

List of Critical and Dangerous Commands

From Paul:

Critical commands can be used with a warning in the SOP/SAP
Dangerous commands have to be enabled in the ODB before they can be used.

There is an entry in the ODB commands list called "init_state" whose values can be either D or E. Verified with Ken they mean Disable and Enable. This entry defines those commands that are "dangerous" and therefore are disabled.

Critical Commands:

From the SWUG:

B.2 Hardware Commands

The ACIS instrument accepts three kinds of "Hardware command", those directed to the DPA to control the active BEP, those sent to the PSMC to control the power supplies and heaters, **and the remainder, also sent to the PSMC to control the mechanical components. The latter are deemed "critical" and should not be sent to the flight instrument without careful forethought.**

The SWUG table of PSMC mechanism commands is:

Table B.4: PSMC Mechanism Commands

IP&CL	<i>bcmd</i> Command	Description
1LVC[AB]DS	disable relief [ab]	Disable commands to vent subsystem small valve [ab]
1LVC[AB]EN	enable relief [ab]	Enable commands to vent subsystem small valve [ab]
1LVCO[AB]ON	open relief [ab]	Open vent subsystem small valve [ab]
1MCDR[AB]OF	closeabort door [ab]	Abort the closing of instrument door [ab]
1MCDR[AB]ON	close door [ab]	Close instrument door [ab]
1LVCC[AB]ON	close relief [ab]	Close vent subsystem small valve [ab]
1MCMD[AB]DS	disable door [ab]	Disable commands to door mechanism [ab]
1MCMD[AB]EN	enable door [ab]	Enable commands to door mechanism [ab]
1MODR[AB]OF	openabort door [ab]	Abort the opening of instrument door [ab]
1MODR[AB]ON	open door [ab]	Open instrument door [ab]
1VVC[AB]DS	disable vent [ab]	Disable commands to vent subsystem valve [ab]
1VVC[AB]EN	enable vent [ab]	Enable commands to vent subsystem valve [ab]
1VVCC[AB]OF	closeabort vent [ab]	Abort the closing of vent subsystem valve [ab]
1VVCC[AB]ON	close vent [ab]	close vent subsystem valve [ab]
1VVCO[AB]OF	openabort vent [ab]	Abort the opening of vent subsystem valve [ab]
1VVCO[AB]ON	open vent [ab]	Open vent subsystem valve [ab]

There also exists a file generated by PGF called "ACIS Hardware Commands (Version 2.1)"

ACIS_Hardware_Commands.html has a column labeled "Critical" and one labeled "Hazard".

<https://acisweb.mit.edu/acis/ipcl/ipcl-cmds-08jun98.html>

That table has a column labeled "Critical" and those commands deemed critical are:

1ED0ICL	Latch EEPROM Programmer Byte 0	SD	3	NA	11000000vvvvvvvv	Y	N	Latch EEPROM Programmer Byte 0
1ED1ICL	Latch EEPROM Programmer Byte 1	SD	3	NA	11000001vvvvvvvv	Y	N	Latch EEPROM Programmer Byte 1
1ED2ICL	Latch EEPROM Programmer Byte 2	SD	3	NA	11000010vvvvvvvv	Y	N	Latch EEPROM Programmer Byte 2
1ED3ICL	Latch EEPROM Programmer Byte 3	SD	3	NA	11000011vvvvvvvv	Y	N	Latch EEPROM Programmer Byte 3

1EWDATCL	Write EEPROM Data	SD	3	NA	1101000100000000	Y	N	Write EEPROM data. 1SETIRT must be asserted for EEPROM read and write operations. Flight Hardware does not support this command.
--------------------------	-------------------	----	---	----	------------------	---	---	--

1LVCAEN	Little Valve Enable A	HLP	11	A	Y	N	Enables the A Side Little Valve Commands
-------------------------	-----------------------	-----	----	---	---	---	--

1LVCBEN	Little Valve Enable B	HLP	75	B	Y	N	Enables the B Side Little Valve Commands
1LVCCAON	Little Valve Close A	HLP	23	A	Y	N	Commands the A Side Little Valve Close
1LVCCBON	Little Valve Close B	HLP	87	B	Y	N	Commands the B Side Little Valve Close
1LVCOAON	Little Valve Open A	HLP	22	A	Y	N	Commands the A Side Little Valve Open
1LVCOBON	Little Valve Open B	HLP	86	B	Y	N	Commands the B Side Little Valve Open
1MCDRAOF	Door Close Off A	HLP	15	A	Y	N	Aborts the A Side Door Mechanism Close Command
1MCDRAON	Door Close On A	HLP	13	A	Y	N	Commands the A Side Door Mechanism Close Drive On
1MCDRBOF	Door Close Off B	HLP	79	B	Y	N	Aborts the B Side Door Mechanism Close Command
1MCDRBON	Door Close On B	HLP	77	B	Y	N	Commands the B Side Door Mechanism Close Drive On

1MCMDAEN	Door Enable A	HLP	8	A	Y	N	Enables the A Side Door Mechanism Commands
--------------------------	---------------	-----	---	---	---	---	--

1MCMDBEN	Door Enable B	HLP	72	B	Y	N	Enables the B Side Door Mechanism Commands
1MODRAOF	Door Open Off A	HLP	14	A	Y	N	Aborts the A Side Door Mechanism Open Command
1MODRAON	Door Open On A	HLP	12	A	Y	N	Commands the A Side Door Mechanism Open Drive On
1MODRBOF	Door Open Off B	HLP	78	B	Y	N	Aborts the B Side Door Mechanism Open Command
1MODRBON	Door Open On B	HLP	76	B	Y	N	Commands the B Side Door Mechanism Open Drive On

1VVCAEN	Vent Valve Enable A	HLP	10	A	Y	N	Enables the A Side Vent Valve Commands
-------------------------	---------------------	-----	----	---	---	---	--

1VVCBEN	Vent Valve Enable B	HLP	74	B	Y	N	Enables the B Side Vent Valve Commands
1VVCCAOF	Vent Valve Close Off A	HLP	20	A	Y	N	Aborts the A Side Vent Valve Close Command
1VVCCAON	Vent Valve Close On A	HLP	18	A	Y	N	Commands the A Side Vent Valve Close On
1VVCBBOF	Vent Valve Close Off B	HLP	84	B	Y	N	Aborts the B Side Vent Valve Close Command
1VVCBBON	Vent Valve Close On B	HLP	82	B	Y	N	Commands the B Side Vent Valve Close On
1VVCOAOF	Vent Valve Open Off A	HLP	19	A	Y	N	Aborts the A Side Vent Valve Open Command
1VVCOAON	Vent Valve Open On A	HLP	17	A	Y	N	Commands the A Side Vent Valve Open On
1VVCBOF	Vent Valve Open Off B	HLP	83	B	Y	N	Aborts the B Side Vent Valve Open Command
1VVCBON	Vent Valve Open On B	HLP	81	B	Y	N	Commands the B Side Vent Valve Open On

There are discrepancies between the two lists:

1) These "DS" commands in Table B.4, and are therefore "Critical":

1LVC[AB]DS

1MCMD[AB]DS

1VVC[AB]DS

Appear in ACIS Hardware Commands, but not labeled "Critical"

2) 1E* Commands, labeled Critical, in ACIS Hardware Commands:

1ED0ICL	Latch EEPROM Programmer Byte 0	SD	3	NA	11000000vvvvvvvv	Y	N	Latch EEPROM Programmer Byte 0
1ED1ICL	Latch EEPROM Programmer Byte 1	SD	3	NA	11000001vvvvvvvv	Y	N	Latch EEPROM Programmer Byte 1
1ED2ICL	Latch EEPROM Programmer Byte 2	SD	3	NA	11000010vvvvvvvv	Y	N	Latch EEPROM Programmer Byte 2
1ED3ICL	Latch EEPROM Programmer Byte 3	SD	3	NA	11000011vvvvvvvv	Y	N	Latch EEPROM Programmer Byte 3
1EWDATCL	Write EEPROM Data	SD	3	NA	1101000100000000	Y	N	Write EEPROM data. 1SETIRT must be asserted for EEPROM read and write operations. Flight Hardware does not support this command.

Do not appear in Table B.4

However Peter says:

“The 1E* commands are pre-flight DPA hardware commands that would be included in Table B.2 except that they are NOOPS when executed by the flight hardware. I omitted them to avoid confusion.”

Commands labeled as "Dangerous"

The Commands Data Base(CDB) does not appear with every release of the Telemetry Data Base (TDB). The last one to appear came along with the P014 release August, 2015:

CDB_P010_1949_ASCII_REV1 (Note the number does not match TDB_P014_1949_ASCII_REV1)

George Leussis tells me that a new CDB will appear with the P016 TDB.

Within the CDB is a file called COMMAND.TXT. The 10th column is "initial_state" Whose values are either "D" or "E". D = Disabled; E = Enabled.

Sample COMMAND.TXT entry:

```
1HBOBON,1HBOBON,ACIS,P,AXAF,R,,9,N,D,N,N,Y,,C,,,HWCMDHDR,Y,98.400000,"HOUSING B.O. ON B","SI/12/HLP/94///600005E TURNS THE SIDE B DETECTOR HOUSING BAKE OUT ON";
```

I wrote a program to extract all ACIS MSID's whose initial_state value is D.

This is a list of all "Dangerous" commands in CDP: P010 VERSION1:

```
1HBOAON D    TURNS THE SIDE A DETECTOR HOUSING BAKE OUT ON
1HBOBON D    TURNS THE SIDE B DETECTOR HOUSING BAKE OUT ON
1LVCAEN D    ENABLES THE A SIDE LITTLE VENT VALVE COMMANDS
1LVCBEN D    ENABLES THE B SIDE LITTLE VENT VALVE COMMANDS
1LVCCAON D   COMMANDS THE A SIDE LITTLE VENT VALVE CLOSE ON
1LVCCBON D   COMMANDS THE B SIDE LITTLE VENT VALVE CLOSE ON
1LVCOAON D   COMMANDS THE A SIDE LITTLE VENT VALVE OPEN ON
1LVCOBON D   COMMANDS THE B SIDE LITTLE VENT VALVE OPEN ON
1MCDRAOF D   COMMANDS THE A SIDE DOOR MECHANISM CLOSE DRIVE OFF
1MCDRAON D   COMMANDS THE A SIDE DOOR MECHANISM CLOSE DRIVE ON
1MCDRBOF D   COMMANDS THE B SIDE DOOR MECHANISM CLOSE DRIVE OFF
1MCDRBON D   COMMANDS THE B SIDE DOOR MECHANISM CLOSE DRIVE ON
1MCMDAEN D   ENABLES THE A SIDE DOOR MECHANISM COMMANDS
1MCMDBEN D   ENABLES THE B SIDE DOOR MECHANISM COMMANDS
1MODRAOF D   COMMANDS THE A SIDE DOOR MECHANISM OPEN DRIVE OFF
1MODRAON D   COMMANDS THE A SIDE DOOR MECHANISM OPEN DRIVE ON
1MODRBOF D   COMMANDS THE B SIDE DOOR MECHANISM OPEN DRIVE OFF
1MODRBON D   COMMANDS THE B SIDE DOOR MECHANISM OPEN DRIVE ON
1VVCAEN D    ENABLES THE A SIDE VENT VALVE COMMANDS
1VVCBEN D    ENABLES THE B SIDE VENT VALVE COMMANDS
1VVCAOF D    COMMANDS THE A SIDE VENT VALVE CLOSE OFF
1VVCAON D    COMMANDS THE A SIDE VENT VALVE CLOSE ON
1VVCCBOF D    COMMANDS THE B SIDE VENT VALVE CLOSE OFF
1VVCCBON D    COMMANDS THE B SIDE VENT VALVE CLOSE ON
1VVCOAOF D    COMMANDS THE A SIDE VENT VALVE OPEN OFF
1VVCOAON D    COMMANDS THE A SIDE VENT VALVE OPEN ON
1VVCOBOF D    COMMANDS THE B SIDE VENT VALVE OPEN OFF
1VVCOBON D    COMMANDS THE B SIDE VENT VALVE OPEN ON
```