Use of Maintenance Rule Risk Assessments in TSTF-585, "Provide an Alternative to the LCO 3.0.3 One-Hour Preparation Time"

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TSTF-585 OVERVIEW

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Background

- TSTF-585
  - The TSTF has shared two drafts of TSTF-585 for discussion with the NRC.
  - Teleconferences were held on June 10, 2021, and February 3, 2022.
  - The NRC has provided three sets of comments on the drafts: June 2021, February 2022, and March 2022.
- Many of the NRC's comments and questions were related to using the 10 CFR 50.65(a)(4) (Maintenance Rule) tools to assess and manage risk during a proposed extended delay time before initiating a shutdown under LCO 3.0.3.
- Today's workshop is primarily focused on those issues, as well as some related NRC questions and comments on TSTF-585.

Overview of TSTF-585

- LCO 3.0.3 requires a plant shutdown under three conditions:
  1. An LCO is not met and the associated Actions are not met;
  2. An LCO is not met and an associated Action is not provided; or
  3. An LCO is not met and LCO 3.0.3 entry is directed by the associated Actions.
- LCO 3.0.3 requires initiation of actions to shut down the plant within **one hour** if any of the conditions are met without regard to the safety significance of the issue that resulted in LCO 3.0.3 entry.
  - The one hour to prepare appeared in the 1980's versions of the standard TS with no explanation.
  - GL 87-09 added the following Bases, "One hour is allowed to prepare for an orderly shutdown before initiating a change in plant operation. This time permits the operator to coordinate the reduction in electrical generation with the load dispatcher to ensure the stability and availability of the electrical grid."

Overview of TSTF-585

- Based on 40 years of operating experience, the one hour delay period should be extended.
- Given typical shutdown preparations, 24 hours is warranted for low-risk situations.
- TSTF-585 revises LCO 3.0.3 to provide an alternative to the one hour provided to prepare for a shutdown:
  - If the LCO 3.0.3 entry is unplanned, and
  - If risk is assessed and managed, then
  - 24 hours is provided initiate the shutdown.
- The conditions for entering LCO 3.0.3 are unchanged.
- The shutdown requirements (e.g., lower Mode entry) in LCO 3.0.3 are unchanged.

Overview of TSTF-585

- What is meant by, "risk is assessed and managed"?
- The requirement that risk be assessed and managed appears in:
  - LCO 3.0.4 (Mode changes) (TSTF-359),
  - LCO 3.0.8 (Nonfunctional Snubbers) (TSTF-372),
  - LCO 3.0.9 (Nonfunctional Barriers) (TSTF-427), and
  - SR 3.0.3 (Missed Surveillances) (TSTF-358).
- In all of these cases and in TSTF-585, risk is assessed using the existing 10 CFR 50.65(a)(4) tools.
  - Section 11 of NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants,"
  - Endorsed by NRC Regulatory Guide 1.160, "Monitoring the Effectiveness of Maintenance at Nuclear Power Plants."

Overview of TSTF-585

- In order to use the 24 hour preparation period in LCO 3.0.3.b:
  - There may be no more than minimal increase in risk (i.e., the level determined acceptable during normal work control levels), and
    - NUMARC 93-01 describes an activity subject to "normal work controls" as having an incremental core damage probability (ICDP) < 1E-6 and an Incremental Large Early Release Probability (ILERP) of < 1E-7.
    - The risk assessment must consider all inoperable TS equipment regardless of whether the equipment is included in the normal MR risk assessment scope.

Overview of TSTF-585

- If the situation does not satisfy the risk requirement or is planned, the existing one hour delay period applies.
- The proposed TS and Bases provide guidance when:
  - The risk assessment is completed after the one hour delay time has expired, and
  - The plant conditions and risk assessment change after the one hour delay time has expired.

USE OF THE MAINTENANCE RULE TO ASSESS AND MANAGE RISK WHILE IN LCO 3.0.3

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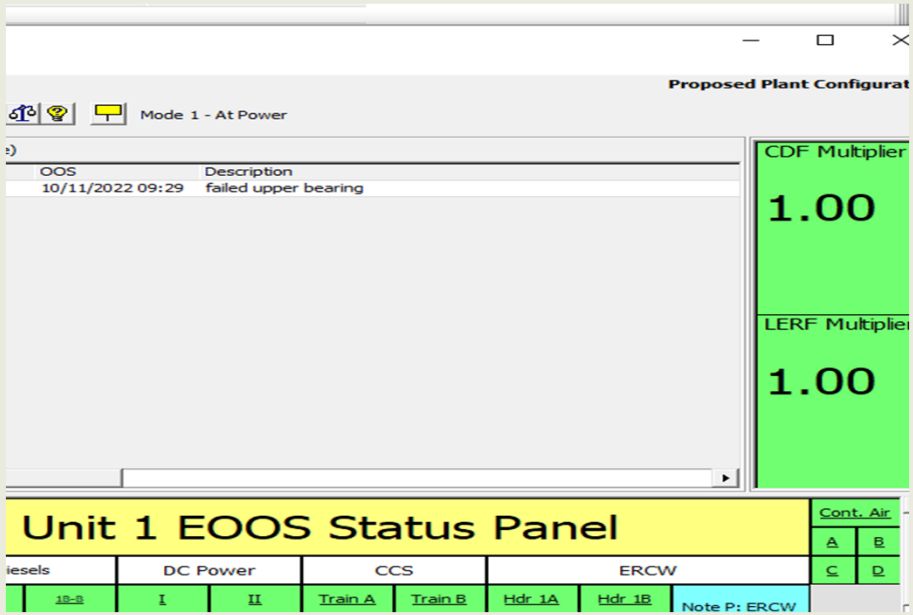
How the MR Tools are Used to Assess and Manage Risk

- Schedulers and work week managers plan schedule in advance to be low risk
- Use tools like EOOS, PHOENIX, PARAGON and RISK MONITOR to confirm
- During each execution week Operators keep actual status current in software
- Status is "live" in control room



How the MR Tools are Used to Assess and Manage Risk

- Current status of plant is maintained in Configuration Risk Management (CRM) software
- Prior to removing equipment from service (or upon an emergent failure) operators will calculate risk
- Typical calculation time for example plant is on the order of 1-2 minutes
- If risk level is "green," (minimal increase) no RMAs required, but may be implemented if appropriate
- If risk level is "yellow," (slightly elevated) RMAs required
- Sometimes inoperable equipment can be maintained "available"
- Appropriate RMAs chosen by control room operators

How the MR Tools are Used to Assess and Manage Risk

- Example RMAs
  - Pre-job brief to heighten awareness
  - Walk down/ protect redundant train (or function) equipment
  - Plans for prompt restoration
  - Minimize work in areas contributing to initiating event frequency (e.g. switchyards)
  - Establish alternate success paths (portable equipment, FLEX equipment, etc.)

How the MR Tools are Used to Assess and Manage Risk

- What is the CRM model?
  - User friendly software
  - Model of record
  - Plant model is peer reviewed consistent with ASME/ANS standard and RG 1.200
  - Plant model contains high level of detail including dependencies, common-cause, etc.

Discussion