Meeting
U.S. Nuclear Regulatory Commission
Nuclear Energy Institute
Electric Power Research Institute
Westinghouse Owners Group

Risk-informed Inservice Inspection (ISI) Living Program Guidance

December 2, 2003

Agenda

- Introduction
- RI-ISI Living Program Philosophy
- NEI Living Program Guidance to Maintain Risk-Informed ISI Programs
- Plant Examples
- Summary and Discussion

Introduction

- Introduction and Opening Remarks
  - NEI
    - To continue open dialogue on issues related to risk-informed ISI
    - To discuss developments on living program guidance
  - NRC

RI-ISI Living Program Philosophy

Purpose for RI-ISI Template Submittal Process

- Reasonable Assurance Licensees Conducted the Evaluations Consistent with a Topical & NRC Safety Evaluation (SE)
- Change in Risk Within Acceptance Guidelines (i.e., R.G. 1.174)
- Template provides a fixed snapshot in time of the RI-ISI program, that is:
  - Delta Risk Numbers
  - Number of Inspections
  - Allocation of Inspections

NRC Notification Examples

- Changing from One Methodology to Another
- Changing "scope" of Application
  - Class 1 only to Class 1 & 2
  - Class 1 & 2 only to full scope
- Plant-Specific Impact of Revised Methodology or Safety Evaluations
- Significant Industry/Plant Event
- ASME Section XI Ten Year Updates (unless not required by plant specific SE)
- Changes that Impact the Basis for NRC Approval in the Plant Specific Safety Evaluation

NEI Living Program Guidance to Maintain Risk-Informed ISI Programs

NEI Living Program Guidance to Maintain Risk-Informed ISI Programs

Section I	Introduction
Section II	Background
Section III	Changes That can Impact a RI-ISI Program
Section IV	Guidelines/Recommended Practices
Section V	Reporting Guidelines
Section VI	References
Appendix A	Plant Specific Examples

Aspects of Evaluations

- Expedited (Not Expected)
  - Significant events
- Periodic (Screening)
  - Consistent with NRC SE
  - Evaluation versus update
- Ten Year (Update)
  - Cumulative impact of periodic screening
  - Consistent with existing SXI philosophy

Potential Changes

- Timing - Evaluated by licensee each inspection period
- Changes to be Reviewed
  - Plant Examination Results
  - Piping Failures
    - Plant-Specific
    - Industry
  - PRA Update
  - Plant Design Changes
  - Change in Postulated Conditions or Assumptions

Plant Examination Results

Examples	Technical Disposition	Programmatic Disposition	Impact on Overall Plant Risk
• Leakage • Flaw Indication • Flaw/Weld Repair Replacement	• If new or different degradation mechanism – ➢ Determine affected segments ➢ Evaluate impact on failure potential, risk ranking & element selection	• Covered by existing ASME Section XI, risk-informed ISI & corrective action program	• Minimal

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Piping Failures

	Examples	Technical Disposition	Programmatic Disposition	Impact on Overall Plant Risk
Plant-Specific Failures	• Leakage • Failure due to new degradation mechanism • Failure occurs in systems not previously susceptible to type of failure	• If new or different degradation mechanism – ➢ Determine affected segments ➢ Evaluate impact on failure potential, risk ranking & element selection	• Covered by existing ASME Section XI, risk-informed ISI & corrective action program	• Likely to be minimal
Industry Failures			• NRC requirement or industry recommendation	

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PRA Update

Potential PRA Changes by Technical Element

- Initiating Event
- Accident Sequence Analysis
- Success Criteria
- Systems Analysis
- Human Reliability Analysis
- Data Analysis
- Internal Flooding, Including Indirect Effects
- Quantification
- LERF Analysis

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PRA Update - Technical Element Example

Technical Element	Potential Change	Example PRA Change	Technical Disposition	Impact on Overall Plant Safety
Initiating Event	Increase in frequency	Small LOCA (SLOCA)	Systems responding to SLOCA could be more important	May need to be evaluated
	Decrease in frequency	Loss of PCC train A (LPCCA)	Systems responding to LPCCA could be less important	No impact
	New initiating event	Partition LOCA sizes	Systems responding to LOCA could be more or less important	May need to be evaluated
	Delete initiating event	Eliminate steamline break outside containment	Loss of basis for consequence assignment	May need to be evaluated

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Plant Design Changes - Physical

Examples	Technical Disposition	Programmatic Disposition	Impact on Overall Plant Risk
• Snubber/support change	• No change	• Use existing design control process	• None
• New piping or equipment installation	• Evaluate impact on failure potential, consequence, risk ranking, element selection	• Use existing design control process	• Minimal

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Plant Design Changes - Programmatic

Examples	Technical Disposition	Programmatic Disposition	Impact on Overall Plant Risk
• Power uprating / station blackout diesel / 24 month fuel cycle	• Evaluate impact on failure potential, consequence, risk ranking, element selection	• Use existing design change control process & should already be included in PRA model update for plant conditions	• Likely to be minimal impact
• Water chemistry change	• Evaluate impact on failure potential, risk ranking, element selection	• Use existing design control process or licensing basis	• Likely to be minimal impact

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Plant Design Changes - Procedural

Examples	Technical Disposition	Programmatic Disposition	Impact on Overall Plant Risk
• Pump test change from quarterly to refueling in standby system	• Evaluate impact on failure potential, consequence, risk ranking, element selection	• Use existing design control process or licensing basis & should already be included in PRA model update	• Minimal
• Emergency operating procedure / abnormal operating procedure	• Evaluate impact on failure potential, consequence, risk ranking, element selection	• Use existing design change control process & should already be included in PRA model update	• Likely to be minimal impact

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Change in Postulated Conditions or Assumptions

Examples	Technical Disposition	Programmatic Disposition	Impact on Overall Plant Risk
• Change from salt water to fresh water • Check valve leaking or not leaking	• Evaluate impact on failure potential, risk ranking and element selection	• Covered by corrective action program and existing design control process • Monitor corrective action program and take action as necessary	• Minimal

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Plant Examples

Plant Examples

PWR

- Class 1
- Class 1 & 2
- Full-scope

BWR

- Class 1
- Full-scope

Example Plant Results

- Plant A
  - No changes in number of inspections
- Plant B
  - No changes in number of inspections
- Plant C
  - Six VT-2 examinations were removed
  - One VT-2 examination was added

Example Plant Results

- Plant D
  - Five examinations were added
  - Eight examinations were removed
  - Twelve VT-2 examinations were removed
- Plant E
  - Seven examinations were added
  - Eight examinations were removed
  - Twenty VT-2 examinations were removed

Example Plant Results

- Plant F
  - No Changes in number of inspections
- Plant G
  - No Changes in number of inspections
- Plant H
  - Nineteen examinations were removed

Summary and Discussion

Summary and Discussion

- NEI Guideline Document Substantially Completed
  - Will provide to NRC for information (1-30-04)
  - Many aspects of a living RI-ISI program are already programmatically controlled
  - Includes insights from eight plants that have conducted actual RI-ISI updates
  - Supports the identification of important considerations in maintaining a living RI-ISI program