DC/PC INSTALLATION PROCEDURE

procedure name

PHENIX Procedure No. PP-2.5.5.4-09

Revision: A **Date: 11-1-99**

Hand Processed Changes

HPC No.	Date	Page Nos.	Initials

Approvals

Peter Kroon 11/1/99
PHENIX S E & I Date

11-2-99
Cognizant Scientist/Engineer Date
/Activity Manager

William C Berg 11-1-99
PHENIX QA/Safety Date

11/1/99
RHIC ES&H Date

REVISION CONTROL SHEET

LETTER	DESCRIPTION	DATE	WRITTEN BY	APPROVED BY	CURRENT OVERSIGHT
A	First Issue	11/1/1999	n/a	P. Kroon, T. Hemmick, W. Lenz, M. Gaffney	n/a
RETIRED	Installation completed	3/19/2007	n/a	D. Lynch, P. Giannotti, R. Pisani for PHENIX	D.Lynch

Introduction

Safe handling of the Drift Chamber (DC) and Pad Chamber (PC) Assembly while installing upon the PHENIX Detector Carriage will eliminate danger to workers at Brookhaven National Laboratory (BNL). This procedure will provide detailed instructions for safe installation of the detector assembly onto the PHENIX West Carriage.

1.0 Purpose & Scope

The purpose of this procedure is to provide directions for handling and installing the DC/PC Assembly. It applies to BNL personnel, outside contractors, contract labor and to personnel designated to operate equipment covered by this procedure. Safety standards provided by BNL for Material Handling (1.6.0) and required training and certification (1.6.1) will apply. There are two parts to the procedure: Movement of the detector assembly from the assembly hall floor to the "Park position" (the Southeast corner of the PHENIX collision hall), and lift of the detector assembly onto the Detector Carriage.

This procedure will be used for installation of two DC/PC assemblies: one on the west Carriage in the 1008 collision hall, and one on the east carriage in the 1008 assembly hall. The intermediate steps for placing the DC/PC in the "Park Position", Para. 7.1; and preparations in the collision hall, Para. 6.1, 6.2, and 6.6, are not required for the east carriage installation.

Note that the DC/PC assembly weighs an estimated 3200-lbs., including the attached cables.

2.0 Responsibilities

2.1 All operations shall be performed under the direction of the Phenix Experimental Hall "Person-in-Charge" or his designee.

2.2 Due to the component value, as well as the inherent personnel risk involved in handling such large objects, this procedure and all relevant BNL safety guidelines must be strictly adhered to. In accordance with BNL policy, any individual may cease operations if they in any way feel unsafe or if they believe unsafe procedures are being followed. Such a complaint shall be reviewed by the cognizant engineer, and if necessary, BNL ES & H Services.

3.0 Prerequisites

3.0 All personnel involved in this procedure must have a current BNL Safety Awareness Certificate (SAC).

3.1 All personnel involved in this procedure shall wear hard hats in accordance with RHIC SEAPPM 1.16.0.

3.2 Personnel involved in this procedure shall wear safety shoes.

4.0 Precautions

4.1 Visitors shall not be permitted in the PEH during these procedures.

4.2 Some operations will require personnel to work in close proximity to suspended loads. Do not permit yourself or anyone else to be positioned under the load.

5.0 Equipment/Parts List

5.1 The following equipment, hardware, & parts are called for in various sections of this procedure:

Equipment/Rigging Hardware:

Slings (2): 20-ft., 6200-lb. capacity in vertical configuration
40-ton Assembly Hall crane
12-ton Collision Hall crane
2 Chain Falls rated at or above 3000 Lb. each.

Detector Parts & Hardware:

Drift Chamber/Pad Chamber Assembly delivered on table with wheels and jack stands (the rolling table weighs an additional 3000 Lb.).

6.0 Preparations

6.1 Locate the Central Magnet in a convenient spot in the Collision Hall so that it does not block access to the "Park position" (Collision Hall Southeast corner).

6.2 Position the PHENIX cart so that it will roll through PHENIX main door. Place blocks into track gaps to ensure smooth movement of the cart.

6.3 Survey drift chamber mount points to nominal position with mount slides retracted.

6.4 Extend the DC mount slides in the extended position and secure with clamps

6.5 Locate detector carriage in proper position and block rollers to prevent inadvertent motion.

6.6 Position a manlift in the Southwest corner of the collision hall.

7.0 Procedure

7.1 Movement of detector to Park Position

The detector will be delivered to the PHENIX Experimental Hall mounted horizontally on a rolling table, attached by two pins through the lower front mounting points. This installation procedure requires several moves of the DC/PC after it is removed from its rolling table. **The DC/PC is a fragile assembly and is to be supported ONLY under or by its three attachment points until in its final position on the carriage.**

7.1.1 Attach the two 20-Ft. slings from the crane hook to the Drift Chamber's rear mount holes. The slings should have abrasion guards where they cross sharp edges of the detector.

7.1.2 Adjust one chain fall to 20-Ft. length. Attach this chain fall between the front central lift point and the crane.

7.1.3 Lift the crane to tension the slings and remove the mount pins holding the drift chamber to the rolling table. The suspended drift chamber will then look as shown in Figure 1.

7.1.4 Lift the detector and place it on the PHENIX cart, supporting it under the prescribed three points with cushioned blocks.

7.1.5 Remove the rigging gear and transfer it to the 12-ton crane in the collision hall.

7.1.6 Carefully and slowly roll the cart from the assembly hall into the collision hall.

7.1.7 Re-attach the rigging gear and Lift the detector from the cart in the collision hall using the 12-ton crane. Place the detector in the park position on the south tracks, supported in the same manner as on the PHENIX cart.

7.1.8 Move the PHENIX central magnet east to allow clear access for the second part of the lift and to allow the magnet to serve as a secure point during the DC/PC lift.

7.2 *Carriage installation*

7.2.1 Attach the two 20-Ft. slings to the Drift Chamber's rear mount holes. The slings should have abrasion guards where they cross sharp edges of the detector.

7.2.2 Adjust one chain fall to 20-ft. length. Attach this chain fall between the front central lift point and the crane hook. All slings and the chain fall should have control lines attached so operators may guide them during times they are slacked.

7.2.3 Attach the second chain fall to the front lift point of the DC as well. This chain fall will be used to take the load as the center of mass of the DC/PC detector system passes over the front pivot.

7.2.4 Position the drift chamber so that the front mounting pins may be inserted. Insert and secure the pins.

7.2.5 Raise the front chain fall so that the front edge of the drift chamber is lifted vertically. Adjust the crane to keep the drum directly above the hook. Adjust the vertical to bring the DC back to horizontal. Continue this procedure until the rear slings fall slack. *Slack will occur when a total of about 3.5' of chain is taken up from the chain fall.* Guide the slings so that they do not brush against sensitive parts of the drift chamber.

7.2.6 Remove the rear slings from the rear detector mount points.

7.2.7 Attach the free end of the second chain fall to the central magnet or the tracks for support.

7.2.8 Rotate the DC/PC about the front mounting pins by successively raising the crane or the first chain (crane hook) and slackening the second chain fall (central magnet) to bring the chamber to its upright position. ***The center of mass of the DC/PC system will pass over the front pivot point approximately 8 degrees prior to final detector positioning.***

7.2.9 Once the rear detector mount points align, insert mount pins into the rear mount points.

7.2.10 Use the manlift to gain access, and remove all slings and chain falls from the crane and drift chamber.

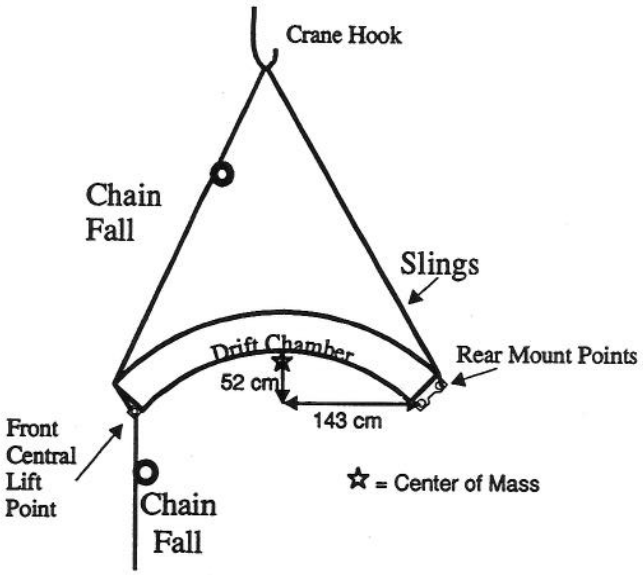

Figure 1: This figure shows the drift chamber hanging by 2 slings and one chain fall. The second chain fall will be attached to the central magnet and be used to transfer the load as the center of mass of the system passes over the pivot.