Operational and Safety Benefits of Risk Informed Applications

NRC Regulatory Information Conference

March 14, 2023

NUCLEAR ENERGY INSTITUTE

General Themes in Risk Informed Application Benefits

- Reduction in outage complexity, duration, and risk
- Flexibility to better focus maintenance and repairs
- Averted shutdowns
- Completion of deferred maintenance without additional license amendments or exemptions
- Reduced personnel dose
- Refocusing of staff hours on more impactful issues

TSTF-425, Risk Informed Surveillance Frequency Control Program

- Allows licensees to move tech spec surveillance frequencies to a licensee-controlled program and to use risk information to extend these
- Major benefits:
  - Streamlining of testing programs to reduce burden on plant personnel
  - Potential to shorten outages with less frequent testing
  - Reduction of frequency for tests that stress plant systems

Plant Specific Benefits: TSTF-425 Success

- Station blackout test extension
  - Allows performance of test on one division instead of two
  - Significantly reduces outage complexity
  - Reduces dose
  - Lessens the potential for test-caused errors
  - Reduces outage length up to 24 hours
- EDG Operability Test Extension
  - Supports train-specific outages
  - Substantially reduces outage risk and complexity

50.69, Risk Informed Special Treatments

- Allows licensees to recategorize some safety-related equipment with low risk significance to streamline various operational programs (e.g. maintenance, procurement)
- Major benefits:
  - Potential for substantial reduction in Appendix B (Quality Assurance) scope
  - Improves program focus on most risk-significant components

Plant Specific Benefits: 50.69 Success

- Aggregate benefits at two-unit PWR, several years into implementation
  - Permanent 1 person-rem/year reduction
  - Maintenance Rule scope reduction allows for reallocation of 230 engineering hours per year
  - Procurement lead time for safety-related parts cut in half
- Specific successes
  - Relief valve downgraded to removed from IST test
    - Allowed test to be conducted despite inability to isolate valve
  - Simplification of process to address known pin hole leak issues
    - Supported streamlined piping replacement

TSTF-505, Risk Informed Tech Spec Completion Times

- Allows licensees to extend equipment allowed outage time to up to 30 days based on a plant-configuration specific risk assessment
- Major benefits:
  - Avoidance of unplanned shutdowns (economic and safety improvement)
  - More deliberate maintenance practices
  - Substantial reduction in need for NOEDs

Plant-Specific Benefits: TSTF-505 Success

- Averted shutdowns
  - 24 hours tech spec limitation extended to 71-hour Risk Informed Completion Time
    - Enabled repair to be delayed until more timely preparations could be implemented
    - Supported improved grid stability during a time of high demand with averted shutdown
- Additional online work enabled, reducing outage risk
  - Conducting piping replacement online
    - 42 hours of outage length reduction
  - Moving cable work online
    - 36 hours of outage length reduction

Summary of Risk Informed Application Benefits

- Refocusing of utility and NRC resources on issues most relevant to plant operation, performance, and safety
- Streamlining of plant operations to support improved performance and more timely resolution of operational issues
- Overall reduction in challenges to plant