



Motor-Operated Valve Performance and Lessons Learned for New Reactors

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Motor-Operated Valve Performance Issues for New Reactors

- Operating experience revealed weaknesses in MOV design, qualification, and testing
- NRC, industry, and ASME expended significant resources to resolve MOV issues
- New reactors need to apply MOV lessons learned in Inservice Testing (IST) and Power-Operated Valve (POV) Programs

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POV Regulations for New Reactors

- 10 CFR Part 52 - Design Certification and COLs
- 10 CFR 50, App. A and B - Design and QA criteria
- 10 CFR 50.49 - Environmental qualification
- 10 CFR 50.55a - ASME Code IST requirements, and periodic MOV design-basis capability verification
- 10 CFR 50.69 - Risk-informed treatment
- 10 CFR Part 50, Appendix S - Seismic Qualification

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Industry MOV Activities applicable to New Reactors

- MOV programs in response to Generic Letters 89-10, 95-07, and 96-05
- Electric Power Research Institute test-based valve performance methodology
- Joint Owners Group GL 96-05 valve degradation program
- MOV lessons learned applicable to IST and POV Programs

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Applicable ASME Activities

- ASME QME-1-2007 updates equipment functional qualification
- OM Code Cases OMN-1 and 11 (MOVs) and OMN-12 (air and hydraulic operated valves) provide alternatives to stroke-time testing
- Replacement of Code quarterly MOV stroke-time testing being considered

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NRC Review of IST and MOV Operational Programs

- COL application needs to fully describe operational programs
- Regulatory Guide 1.206 used for fully describing programs in COL applications
- Standard Review Plan Section 3.9.6 used for reviewing functional design, qualification, and IST programs
- NRC inspects implementation of operational programs

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QME-1-2007

- Incorporates lessons learned in qualifying pumps, valves, and dynamic restraints
- Valves include power-operated, check, and relief
- References IEEE standards for electric components
- NRC staff preparing revision to RG 1.100 for public comment

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QME-1-2007 Regulatory Significance

- Industry-wide approach for qualification of active mechanical equipment
- Consistency in qualification programs
- More efficient and effective NRC staff review
- Resource for NRC inspectors

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Summary

- Improvement in functional design and qualification of mechanical equipment
- QME-1-2007 can expedite NRC review and inspection
- COL applications need to fully describe operational programs per RG 1.206
- Operational program milestones need to allow timely review during NRC inspections

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