

## RPR 10D – Radiation Producing Machine Inspection Accelerators

Authorized User: \_\_\_\_\_

Permit #: \_\_\_\_\_

Building: \_\_\_\_\_

Room(s): \_\_\_\_\_

### Preliminary Review

- Review the Authorized Users permit and list the permitted radiation producing machines. Have any machines been added or removed? If yes, identify the machine(s) in the following table.

<b>Permit Inventory</b>					
Machine Type	Model #	Serial #	Max kVp	Max mA	Current Location

- Have the Authorized User and/or machine operators been issued dosimetry?
- Review the quarterly and annual dosimetry records, have any exposures (Occupational/Area) exceeded the following ALARA limits:

<b>Worker Dose</b>	<b>ISU ALARA Guideline (mrem)</b>
Whole body TEDE	300/quarter; 1000/year
Minor (< age 18) TEDE	30/quarter; 100/year
Declared Pregnant Worker: Embryo/Fetus	50/quarter; 100/gestation period
Extremity Limit	1250/quarter <sup>**</sup> ; 5000/year <sup>**</sup>
Non-radiation worker/Public	100/year

<sup>\*\*</sup> Not an established ISU ALARA Guideline

If yes, identify the individual and the limit that was exceeded:

- Are the Authorized User and accelerator operators current on their Radiation Safety Training?
- Have radiation detection instruments been assigned to the Authorized User?
- Have any safety device bypasses been authorized in writing by the RSO since the last inspection?
- Review the previous inspection, were any deficiencies found?

If yes, list the deficiencies and indicate if they have been corrected.

**RPR 10D – Radiation Producing Machine Inspection**  
Accelerators

<b>1.0</b>	<b>Communications</b>	<b>Yes</b>	<b>No</b>	<b>NA</b>
1.1	Is the Current Academic X-ray Machine License posted?			
1.2	Are the Idaho DHW enforcement actions posted, if applicable?			
1.3	Is the State of Idaho Notice to Workers posted?			
1.4	Is the current Radiation Safety Call list posted?			
1.5	Are all signs/postings/labels in good and legible condition?			
1.6	Is the State of Idaho X-ray Documents Notice posted?			

<b>2.0</b>	<b>Facilities</b>	<b>Yes</b>	<b>No</b>	<b>NA</b>
2.1	Are all entrance doors locked if unattended?			

<b>3.0</b>	<b>Equipment</b>	<b>Yes</b>	<b>No</b>	<b>NA</b>
3.1	Are instrumentation, readouts, and controls on the accelerator control console clearly identifiable?			
3.2	Is each entrance into the target room or other high radiation area interlocked and shuts the machine down under conditions of barrier penetration?			
3.3	Are easily observable flashing/rotating warning lights present at the entrance to a high radiation area?			
3.4	Each high radiation area has an audible warning device which is activated for 15 seconds prior to the possible creation of a high radiation area?			
3.5	Barriers and pathways leading to high radiation areas are posted appropriately?			
3.6	Is each safety interlock on a circuit which allows it to operate independently of all other safety interlocks?			
3.7	Are all safety interlocks designed so that any defect or component failure in the safety interlock systems prevents operation of the accelerator?			
3.8	When a safety interlock is tripped it is only possible to resume operation of the accelerator by manually resetting controls at the position of the tripped safety interlock, then at the main console?			
3.9	Are SCRAM buttons easily identifiable and once tripped must be manually reset before the accelerator can resume operation?			
3.10	Is the accelerator secured from unauthorized personnel when not in operation?			
3.11	A 'Beam-on' light near any switch that energizes the system is working?			
3.12	A "Caution Radiation –This equipment produces radiation when energized" label is present near the switch used to power each machine?			

<b>4.0</b>	<b>Administrative</b>	<b>Yes</b>	<b>No</b>	<b>NA</b>
4.1	Are dosimeters used when necessary and worn correctly?			
4.2	Are written operating and emergency procedures available for all operators of the accelerator(s)?			
4.3	The safety interlock system is not used to turn off the accelerator beam except for in emergencies?			

**RPR 10D – Radiation Producing Machine Inspection**  
Accelerators

4.4	All safety and warning devices are tested for proper operation at intervals not exceeding three months?			
4.5	Electrical circuit diagrams of the accelerator and associated safety interlock systems are maintained and available to the accelerator operators?			
4.6	Have any safety devices been bypassed since the last inspection?			
4.6a	Were the bypasses authorized in writing by the RSO?			
4.6b	Is a bypass currently in effect?			
4.6c	Is a record present containing the details of the safety device bypass?			

<b>5.0</b>	<b>Records</b>	<b>Yes</b>	<b>No</b>	<b>NA</b>
5.1	Are radiation training records on file for all laboratory workers?			
5.2	Are laboratory specific training records on file for all laboratory workers?			
5.3	Are periodic contamination surveys performed in the accelerator halls and recorded?			

<b>6.0</b>	<b>Instrumentation</b>	<b>Yes</b>	<b>No</b>	<b>NA</b>
6.1	Are all instruments used for compliance calibrated and working?			
6.2	Are all instruments response checked prior to use?			
6.3	Are instrument response check records present for assigned instrument(s)?			
6.4	Are radiation levels monitored in all high radiation areas?			

**Safety Device Testing**

<b>Safety Device Tested</b>	<b>Pass/Fail</b>
Warning Lights	
Interlocks*	
Emergency Shut-Off Switch*	

\*Identify units tested in the general comments box.

If any safety device fails during testing, post the radiation producing machine as out of service, and notify the Authorized User.

<b>Item #</b>	<b>Comments</b>

**RPR 10D – Radiation Producing Machine Inspection**  
Accelerators

**General Comments**

--

Performed By: \_\_\_\_\_

Date: \_\_\_\_\_

Acknowledged By: \_\_\_\_\_

Date: \_\_\_\_\_

Authorized User Representative