RISK INFORMED LICENSE ACTIVITIES (RILAs)

Lessons Learned

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Past, Current, and Future Submittals

- **Risk Informed In-Service Inspection (RI-ISI)**
  - Uses OE and risk insights to target NDE of pipe segments based on consequence and likelihood
- **Fire Protection (10 CFR 50.48/NFPA 805)**
  - Implements a risk informed, performance based FP Program
- **Risk Informed Treatment of Missed Surveillances**
  - Provides a structured, objective process for evaluating a missed TS surveillance
- **Risk Informed Mode Changes**
  - Allows justification of a change in plant mode when all requirements are not met
- **Containment Testing**
  - Allows deferral of ILRT to 15 year frequency

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Past, Current, and Future Submittals

- **Risk Managed Surveillance Frequency Control Program (RITS 5b)**
  - Relocates ST intervals from TS to licensee controlled program
  - Allows the modification of test frequency
- **Risk Managed Allowed Outage Time/Completion Time (RITS 4b)**
  - Allows plant specific PRA analysis to calculate risk informed completion times for returning SSCs to operable status
  - Allows for removal of some TS 3.0.3 requirements
- **Risk Informed Special Treatment Requirements (10 CFR 50.69)**
  - Guidance for treatment of safety significant/low safety significant SSCs
  - Requirements can be reduced for SR SSCs of low safety significance
- **Risk Informed Core Cooling System Requirements (10 CFR 50.46)**
  - Permits licensees to implement a risk informed alternative to the requirements for analyzing ECCS systems during LOCAs

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Lessons Learned - General

- **Plant specific benefits can be substantial**
  - Dose and Cost Reduction, Industrial Safety, Outage Planning
  - Nuclear Safety Improvements
  - Efficiency
- **Plant operational performance helped contribute to a 40% CDF reduction since 2000**
  - This reduction helps facilitate implementation of RILAs
- **Team sport:**
  - Engineers, Operators, Regulatory Assurance
  - Need to be knowledgeable in design and application
- **Well prepared submittals permit timely regulator reviews**
- **Enormous promise but often high cost – business case should typically justify**

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Lesson Learned – Risk Management/PRA Models

- PRA model quality – key enabler
- Fire PRA increased in importance
- Models don't need to be "perfect"….adequate for application
- Lack of realism may confuse results and obscure key insights – models need to be realistic, not conservative
- Successful applications use insights more so than numbers
- Numerically focused applications (NFPA 805) are problematic
- Defense-in-depth philosophy should be balanced with insights
- Cultural issues remain with regard to deterministic thinking

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Industry Fleet Progress

- **RITS 5b (Surveillance Frequency)**
  - Detailed application and implementation guidance available
  - Application in place (implemented) for majority of industry fleet
  - Varied use; substantial savings left to be realized
- **RITS 4b (Completion Times)**
  - Detailed application and implementation guidance available
  - Majority of fleet plans application before 2020
  - Piloted; several submittals pending; implemented at one site
  - Substantial savings left to be realized
- **50.69 (Special Treatment)**
  - Detailed application and implementation guidance available
  - Piloted; only implemented at two sites
  - Interest growing
  - Potential value yet to be realized

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Other Considerations - TSTF Traveler Work

- Reduce transients associated with loss of safety function
- A plant transient due to loss of safety function increases risk beyond simply the loss of function
- Reasonable period of time should be given to restore function
- Examples:
  - RICT (4b) and PRA functionality
  - HELB doors
  - Control Room Ventilation Cooling - TSTF for PWRs submitted 10/31/15

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Conclusions

- Programs when implemented should not be viewed as simply "PRA" efforts ... the risk aspects and inputs are only a part of the overall processes (i.e. its risk-informed)
- Relatively early in our experience with implementation
- PRA models are more than adequate (today) to implement risk-informed initiatives ... should not be driven to perfection
- Need regulatory confidence in quality of PRA models
- Need renewed definition of defense-in-depth to eliminate obstacles
- Valuable operational flexibility; maintains adequate safety margin

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