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C-A OPERATIONS PROCEDURES MANUAL

4.92 Control of Temporary Hardware Changes/Bypasses in the Particle Accelerator Safety System (PASS) and the Access Control System (ACS)

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Hand Processed Changes

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Approved: _____ Signature on File _____
Collider-Accelerator Department Chairman Date

D. Passarello

4.92 Control of Temporary Hardware Changes/Bypasses in the Particle Accelerator Safety System (PASS) and the Access Control System (ACS)

1. Purpose

To control and document short term hardware changes in the Particle Accelerator Safety System (PASS) and Access Control System (ACS) within the C-A Complex.

1.1 Definitions

- a. Bypass - Temporary defeat of a sensor or system response to a sensor.
- b. Temporary Change - Reconfiguration or removal of functionality that does not degrade the level of protection. The changes shall remain in place for a specified period of time to facilitate operations and not evoke a permanent change to the hardware.
- c. Temporary Chipmunk Change - Bypass of a Chipmunk interlock function, for a fault study, via the toggle switch that is intended for that purpose is not the scope of this procedure and shall be done in consultation with the RSC Chair. All other non-fault study bypasses are covered by this procedure.

2. Responsibilities

- 2.1 The Access Controls Group (ACG) cognizant engineer (CE) shall review and approve all PASS/ACS Temporary Change Requests.
- 2.2 The Access Controls Group Leader shall review and approve all PASS/ACS Temporary Change Requests.
- 2.3 The C-A Chief Electrical Engineer shall review and approve all PASS/ACS Temporary Change Requests.
- 2.4 The Chair, or designee of the C-A Radiation Safety Committee (RSC), shall review all proposed temporary changes/bypasses.
 - 2.4.1 The approval of a second knowledgeable member of the RSC or liaison physicist, is required for interlock bypasses.
- 2.5 A member of the ACG shall implement and verify approved changes.

3. Prerequisites

- 3.1 All personnel involved in working on any electrical system or equipment in the C-A shall be familiar with BNL SBMS [Electrical Safety](#), BNL SBMS [Lockout/Tagout Implementation Plan](#), C-A-OPM 1.5, “[Electrical Safety Implementation Plan](#)”, C-A-OPM 1.5.3, “[Procedure to Open or Close Breakers and Switches](#)”, C-A-OPM 2.36, “[Lockout/Tagout for Control of Hazardous Energy](#)”. C-A will provide on-site / work specific training to individuals in the electrical safety aspects of their job functions and assignments.
- 3.2 [C-A-OPM 9.1.16](#), "Lockout/Tagout for Radiation Safety (RS LOTO), shall be followed as appropriate".

4. Precautions

- 4.1 All personnel shall ensure their own safety by following the standards, safety rules, and the training they receive. In general, all energy sources must be locked out and tagged. Working on or near energized sources, “Working Hot”, is not permitted unless a valid working hot permit has been issued. Personnel shall utilize tools, instruments, equipment (e.g., proper connectors and proper ac line cords), etc., that are safe and proper for the job. If any part of a job appears unsafe to any individual, it is their duty to discontinue work and inform the supervisor, manager, ESH Coordinator, or the C-A ESSHQ Division Head, of the unsafe condition.

Danger:
VOLTAGES UP TO 480 VAC MAY BE PRESENT
Wiring changes and testing may involve close proximity to voltages up to 480 VAC. Appropriate electrical LOTO must be implemented.

Warning:
Some tests require the use of jumper wires to reduce testing to manageable steps. Failure to remove jumper wires may result in unacceptable radiation exposure and injury.

5. Procedures

- 5.1 The CE shall review and approve all PASS/ACS Temporary Change Requests. The review shall verify the following information:
- a. Description of Change/Bypass with expected expiration date.
 - b. Explanation of continued Safety Functionality after change/bypass is incorporated.
 - c. Description of Change/Bypass, Implementation & Restoration Validation Tests.
 - d. List of equipment used for bypass (including type and serial numbers when applicable).
 - e. Copies of marked up drawings, State Tables or other relevant documentation are attached to the PASS/ACS Temporary Change

Request.

- 5.2 During operation, approvals shall be obtained off hours by the following steps:
- 5.2.1 In lieu of written signatures, the Operations Coordinator (OC) shall, by means of telephone, fax, or e-mail, obtain verbal approvals from responsible persons in Steps 2.2, 2.3 and 2.4, and the ACG CE for the safety system (PASS or ACS), which the Change/Bypass affects.
 - 5.2.2 After talking with approvers (preferably by conference telephone call), the OC shall sign the PASS/ACS Temporary Change Request form with his/her own signature "for the approver."
- 5.3 For Bypass/Changes which will remain in place for more than thirty (30) days and will not become permanent:
- 5.3.1 The CE shall notify the ESH Coordinator if the change shall last more than 30 days.
 - 5.3.2 The ES&H Coordinator shall notify the RSC if any bypass change stays in place for more than thirty (30) days, and request that the bypass be made permanent, removed, or approved for another thirty (30) day interval.
- If no response is forthcoming, the C-A Department ESH Coordinator shall refer the matter to the Department Chair.
- 5.4 When a PASS/ACS Change/Bypass is to be incorporated permanently, the engineering drawings and/or specification shall be revised, per [C-A-OPM 13.6.2](#), "Configuration Management", and [C-A-OPM 4.91](#), "Configuration Management Plan for the Particle Accelerator Safety System".

6. Documentation

- 6.1 Copies of the PASS/ACS Temporary Change Requests, marked up drawings, State Tables, or other bypass documentation, all with appropriate approvals, shall be kept in the CE's office and in the Main Control Room.
- 6.2 Notification to the MCR and OC shall be done using informational documents, whose generation shall be triggered by the PASS/ACS Temporary Change Request form. These documents are either memoranda or copies of drawings or State Tables. Copies of these informational documents shall be sent to the RSC file.

7. References

- 7.1 [C-A-OPM 4.91, "Configuration Management Plan for the RHIC Particle Acceleration Safety System".](#)
- 7.2 [C-A-OPM 9.1.16, "Lockout/Tagout for Radiation Safety".](#)
- 7.3 [C-A-OPM 13.6.2 "Configuration Management".](#)

8. Attachments

- 8.1 [C-A-OPM-ATT 4.92.a, "PASS/ACS Temporary Change Request Form".](#)