OPTIONS = N/A

Table 8

Address Assignments
Standard DEC I/O Devices

Sheet 11 Address Field 770000 to 773776

	00	10	20	30	40	50	60	70
7700	B U S T E S T E R A N D L A T E N C Y T E S T E R							
7701								
7702								
7703	◄———— VT20 ————————————————►							
7704	◄———— LPS ————————————————►					ADF 11	
7705	#1	#2	#3	#4	#5	#6	#7	#8
7706	#9	#10	#11	DM11-BB #12	#13	#14	#15	#16
7707	KG11#0	#1	#2	#3	#4	#5	#6	#7
7710				U D C 11				
7711								
7712				F U N C T I O N A L				
7713								
7714				M O D U L E S				
7715								
7716								
7717								UDC11
7720	VT42#1	VT42#2			◄————— RH11 —————————————►			
7721		MP0	MP 4-8	8 - 11	12 - 15		◄FPP	11/45 (20)
7722								
7723	1 1 / 4 5 M E M O R Y M A N A G E M E N T							
7724	▨	DR11-B #1						
7725	QST/45 ————►	◄—— TM11 ——————►			KW11-P	XY11		AFC11 ——►
7726	#1	#2	#3	#4 PR611P	#5	#6	#7	#8
7727	#1	#2	#3	#4 PR611R	#5	#6	#7	#8
7730			BM 792-YA					
7731			BM 792-YB					
7732			BM 792-YC					
7733		M792	User ROM #2					
7734		M792	User ROM #3					
7735		M792	User ROM #4					
7736		M792	User ROM #5					
7737		M792	Maintenance ROM					
	00	10	20	30	40	50	60	70

Table 8

Address Assignments
Standard DEC I/O Devices

Sheet 2: Address Field 774000 to 777776

	00	10	20	30	40	50	60	70
7740	#1	#2	#3	#4	#5	#6	#7	#8
7741	#9	#10	#11	#12	#13	#14	#15	#16
				DC11				
7742	#17	#18	#19	20	#21	#22	#23	#24
7743	#25	#26	#27	#28	#29	#30	#31	#32
7744	#32	#31	#30	#29	#28	#27	#26	#25
7745	#24	#23	#22	#21	#20	#19	#18	#17
				DP11				
7746	#16	#15	#14	#13	#12	#11	#10	#9
7747	#8	#7	#6	#5	#4	#3	#2	#1
7750	#1	#2	#3	#4	#5	#6	#7	#8
				DM11				
7751	#9	#10	#11	#12	#13	#14	#15	#16
7752	#1	#2	#3	#4	#5	#6	#7	#8
				DN11				
7753	#9	#10	#11	#12	#13	#14	#15	#16
7754	◄———————————————— DS11 ————————————————►							
7755								
7756	DS11	#1	#2	#3	#4	#5	#6	#7
				DL11,C,D,E				
7757	#8	#9	#10	#11	#12	#13	#14	#15
7760	#16	#17	#18	#19	#20	#21	#22	#23
7761	#24	#25	#26	#27	#28	#29	#30	#31
7762	◄———————————————— DX11 ————————————————►							
7763								
7764	AA11-#2		AA11-#3		AA11-4		AA11-5	
7765	1	2	3	4	5	6	7	8
				KL11 or DL11A,B				
7766	9	10	11	12	13	14	15	16
7767		◄——— RP11 ———►				AA11	#1	AD01
7770								
7771							CR11 ◄	CM11
7772								CD11
7773	KE11	#1	KE11-2		TC11		◄ DC14/SL11 ►	SL11
7774	◄— RK11 —►		◄ DT11 (8) ►		◄— RC11 —►		◄— RF11 —►	
7775	TA11	LP11			KW11-L	PC11	CTY	CPU-SR
7776	◄———————————— KT ————————————►							
7777	CPU Register ————————————————————►							CPU
	00	10	20	30	40	50	60	70

DR11A,C   Start at 167770 Down

Table 1

Timing Characteristics of Standard PDP-11 NPR Devices

NPR Priority	Device	Latency (Worst Case) (usec)	Time Between Data Available (usec)
1	RK11/RK03	8.5	11.1
2	RP11	11	14.8#
3	RC11	12	16
4	RF11	13	16
5	RK11/RK02	19	22.2
6	TM11	29	32 (@ 800 bpi)
7	TC11	67	200
8	DM11	100	119 (@ 1200 baud)
9	CD11	800	
10	DR11-B	*	

The RP11 transfers two words each 14.8 usec.
* Depends on Customer Application.

Table 2

Priority of Devices Affected by BR Latency

Priority	BR7	BR6	BR5	BR4
1	AD01(1)	KW11-L	DP11 @ 9600 baud or higher	KL11
2	DT11-B	TC11	DC11 @ 1800 baud	UNC11 (Def'd)
3		CR11	DP11 @ 4800 baud	AFC11(2)
4		CM11	DC11 @ 1200 baud	
5		KW11-P(2)	DP11 @ 2400 baud	
6		UDC11 (Immediate)	DC11 @ 600 BAUD	
7			DP11 @ 2000 baud	
8			DC11 @ 300 baud	
9			DM11	
10			DR11-A(2)	
11			DR11-B	

Notes:

1. For AD01 sampling at high rates. Can be assigned to lower level for slow input applications.

2. Priority positions depends on customer application.

Table 3

Fixed Vector Interrupt Devices

UNIBUS OPTION NO.	DEVICE ADDRESS	INTERRUPT VECTOR	BR LEVEL	X=NPR	BUS LOAD	MOUNTING	AMPS @+5 Vdc	AMPS (1) @ 115 Vac	POWER DISSIPATION (W)	PERIPHERAL
AA11	776752	140	4		1(3)	SU	2,9		(2)	VR01, VR14, VT01
AD01	776774	130	5,7		1	Panel		1	100	
AFC-11	772570	134	4		1	Cabinet		15	1700	
CR11/CM11	777162	230	6		1	SPC	1,5		(2)	GDI 100, M200/ GDI 100M
CTY	777560	060,064	4		1	SPC	1,5		(2)	Console Teleprinter
KW11-L	777546	100	6		1	Module*	0,8		(2)	(*Mounts in KA11 or KC11)
KW11-P	772540	104	6		1	SPC	1,0		(2)	
LP11	777510	200	4		1	SPC	1,0		(2)	LP01
PC11/PR11	777550	070,074	4		1	SPC	1,5	3	350	PC05
RC11	777440	210	5	X	1	Panel		2,2	250	RS64
RF11	777460	204	5	X	1	Cabinet		11	1200	RS11
RK11	777400	220	5	X	1	Cabinet		5	500	RK02, RK03
RP11	776710	254	5	X	4	Cabinet		10	1100	RP02
TC11	777340	214	6	X	1	Cabinet		3	350	TU56
TM11	772520	224	5	X	1	Cabinet		9	1000	TU10
UDC11	771772	234	4,6		2	Cabinet		24	2700	
XY11	772554	120	5		1	SPC	1,0		(2)	XY Plotter

1. Maximum AC operating current for controller and one peripheral when mounted in same cabinet.

2. Power dissipation is included in BA11 Mounting Box
   - see Equipment Power Requirements, Table 6.

3. AA11 presents two unit bus loads if it includes Scope Control.

Table 4

Floating Vector Interrupt Devices

UNIBUS Option No.	Max. No. of Units	Address of			Full(1) Duplex	BR Level	X= NPR	Bus Load	Mounting	Amps (6) @ +5 Vdc
		First	Second	... Last Unit						
DC11	32	774000	774010	... 774370	X	5		1	SU	2.0
KL11	16	776500	776510	... 776670	X	4		1	SPC	1.5
DP11	32	774770	774760	... 774400	X	5		1	SU	2.5
DM11	16	775000	775010	... 775170	X	5	X	1	2=SU(8)	4.9
DN11	16	775200	775210	... 775370		4		1	SU	4.0
DM11=BB	16	770500	770510	... 770670		4		1	Module(9)	2.5
DR11=A	(2)	767770	767760	...	X	5		1	SPC	1.5
DT11	8	777420	777422	... 777436	X	7		(4)	Panel	(5)
DR11=B	4(3)	772410	772430	... 772470	(7)	5	X	1	SU	3.3

1. Full duplex devices require two consecutive vectors.

2. The maximum number of DR11-A's is limited only by available vector space. Addresses are assigned in User Address Space starting at 767770 and counting down.

3. Additional DR11-B's may be installed with addresses in User Address Space.

4. DT11 presents three Unit Bus Loads to each processor bus and three loads to the switched bus.

5. DT11 requires 1.2 amps at 115 Vac; power dissipation is 125 watts.

6. Power dissipation of SPC and SU devices is included in BA11 Mounting Box - see Equipment Power Requirements, Table 6.

7. DR11-B requires only one vector, but it must be of the form XX4.

8. DM11 also includes Distribution Panel and power supply.

9. DM11-BB module set mounts in DM11 SU.

Table 7

I/O Device Vector Assignments

000-174	200-374	400-574	600-774
000 Reserved	200 LP11	400	600
004 Time out error	204 RF11	404	604
010 Reserved Inst,	210 RC11	410	610
014 "T" trap	214 TC11	414	614
020 "IOT" trap	220 RK11	420	620
024 Power fail	224 TM11	424	624
030 "EMT" trap	230 CR11, CM11	430	630
034 "TRAP" trap	234 UDC11	434	634
040 Reserved	240 11/45 PIRQ	440	640
044 Reserved	244 FPP	444	644
050 Reserved	250 KT error	450	650
054 Reserved	254 RP11	454	654
060 CTY Input	260 TA11	460	660
064 CTY Output	264 Reserved	464	664
070 PC11 Reader	270 *	470	670
074 PC11 Punch	274 *	474	674
100 KW11-L	300 #	500	700
104 KW11-P	304	504	704
110 Reserved	310	510	710
114 MEM, PARITY	314	514	714
120 XY11	320	520	720
124 DR11-B	324	524	724
130 AD01	330	530	730
134 AFC11	334	534	734
140 AA11 Display	340	540	740
144 AA11 Light Pen	344	544	744
150 Reserved	350	550	750
154 Reserved	354	554	754
160 Reserved	360	560	760
164 Reserved	364	564	764
170 *	370	570	770
174 *	374	574	774

*User reserved

#Start floating vector assignments at location 300. Note that full duplex devices require two consecutive vectors; e.g., DC11 #1 at 300 and 304,