MOVING CENTRAL MAGNET AND DETECTOR CARRIAGES IN THE PHENIX 1008 IR

procedure name

PHENIX Procedure No. PP-2.5.5.1-01

Revision: D **Date: 6/23/2016**

Hand Processed Changes

HPC No.	Date	Page Nos.	Initials

Approvals

6/23/16
PHENIX S E & I Date

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Cognizant Scientist/Engineer Date
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REVISION CONTROL SHEET

LETTER	DESCRIPTION	DATE	WRITTEN BY	APPROVED BY	Current Oversight
A	First Issue	5/20/1999	n/a	(2 unintelligible), P Kroon, W Lenz, Y. Makdisi	D. Lynch
B	Par. 1.1 Added "…The hydraulics for moving the carriages … particular carriage/ magnet move. Par. 1.2 changed "…or the beam pipe." to "…or the beam pipe, with … platform levels. Par. 3.2 rewritten to reflect need for additional watch technicians when moving the MMS or CM. par. 5.3 added "In the case … or released." Par. 5.5 and 5.7 references to CM now include MMS.	11/24/2009	D. Lynch	P. Giannotti, D. Lynch, R. Pisani	D. Lynch
C	Reviewed and found to be OK as is	1/25/2013	D. Lynch	P.Giannotti, D. Lynch, R. Pisani	D. Lynch
D	Reviewed and found to be OK as is	6/23/2013	D. Lynch	P.Giannotti, D. Lynch, R. Pisani	D. Lynch

1.0 Purpose & Scope

1.1 The purpose of this procedure is to provide directions for the movement of the PHENIX Central Magnet (CM), the South Muon Magnet (MMS) and the east and west detector carriages (EC and WC) in the interaction region of the PHENIX Experimental Hall (PEH). These items are moved periodically to provide access to various detector elements for maintenance.

The Central Magnet weighs about 450 tons, the MMS weighs about and each carriage weighs around 200 tons. They roll on Hilman rollers on permanent steel tracks, driven by hydraulic cylinders. The operation of the large hydraulic system (moving of the magnets) is covered in its own procedure, and is common to several moving operations in the PEH. The hydraulics for moving the carriages is different from that used for the magnets. The carriages each have their own dedicated hydraulic system. Hydraulic system operators must be familiar with the operation manual for each of the specific hydraulic systems and its implementation for the particular carriage/magnet move.

1.2 This procedure covers the unidirectional moves in the IR that are accomplished without disconnecting any of the service or signal attachments (water, gas, power, data etc.)or the beam pipe, with the exception that moving the CM requires disconnection of the plumbing at both the floor and bridge platform levels.

2.0 Responsibilities

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

3.0 Prerequisites

3.1 Training: All personnel involved in this procedure shall have reviewed this procedure and the operation of the hydraulic system, including the location of the "Emergency Stop" and the wall-mounted circuit breaker, and be fully knowledgeable about the way in which the device moves on the rails.

3.2 In addition to the hydraulics operator, at least two technicians are to be assigned to conduct this procedure for moving the MMS, EC or WC, three or more technicians in addition to the hydraulics operator for moving the CM, with their sole focus being on the moving device and rollers.

3.3 Each of the devices has two "normal positions": 1) Data taking, or "in" and 2) retracted, or "out". Both carriages must be fully retracted before the Central

Magnet can be moved. The CM must be fully in before either carriage can be moved in.

4.0 Precautions

4.1 There is a potential for crushing personnel or equipment during this operation. The devices move so slowly that to the casual observer it may appear to be stationary. Therefore, access to the immediate area must be cleared of non-essential personnel and equipment.

4.2 There is a potential of damaging cables and hoses if they are not kept clear of the roller paths on the tracks during movement.

5.0 Procedure

5.1 Ensure that the hydraulic cylinders are properly and securely attached and connected.

5.2 Ensure that the rails are swept clean of debris and there is nothing in the paths of the rollers.

5.3 Remove/release all seismic tie downs for the device to be moved. In the case of moving either the CM or MMS, the seismic tie downs of the stationary magnet must be secure while the constraints of the magnet to be moved must be removed or released.

5.4 Ensure that nothing projects above the track level that would be hit by the traveling device or its cables and hoses.

5.5 Ensure that all hoses and cables that remain attached to the device are free to move for the travel of the device (up to 60 inches for the CM and MMS, up to 40 inches for the carriages).

5.6 Inspect the entire travel envelope of the device to ensure there are no obstructions or interferences.

5.7 If moving the CM or MMS, inspect the travel envelope of the CM (MMS) over the beam pipe to ensure there are no obstructions or interferences.

5.8 Energize the hydraulics to move the device to the desired position, continuously checking for free motion of all parts device and its cables and hoses, particularly underneath the device and around the beam pipe.

5.9 Shut down and secure the hydraulic system to preclude any unauthorized operation.

6.0 Documentation

NONE

7.0 References

NONE

8.0 Attachments

NONE