

Strategic Programmatic Overview of the Operating Reactors Business Line

- Commission Meeting
- October 24, 2017



Agenda

- Victor McCree – Introductions
- Brian Holian – Programmatic Overview
- Kathryn Brock – Operating Reactor Licensing Status
- Shakur Walker - Evaluating Efficiencies in Engineering Inspections

Agenda (cont'd)

- Steven Lynch – Medical Isotope Facility Licensing Status
- Michael Waters – Digital Instrumentation and Control Integrated Action Plan
- Kimberly Webber – Demonstrating Agility and Efficiency Through Collaboration

Continued Focus on Our Core Mission – Safety and Security

- Risk-Informed Decision Making
- Emerging Technical Issues
- Programmatic Improvements and Efficiencies
- Focus Areas

Progress on Utilizing Risk Insights

- A Variety of Risk-Informed Actions Underway (e.g. 50.69 submittals, Risk-Informed Steering Committee)
- Palo Verde Allowed Outage Time Extension
- Assessing Improvements to Procedures and Guidance
- Provide Paper to Commission in October

Regions and HQ Continue to Pursue Timely Resolution of Technical Issues

- Open phase inspections
- Cybersecurity
- Fukushima – first closeout
- Anchor/Darling valves



Process Improvements & Efficiencies – An Ongoing Aspect of Our Work

- Decommissioning rulemaking
- Inspection resource sharing shows our agility
- Restructuring and consolidation assists the organization
- Core business (licensing) going well

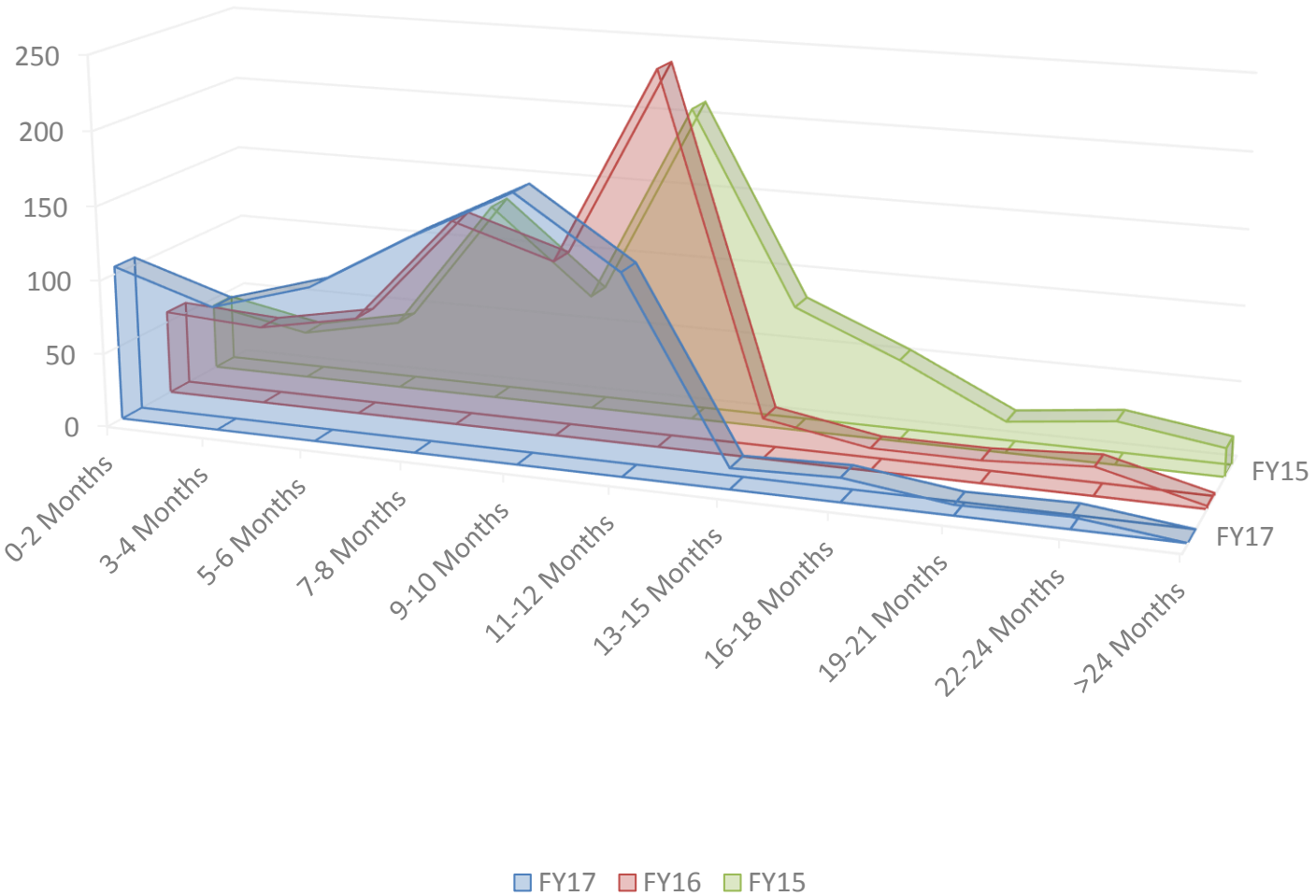
Focus Areas – Actions Ongoing

- Further integration of risk insights
- Communication with stakeholders
- Accident tolerant fuel
- Backfit
- Workforce management and planning

Ensuring Effective, Efficient, and Agile Licensing

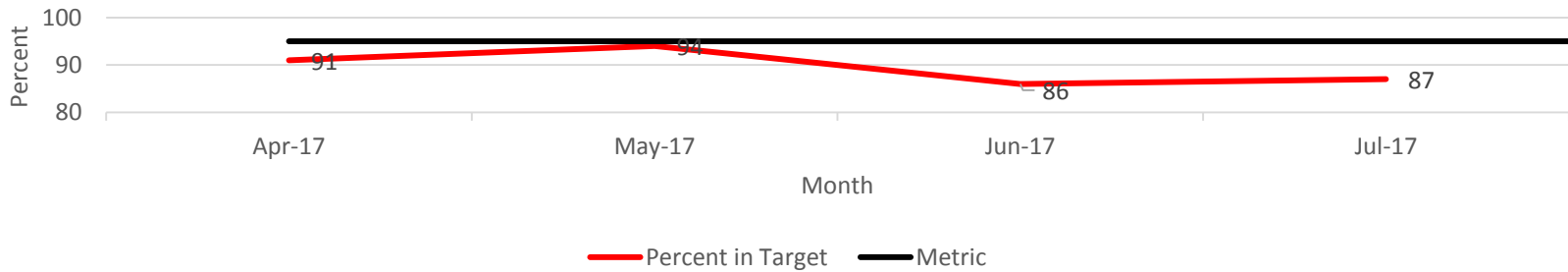
- Sustained progress in licensing timeliness and completions
- Enhanced licensing controls
- Enhanced predictability of the process
- Tracking new metrics to enhance oversight

Licensing Action Closure Times are Improving

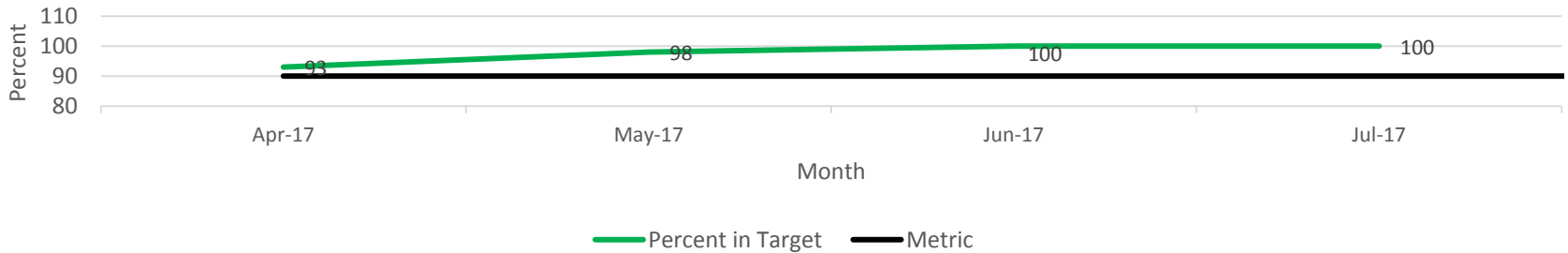


Measures Demonstrate Progress

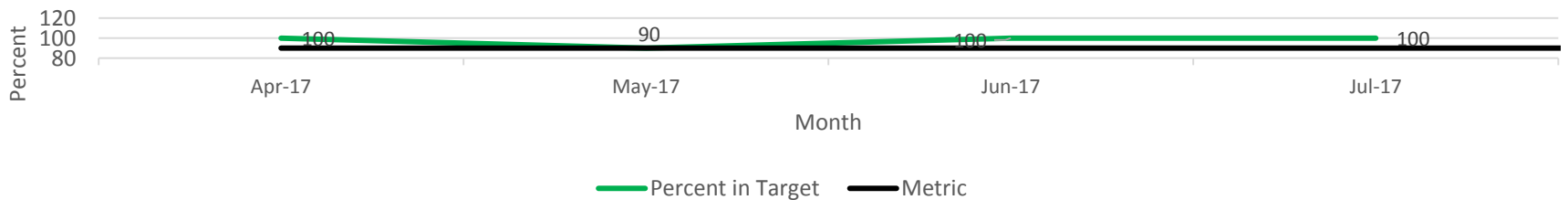
Acceptance Review Timeliness



LA Completion within Forecasted Hours (+25%)



LA Completion within Forecasted Schedule (+1 month)



Leveraging Acceptance Review Process to Enhance Quality

- Setting challenging metrics
- Accepting quality submittals leads to efficient safety reviews
- Using a variety of communication tools to gain early alignment

Continuous Improvement in Licensing Workload Management

- Enhancing workload management
- Strengthening the rigor of controls
- Leveraging lessons learned on unique or first-of-a kind submittals
- Increasing opportunities for synergy through communication

RAI Reviews Reflect Continuous Learning

- Enhancing the predictability of the RAI process
- Self-assessment indicates adherence to guidance
- GAO independently examined the RAI process
 - Findings confirm staff assessment
 - No recommendations

Using Risk Insights to Guide Regulatory Activities

Vision: Enhance the integration of risk information into the organization's decision making practices and processes to improve the technical basis for regulatory activities, increase efficiency, and improve effectiveness

- Employing a training initiative
- Integrating risk into current regulatory processes
- Developing a communication strategy

Focused Effort to Improve Performance in Risk-Informed Licensing Actions

- Tracking risk-informed actions using RRPS
- Monitoring review hours
- Training staff on recognizing and conducting risk-informed reviews

Crediting FLEX in Risk-Informed Decision-Making

- FLEX equipment adds value beyond the Orders (ROP, NOEDs)
- Crediting FLEX in licensing reviews and other regulatory actions



FLEX Equipment Storage Building

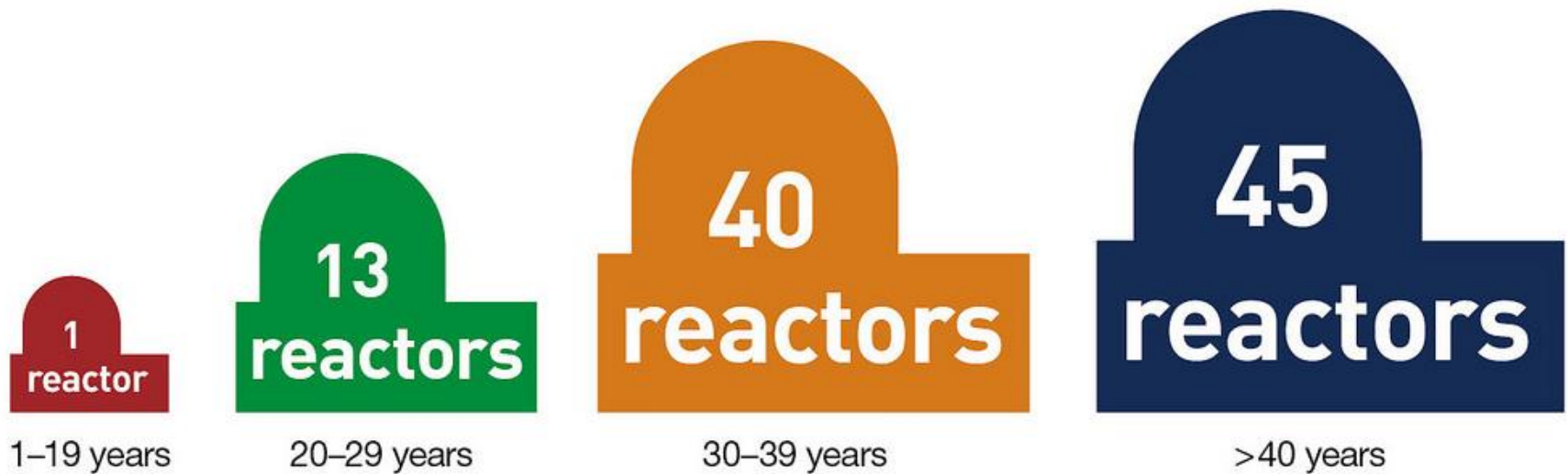


FLEX Diesel-Driven Portable Pump

Increasing Discipline and Management of Backfitting

- Focusing on how we manage backfits and licensing basis questions
- Updating guidance and procedures
- Reset training for staff this Fall to improve consistency, understanding, and predictability
- Planning more detailed workshops and training in FY 2018

Engineering Inspection Focus Has Evolved Over the Years



Number of nuclear power reactors by years of operation by the end of 2017.

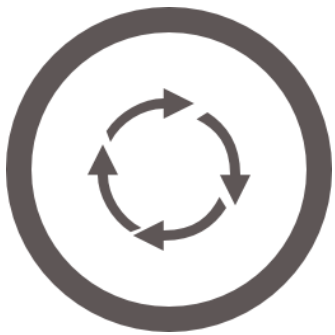
Developing a More Effective and Efficient Way to Inspect Engineering Areas

Engineering inspections independently verify the design and capability of risk-significant SSCs; and help identify latent conditions.



Assess the Various Options in Developing Recommendations

Several options are being considered, from minimal to transformational.



INSPECTION
CYCLE



FIRE
PROTECTION



INSPECTION
FORMAT



SELF-
ASSESSMENTS

Current Status and Next Steps

The working group is actively engaging internal stakeholders, industry representatives, and the public for input to maintain a balanced and transparent approach.



Continuing Efficient Reviews of Medical Isotope Facilities

- Following established guidance and completing reviews within 24 months maintains quality and timeliness of initial licensing activities



Applying Program Enhancements for Effective Licensing and Oversight

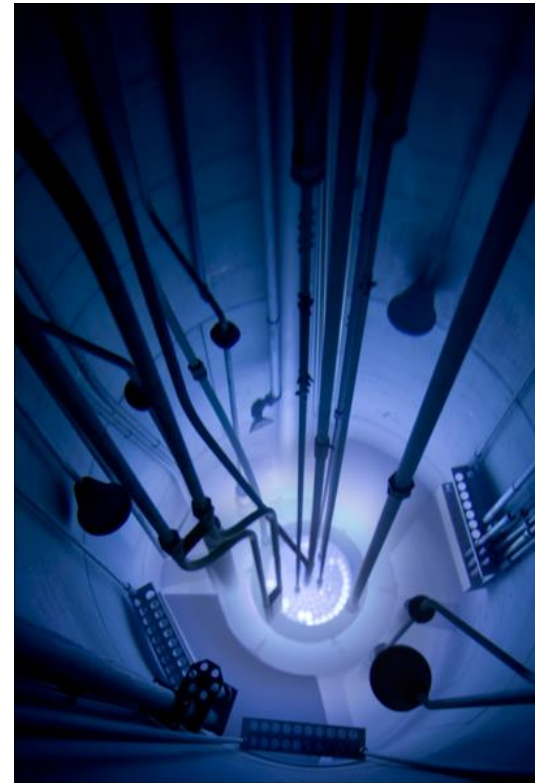
- Developed construction inspection program for medical isotope facilities
- Examining licensing requirements and developing guidance for operating license applications
- Identifying technical and programmatic needs for operational inspections and operator licensing

Promoting Regulatory Agility Through Engagement

- Supporting efforts to establish domestic supply of ^{99}Mo without the use of highly-enriched uranium
- Supporting inter-office licensing reviews and rulemaking efforts
- Coordinating with Agreement States
- Engaging with international community and sharing best practices

Leveraging Experience to Develop Technology-Inclusive Framework

- Considering technology beyond light water and non-power reactors
- Streamlining NPUF license renewal process
- Supporting advanced reactor pre-application meetings

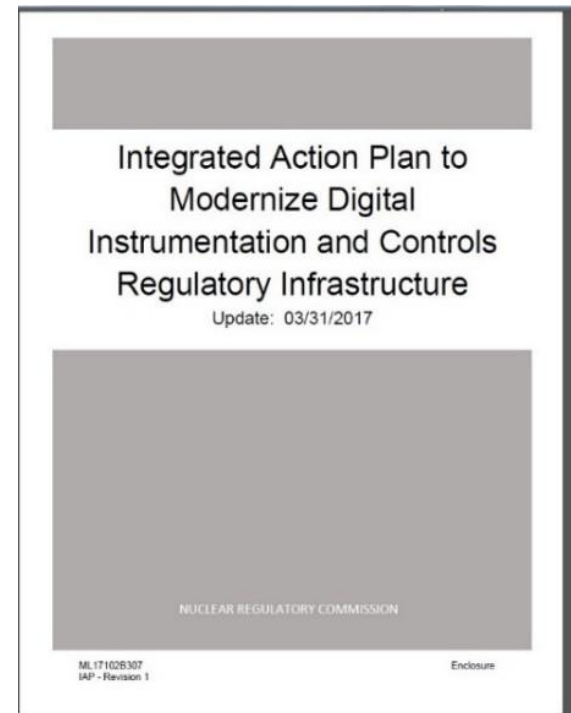


Oregon State University
TRIGA Reactor

Source: OSTR Webpage

Modernizing the Regulatory Infrastructure for Digital I&C

- Addressing digital upgrade needs of the operating fleet
- Improving regulatory predictability and efficiency
- Engaging stakeholders to achieve common understandings



Clarifying Guidance for 50.59 Upgrades

- RIS supplement provides near-term clarification for digital upgrades
- Draft Appendix D to NEI 96-07 provides durable guidance for all types of digital upgrades



Turbine Control Upgrade
(Vogtle)



Distributed Control System
(McGuire)

Improving the Digital Licensing Process

- Incorporating lessons from use of ISG-06 licensing guidance
- Considering industry proposals for NRC approval earlier in the design process
- Reviewing technical guidance for common cause failure



Digital Reactor Protection System
(Diablo Canyon)



Digital Power Range Monitoring
(Columbia)

Planning Commission Engagement

- Status of IAP Activities (October 2017)
- Common Cause Failure Position (Summer 2018)
- Evaluation of IEEE Std. 603-2018 for incorporation by reference into 10 CFR 50.55a (2018)

Securing Safety through Research

- Delivering necessary analyses, tools, and information
- Supporting licensing and oversight of operating nuclear power plants
 - MELLA+ licensing reviews
 - Accident tolerant fuels
 - SPAR models incorporate FLEX strategies
- Ensuring sustainability

Enhancing Efficiency and Transparency

- Improved coordination and communication
- Strengthened accountability for research projects
- Enhanced in-house expertise and capabilities to accomplish the mission
- Participation in SWP pilot

Leveraging Domestic Collaboration

- Strong partnerships with DOE, EPRI, NIST, and other agencies
 - Sharing computer codes and computation systems
 - Reducing duplication



NIST Alkali Silica Reaction Test Setup

Leveraging International Collaboration



The reactor hall of the
Halden Reactor

- Extensive bilateral and multilateral cooperation
 - Advancing nuclear safety analyses and codes
 - Accessing international expertise
 - Achieving significant value for nuclear safety

Acronyms

- CFR – Code of Federal Regulation
- DOE – Department of Energy
- EPRI – Electric Power Research Institute
- FLEX – Diverse and Flexible Coping Strategies
- FY – Fiscal Year
- GAO – Government Accountability Office

Acronyms

- IAP – Integrated Action Plan
- IEEE – Institute of Electrical and Electronics Engineers
- ISG – Interim Staff Guidance
- I&C – Instrumentation and Controls
- LA – License Amendment
- MELLA+ - Maximum Extended Load Line Limit Analysis Plus

Acronyms

- NEI – Nuclear Energy Institute
- NIST – National Institute of Standards and Technology
- NOED – Notice of Enforcement Discretion
- NPUF – Non-power production or utilization facility
- NRC - Nuclear Regulatory Commission

Acronyms

- OSTR - Oregon State TRIGA Reactor
- RAI - Request for Additional Information
- RIS – Regulatory Information Summary
- ROP – Reactor Oversight Process
- RRPS – Replacement Reactor Program System
- SPAR - Standardized Plant Analysis Risk

Acronyms

- SSC – Structure, System, Component
- SWP – Strategic Workforce Planning
- TRIGA - Training, Research, Isotopes, General Atomics
- ^{99}Mo – Molybdenum-99