

## APPENDIX B

### IRRADIATOR INSPECTION REFERENCES

1. ORGANIZATION AND SCOPE OF PROGRAM

License application and applicable license conditions.

2. MANAGEMENT OVERSIGHT

A. Radiation Safety Committee.

Applicable license conditions.

B. Radiation Safety Officer.

Applicable license conditions.

C. Audits, Reviews, or Inspections.

10 CFR 20.1101 Radiation protection programs.

10 CFR 20.2102 Records of radiation protection programs.

Applicable license conditions.

D. ALARA

10 CFR 20.1101 Radiation protection programs.

E. Individuals/Operators.

10 CFR 36.2 Definitions.

Applicable license conditions.

3. FACILITIES

A. General

10 CFR 20.1302 Compliance with dose limits for individual members of the public.

B. Access Control.

10 CFR 20.1601, 1602 Control of access to high/very high radiation areas.

10 CFR 20.1801 Security of stored material.

10 CFR 20.1802 Control of material not in storage.

10 CFR 36.23 Access control.

Applicable license conditions.

C. Engineering Controls.

10 CFR 20.1101 Radiation protection programs.

10 CFR 20.1701 Use of process or other engineering controls.

10 CFR 36.35 Source rack protection.

Applicable license conditions.

D. Design, Construction Monitoring, and Acceptance Testing.

10 CFR 36.39 Design requirements.  
10 CFR 36.41 Construction monitoring and acceptance testing.  
Applicable license conditions.

4. EQUIPMENT AND INSTRUMENTATION

A. Fire Protection

10 CFR 36.27 Fire protection.  
Applicable license conditions.

B. Sealed Sources.

10 CFR 36.21 Performance criteria for sealed sources.  
Applicable license conditions.

C. Irradiator Pools.

10 CFR 36.33 Irradiator pools.  
License conditions.

D. Design Requirements.

10 CFR 36.39 Design requirements.  
Applicable license conditions.

E. Survey Instruments.

10 CFR 36.57 Radiation surveys.  
10 CFR 36.63 Pool water purity.  
10 CFR 36.81 Records and retention periods.  
Applicable license conditions.

F. Safety Component Defects.

10 CFR 21.21 Notification of failure to comply or existence of a defect and its  
evaluation.

5. MATERIAL USE, CONTROL, AND TRANSFER.

A. Security and Control.

10 CFR 20.1003 Definitions (restricted area and unrestricted area).  
10 CFR 20.1801 Security of stored material.  
10 CFR 20.1802 Control of material not in storage.

B. Receipt and Transfer of Licensed Material.

10 CFR 20.1906 Procedures for receiving and opening packages.  
10 CFR 20.1501 General.  
10 CFR 20.2103 Records of surveys.  
10 CFR 30.41 Transfer of byproduct material.  
10 CFR 30.51 Records of receipt and transfer.

6. OPERATING AND EMERGENCY PROCEDURES

10 CFR 36.53 Operating and emergency procedures.

Applicable license conditions.

7. AREA RADIATION SURVEYS AND CONTAMINATION CONTROL

A. Area Surveys.

10 CFR 20.1302 Compliance with dose limits for individual members of the public.  
10 CFR 20.1501 General.  
10 CFR 20.2103 Records of surveys.  
10 CFR 20.2107 Records of dose to individual members of the public.  
10 CFR 36.25 Shielding.  
10 CFR 36.57 Radiation surveys.  
Applicable license conditions.

B. Leak Tests and Inventories

10 CFR 36.59 Leak tests and inventories.  
Applicable license conditions.

C. Pool Monitoring.

10 CFR 36.29 Radiation monitors.

8. TRAINING AND INSTRUCTIONS TO WORKERS.

General.

10 CFR 19.12 Instruction to workers.  
10 CFR 36.51 Training.  
10 CFR 36.81 Records.  
Knowledge of 10 CFR Part 20 radiation protection procedures and requirements.  
Applicable license conditions.

9. RADIATION PROTECTION

A. Radiation Protection Program.

1. Exposure evaluation.

10 CFR 20.1501 General.

2. Programs.

10 CFR 20.1101 Radiation protection programs.

B. Dosimetry.

1. Dose Limits.

10 CFR 20.1201 Occupational dose limits for adults.  
10 CFR 20.1202 Compliance with requirements for summation of external and internal doses.  
10 CFR 20.1207 Occupational dose limits for minors.  
10 CFR 20.1208 Doses to an embryo/fetus.

2. External.

10 CFR 20.1203 Determination of external dose from airborne radioactive material.

- 10 CFR 20.1501 General.
- 10 CFR 20.1502 Conditions requiring individual monitoring of external and internal occupational dose.
- 10 CFR 36.55 Personnel monitoring.
- Applicable license conditions.

3. Internal.

- 10 CFR 20.1204 Determination of internal exposure.
- 10 CFR 20.1502 Conditions requiring individual monitoring of external and internal occupational dose.
- 10 CFR 20, Subpart H internal exposure in restricted areas.

C. Records.

- 10 CFR 20.2102 Records of radiation protection programs.
- 10 CFR 20.2103 Records of surveys.
- 10 CFR 20.2104 Determination of prior occupational dose.
- 10 CFR 20.2106 Records of individual monitoring results.

10. RADIOACTIVE WASTE MANAGEMENT.

A. Disposal

- 10 CFR 20.1904 Labeling containers.
- 10 CFR 20.2001 General requirements.
- 10 CFR 20.2103 Records of surveys.
- 10 CFR 20.2108 Records of waste disposal.
- 10 CFR 20.2003 Disposal by release into sanitary sewage.

B. Effluents

1. General

- IP 87102 Maintaining Effluents from Materials Facilities As Low As Is Reasonably Achievable (ALARA).

2. Release to septic tanks

- 10 CFR 20.1003 Definitions (sanitary sewerage).
- 10 CFR Part 20, App. B, Table 2 Effluent Concentrations.

3. Incineration of waste

- 10 CFR 20.2004 Treatment or disposal by incineration.

4. Control of air effluents and ashes

- 10 CFR 20.1201 Occupational dose limits for adults.
- 10 CFR 20.1301 Dose limits for individual members of the public.
- 10 CFR 20.1501 General.
- 10 CFR 20.1701 Use of process or other engineering controls.
- Applicable license conditions.

C. Waste Management

1. General

10 CFR 20.2001  
IP 84850

General requirements.  
Radioactive Waste Management - Inspection of Waste Generator Requirements of 10 CFR Part 20 and 10 CFR Part 61.

2. Waste compacted

Applicable license conditions.

3. Waste storage areas

10 CFR 20.1801  
10 CFR 20.1902  
10 CFR 20.1904

Security of stored material.  
Posting requirements.  
Labeling containers.  
Applicable license conditions.

4. Packaging, Control and Tracking

10 CFR Part 20,  
Appendix F  
10 CFR 20.2006  
10 CFR 61.55  
10 CFR 61.56

Requirements for low-level waste transfer for disposal at land disposal facilities and manifests.  
Transfer for disposal and manifests.  
Waste classification.  
Waste characteristics.

5. Transfer

10 CFR Part 20,  
Appendix F  
10 CFR 20.2001  
10 CFR 20.2006  
10 CFR 30.41

Requirements for low-level waste transfer for disposal at land disposal facilities and manifests.  
General requirements.  
Transfer for disposal and manifests.  
Transfer of byproduct material.

6. Records

10 CFR 20.2103  
10 CFR 20.2108  
10 CFR 30.51

Records of surveys.  
Records of waste disposal.  
Records.

11. DECOMMISSIONING

10 CFR 30.36  
IMC 2602  
IP 87104  
IMC 2605  
NUREG/BR-0241

Expiration and termination of licenses and decommissioning of sites and separate buildings or outdoor areas.  
Decommissioning Inspection Program for Fuel Cycle Facilities and Materials Licensees.  
Decommissioning Inspection Procedure for Materials Licensees.  
Decommissioning Procedures for Fuel Cycle and Materials Licensees.  
NMSS Handbook for Decommissioning Fuel Cycle and Materials Licensees.

12. TRANSPORTATION

A. General

NRC Charts

Hazard Communication for Class 7 (Radioactive) Materials.

10 CFR 71.5                      Transportation of licensed material.  
TI 2515/133                      Implementation of Revised 49 CFR Parts 100-179 and 10 CFR  
Part 71

B.      Shippers - Requirements for Shipments and Packaging

1.      General Requirements

49 CFR Part 173,              Class 7 (radioactive) materials.  
    Subpart I  
49 CFR 173.24                  General requirements for packaging and packages.  
49 CFR 173.448                General transportation requirements.  
49 CFR 173.435                Table of A<sub>1</sub> and A<sub>2</sub> values for radionuclides.

2.      Transport Quantities

10 CFR 71.4                    Definitions.

a.      All quantities

10 CFR 71.4                    Definitions.  
49 CFR 173.410                General design requirements.  
49 CFR 173.441                Radiation level limitations.  
49 CFR 173.443                Contamination control.  
49 CFR 173.475                Quality control requirements prior to each  
shipment of Class 7 (radioactive) materials.  
49 CFR 173.476                Approval of special form Class 7  
(radioactive) materials.

b.      Limited quantities

49 CFR 173.421                Excepted packages for limited quantities of  
Class 7 (radioactive) materials.  
49 CFR 173.422                Additional requirements for excepted packages  
containing Class 7 (radioactive) materials.

c.      Type A quantities

49 CFR 173.412                Additional design requirements for Type A  
packages.  
49 CFR 173.415                Authorized Type A packages.  
49 CFR 178.350                Specification 7A; general packaging,  
Type A.

d.      Type B quantities

IP 86740, Section 2            Inspection of transportation activities.

e.      LSA material and SCO

49 CFR 173.403                Definitions.  
49 CFR 173.427                Transport requirements for low specific activity  
(LSA) Class 7 (radioactive) materials and  
surface contaminated objects (SCO).

3.      HAZMAT Communication Requirements

49 CFR 172.200-205          Shipping papers.

- 49 CFR 172.300-338 Marking.
- 49 CFR 172.400-450 Labeling.
- 49 CFR 172.500-560 Placarding.
- 49 CFR 172.600-604 Emergency response information.

C. HAZMAT Training

- 49 CFR 172.702 Applicability and responsibility for training and testing.
- 49 CFR 172.704 Training requirements.

D. Transportation by Public Highway

- 49 CFR 171.15 Immediate notice of certain hazardous materials incidents.
- 49 CFR 171.16 Detailed hazardous materials incident reports.
- 49 CFR 177.800 Purpose and scope of this part and responsibility for compliance and training.
- 49 CFR 177.816 Driver training.
- 49 CFR 177.842 Class 7 (radioactive) material.

13. NOTIFICATIONS AND REPORTS

- 10 CFR 19.13 Notifications and reports to individuals.
- 10 CFR 20.2201 Reports of theft or loss of licensed material.
- 10 CFR 20.2202 Notification of incidents.
- 10 CFR 20.2203 Reports of exposures, radiation levels, and concentrations of radioactive material exceeding the constraints or limits.
- 10 CFR 30.50 Reporting requirements.
- 10 CFR 36.83 Reports

14. POSTING AND LABELING

- 10 CFR 19.11 Posting of notices to workers.
- 10 CFR 21.6 Posting requirements.
- 10 CFR 20.1902 Posting requirements.
- 10 CFR 20.1903 Exemptions to posting requirements.
- 10 CFR 20.1904 Labeling containers.
- 10 CFR 20.1905 Exemptions to labeling requirements.
- 10 CFR 36.23 Access control.

15. INDEPENDENT AND CONFIRMATORY MEASUREMENTS

No references.

16. VIOLATIONS, NON-CITED VIOLATIONS AND OTHER SAFETY ISSUES

NRC Enforcement Manual dated March 27,2001.  
 General Statement of Policy and Procedures for NRC Enforcement Actions dated February 16,2001.

17. PERSONNEL CONTACTED

No references.

18. PERFORMANCE EVALUATION FACTORS

- IP 87101 Performance Evaluation Factors.

END