



Strategic Programmatic Overview of the Fuel Facilities and Spent Fuel Storage and Transportation Business Lines

COMMISSION BRIEFING

MAY 10, 2022



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DAN DORMAN

EXECUTIVE DIRECTOR FOR OPERATIONS

Opening Remarks and Introductions

FUEL FACILITIES

Robert Lewis

- Strategic Overview of the Fuel Facilities Business Line

Shana Helton

- Preparing for the Fuel Cycle Program of the Future

Matthew Bartlett

- Fuel Facilities Licensing Activities

Cynthia Taylor

- Fuel Facilities Oversight Activities and Implementation of the Smarter Inspection Program

Danté Johnson

- Update on the NRC's Authorizing Official Activities



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ROBERT LEWIS

DEPUTY DIRECTOR

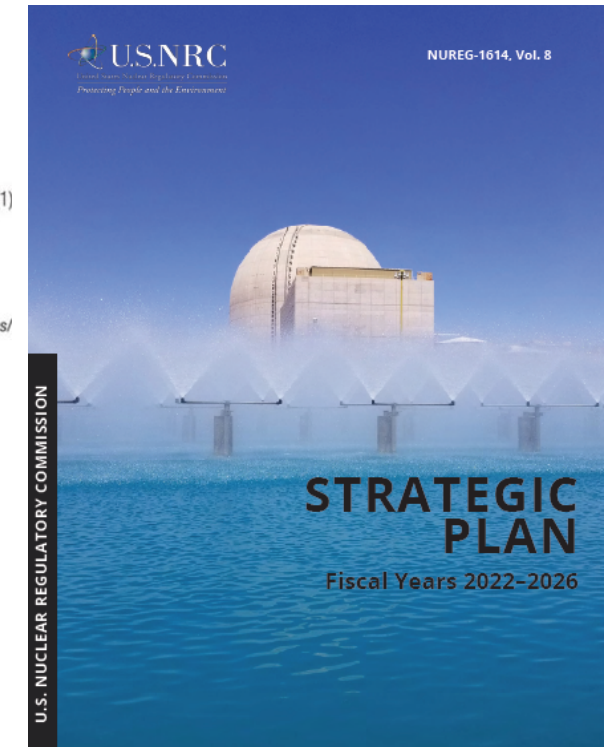
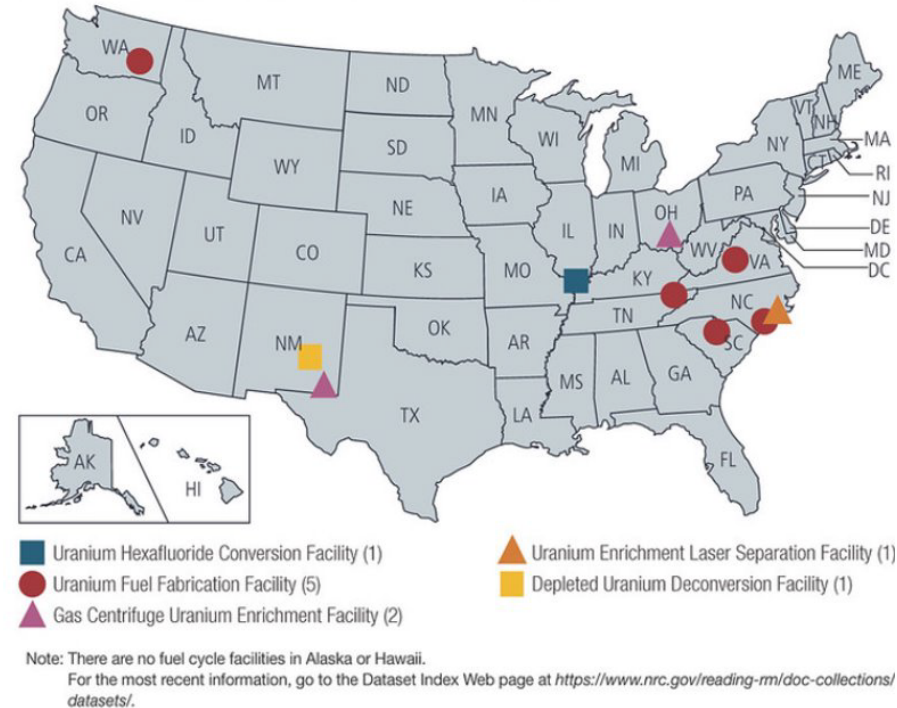
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

Strategic Overview of the Fuel Facilities Business Line

NRC Fuel Facilities Program

- Ensuring safe and secure use of special nuclear material
- Fostering a healthy organization
- Inspiring stakeholder confidence in the NRC

Locations of NRC-Licensed Fuel Cycle Facilities



Modern, Risk- Informed Regulator

Working together
to ensure the
safe, secure, and
environmentally
responsible use of
radioactive
materials and
nuclear facilities.





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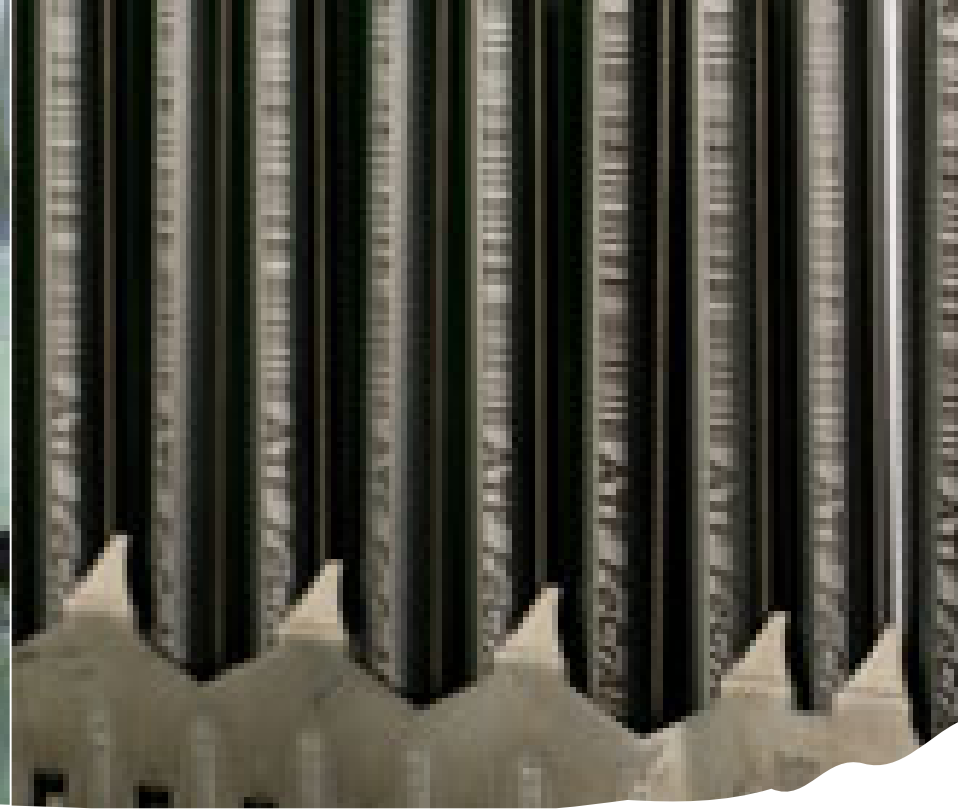
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SHANA HELTON

DIRECTOR, DIVISION OF FUEL MANAGEMENT
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

Preparing for the Fuel Cycle Program of the Future



ACCIDENT TOLERANT FUEL TECHNOLOGIES

Maintaining our readiness to regulate new technologies to ensure safety



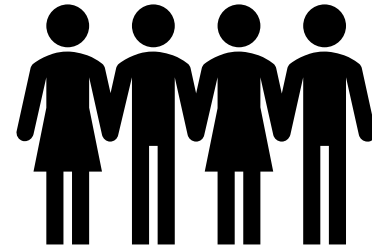
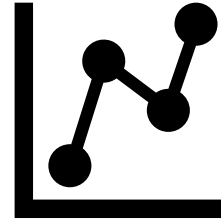
Preparing to License the Fuel Cycle Program of the Future

- Enrichment
- Fuel Fabrication
- Medical isotope production



Aligning Workload Forecast to Staffing

- High priority on staffing and hiring
- Preserving and transferring knowledge
- Use of technology and data





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MATTHEW BARTLETT

SENIOR PROJECT MANAGER, DIVISION OF FUEL MANAGEMENT
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

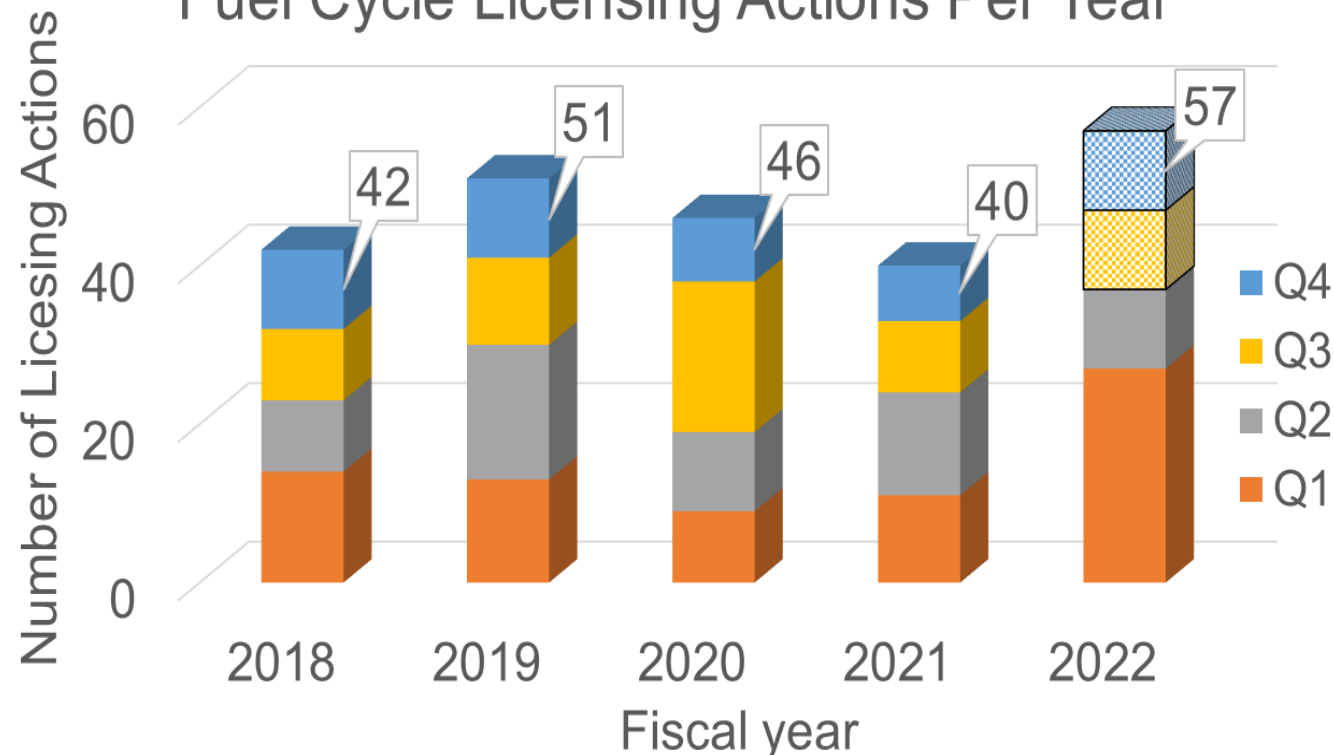
Fuel Facilities Licensing Activities

Accomplishments and Significant Licensing Reviews

Fuel Cycle Facilities

- 10 University/Research Facilities (+3 apps.)
- 5 Fuel Fabrication Facilities (+1 application)
- 1 Enrichment Facility (+2 in development)
- 1 Conversion Facilities (+1 deconversion)

Fuel Cycle Licensing Actions Per Year



Timely Reviews

- Average completed within 82% of the established scheduled

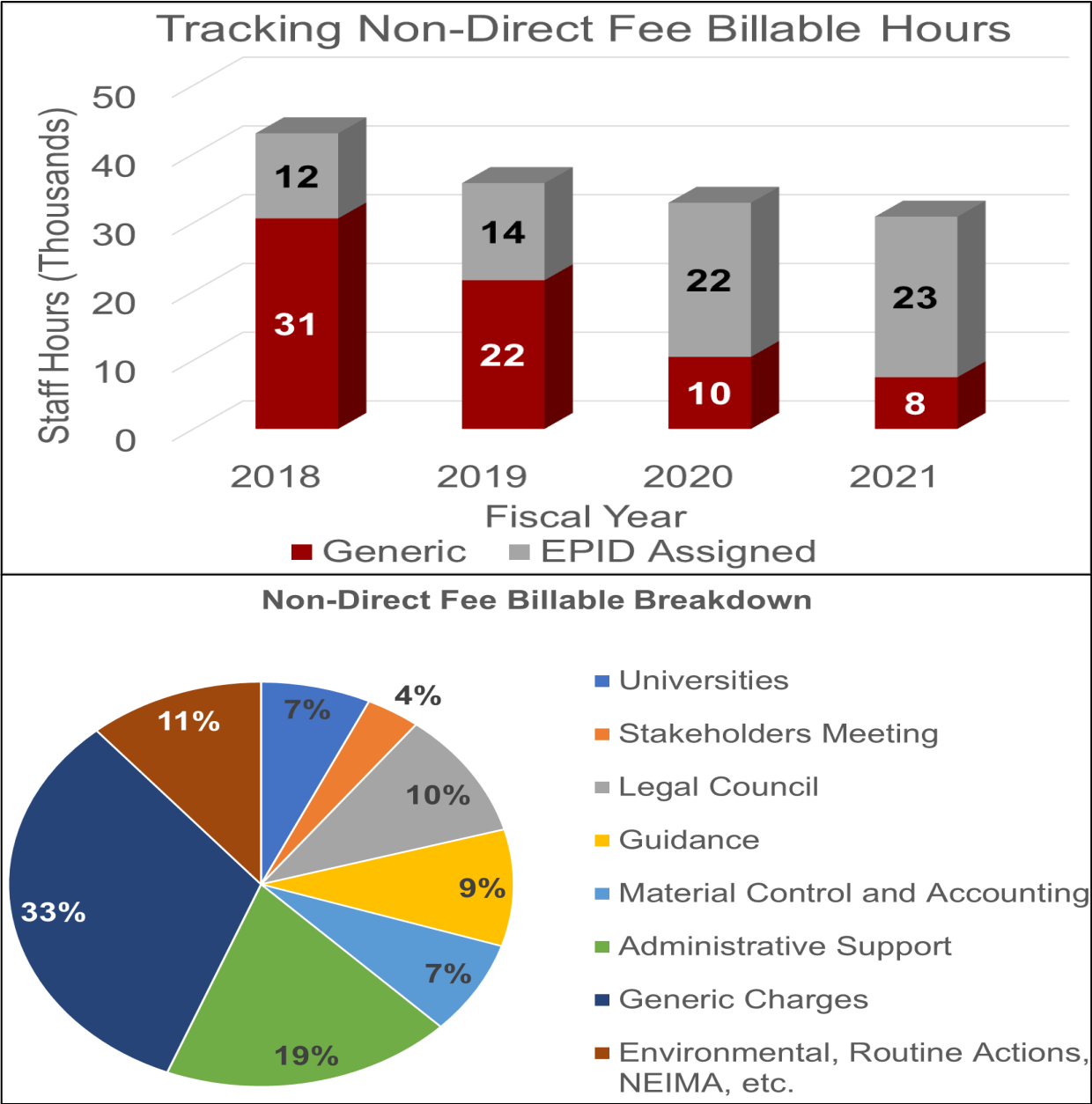
Major Actions

- Renewal for Westinghouse
- Renewal of 3 University/Research Facilities
- Honeywell Restart
- TRISO-X Fuel Fabrication (application)

Trends:

- Increasing Enrichments above 5%
- New fuel types (Sodium, pebble, etc.)

Licensing Program Updates - Improved Tracking and Transparency



Collect the Data
Better tracking of non-direct fee billable work

Observe the Trends
Develop dashboards

Tell the story
Provide feedback to stakeholders

Licensing Program Updates - New Processes and Tools



- Online database for tracking licensing actions
- A consistent, easy to access tool for project management
- Built in reports to compile and display data
- Reduced time to compile quarterly reports from 250 hours to under 50 hours per year.

Smarter Licensing Recommendations



Added 32 smarter licensing recommendations into the guidance



Provide for more interactions, efficiency, and transparency



Interactions: Pre-application meetings, site visits, and alignment calls



Efficiency: Combine steps and stagger technical reviews



Transparency: Estimate hours and review schedule; make Division Instructions public



Openness and Outreach with the public



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CYNTHIA TAYLOR

SENIOR FUEL FACILITIES PROJECT INSPECTOR,
DIVISION OF FUEL FACILITY INSPECTION
REGION II

**Fuel Facilities Oversight Activities and Implementation of the
Smarter Inspection Program**

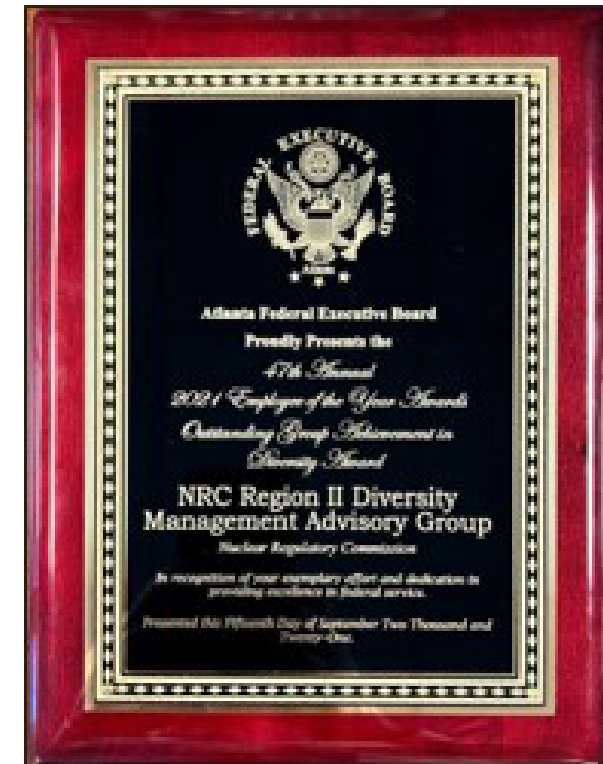
Oversight Accomplishments While Proactively Preparing for the Future

- Effective Inspection Program
- Stakeholder Engagement
- Application of Risk-Informed Decision Making
- Planned Activities



Empowering Our People Through Intentional Individual Talent Development

- Knowledge Management and Training
- Organizational Effectiveness
- Diversity and Inclusion Efforts



Innovations and Enhancements in Fuel Cycle Oversight

- Early Insights Into the Smarter Inspection Program
- Category 2 Inspection Program Development
- Leveraging Technology and Best Practices





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ACTING DEPUTY DIRECTOR, DIVISION OF SECURITY OPERATIONS
OFFICE OF NUCLEAR SECURITY AND INCIDENT RESPONSE

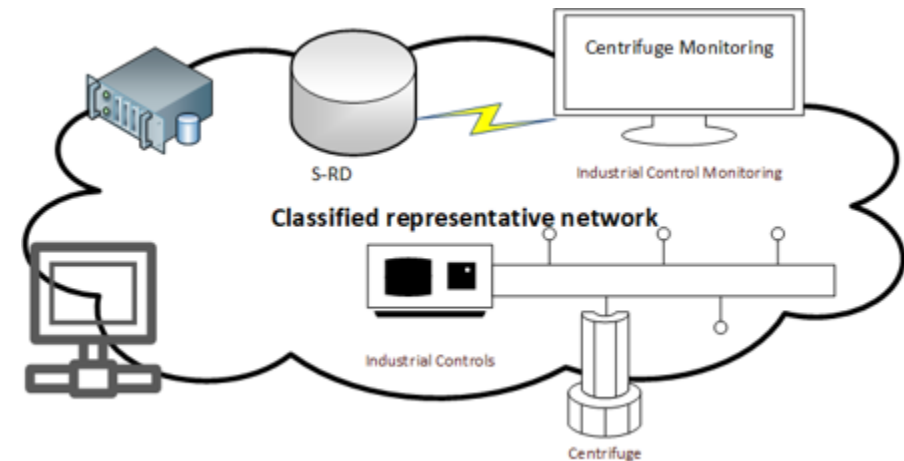
Update on the NRC's Authorizing Official Activities

Collaborating to
Accomplish the
Agency's Mission



Transition of Authorizing Official Responsibilities to the NRC

- Department of Energy previously performed the Authorizing Official role
- In December 2020, the NRC assumed formal responsibility as the Authorizing Official



Developing the NRC's Authorizing Official Program

- Interim Authorizing Official
- Agency Working Group



Engaging with Stakeholders

- October 2021 Workshop
- NIST Special Publication 800.53, “Security and Privacy Controls for Information Systems and Organizations”



Understanding the NRC's New Responsibilities and Authorities

- Providing facility security clearances
- Protecting classified information





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DAN DORMAN

EXECUTIVE DIRECTOR FOR OPERATIONS

Opening Remarks and Introductions

SPENT FUEL STORAGE AND TRANSPORTATION

Robert Lewis

- Strategic Overview of the Spent Fuel Storage and Transportation Business Line

Christopher Regan

- Spent Fuel Storage and Transportation Program Environment

Christopher Markley

- Spent Fuel Storage and Transportation Licensing Activities

Jennifer Dalzell

- Spent Fuel Storage and Transportation Oversight Activities

Lucas Kyriazidis

- Update on Spent Fuel Research Activities



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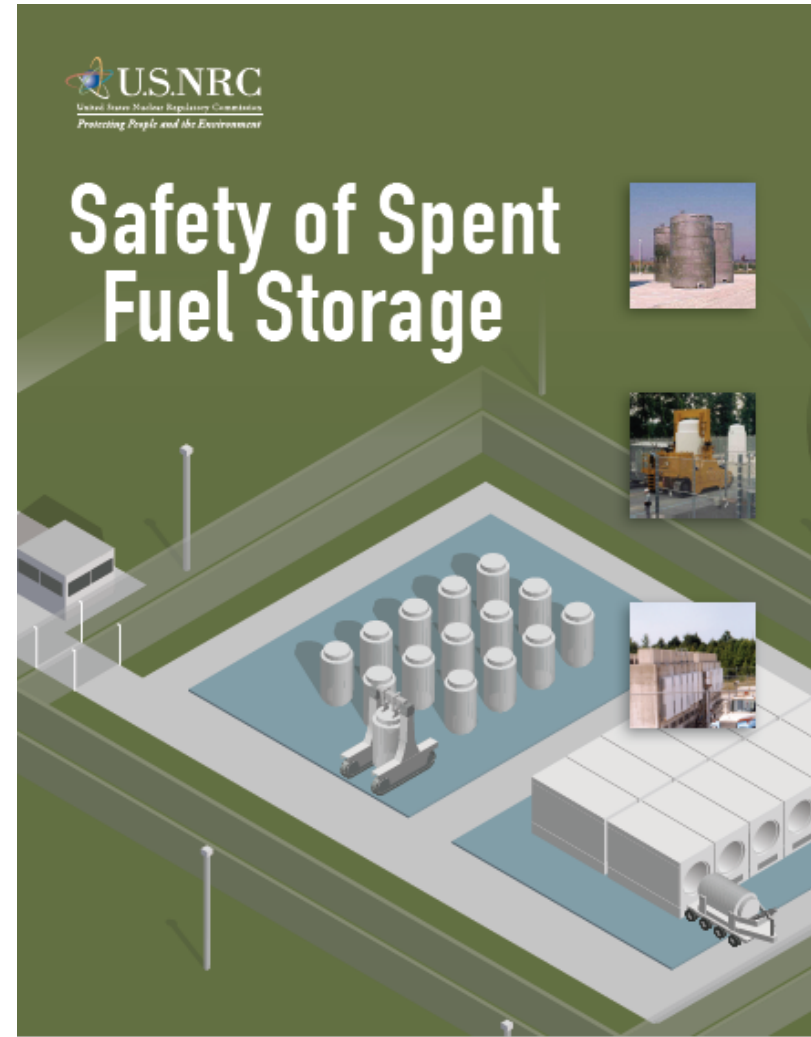
ROBERT LEWIS

DEPUTY DIRECTOR

OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

Strategic Overview of the Spent Fuel Storage and Transportation Business Line

Strategic Overview of the Spent Fuel Storage and Transportation Business Line



Applying Risk-Informed Tools





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CHRISTOPHER REGAN

DEPUTY DIRECTOR, DIVISION OF FUEL MANAGEMENT
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

Spent Fuel Storage and Transportation Program Environment



Inspiring Stakeholder Confidence and External Engagement

- Consolidated Interim Storage Facilities Licensing
- Continued Significant Engagement with External Stakeholders
- Transportation Regulatory Readiness Outreach



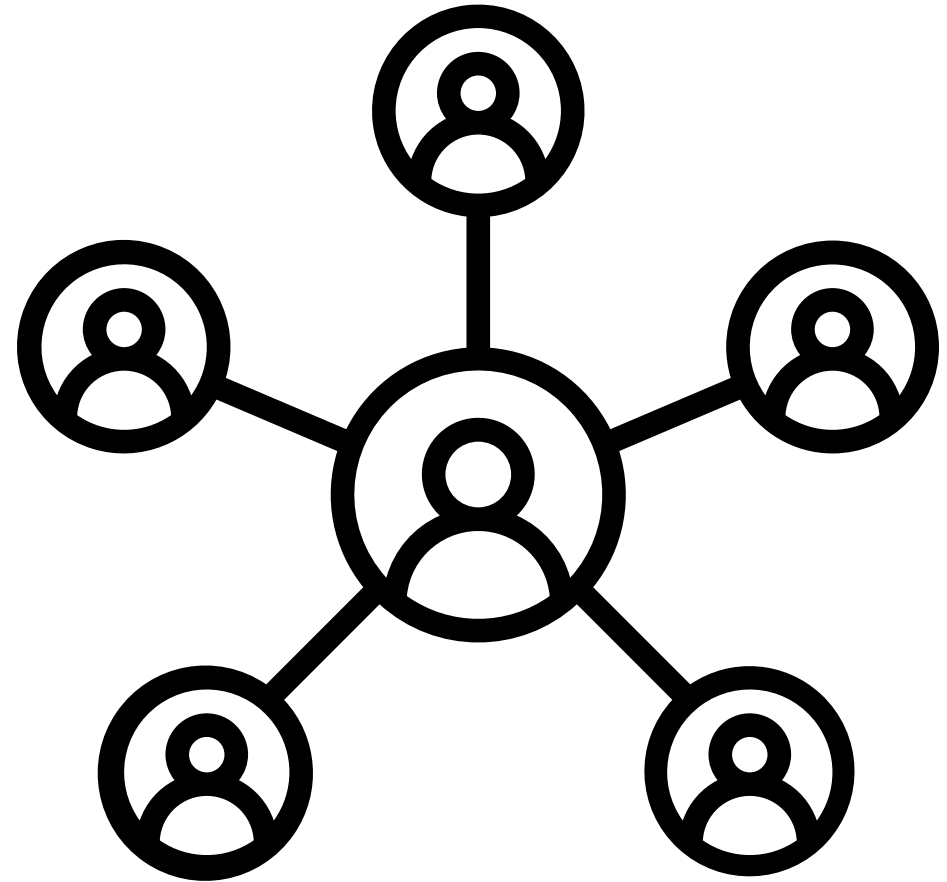


Effective Strategies for Future Workload Challenges and Planning

- Ensuring program agility in anticipation of rapid changes in the spent fuel management environment
- A continuum of learning

Implementing Innovative Business Line Human Capital Strategies

- Our strength is in the people – a hiring focus
 - Recruitment
 - Retention
 - Recognition
 - Knowledge Management





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CHRISTOPHER MARKLEY

SYSTEMS ANALYST, DIVISION OF FUEL MANAGEMENT
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Spent Fuel Storage and Transportation Licensing Activities

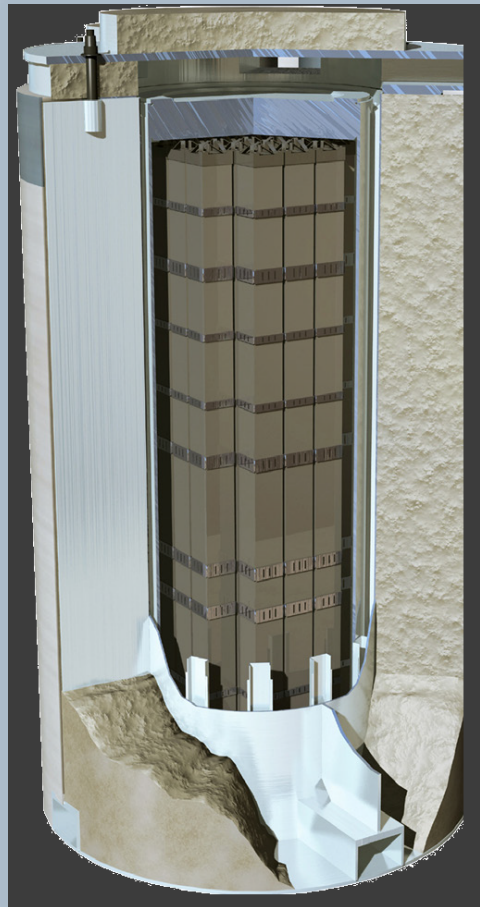
Continuing to Ensure Safety Through Successful Implementation of Licensing and Rulemaking Activities



- Completed 43 licensing actions in Fiscal Year 2021
- Reviewed CISF license applications
- Supported the deployment of accident tolerant fuel
- Engaged stakeholders to prepare for future activities.



Continue to Work on Innovations for Storage and Transportation to Enhance our Licensing Program



- Graded Approach to Certificates of Compliance
- Use of Topical Reports to Define Technical Inputs
- Risk Tool to Focus NRC Staff's Review





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JENNIFER DALZELL

TECHNICAL ASSISTANT
DIVISION OF NUCLEAR MATERIALS SAFETY
REGION III

Spent Fuel Storage and Transportation Oversight Activities

Effective Spent Fuel Oversight Program

- Enhanced Inspection Procedure Initiative
 - Modified to be more risk-informed, comprehensive, and consistent
 - Incorporates lessons learned from the COVID-19 public health emergency

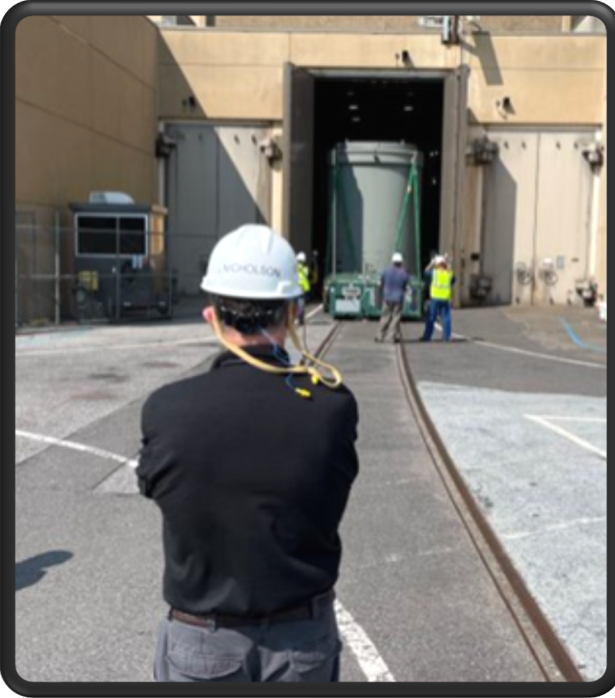


Increased Collaboration and Improvements to Training

- Cross-regional and Headquarters inspector staff support
- Improvements to training program



Preparation for Consolidated Interim Storage



- Inspection procedures and training programs are being created to support the oversight





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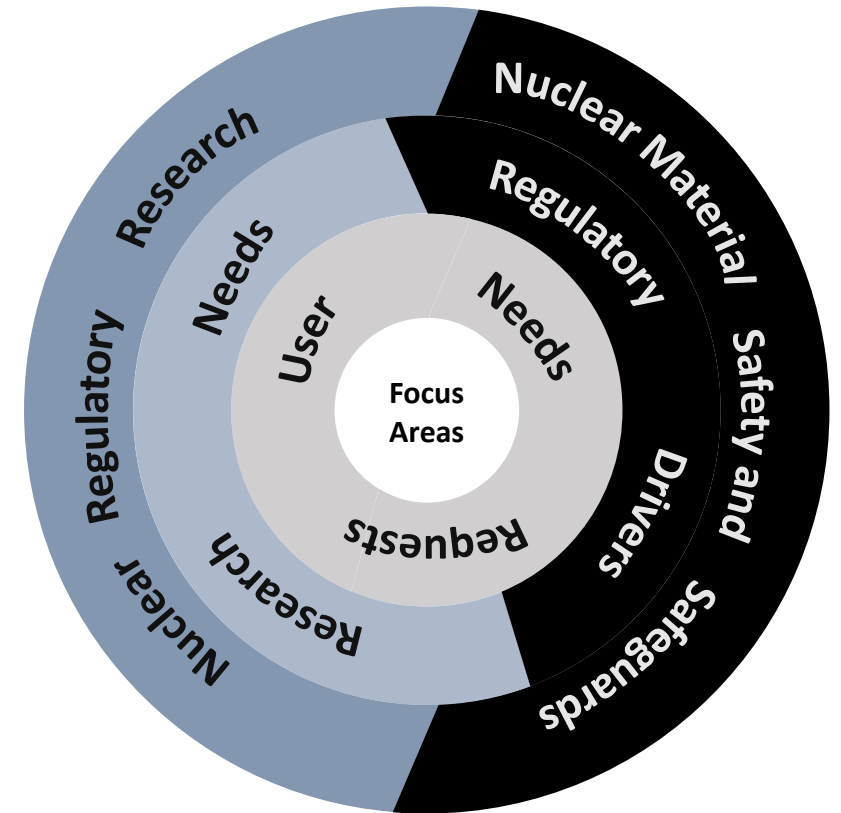
LUCAS KYRIAZIDIS

REACTOR SYSTEMS ENGINEER, DIVISION OF SYSTEMS ANALYSIS,
OFFICE OF NUCLEAR REGULATORY RESEARCH

Update on Spent Fuel Research Activities

Research Readiness – Strategic & Future Looking Research

- RES proactively identifies research needs through domestic and international collaborations
- Research needs driven by fulfilling regulatory needs
- Focus areas in dry cask storage systems, aging management, spent nuclear fuel cladding performance, and criticality safety research



RES is actively engaged in the latest advances in technology and relies on innovative research to ensure NRC readiness for new spent fuel activities

Leveraging, Strengthening, and Expanding Partnerships



- Active engagement with our counterparts at Department of Energy and in industry to research data & identify areas of cooperation
- Participate in several international research programs to aggregate key data while minimizing research costs

Leveraging domestic & international collaborations to improve NRC tools for more efficient spent fuel licensing

Improved Tools, Methods, and Data



Improving Simulation Tools for Effective Regulatory Decision-making for SNF

- Updating and assessing NRC's computer codes FAST & SCALE for ATF, HBU/IE



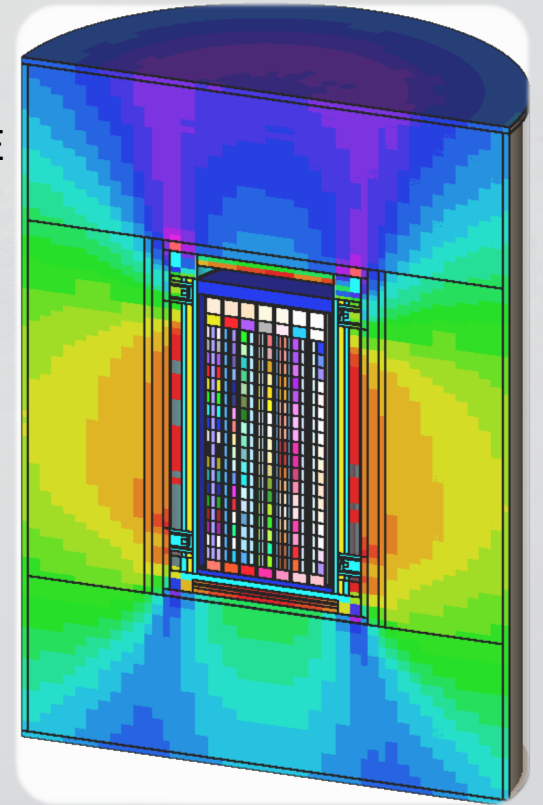
Aging Management Research

- Assessing non-destructive canister inspection methods for detecting CISCC
- New consensus code for establishing in-service inspection requirements



Supporting the Development of Risk-Informed Guidance

- Alternative criteria for fuel classification during cask loading
- New approaches for licensing more efficient thermal cask loading



Supporting Spent Fuel Storage and Transportation Licensing Through Research

ACRONYMS

- AO – authorizing official
- ASME – American Society of Mechanical Engineers
- ATF – accident tolerant fuel
- CISCC – chloride induced stressed corrosion cracking
- CISF – consolidated interim storage facility
- DI – Division Instruction
- EPRI – Electric Power Research Institute
- FAST – Fuel analysis under steady-state and transients
- HALEU – high-assay low-enriched uranium
- HBU/IE – high burnup/increased enrichment

ACRONYMS

- NEA – Nuclear Energy Agency
- NIST – National Institute of Standards and Technology
- NRC – U.S. Nuclear Regulatory Commission
- NSIR – Office of Nuclear Security and Incident Response
- RES – Office of Nuclear Regulatory Research
- SNF – spent nuclear fuel
- S-RD – secret-restricted data
- TRISO – tri-structural isotropic fuel