From: Joseph Sebrosky
Sent: Wednesday, May 10, 2023 2:35 PM
To: Michael Orenak
Subject: Updated Slides for May 11, 2023, Technology Inclusive Management of Safety Case (TIMaSC) meeting
Attachments: 2023-05-01 TIMaSC Slidesfor May 11 NRC Meeting_rev.pdf

Mike,

Attached are the updated slides from Brandon Chisholm of Southern Company for the May 11, 2023, Technology Inclusive Management of Safety Case (TIMaSC) meeting.

Joe

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Technology Inclusive Management of Safety Case (TIMaSC) Project

Brandon M Chisholm, PhD – Southern Company
Steve Nesbit – LMNT Consulting

Nuclear Regulatory Commission (NRC) Meeting on TIMaSC
May 11, 2023

Southern Company

Outline of Today's Presentation

- Introduction and overview (Chisholm)
- Notional timeline of TIMaSC activities (Chisholm)
- Project need (Nesbit)
- Potential scope (Nesbit)

Purpose of Today's Meeting

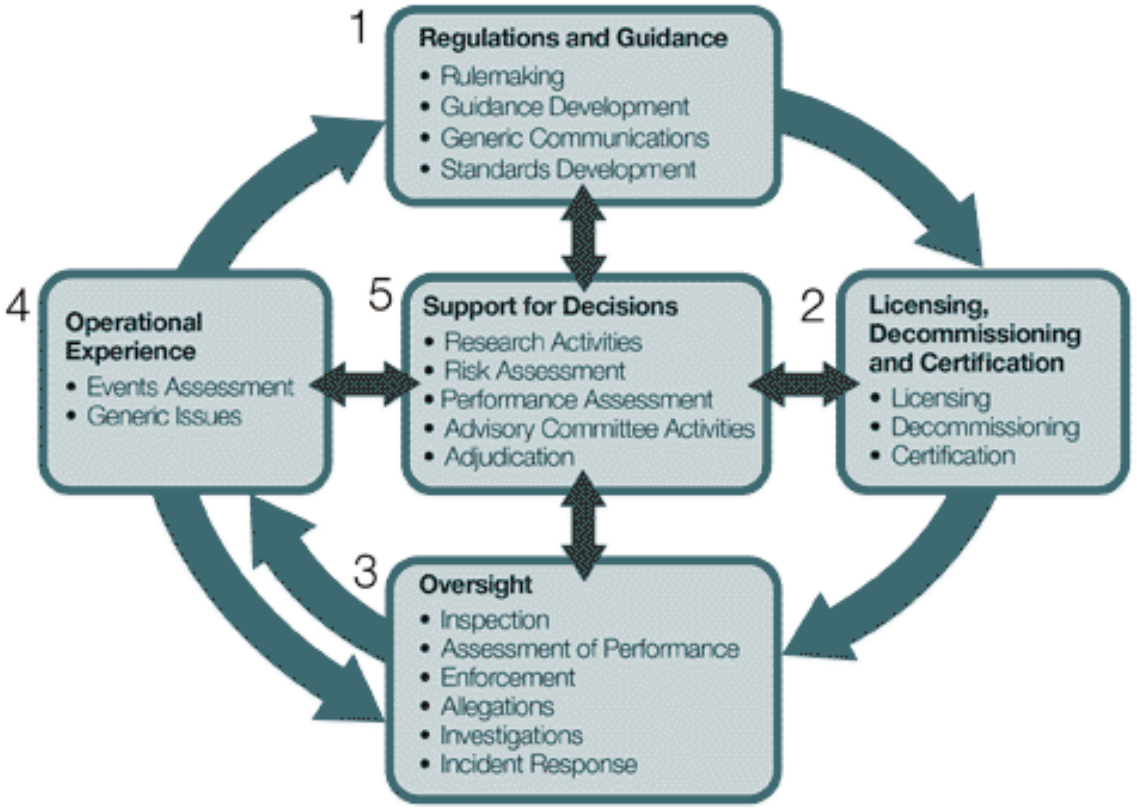
- Share initial concepts for TIMaSC with the NRC and obtain feedback
  - Funding for project execution has not yet been guaranteed
  - Primarily interested in input on potential project scope
  - Feedback will be implemented into development of TIMaSC project plan
- Socialize the project with the broader advanced reactor community

Note: Today we will be discussing our initial concepts and notional schedule for the TIMaSC project. We are just beginning the planning process, and we are confident that the project will evolve further as we proceed through detailed planning. Obtaining and factoring in stakeholder feedback (e.g., this meeting) is an important part of that process.

Overview

- Southern Company, the DOE, and members of the advanced reactor industry are working together to develop a project plan for the fourth effort in a series to develop guidance for advanced non-light water reactors applicants/licensees
- The approach in the guidance is technology inclusive, risk-informed, and performance-based
- All guidance documents could be applied to applicants or licensees under 10 CFR Part 50 or Part 52
- As users of previous guidance documents (e.g., LMP/NEI 18-04, TICAP/NEI 21-07) approach the operational phase of their plants' lifecycles, additional insight is being gained regarding key areas of uncertainty within the associated regulatory framework

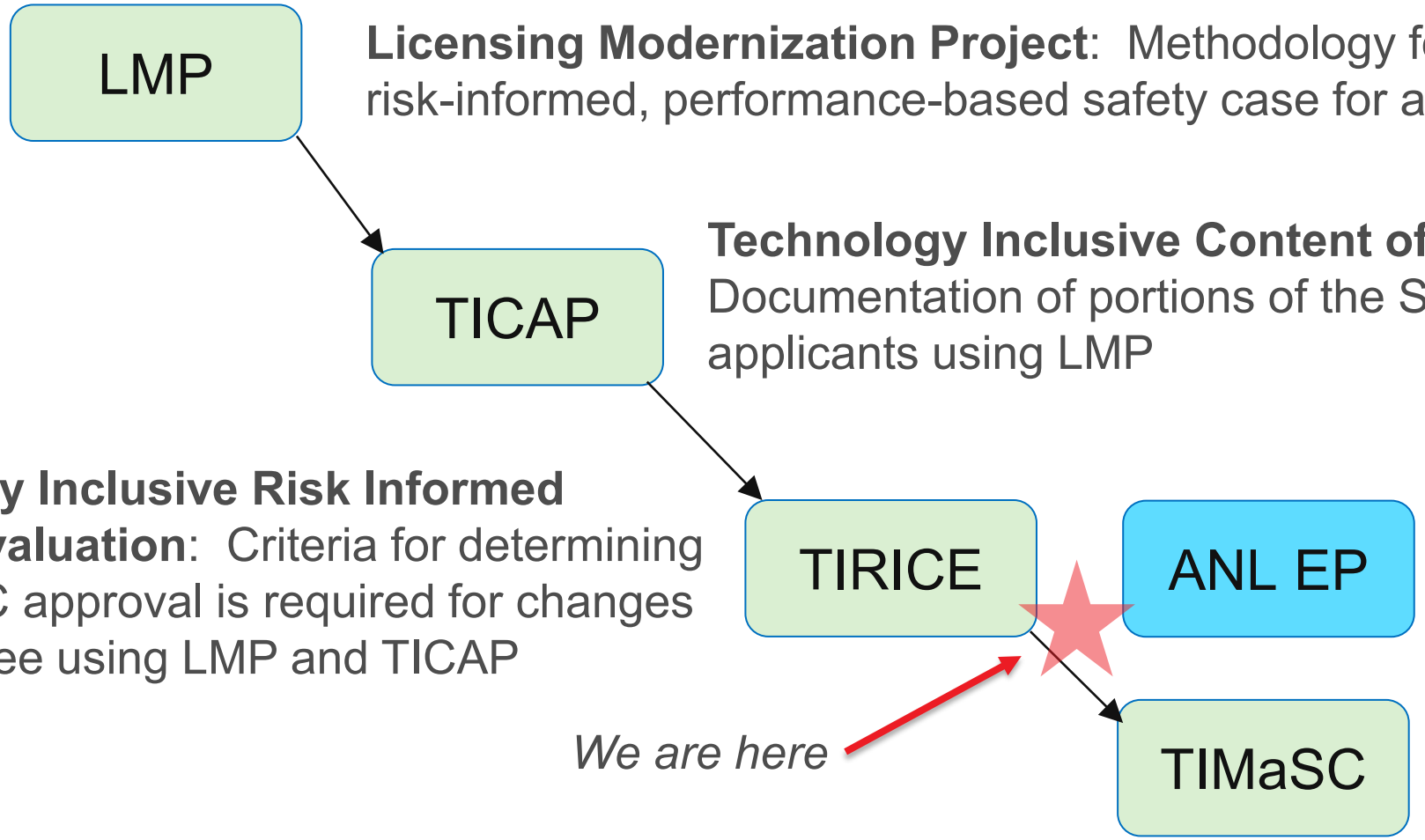
NRC Regulatory Framework



1. *Developing regulations and guidance for applicants and licensees.*
2. *Licensing or certifying applicants to use nuclear materials, operate nuclear facilities, and decommission facilities.*
3. *Inspecting and assessing licensee operations and facilities to ensure licensees comply with NRC requirements, responding to incidents, investigating allegations of wrongdoing, and taking appropriate followup or enforcement actions when necessary.*
4. *Evaluating operational experience of licensed facilities and activities.*
5. *Conducting research, holding hearings, and obtaining independent reviews to support regulatory decisions.*

As of June 2017

Chronology of Efforts



Licensing Modernization Project: Methodology for establishing a risk-informed, performance-based safety case for a non-LWR

Technology Inclusive Content of Application Project: Documentation of portions of the SAR content for applicants using LMP

Technology Inclusive Risk Informed Change Evaluation: Criteria for determining if prior NRC approval is required for changes for a licensee using LMP and TICAP

Risk-Informed Performance-Based Emergency Planning approach based on LMP safety case

Technology Inclusive Management of Safety Case

Overview (cont.)

- Status of earlier projects
  - LMP: Done. NEI 18-04 guidance document issued and endorsed by the NRC in Regulatory Guide 1.233
  - TICAP: Underway. NEI 21-07 guidance document submitted to the NRC for endorsement in March 2022
  - TIRICE: Underway. NEI 22-05 guidance document under development and to be submitted to the NRC for endorsement later this year
- Potential TIMaSC output: Guidance endorsed by the Nuclear Regulatory Commission (NRC)

Notional TIMaSC Timeline

- 2023 – Complete project planning *(currently funded)*
- 2024 – Develop draft guidance, carry out tabletop exercises, obtain NRC feedback on draft guidance, and submit guidance to the NRC for endorsement
- 2025 – Support NRC review of the guidance and obtain NRC endorsement

Note: Project schedule will be dependent upon final scope and funding

TIMaSC Need

- LMP and TICAP establish the basis for (i) the development of a safety case for an advanced reactor facility and (ii) the documentation of that safety case in the safety analysis report (SAR)
- Once that safety case is accepted by the NRC and the operating license is granted, TIRICE establishes a methodology for controlling changes to the facility
  - » Analogous to 10 CFR 50.59 but consistent with the risk-informed, performance-based safety case
- During the development of LMP-TICAP-TIRICE, it became apparent that additional guidance related to the maintenance of the safety case would be beneficial
- It is important to develop such guidance early to ensure a smooth transition from applicant to licensee

TIMaSC Scope

- The following slides present three general areas for consideration as part of TIMaSC, along with examples and specific aspects that could be addressed
  - In developing this information, it became evident that issues and concerns can be organized in different ways
  - A key challenge is to ensure that whatever approach is taken does not lead to important issues “falling through the cracks”
- It is possible the Advanced Reactor Content of Application Project (ARCAP) guidance could impact the TIMaSC scope
  - The TIMaSC team will review the draft ARCAP guidance with this in mind, when it becomes available

TIMaSC Scope – Changes to the State of Knowledge

- This area covers new information that impacts aspects of the facility safety case
- Examples include
  - Operating experience that indicates reliability or capability targets for safety significant structures, systems, and components (SSCs) are not met
  - Operating experience that indicates reliability or capability targets for safety significant SSCs have more than anticipated margin
  - The type and magnitude of external hazards
    - » Could impact PRA results or deterministic analyses
  - Results of tests, experiments, and analyses

TIMaSC Scope – Probabilistic Risk Assessment (PRA) Considerations

- This area covers PRA changes and program(s) to control the PRA
- Examples include
  - Methodology changes
  - New information (see previous slide)
  - PRA updates and upgrades
    - » Consistent with provisions in the non-LWR PRA Standard (ASME/ANS RA-S-1.4-2021)
  - Changes to licensing basis event (LBE) frequencies or consequences and/or cumulative impacts
  - Changes to SSC or LBE risk significance
  - PRA documentation
  - Process for the evaluation of risk impacts

TIMaSC Scope – Programmatic Controls

- This area covers plant programs that play a substantive role in the safety case, including but not limited to defense-in-depth (i.e., covered in SAR Chapter 8 per TICAP)
- Examples include
  - Ensuring that programs maintain the necessary efficacy, for example:
    - » Performance monitoring
    - » Special treatments
  - Ensuring that changes are controlled by TIRICE or other means
  - Incorporation of new industry or NRC guidance, as appropriate

Next Step

- Develop TIMaSC Project Plan, considering input from the NRC and other stakeholders
  - Scope
  - Cost
  - Schedule

Questions and Feedback

Abbreviations

Abbreviation	Definition
ANS	American Nuclear Society
ARCAP	Advanced Reactor Content of Application Project
ASME	American Society of Mechanical Engineers
CFR	Code of Federal Regulations
EP	Emergency Planning
LBE	Licensing Basis Event
LMP	Licensing Modernization Project
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
PRA	Probabilistic Risk Assessment
SAR	Safety Analysis Report
SSC	Structure, System, or Component
TICAP	Technology Inclusive Content of Application Project
TIMaSC	Technology Inclusive Management of Safety Case
TIRICE	Technology Inclusive Risk-Informed Change Evaluation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