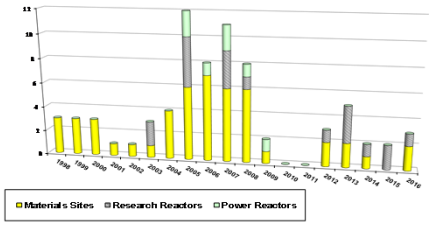
Regulatory Improvements for Power Reactor Decommissioning

"NMSS Decommissioning Program Progress and Challenges"

Bruce A. Watson, CHP
Chief, Reactor Decommissioning Branch
Office of Nuclear Material Safety and Safeguards

2017 is the 20th Year Anniversary



Decommissioning Activities

Computer Codes for Decommissioning/Uranium Recovery consolidated in the Office of Regulatory Research

- Visual Sample Plan – MARSSIM friendly
- RESRAD Family of Codes
- MILDOSE AREA

Recent Decommissioning Activities

Decommissioning Planning Rule (DPR) – 2012

- Radiological surveys including the subsurface
- Monitor close to radiological sources
- Strengthened decommissioning funding for material sites

Prompt Remediation Issue - 2016

- In SRM to SECY-16-0121, the Commission approved the staff recommendation not to pursue rulemaking: DPR is effective, no need for additional regulations

Revision of NMSS Decommissioning Guidance

NUREG-1757 Vol 2, "Consolidated Decommissioning Guidance"

- Composite Soil Sampling
- ALARA Analysis
- Dose Modeling Desk Reference Guides

NUREG-1507, "Minimum Detectable Concentrations with Typical Radiation Survey Instruments for Various Contaminants and Field Conditions during a Decommissioning Action"

- InSitu Gamma Spectroscopy
- Mixed Radionuclides, Thorium-232, Uranium-238, High Enriched Uranium, processed Uranium, and Radium-226.
- Z-Score procedures

NUREG-1700, "Standard Review Plan for License Termination Plans"

NUREG-1628, "Frequently Asked Questions for Decommissioning"

Power Reactor Regulations

- 10 CFR 50.83 – Partial site releases

  Partial Site releases approved for GE- Vallecitos, Humboldt Bay, LaCrosse and Zion
- 10 CFR 50.82(a)(3) – Power reactor decommissioning will be completed within 60 years of permanent cessation of operations.

  Decommissioning can be performed safely starting on Day 1 after permanently ceasing operations or at year 50+ (but may present other issues).

Why 60 Years? What are the Benefits?

Bases: 50 years for radioactive decay and 10 years to complete decommissioning and license termination

- Dose Rates at 1-2 % when plant shutdown
- Radwaste volumes reduced to 10%
- Institutional Knowledge
- Allows Decommissioning Fund to Grow
- Safety at Multi-unit Sites

Potential Consequences of 60 years?

- Loss of Institutional Knowledge
- Generational Issues
- Health Physics Measurement Challenges
  - Free Release of Materials
  - Surrogates? Hard-to-Detects
- Changes/Challenges to the RadWaste Program
- Reactor Internals - irradiated hardware and cutting plans
- Availability of and Access to Low Level Waste Disposal Sites
- Aging management issues

Power Plants in Long Term SAFSTOR

- Three Mile Island – 38 years
- Dresden 1 – 39 years
- Peach Bottom 1 – 43 years
- Fermi 1 – 45 years*
- NS Savannah – 47 years
- GE – VBWR and EVSER – 54 years*

*partially dismantled

San Onofre 1, 2, 3

License Termination Plan (LTP) required within 2 years of Requesting License Termination

At Multi-unit Sites, terminate the shutdown license:

- Dismantle the reactor and systems under 50.59, if allowed by the license
- Submit the LTP to terminate the license, deferring the radiological surveys and release to the operating unit footprint
- Complete radiological surveys and site restoration when the operating units are decommissioned

Thank you from the Reactor Decommissioning Branch