Strategic Programmatic Overview of the Operating and New Reactors Business Lines
Dan Dorman
Deputy Executive Director for Reactor and Preparedness Programs, Office of the Executive Director for Operations
Operating Reactor Business Line

Andrea Veil, Strategic Priorities and Successes for the Operating Reactors Business Line

Caty Nolan, Continuously Improving the Reactor Oversight Process

Frank Arner, Leveraging Risk-insights to Enhance the Oversight of Operating Reactors

Caroline Carusone, Modernizing Our Licensing Programs
Andrea Veil
Director, Office of Nuclear Reactor Regulation
COVID-19: Maintaining Safety and Security while Preserving Openness and Transparency

Opportunities for public and industry engagement

COVID-19 licensing actions Issued

- LAR: 44
- Relief Request: 28
- Exemption: 28
- Other: 15

Total: 386
The Reactor Oversight Process Continues to Provide Objective, Risk-Informed, Understandable, and Predictable Oversight

- Implementing continuous improvements
- Inspecting risk-informed initiatives
- Focusing using the very low safety significance issue resolution process

<table>
<thead>
<tr>
<th>Year</th>
<th>Risk-Informed Licensing Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>49</td>
</tr>
<tr>
<td>2021</td>
<td>354</td>
</tr>
</tbody>
</table>
Key considerations for long-term operation:

- **SAFETY**
- Reliability
Post-Fukushima Actions Have Improved Operating Nuclear Fleet Safety

- Added capabilities to maintain key plant safety functions following a large-scale natural disaster
- New equipment to better handle potential reactor core damage events
- Strengthened emergency preparedness capabilities
- Updated evaluations of the potential impact from seismic and flooding events
We Are Modernizing our Regulatory Infrastructure to Better Enable New Technologies

Digital I&C

Accident Tolerant Fuel
We Are a Leader in Transformation and Innovation to Become a More Modern Risk-Informed Regulator
We Are Developing Our 21st Century Workforce

- Culture Initiatives
- Diversity and Inclusion
- Professional Development
- Knowledge Management
Continuously Improving the Reactor Oversight Process

Caty Nolan
Reactor Systems Engineer, Division of Reactor Oversight, NRR
SDP Tracker

Count of EA #

Final SDP Color
- GREEN
- GTG (security)
- Minor PD
- No PD
- RED
- WHITE
- YELLOW

255-Day Overall SDP Completion Metric

120-Day Inspection Period

45-Day IR Issue Period

90-Day SDP Finalization Period
Modernizing the ROP

Operating Experience & Generic Communication Hub

- ROBLES - MAP Oversight
- SCRAM Trends
- Power Status
- Operating Reactor Analytics (Public)
- ROP Self-Assessment
- Congressional Budget Justification
- INFO Event Trending

- Human Factors Information System
- Accident Sequence Precursors (Public)
- COVID-19 Site Local Conditions
Operating Reactor Analytics

DEMO VIDEO Developed by Embark Venture Studios
Leveraging Risk-insights to Enhance Oversight of Operating Reactors

Frank Arner
Senior Reactor Analyst, Division of Operating Reactor Safety, Region 1
PRA Models Are Integral to the Reactor Oversight Process

Sample Selection

Emergent Issues and Reactive Inspections

Risk-Informed Initiatives

SDP and Plant Assessment
Use of PRA Insights in the Oversight of Risk-Informed Initiatives

Examples

• Use of 10 CFR 50.69 allowed for expedited repair of degraded piping.

• Use of the TSTF-505 program allowed for the safe online repair of components that would normally exceed Technical Specification allowed outage time.
Use of Risk Tools to Be riskSMART Regulators

NRC Standardized Plant Analysis Risk SPAR models

Provide **independence** from Licensee models

Allow for **independent** analysis and appropriate Action Matrix input conclusions
Our Models Are Updated to Ensure Robust ROP Execution

- Allows for the PRA model to be consistent with the as-built, as operated plants
- Allows for SRAs to credit FLEX equipment in evaluations
• Weekly knowledge transfer sessions

• Resident inspector and Senior Reactor Analyst interactions during site turnovers

• Required SRAs and risk analyst qualification courses to ensure risk professionals stay in tune with state-of-the-art practices
Modernizing Our Licensing Program

Caroline Carusone
Deputy Director, Division of Operating Reactor Licensing, NRR
Modernizing Our Licensing Program

- Enhancing Stakeholder Engagement
- Expanding Use of Data and Business Tools
- Strengthening Organizational Capacity
Incorporating Stakeholder Feedback into Licensing Program

31 public meetings
233 actions completed in FY21
31 Days Average review time
30 Online Submissions
Over $500k Cost Savings with Summary FRNs

COVID-19
Regulatory Response

10 CFR 2.206
Program Improvements

Average time to complete
Old: 365+ days
New: 30 days

Risk-Informed Process for Evaluations

Revamped Technical Assistance Request (TAR) Process

25
Data intake architecture and access

Data visualization to track **performance** and understand resource impacts

Trends analysis to **predict** and plan for the future

Expanding Use of Data and Business Tools
Early Returns on Data Modernization Efforts

- **Intake**: Web-Based Relief Request Portal
- **Performance**: Integrated Workload Management Tools
- **Prediction**: Licensing Action Precedent Analysis

Graph: Average review time - Licensing Actions
Strengthening Organizational Capacity

- Evolving Risk-Informed Mindset and Customer Focus
- Leveraging Collective Talents
- Cross-Training and Knowledge Management
Closing Remarks

Dan Dorman
Deputy Executive Director for Reactor and Preparedness Programs, Office of the Executive Director for Operations
## Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>CFR</td>
<td>Code of Federal Regulations</td>
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<tr>
<td>FLEX</td>
<td>Diverse and Flexible Coping Strategies</td>
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<tr>
<td>INPO</td>
<td>Institute of Nuclear Power Operations</td>
</tr>
<tr>
<td>LAR</td>
<td>License Amendment Request</td>
</tr>
<tr>
<td>MAP</td>
<td>Mission Analytics Portal</td>
</tr>
<tr>
<td>MAP-X</td>
<td>Mission Analytics Portal – External</td>
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<tr>
<td>NRC</td>
<td>U.S. Nuclear Regulatory Commission</td>
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<tr>
<td>NRR</td>
<td>Office of Nuclear Reactor Regulation</td>
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<tr>
<td>PRA</td>
<td>Probabilistic Risk Assessment</td>
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<tr>
<td>ROP</td>
<td>Reactor Oversight Process</td>
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<tr>
<td>SDP</td>
<td>Significance Determination Process</td>
</tr>
<tr>
<td>SPAR</td>
<td>Standardized Plant Analysis Risk</td>
</tr>
<tr>
<td>TSTF</td>
<td>Technical Specification Task Force</td>
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Introduction

Dan Dorman
Deputy Executive Director for Reactor and Preparedness Programs, Office of the Executive Director for Operations
New Reactor Business Line

Andrea Veil, Strategic Priorities and Successes for the New Operating Reactors Business Line

Nicole Coovert, Vogtle Units 3 and 4

Mohamed Shams, Advanced Reactor Preparedness

Steven Vitto, Security Considerations for Advanced Reactors
Strategic Priorities and Successes
New Reactors Business Line

Andrea Veil
Director, Office of Nuclear Reactor Regulation
Vogtle 3 and 4
Advanced Reactors
Key Successes

- Collaborating with the Canadian Nuclear Safety Commission
- Supporting national priorities:
  - Advanced Reactor Demonstration Program
- Preparing for new light-water reactor applications
- Ensuring workforce readiness
Transition of Vogtle Unit 3 to Operations and Preparing for the 10 CFR 52.103(g) Finding for Unit 4

Nicole Coover
Branch Chief, Division of Construction Oversight, Region 2
The NRC... IS WELL-POSITIONED AND EQUIPPED to conduct inspections and address emergent licensing issues.
…HAS THE EXPERTISE AND CAPACITY to effectively oversee the Vogtle 3&4 construction project.
Vogtle 3 & 4 Resident Inspectors

...IS PREPARED to ensure a successful transition from construction to operation.
• Improve the effectiveness and efficiency of future construction programs

• Leveraging Nuclepedia to store feedback from staff across the agency, industry stakeholders, and the public

...IS EMBARKING ON A HOLISTIC LESSONS-LEARNED to capture Part 52 experience and inform future construction programs.
Advanced Reactor Preparedness

Mohamed Shams
Director, Division of Advanced Reactors and Non-Power Production and Utilization Facilities, NRR
NRC is Building an Agile Advanced Reactor Program

01 Implementing Vision & Strategies
02 Building a Diverse Workforce
03 Leveraging Signposts & Markers
04 Creating Tools & Guidance
05 Enhancing Transparency
Transforming the Regulatory Framework into a Modern, Risk-Informed Approach

- Continuing extensive engagement with stakeholders
- Evolving Part 53 & developing risk-informed guidance
- Adhering to the principles of the Advanced Reactor Policy Statement
- Completing key rulemaking activities
Engaging in licensing reviews

Active in preapplication engagements

Using core teams to perform risk-informed reviews

Creating tools to leverage data, optimize execution and enhance transparency
We are Strengthening Readiness through Research

Reference Plant Models
Code Development
Technical Basis for Consensus Standards

Collaborating Internationally to Enhance Licensing the Reactors of the Future

US - Canada MOC
IAEA - SMR Regulators Forum
NEA - Working Group on the Safety of Advanced Reactors
Security Considerations for Advanced Reactors

Steven Vitto,
Security Specialist, Division of Physical and Cyber Security Policy, Office of Nuclear Security and Incident Response
NSIR Remains Focused On:

- Safety and security of the current operating fleet
- Establishing a modern infrastructure for advanced reactors
Developing a Consequence-Based Approach to Security

- Variety of potential reactor designs
- Radiological consequence provides a benchmark for the proposed security framework

- Two key rulemakings:
  - Alternative Physical Security Requirements for Advanced Reactors
  - Part 53 Risk-Informed, Technology Inclusive Regulatory Framework for Advanced Reactors
Prepared to Regulate the Nuclear Technology of the Future

• Cultivating a team of interdisciplinary experts
• Maintaining open engagement with stakeholders
• Applying the right skill sets and resources to arrive at risk-informed and technically sound approaches
Early and Frequent Stakeholder Engagement is Critical
Delivering Success in Our Work and Supporting National Priorities

- Continued focus on new technologies and industry trends
- Cyber security to protect critical digital assets
- Ongoing threat assessment through engagement with interagency and law enforcement partners
Closing Remarks

Dan Dorman
Deputy Executive Director for Reactor and Preparedness Programs, Office of the Executive Director for Operations
<table>
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<tr>
<th>Acronym</th>
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<td>CNSC</td>
<td>Canadian Nuclear Safety Commission</td>
</tr>
<tr>
<td>HQ</td>
<td>Headquarters</td>
</tr>
<tr>
<td>IAEA</td>
<td>International Atomic Energy Agency</td>
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<tr>
<td>ICN</td>
<td>Inspection Closure Notice</td>
</tr>
<tr>
<td>ITAAC</td>
<td>Inspections, Tests, Analyses, and Acceptance Criteria</td>
</tr>
<tr>
<td>MOC</td>
<td>Memorandum of Cooperation</td>
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<tr>
<td>NEA</td>
<td>Nuclear Energy Agency</td>
</tr>
<tr>
<td>NRR</td>
<td>Office of Nuclear Reactor Regulation</td>
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<tr>
<td>NRC</td>
<td>U.S. Nuclear Regulatory Commission</td>
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<tr>
<td>SIT</td>
<td>Special Inspection Team</td>
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<tr>
<td>SMR</td>
<td>Small Modular Reactor</td>
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<tr>
<td>SNC</td>
<td>Southern Nuclear Company</td>
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