

# Vermont Yankee Post Shutdown Decommissioning Activities Report Public Meeting

February 19, 2015  
Brattleboro, Vermont

**Andrew Persinko, Deputy Director**

**Division of Decommissioning, Uranium Recovery and Waste Programs  
Office of Nuclear Material Safety and Safeguards**



# Welcome

- Meeting Agenda
- Meeting Facilitation and Protocol
- NRC Speakers and Experts
- Public Comments, Questions and Answers
- Meeting Feedback Forms
- Adjourn at 9 PM





# Vermont Yankee PSDAR Meeting Agenda

- Andrew Persinko - Introduction
- Bruce Watson - PSDAR Requirements
- Douglas Broaddus – NRC Review of the PSDAR and Licensing Status
- Marc Ferdas – Inspection Programs
- Joe Lynch, *Entergy* – Vermont Yankee PSDAR
- Chip Cameron – Public Comment Session
- Andrew Persinko - Summary Remarks and Meeting Closure by 9 PM



# Mission

- The NRC licenses and regulates the Nation's civilian use of radioactive materials to protect public health and safety, promote the common defense and security, and protect the environment





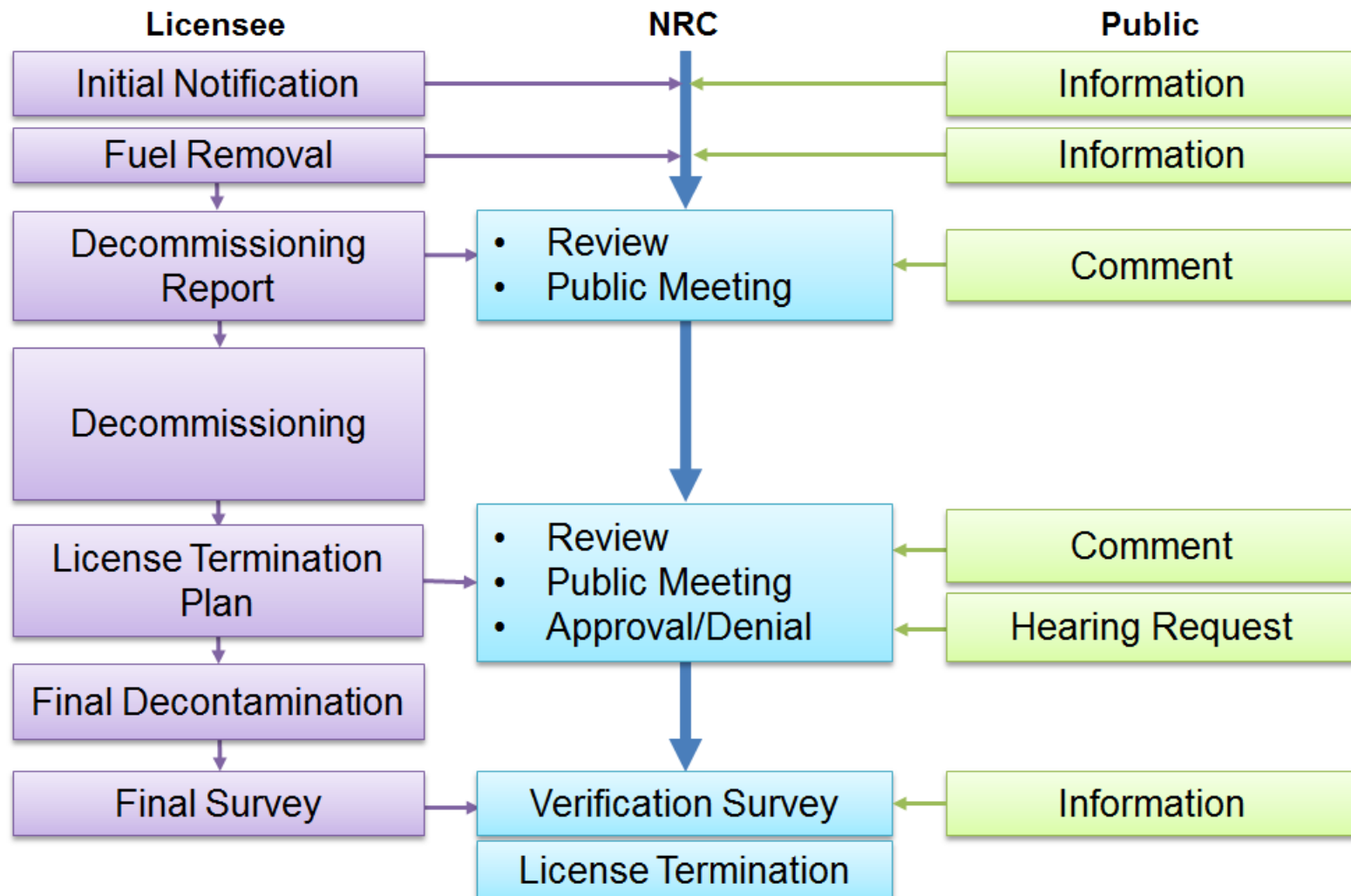
# Decommission (10 CFR 20 Subpart E)

- “To remove (as a facility) safely from service and reduce radioactivity to a level that permits:
- Release of the property for unrestricted use and termination of the license; or
- Release of the property under restricted conditions and termination of the license”

# Release Criteria

- **Unrestricted Release**
  - Total Effective Dose Equivalent (TEDE)  $\leq 25$  mrem (0.25 mSv/a) and As Low As is Reasonably Achievable (ALARA)
  - Average member of the critical group
  - All pathways
  - Period of performance - 1000 years
- **Restricted release**
  - $\leq 25$  mrem (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

# Reactor Decommissioning Process



# NEPA

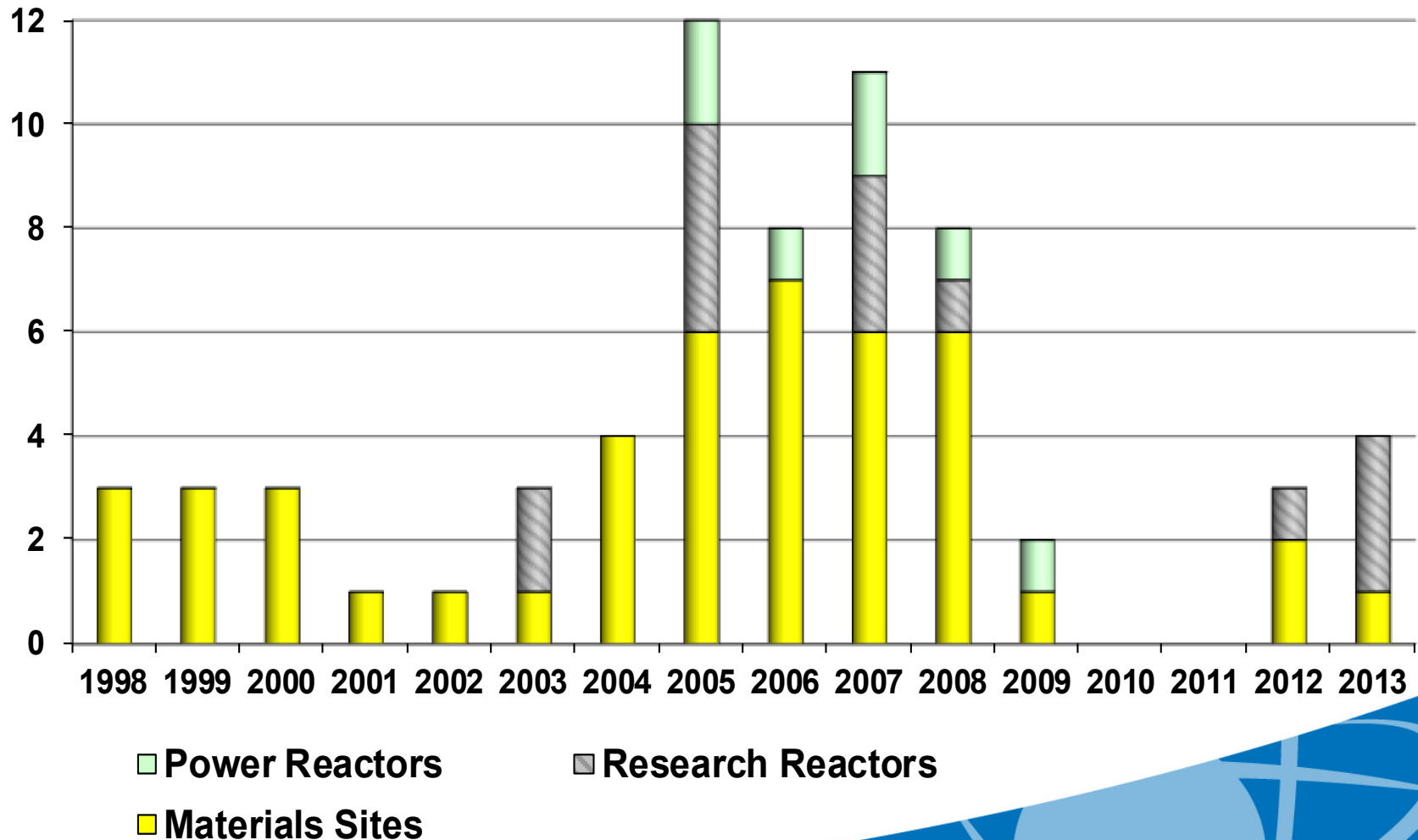
- National Environmental Policy Act
- 10 CFR Part 51, Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions
- Bounded environmental effects or Supplemental Environmental Report
- Environmental Assessment conducted during license termination process

# Transition from Operations to Decommissioning

- Office of Nuclear Reactor Regulation continues Project Management until the Post Shutdown Defueled Technical Specifications are issued
- Transfer Project Management to the Office of Nuclear Material Safety and Safeguards
- Inspection Program is transferred to the Division of Nuclear Materials Safety from Division of Reactor Projects
- Support continues from Nuclear Security and Incident Response



# NRC Decommissioning Experience







# Maine Yankee





# Connecticut Yankee





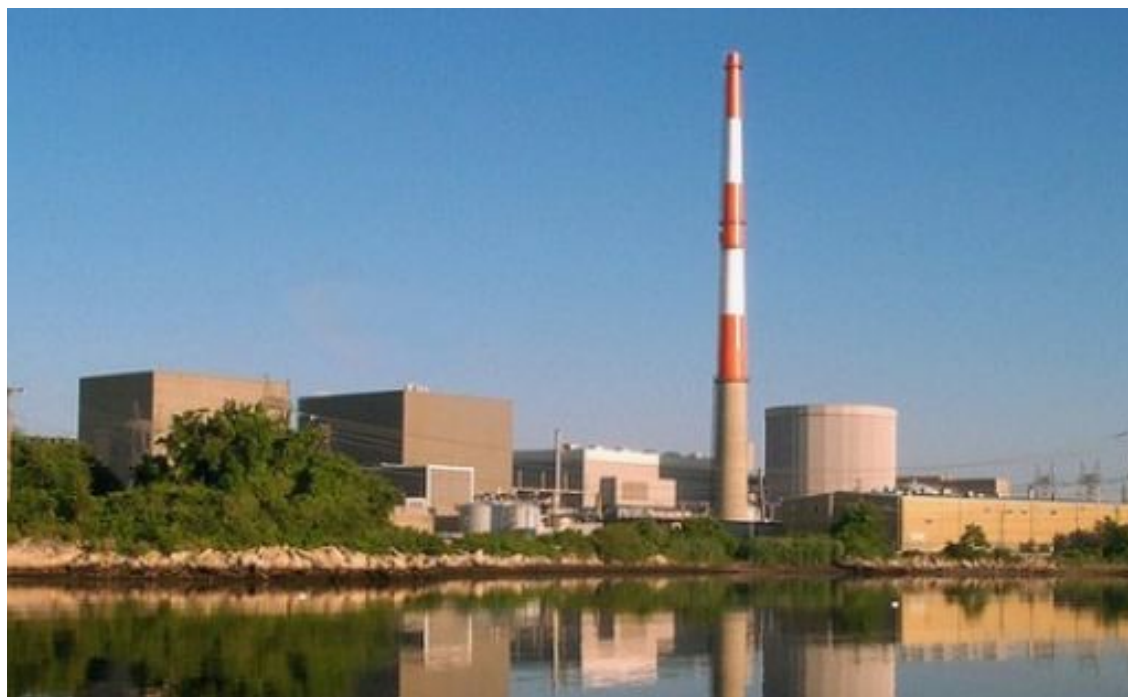


# Yankee Rowe





# Millstone Unit 1





# **Vermont Yankee Post Shutdown Decommissioning Activities Report**

February 19, 2015  
Brattleboro, Vermont

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





# NRC Decommissioning Regulations - 1997

- 10 CFR Part 20 Subpart E “License Termination”
- 10 CFR Part 50 – Power Reactor License
- 10 CFR Part 72 – Independent Spent Fuel Storage Installation License (ISFSI)
- 18 Years of Implementing Experience



# Vermont Yankee

## Decommissioning Milestones

- December 19, 2014 – PSDAR submitted
- December 23 the PSDAR was available in ADAMS at **ML14357A110**
- December 29, 2014 – Vermont Yankee Permanent Cessation of Operation
- January 12, 2015 – Entergy certified VY permanent cessation of operations and the reactor was permanently defueled
- NRC issued the public notice for this PSDAR public meeting





# Reactor Decommissioning Options

- **DECON:** Equipment, structures, etc. are promptly removed or decontaminated to a level that permits radiological release (**5** plants in DECON)
- **SAFSTOR:** Plant placed in a safe, stable condition and maintained in that state until it is subsequently decontaminated to levels that permit radiological release (**14** plants in SAFSTOR)
- **ENTOMB:** Plant is encased in a structurally long-lived substance to allow decay until levels permit unrestricted release (**not currently available**)
- **Radiological Decommissioning** must be completed within 60 years





# Post Shutdown Decommissioning Activities Report Contents (10 CFR 50.82 – Regulatory Guide 1.185)

- A description and schedule for the planned decommissioning activities
- A site-specific decommissioning cost estimate, including the costs of managing irradiated fuel
- A discussion that provides the means for concluding that the environmental impacts associated with the decommissioning activities will be bounded by appropriately issued Environmental Impact Statements





# Power Reactor Decommissioning Process – Post Shutdown Decommissioning Activities Report

- NRC regulations require that a public meeting be held in the vicinity of the facility to discuss the PSDAR and its contents, as well as to solicit comments
- NRC shall make the PSDAR available for public comment (ADAMS ML 14357A110)
- NRC does not approve the PSDAR
- Licensee may begin major decommissioning activities 90 days after NRC receives the PSDAR





# **The NRC Review Process – Vermont Yankee PSDAR**

February 19, 2015  
Brattleboro, Vermont

Douglas Broaddus, Chief  
Decommissioning Transition Branch  
Office of the Nuclear Reactor Regulation



# NRC's PSDAR Review Process

- Content requirements in 10 CFR 50.82(a)(4)(i)
- Regulatory Guide 1.185 describes the type of information to be included in a PSDAR
- NRR project manager coordinates technical reviews of the PSDAR
- NRC staff may submit Requests for Additional Information (RAIs)





# NRC's PSDAR Review Process: Evaluation Criteria



- Does the PSDAR contain the information required by regulation?
- Can the decommissioning be completed as described, and within 60 years?
- Can the radiological decommissioning be completed for the estimated cost?
- Do the decommissioning activities endanger public health and safety or the environment?



# NRC's PSDAR Review Process: Decommissioning Cost Estimate



- Site-specific Decommissioning Cost Estimate
  - Reasonable assurance funds are available to perform the radiological cleanup
  - If plans are delayed, ensure licensee has a means of adjusting the cost estimate and funding over the storage period
- Decommissioning Cost Estimate (DCE) and funding level are updated annually

# NRC's PSDAR Review Process: Environmental Review / NEPA



- Reasons for concluding that environmental impacts of site-specific decommissioning activities are bounded by previous Environmental Impact Statement(s)
  - NUREG-0586, “Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities”
  - Inspection program



# NRC's PSDAR Review Process

- Review considers public comments
- Staff will notify licensee when no additional information is required
  - NRC does not approve the PSDAR
  - Staff documents NRC review is complete
- Licensee may not begin major decommissioning activities until 90 days after NRC receives the PSDAR, per 10 CFR 50.82(a)(5)





# NRC Oversight Program

## Reactor Decommissioning & Spent Fuel Storage

February 19, 2015  
Brattleboro, Vermont

Marc S. Ferdas, Chief  
Decommissioning & Technical Support Branch  
Region I, Division of Nuclear Materials Safety



# Oversight Program

- Oversight and monitoring conducted over the entire period of decommissioning process
- Oversight program is described in Inspection Manual Chapter (IMC) 2561 & 2690

<b>NRC INSPECTION MANUAL</b>		NMSS/SFST
MANUAL CHAPTER 2690		
INSPECTION PROGRAM FOR DRY STORAGE OF SPENT REACTOR FUEL AT INDEPENDENT SPENT FUEL STORAGE INSTALLATIONS AND FOR 10 CFR PART 71 TRANSPORTATION PACKAGINGS		

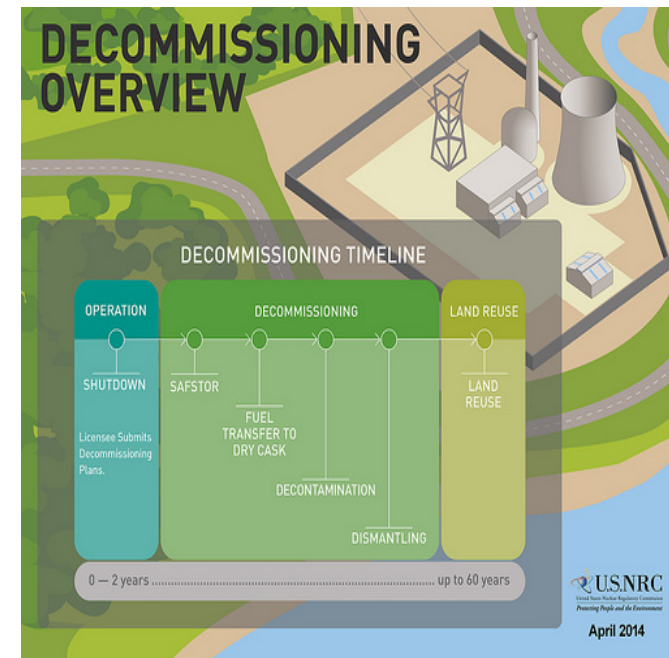
<b>NRC INSPECTION MANUAL</b>		DWM
MANUAL CHAPTER 2561		
DECOMMISSIONING POWER REACTOR INSPECTION PROGRAM		
2561-01	PURPOSE	
To establish the inspection policy and guidance for decommissioning power reactors for the Offices of Nuclear Reactor Regulation (NRR) and Nuclear Material Safety and Safeguards (NMSS).		
2561-02	OBJECTIVES	
02.01 To obtain information through direct observation and verification of licensee activities to determine whether the power reactor is being decommissioned safely, that spent fuel is safely stored onsite or transferred to another licensed location, and that site operations and license termination activities are in conformance with applicable regulatory requirements, licensee commitments, and management controls.		
02.02 To ensure that the licensee's systems and techniques for decommissioning and license termination activities are adequate and in accordance with regulatory requirements. These systems include, in part, management and organization effectiveness; self-assessment, auditing, and corrective actions; design control; maintenance and surveillance; radiation protection; radioactivity measurements; and, effluent controls.		
02.03 To identify declining trends in performance and perform inspections to verify that the licensee has resolved the issue(s) before performance declines below an acceptable level.		
02.04 To provide for effective allocation of resources for the inspection of Part 50 power reactors following permanent cessation of operation.		
2561-03	APPLICABILITY	
This program is to be implemented following the certification date for the removal of all nuclear fuel from the reactor vessel (10 CFR 50.82(a)(1)(ii)) and is to continue until license termination.		
2561-04	DEFINITIONS	
Issue Date: 04/14/03 - 1 - 2561		





# Oversight Program

- Decommissioning inspection program includes both core and discretionary inspections.
- Implementation depends on activities being planned or performed.
  - Post-Operation Transition Phase
  - SAFSTOR – Fuel in Spent Fuel Pool
  - SAFSTOR – No Fuel in Spent Fuel Pool
  - Actively Decommissioning – Fuel in Spent Fuel Pool
  - Actively Decommissioning – No Fuel in Spent Fuel Pool
  - Final Surveys Underway





# Inspection Activities

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- Organization, Management, & Cost Controls
- Spent Fuel Pool & Dry Cask Storage Operations
- Safety Reviews, Design Changes, and Modifications
- Maintenance and Surveillance Testing
- Occupational Radiation Exposure
- Effluent & Environmental Monitoring
- Physical Security
- Emergency Preparedness



# Oversight Status

- Vermont Yankee is in the Post-Operation Transition Phase as they prepare the site for SAFSTOR.
- No major decommissioning activities are planned.
- Vermont Yankee is developing plans to place all spent fuel into dry cask storage.
- Oversight activities are being performed by resident and regional inspectors.

# References - Reactor Decommissioning & Spent Fuel Storage

- **IMC 2561**: Decommissioning Power Reactor Inspection Program
- **IMC 2690**: Inspection Program for Dry Storage of Spent Reactor Fuel at Independent Spent Fuel Storage Installations and for 10 CFR Part 71 Transportation Packaging
- **RG 1.184 (rev 1)**: Decommissioning of Nuclear Power Reactors
- **RG 1.185 (rev 1)**: Standard Format and Content for Post-Shutdown Decommissioning Activities Report
- **NUREG 1628**: Staff Response to Frequently Asked Questions Concerning Decommissioning of Nuclear Power Reactors
- **NRC Web-Page**: <http://www.nrc.gov/waste/decommissioning.html>
- **YouTube Video**: [http://www.youtube.com/watch?v=GifRku-N7\\_Q&feature=youtu.be](http://www.youtube.com/watch?v=GifRku-N7_Q&feature=youtu.be)