



# Generic Safety Issue 191, PWR Sump Performance

Michael Scott

Chief, Safety Issue Res. Branch  
Office of Nuclear Reactor Regulation  
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# Agenda

- NRC Staff Perspective
- Developments Since Last Brief
- Evaluation process for SRM items
- Approaches Considered
- Subjects of Disagreement
- Recommendations
- Conclusions

# NRC Staff Perspective

- GSI-191 is a safety issue
- A small amount of debris can lead to sump clogging
- Large uncertainties in performance of sumps in “high-fiber” plants
- Tolerance of nuclear fuel to debris appears to be limited

# NRC Staff Perspective (Cont'd)

- Small pipe breaks can be problems or even limiting
- Not all insulation is in zones of influence for breaks
- Some plants have resolved issues without insulation removal
- Dose impact not out of line with safety benefit

# Developments Since Last Brief

- Progress continues – strainer test and evaluation methods found acceptable for 46 of 69 PWRS
- All vendors have now shown adequate test/evaluation protocol
- In-vessel “cross test” performed – unexpected results

# Evaluations for SRM M100415

- Stakeholder interactions
- Evaluation teams for options
- Complex issues
- Several innovative approaches evaluated and/or adopted
- Met with CRGR

# Approaches Considered

- Continue present resolution path
- No further actions needed
- Leak-before-break credit
- Risk-informed approach for some or all breaks

# Approaches Considered (Continued)

- Split approach by leak size
- Resolve in-vessel effects separately

# Potentially Viable Options

- Continue current approach, with or without firm schedule
- Risk-informed approach
- Leak-before-break (LBB) / General Design Criterion (GDC) 4

# LBB Application to Sumps

- Large reduction in defense in depth
- Inconsistent with intent of GDC-4
- Potentially precedent-setting
- Primary water stress corrosion cracking
- Inconsistent with NRC/ACRS views on risk-informing ECCS

# Staff-Recommended Approach

- Continue plant-specific issue resolution, demonstrated successful for many plants
- Risk-informed approach available to licensees to potentially mitigate evaluations for large breaks
- Different time limit for large and small breaks

# Advantages of Staff Approach

- Maintains defense in depth
- Risk-informed
- Allows for proposed refinements
- Demonstrated effective issue resolution process

# Conclusions

- GSI-191 approaches resolution, but remains a safety issue
- Staff recommends reasonably flexible, risk-informed approach
- In-vessel effects should be resolved as part of GSI-191 – uncertainty could affect closure schedule

# Acronyms

- CRGR – Committee to Review Generic Requirements
- ECCS – emergency Core Cooling System
- GL – generic letter
- GSI – generic safety issue
- PWR – pressurized water reactor