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

Strategic Programmatic Overview of the Operating Reactors Business Line

Commission Meeting

September 27, 2018

Agenda

- Margaret Doane – Introductions
- Ho Nieh – Programmatic Overview
- Russell Felts – Workload Management
- Chris Miller – Potential Reactor Oversight Process Changes
- Anton Vegel – Regional Focus Areas and Oversight Implementation Issues
- Marissa Bailey – Security Program Updates
- Robert Tregoning – International Testing Capabilities

Continued Focus on Our Core Mission – Safety and Security

- Strategic Direction
  - Enhancing focus on issues of greatest safety significance
  - Expanding risk-informed decision making
- Programmatic Priorities
  - Digital Instrumentation and Control (DI&C)
  - Lead Test Assemblies (LTAs)/Accident Tolerant Fuel (ATF)
  - NRR/NRO Merger
  - Resource Planning

Advancing Risk-Informed Decision Making

- SECY-17-0112 enumerated challenges
- NRR RIDM Action Plan strategies
  - Evaluate/Update guidance
  - Develop graded licensing approach
  - Enhance mandatory training
  - Advance risk-informed initiatives
  - Enhance communication

Addressing RIDM Challenges through an Action Plan

- Comprehensive action plan with two phases
- Phase I is now complete with 19 recommendations
- Implementing Phase II with 13 action items
  - Use of Integrated Review Teams
  - Sustainable guidance and expectations
  - Communicating with external stakeholders
- Action Plan to be completed by December 30, 2018
- Working with ORBL offices and Regions on RIDM practices

Improving Knowledge and Acceptance of RIDM

- Extensive risk training courses have been available to all staff
- Piloted new RIDM training course for managers:
  - Provide perspectives on how risk and deterministic information is used together to make regulatory decisions
  - Review risk-informed licensing guidance and recent actions
  - Illustrate risk management tools and practices at utilities
- Evaluating next steps

Optimizing Risk-Informed Licensing Review Efficiency

- Same staff performing like (LAR) reviews
- Feedback loop on lessons learned

- Discipline in RAIs (draft SE with gaps, audits)
- Increased use of contractors to address risk-informed licensing surge
- Close management oversight
- Risk-Informed Steering Committee (RISC)

Sharing Lessons Learned to Improve Efficiency

- Clarity and completeness of LAR submittals
  - key assumptions
  - sources of uncertainty
  - peer review facts & observations (F&O)
- Staff focus on F&Os that impact the particular application of the PRA
- NRC-accepted F&O closure process facilitates LAR streamlining
- Communicating via RISC, conferences, and other forums
- Preparing Regional staff for wider industry deployment of 50.69 and TSTF-505

Ongoing Activities to Improve the ROP

- Enhancing the Replacement Reactor Program System (RRPS)
- Evaluating operating experience to improve inspections
- Enhancing engineering inspections
- Implementing Inspection Finding Resolution Management (IFRM)

Sources of Feedback for Improving the ROP

- NRC's transformation initiative suggestions
- Nuclear Energy Institute (NEI) publication and follow-up letter
- National Regional Utility Group (NRUG) letter
- Union of Concerned Scientists (UCS) feedback

Suggestions Binned From Transformation Initiative

- Organization/staffing supporting inspections
- Inspection report efficiencies
- Numerous ROP program improvements
- Recognition of Column 1 licensee performance in several program areas

Feedback From NEI, NRUG and UCS

- Focus ROP on issues with higher risk significance, reduce unnecessary regulatory burden, improve program efficiencies, and improve NRC and industry communications (NEI)
- Use a more forward looking approach to oversight – i.e., consider licensee corrective actions (NRUG)
- Maintain regulatory independence in efforts to modify engineering inspections (UCS)

Potential Changes

- Extend engineering inspection improvements to other areas
- Credit licensee self-assessments
- Recognize sustained Column 1 licensee performance with reduced inspections
- Enhance PIs and reduce inspection based on performance

Potential Changes to the ROP (cont'd)

- Evaluate the treatment of White findings and White PI's – numerous suggestions
- Assess numerous changes to SDP program and associated decision-making
- Improve assessment of Cross-Cutting Issues

Conducting Next Steps

- Establish working group
- Communicate with stakeholders
- Obtain Commission approval per Commission direction
- Address NRC resource challenges
- Revise applicable ROP program documents and conduct training, if required

Thorough and Independent Verification of Nuclear Plant Safety

- Continued effective implementation of reactor oversight inspections
  - Regional examples of findings related to safe operation

- Continued safety of plants that have announced premature closure

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Regional Key Focus Areas

- Improve coordination and consistency across the regions
- Support of ROP improvement initiatives
- People: Sustaining a strong cadre of talented and professional inspection staff

Completing Assessment of Cyber Security Controls at Operating Reactors

- Controls implemented in two phases
- Full implementation inspections through 2020
- Results show licensees have adequately implemented programs
- Next steps

Improving the Baseline Physical Security Inspection Program

- Identified efficiencies for baseline security inspections
- Aligned the baseline security SDP with the ROP
- Ensured significance of security findings are characterized appropriately

Continuously Improving the Force-on-Force Inspection Program

- Fifth Force-on-Force (FOF) inspection cycle in progress
- Identified three options to further improve the FOF inspections (SECY-17-0100)
  1) Two NRC-conducted FOF exercises (status quo)
  2) One NRC-conducted FOF exercise and one defense-in-depth exercise
  3) One NRC-conducted FOF exercise and an enhanced NRC inspection of a licensee-conducted annual FOF exercise
- Ensuring exercise scenarios are realistic

Assessing Long-Term Options for the Mock Adversary Force

- NEI-managed CAF used since 2004
- JCAF approved for 2018 and 2019
- Provided oversight of JCAF during selection, training and exercises
- Assessment of long-term options to the Commission in December 2018

Enhancing Regulatory Decision Making Through Research

- Core of research activities support licensing and oversight of nuclear power plants
- Recent successes
  - Subsequent License Renewal guidance documents
  - Boiling water reactor operating flexibility
- Current focus areas
  - Accident tolerant fuels
  - DI&C regulatory infrastructure
  - Realism in risk assessment

Relying on International Partnerships to Effectively Support the ORBL

- Cooperating through diverse strategies and extensive partnerships
- Leveraging operating experience, expertise, and facilities
  - Thermal-hydraulic, severe accident, and radiological release codes
  - Concrete aging
  - Fire propagation

Containment Construction for NEA Test Program

Maintaining Critical Infrastructure & Capabilities

- Continued importance of large-scale, flexible facilities
  - Validate analytical codes
  - Address complex, multidisciplinary issues
- Increased challenges
  - High operating and maintenance costs
  - Aging facilities
  - Decreased demand

PANDA Reactor Pressure Vessel

Addressing Infrastructure Challenges

- Identifying needs and preservation strategies
- Mitigating impacts due to closure of Halden reactor
  - Halden Reactor Project developing path forward
  - NRC staff pursuing alternatives to address gaps

Melt Coolability and Concrete Interaction Facility

Acronyms

- ATF – Accident Tolerant Fuel
- CAF – Composite Adversary Force
- DI&C – Digital Instrumentation and Controls
- FOF – Force-On-Force
- F&O – Facts and Observations
- JCAF – Joint Composite Adversary Force
- LAR – Licensing Amendment Request
- LTA – Lead Test Assembly

Acronyms (continued)

- NEA – Nuclear Energy Agency
- NEI – Nuclear Energy Institute
- NRUG – National Regional Utility Group
- ORBL – Operating Reactors Business Line
- PI – Performance Indicator
- PRA – Probabilistic Risk Assessment
- RAI – Request for Additional Information

Acronyms (continued)

- RIDM – Risk-Informed Decision Making
- RISC – Risk-Informed Steering Committee
- ROP – Reactor Oversight Process
- SDP – Significance Determination Process
- SE – Safety Evaluation
- TSTF – Technical Specifications Task Force
- UCS – Union of Concerned Scientists