U.S.NRC
United States Nuclear Regulatory Commission
*Protecting People and the Environment*

# Update on Research and Test Reactor Initiatives

## December 16, 2014


## Michael R. Johnson

## Deputy Executive Director for Reactor and Preparedness Programs


# Research and Test Reactors Overview

**Lawrence Kokajko, Director**
**Division of Policy and Rulemaking**
**Office of Nuclear Reactor Regulation**

# Research and Test Reactors Have Distinctive Features

- **Benefit science, engineering, medicine, and education**
- **Present unique risk profiles**
- **Require balance of adequate safety/security and minimum regulations**

# Research and Test Reactor Renewal Activities

**Alexander Adams Jr., Chief**
**Research and Test Reactors**
**Licensing Branch**
**Division of Policy and Rulemaking**
**Office of Nuclear Reactor Regulation**

# Multiple Factors Created and Contributed to the Backlog

- **Historic events**
- **NUREG-1537**

# Streamlining Does Not Compromise Safety

## Focused reviews for facilities less than 2 MW

- Reactor design
- Radiation protection
- Accident analysis, and
- Technical specifications

# Staff Is Addressing Pinch Points

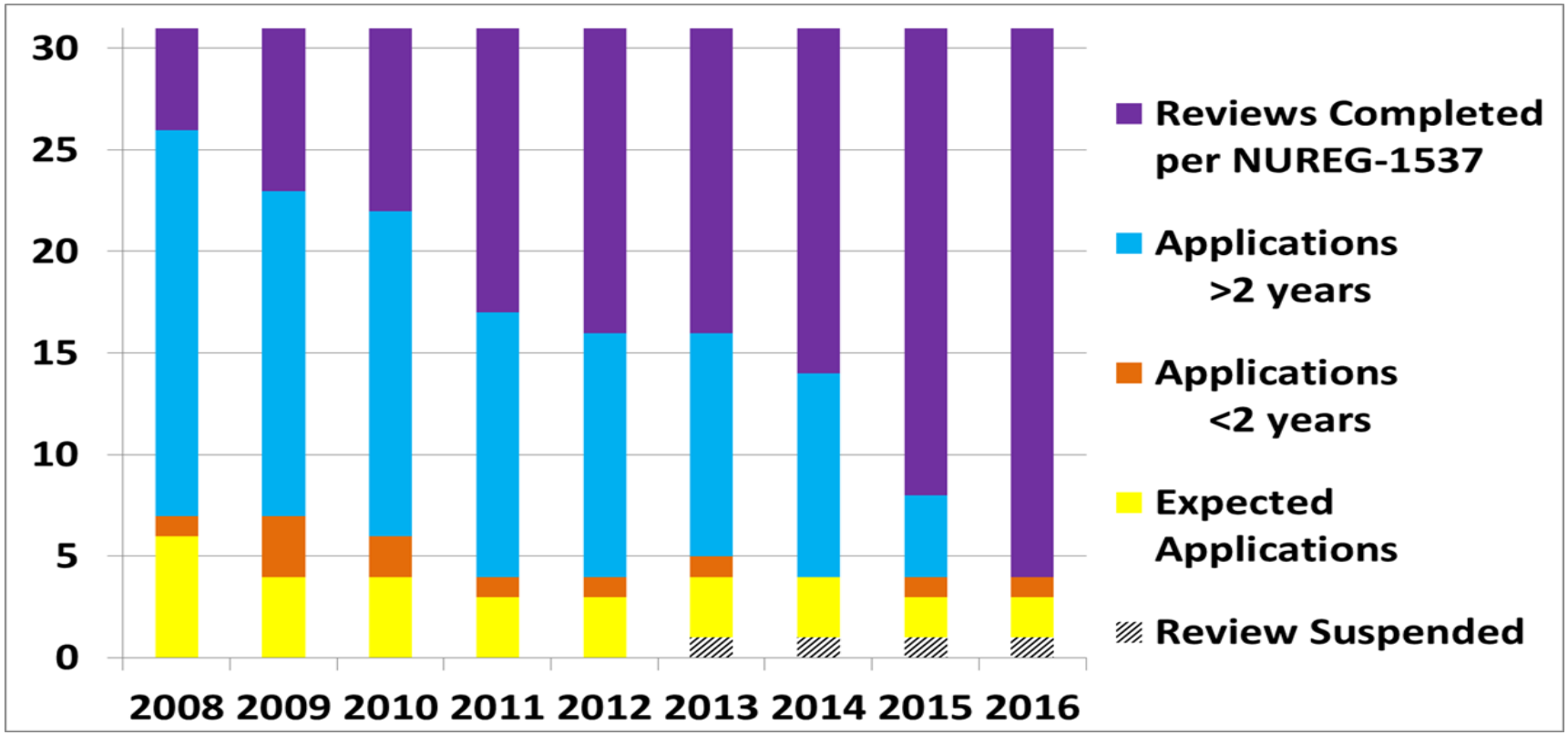
- Comprehensive safety analysis reports
  - Consistent with NUREG-1537
- Timely renewal

# License Renewal Reviews Benefit from Lessons-learned

- Security, emergency, and operator requalification plans
- Specific errors
- Applicability of codes to research reactors
- Assumptions

**Research Reactor Building and Vent Stack**

# NUREG-1537 Ensures Consistency



# Priorities Are Consistent with Commission Direction

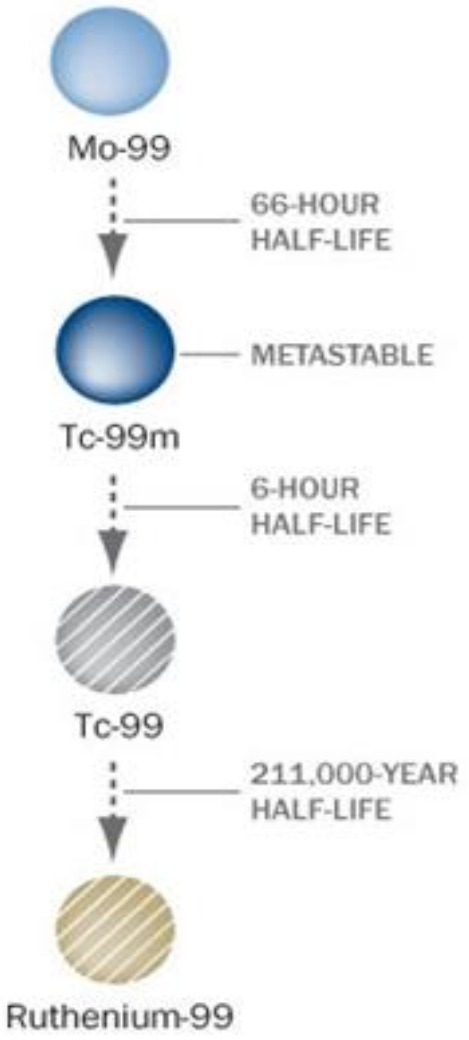
- **Complete reviews by end of 2016**
- **Rulemaking for future renewals**

# Medical Radioisotope Production Facility Licensing

**Steven T. Lynch, Project Manager**
**RTR Licensing Branch**
**Division of Policy and Rulemaking**
**Office of Nuclear Reactor Regulation**

# Staff Supports $^{99}$Mo Policy Objectives

- $^{99}$Mo decays into radiopharmaceutical $^{99m}$Tc
- Supply jeopardized by dependence on aging international reactors

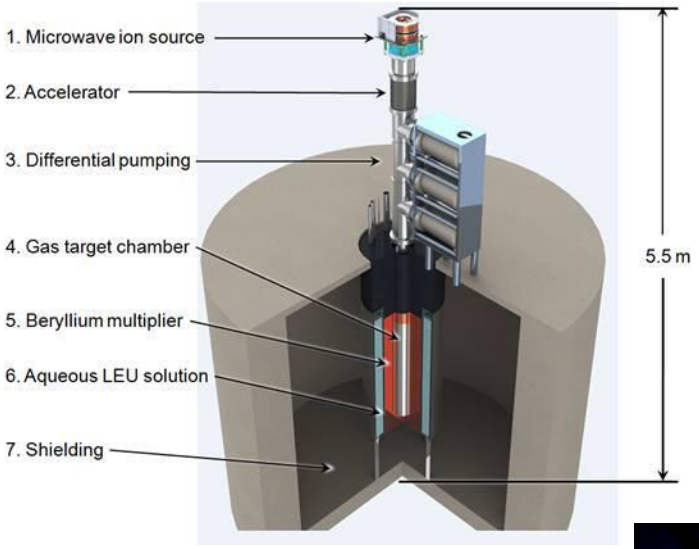


# Communication Is Essential to Infrastructure Development

- Communicating with applicants; public; and federal, state, and local governments
- Cooperating through inter-office working group
- Preparing licensing guidance
- Identifying applicable regulations

# Staff Received Eleven Letters of Intent

- Two construction permit applications
  - SHINE Medical Technologies, Inc.
  - Northwest Medical Isotopes, LLC
- One amendment request

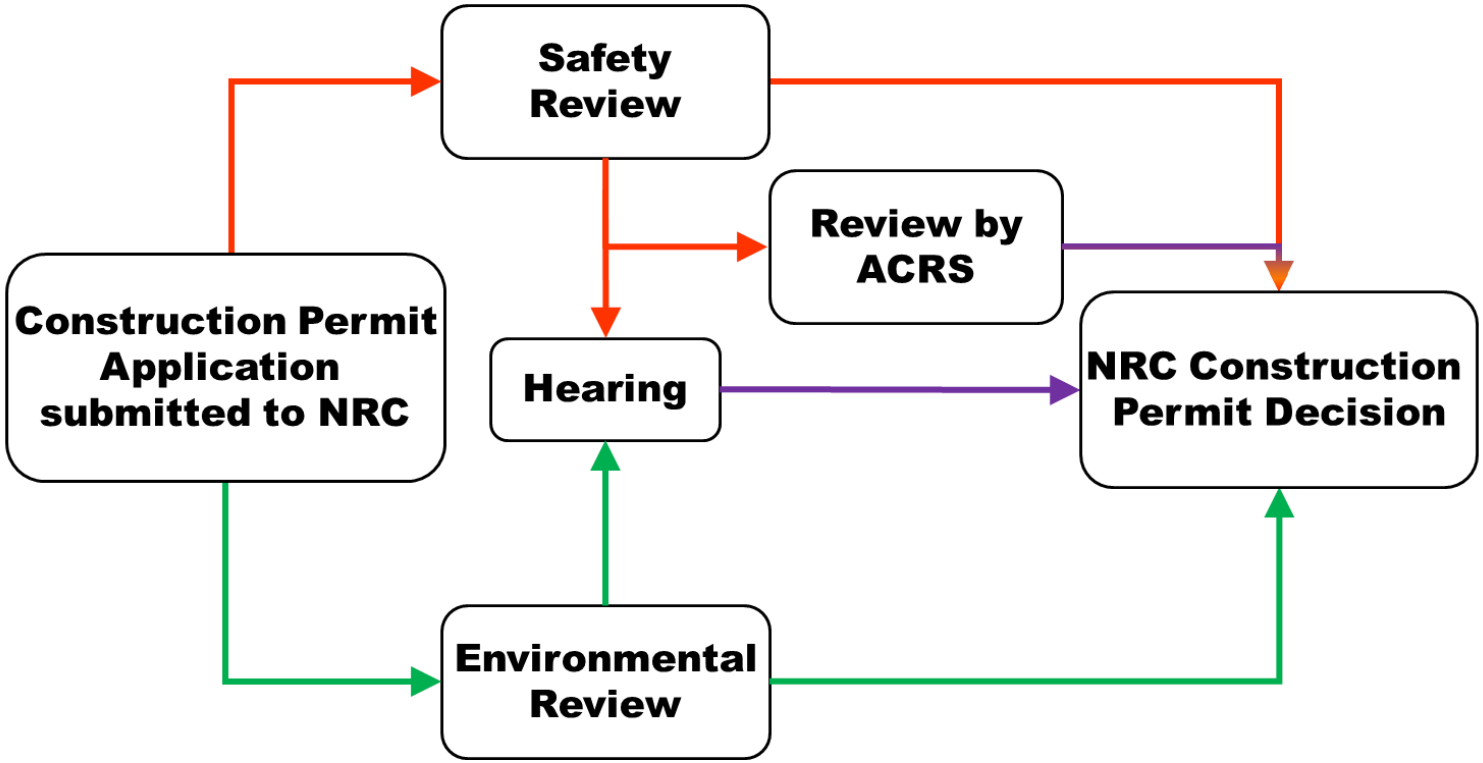



**SHINE Medical Technologies, Inc.**

**Oregon State University**

**Northwest Medical Isotopes, LLC**

# Staff Reviews Take 18 – 24 Months



# Reviews Will Be Timely and Effective

- **Recent accomplishments:**
  - **Issued direct final rule and interim staff guidance**
- **Staff focus:**
  - **Preparing for an additional application within the next year**
  - **Developing construction inspection program**

# Research and Test Reactor Security

**John T. Adams, Senior Level Advisor**
**for**
**Non-Power Reactors**
**Division of Policy and Rulemaking**
**Office of Nuclear Reactor Regulation**

# NRR Regulates Research and Test Reactor Security

- Licensing process
- Inspection program
- Assessment of the threat

# Atomic Energy Act Imposes Minimum Amount of Regulation

- **Protect the health and safety of the public**
- **Promote common defense and security**
- **Permit widespread and diverse research and development**

# Staff Implements a Balanced Regulatory Approach

- Assessment of the threat
- Appropriate protective measures
- Completion of the research and development mission

Change impacts balance

# Security Rulemakings Require Careful Consideration

- Unintended consequences
- Licensee/public involvement
- Prior Commission direction
- Security of medical radioisotope facilities

# Research and Test Reactors Are Secure

- **Assessment of RTR cyber security**
- **International Physical Protection Advisory Service**

# Staff Activities Are Diverse

- **Streamlining the regulatory framework for RTRs**
- **Developing the regulatory framework for radioisotope facilities**
- **Maintaining secure facilities in a changing global environment**

# Acronyms

- **NRC – Nuclear Regulatory Commission**
- **RTRs – research and test reactors**
- **CFR – Code of Federal Regulations**
- **MW – megawatt**
- **$^{99}$Mo – molybdenum-99**
- **$^{99m}$Tc – technetium-99 metastable**
- **ACRS – Advisory Committee for Reactor Safeguards**