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Inspection Procedure 71111.21N Attachment 2 Power-Operated Valve Inspection Public Workshop

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POV Public Meeting Agenda

- Discuss why we are inspecting POVs
- Review of the POV inspection procedure requirements and guidance
- Overview of EQ inspection lessons learned
- Review questions we have received (FAQ)s
- Mock POV scenario discussion
- Question and answer period

Why Are We Inspecting POVs Now?

- Baseline inspection efforts do not examine all POV program attributes described in Generic Letter 96-05
- Operating experience indicates POV/MOV performance gaps still exist:
  - Browns Ferry Unit 1, October 23, 2010, Stem Disc Separation
  - LaSalle Station Unit 2, February 11, 2017, Wedge Pin and Stem Disc Separation

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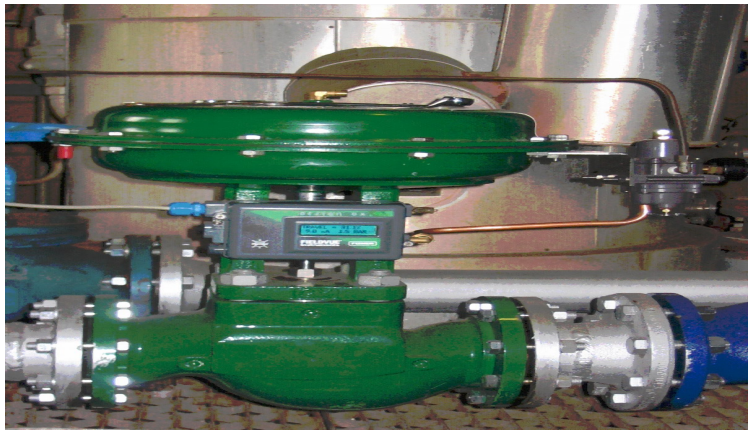

POV Procedure and Guidance

IP 71111.21N.02 Objective

- IP 71111.21.02 (July 26, 2019), “Design-Basis Capability of Power-Operated Valves under 10 CFR 50.55a Requirements,” specifies that the objective is to: *assess the reliability, functional capability, and design basis of risk-important POVs as required by 10 CFR 50.55a and applicable 10 CFR Part 50, Appendix A and Appendix B.*

General Guidance Section 02.01 Sample Selection

- As a pre-inspection activity, inspectors will select 30 POVs:
  - Multiple systems and different valve types (MOVs, AOVs, HOVs, SOVs, and Squib Valves (as applicable), sizes and manufacturers
  - Risk assessment
  - Historical performance
- The Inspectors will request the licensee to make available:
  - Design-basis capability information including function, safety significance, sizing, margin, and setting assumptions
  - See Appendix C to the POV inspection procedure

General Guidance Section 02.01 Sample Selection

- Based on POV design-basis capability information, the inspectors will consider the following for selection of a 10 POV sample for detailed inspection review:
  - System Risk
  - POVs with high incidence of corrective maintenance and/or poor performance
  - POVs with low margin
  - POVs with questionable assumptions (e.g., low VF, low friction values, not all uncertainties captured)
  - POVs in untreated water systems
  - POVs in high energy systems
  - POVs located in elevated environments (e.g., high temperature, high radiation areas)

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Inspection Preparation Activities

- Discuss inspection with site POV engineers and obtain information (such as POV capability calculations and assumptions)
- Evaluate POV parameter assumptions for potential issues
- Determine the basis of POV assumptions (such as EPRI, JOG, ComEd) and whether the conditions for each source are correctly applied

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Typical Sample Gate Valve Data Sheet

- Valve ID – 1-SI-123
- Safety Function – Open/Close
- Manufacturer – Westinghouse
- Valve Type – Flex Wedge
- Valve Size – 4”
- Actuator Make – Limitorque
- Actuator Size – SMB-000
- Risk – Medium
- DB Pressure C/O – 105 / 105
- Assumed VF C/O - 0.3 / 0.3
- Assumed LSB – 5%
- Assumed SFC - .12
- Calc Th/Tq Close – 5685 lbs
- Calc Th/Tq Open – 8250 lbs
- Least Available – 8500 lbs
- Th/Tq Dyn Close – 6200 lbs
- Th/Tq Dyn Open – 8700 lbs
- Meas Close VF – 0.5
- Meas Open VF – 0.47
- Meas LSB – 9.5%
- Margin Close – 5%
- Margin Open – 3.2%
- Basis – Extrapolated test & revised calc

What Should Licensees Be Concerned With?

- For All Valves
  - Assumed friction coefficient is less than bounding values (0.2 stem-to-stem nut friction for gate, globe and 0.6 bearing coefficient for bronze bearings on butterfly valve)
  - As left valve settings near structural limits
  - Misapplication of EPRI MOV PPM data and methodology
  - Using EPRI MOV PPM test data to justify valve factor assumptions in valve capability calculations
  - Using static testing as basis for monitoring valve degradation with no engineering analysis or data

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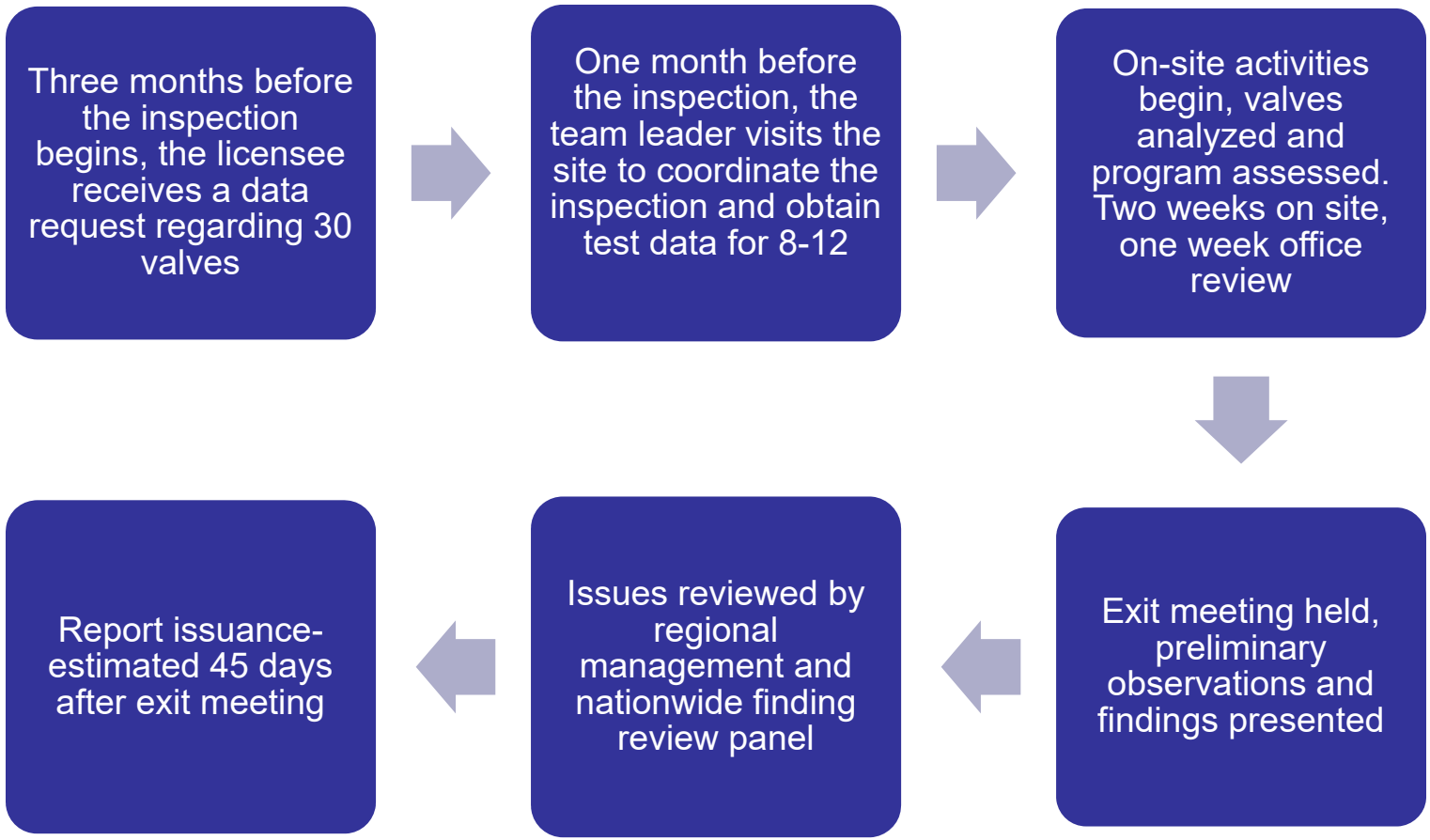
Inspection Process Flow



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EQ Inspection Lessons Learned

EQ Inspection Takeaways

- EQ inspection procedure could have benefited from further background guidance
- Inspectors had difficulty interpreting each nuclear power unit's unique EQ licensing basis
- Communication between inspectors and NRR technical program office not consistent
- The minor, more than minor screening criteria contained in current NRC guidance was not as helpful in assessing specific EQ related issues

POV Inspection Enhancements

- Identified singular technical and programmatic points-of-contact within the NRC
- Minor/more-than-minor examples developed
- Enhanced training for inspectors was developed(both technical and inspection implementation focused)
- Enhanced Interactive SharePoint Site developed.
- Tabletop dry runs performed
- Findings review panel established proactively

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FAQs

- Q: What has been communicated to stakeholders?
- A: ROP monthly public meetings since May 2019
  - POV inspections replacing EQ inspections beginning in January 2020
  - NRC incorporated lessons learned from EQ inspection implementation

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FAQs

- Q: What is publicly available in regards to POV material?
- A: Publicly available now:
  - Inspection Procedure IP71111.21N.02 (ML19067A240)
  - MOV technical training (ADAMS Package: ML19235A1212020)
  - EQ lessons learned (ML19183A063)

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FAQs

- Q: What is publicly available in regards to POV material?
- A: Public availability forthcoming:
  - POV Inspection implementation training
  - Minor/More-than-minor examples specific to POVs (as an appendix to the IP)

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FAQs

- Q: What are the NRC resources uses per POV inspection?
- A: 3 NRC inspectors, 2 weeks onsite
  - 210 hrs (+/- 32 hrs)
  - No use of contract inspectors planned

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FAQs

- Q: Will there be other public workshops?
- A: The NRC staff has now held two public workshops on POV inspections.
  - Staff is open to more as needed and will consider any input received today.

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Scenario Discussions

- Scenario one:
  - Service water/emergency service water isolation valve testing
- Scenario two:
  - Block valve design assumptions

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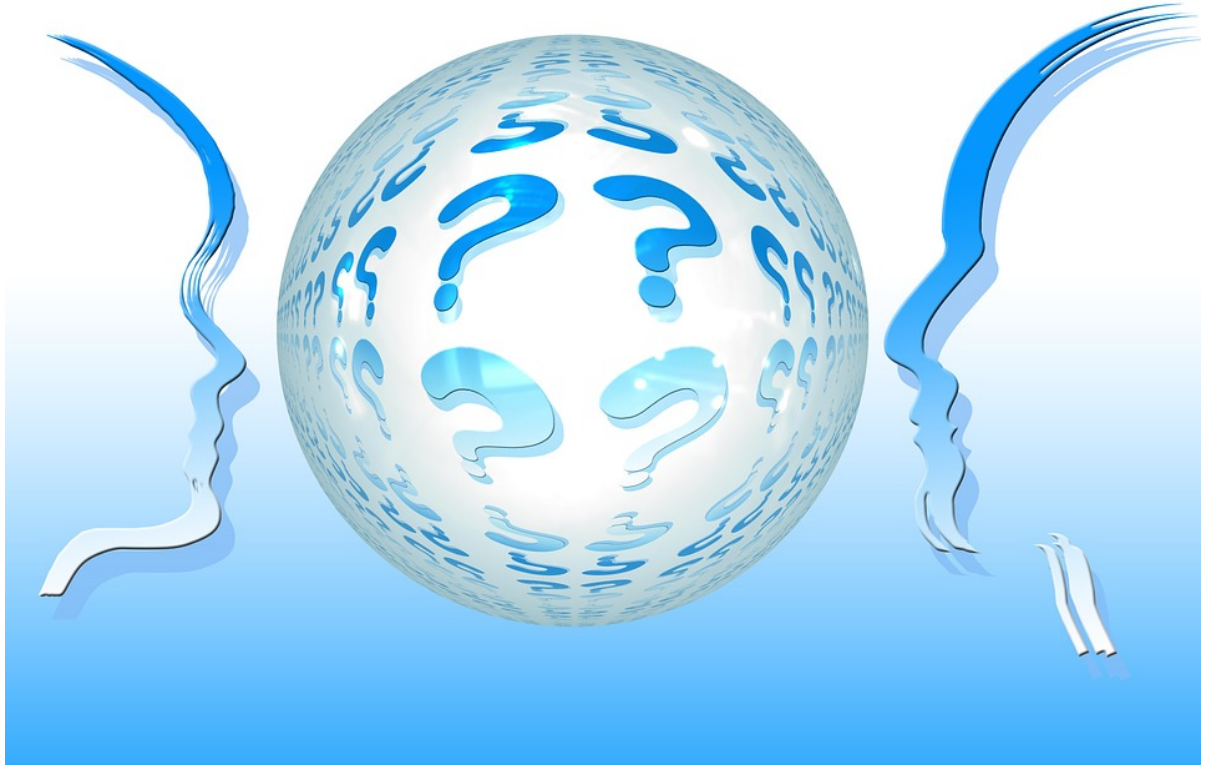
Q & A Session



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