| Serial Number: 2009-G001 | Start Date: 1-31-2009 | Expiration Date: 1-31-2010 |
|---|---|---|

**Work Area/Description of Work**: Accelerator tunnel, Hall-A, Hall-B, Hall-C, Free Electron Laser and associated service buildings.

General access requirements for entry into any beam enclosure listed above.

Beam enclosure areas addressed by this RWP are normally designated and posted as Radiologically Controlled Areas (RCA) and Radioactive Material Areas when accessible, except as noted in the special instructions. Other radiological conditions and postings may be present in the enclosure, including Radiation Areas, High Radiation Areas, Contamination Areas, and Airborne Radioactivity Areas. Access to these areas requires at minimum concurrence of the Radiation Control Department, and may require additional controls.

A beam enclosure is any area where primary electron beams may be present. This RWP applies only to work in these areas during routine access conditions. It shall not limit the access of emergency personnel in the event of an accelerator emergency requiring access.

**Task Description**: Perform general maintenance, equipment installation/removal, testing, walk-through, and inspections. This RWP shall be the radiological work control document for all work in beam enclosures which is not specifically addressed by a Job-Specific or Standing RWP.

**Work Area Radiological Conditions**:

_*__ Radiation Levels:
Maximum_____
Contact _____
Whole Body_____

_*__ Contamination Levels:
Maximum_____
Location_____

_*__ Airborne Levels:
Maximum_____
Location_____

_*__Other_____
_____

*** See survey maps in Machine Operations Control Center and posted at access points for radiological survey data. See continuation sheet for further information and limitations.**

**ALARA Estimate**: **Expected cumulative dose less than 1 person-rem.**

_____(Total Man-hours) X _____(Whole Body Exposure Rate) = _____ Man-Rem

**Training Requirements for Entry on this RWP**:

_**X**_Radiation Worker I __*_Radiation Worker II ____Respirator Qualified

***Also see special instructions**

**Dosimetry Requirements for Entry**:

__**X**_TLD ____SRPD ____Alarming Dosimetry ____Dose Rate meter

***Also see special instructions**

____ Multiple Dosimetry (as specified below):
_____
_____

____ Extremity Dosimetry( as specified below):
_____
_____

**Protective Clothing Requirements**: ***See special instructions**

____ Full Protective clothing (coveralls, booties, overshoes, cotton liners, rubber gloves, hood)

____ Partial protective clothing (as specified below):

____ Special protective clothing (as specified below):

____ Respiratory equipment (as specified below):

**Radiological Controls Coverage Requirements**:

____Continuous ____ Intermittent __**X**__ None

Special Instructions/ Consideration /Stay-time Controls:

____ Dose Tracking required ____ Pre-job briefing required __X__ Other (as specified below)

**GENERAL:**

1) **Do not** enter any area posted "Radiation Area" unless authorized on the posting or by the Radiation Control Department (RCD).
2) **Do not** enter any area posted "High Radiation Area" or "Contamination Area".
3) **Do not** enter any area posted "Airborne Radioactivity Area" unless specifically authorized on the posting.
4) **Do not** drill, grind, or weld on any beamline components (includes girders, supports, stands, etc.) without approval from the RCD.
5) **Do not** drain or open any liquid systems labeled "Potential Internal Contamination" without RCD approval.
6) The following locations or systems shall be considered potentially contaminated **(regardless of labeling)** and require notification of RCD prior to opening or entry.
   a) Any cooling water system associated with components which absorb part of the beam's energy.
   b) Any air conditioning (HVAC) system which transports ambient air in a beam enclosure (see exceptions on continuation form). Filter media, condensate and lubricants from any such system are to be treated as contaminated and handled only by appropriately trained workers.
   c) Beam enclosure floor drains, related piping, sumps, pumps and discharge locations.
   d) Mechanical vacuum pumps associated with the primary beam vacuum chamber or cryogenic targets.
   e) Target assemblies, or any other component on which the primary beam is directed.

**SEE CONTINUATION FORM FOR ADDITIONAL INSTRUCTIONS**

**Radiological Conditions that may void this RWP**:

_____

Approvals:

Submitted by:_ _____ __1 / 15 / 09 Work Supervisor_____N/A_____ ___/___/__
date

Approved by RCD manager (or designee)_____ _____ _1_/_15 / 09_
date

Cancellation:

This RWP is cancelled as of _____ by_____
Date

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|---|---|

| Date | Comments |
|---|---|
| | **General Instructions** – Continued from Page 2 |
| | |
| 1-31-09 | 7) All material located in a beam enclosure during beam operation must be monitored for |
| | radioactivity upon removal from the enclosure (see exceptions below). An Assigned Radiation |
| | Monitor (ARM) may survey items for removal from the enclosure (i.e. to make accessible for |
| | release survey), but items will be considered radioactive until released by an RCT. |
| | ***Only a qualified Radiological Control Technologist (RCT***) may approve the release of such items as non- radioactive. |
| | 8) Notify RadCon prior to removing any beamline component from its installed location. This applies to the beamline proper, beamline diagnostic equipment, girders and their components, support stands and any associated shielding. ***All such work requires pre-planning via ATLis***. ( This includes target and dump work) |
| | 9) All stored radioactive material is the responsibility of the radioactive materials custodian |
| | applicable to the system or work area. |
| | 10) No eating, drinking or smoking is permitted in beam enclosures. |
| | 11) This RWP does not apply to visitors. Visitors must be escorted at all times while in an RCA |
| | by a trained Radiation Worker, and must obtain the appropriate dosimetry from RadCon. |
| | **Visitors may not enter ANY area posted beyond the level of RCA (eg. Radiation Area).** |
| | 12) Upon cessation of beam operations, a radiation survey of the enclosure must be performed |
| | prior to allowing general access applicable to this RWP. See specific requirements below. |
| | 13) Any **"hands-on"** work directly on a posted Hot Spot shall be approved by RadCon in advance. |
| | 14) Do not alter any installed shielding bearing a "Controlled Shielding Configuration" label |
| | without specific approval from RadCon. |
| | 15) All metal waste released from a beam enclosure as non-radioactive must be disposed of by |
| | means ***other than recycling***. Waste disposal bins that can be used for this purpose are located |
| | near building 72 (Phys. Storage Bldg.) on the accelerator site and building 90 (EEL) offsite. |
| | 16) Radioactive material which causes the presence of a Radiation Area, or which has surface |
| | contamination in excess of applicable control limits shall not be stored out of doors |
| | without specific concurrence from the RadCon Manager and the Hall Leader/Operability |
| | Manager, as applicable. |
| | |
| | |
| | **Special Instructions** |
| | |
| | **ALL AREAS** |
| | Automated, "rapid access" monitoring systems *( currently installed in Hall B, the CEBAF Injector, and the FEL area)* may be used under certain conditions. When these systems are used, |
| | the following requirements apply: |
| | 1) The magenta beacon at the entry door must be OFF for entry. If not, a radiation survey is required. |
| | 2) The system shall be tested during initial entry (by pressing a test switch and verifying beacon |
| | operation) under direction of the Personnel Safety System Operator (SSO). |
| | 3) When entering via rapid access protocol, no access beyond established boundaries in these areas is permitted without a specific survey of the area. |
| | 4) When entering any area (other than the CEBAF injector) via rapid access protocol, no |
| | hands-on work on beam lines or targets is permitted without a survey of the affected area. |
| | |
| | |
| | |
| | **END STATIONS** |
| | 1) Any cryogenic target system which contains or may have contained He-3 shall be considered |
| | potentially internally contaminated. Do not open, vent, or modify any such target system |
| | without RadCon approval. |

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| 1-31-09 | **Special Instructions** – Continued from Page 3 |
| | **HALL A and C** |
| | 1) Certain components and spaces are subject to a buildup of low-level contamination. Examples |
| | include the interior of equipment racks, ventilated electronic components such as computer CPUs, |
| | power supplies, etc., all ventilation fans and ductwork, and devices that may electrostatically |
| | collect dust from the air (including CRT monitors and photomultiplier tubes). |
| | ***However, the following tasks require RadCon approval, RW-II, and the use of PPE:*** |
| | a) Handling, cleaning or removing filter media housed in this equipment |
| | b) Large-scale cleaning of this equipment such as component wipe-down, vacuuming, or any |
| | use of compressed air for cleaning |
| | c) Maintenance or repairs performed in rack spaces. |
| | d) Any work that may disturb visible dust build-up on equipment or components |
| | - ***Minimum PPE for the above tasks is gloves, regardless of contamination levels.*** |
| | Non-invasive work in or on this equipment *(i.e. flipping a switch, connecting cables)* does not require notification of RadCon. |
| | All such equipment must be assessed for contamination by RadCon prior to release from control |
| | ****The above controls may be modified based on assessments by RadCon**** |
| | |
| | **HALL B** |
| | 1) Air handling (HVAC) systems in hall B are not subject to the contamination controls described |
| | in the general instructions. |
| | 2) Equipment which is not part of the beam line may be removed without a radiological survey - |
| | *IF IT IS KNOWN THAT THE MATERIAL OR EQUIPMENT HAS NEVER BEEN* |
| | *LOCATED OR INSTALLED WITHIN ONE METER OF THE BEAMLINE.* |
| | ***If there is any question as to the confidence of this process knowledge, a survey shall be requested.** |
| | 3) The radiological posting level of Hall B is normally “Radiologically Controlled Area”. |
| | If radiological conditions allow, the posting level may be reduced to “Controlled Area” |
| | (dosimetry not required). Radioactive Material Area designation and survey requirements above |
| | apply at all times. |
| | *****Always check the local postings prior to entry***** |
| | |
| | **FREE ELECTRON LASER** |
| | 1) Laser diagnostic equipment (i.e. power meters, etc.) used both in the FEL vault and drive laser |
| | Room may be moved between these areas provided it is surveyed by an ARM prior to removal |
| | from the vault and found to have no detectable radioactivity. |
| | 2) Air handling (HVAC) systems in the FEL vault are not subject to the contamination controls |
| | described in the general instructions. |
| | |
| | **CEBAF INJECTOR** |
| | 1) When accessible, the injector area (gun area up to the North Linac gate) is posted as a |
| | Radiologically Controlled Area, Dosimetry Required, however it is not considered a Radioactive |
| | Material Area |
| | 2) Items which have resided exclusively within the injector segment may be removed without a |
| | radiological survey. |
| | ***If there is any question as to the confidence of this process knowledge, a survey shall be requested.** |
| | 3) Surveys are not required to take CEBAF injector to “Restricted Access” when the rapid |
| | Access system is functional |
| | Note: “Beamline” means primary electron beam vacuum chamber and any other envelope in |
| | which the primary electron beam is contained. |
| | To contact RadCon, call 876-1743 or 592-3073, or contact the MCC Crew Chief. |

**Click here when you have read and understand this document**