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Relocation of LCOs that do not Satisfy Criterion 4 of 10CFR50.36

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PWROG-NRC Meeting

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Agenda

- Introduction
- Program Objective
- Background
- Program Overview
- Program Approach
- TSTF Schedule
- NRC Review Fees
- Summary
- Open Discussion

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Program Objective

- Review the RTS (RPS) and ESFAS functions contained in NUREGs-1430, 1431, and 1432 against the Criteria (3 and 4) contained in 10CFR50.36(c)(2)(ii)
- Determine which RTS (RPS) and ESFAS functions do not satisfy Criterion 3 or 4
- Prepare a TSTF that proposes to relocate these functions out of the Tech Specs to licensee control

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Background

- WCAP-11618, "Criteria Application," proposed relocating the following RTS and Interlock functions out of the Tech Specs:
  - Manual Reactor Trip
  - Source Range Neutron Flux
  - Intermediate Range Neutron Flux
  - Pressurizer Water Level- High
  - Turbine Trip
  - Interlocks

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Background (cont.)

- WCAP-11618 proposed relocating the following ESFAS and Interlock functions out of the Tech Specs:
  - All Manual Initiation Functions
  - High Steam Flow Coincident with Tavg Low Low
  - Steam Generator Water Level- High High

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Background (cont.)

- WCAP-11618 proposed relocating the following ESFAS and Interlock functions out of the Tech Specs:
  - AFW Start
    - LOP
    - UV RCP
    - Trip of all MFW Pumps
    - AFW Pump Suction Transfer on Suction Pressure Low

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Background (cont.)

- WCAP-11618 proposed relocating the following ESFAS and Interlock functions out of the Tech Specs:
  - Auto Switchover to Containment Sump- RWST Level Low Low
  - LOP DG Start
  - Interlocks

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Background (cont.)

- WCAP-11618 concluded that those functions did not satisfy Criterion 3 or 4
- NRC review of WCAP-11618 concluded that these functions should be retained in the Tech Specs
  - "The Policy Statement criteria should not be used as the basis for relocating specific trip functions, channels, or instruments within these LCOs", (Reference Letter from Murley (NRC) to Newton (WOG) dated May 9, 1988).
- CEOG & BWOG also proposed to relocate RPS & ESFAS functions that did not satisfy any of the criteria
- NRC review of CEOG and BWOG criteria applications also concluded that these functions should be retained in the Tech Specs for the same reason
- Met with the Staff on May 10, 2007 to discuss the Program
- The Program was also discussed during the June 7, 2007 NEI/NRC RMTS Meeting
- There was a question raised as to whether the 50.36 Criteria could be applied to individual Functions in Tech Specs 3.3.1 and 3.3.2

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Program Overview

- Review the RTS and ESFAS functions contained in NUREG-1431 to determine whether they satisfy Criterion 3 or 4
  - Review the W NSSS Safety Analyses to identify the RTS and ESFAS functions that satisfy Criterion 3
  - Review W NSSS plant PRA models and risk-informed applications, to identify which RTS and ESFAS functions are represented in the PRA to identify the RTS and ESFAS functions that satisfy Criterion 4
  - Identify the RTS and ESFAS functions that do not satisfy Criterion 3 or 4 based on the review of the Safety Analyses, PRA, and risk-informed applications
  - Prepare a Traveler that relocates the RTS and ESFAS functions that do not satisfy Criterion 3 or 4
- Review the RPS and ESFAS functions contained in NUREG-1432 and NUREG-1430 to determine whether they satisfy Criterion 3 or 4

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Program Approach

- 10CFR50.36(c)(2)(ii) contains four Criteria to determine whether a Limiting Condition for Operation (LCO) should be included the Technical Specifications
- The four Criteria are:
- Criterion 1: Installed instrumentation that is used to detect, and indicate in the control room, significant abnormal degradation of the reactor coolant pressure boundary
- Criterion 2: A process variable, design feature, or operating restriction that is an initial condition of a design basis accident (DBA) or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier

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Program Approach (cont.)

- Criterion 3: A structure, system, or component (SSC) that is part of the primary success path and which functions or actuates to mitigate a DBA or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.
- Criterion 4: An SSC which operating experience or probabilistic risk assessment (PRA) has shown to be significant to public health and safety.

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Program Approach (cont.)

- The RTS and ESFAS functions do not satisfy Criterion 1, since they are not RCS leakage detection instrumentation
- The RTS and ESFAS functions do not satisfy Criterion 2 since they are not a process variable, design feature, or operating restriction that is an initial condition of a DBA or transient analysis

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Program Approach (cont.)

- Therefore, the RTS and ESFAS functions should be evaluated against Criteria 3 and 4 to determine which Functions should be retained in the Tech Specs
- The NRC's review of WCAP-11618 concluded that the Policy Statement criteria should not be used as the basis for relocating specific trip functions, channels, or instruments within these LCOs
- The NRC's review did not evaluate whether the Functions proposed to be relocated satisfied any of the Interim Policy Statement Criteria

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Program Approach (cont.)

- Each Functional Unit in the RTS and ESFAS Tech Specs is an LCO, therefore it is appropriate to apply Criteria 3 and 4 to each Functional Unit in the RTS and ESFAS Tech Specs
  - Each functional unit represents the lowest functional capability or performance level of equipment required for safe operation
  - Separate Condition entry for each function
  - To a large extent, unless where grouping facilitated presentation, LCOs 3.3.1 and 3.3.2 have function-unique Conditions, Required Actions, and Surveillance Requirements
  - The functional units were combined into LCOs 3.3.1 and 3.3.2 only to facilitate presentation and enhance operator use

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Program Approach (cont.)

- NUREGs-1430, 1433, and 1434 RPS and ESFAS Functions are contained in separate LCOs
- New W NSSS SLB Protection revised the ESFAS Function
- WCAP-11394-P-A, "Methodology for the Analysis of the Dropped Rod Event," deleted the Power Range Neutron Flux Negative Rate Reactor Trip Function
- 50.44 Rulemaking downgraded the PAM Hydrogen Monitor from Category 1 to Category 3, and deleted it from the PAM Tech Spec

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Program Approach (cont.)

- WCAP-15981, "Redefinition of PAM Instrumentation for W NSSS Plants," evaluated individual PAM Functions, and will relocate and add PAM Functions to Table 3.3.3-1
- The individual RTS and ESFAS Function in Tech Specs 3.3.1 and 3.3.2 could be broken out into separate LCOs as done in NUREGs 1430, 1433, and 1434, and the 50.36 Criteria applied to the individual LCOs as also done with the development of NUREG-1431 from NUREG-0452 for LOP DG Voltage, CREFS, and BDMS
- Several individual Tech Spec elements were relocated under generic "LG" NSHCs, e.g., ECCS flow balance during the development of the "Split Reports" and ITS conversions

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Program Approach (cont.)

The program will consist of four tasks:

- Task 1: The Safety Analyses (Chapter 6 and 15) will be reviewed to determine the RTS and ESFAS functions that satisfy Criterion 3
- Task 2: Plant PRA models will be reviewed to determine the RTS and ESFAS functions that satisfy Criterion 4
- Task 3: The risk-informed applications completed for the W NSSS plants, i.e. WCAP-10271, WCAP-14333, and WCAP-15376 will be reviewed to determine the RTS and ESFAS functions that satisfy Criterion 4
- Task 4: The RTS and ESFAS functions that do not satisfy Criterion 3 or 4 based on the review of the Safety Analyses, PRA, and risk-informed applications will be identified

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Program Approach (cont.)

- Task 1: Review the Safety Analyses (Chapter 6 and 15)
- Identify the primary RTS and ESFAS functions credited
- Primary RTS and ESFAS functions satisfy Criterion 3
- Backup RTS and ESFAS functions do not satisfy Criterion 3 and will be candidates for relocation out of the Tech Specs
  - The primary success path is discussed in the May 9, 1988 Murley letter

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Program Approach (cont.)

- Task 2: Review the plant PRA models
- Typically, plant PRA models do not model specific RTS and ESFAS functions for each event, but use representative functions
  - A conservative qualitative approach will be used
- Identify the RTS and ESFAS functions credited for the mitigation of each event considered in the PRA model
  - External events will be considered
- Identify those events that credit a backup function for a Reactor Trip or ESF actuation and the backup function
- Primary and credited backup RTS and ESFAS functions satisfy Criterion 4

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Program Approach (cont.)

- Task 3: Review Risk-Informed applications
  - The Risk Informed applications are WCAP-10271, WCAP-14333, WCAP-15376
- Identify the RTS and ESFAS primary and backup functions credited for each event considered in the generic risk-informed applications
- Primary and credited backup RTS and ESFAS functions identified satisfy Criterion 4

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Program Approach (cont.)

- Task 4: Identify the RTS and ESFAS functions that do not satisfy Criterion 3 or 4
- Summarize the information developed in Tasks 1-3
- Primary RTS and ESFAS functions credited in the Safety Analyses satisfy Criterion 3
- Primary and backup RTS and ESFAS functions credited in the PRA satisfy Criterion 4

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Program Approach (cont.)

- A TSTF will be prepared that proposes to relocate the RTS and ESFAS functions in NUREG-1431 that do not satisfy Criterion 3 or 4
- The same process will be applied to NUREGs-1430 and 1432
- A TSTF will be prepared that proposes to relocate the RTS and ESFAS functions in NUREGs-1430 and 1432 that do not satisfy Criterion 3 or 4
- Implementation guidance will be developed on how to apply the generic results on a plant specific basis

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TSTF Schedule

- The TSTF that proposes to relocate the RTS and ESFAS functions in NUREG-1431 that do not satisfy Criterion 3 or 4 will be submitted for NRC review as the pilot application
- The TSTF that proposes to relocate the RPS and ESFAS functions in NUREGs-1430 and 1432 that do not satisfy Criterion 3 or 4 will be submitted for NRC review after approval of the Traveler for NUREG-1431

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NRC Review Fees

- The TSTFs will propose changes associated with one of the eight risk-informed initiatives
- Therefore, the PWROG will request that NRC review fees associated with the TSTF be waived, as discussed in the January 10, 2003 letter from Beckner (NRC) to Pietrangelo (NEI)

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Summary

- Each functional unit in the RTS and ESFAS Tech Specs is an LCO, therefore it is appropriate to apply Criteria 3 and 4 to each functional unit in the RTS and ESFAS Tech Specs
- NUREG-1430, 1433, and 1434 RPS and ESFAS Functions are contained in separate LCOs
- New W NSSS SLB Protection revised the ESFAS Function
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Summary (cont.)

- WCAP-15981, "Redefinition of PAM Instrumentation for W NSSS Plants," evaluated individual PAM Functions, and will relocate and add PAM Functions to Table 3.3.3-1
- The individual RTS and ESFAS Function in Tech Specs 3.3.1 and 3.3.2 could be broken out into separate LCOs, and the 50.36 Criteria applied to the individual LCOs
- Defense in Depth and Diversity and Safety Margin will be maintained after the change
- The approach of retaining all primary and backup RTS and ESFAS functions is conservative, therefore a Risk-Informed approach in accordance with Reg Guide 1.174 is not required with respect to the quantitative acceptance criteria
- The proposed changes are consistent with 10CFR50.36

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Summary (cont.)

- The proposed changes do not eliminate the relocated RTS and ESFAS functions
- Changes to the relocated RTS and ESFAS functions will be controlled by 10CFR50.59
- The current RTS and ESFAS TS and Maintenance Rule Requirements for the relocated functions will be retained under licensee control

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Open Discussion