



# TEST PLAN WORKSHEET

## PROGRAM DEPUTY APPROVAL

PD Signoff: \_\_\_\_\_ Date: \_\_\_\_\_  
 Ops Reviewer Signoff: \_\_\_\_\_ Date: \_\_\_\_\_  
 Expiration Date (max. 90 days from approval): \_\_\_\_\_  
 Presentation Required?  yes  no

## COMPLETION INFORMATION

Completion Date: \_\_\_\_\_  
 Crew Chief Signoff: \_\_\_\_\_  
 Comments (partial completion, etc.): \_\_\_\_\_



**NOTE:** Information addressing the appropriate content of each of the following sections can be found in Section 2.0 of the Test Plan Instructions.

### Test Plan Title: 30 HZ PZT & Corrector Data

**Author(s):** Y. Chao

**Date Submitted:** Oct 10, 2004

**Revision Number:** 0

### Brief Purpose of Test

Resolve question concerning interaction between 30 hz PZT & 30 hz BPM.

### Anticipated Benefits

Important for measuring PZT propagation and implementing matching solution.

### Beam Conditions Required

Complete all of the following tables, entering a value or an **X** in the appropriate spaces:

#### Beam Type/Current (enter value)

Beam Type	Beam Current
Beam Off	
Pulsed (std. current = 8 $\mu$ A)	
<b>CW</b>	20 $\mu$ A <sup>a</sup>

a.This is preferred. If for any reason this cannot be met, use closest possible value but no less than 3  $\mu$ A. **Note deviation from desired current in ELOG.**

#### Beam Energy (select one)

Beam Off	845 MeV (1-pass)	1.645 GeV (2-pass)	2.445 GeV (3-pass)	3.245 GeV (4-pass)	4.045 GeV (5-pass)	Other (specify)
					X	

#### Beam Termination Point (select one)

Hall A	Hall B	Hall C	BSY Dump	NE Stub Dump	45 MeV Dump	Other (specify)
X		X <sup>a</sup>	X			

a.Any of the above.

**Type of Test (select one)**

Invasive (disrupts beam delivery)	Non-invasive (does not disrupt beam delivery)
X	

**Time Required**

Total test time is 30 minutes. Total invasive time is up to 25 minutes. Preparatory step up to 15 minutes can be performed non-invasively prior to test.

- a. Setup: 4 minutes
- b. Main test: 25 minutes excluding beam trips.
- c. Backout Procedure: 1 minute

**Preferred Time of Test**

**October 14th MD.**

**Staff Required to Execute the Test (including contact info)**

OPS. Page Y. Chao (6292) for questions.

For questions on 30 Hz PZT contact Injector oncall.

**Controlled Access Requirements**

None

**Hardware and/or Software Changes Required**

**NOTE:** If software changes are part of the test plan, include the name of the application, the old revision level, the new revision level, and if applicable, whether or not it is possible to roll back to the old revision level (are there hardware limitations, etc.).

None

**Special Hazards/Safety Considerations (enter "None" if not applicable)**

**HAZARD** (describe the specific potential hazard[s]; e.g., MPS or PSS interlocks disabled, work near energized equipment, etc.):

**RISK** (characterize the risks involved [e.g., beam damage to beamline components, electrocution of personnel by contact with magnet leads, etc.] and assess the level of risk per the *EH&S Manual, Section 3210, Hazard Identification and Characterization*):

**CONTROLS** (describe what specific measures will be used to mitigate the hazard; if the risk assessment [i.e., risk code] is  $\geq 3$ , list the applicable work control document [SOP, OSP or TOSP]):

## Setup Procedure

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**In order to save beam time, steps 1-5 should be done non-invasively ahead of the invasive step 6, and takes about 2 minutes.**

1. Turn off all 30 hz systems (select All system Off from 30 hz control panel) if they are not already off.
2. Set up accelerator 30 hz PZT system
  - a. Open **PGun ops main** in medm.
  - b. Go to **related screens** buttons in the lower right hand corner. Pull down the left most button to select **30 Hz mirror control**. The 30 hz pzt control screen appears. Use this to control the PZT X/Y selection and ON/OFF status later in the procedure

3. Open an X-window. Go to the directory

`/usr/ntfs/public/optics/daily_pzt/`

Data acquisition will be done here.

4. Run standard lock configuration for 3 pass Hall A beam delivery.
5. Start striptools GUI to start monitoring beam loss in Hall A caused by FSD etc. Load the configuration file

`/cs/prohome/apps/s/StripTool/pro/fileio/config/Monitor1A`

This shows the wire sum of IPM1A36 in Arc 1 with time span of 6 minutes. The function of this chart is as a good data counter for data acquired in the main test steps. In the main test steps 3 & 5 roughly 3 minutes' worth of data will be collected **excluding beam trips**. This chart can indicate the length of "good" data collected in each step.

6. Set up CW beam to end of Hall A, Hall C (20  $\mu\text{A}^1$ ), or BSY dump.

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1.This is preferred. If for any reason this cannot be met, use closest possible value but no less than 3  $\mu\text{A}$ .  
**Note deviation from desired current in ELOG.**

## Test Procedure

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### Acquire PZT Data:

1. From the **PZT Diagnostics Tool** screen: Turn on X PZT. Make sure the 30 hz signal can be seen in the Injector absolute 30 hz BPM screen. The maximum BPM spike in the Injector should be around 300 micron<sup>1</sup>.

2. In the X-window opened in Setup step 3, type

**XPZTShort**

When this process has run for about 3 minutes without beam loss (due to FSD etc.), type **Cntrl-C** to stop it and move on. If there has been intervening beam loss during this process, use the strip chart started in Setup step 5 to estimate when to stop this process with **Cntrl-C** such that the **net amount of good data without beam loss** is roughly 3-4 minutes long. (For example if there has been beam loss for total of 2 minutes, then this process should run for 5-6 minutes total)

If for any reason this process has to be aborted and resumed later. Type **Cntrl-C** to stop it. Later repeat the same command above.

3. From the **PZT Diagnostics Tool** screen: Turn on Y PZT: Make sure the 30 hz signal can be seen in the Injector absolute 30 hz BPM screen. The maximum BPM spike in the Injector should be around 300 micron.

4. In the X-window opened in Setup step 3, type

**YPZTShort**

Follow the same instructions as given in step 2 above.

5. Turn off 30 hz PZT chassis and exit the GUI.

6. Set up the 30 hz system for 1S correctors and RF, as done during ORFP for aperture scan and Courant Snyder matching.

7. Activate 30 hz corrector 1S08H at ORFP amplitude. Verify that the response is seen on 30 hz BPM screen to at least end of 1R.

8. In the X-window opened in Setup step 3, type

**1S08HShort**

Follow the same instructions as given in step 2 above.

9. Activate 30 hz corrector 1E01H at ORFP amplitude. Verify that the response is seen on 30 hz BPM screen to at least end of 1R.

10. In the X-window opened in Setup step 3, type

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1. The X PZT may create a larger signal in Y and vice versa. Do not be concerned with this other than making sure the correct PZT as specified in the procedure is invoked.

**1E01HShort**

Follow the same instructions as given in step 2 above.

11. Activate 30 hz corrector 1S09V at ORFP amplitude. Verify that the response is seen on 30 hz BPM screen to at least end of 1R.
12. In the X-window opened in Setup step 3, type

**1S09VShort**

Follow the same instructions as given in step 2 above.

13. Activate 30 hz corrector 1E01V at ORFP amplitude. Verify that the response is seen on 30 hz BPM screen to at least end of 1R.
14. In the X-window opened in Setup step 3, type

**1E01VShort**

Follow the same instructions as given in step 2 above.

15. Restore any changed Injector quads, correctors and skew quads.
16. Disable 30 hz system.

## Backout Procedure

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1. Turn off 30 hz PZT chassis and exit the GUI.
2. Restore any changed Injector quads, correctors and skew quads.
3. **Make sure all UNIX processes invoked in this procedure are terminated.** This is done by typing in both X-windows the following:

```
ps -ef | grep ezlog
```

and look for nontrivial entries indicating ongoing ezlog processes. If any is found under the current username, kill it.

4. Disable 30 hz system.

## Test Results

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Result & logged data will be analyzed off-line.