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C-A OPERATIONS PROCEDURES MANUAL

ATTACHMENT

8.15.3.d Instructions for Chipmunk Installation Request Form (BNL F 2948A)

C-A OPM Procedures in which this Attachment is used.		
8.15.3		

Hand Processed Changes

<u>HPC No.</u>	<u>Date</u>	<u>Page Nos.</u>	<u>Initials</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

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

V. Castillo

8.15.3.d Instructions for Chipmunk Installation Request Form (BNL F 2948A)

1. **Purpose**

This document facilitates the completion of BNL Form F 2948A, Chipmunk Installation Request.

2. **Responsibilities**

The personnel or group involved in filling each section is as follows: (LP) = Liaison Physicist, (ACG) = Access Controls Group, (RCD) = Radiological Controls Group, (MC) = Main Control Group and (CG) = Controls Group.

3. **Prerequisites**

None

4. **Precautions**

None

5. **Procedure**

5.1 Completion of Upper Portion of White Form

5.1.1 Installation Request No. (ACG)

- Request numbers are generated by the ACG representative for new Chipmunk installations only. These numbers increase sequentially.
- Replacement requests with different installation parameter(s), 5.1.6.1 thru 5.1.6.6, from the original Request get a letter appended to the original Request number.

5.1.2 Required Date of Installation (LP)

- This is the date by which the Chipmunk installation must be completed and operating.
- “Operating” requires testing to the Main Control Room (MCR) if the Chipmunk is linked to the computer.

5.1.3 Location (LP)

- The Facility: AGS, Booster, Linac, Beam Line No., Experimental Trailer, RHIC, ATR, Tandem, etc.

- Brief description of the area including local objects of identification.
- Map co-ordinates of the area.

5.1.4 Exp. No. (LP)

- The Experiment No.(s) involved with this installation.

5.1.5 Contact (LP)

- Liaison Physicist requesting the installation.
- The Chairman of the Radiation Safety Committee can perform the functions of a Liaison Physicist.

5.1.6 Special Instructions

5.1.6.1 Replacement Device

- A Chipmunk replacing another, after annual shutdown and calibration, at the same location.

5.1.6.2 Local Area Monitor

- A Chipmunk used for audio / visual warning of radiation levels to personnel.

5.1.6.3 Marked Placement

- This Chipmunk has a marked location where it must be spotted. This location is determined by Fault Studies. Initially a Chipmunk designated for marked placement may not have a marked location.

5.1.6.4 Security System Device

- A Chipmunk that interlocks an Accelerator Facility to turn off the beam at a set level of radiation.

5.1.6.5 Security System Trip Level

- The level in mrem/hr at which an interlocking Chipmunk (5.1.6.4) will effect a trip.
- There are three trip levels: 50, 20 and 2.5 mrem/hr set by a 3-position switch in the interlocking hardware.

- The Quality Factor (QF) of the source of radiation and the QF setting of the Chipmunk also determine the trip level as detailed in the QF Matrix, Attachment 1.

5.1.6.6 Alarm Levels

- The radiation level in mrem/hr at which the computer alarms the Main Control Room (MCR) when the Chipmunk registers that level.
- There are Chipmunks that are not linked to the computer.
- There are Chipmunks linked to the computer that do not have an alarm level.
- Alarm levels for Protons and Heavy Ions may differ.

5.1.6.7 Notify Contact Immediately upon Completion (LP)

- The LP may request to be informed of the completion of the Chipmunk installation.

5.1.7 Other Instructions (LP)

- The LP may list instructions pertaining to the Chipmunk installation that are not included under Special Instructions.

5.1.8 Requested By (LP)

- This is signed by the LP and initialed by the Chairman of the Radiation Safety Committee.

5.1.9 Date (LP)

- This is the date the Chipmunk Installation Request form BNL F 2948A was submitted.

5.1.10 Unit No. (ACG)

- This is a sequential number assigned to a Chipmunk when it is first calibrated after manufacture.

5.1.11 NMO # (CG)

- The NMO (Nuclear Monitor) number is the computer address that receives counts from the Chipmunk.

- The CG generates the computer addresses which become NMO numbers.
- The ACG assigns an NMO number to a Chipmunk location when a Chipmunk Installation Request is executed.
- The ACG assigns the NMO number to the Chipmunk while it is installed at a Chipmunk location.
- NMO numbers are not sequential. Missed numbers are spares.

5.1.12 Date (ACG)

- This is the date the ACG receives the form BNL F 2948A from the LP.

5.1.13 Location (RCD)

- This is the RCD description of the location of the Chipmunk.
- The RCD description is used in the RCD's Detector File List Program.

5.2 Completion of Lower Portion of White Form

5.2.1 Justification Remarks (LP)

- The LP states reason(s) for installation of Chipmunk.
- The LP records areas exclusive of Location (5.1.3) monitored by this Chipmunk.

5.2.2 Sign-Off

5.2.2.1 Access Controls Group (ACG)

- The ACG representative initials this box on completion of the Chipmunk installation.

5.2.2.2 Operations Coordinator (MC)

- The Operations Coordinator for the shift, or his representative, initials this box on completion of the Chipmunk installation.

5.2.2.3 Radiological Control Technician (RCT)

- The RCT initials this box on completion of the Chipmunk installation.

5.2.3 Installation Complete (ACG)

- The ACG representative signs here on completion of the Chipmunk installation.

5.2.4 Date

- The ACG representative records the date of completion of Chipmunk installation.

5.3 White Form Disposal

- The white copy of form BNL F2948A is saved with the Radiation Safety Committee records of Chipmunk Installation Requests.

5.4 Completion of Lower Portion of Yellow Form (ACG)

5.4.1 Sis Scaler Address

- The ACG records the Sis Scaler address of the Chipmunk.
- The ACG initials on completion of the items listed in section 5.4.1.

5.4.2 Change of Placement Only

- The ACG verifies if the installation was only the change of spotting of the Chipmunk at the same location.

5.4.3 Placement

- The ACG verifies if the Chipmunk was spotted at the location.

5.4.4 Marked

- The ACG verifies if the spot for the Chipmunk is marked.

5.4.5 Cables Attached

- The ACG verifies all cabling for the Chipmunk installation is completed.

5.4.6 Power Up

- The ACG verifies the Chipmunk installation is powered.

5.4.7 Interlock Check

- The ACG verifies that the Interlocking function of the Chipmunk installation is operational.
- The Interlock is enforced with the Radioactive test source if the trip level is 2.5 mrem/hr or 20 mrem/hr.
- The Interlock is enforced with the Test button on the Chipmunk if the trip level is 50 mrem/hr.

5.4.8 Reset Check

- The ACG verifies the Resetting functions of the Chipmunk installation are operational.
- The local Reset function at the Chipmunk interface box must be verified.
- The remote Reset function at the MCR must be verified.
- RHIC chipmunks have only a Remote reset function, at the MCR.

5.4.9 PC Message Logging Check

- The ACG verifies the Logging function of the Chipmunk installation, at the MCR, is operational.

5.4.10 Warning Tag

- The ACG installs a Security Warning Tag on the cable to the Chipmunk, at the Chipmunk installation.
- The ACG documents the Warning Tag #.

5.4.11 Sign-Off

5.4.11.1 Operations Coordinator

- The Operations Coordinator for the shift, or his representative, initials this box on completion of the Chipmunk installation.

5.4.11.2 Radiological Control Technician

- The RCT initials this box on completion of the Chipmunk installation.

5.4.12 Installation Complete (ACG)

- The ACG representative signs here on completion of the Chipmunk installation.

5.4.13 Date

- The ACG representative records the date of completion of Chipmunk installation.

5.4.14 Form Disposal

- The yellow copy of form BNL F2948A is saved with the ACG's records of Chipmunk Installation Requests.

5.5 Completion of Lower Portion of Green Sheet (MC)

5.5.1 Circle as Applicable (MC)

- The Operations Coordinator or representative circles the options and activities selected in 5.5.2 thru 5.5.5.

5.5.2 Sis Scaler Address

- The MC records the Sis Scaler address of the Chipmunk.
- The MC initials form after required data is recorded.

5.5.3 Verify Sis Scaler Address and Description / Location with HP Detector File List

- The MC verifies the Chipmunk Sis Scaler address correlates with the Chipmunk location in the RCD Detector File list (5.1.13). Initial form when address is verified.

5.5.4 Enter / Verify Database NMO Number and Description

- The MC verifies the Database NMO Number and Description, entering them if necessary. Initial form when completed.

5.5.5 Enter / Verify Spreadsheet Neutron Monitor Name

- The MC verifies the Spreadsheet NMO name entering it if necessary. Initial form when complete.

5.5.6 Installation Complete (MC)

- The Operations Coordinator or representative signs here on completion of the Chipmunk installation.

5.5.7 Date

- The MC representative records the date of completion of Chipmunk installation.
- The MC representative retains Green copy for MC's Chipmunk installation records.

5.5.8 Form Disposal

- The green copy of form BNL F2948A is saved with the MC's records of Chipmunk Installation Requests.

5.6 Completion of Lower Portion of Orange Sheet (RCD)

5.6.1 Source Check

- The RCT verifies the Chipmunk installation is functional with a Radioactive test source. Initial form when completed.

5.6.2 Alarm Level Set

- The RCT verifies the Alarm level for the Chipmunk installation is set in the computer at MCR. Initial form when completed.

5.6.3 Update Map

- The RCT verifies the RCD Chipmunk Installation map is updated. Initial form when completed.

5.6.4 Update MCR Map

- The RCT verifies that the MCR Chipmunk Installation map is updated. Initial form when completed.

5.6.5 Installation Complete (RCD)

- The RCT signs here on completion of the Chipmunk installation.

5.6.6 Date

- The RCT records the date of completion of Chipmunk installation.
- The RCT retains Pink copy for RCD's Chipmunk installation records.

5.6.7 Form Disposal

- The pink copy of form BNL F2948A is saved with the RCD's records of Chipmunk Installation Requests.

6. **Documentation**

None

7. **References**

None

8. **Attachments**

8.1 Attachment 1 – Matrices for Correlating Radiation Source and Chipmunk Quality Factor

8.2 Attachment 2 – Chipmunk Installation Form

**MATRICES FOR CORRELATING RADIATION
SOURCE AND CHIPMUNK QUALITY FACTOR**

**S
O
U
R
C
E**

**MUONS,
GAMMAS
(QF 1)**

**GAMMAS +
NEUTRONS
(QF 2.5)**

**LOW NRG
NEUTRONS
(QF 5)**

CHIPMUNK QUALITY FACTOR SETTING		
QF 1	QF 2.5	QF 5
400	1000	2000
*2.5 urem	*1 urem	*0.5 urem
160	400	800
*6 urem	*2.5 urem	*1.3 urem
800	200	400
*12 urem	*5 urem	*2.5 urem

MATRIX - 1

Counts Per mrem

*urem/count

This is the constant [VI (5)]
in the Detector File
List Program. There it is
expressed in mrem/count,
where:

$$2.5 \text{ urem} = 0.0025 \text{ mrem}$$

**S
O
U
R
C
E**

**MUONS,
GAMMAS
(QF 1)**

**GAMMAS +
NEUTRONS
(QF 2.5)**

**LOW NRG
NEUTRONS
(QF 5)**

CHIPMUNK QUALITY FACTOR SETTING		
QF 1	QF 2.5	QF 5
X 1	X 0.4	X 0.2
X 2.5	X 1	X 0.5
X 5	X 2	X 1
*12 urem	*5 urem	*2.5 urem

MATRIX - 2

Meter Reading
Multiplier for Radiation
In mrem hr

WHERE:
Chipmunk Meter Reading x
Matrix-2 Multiplier = mrem/hr

Attachment 1

CHIPMUNK INSTALLATION REQUEST

INSTALLATION REQUEST NO. _____ REQUIRED DATE OF INSTALLATION: _____

LOCATION: _____

EXP. NO. _____

CONTACT _____

SPECIAL INSTRUCTIONS:

REPLACEMENT DEVICE NO YES (SEE INSTALLATION REQUEST NO. _____)
LOCAL AREA MONITOR NO YES
MARKED PLACEMENT NO YES
SECURITY SYSTEM DEVICE NO YES

SECURITY SYSTEM DEVICE TRIP LEVEL _____ mR/hr.

ALARM LEVELS
PROTONS _____ mR/hr. HEAVY IONS _____ mR/hr.

NOTIFY CONTACT IMMEDIATELY UPON COMPLETION? YES NO

OTHER INSTRUCTIONS: _____

REQUESTED BY: _____ DATE: _____

UNIT #: _____ NMO #: _____

DATE: _____ LOCATION: _____
(ACG) (RCD)

JUSTIFICATION REMARKS:

SIGN-OFF

ACCESS
CONTROLS
GROUP:

OPERATIONS
COORDINATOR:

RADIOLOGICAL
CONTROL
TECHNICIAN:

INSTALLATION COMPLETE: _____ DATE: _____

BNL F 2948A

RADIATION SAFETY COMMITTEE

Attachment 2

CHIPMUNK INSTALLATION REQUEST

INSTALLATION REQUEST NO. _____ REQUIRED DATE OF INSTALLATION: _____

LOCATION: _____
EXP. NO. _____
CONTACT _____

**This section completed when
data entered on white sheet.**

SPECIAL INSTRUCTIONS:

REPLACEMENT DEVICE NO YES (SEE INSTALLATION REQUEST NO. _____)
LOCAL AREA MONITOR NO YES
MARKED PLACEMENT NO YES
SECURITY SYSTEM DEVICE NO YES

SECURITY SYSTEM DEVICE TRIP LEVEL _____ mR/hr.

ALARM LEVELS
PROTONS _____ mR/hr. HEAVY IONS _____ mR/hr.

NOTIFY CONTACT IMMEDIATELY UPON COMPLETION? YES NO

OTHER INSTRUCTIONS:

REQUESTED BY: _____ DATE: _____

UNIT # _____ NMO #: _____

DATE: _____ LOCATION: _____
(ACG) (RCD)

DCON/SIS/PLC ADDRESS _____ PP/SIS/PLC ADDRESS _____ (INITIAL) _____

CHANGE OF PLACEMENT ONLY: YES N/A

PLACEMENT: (INITIAL) _____ MARKED: YES NO

CABLES ATTACHED: (INITIAL) _____ POWER UP: (INITIAL) _____

INTERLOCK CHECK: (INITIAL) _____ RESET CHECK: (INITIAL) _____

PC MESSAGE (INITIAL) _____ WARNING TAG#: _____

LOGGING CHECK: _____

SIGN-OFF

OPERATIONS COORDINATOR RADIOLOGICAL CONTROL TECHNICIAN

INSTALLATION COMPLETE: _____ DATE: _____

BNL F 2948A

ACCESS CONTROLS GROUP

CHIPMUNK INSTALLATION REQUEST

INSTALLATION REQUEST NO. _____ REQUIRED DATE OF INSTALLATION: _____

LOCATION: _____

EXP. NO. _____

CONTACT _____

**This section completed when
data entered on white sheet.**

SPECIAL INSTRUCTIONS:

REPLACEMENT DEVICE NO YES (SEE INSTALLATION REQUEST NO. _____)
LOCAL AREA MONITOR NO YES
MARKED PLACEMENT NO YES
SECURITY SYSTEM DEVICE NO YES

SECURITY SYSTEM DEVICE TRIP LEVEL _____ mR/hr.

ALARM LEVELS
PROTONS _____ mR/hr. HEAVY IONS _____ mR/hr.

NOTIFY CONTACT IMMEDIATELY UPON COMPLETION? YES NO

OTHER INSTRUCTIONS:

REQUESTED BY: _____ DATE: _____

UNIT #: _____ NMO #: _____

DATE: _____ LOCATION: _____

(ACG) (RCD)

CIRCLE AS APPLICABLE

ASSIGN/VERIFY DCON/SIS/PLC ADDRESS _____ (INITIAL) _____
PP/SIS/S ADDRESS

VERIFY DCON/SIS/PLC ADDRESS AND DESCRIPTION/LOCATION (INITIAL) _____
WITH HP DETECTOR FILE LIST

ENTER/VERIFY DATABASE NMO NUMBER AND DESCRIPTION (INITIAL) _____

ENTER/VERIFY SPREAD SHEET NEUTRON MONITOR NAME (INITIAL) _____

INSTALLATION COMPLETE: _____ DATE: _____

BNL F 2948A

OPERATIONS COORDINATOR

CHIPMUNK INSTALLATION REQUEST

INSTALLATION REQUEST NO. _____ REQUIRED DATE OF INSTALLATION: _____

LOCATION: _____

EXP. NO. _____

CONTACT: _____

**This section completed when
data entered on white sheet.**

SPECIAL INSTRUCTIONS:

- REPLACEMENT DEVICE NO YES (SEE INSTALLATION REQUEST NO. _____)
- LOCAL AREA MONITOR NO YES
- MARKED PLACEMENT NO YES
- SECURITY SYSTEM DEVICE NO YES

SECURITY SYSTEM DEVICE TRIP LEVEL _____ mR/hr.

ALARM LEVELS
PROTONS _____ mR/hr. HEAVY IONS _____ mR/hr.

NOTIFY CONTACT IMMEDIATELY UPON COMPLETION? YES NO

OTHER INSTRUCTIONS:

REQUESTED BY: _____ DATE: _____

UNIT # _____ NMO #: _____

DATE: _____ LOCATION: _____
(ACG) (RCD)

SOURCE CHECK (INITIAL) _____

ALARM LEVEL SET (INITIAL) _____

UPDATE MAP (INITIAL) _____

UPDATE MCR MAP (INITIAL) _____

INSTALLATION COMPLETE: _____ DATE: _____

BNL F 2948A

RADIOLOGICAL CONTROL DIVISION