



United States Nuclear Regulatory Commission

**The US NRC's Non-Power Reactor
Legal & Regulatory Framework**

**IAEA Research Reactor Decommissioning
Demonstration Project Meeting
“Project Management and Dismantling
Workshop”
December 3-7, 2012**

**Bruce A. Watson and Theodore Smith
U.S. Nuclear Regulatory Commission
Division of Waste Management and Environmental
Protection**



United States Nuclear Regulatory Commission

NRC's Role

- **Ensure adequate protection of public health and safety, the common defense and security, and the environment in the use of radioactive materials at: nuclear power, research, test and training reactors; fuel cycle facilities; medical, academic and industrial facilities; and the transport, storage, and disposal of nuclear materials and waste**
- **Develop regulations for the safe use and remediation of radioactive materials at NRC licensed sites**



United States Nuclear Regulatory Commission

Licensee's Role

- **Safe decommissioning of the facility**
- **Responsibility for actions of their staff and contractors**
- **Ensure adequate protection of workers, public, and environment**
- **Establish and maintain records to support decommissioning**
- **Compliance with all requirements**



United States Nuclear Regulatory Commission

Laws

**Regulations
(CFR)**

**NRC Guidance
(NUREGs, SRP...)**

**Inspection Manual Chapters,
Operational Procedures, Industry Standards**



United States Nuclear Regulatory Commission

Decommissioning Infrastructure - Laws

- **Atomic Energy Act of 1954, as amended**
 - Establishment of program of government control of atomic energy and nuclear materials
- **Energy Reorganization Act of 1974**
 - Creation of NRC as regulatory agency
- **National Environmental Policy Act, 1969 as amended**
 - Establishment of policies for protection of the environment
- **Other specific laws**
 - West Valley Demonstration Project Act of 1980 (for WVDP)
 - Uranium Mill Tailings Radiation Control Act of 1978



United States Nuclear Regulatory Commission

NRC's Decommissioning Program Activities

- **Develop regulations and guidance**
- **Conduct research**
- **Review/approve DPs & LTPs, license amendment requests and FSSRs**
- **Inspections**
- **NEPA compliance**
- **Confirmatory surveys**



United States Nuclear Regulatory Commission

Decommissioning Infrastructure Regulations for Reactors

- **10 CFR Part 50 – Reactor Licensing
License termination requirements**
- **10 CFR Part 51 - Environmental Protection
NEPA compliance**



United States Nuclear Regulatory Commission

License Termination Standards for Unrestricted Use (10 CFR 20.1402)

- **≤ 0.25 mSv/a TEDE and ALARA, no NRC controls in effect**
- **Licensee is terminated**
- **No additional NRC public input/outreach requirements**
- **All Non-Power Reactors completing decommissioning have been released for unrestricted use and the license terminated**



United States Nuclear Regulatory Commission

License Termination Standards for Restricted Use (10 CFR 20.1403)

- **≤ 0.25 mSv/a TEDE and ALARA, with institutional controls in effect**
- **Legally enforceable institutional controls**
- **If institutional controls fail, doses do not exceed 1 mSv/a, or 5 mSv/a, under specific circumstances**
- **Financial assurance - independent third party**
- **Licensee and NRC public input/outreach requirements**



United States Nuclear Regulatory Commission

Alternate Criteria for License Termination (10 CFR 20.1404)

- **> 0.25 mSv/a, but < 1 mSv/a TEDE, with institutional controls in effect**
- **Similar requirements for license termination under restricted conditions**
- **Licensee must demonstrate doses to public from all man-made sources other than medical will be < 1 mSv/a and ALARA**
- **Unusual, site-specific circumstances**



United States Nuclear Regulatory Commission

Formal Opportunities for Public Involvement

- **Public notification and participation in decommissioning (10 CFR 20.1403, 20.1405, and 50.82)**
- **Hearings (10 CFR Part 2, Subpart L)**
- **2.206 Petition (10 CFR Part 2, Subpart B)**
- **Freedom of Information Act requests**
- **Allegations**



United States Nuclear Regulatory Commission

Public Outreach Activities

- **Public Meetings**
- **Publicly-noticed meetings with the licensee**
- **Workshops**
- **Informal contacts with NRC staff**
- **Press Releases**
- **Federal Register Notices**
- **Licensee-initiated community outreach**
- **NRC Web Site**



United States Nuclear Regulatory Commission

Formal Opportunities for Public Involvement

- **Public notification and participation in decommissioning (10 CFR 20.1403, 20.1405, and 50.82)**
- **Hearings (10 CFR Part 2, Subpart L)**
- **2.206 Petition (10 CFR Part 2, Subpart B)**
- **Freedom of Information Act requests**
- **Allegations**



United States Nuclear Regulatory Commission

NRC Regulations

- 10 CFR Part 20 Subpart E “License Termination Rule” was implemented in 1997
- 10 CFR Part 50 – Operating License
- 10 CFR Part 72 - Independent Spent Fuel Storage Installation License (ISFSI)



United States Nuclear Regulatory Commission

Reactor Decommissioning Options

- **DECON:** Equipment, structures, etc. removed or decontaminated to a level that permits release
- **SAFSTOR:** Plant placed in a safe, stable condition and maintained in that state until it is subsequently decontaminated to levels that permits release
- **ENTOMB:** Plant is encased in a structurally long-lived substance to allow decay until levels permit unrestricted release (not currently available)



United States Nuclear Regulatory Commission

Reactor Decommissioning Process

- **Operator/Licensee continues to comply with License, Technical Specifications, and Final Safety Analysis Report.**
- **Operator/Licensee continues to comply with Security Plan, Environmental Monitoring and Emergency Plan until relief is approved by NRC.**
- **Licensee ensures Vital Security Area to Spent Fuel until fuel is transferred to Department of Energy**



United States Nuclear Regulatory Commission

Research Reactor Decommissioning Process

- NRC notices the Decommissioning Plan in the Federal Register
- NRC does not hold a Public Meeting to discuss the Decommissioning Plan
- NRC approves the Decommissioning Plan



United States Nuclear Regulatory Commission

Research Reactor Decommissioning Process

- **Licensee performs site decommissioning**
- **NRC continues to conduct on-site inspections, including confirmatory surveys**
- **License submits Final Status Survey Reports**
- **NRC approves the License Termination**



United States Nuclear Regulatory Commission

Primary Guidance Documents

- **NUREG-1537 – Guidelines for Preparing and Reviewing applications of Non-Power Reactors**
- **NUREG-1748 – Environmental Review Guidance for Licensing Actions Associated with NMSS Programs**



United States Nuclear Regulatory Commission

Regulatory Guidance - NUREGS

- NUREG 1575, Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM & Supplement 1, MARSAME)
- NUREG 1757, Consolidated Decommissioning Guidance
- NUREG 1576, Multi-Agency Radiological Laboratory Analytical Protocols Manual (MARLAP)



United States Nuclear Regulatory Commission

Regulatory Guidance

- IE Circular 81-07, Control of Radioactively Contaminated Material (NUREG 1640 draft)
- NUREG 1501, Background as Residual Radioactivity for Decommissioning (GEIS rulemaking)
- NUREG 1505, A Non-parametric Statistical Methodology for Design & Analysis of Final Status Decommissioning Surveys
- NUREG 1555, Standard Review Plan for Environmental Reviews for NPPs.



United States Nuclear Regulatory Commission

Thank You!

**For additional reactor decommissioning
information, visit our Public Website:**

**[http://www.nrc.gov/materials/ql-
materials.html](http://www.nrc.gov/materials/ql-materials.html)**

Click on Decommissioning