

United States Nuclear Regulatory Commission

Protecting People and the Environment

## DECOMMISSIONING OVERSIGHT PROGRAM AFTER SHUTDOWN





Steve Hammann Decommissioning, ISFSI, and Reactor HP Branch

### What is Reactor

### **Decommissioning?**

The process of removing a reactor facility safely from the operating mode to a permanent shutdown condition and reducing the residual radioactivity to a level that permits the release of the property for unrestricted use and termination of the license

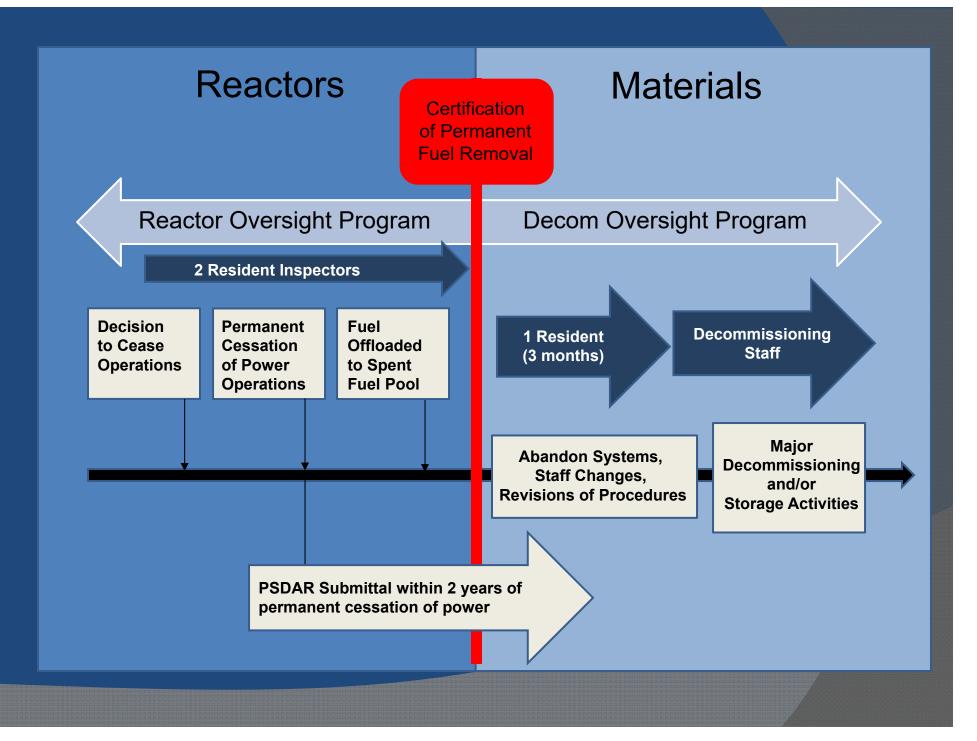
#### BEFORE

#### AFTER





en har en fan de skriver de skriver fan de skriver fan de skriver de skriver de skriver op de skriver op de sk



### What happens after shutdown?

- Certification of permanent cessation of operations
- Certification of permanent removal of fuel from reactor
- Submission of Post Shutdown
  Decommissioning
  Activities Report
  (PSDAR)

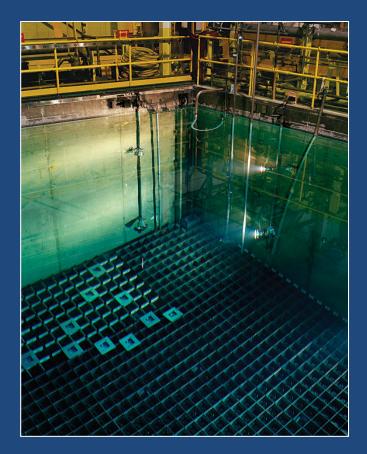


### **Plant modifications**

- Orain down systems
- Modify current systems for a shutdown state
- Abandon unneeded systems
- Prepare for either DECON or SAFSTOR



## What happens to the spent fuel?



 Typically removed from spent fuel pool
Stored on-site in dry cask storage systems
Safety and security programs remain until fuel removed from site



## Why the need for Dry Cask Storage?





- Reprocessing of spent fuel not an option
- No national repository for spent fuel to date
- Pools meant for temporary storage encounter capacity issues



### **Consolidated Interim Storage**

#### Interim Storage Partners (ISP) in Texas

- Summer 2018 NRC resumed the safety and environmental reviews
- May 2021 safety and security reviews are scheduled to be complete
- Holtec International & Eddy Lea Energy Alliance in New Mexico
  - February 2018 Staff began detailed review
  - March 2021- safety and security reviews scheduled to be complete





### **Decommissioning Options**



DECON – Equipment, structures, etc., are removed or decontaminated to a level that permits unrestricted release

SAFSTOR – Plant is placed in a safe, stable condition and maintained in this state until it is subsequently decontaminated to levels that permit unrestricted release



## Continued Deactivation & Decommissioning (D&D)







### **License Termination Plan AFTER CLEANUP** Dry Cask safely stored and monitored until disposal. License **Terminated** NRC Site released for public or other use. **Conducts** Survey

- Any site restoration
- NRC license termination
- Spent fuel management



### Connecticut Yankee & Rancho Seco



# How does the NRC inspect decommissioning sites?

Oversight and monitoring conducted over the entire period of decommissioning process

 Oversight program is described in Inspection Manual Chapter (IMC) <u>2561</u> & <u>2690</u>

#### NRC INSPECTION MANUAL 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; selfassessment, 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.

-1-

2561-04 DEFINITIONS

Issue Date: 04/14/03

2561

÷

DWM

Protecting Prople and the Environment

### What areas do we inspect?

Decommissioning inspection program includes both <u>core</u> and <u>discretionary</u> inspections

#### **Core Inspections**

- Organization and management controls
- Maintenance and Surveillance activities
- Evaluation of modifications
- Spent fuel wet storage and handling
- Radiation protection
- Physical security

### **Discretionary Inspections**

- Can be used as supplemental guidance during conduct of core procedures
- Fire Protection
- Material accountability and control
- Emergency preparedness



# How does emergency planning change?

Emergency preparedness remains

'All hazards' approach utilized vs. formal preplanned off-site radiological response plans





## **Questions**?