PHENIX

# PHENIX TOF OPERATION IN THE PEH

procedure name

## PHENIX Procedure No. PP-2.5.2.8-04

**Revision: A** **Date: 4-24-00**

## Hand Processed Changes

| HPC No. | Date | Page Nos. | Initials |
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## Approvals

5/2/00
PHENIX S E & I Date

5/1/2000
Cognizant Scientist/Engineer Date
/Activity Manager

5/1/00
PHENIX /Safety Date

5/3/2000
CA-D SAFETY Date

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## REVISION CONTROL SHEET

| LETTER | DESCRIPTION | DATE | WRITTEN BY | APPROVED BY | CURRENT OVERSIGHT |
|---|---|---|---|---|---|
| A | First Issue | 4/24/2000 | n/a | J. Haggerty, W. Lenz, Y. Makdisi, 1 other unintelligible | n/a |
| B | Made inactive. Procedure is for run 2000 only. | 11/16/2009 | D. Lynch | P. Giannotti, D. Lynch, R. Pisani | P. Giannotti |
| | | | | | |

## 1.0 Purpose

The purpose of this document is to define the plan for operation of the PHENIX Run 2000 Time of Flight Detector (TOF) in the PEH (PHENIX Experimental Hall). This plan will ensure:

*1.1 the safety of all personnel from risk associated with the operation of the high voltage system required for powering the TOF,*
*1.2 the implementation of the appropriate emergency approaches,*
*1.3 prompt notification of the appropriate CA-D and ES&H specialist,*
*1.4 the maintenance of appropriate CA-D emergency status,*
*1.5 the preservation and protection of the environment, and*
*1.6 the preservation of BNL facilities and equipment.*

## 2.0 Responsibilities

During the Run 2000, there will be two levels of responsibility for the oversight of the TOF.

The first level of responsibility will be the PHENIX Shift Crew. Prior to data taking, there will be a period of TOF commissioning when the TOF is tested at high voltage before the IR is closed and the TOF is inaccessible. During this commissioning phase the TOF HV & LV systems will be monitored by the team of TOF Experts every eight hours, at 8:00, 16:00 and 24:00. The TOF Experts will keep a record of the performance of the TOF.

During data taking, it will be the responsibility of the PHENIX Shift Crew to:

*2.1 monitor the status and alarms for the TOF HV system, LV system and air blowers cooling system according to a prescribed check off list at least once a shift (eight hours).*
*2.2 in event of an alarm or irregularity, contact an expert from the Expert Call List given in Appendix A.*

The second level of responsibility is the TOF Experts. It is the responsibility of the TOF Experts to:

*2.3 maintain the TOF in a safe operating condition. This includes:*
- 2.3.1 turn on the air blowers,
- 2.3.2 setting, adjusting, and checking the HV and LV power supplies,
- 2.3.3 posting any special instructions or notifications as required, and
- 2.3.4 carrying out any emergency actions, as prescribed in the Procedures section of this document.

## 3.0 Prerequisites

The TOF experts shall have read or have training in the following areas:

*3.1 Local Emergency Plan for the C-A Department, C-AD OPM 3.0,*
*3.2 BNL Electrical Safety I, Rad Worker I & TLD.*
*3.3 CA-D USER training, PHENIX IR Access training*
*3.4 geographical layout of the experimental area (routes of egress, location of emergency equipment, phones and controls) C-AD OPM 3.16*

The TOF Experts shall train all personal involved in the TOF running in the safe operation of the TOF HV & LV system.

## 4.0 Precautions

### *4.1 HV system precautions*

The HV power supplies are current limited at less than 30 milliamp per board. All HV points are enclosed within the protection containers in order to eliminate the danger to personnel. When the doors of containers are closed the HV points are inaccessible to personnel. When TOF is being tested and HV is on the TOF, there will be yellow tape barrier and HV warning sign posted around the TOF to indicate to personnel that they need to keep their distance. When the IR is closed no barriers or warnings will be required.

### *4.2 LV system precautions*

TOF utilized high current low voltage power supplies to provide power required by FEM crates to operate. This power is delivered from the LV power supply rack to the detector and distributed. Because the voltage is low, LV wires may stay energized while TOF FEM Testing Warning is posted to allow test-work on FEM crates.

### *4.3 Air blowers precautions*

The Air blowers are the only cooling system for TOF detector. In the normal operation, the air blowers should be always turned on. The status of the air blowers is shown in the main control panel, which indicates the current inside of air blowers. If air blowers are tripped, turn off all HV modules immediately and call TOF experts as listed in Appendix A.

## 5.0 Standard Operating Procedures

### *5.1 HV system Procedure: Turning on high voltage to the TOF*

5.1.1 Check that air blowers for both E0 and E1 sectors are on, which are indicated on the main control panel in the PHENIX counting house.

5.1.2 Check that the appropriate current limits are in place for the main channel of each HV module, and check that the appropriate HV limits are in place both for the main channel and each sub channel. The TOF Experts and personnel assigned to operate the TOF HV shall maintain a HV logbook where the operating parameters of the HV setting are recorded.

5.1.3 Check that the ramp up rate for each channel is appropriate (< 500 volts per step).

5.1.4 Start ramping up HV and place the "HV ON" sign in a prominent position.

5.1.5 If any of the HV supplies trips, disable all channels in the same modules until the reason for the trip is understood and call TOF experts listed in Appendix A. If the reason for the trip is understood, then begin the procedure again from 5.1.1.

5.1.6 If there are no HV trips, verify that the operating currents are appropriate.

5.1.7 When ramping is complete, verify that the operating currents (for the main channel) and voltage (both for main channels and for sub channels) are appropriate, as given in the operating log.

5.1.8 Check the appropriate TOF, HV and LV temperatures.

5.1.9 HV is ready for TOF.

*5.2 HV System Procedures: Turning off high voltage to the TOF*

5.2.1 Begin ramping down the HV (<500 volts per step).

5.2.2 Verify by the read back that the HV is off in the system.

5.2.3 Remove the "HV ON" sign.

5.2.4 Turn off air blowers.

*5.3 TOF HV cable and HV distribution box mating / unmating procedure:*

5.3.1 To make the connector on HV cable UNMATED with the high voltage distribution box, take the following procedure.

5.3.1.1 The interlock terminator (50 ohm) on the backside of the HV module should be taken out.

5.3.1.2 Check the LED on the front panel of the HV module. The LED must be OFF.

5.3.1.3 Make the connector unmated with the box.

5.3.2 To make the connector on HV cable MATED with the high voltage distribution box, take the following procedure.

5.3.2.1 The interlock terminator (50 ohm) on the backside of the HV module should be taken out.

5.3.2.2 Check the LED on the front panel of the HV module. The LED must be OFF.

5.3.2.3 Make the connector mated with the box.

5.3.2.4 Put a interlock terminator (50 ohm) on the backside of the HV module.

*5.4 TOF HV distribution box opening / closing procedure:*

5.4.1 To open the high voltage distribution box, take the following procedure.

5.4.1.1 Follow "TOF HV cable and HV distribution box unmating procedure".

5.4.1.2 Open the HV distribution box.

5.4.2 To close the high voltage distribution box, take the following procedure.

5.4.2.1 Follow "TOF HV cable and HV distribution box unmating procedure".

5.4.2.2 Close the HV distribution box.

5.4.2.3 If need to make HV cable and HV distribution box mated again, follow "TOF HV cable and HV distribution box mating procedure".

## 6.0 Documentation

*6.1 None*

## 7.0 Reference

*7.1 C-AD OPM 3.0, "Local Emergency Plan for the C-A Department Project".*

*7.2 C-AD OPM 3.16, "Emergency Procedure for the PHENIX Detector Building 1008 Complex".*

## Appendix A: Call list for the TOF experts

1. Tatsuya CHUJO x-1170 (pager: 5614)
2. Susumu SATO x-4490
3. Akio KIYOMICHI x-1079
4. Miwako SUZUKI x-1531