Low Safety Significance Issue Resolution (LSSIR)

Andrew Mauer
Director, Regulatory Affairs

Greg Kreuger
Senior Technical Advisor

August 7, 2019

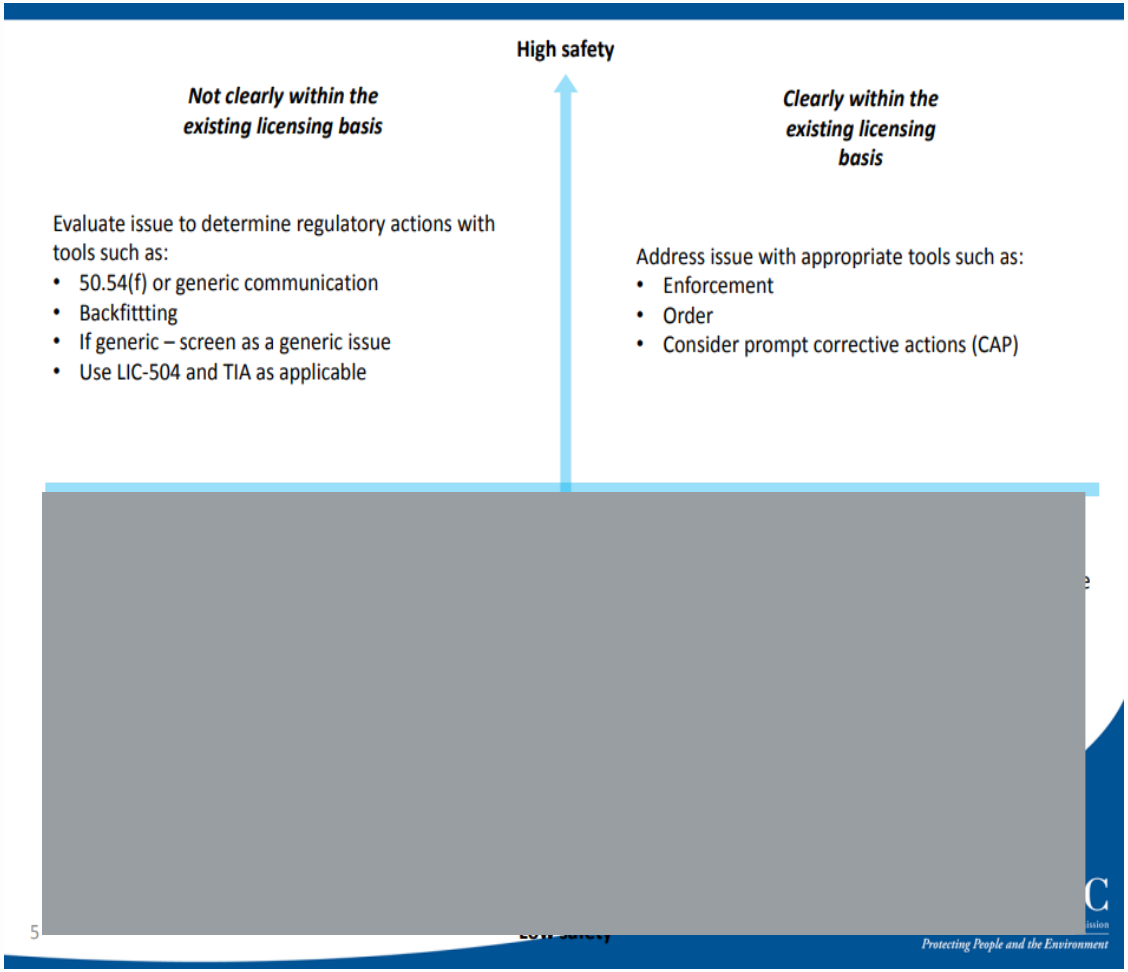
NUCLEAR ENERGY INSTITUTE

Introduction

- Industry recognizes the importance of maintaining compliance with requirements.
- At the same time, we believe that safety significance can be used to inform the resolution of issues where there is not a clear non-compliance, as well as to inform the methods used to restore compliance.
- A relatively simple and repeatable process is necessary to enable the safety significance to be understood early in the life cycle of a regulatory issue, and that issue resolution flows logically from that evaluation.

Foundational Characteristics of LSSIR Process

- Process needs to allow for evaluation of safety significance early in the life cycle of the issue – before the expenditure of substantial resources.
- Where appropriate, issues of low safety significance, that are not a matter of compliance (lower left quadrant), should be dispositioned via “no further action,” with durable documentation.
- Process should provide a mechanism for staff to promptly escalate issues to aid in determining both: (1) whether the safety significance evaluation should be applied, and, if so, (2) whether additional resources should be devoted to an issue based on safety significance.



Assessing Safety Significance

Qualitative

Considerations

Fundamental Criteria

- Potential Consequence
- Qualitative Likelihood

Considerations

- Scope of issue
- Potential for mitigating actions or compensatory measures associated with temporary conditions

Potentially Safety Significant

Not Safety Significant

Document Decision

Quantitative

Considerations

- Consider NUREG/BR-0058 safety goal screening criteria
- Consider TEC-002 for refined semi-qualitative and quantitative risk criteria
- Evaluate the change or delta risk between options or different resolutions

Potentially Safety Significant

Proceed with Issue Disposition

Qualitatively Assessing Safety Significance

- A qualitative assessment is essential to drive an initial evaluation of safety across a wide variety of potential issues
  - Not all issues are amenable to quantification or application of existing models/tools
- Fundamental Criteria
  - Likelihood and Potential Consequence both need to be considered "High" for an issue to be identified as "Potentially Safety Significant"

Alignment with Principles of Risk Informed Decision Making

- Compliance with current regulations
- Consistency with the defense-in-depth (DID) philosophy
- Maintaining adequate safety margins
- Demonstrating acceptable levels of risk, along with a feedback or oversight function to assure consistency across the breadth of regulatory issues and organizations

Integrated and Holistic Approach

- Provides a method to assess safety significance and determine if additional resources or analysis to be applied to reach a conclusion.
- This series of questions are not intended to drive a detailed risk evaluation when documenting the basis for the response to each question.
- Most closely aligned with issues that impact initiating event, mitigating systems, or barrier cornerstones

Assessing Likelihood

- L1. Does the impact of an issue have the potential to create a new initiating event or change the frequency of an initiating event (Licensing Basis Event) that is similar to that of an Anticipated Operational Occurrence (AOO)? If yes, the issue should be considered significant from a likelihood perspective.
- L2. Does the issue or proposed change significantly increase the likelihood of a cause or event that could create simultaneous mitigation challenges with respect to equipment or operator response? If yes, the issue should be considered significant from a likelihood perspective.
- L3. Does the scope of the potential issue significantly impact or increase the likelihood of an event across SSCs, functions, or units at a site? If yes, the issue may be considered significant from a likelihood perspective.

Assessing Likelihood (Continued)

- Responses to the likelihood questions can be (1) significant, (2) not significant, or (3) not applicable.
- A response of significant to any of these questions, would result in the likelihood being characterized as significant.
- In addition, the consideration of issue's extent of condition potential to multiple SSCs or plant functions, or multiple units at a site could be initially considered "Significant" given the potential broad implications of an issue.

Assessing Potential Consequences

- C1. Does the issue have the potential to significantly impact or change the potential consequences associated with an event? If yes, the issue should be considered significant from a consequence perspective.
- C2. Does the issue impact multiple aspects of mitigation capability or a defined fission product barrier? If yes, the issue should be considered significant from a consequence perspective.
- C3. Could the issue significantly diminish evaluated safety margins? If yes, the issue should be considered significant from a consequence perspective.

Assessing Potential Consequences (Continued)

- C4. Does the issue create a significant shift from mitigation systems to operator response or significantly increase operator response burden? If yes, the issue should be considered significant from a consequence perspective.
- C5. Does the scope of the potential issue significantly impact or increase the mitigation capability or potential consequences across SSCs, functions, or units at a site? Qualitative consideration of the protection in aggregate at the site should be accounted for when assessing the extent of condition of an issue. If yes, the issue may be considered significant from a consequence perspective.

Assessing Potential Consequences (Continued)

- Responses to the potential consequence questions can be (1) significant, (2) not significant, or (3) not applicable.
- A response of significant to any of these questions, would result in the potential consequences being characterized as significant.
- Note: One unique aspect considered in the consequence questions is associated with the ability to mitigate the identified potential consequence using process, plant changes, or configuration controls.
    - Clearly the consequence would not be considered significant if mitigation or elimination of the consequence can be employed after the issue is identified. Further consideration of such controls and the length of time mitigation of the issue may be warranted.

Overall Results

- It is envisioned that both the likelihood of the issue and the potential consequence of an issue would need to be qualitatively characterized as “Significant” for the issue to move forward toward a more quantitative evaluation.
- Employing additional and cross-functional personnel resources would ultimately be applied to a particular issue if the initial qualitative determination is potentially safety significant.

Conclusion

- We appreciate the NRC's continued leadership and focused attention on low safety significance issue resolution

