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THE EPICS COOKBOOK: A BARE BONES START

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NOTE: This booklet is just a very simplified look at the EPICS system. Refer to the green OPERATORS GUIDE for more indepth information.

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**This cookbook was created for the novice operator. A suggested exercise to accompany the use of this text is to sit down at a terminal and type through each given example to see how the system reacts to each step. You should be reminded that most of the content in this manual is superficial. Refer to the green Operators Guide for more detailed information.

I. LOGGING ON (LOG)*****

Before using the facilities in your account, you must log on

- A. [1] (cr)
- [2] LOG (cr)
- [3] ACCOUNT NAME: your acct name (cr)
- [4] PASSWORD: your password (cr)

You may also log on by combining steps [2], [3] and [4] together.

- B. [1] (cr)
- [2] LOG accountname/password (cr)

Ex. Let's say you would like to log onto the account which has the name 'John' and the password 'Spy'.

- [1] (cr)
- [2] LOG JOHN/SPY (cr)

II. LOGGING OFF*****

When you are finished with the computer, you should log off using one command.

- [1] EYE (cr)

If the operator does not use the keyboard for approximately 20 minutes the system automatically logs off. This is called a "Timeout". To avoid timingout while you are sitting idle at the console, press (cr) every 10 minutes.

Ex. The following steps demonstrate how one would view the entire page called NTEST front to back and back to front:

- [1] P (cr)
- [2] P NTEST (cr)
- [3] →

Continue step [3] until an EOB is reached.

- [4] ←

Continue step [4] until the beginning of the page returns.

Ex. It is also possible to get a page from another account, but you must know its UIC. You may get another person's UIC by simply asking him/her for it. The following example will call up NT200 from the account [20,1].

- [1] P [20,1]NT200 (cr)

IV. VIEWING A PAGE WITH VARIOUS OVERLAYS*****

The overlay keus are the red keus located directly above the alphanumeric keus.

Table 1 displays these keus and their function.

- [1] P filename (cr)
- [2] Press the key which corresponds to the horizontal overlay that you desire.

Table 1
Horizontal Overlays

<u>Overlays</u>	<u>Overlay Content</u>
Fixed Overlay	Cursor character ">", line number, device access characters, device name, device readback
Overlay 0	Device setting, most significant hardware status bits.
Overlay 1	Additional most significant hardware status bits
Overlay 3	Levels and Slopes
Overlay 8	Saved Value; Watch Time; Watch Repeat Count

For a more extensive list of the horizontal overlays, please refer to the Operators Guide on page 15.

Ex. The following example demonstrates the procedure for viewing the page NTPS, and inspect the saved values. From there it will display the levels and slopes of the devices.

```
[1] P (cr)
[2] P NTPS (cr)
[3] Press the 9th red key from the right (Saved values)
[4] Press the 4th red key from the right (Slopes + Levels)
```

V. CREATING A PAGE (PEDIT)*****<-----*****

The page editor is used to create and/or modify a page. It is called PEDIT. The command sequence used to create or modify a page is:

```
[1] PEDIT filename (cr)
```

Your filename can be up to 9 alphanumeric characters.
NOTE: All PEDIT commands can be abbreviated as PED.

[2] ENTER TITLE: page description (cr)

Describe your page in 0 to 30 alphanumeric characters.
Now the monitor should display the following:

```
Filename/Page description
NAME TIME VAL RPT/WATCH-TIME LD UP PROG STS
>000.0 DEFAULT *D 0.000*
```

PED>
--

Ex. In order to create a page called 'JAPE' and give it the description 'Just a practice example' the following must be done:

[1] PEDIT JAPE (cr)
[2] ENTER TITLE: JUST A PRACTICE EXAMPLE (cr)

This will return:

```
JAPE/ Just a Practice Example
NAME TIME VAL RPT/WATCH TIME LD UP PROG STS
>000.0 DEFAULT *D 0.000*
```

VI. INSERTING DEVICES ONTO A PAGE (I)*****

A. [1] PEDIT filename (cr)

Use step 1 only if you are not already in the PEDIT mode.

[2] I (cr)

You should now have the following prompt at the bottom of the screen.

```
PED>
I
INS PED>
```

[3] Devicename (cr)

To get out of the Insert mode, press the Escape key.

[4] Press "ESCAPE" (cr)

To save what you have entered:

[5] GO (cr)

Ex. Let's go back to the page 'JAPE' and begin to insert devices NT9Q1, NT9Q2, and NTEBR.

[1] PEDIT JAPE (cr)
[2] I (cr)
[3] NT9Q1 (cr)
[4] NT9Q2 (cr)
[5] NTEBR (cr)

If you would like to get out of the INS PED mode:

[6] Press 'ESCAPE'

If you would like to save your entries:

[7] GO (cr)

B. Inserting a Device onto a particular line number*****

[1] PEDIT filename (cr)
(if you are not already in PEDIT)
[2] I linenumbe devicename (cr)

In order to squeeze a line between two whole numbered lines you must insert by 1/10.

Ex. 0.000 NT9Q1
0.100 NT9Q2
0.200 NTECH
1.000 NT2V

NOTE: The units diget is required when inserting.

Ex. Once again let's go back to the file 'JAPE' and insert NT9VR (with a saved value of 10) between lines 1 and 2, and NHBV (with a saved value of 50) onto line 4.

```
[1] P (cr)
[2] PEDIT JAPE (cr)
[3] I 1.5 NT9VR V=10 (cr)
[4] I 4 NHBV V=50 (cr)
```

Now to save it:

```
[5] GO (cr)
```

VII. CHANGING PARAMETERS ON A PAGE (C)*****

```
[1] PEDIT filename (cr)
(If not already in PEDIT)
[2] C linenumber parameter=newvalue (cr)
```

Table 2 lists some PEDIT parameters and their keywords.

Table 2
PEDIT Parameters and Keys

<u>Parameter</u>	<u>Key</u>
Title of Page	TITLE
Line number	LN (optional)
Name of device	N (optional)
Time of reading	T
Value for save & restore	V

For a more comprehensive list of the PEDIT parameters refer to the Operators Guide on page 21.

Ex. In order to change the saved value of NT9Q1 (line 1) on the JAPE page to 250 we must do the following:

- [1] P (cr)
- [2] PEDIT JAPE (cr)
- [3] C 1 V=250 (cr)

To save the change:

- [4] GO (cr)

Other PEDIT commands are D(etele) and L(ist). D is used to delete a particular line number and L is used to list several lines starting with the desired number.

Ex. The following commands will PEDIT NT200, list from line 8, and delete line 10.

- [1] PEDIT NT200 (cr)
- [2] L 8 (cr)
- [3] D 10 (cr)

And to save the corrections:

- [4] GO (cr)

VIII. EXITTING PEDIT*****

There are 4 ways to exit PEDIT, and each has a different outcome.

A. [1] GO (cr)

This exits PEDIT, and saves the file with changes made. Then it will call up the new version of the page for viewing.

B. [1] E (cr)

This command exits PEDIT and saves the file with changes made.

C. [1] A (cr)

Exits PEDIT, but does NOT save any changes made during the editing session.

D. [1] CTRL-Z

Exits PEDIT at any time during the editing session, but does NOT save any changes.

IX. STORING CURRENT "SET-TO" VALUES ON PERMANENT TAPE (SVD)*****

[1] P filename (cr)

[2] SVD filename (cr)

Ex. In this example let's store the current set-to values of JAPE on permanent tape.

[1] SVD JAPE (cr)

WARNING: This can be a very dangerous command. With an SVD command, you are losing what is presently stored. You are also reminded that the stored set-to values can be seen on Overlay 8.

X. RESTORING THE SAVED "SET-TO" VALUES BACK TO CURRENT (RSD)***

[1] P filename (cr)

(if not already at the desired page)

[2] RSD filename (cr)

Ex. When the values that were stored into JAPE are needed, we must do the following:

[1] RSD JAPE (cr)

XI. LISTING A DATABASE ENTRY (DBL)*****

A. If you would like to list just 1 device:

```
[1] DBL devicename (cr)
```

If you would like a listing of all the devices with the same name up to a certain character:

Ex.

```
[1] DBL NTBAD (cr)
```

This will give you a listing of all the devices beginning with NTBAD. The output would resemble Figure 2.

Figure 2
DBL of NTBAD

DBL NTBAD

DEVICE	MODULE	CRATE	SLOT	CHAN	SCALE1	SCALE2
NTBAD1	091T	51,15	S	0	0.000	0.000
NTBAD2	091T	51,15	S	2	0.000	0.000

You can also DBL moduletupes, crates, crates and slots, and modules. See Operators Guide on page 35 for further details

XIII. COPYING A PAGE TO YOUR ACCOUNT*****

```
[1] PEDIT newfilename=[UIC of desired page]oldfilename
                                     (cr)
```

**Note: You must be in the account of the newfilename.

Ex. 1 If you are in your account, and would like to copy one page (NT50) to a new page in your file (NT100) and change the title (NT at 100 GEV), the procedure is as follows:

```
[1] PEDIT NT100=NT50 (cr)
```

The page will be copied, and you will still be in FEDIT of the page NT100. Now to change the title:

```
[2] TITLE=NT AT 100 GEV (CR)
```

And then save:

```
[3] GO (cr)
```

Ex. 2 This example will demonstrate how to copy a page called NTPS in the operators account [20,1] to your own account.

```
[1] PEDIT NTPS=[20,1]NTPS (cr)
[2] GO (cr)
```

XIII. PLOTTING A DEVICE'S CURRENT (PLT)*****

A. General

[1] PLT (cr)

The computer should respond:

PLT>
--

[2] out= console name for output (cr)

(This is usually written on a label above the monitor.)

The computer will continue the prompt:

PLT>
--

[3] AD= devicename (cr)

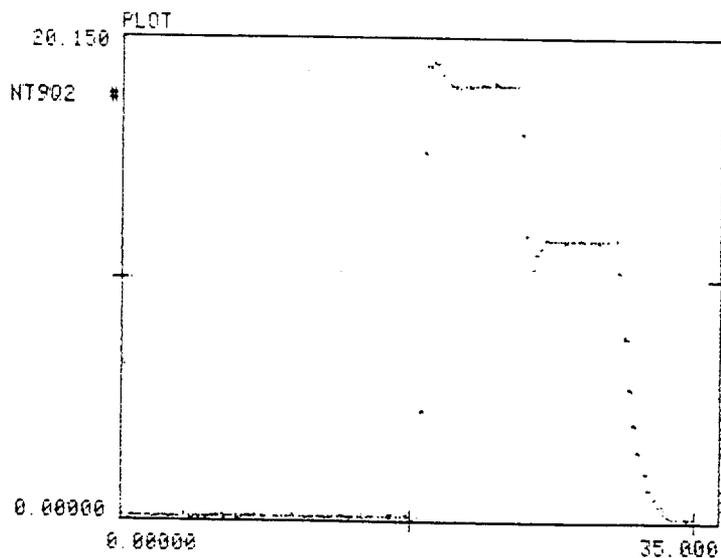
[4] XB= the time (in seconds after T1) at which you want
the graph to begin (cr)

[5] XE= the time (in seconds) at which you want the
graph to end (cr)

[6] GR (cr)

It should take several minutes. When it does display a graph,
it should resemble Figure 3.

Figure 3
A Plotted Graph of NT9Q2



At about $T_1+17.5$ seconds, NT9Q2 ramps up, overshoots, and then settles down to a current of about 19 amps. Approximately eight seconds later, it ramps down to a new current of about 12 amps.

B. Changing the device and Plotting again

[1] DE= old device (cr)

[2] AD= new device (cr)

[3] GR (cr)

If none of the parameters are changed the computer continues to plot with the most recent parameters.

If you do not delete the old device before entering a new device, you will get a graph of both. Refer to the Operators Guide on page 54 for more advanced features of PLT.

C. Exit PLT

[1] ctrl-z

Ex. The following set of instructions will plot the magnet NHBUE from 0 to 60 seconds on the monitor NG21OS1.BLK. Once this graph is done, we will change the magnet to NT9V. After this completed, we will exit the PLT mode.

- [1] PLT (cr)
- [2] DUT=NG21OS1.BLK (cr)
- [3] AD=NHBUE (cr)
- [4] XB=0 (cr)
- [5] XE=60 (cr)
- [6] GR (cr)

Wait for this graph.

- [7] DE=NHBUE (cr)
- [8] AD=NT9V (cr)
- [9] GR (cr)

Wait for this graph.

[10] ctrl-z (cr)

XIV. READING A DEVICE*****

A.

Reading a device can be done a number of ways. When a device is entered onto a page, there is a continuous readback only after it has been EDITED onto the page via the GO command. When reading the device on a page you are looking at the column to the right of the device name. No matter what overlay you have on display the device name and device readback are always present. Figure 4 has highlighted the device readback column from a power supply page.

Figure 4
Page of NTPS

NTPS	/MT	BEAR	LINE	POWER	SUPPLIES	0	15:18
1K	NEBH	0.000	31.994	OFF	TRP	PUL	RSP*
2K	NEBP	-5.644	10.994	OFF	TRP	RSP	REY*
3K	NEBD	-2.498	1530.000	OFF	TRP	RHP	REN
4K	NEBR	0.050	5.000	OFF	TRP	DC	RSP*
5K	NEBW	4.946	2405.000	OFF	TRP	RHP	REN
6K	NEBQ	0.545	0.000	OFF	TRP	DC	REY*
7K	NEBQ2	0.649	0.000	OFF	TRP	DC	RSP*
8K	NEBH	0.650	32.000	OFF	TRP	DC	RSP*
9K	NEBY	0.000	20.000	OFF	TRP	RHP	RSP*
10K	NEBE	6.244	3230.000	OFF	TRP	DC	REN
11K	NEBY	0.400	51.000	OFF	TRP	DC	RSP*
12E	NTSE1AM	-2.498	0725.000	OFF	TRP	DC	REN
13K	NTSE1	14:11.00	11.000				
14#	NT8D1						
15K	NT8E2	-1.746	3760.000	OFF	TRP	DC	REN

It is also worth mentioning, at this time, about the Fast Attach key (located on the auxiliary keyboard). The Fast Attach allows the viewer to get a continuous reading on a device (instead of the usual reading every couple seconds). The up (↑) and down (↓) arrow keys must be used to select the device line that you wish to Fast Attach. The cursor (to the left of the line numbers) resembles a greater than sign (>). The up and down arrows control the cursor position. In Figure 4 the cursor is set on line 15. Once the cursor is on the desired device line, pressing the Fast Attach key is all that is required.

B.

A readback can also be viewed on the device's parameter page. This page has its current reading located at the top of the second column. The other numbers in the second column are the device's settings for each level and slope. Figure 5 has highlighted the readback on a parameter page.

Figure 5
Readback From NTBQ1

NTBQ1	/NTBQ1 LEVELS AND SLOPES		
> 1K NTBQ1	0.000	(-1)	C
2K NTBQ1	9.800	.LVL(0)	C
3K NTBQ1	18.750	.LVL(1)	C
4K NTBQ1	0.000	.LVL(2)	C
5K NTBQ1	0.000	.LVL(3)	C
6K NTBQ1	0.000	.LVL(4)	C
7K NTBQ1	0.000	.LVL(5)	C
8K NTBQ1	0.000	.LVL(6)	C
9K NTBQ1	200.000	.SLP(0)	C
10K NTBQ1	200.000	.SLP(1)	C
11K NTBQ1	200.000	.SLP(2)	C
12K NTBQ1	200.000	.SLP(3)	C
13K NTBQ1	200.000	.SLP(4)	C
14K NTBQ1	200.000	.SLP(5)	C
15K NTBQ1	200.000	.SLP(5)	C

XV. SETTING A DEVICE*****

To set any device to a particular level there is only one command.

[1] SET devicename = level (cr)

Ex. To set NTAQ to 300 amps, the following steps must be followed.

[1] SET NTAQ=300 (cr)