



Strategic Programmatic Overview of the Decommissioning and Low-Level Waste and Nuclear Materials Users Business Lines

Commission Meeting
January 18, 2024



John Lubinski

Director

Office of Nuclear Material Safety
and Safeguards

Decommissioning and Low Level Waste Presenters

John Lubinski

- Director, Office of Nuclear Material Safety and Safeguards

Jane Marshall

- Director, Division of Decommissioning, Uranium Recovery, and Waste Programs

Amy Snyder

- Senior Project Manager, Reactor Decommissioning Branch

Cynthia Barr

- Senior Risk Analyst, Risk and Technical Analysis Branch

Gehan Flanders

- Health Physicist, Region III

Decommissioning and Low-Level Waste Business Line

Program Overview

- Regulation of Decommissioning, Low-Level Waste, and Uranium Recovery
- Implementation of decommissioning oversight programs
- Decommissioning activities:
 - 23 decommissioning power reactors, 16 in active decommissioning
 - 2 research test reactors, 8 complex materials sites
 - 3 uranium recovery sites , 5 licensed uranium recovery decommissioning sites
 - 19 Title I and 7 UMTRCA Title II sites
 - Surface Ship Support Barge
 - Low-Level Waste Program and support the DOE with Waste Incidental Reprocessing (WIR)

Decommissioning and Low-Level Waste Business Line

Business Line Priorities

- Promote an organizational culture that values knowledge management, staff training, career development, and recognizes individual and group contributions
- Integrated resource utilization and risk insights
- Improve business processes and products
- Inspire stakeholder confidence





Jane Marshall

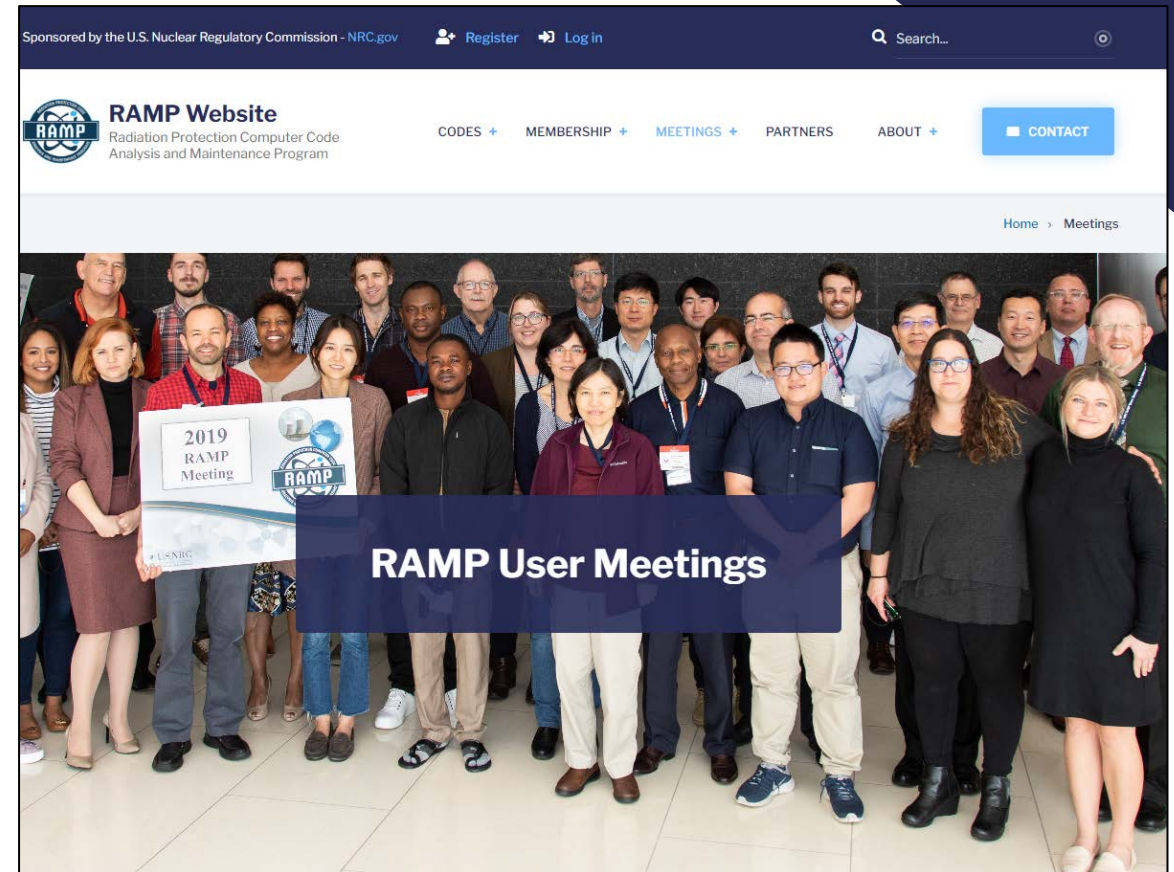
Director

Division of Decommissioning,
Uranium Recovery, and Waste
Program

Leveraging previous experience to better inform our reviews of future licensing actions



Ensuring that staff has the skills, knowledge, and tools to complete necessary decommissioning reviews



Communicating with external stakeholders to ensure effective and efficient decommissioning



UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS
OFFICE OF NUCLEAR REACTOR REGULATION

WASHINGTON, DC 20555-0001

September 13, 2023

NRC INFORMATION NOTICE 2023-04: OPERATING EXPERIENCE RELATED TO FIRE
EVENTS AT DECOMMISSIONING NUCLEAR
POWER PLANTS IN THE UNITED STATES

ADDRESSEES

All holders of and applicants for an operating license or construction permit for a nuclear power reactor issued under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic licensing of production and utilization facilities," including those that have permanently ceased operations and certified that fuel has been permanently removed from the reactor vessel.

All holders of and applicants for a power reactor combined license, standard design approval, or manufacturing license under 10 CFR Part 52, "Licenses, certifications, and approvals for nuclear power plants." All applicants for a standard design certification, including such applicants after initial issuance of a design certification rule.

SUBJECT

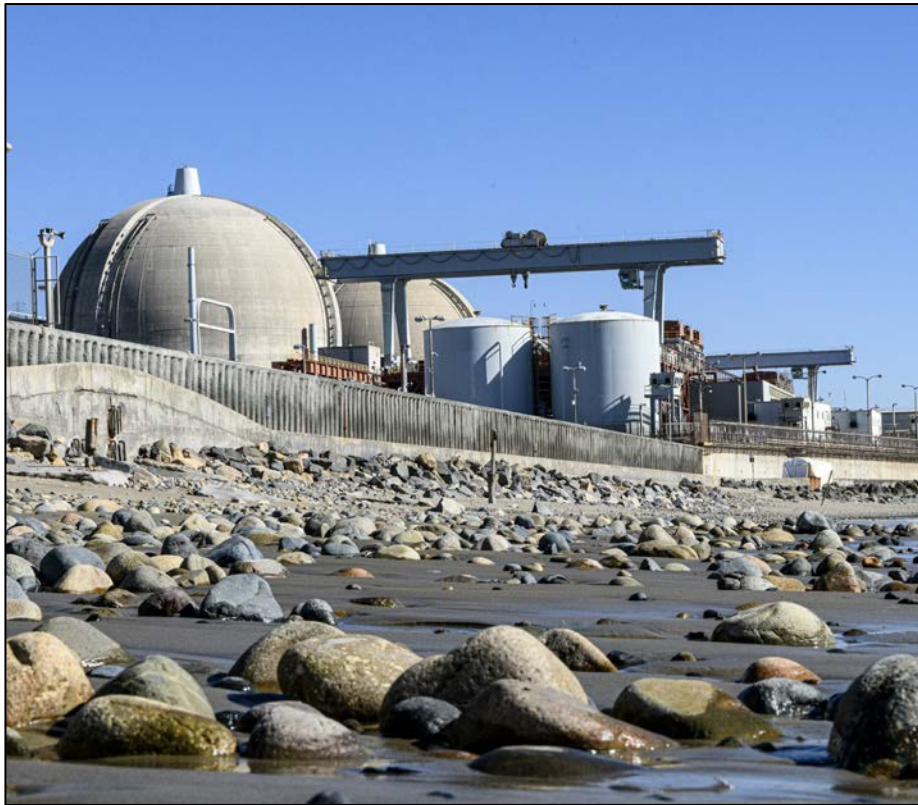


Amy Snyder

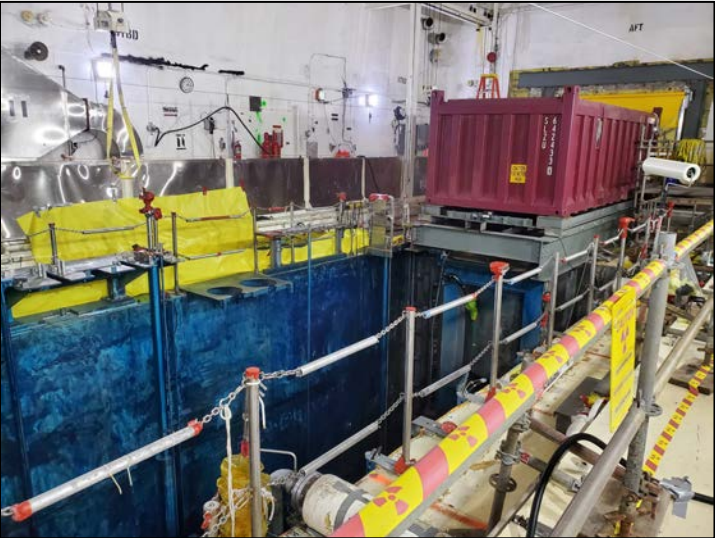
Senior Project Manager

Reactor Decommissioning Branch
Division of Decommissioning, Uranium
Recovery, and Waste Program

Using risk principles and information to inform decision making



Staff risk informed their confirmatory survey plans to increase confidence in our decision making





Cynthia Barr

Senior Risk Analyst

Risk and Technical Analysis Branch

Division of Decommissioning,
Uranium Recovery, and Waste
Program

Domestic operating experience has emphasized the need for enhancements in decommissioning guidance

- *DUWP-ISG-2 was developed to address guidance needs by extending MARSSIM to hard to access locations in the subsurface.*
- *The ISG is expected to increase transparency and better support risk-informed decision-making in the decommissioning process.*

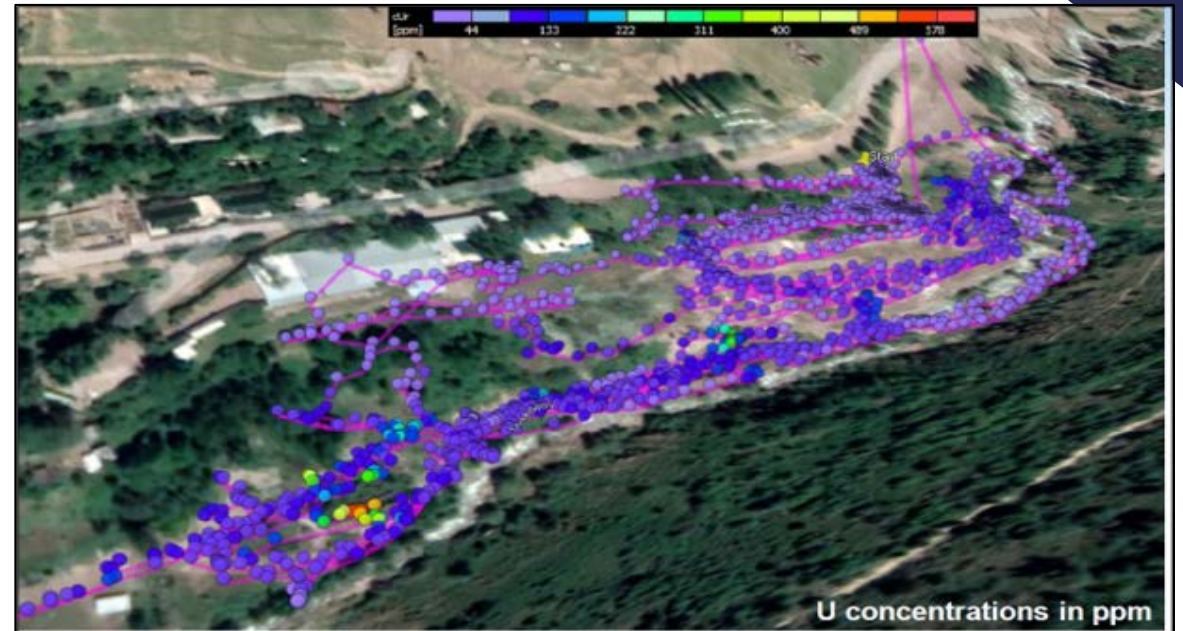


You can find the ISG and other reports on the NRC's [What's New in Decommissioning](#) web site.

Image Credit: Figure 2.9 Iso-Pacific S3 soil sorting system (bottom right).

NRC is benefiting from international collaboration to address more challenging surface and subsurface survey issues

- *Leveraged the international community to address technical issues of importance to decommissioning in the United States.*
- *Organized a Nuclear Energy Agency (NEA) decommissioning innovation workshop.*
- *Stood-up an NEA Expert Group to address guidance gaps to support more efficient and effective decision-making.*

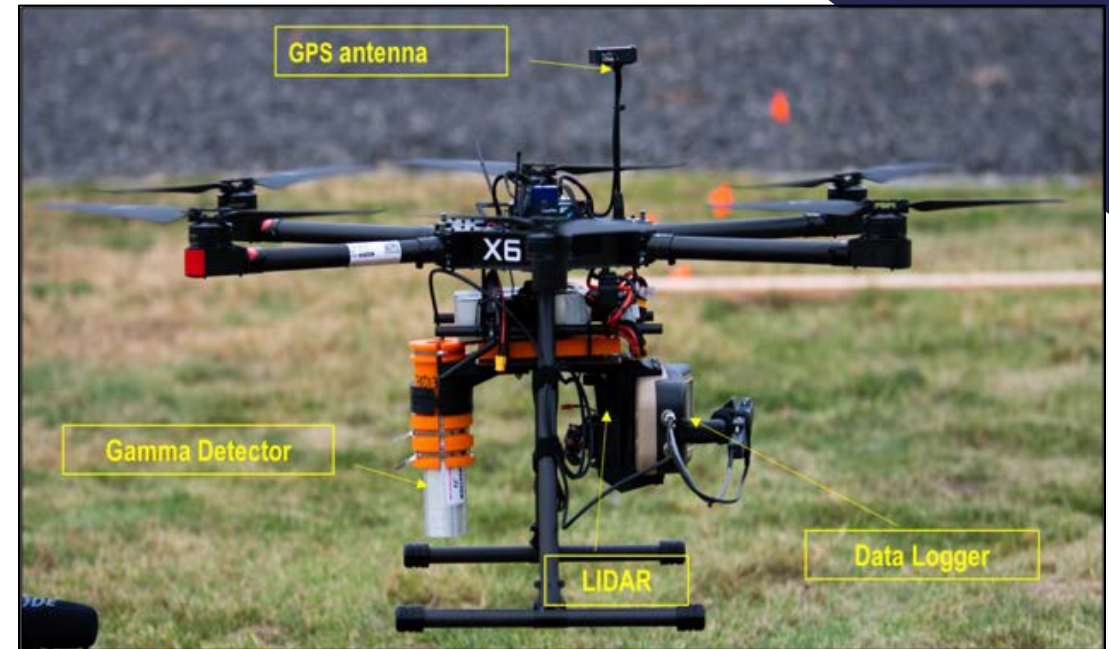


See [WPTES Innovation Workshop web site](#) for more information and presentations.

Image Credit: See Sven Alfelder IAEA DUM-GEM project presentation at the above link.

NRC is leveraging domestic and international experience to identify and shape research activities to address current and future challenges

- *NRC is sponsoring work to update commonly used computer codes such as Visual Sample Plan (VSP) to design radiological surveys incorporating methodologies laid out in the updated guidance.*
- *NRC is staying vigilant to ensure its regulatory readiness to address emerging and innovative technologies in the field of radiological survey methods*



See [Drones for Decommissioning](#) report for more information.

You can find this and other reports on the NRC's [What's New in Decommissioning](#) web site.



Gehan Flanders

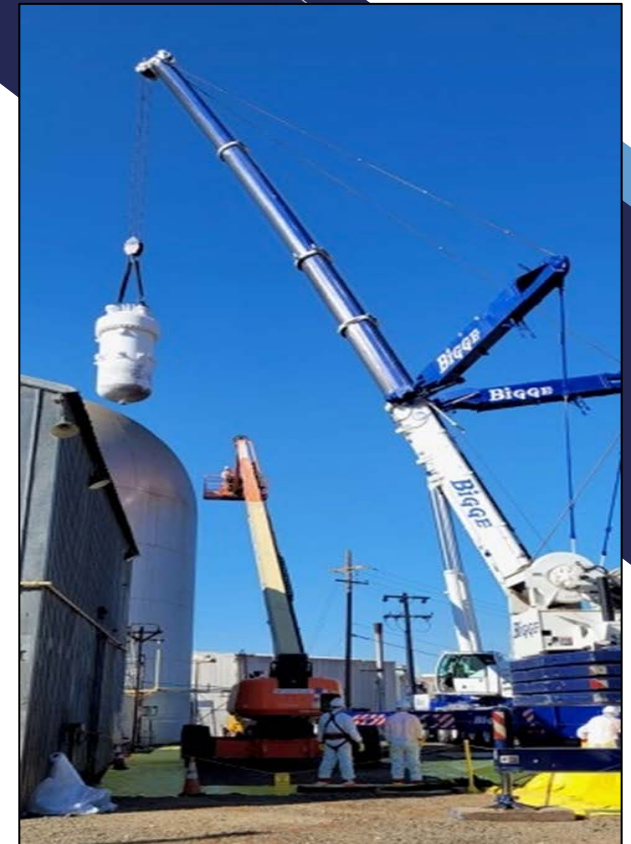
Health Physicist

Division of Radiological
Safety and Security

Region III

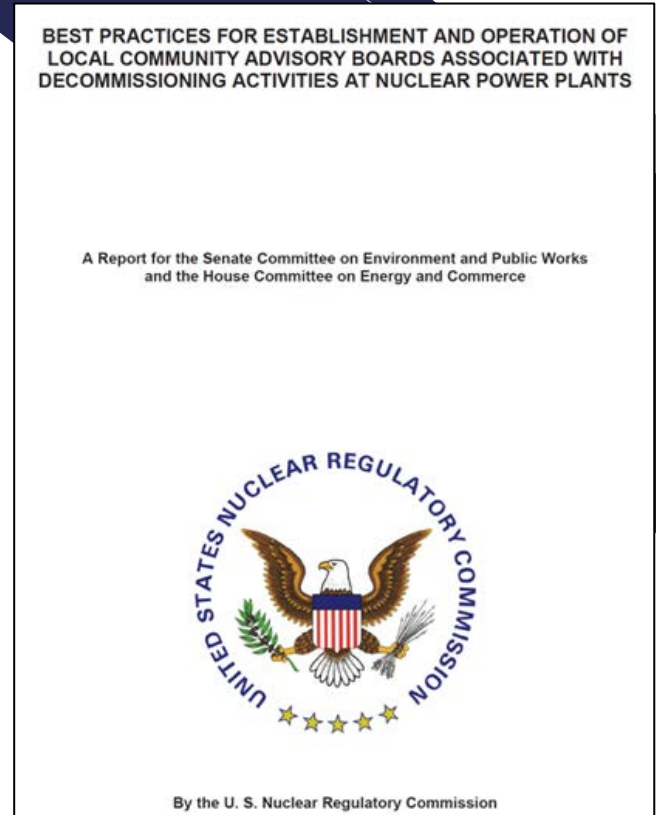
Providing effective oversight of decommissioning activities to ensure safety and protect the environment

- Conducted extensive confirmatory surveys and sampling at the Zion site (Region III)
- Utilized inspection activities at the GE-H Vallecitos BWR to confirm that the RPV removal did not create significant environmental impacts (Region IV)
- Inspectors at Vermont Yankee observed radioactive waste movement and segmentation (Region I)



Building constructive relationships with local communities through public engagement

- Fostered transparency and engagement at Palisades, Pilgrim, and Indian Point community meetings.
- Partnered with DOE-LM and the State of New Mexico to engage with the Pueblo of Acoma in New Mexico at decommissioning uranium recovery sites





John Lubinski

Director

Office of Nuclear Material Safety
and Safeguards

NMU Presenters

John Lubinski

- Director, Office of Nuclear Material Safety and Safeguards

Theresa Clark

- Deputy Director, Division of Materials Safety, Security, State, and Tribal Programs (MSST)

Sherrie Flaherty

- Senior Intergovernmental Liaison Project Manager, MSST

Robin Elliott

- Senior Health Physicist, DRSS, Region I

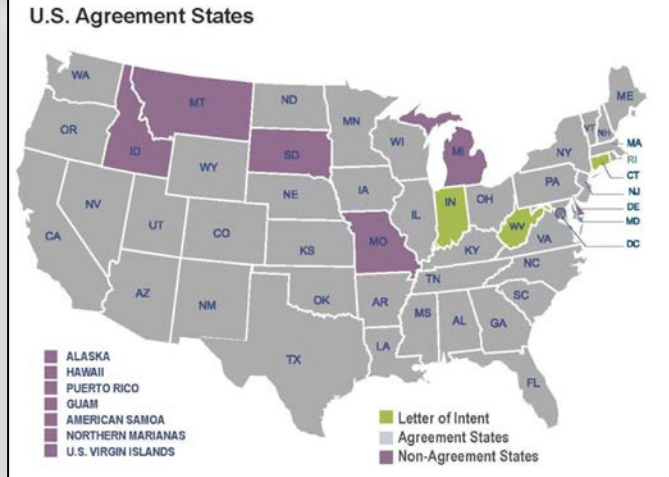
Joey Rolland

- Mechanical Engineer, MSST

Leaders of the National Materials Program



How We Regulate



11 NRC States
39 Agreement States
3 Letters of Intent

Who We Regulate

 **17,000+** licenses

 8,258 industrial	 884 other
 7874 medical	 693 academic

NMU's scope is diverse, highly visible, and cooperative

- Major rulemakings on high-interest topics
- Licensing and oversight using risk and data
- National Materials Program infrastructure
- Event response and operating experience
- Stakeholder confidence



Work is achieved through partnership – at home and abroad



We're ready with a new cadre of recruits





Theresa Clark

Deputy Director

Division of Materials Safety,
Security, State, and Tribal
Programs (MSST)

NMU: Ready for the Future



Enhancing Domestic and International Collaboration of Source Security



Status of Training and Development of NRC and Agreement State Staff

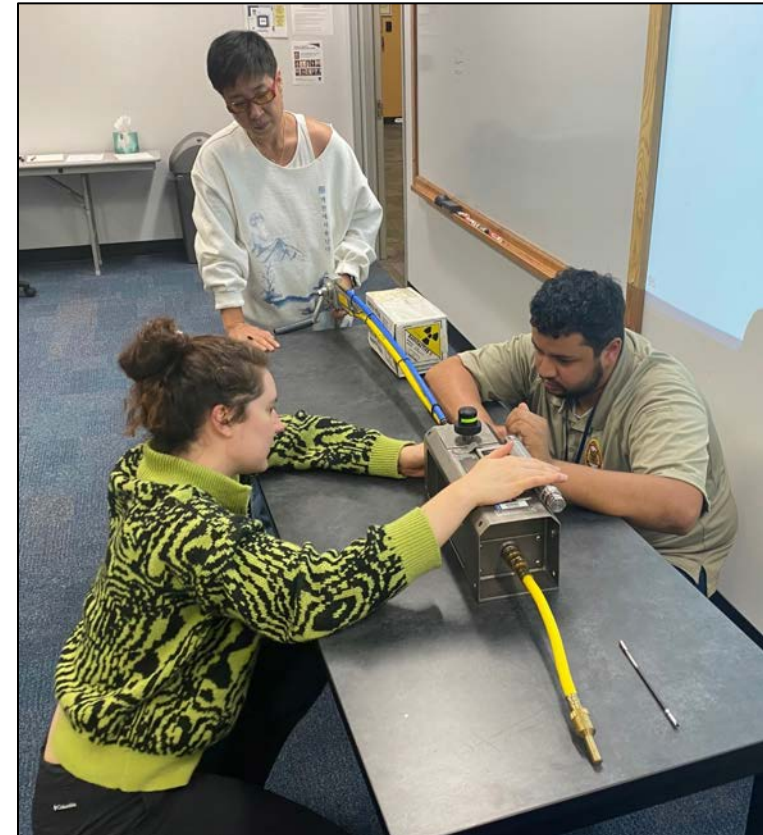


Advancements in Tribal Outreach

NRC is a recognized international leader in advancing source security



Solid, timely training positions NMP staff for the future





A realigned tribal team is increasing outreach and consultation



Sherrie Flaherty

Senior Intergovernmental Liaison
Project Manager

Division of Materials Safety,
Security, State, and Tribal
Programs (MSST)

National Materials Program & IMPEP

- Working together to ensure protections of public health, safety, security, and the environment.
- 40 Radiation Control Programs:
39 Agreement States and the NRC
- Performance evaluated using the Integrated Materials Performance Evaluation Program (IMPEP)



NMP Assistance with Programmatic Challenges



- NRC and Agreement States assisting each other
- Challenges were self-identified and identified through IMPEP
- Working group established to assist in early identification and support

Working Group Recommendations

- Enhancing Awareness of Program's Performance
 - Meaningful performance metrics
 - Tools to identify potential issues and facilitate prompt corrective actions
 - NMP strategies to assist with performance challenges
- Improving IMPEP Assessment
 - Consistent and risk-informed
 - Increase efficiencies

Assessing the Ability to Monitor National Materials Performance Working Group

- Sherrie Flaherty, Co-Chair, NRC NMSS
- Santiago Rodriguez, Co-Chair, State of New Mexico
- Huda Akhavannik, NRC NMSS
- Robert Johnson, NRC NMSS
- Duncan White, Advisor, NRC NMSS
- Keisha Cornelius, State of Oklahoma
- David Crowley, State of North Carolina
- Beth Shelton, State of Tennessee
- Brian Harris, NRC OGC
- Jen Scro, NRC OGC
- Farrah Gaskins, NRC Region I
- Tammy Bloomer, NRC Region I
- Darren Piccirillo, NRC Region III
- Lizette Roldan-Otero, NRC Region IV
- Linda Howell, Advisor, NRC Region IV



Robin Elliott

Senior Health Physicist

Division of Radiological Safety and
Security, Region I

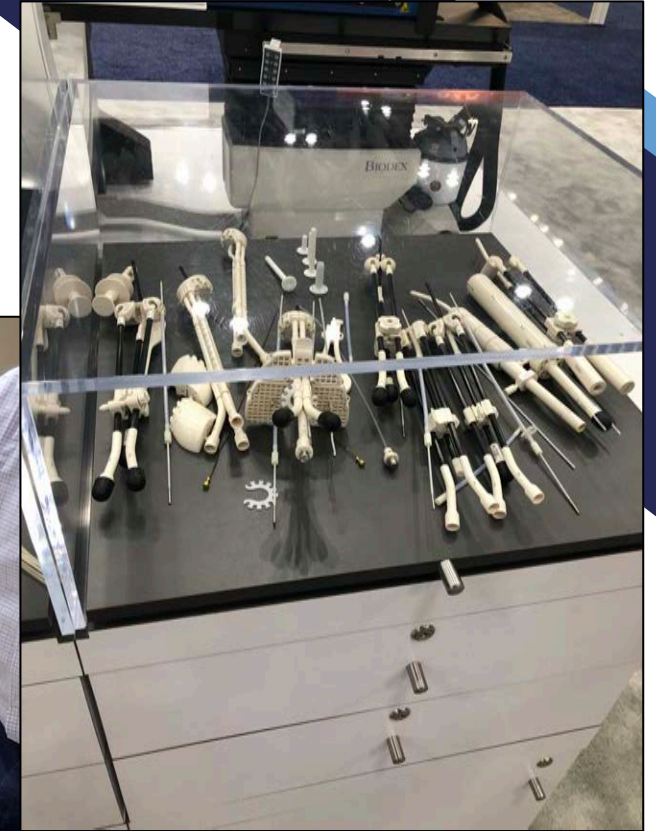
Risk Informed Inspections

- Risk informed inspections results:
 - Improved licensee safety & security
 - Improved communications, understanding, event reporting
 - Focus on highest priority activities
 - Risk informed documentation review



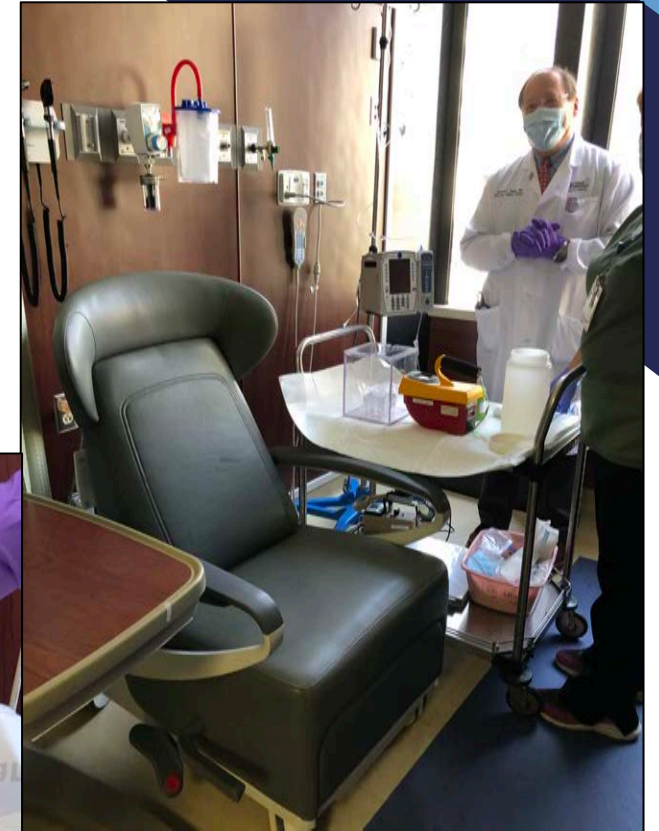
Risk Informed Inspections

- Inspection Procedure risk modules have:
 - Guided inspectors on the prioritization of focus areas
 - Resulted in deeper evaluation of high-risk activities
 - Focused inspectors on risk-informed value-added findings



Anticipating New Emerging Technologies

- Reviews of new medical technologies
 - Lutathera – Lu-177
 - Pluvicto – Lu-177
- On the Horizon
 - Ac-225
 - Ce-134
 - Pb-212
 - At-211



Anticipating New Emerging Technologies (Cont.)

- Staff involvement ensures early engagement on emerging trends.
 - FDA
 - Manufacturers
 - Attending Professional Meetings
- On-going staff training





Joey Rolland

Mechanical Engineer

Division of Materials Safety,
Security, State, and Tribal
Programs (MSST)



Comprehensive revision to certain materials license reviewer and inspector qualification guidance facilitated by a diverse team representing the NRC regions and the Agreement States

Scope

- IMC 1248 GENERAL QUALIFICATION GUIDANCE
- IMC 1248 APP A LICENSE REVIEWER
- IMC 1248 APP B INSPECTOR
- IMC 1248 APP C EXEMPT DISTRIBUTION REVIEWERS
- IMC 1248 APP D SEALED SOURCE DEVICE REVIEWERS

The Team

This effort benefits from a range of experience from the NRC and the Agreement States

Steering Committee:

- Theresa Clark, NMSS
- Jared Heck, Region III
- Tammy Bloomer, Region IV

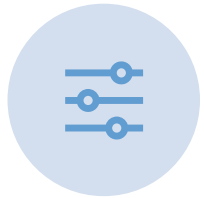
- Leira Cuadrado, NMSS, Chair
- Linda Howell, Region IV, Advisor
- Netra Patel, Region I
- Steve Shaffer, Region I
- Erin Kennedy, Region III
- Jennifer Dalzell, Region III
- Elizabeth Tindle-Engelmann, Region III
- Mohanned Kawasmi, Region IV
- Kyle Bischoff, Region IV
- Danielle Williams, NMSS
- Sherrie Flaherty, NMSS
- Auggie Ong, New Hampshire
- Tawny Morgan, North Carolina



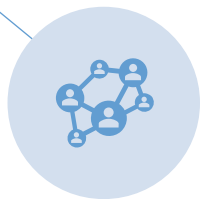
Approach



Address learnings from the implementation of the qualification program in past years.



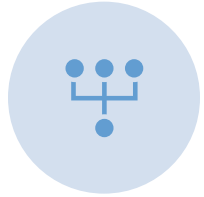
Add flexibilities so the qualification process works better for experienced and new employees.



Emphasize the importance of collaboration across the National Materials Program to best prepare license reviewers and inspectors.



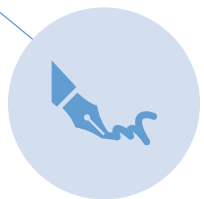
Approach (Cont.)



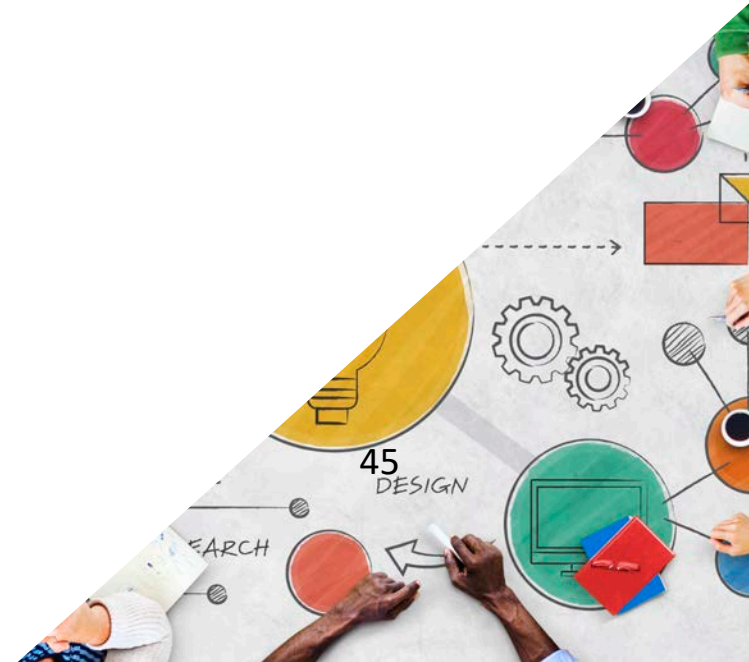
Develop a basic qualification card that is consistent with other inspection programs in the agency.



Develop tools to improve support of individuals seeking qualification.



Include a common signature authority process.





Backup Pictures



Acronyms

- AAPM – American Association of Physicists in Medicine
- AI/ML – Artificial Intelligence/ Machine Learning
- DRPs – Discrete Radiological Particles
- DLLW- Decommissioning and Low-Level Waste
- DOE -Department of Energy
- EPA- Environmental Protection Agency
- ET - Evapotranspiration
- FTE – Full Time Equivalent
- HDR – High Dose Rate
- IMPEP – Integrated Materials Performance Evaluation Program
- ISG – Interim Staff Guidance
- LTP- License Termination Plan
- MARSSIM- Multi-Agency Radiation Survey and Site Investigation Manual

Acronyms

- NMP – National Materials Program
- NMU - Nuclear Materials Users
- NPL – National Priorities List
- NSM – National Security Memorandum
- PSDAR- Post Shutdown Decommissioning Activities Report
- RAMP – Radiation Protection Computer Code Analysis and Maintenance Program
- RCPs – Radiation Control Program
- RESRAD – Residual Radioactivity Code
- SSSB – Surface Ship Support Barge
- VSP – Visual Sample Plan
- WPTES – Working Party on the Technical, Environmental, and Safety Aspects of Decommissioning and Legacy Management