PWR Owners Group-NRC Meeting

PWROG Program to Revise NUREG-1431 Tech Spec 3.2.1B, "FQ(Z) (RAOC-W(Z) Methodology)"

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PWROG Program to Revise NUREG-1431 Tech Spec 3.2.1B

- Background
- Tech Spec 3.2.1B, "FQ(Z) (RAOC-W(Z) Methodology)"
- Issue identified in NSAL-09-5
- Westinghouse NSSS Plant Applicability
- Safety Significance
- Recommendations in NSAL-09-5
- PWROG Program
- Summary
- Questions

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PWROG Program to Revise NUREG-1431 Tech Spec 3.2.1B

- Background
  - NSAL 09-5 "Relaxed Axial Offset Control F_Q Tech Spec Actions" was issued on August 4, 2009
  - NSAL 09-5, Rev. 1 was issued on September 23, 2009
- Tech Spec 3.2.1B, "FQ(Z) (RAOC-W(Z) Methodology)"
  - Condition B
    - $FQ^W(Z)$ not within limits
  - Required Action B.1
    - Reduce AFD limits $\geq$ 1% for each 1% that $FQ^W(Z)$ exceeds limit
  - Intent of the Required Action is to provide a $\geq$ 1% FQ benefit (margin) for each 1% reduction in the AFD limits

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- Issue identified in NSAL-09-5
  - Calculations determined that the FQ benefit resulting from a 1% reduction in the AFD limits is height dependent, and can potentially be less than 1% at the location with the least margin, e.g., when the limiting location is in the middle third of the core
- Westinghouse NSSS plant Applicability
  - Westinghouse NSSS plants with RAOC who use the FQ Surveillance

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- Safety Significance
  - W(Z) is calculated using very conservative xenon distributions associated with extreme power swing maneuvers that are not typical of actual or expected operation
  - The transient axial power shapes assumed in the LOCA analysis are very conservative with respect to those that occur during actual operation
  - Exceeding the transient $FQ^W(Z)$ limit is rare, and violations are typically small (< 2%) relative to the uncertainties applied to the measured $FQ^W(Z)$ values (5% measurement uncertainty and 3% manufacturing tolerance)

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- Recommendations in NSAL-09-5
  - Revised W(Z)s can be implemented prior to startup after a refueling outage to provide additional margin to the $FQ^W(Z)$ limit
  - If a Surveillance performed during power operation determines that $FQ^W(Z)$ may be exceeded following performance of the next surveillance, revised W(Z)s can be implemented during the cycle to provide additional margin to the $FQ^W(Z)$ limit

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- Recommendations in NSAL-09-5 (cont.)
  - If the $FQ^W(Z)$ limit is exceeded, implement the following interim administrative actions
    - Reduce the maximum allowable power level by 3% for each 1% that $FQ^W(Z)$ exceeds the limit
    - Reduce the PRNF- High trip setpoint by 1% for each 1% that the maximum allowable power level is reduced
    - Reduce the OPDT trip setpoint by 1% for each 1% that the maximum allowable power level is reduced
    - Perform SRs 3.2.1.1 and 3.2.1.2 prior increasing power above the reduced limit

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- Recommendations in NSAL-09-5 (cont.)
  - The interim administrative actions are only applicable $\geq$ 75% RTP
  - The interim actions are very conservative to bound all affected plants

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- PWROG Program
  - Program approved in March 2010
  - A generic LAR containing the proposed changes to Tech Spec 3.2.1B and Bases, and technical justification for the changes will be prepared by June 2010
  - The affected plants will submit plant specific LARs consistent with the generic LAR
  - Responses to any NRC RAIs will be developed
  - A Traveler to revised NUREG-1431 will not be developed

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- PWROG Program (cont.)
  - Condition B will be revised to only be applicable $\geq$ 75% RTP
  - Required Action B.1, which requires reducing the AFD limits by 1% for each 1% that $FQ^W(Z)$ exceeds the limit will be retained
  - A new Required Action will be added to reduce the maximum allowable power level by 3% for each 1% that $FQ^W(Z)$ exceeds the limit
  - Required Action B.2 will be revised to reduce the PRNF- High trip setpoint by 1% for each 1% that the maximum allowable power level, versus the maximum allowable power level of the AFD limits

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- PWROG Program (cont.)
  - Required Action B.3 will be revised to reduce the OPDT trip setpoint by 1% for each 1% that the maximum allowable power level is reduced, versus the maximum allowable power level of the AFD limits
  - The Completion Time for Required Action B.4 to perform SRs 3.2.1.1 and 3.2.1.2 will be revised to prior increasing Thermal Power above the maximum allowable power level, versus the maximum allowable power level of the AFD limits
  - Revised Bases for the above changes will be developed

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- Summary
  - NSAL-09-5 provided recommendations to implement interim administrative actions to address this issue, and also to revise the W(Z)s to provide additional margin to the $FQ^W(Z)$ limit such that the limit would not be exceeded
  - PWROG Program
    - A generic LAR containing the proposed changes to Tech Spec 3.2.1B and Bases, and technical justification for the changes will be prepared
    - The affected plants will submit plant specific LARs consistent with the generic LAR

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PWROG Program to Revise
NUREG-1431 Tech Spec 3.2.1B

- Questions?