

Here are some quick notes for common operator actions on CYBIS.

This version describes procedures for CYBIS running on NOS 2.8.7 on the DtCyber emulator.

1. Local and remote control of DtCyber

DtCyber is controlled via two X-based applications, called “dd60” (the Cyber console emulation) and “dtover” (the DtCyber operator control interface).

If you’re using local access, i.e., you’re at the X display of the machine where DtCyber runs, you would start DtCyber with the “dteyber.sh” script. Among other things, that script will start dd60 and dtover.

If you’re using remote access (you’re coming in via SSH) do **not** use dteyber.sh but instead use “dteyber-remote.sh”. That script also does dteyber startup handling but doesn’t run the control applications.

For remote access, you’ll need to specify SSH tunneling on the SSH command line, or in the tunneling settings if you’re using a GUI-based SSH utility such as PuTTY. I use this command:

```
ssh -L 5104:localhost:5004 -L 5105:localhost:5005 \  
-L 5106:localhost:5006 -L 5107:localhost:5007 \  
-L 8105:localhost:8005 paul@cyberserv.org
```

The tunnel entries for 5004 and 8005 are for the classic and ASCII pterm respectively. 5005 is the port for the pterm at station 0-1; that is occasionally needed because 0-1 is a “special station”. 5006 is the port for dtover; 5007 is the port for dd60. I map all these to different port numbers locally so I don’t get conflicts if I run dteyber on my own machine while at the same time tunneling to Cyber1.

1.1. Starting and stopping dtover

You can start dtover and stop at any time. It’s ok to have more than one copy running. For local access, simply start it in the background:

```
./dtover & <enter>
```

For remote access, specify the TCP port number to access. That will have to be a port number you gave to SSH for tunneling to the machine on which DtCyber is running. My convention is to use the standard port number plus 100; for dtover that means 5106:

```
./dtover 5106 & <enter>
```

To exit dtover, enter the command:

```
end. <enter>
```

dtover will exit. Note that this doesn’t affect DtCyber.

1.2. Starting and stopping dd60

You can start dd60 and stop at any time. It's ok to have more than one copy running. For local access, simply start it in the background:

```
./dd60 & <enter>
```

For remote access, specify the refresh interval, and the TCP port number to access.

The refresh rate controls how quickly dd60 updates. The default is every 60 milliseconds, which makes it nicely responsive for local use, but that isn't a good idea for WAN access. I usually pick 3-5 seconds for the refresh rate.

The TCP port number will have to be a port number you gave to SSH for tunneling to the machine on which DtCyber is running. My convention is to use the standard port number plus 100; for dd60 that means 5107:

```
./dd60 4 5107 & <enter>
```

To exit dd60, enter ALT-Z (Command-Z on the Mac). dd60 will exit. Note that this doesn't affect DtCyber.

2. Startup.

Normally you will want to start DtCyber with a Level 0 Deadstart, and autostart everything. There are two startup scripts: dtcyber.sh (if you're local, i.e., sitting at the X display of the machine where DtCyber runs) and dtcyber-remote.sh (if you're remote, i.e., connected via SSH). Either way, if you invoke the script without arguments, it will start DtCyber in autostart mode, which will start everything (including PLATO). Autostart mode also reinitializes ECS, which is necessary after certain failures and never hurts in a level 0 deadstart.

```
./dtcyber.sh
```

After a few seconds, two windows appear, one of these is the Cyber console. (If you're using dtcyber-remote.sh, the script just exits once dtcyber has started, and you then have to start dd60 and/or dtoper manually, at your local system.)

Click on the dd60 window to see the console display so you can see what's going on. When it first appears, NOS is in the middle of the deadstart, which shows a display like this:

11.59.19. 07/04/26. NETWORK OPERATING SYSTEM. (CYBER1).
MID=AA NOS 2.8.7 871/871.

NOW LOADING THE NOS SOFTWARE SYSTEM.
COPYRIGHT CONTROL DATA SYSTEMS INC. 1997.

NOW LOADING THE NOS SOFTWARE SYSTEM.
COPYRIGHT CONTROL DATA SYSTEMS INC. 1997.

DEADSTART STATUS.

LOADING MF\$IE\$D

DISK BUSY
AUTO.

When it is done, you'll see the A and B displays on the console, and lots of things will start to run. After all the activity stops, PLATO is running; the display will look roughly like this:

A. SYSTEM DAYFILE.										B.A. SYSTEM STATUS.									
12.02.54. 07/04/26. NETWORK OPERATING SYSTEM. (CYBER1). MID=AA NOS 2.8.7 871/871.																			
12.01.37.	PLAIS.	UNIT 7	PUBD	MASTER	A	CP	JSN	SC	PR	FL	CPU	STATUS							
12.01.37.	PLAIS.	UNIT 8	PUBE	MASTER	A	1													
12.01.37.	PLAIS.	UNIT 9	PUBF	MASTER	A	2	NAM	X	77	326	X	NV/		12.01.43.APPLICATION					
12.01.37.	PLAIS.	UNIT 10	PUBG	MASTER	A	3	MAS1	S	76	45	X	CYBIS							
12.01.37.	PLAIS.	UNIT 11	PUBH	MASTER	A	4													
12.01.37.	PLAIS.	UNIT 12	PUBI	MASTER	A	5	PLA1	S	73	1243	X			CHECK DATE/TIME					
12.01.37.	PLAIS.	UNIT 13	PUBJ	MASTER	A	6	COA1	S	72	11	X								
12.01.37.	PLAIS.	UNIT 14	BINARIES	BINARY	D	7	FOR1	S	74	172	X	FRAMAT							
12.01.37.	PLAIS.	UNIT 15				10	PN11	S	74	462	X	0 TERMINALS ACTIVE.							
12.01.37.	PLAIS.	UNIT 16				11													
12.01.38.	PLAIS.	UNIT 17				12													
12.01.38.	PLAIS.	UNIT 18				13													
12.01.38.	PLAIS.	UNIT 19				14													
12.01.38.	PLAIS.	UNIT 20				15													
12.01.38.	PLAIS.	UNIT 21				16													
12.01.38.	PLAIS.	UNIT 22				17													
12.01.38.	PLAIS.	UNIT 23				20													
12.01.38.	PLAIS.	UNIT 24				21													
12.01.38.	PLAIS.	UNIT 25				22													
12.01.38.	PLAIS.	UNIT 26				23													
12.01.38.	PLAIS.	UNIT 27				24													
12.01.38.	PLAIS.	UNIT 28				25													
12.01.38.	PLAIS.	UNIT 29				26	MAG	X	76	35	X	MAGNET.							
12.01.39.	PLAIS.					27	B10	X	70	2		IDLE.							
12.01.41.	AAAMS.	IF(1,NOT,FILE(PN1LOCK,AS),PN1DF)				30													
12.01.41.	AAAMS.	ENDIF(PN1DF)				31	SYS	S	100	0		E0006, CYBER, 06 RECOVERED.							
12.01.42.	AAAMS.	ONEXIT.																	
12.01.42.	AAAMS.	IF(1,FILE(PN1LOCK,AS),RUNPNI)																	
12.01.42.	AAAMS.	*DIS.																	
12.01.42.	AAAMS.	PN1(i)																	
12.01.43.	NAM X.																		
12.01.43.	PLAIS.	DEVELOPMENT SYSTEM																	
12.01.43.	PLAIS.	INSTALLING LOCAL SYSLES MODS																	
12.01.43.	PLAIS.	LOCAL SYSTEM LESSONS INSTALLED																	
12.01.43.	PN1IS.	NETON COMPLETE.																	
12.01.51.	PLAIS.	CHECK DATE/TIME																	

3. Shutdown.

First back out PLATO (1 3 from author mode). Then, at the console:

```

K.          MAS1
12.05.03. 07/04/26. NETWORK OPERATING SYSTEM. (CYBER1).
MID=AA     NOS 2.8.7 871/871.

B,A.  SYSTEM STATUS.

-----
CP   JSN   SC   PR   FL   CPU   STATUS
1
2   NAM    X   77   326  X   NV/      12.01.43.APPLICATION
3   MAS1   S   76   45   X   CYBIS
4
5   PLA1   S   73   1243  X   FULL SYSTEM BACKOUT COMPLETED.
6   COA1   S   72   11   X
7   FOR1   S   74   172  X   FRAMAT
10  FN11   S   74   462  X   0 TERMINALS ACTIVE.
11
12
13
14
15
16
17
20
21
22
23
24
25
26   MAG    X   76   35   X   MAGNET.
27   BIO    X   70   2    X   IDLE.
30
31   SYS    S   100   0    E0006, CYBER, 06 RECOVERED.

MASTOR K-DISPLAY

SUBMIT FILE =   CYBIS
SECUR       =   OFF

K.STOP

```

k,mas1. <enter>
k.stop <enter>
[(to erase the "k.")

```

K.          MAS1
12.05.41. 07/04/26. NETWORK OPERATING SYSTEM. (CYBER1).
MID=AA     NOS 2.8.7 871/871.

B,A.  SYSTEM STATUS.

-----
CP   JSN   SC   PR   FL   CPU   STATUS
1
2   NAM    X   77   326  X   NV/      12.05.23.APPLICATION
3
4
5
6
7
10
11
12
13
14
15
16
17
20
21
22
23
24
25
26   MAG    X   76   35   X   MAGNET.
27   BIO    X   70   2    X   IDLE.
30
31   SYS    S   100   0    E0006, CYBER, 06 RECOVERED.

JSN NOT FOUND

AB.

```

ab.<enter>

A. SYSTEM DAYFILE.		B,A. SYSTEM STATUS.						
12.06.10. 07/04/26. NETWORK OPERATING SYSTEM. (CYBER1). MID=AA NOS 2.8.7 871/871.								
12.01.38. PLAIS.	UNIT 27	CP	JSN	SC	PR	FL	CPU	STATUS
12.01.38. PLAIS.	UNIT 28	1						
12.01.39. PLAIS.	UNIT 29	2						
12.01.39. PLAIS.		3	NAM	X	77	326	X NV/	12.05.23.APPLICATION
12.01.41. AAMS.	IFE(.NOT.FILE(PNLOCK,AS),PNIDF)	4						
12.01.41. AAMS.	ENDIF(PNIDF)	5						
12.01.41. AAMS.	ENDIF(CYBIS)	6						
12.01.42. AAMS.	ONEXIT.	7						
12.01.42. AAMS.	IFE(FILE(PNLOCK,AS),RUNPNI)	10						
12.01.42. AAMS.	*DIS.	11						
12.01.42. AAMS.	PNI(1)	12						
12.01.43. NAM X.	NV/ 12.01.43.APPLICATION NETTED 0	13						
12.01.43. PLAIS.	DEVELOPMENT SYSTEM	14						
12.01.43. PLAIS.	INSTALLING LOCAL SYSLES MODS	15						
12.01.43. PLAIS.	LOCAL SYSTEM LESSONS INSTALLED	16						
12.01.43. PNIIS.	NETON COMPLETE.	17						
12.01.51. PLAIS.	CHECK DATE/TIME	20						
12.04.00. PLAIS.	FULL SYSTEM BACKOUT COMPLETED.	21						
12.05.21. MASI.	DS, K.STOP	22						
12.05.21. PLAIS.	(PI0) PPU DROPPED	23						
12.05.21. PLAIS.	OPERATOR KILL.	24						
12.05.21. FORIS.	OPERATOR KILL.	25						
12.05.22. COAIS.	OPERATOR KILL.	26	MAG	X	76	35	X	MAGNET.
12.05.23. MASI.	MASTOR DROP	27	BIO	X	70	2		IDLE.
12.05.23. NAM X.	NV/ 12.05.23.APPLICATION NETTED 0	30						
12.05.23. PNIIS.	FF - CYBIS	31	SYS	S	100	0		E0006, CYBER, 06 RECOVERED.
12.05.23. MASI.	NETOFF COMPLETE.							
12.05.23. PNIIS.	OPERATOR KILL.							
12.05.23. MASI.	ELSE(MASTOR)							
12.05.24. MASI.	ENDIF(MASTOR)							
12.05.24. MASI.	DAYFILE.							
12.05.24. MASI.	USER DAYFILE PROCESSED.							
12.05.24. MASI.	EXIT.							
12.05.24. MASI.	OUT(*OP=E)							
12.05.24. MASI.	UNLOAD(*OP=0)							
12.05.24. MASI.	DAYFILE(OUTPUT,JT=D)							
12.05.24. MASI.	USER DAYFILE PROCESSED.							
IDLE,NAM.								

idle,nam.<enter>

A. SYSTEM DAYFILE.		B,A. SYSTEM STATUS.						
12.07.26. 07/04/26. NETWORK OPERATING SYSTEM. (CYBER1). MID=AA NOS 2.8.7 871/871.								
12.06.41. AADN.	SKIPR(TRCLEV1)	CP	JSN	SC	PR	FL	CPU	STATUS
12.06.41. AADN.	COPYBFI(TRCLEV1,TRCLEV3)	1						
12.06.41. AAFN.	DEFINE(CSLST=CSL0168)	2						
12.06.41. AADN.	E01 ENCOUNTERED.	3						
12.06.41. AADN.	E01. 1 FILE 2 RECORDS 179 WORDS.	4						
12.06.41. AADN.	BKSP(TRCLEV3)	5						
12.06.41. AADN.	SKIPR(TRCLEV3)	6						
12.06.41. AAFN.	SKIPR(CSLST)	7						
12.06.41. AAFN.	NOTE(DFL,NR)/CSDA168	10						
12.06.41. AAFN.	DAYFILE(DFL)	11						
12.06.41. AADN.	IFI(.NOT.FILE(TRCLEV3,E0F)) WRITEF(TRCLEV3)	12						
12.06.42. AAFN.	USER DAYFILE PROCESSED.	13						
12.06.42. AAFN.	PACK(DFL)	14						
12.06.42. AAFN.	PACK COMPLETE.	15						
12.06.42. AADN.	ENDIF(NTRCLV1)	16						
12.06.42. AAFN.	COPYE(DFL,CSLST)	17						
12.06.42. AADN.	RETURN(TRCLEV1,TRCLEV2,TRCLEV3)	20						
12.06.42. AAFN.	E01 ENCOUNTERED.	21						
12.06.42. AAFN.	E01. 0 FILES 1 RECORD 400 WORDS.	22						
12.06.42. AAFN.	SETJOB(DC=N0)	23						
12.06.42. AAFN.	EXIT. CS	24						
12.06.42. AADN.	ENDIF(NOTRACE)	25						
12.06.42. AADN.	ATTACH(NVFLST=NVLO168/NA,M=H)	26	MAG	X	76	35	X	MAGNET.
12.06.42. AADN.	IFI(.NOT.FILE(NVFLST,AS))DEFINE(NVFLST=NVLO168)	27	BIO	X	70	2		IDLE.
12.06.42. AADN.	DEFINE(NVFLST=NVLO168)	30						
12.06.43. AADN.	SKIPR(NVFLST)	31	SYS	S	100	0		E0006, CYBER, 06 RECOVERED.
12.06.43. AADN.	NOTE(DFL,NR)/NVDA168							
12.06.43. AADN.	DAYFILE(DFL)							
12.06.43. AADN.	USER DAYFILE PROCESSED.							
12.06.43. AADN.	PACK(DFL)							
12.06.43. AADN.	PACK COMPLETE.							
12.06.43. AADN.	COPYE(DFL,NVFLST)							
12.06.43. AADN.	E01 ENCOUNTERED.							
12.06.43. AADN.	E01. 0 FILES 1 RECORD 435 WORDS.							
12.06.43. AADN.	SETJOB(DC=N0)							
12.06.43. AADN.	EXIT. NVF							
UNLOCK.								

unlock. <enter>

The word “UNLOCK” appears in bold on the top line of the display.

A. SYSTEM DAYFILE.		UNLOCK		B.A. SYSTEM STATUS.					
12.07.51. 07/04/26. NETWORK OPERATING SYSTEM. (CYBER1).		MID=AA NOS 2,8,7 871/871.							
12.06.41.	AAADN. SKIPR1(TRCLEV1)	CP	JSN	SC	PR	FL	CPU	STATUS	
12.06.41.	AAADN. COPYBF(TRCLEV1,TRCLEV3)	1							
12.06.41.	AAAFN. DEFINE(CSLST=CSL0168)	2							
12.06.41.	AAADN. E01 ENCOUNTERED.	3							
12.06.41.	AAADN. E01. 1 FILE 2 RECORDS 179 WORDS.	4							
12.06.41.	AAADN. BKSP1(TRCLEV3)	5							
12.06.41.	AAADN. SKIPR1(TRCLEV3)	6							
12.06.41.	AAAFN. SKIPR1(CSLST)	7							
12.06.41.	AAAFN. NOTE(DFL,NR)/CSDA168	10							
12.06.41.	AAAFN. DAYFILE(DFL)	11							
12.06.41.	AAADN. IF(.NOT.FILE(TRCLEV3,E0F)) WRITEF(TRCLE	12							
	V3)	13							
12.06.42.	AAAFN. USER DAYFILE PROCESSED.	14							
12.06.42.	AAAFN. PACK(DFL)	15							
12.06.42.	AAAFN. PACK COMPLETE.	16							
12.06.42.	AAADN. ENDF1NTRCLV1)	17							
12.06.42.	AAAFN. COPYE1(DFL,CSLST)	20							
12.06.42.	AAADN. RETURN1 TRCLEV1,TRCLEV2,TRCLEV3)	21							
12.06.42.	AAAFN. E01 ENCOUNTERED.	22							
12.06.42.	AAAFN. E01. 0 FILES 1 RECORD 400 WORDS.	23							
12.06.42.	AAAFN. SETJOB(DC=NO)	24							
12.06.42.	AAAFN. EXIT. CS	25							
12.06.42.	AAADN. ENDF1F(NOTRACE)	26							
12.06.42.	AAADN. ATTACH(NVFLST=NVLO168/NA,M=H)	27							
12.06.42.	AAADN. IF(.NOT.FILE(NVFLST,AS))DEFINE(NVFLST=NV	30							
	LO168)	31							
12.06.42.	AAADN. DEFINE(NVFLST=NVLO168)								
12.06.43.	AAADN. SKIPR1(NVFLST)								
12.06.43.	AAADN. NOTE(DFL,NR)/NVDA168								
12.06.43.	AAADN. DAYFILE(DFL)								
12.06.43.	AAADN. USER DAYFILE PROCESSED.								
12.06.43.	AAADN. PACK(DFL)								
12.06.43.	AAADN. PACK COMPLETE.								
12.06.43.	AAADN. COPYE1(DFL,NVFLST)								
12.06.43.	AAADN. E01 ENCOUNTERED.								
12.06.43.	AAADN. E01. 0 FILES 1 RECORD 435 WORDS.								
12.06.43.	AAADN. SETJOB(DC=NO)								
12.06.43.	AAADN. EXIT. NVF								
12.07.44.	SYS S. DS, UNLOCK.								
CHECK POINT SYSTEM.									

check point system. <enter>

Important! Wait for “check point complete” message (right side of the display, bottom line, “31 SYS”).

A. SYSTEM DAYFILE.		UNLOCK		B.A. SYSTEM STATUS.						
12.08.18. 07/04/26. NETWORK OPERATING SYSTEM. (CYBER1).		MID=AA NOS 2,8,7 871/871.								
12.06.41.	AAADN.	BKSP(	TRCLEV3)	CP	JSN	SC	PR	FL	CPU	STATUS
12.06.41.	AAADN.	SKIPR(	TRCLEV3)	1						
12.06.41.	AAAFN.	SKIPEI(	CSLST)	2						
12.06.41.	AAAFN.	NOTE(	DFL,NR)/CSDA168	3						
12.06.41.	AAAFN.	DAYFILE(	DFL)	4						
12.06.41.	AAADN.	IF(.NOT.	FILE(	TRCLEV3,E0F))	WRITEF(	TRCLEV3)				
12.06.42.	AAAFN.	USER	DAYFILE PROCESSED.	5						
12.06.42.	AAAFN.	PACK(	DFL)	6						
12.06.42.	AAAFN.	PACK	COMPLETE.	7						
12.06.42.	AAADN.	ENDIF(	NTRCLV1)	10						
12.06.42.	AAAFN.	COPYE1(	DFL,CSLST)	11						
12.06.42.	AAADN.	RETURN(	TRCLEV1,TRCLEV2,TRCLEV3)	12						
12.06.42.	AAAFN.	E01	ENCOUNTERED.	13						
12.06.42.	AAAFN.	E01. 0	FILES 1 RECORD 400 WORDS.	14						
12.06.42.	AAAFN.	SETJOB(	DC=NO)	15						
12.06.42.	AAAFN.	EXIT.	CS	16						
12.06.42.	AAADN.	ENDIF(	NOTRACE)	17						
12.06.42.	AAADN.	ATTACH(	NVFLST=NVLO168/NA,M=H)	18						
12.06.42.	AAADN.	IF(.NOT.	FILE(	NVFLST,AS))	DEFINE(	NVFLST=NVLO168)				
12.06.42.	AAADN.	DEFINE(	NVFLST=NVLO168)	21						
12.06.43.	AAADN.	SKIPEI(	NVFLST)	22						
12.06.43.	AAADN.	NOTE(	DFL,NR)/NVDA168	23						
12.06.43.	AAADN.	DAYFILE(	DFL)	24						
12.06.43.	AAADN.	USER	DAYFILE PROCESSED.	25						
12.06.43.	AAADN.	PACK(	DFL)	26						
12.06.43.	AAADN.	PACK	COMPLETE.	27						
12.06.43.	AAADN.	COPYE1(	DFL,NVFLST)	30						
12.06.43.	AAADN.	E01	ENCOUNTERED.	31						
12.06.43.	AAADN.	E01. 0	FILES 1 RECORD 435 WORDS.	31	SYS	S	100	0		CHECKPOINT COMPLETE.
12.06.43.	AAADN.	SETJOB(	DC=NO)							
12.07.44.	SYS S.	EXIT.	NVF							
12.08.12.	SYS S.	DS, UNLOCK.								
12.08.12.	SYS S.	DS, CHECK	POINT SYSTEM.							
12.08.13.	BIO X.	SUBSYSTEM	ABORTED.							
12.08.13.	BIO X.	EXIT.								
12.08.13.	SYS S.	CHECKPOINT	COMPLETE.							
STEP.										

step. <enter>

The word “STEP” appears in bold on the top line of the display.

Now go to the DtCyber operator window. At that window, enter:

```
Desktop CYBER 2.2 ALPHA 3 (GPK) on pkoning
OPERATOR INTERFACE

LOAD,CH,EQ,FILE Load file for ch/eq, read-only.
LOAD,CH,EQ,FILE,W. Load file for ch/eq, read/write.
LOCK. Disable SHUTDOWN.
UNLOCK. Enable SHUTDOWN.
UNLOAD,CH,EQ. Unload ch/eq.
DUMP,CPU. Dump state of CPUs.
DUMP,CM,X,Y. Dump CM from X to Y.
DUMP,ECS,X,Y. Dump ECS from X to Y.
DUMP,PPUNN. Dump specified PPU state.
DISASSEMBLE,PPUNN. Disassemble specified PPU.
SET,KEYBOARD=TRUE. Emulate console keyboard accurately.
SET,KEYBOARD=EASY. Make console keyboard easy (rollover).
DEBUG,DISPLAY=[ON,OFF]. Turn CP/PP debug display on/off.
DEBUG,[ON,OFF]. Enabled/disable debug commands.
TRACE,CPUN. Trace specified CPU activity.
TRACE,CPNN. Trace CPU activity for CP NN.
TRACE,XJ. Trace exchange jumps.
TRACE,PPUNN. Trace specified PPU activity.
TRACE,CHANNELNN. Trace specified channel activity.
TRACE,ECS. Trace ECS accesses.
UNTRACE,XXX. Stop trace of XXX.
UNTRACE,. Stop all tracing.
UNTRACE,RESET. Stop tracing, discard trace data.

END. Exit operator mode.
SHUTDOWN. Close DtCyber.

UNLOCK.
```

unlock. <enter>

The word “UNLOCKED” appears in the top line, on the right hand side.

```
Desktop CYBER 2.2 ALPHA 3 (GPK) on pkoning
OPERATOR INTERFACE
UNLOCKED

LOAD,CH,EQ,FILE Load file for ch/eq, read-only.
LOAD,CH,EQ,FILE,W. Load file for ch/eq, read/write.
LOCK. Disable SHUTDOWN.
UNLOCK. Enable SHUTDOWN.
UNLOAD,CH,EQ. Unload ch/eq.
DUMP,CPU. Dump state of CPUs.
DUMP,CM,X,Y. Dump CM from X to Y.
DUMP,ECS,X,Y. Dump ECS from X to Y.
DUMP,PPUNN. Dump specified PPU state.
DISASSEMBLE,PPUNN. Disassemble specified PPU.
SET,KEYBOARD=TRUE. Emulate console keyboard accurately.
SET,KEYBOARD=EASY. Make console keyboard easy (rollover).
DEBUG,DISPLAY=[ON,OFF]. Turn CP/PP debug display on/off.
DEBUG,[ON,OFF]. Enabled/disable debug commands.
TRACE,CPUN. Trace specified CPU activity.
TRACE,CPNN. Trace CPU activity for CP NN.
TRACE,XJ. Trace exchange jumps.
TRACE,PPUNN. Trace specified PPU activity.
TRACE,CHANNELNN. Trace specified channel activity.
TRACE,ECS. Trace ECS accesses.
UNTRACE,XXX. Stop trace of XXX.
UNTRACE,. Stop all tracing.
UNTRACE,RESET. Stop tracing, discard trace data.

END. Exit operator mode.
SHUTDOWN. Close DtCyber.

SHUTDOWN.
```

shutdown. <enter>

```
Desktop CYBER 2.2 ALPHA 3 (GPK) on pkoning

OPERATOR INTERFACE

LOAD,CH,EQ,FILE Load file for ch/eq, read-only.
LOAD,CH,EQ,FILE,W. Load file for ch/eq, read/write.
LOCK. Disable SHUTDOWN.
UNLOCK. Enable SHUTDOWN.
UNLOAD,CH,EQ. Unload ch/eq.
DUMP,CPU. Dump state of CPUs.
DUMP,CM,X,Y. Dump CM from X to Y.
DUMP,ECS,X,Y. Dump ECS from X to Y.
DUMP,PPUNN. Dump specified PPU state.
DISASSEMBLE,PPUNN. Disassemble specified PPU.
SET,KEYBOARD=TRUE. Emulate console keyboard accurately.
SET,KEYBOARD=EASY. Make console keyboard easy (rollover).
DEBUG,DISPLAY=[ON,OFF]. Turn CP/PP debug display on/off.
DEBUG,[ON,OFF]. Enabled/disable debug commands.
TRACE,CPUN. Trace specified CPU activity.
TRACE,CPNN. Trace CPU activity for CP NN.
TRACE,XJ. Trace exchange jumps.
TRACE,PPUNN. Trace specified PPU activity.
TRACE,CHANNELNN. Trace specified channel activity.
TRACE,ECS. Trace ECS accesses.
UNTRACE,XXX. Stop trace of XXX.
UNTRACE,. Stop all tracing.
UNTRACE,RESET. Stop tracing, discard trace data.

END. Exit operator mode.
SHUTDOWN. Close DtCyber.

DtCyber shut down.
```

The message “DtCyber shut down.” appears at the bottom, indicating that DtCyber has exited.

```
Desktop CYBER 2.2 ALPHA 3 (GPK) on pkoning

OPERATOR INTERFACE

LOAD,CH,EQ,FILE Load file for ch/eq, read-only.
LOAD,CH,EQ,FILE,W. Load file for ch/eq, read/write.
LOCK. Disable SHUTDOWN.
UNLOCK. Enable SHUTDOWN.
UNLOAD,CH,EQ. Unload ch/eq.
DUMP,CPU. Dump state of CPUs.
DUMP,CM,X,Y. Dump CM from X to Y.
DUMP,ECS,X,Y. Dump ECS from X to Y.
DUMP,PPUNN. Dump specified PPU state.
DISASSEMBLE,PPUNN. Disassemble specified PPU.
SET,KEYBOARD=TRUE. Emulate console keyboard accurately.
SET,KEYBOARD=EASY. Make console keyboard easy (rollover).
DEBUG,DISPLAY=[ON,OFF]. Turn CP/PP debug display on/off.
DEBUG,[ON,OFF]. Enabled/disable debug commands.
TRACE,CPUN. Trace specified CPU activity.
TRACE,CPNN. Trace CPU activity for CP NN.
TRACE,XJ. Trace exchange jumps.
TRACE,PPUNN. Trace specified PPU activity.
TRACE,CHANNELNN. Trace specified channel activity.
TRACE,ECS. Trace ECS accesses.
UNTRACE,XXX. Stop trace of XXX.
UNTRACE,. Stop all tracing.
UNTRACE,RESET. Stop tracing, discard trace data.

END. Exit operator mode.
SHUTDOWN. Close DtCyber.

END.
```

end. <enter>

This will close the operator window.

3.1. Shutdown failures

Sometimes, if a PPU program is misbehaving, the “check point system” step does not complete normally. (Give it 30 seconds or so, but it should complete fairly quickly. Completion is indicated by the fact that the B display – right side of the standard display – has only one line on it, for “SYS” and that line has a message “checkpoint complete.”) If “check point system” does not complete, do the following. **Important:** do this right

away, you get only **one** chance to do this and you wouldn't want to wait till later and forget...

Go to the DtCyber operator window. At that window, enter:

```
unlock. <enter>
shutdown. <enter>
end. <enter>
```

Now restart dtcyber **without** autostart:

```
./dtcyber.sh cybis871
```

Then go to the console window and use the Deadstart Options display to do a level 3 deadstart:

```

      INITIAL OPTIONS
A    OS LOAD AUTOMATIC
O    OS LOAD WITH INTERVENTION
U    UTILITIES
H    HELP

(CR)  OS LOAD AUTOMATIC

CONTROL DATA PROPRIETARY PRODUCT
COPYRIGHT CONTROL DATA 1980.

CIP- V11
739
```

O

```

      OPERATOR INTERVENTION
      (NOS OR NOS/BE DEADSTART)

A - CONTINUE OS LOAD
V - HARDWARE VERIFICATION
H - HARDWARE RECONFIGURATION
P - DEADSTART PANEL PARAMETERS
S - SELECT DEADSTART DEVICE

(CR) - CONTINUE OS LOAD
(BS) - PREVIOUS DISPLAY
```

P

```
DEADSTART PANEL PARAMETERS

(CR) - CONTINUE OS LOAD
(BS) - PREVIOUS DISPLAY

I = 0 - INIT/RECOVERY LVL
C = 25 - CMRDECK NUMBER
D = YES - DISPLAY CMRDECK
W12 = 0000 - D/S PANEL WORD 12
W14 = 0000 - D/S PANEL WORD 14

I=3
```

I=3 <enter> <enter>

The Level 3 deadstart options display will appear. Enter:

```
LEVEL 3 OPTIONS

ABORT. YES
ABORT,B. NO
AUTOLOAD. YES
GRENADE. NO
AUTO. YES

GO.
```

INSTRUCTIONS FOR SELECTING LEVEL 3 RECOVERY OPTIONS.
ENTER COMMAND TO TOGGLE SELECTION.
ENTER GO. TO CONTINUE RECOVERY.

ABORT.
CHECKPOINT ALL DEVICES AND ABORT LEVEL 3 RECOVERY.
SELECTING *ABORT.* DESELECTS *ABORT,B.*

ABORT,B.
CHECKPOINT ALL NON-BUFFERED DEVICES AND ABORT LEVEL
3 RECOVERY. SELECTING *ABORT,B.* DESELECTS *ABORT.*

AUTOLOAD.
TOGGLE THE SELECTION OF BUFFER CONTROLLER AUTOLOADING.

GRENADE.
TOGGLE THE SELECTION OF THE GRENADE FUNCTION. THE
GRENADE FUNCTION IS ISSUED ONCE THE CONTROLWARE IS
LOADED, CAUSING UNIT RESERVATIONS TO BE CLEARED ON
ALL S44 UNITS PHYSICALLY CONNECTED TO EACH CONTROLLER.

AUTO.
TOGGLE THE SELECTION OF THE DSD AUTO COMMAND.

abort. <enter>

go. <enter>

You should get a display like this. Don't be misled by the "recovery aborted" message, the right thing has happened at this point.

```
13.19.08. 07/04/26. NETWORK OPERATING SYSTEM. (CYBER1).  
MID=AA NOS 2.8.7 871/871.  
NOW LOADING THE NOS SOFTWARE SYSTEM.  
COPYRIGHT CONTROL DATA SYSTEMS INC. 1997.  
NOW LOADING THE NOS SOFTWARE SYSTEM.  
COPYRIGHT CONTROL DATA SYSTEMS INC. 1997.  
  
DEADSTART STATUS.  
  
ALL EQ-S CHECKPOINTED.  
  
RECOVERY ABORTED.  
  
DISK BUSY  
AUTO.
```

Now go to the DtCyber operator window. At that window, enter:

```
unlock. <enter>  
shutdown. <enter>  
end. <enter>
```

Finally, restart DtCyber using the autostart (which is a level 0 deadstart with ECS initialization).

4. Crashes.

If PLATO (CYBIS) dies, you will get the dreaded “plato off” display on all the terminals. A memory dump will be generated and sent to the “printer”. Mastor will automatically restart things.

If Conden dies, you may be able to restart it from the menu from 1 at author mode.

If Framat dies, go to the console window and enter:

```
drop,plal. <enter>
```

(which will produce “plato off”) and things should restart.

If Mastor dies, shut down the system and restart, as follows:

On the console, enter:

```
idle,nam. <enter>  
unlock. <enter>  
check point system. <enter>
```

Important! Wait for “check point complete” message (at the B display line for “SYS”).
step. <enter>

Now go to the DtCyber operator window. At that window, enter:

```
unlock. <enter>
shutdown. <enter>
end. <enter>
```

Then restart DtCyber using the autostart (level 0 deadstart with ECS initialization).

4.1. Dump file preservation

In any of the above crash cases, wait for any line printer output to stop (BIO status on the B display is IDLE). Then enter this command into the DtCyber operator window:

```
unload,12,5. <enter>
```

You'll get a message saying that LP was unloaded to some long file name. That's the line printer output up to this point; save it for analysis.

If DtCyber dies, hopefully we'll have a corefile; save that for analysis. In all cases, if you do a restart, make it a level zero deadstart, with ECS initialized.

5. The "black box"

Some PLATO systems had a black box (earlier, an 8-track tape, if I remember right) that would transmit a fixed message periodically to all terminals. This is useful if the system is down for some reason; that might be backups, or some planned (or unplanned) downtime of another kind.

The DtCyber equivalent is the utility program "blackbox". You can run this when DtCyber is **not** running. It takes one argument, which is the message to be displayed. It accepts connections from pterms, just as DtCyber does. It will ignore any input, and send the supplied message to every connected terminal every 5 seconds.

For example:

```
./blackbox "Backups in progress, expect PLATO back at 9:00 PST"
```

If no argument is given, the default is: "PLATO is down for the moment".

Blackbox will reply "Current message is: *message*" and "Enter a new message at any time, or Ctrl/D to stop blackbox". This allows you to change the message if you need to; just type the new message and Enter. You can change it as often as needed.

The black box runs until terminated (by control/D). It takes very little CPU time, so it can easily be used while the system is busy doing backups or the like.

If you use "blackbox" be sure to stop it before restarting DtCyber.

If you forget, you should see some messages saying "can't bind to socket" from DtCyber. If that happens, let startup complete normally, shut down DtCyber, kill blackbox, and restart. Since the NIU (PLATO terminal interface) couldn't start up in this situation, you'll need the console PLATO terminal (x.console.) to shut down PLATO if you had done an autostart.