

RPR 10A – Radiation Producing Machine Inspection
Analytical X-Ray Machines

Authorized User: _____

Permit #: _____

Building: _____

Room(s): _____

Preliminary Review

- Review the Authorized Users permit and list the permitted radiation producing machines in the following table:

Permit Inventory					
Machine Type	Model #	Serial #	Max kVp	Max mA	Current Location

- Have any machines been added to the inventory since the last inspection?
 - Have any machines been removed or marked as out-of-service since the last inspection?
 - Does the Authorized Users permit inventory match the inventory on record with the State?
- Have the Authorized User and/or machine operators been issued dosimetry?
 - Has an Area Monitor been assigned to the facility?
 - Review the quarterly and annual dosimetry records, have any exposures (Occupational/Area) exceeded the following ALARA limits:

Worker Dose	ISU ALARA Guideline (mrem)
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 ^{**} ; 5000/year ^{**}
Non-radiation worker/Public	100/year

^{**} Not an established ISU ALARA Guideline

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

- Are the Authorized User and machine operators current on their Radiation Safety Training?
- 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.

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1.0	Communications	Yes	No	NA
1.1	Do all entrance doors have Chimera signs?			
1.1a	Are the Chimera door signs complete and current?			
1.2	Is the X-ray Documents Notice posted?			
1.3	Is the current Radiation Safety Call list posted?			
1.4	Is the room posted with “CAUTION – X-RAY EQUIPMENT”, or words of similar intent?			
1.5	Is the current State Academic X-ray License posted?			
1.6	Is the Idaho X-ray Notice posted?			
1.7	Are Idaho DHW enforcement action posted, if applicable?			
1.8	Are all signs/postings/labels in good and legible condition?			

2.0	Facilities	Yes	No	NA
2.1	Are work areas uncluttered and adequate for approved procedures?			
2.2	Are all entrance doors locked if unattended?			

3.0	Equipment	Yes	No	NA
3.1	Does the machine appear to be in good operating condition?			
3.2	Are all machines labeled with, the radiation symbol, and CAUTION – HIGH INTENSITY X-RAY BEAM on the source housing and CAUTION RADIATION – THIS EQUIPMENT PRODUCES RADIATION WHEN ENERGIZED near the switch, or words of similar intent?			
3.3	Are easily visible warning lights, with the words ‘X-RAY ON’, or words of similar intent, present and correctly operating for each machine and are they fail safe?			
3.4	Are all doors and panels accessing the x-ray system interlocked and of fail-safe design such that the high voltage to the x-ray tube is shut off if the housing is opened?			
3.5	Is the x-ray machine secured from unauthorized personnel when not in operation?			
3.6	Are all indicators and controls that operate the primary beam labeled and identifiable?			

4.0	Administrative	Yes	No	NA
4.1	Are dosimeters used when necessary and worn correctly?			
4.2	Are written operating procedures available for all operators of the radiation producing machine(s)?			
4.3	Have any safety devices been bypassed since the last inspection?			
4.3a	Were the bypasses authorized in writing by the RSO?			
4.3b	Is a bypass currently in effect?			
4.3c	Is the x-ray machine posted, “SAFETY DEVICE NOT WORKING”, or words of similar intent?			
4.3d	Was the machine surveyed following the bypass?			

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5.0	Records	Yes	No	NA
5.1	Are maintenance records available for each machine?			
5.2	Are laboratory specific training records on file for all laboratory workers?			
5.3	Has any maintenance or repair been performed on the instrument(s) since the last inspection?			
5.3a	Was a survey performed and recorded following the maintenance or repair?			

Operational Survey

Instrument Make	Model	Serial Number	Calibration Due	Instrument checked prior to use?

Max. Exposure Rate 5-cm from housing	
Max. Exposure Rate at Operator Location	
Max. Exposure Rate at nearest public area	

Is the radiation emission for all closed beam x-ray machines less than 0.5 mrem/hr at 5cm outside of the housing?

Safety Device Testing

Safety Device Tested	Pass/Fail
Warning Lights	
Interlocks	
Emergency Shut-Off Switch	
Other: _____	
Other: _____	

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

Item #	Comments

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General Comments

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Performed By: _____

Date: _____

Acknowledged By: _____

Date: _____

Authorized User Representative