

Implementation Issues

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Purpose

- What Are The Issues
- Why Do They Matter

Scope

- Compliance
- Logistics
- Regulatory Uncertainty / Unintended Consequences
- Guidance

Compliance: The Official Version

- NRC Inspection Manual
 - Part 9900: Technical Guidance
 - Operation - Safety and Compliance

“In the context of NRC regulation, safety means avoiding undue risk or, stated another way, providing reasonable assurance of adequate protection...”

“Compliance simply means meeting applicable regulatory requirements”

Compliance: The Official Version

- Tidbits

“Safety is the fundamental regulatory objective...”

“Adequate protection is presumptively assured by compliance with NRC requirements”

“The NRC has the authority to exercise discretion to permit continued operations--despite the existence of a noncompliance--where the noncompliance is not significant from a risk perspective and does not, in the particular circumstances, pose an undue risk to public health and safety”

Compliance: The Official Version

- More Tidbits

“Where requirements exist that the NRC concludes have no safety benefit, the NRC can and should take action, as appropriate, to modify or remove such requirements from the regulations or licenses. Requirements that are duplicative, unnecessary, or unnecessarily burdensome can actually have a negative safety impact. They also can tend to create an inappropriate NRC and licensee focus on "safety versus compliance" debates....”

Compliance: The Official Version

- Final Tidbit

“Since some requirements are more important to safety than others, the Commission should use a risk-informed approach wherever possible when adding, removing, or modifying NRC regulations, as well as when applying NRC resources to the oversight of licensed activities (this includes enforcement)....”

Compliance: Standing on the Other Side

- Licensees Must Comply Simultaneously
 - Technical Specification Requirements (TSR)
 - 10 CFR 50.46c
- Does Rulemaking Impact TSR?
 - YES
 - Core Operating Limits Report (COLR) Bases

Compliance: Standing on the Other Side

- NUREG-1430-1434
 - Core Operating Limits Report

“b. The analytical methods used to determine the core operating **limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents:** “

Compliance: Standing on the Other Side

- NUREG-1430-1434
 - Core Operating Limits Report

“c. The core operating limits shall be determined assuming operation up to RATED THERMAL POWER such that all applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, **Emergency Core Cooling System (ECCS) limits**, nuclear limits such as SDM, transient analysis limits, and accident analysis limits) of the safety analysis are met. “

Compliance: Standing on the Other Side

- TSR and Rule Compliance
 - Individually, NOT the Same Thing
 - Identical after successful 10 CFR 50.90 Exercise
 - (License Amendment Request)

Compliance: Standing on the Other Side

- Examples of Methods Used to Produce COLR
 - Things like Thermal Mechanical Model of Fuel Rod
 - System Code to Model LOCA Event
 - Spray Heat Transfer Coefficient Test Results
- Method License Topical Report (LTR) Requires
 - Safety Evaluation Report (SER)
 - SER Uses Appropriate Magic Words
 - e.g., “Acceptable for LOCA Application”

Compliance: Standing on the Other Side

- Methods to Construct COLR (Going Forward)
 - Thermal Mechanical Model of Fuel Rod
 - Hydrogen Uptake Model
 - ECR Limit X-Axis
 - System Code to Model LOCA Event
 - Multiple Time Horizons
 - Short, Long, Extended Term
 - Deterministic Debris Impact
 - All Time Horizons
 - Probabilistic Risk Analysis (optional)
 - Long Term Time Horizon for Debris

Compliance: Standing on the Other Side

- Methods to Construct COLR (Going Forward)
 - Approvals will be a Complex, Iterative Task
 - Review, RAI's, and Safety Evaluations
 - Cooperative Effort Involving
 - Licensees, Vendors, Regulator
- More to Come....
 - Analyses of Record (AOR)
 - Post Methods SER's
 - License Amendment Request (LAR)
 - Review, RAIs, and SER Approvals

Compliance: Standing on the Other Side

- Finished Looks Like:
 - COLR Revised (including TRM update process)
 - Using Post-LAR, TSR Updated Methods

Implementation: Logistics

Implementation: Logistics

- From Start to Finish
 - Milestones
 - Resources
 - Prioritization
- Schedule is an effect of exercising the process
 - Not an affect upon the process.
 - Setting a Fixed completion date at the beginning does not assure physically workable

Implementation: Logistics

- Analytical and Licensing Effort aren't Identical
 - Analytical Effort Varies by Plant
 - Depends on Method Choices and Margins
 - Licensing Effort Varies by Plant
 - Expect less variance than analytical efforts
 - Even if analytical effort is low, licensing can dwarf analytical effort

Implementation: Logistics

- Big Picture Milestones
 - Step One
 - Licensing Topical Reports (LTR)
 - Development and Preparation
 - Acceptance Review
 - Technical Review
 - Safety Evaluation Processing

Implementation: Logistics

- Big Picture Milestones
 - Step Two
 - License Amendment Request (LAR)
 - Development and Preparation
 - Acceptance Review
 - Technical Review
 - SER Processing

Implementation: Logistics

- Big Picture Milestones
 - Step Three
 - Core Operating Limits Report Revision
 - Development and Preparation
 - Technical Review
 - 10 CFR 50.59 Review
 - Technical Requirement Manual Processing

Implementation: Logistics

- Resources
 - Not all “costs” physically reduce to currency units
 - For example, some things cost time, not cash
 - Qualified personnel just don’t appear
 - Finite pool of subject matter experts and qualified application engineers.
 - Impacts industry and regulators

Implementation: Logistics

- Prioritization Considerations
 - Clad Material Improvement
 - Current Fuel Contract Obligations
 - Request for Proposal Time Frames
 - Available Options
 - Data Gathering
 - Cladding Material
 - Debris Performance
 - Analytical vs. Licensing Efforts
 - Safety vs. Licensing Margins

Implementation: Logistics

- Scheduling
 - Not all “tasks” required the same amount of time
 - Not all “tasks” can be performed simultaneously
 - Resources Can’t be Multi-loaded in time

Implementation: Logistics

- Schedule
 - Pulling Together Pieces
 - Alloy Hydrogen Uptake Models (>6)
 - Long Term Cooling Models (3)
 - System Models (>9)
 - Some Completely New; Some Retrofit
 - Breakaway Oxidation Programs (>3)
 - Interior Oxidation (3)
 - Crud (3)

Implementation: Logistics

- Schedule
 - Operating Licenses (~100)
 - LARs (>60)
 - TSR updates
 - Methods Reference List
 - Analysis of Record

Implementation: Logistics

- Schedule
 - Not possible to know total time to reach final compliance., a priori
 - We can describe final compliance
 - We can describe the process
 - We can not quantitatively identify durations and resource requirements to achieve pre-defined dates.
 - Licensees, Vendors, and Regulator will need to work together to fit all the pieces of the puzzle together

Regulatory Uncertainty/Unintended Consequences

Regulatory Uncertainty

- GSI-191 Dragging on for Long Time
- Rolling Closure into 10 CFR 50.46c
 - What does it mean to have existing closure?
 - Additional effort required to comply with new rule?
 - What does it mean to comply with new rule?
 - Does GL 2004-02 fade away; further closure issues?
 - PWR vs. BWR closure are the same thing?

Regulatory Uncertainty

- Back-fit Rulemaking
 - Involuntary
 - Define LAR scope
 - Review scope needs to be limited
 - LOCA specific issues
 - TSR cleanup issues caused by new rule

Regulatory Uncertainty

- Grandfathering Issues
 - Rulemaking takes place in the context of current operation (bulk of the fleet)
- Existing Fuel
 - Application to existing fuel prior to final compliance not necessarily practical
 - Difficulty/impossibility of breakaway oxide testing.

Regulatory Uncertainty

- Existing LAR's (touching LOCA)
 - What becomes of LAR's in the pipeline?
 - Are existing LAR's subject to back-fit?
- Future LAR's
 - Will LAR's addressing TSR issues caused by new rule be considered voluntary?

Unintended Consequences

- Plant Lifetime
 - What happens to a plant(s) with limited remaining time to license expiration
 - Industry doesn't believe the rulemaking is intended to create an environment causing artificial shutdown of plants.
- Risk-Informed Modeling
 - Overlapping reporting, corrective action, and configuration management issues.
 - Are we going down a path of multiple PRA's? Could we be undermining the point of risk-informed?

Guidance

Guidance: Why

- Why Does This Matter
 - The complexity of 10 CFR 50.46c
 - Early clarity helps everyone
 - No one wants 20 years to achieve compliance
- Need to Set a Boundary
 - What is needed to build a LAR
 - What is necessary to complete safety evaluations

Guidance: What Will NRC Review

- SRP 15.6.5 Revision 3 Not Consistent with 10 CRF 50.46c
 - Review Standard and/or ISG needs to be developed to cover interim time prior to SRP revision

Guidance: Regulatory Information Summary

- Regulatory issue summaries (RIS)
 - Communicate and clarify NRC technical or policy positions on regulatory matters that have not been communicated to or are not broadly understood by the nuclear industry
 - Clarify expected acceptable scope for Compliance
 - TSR cleanup
 - Compliance Planning Criteria

Guidance: Regulatory Information Summary

- Regulatory issue summaries (RIS)

Provide guidance to applicants and licensees on the scope and detail of information that should be provided in licensing applications to facilitate NRC review

- Facilitate understanding useful LAR content

Guidance: Enforcement Guidance

- 10 CFR 50.46c Federal Register Notice Concept
 - Creates unquantifiable period of time when rule language is incompatible with TSR's
 - Licensing Limbo
 - Blanket enforcement guidance required to avoid fleet wide exemptions requests

Proposal

Proposal

- Reviewed Previous Rulemaking
 - Limited Rule Language / Multiple tracks by topic
- Large Projects Don't Complete in a Statically defined, Straight Line
 - Multiple Participants
 - Generate multiple Lines of Communication
 - Leading to dynamic schedules

Proposal

- Keep Information in the Rule Simple
 - Single due date for licensees to submit plan
 - ~120 days post FRN
 - Plans can be based on templates, facilitating resource prioritization issues
 - NRC, Licensees, Vendors to work out a living compliance plan going forward
 - ~12 months post FRN
 - Allows all parties to have practical guide assisting with individual resource allocations and scheduling.