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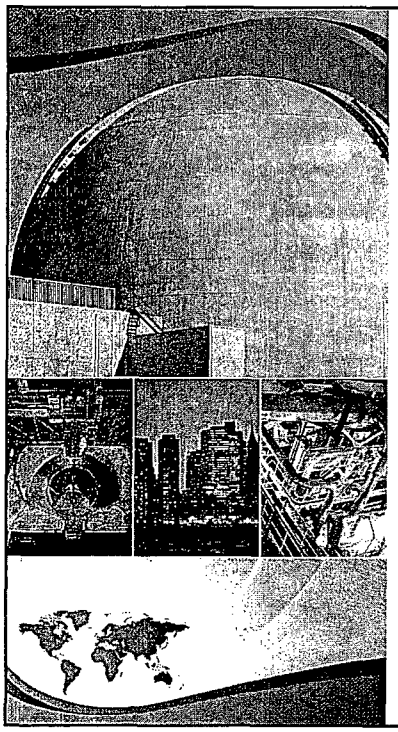
Afternoon Agenda from 1 to 3 pm

Item	Presenter
Generic Aging Lessons Learned (GALL)/MRP-227 Reconciliation	Tim Wells, *Southern Nuclear*
Licensee Submittals (Prior To and After Approval of MRP-227)	Glenn Gardner, *Dominion*
Inspection Standard (MRP-228) Update	Tim Wells, *Southern Nuclear*



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Generic Aging Lessons Learned (GALL) / MRP-227 Reconciliation

August 4, 2009

Presenter: Tim Wells, Southern Nuclear

EPRI Project Manager: Anne Demma

Outline

- NUREG-1801-Rev. 1
- MRP-227-Rev. 0
- MRP Support to NRC on GALL
- Approach
- Examples

Summary of NUREG-1801 Generic Aging Lessons Learned (GALL)

- Aging Management Program Elements
  - Scope Definition
  - Preventive Actions
  - Parameters to be Monitored or Inspected
  - Inspection (Detection of Aging Effects)
  - Monitoring or Trending
  - Acceptance Criteria (Action Levels)
  - Corrective Actions
  - Confirmation
  - Administrative Controls
  - Operating Experience Review (Reality Check)

Aging Management Strategy Input

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I&E Guidelines (MRP-227)

Plant Specific Implementation

MRP-227 Scope and Submittal to NRC

- MRP-227-Rev. 0 scope
  - Applicable to reactor internal structural components
  - Does not address fuel assemblies, reactivity control assemblies, or welded attachments to the reactor vessel.
- MRP-227-Rev. 0 was submitted to the NRC
  - As a means of exchanging information for the purpose of supporting generic regulatory improvements related to methodologies for demonstrating PWR internals integrity throughout the life of the plant, including the extended period authorized by license renewal in accordance with 10CFR Part 54.
  - In addition, many licensees have made commitments as part of power up-rate submittals to incorporate the applicable program elements of an industry reactor vessel internals inspection program.

MRP Support to NRC on GALL

- The MRP-227 guidelines serve as part of an effective means to address the aging of reactor internals components and meet NRC guidance provided in the GALL Report (NUREG-1801).
- The MRP intent is to support the NRC in updating the GALL report for the PWR internals components which are in the scope of MRP-227-Rev. 0.
- The request for information related to the update of the GALL report should follow the Request for Additional Information (RAI) process.

NUREG-1801-Rev. 1 for PWR Internals

- Reference Chapter XI.M16 (PWR Vessel Internals) in GALL Tables
  - IV.B2 (Westinghouse)
  - IV.B3 (Combustion Engineering)
  - IV.B4 (Babcock & Wilcox)
- Each Table IV. B4 entry in AMP column
  - *No further aging management review is necessary if the applicant* provides a commitment in the FSAR supplement to
    - (1) participate in the industry programs for investigating and managing aging effects on reactor internals;
    - (2) evaluate and implement the results of the industry programs as applicable to the reactor internals; and
    - (3) upon completion of these programs, but not less than 24 months before entering the period of extended operation, submit an inspection plan for reactor internals to the NRC for review and approval.
- Chapter XI.M16 (PWR Vessel Internals)

Approach

- Follow the approach in the GALL for the BWR internals components
- Examples for BWR Internals Components

  GALL Report - Vol. 2 - Rev.1 - p. 268

IV B1	REACTOR VESSEL, INTERNALS, AND REACTOR COOLANT SYSTEM Reactor Vessel Internals (BWR)						
Item	**Link**	**Structure and/or Component**	**Material**	**Environment**	***Aging Effect/ Mechanism***	**Aging Management Program (AMP)**	***Further Evaluation***
IV.B1-1 (R-02)	IV.B1.1-a	Core shroud (including repairs) and core plate Core shroud (upper, central, lower)	Stainless steel	Reactor coolant	Cracking/ stress corrosion cracking, intergranular stress corrosion cracking, irradiation-assisted stress corrosion cracking	Chapter XI.M9, "BWR Vessel Internals," for core shroud and Chapter XI.M2, "Water Chemistry" for BWR water	No

Examples for BWR Internals Components (Cont.)

GALL Report - Vol. 2 - Rev.1 - p. 718

XI.M9 BWR VESSEL INTERNALS

Program Description

The program includes (a) inspection and flaw evaluation in conformance with the guidelines of applicable and staff-approved boiling water reactor vessel and internals project (BWRVIP) documents, and (b) monitoring and control of reactor coolant water chemistry in accordance with the guidelines of BWRVIP-29 (Electric Power Research Institute [EPRI] TR-103515) to ensure the long-term integrity and safe operation of boiling water reactor (BWR) vessel internal components.

Evaluation and Technical Basis

1. ***Scope of Program:*** *The program is* ....

   ....

   The various applicable BWRVIP guidelines are as follows:

   Core shroud: BWRVIPs-07, -63, and -76 provide guidelines for inspection and evaluation; BWRVIP-02, Rev. 2, provides guidelines for repair design criteria.

   Core plate: BWRVIP-25 provides guidelines for inspection and evaluation; BWRVIP-50 provides guidelines for repair design criteria. ....

Examples for BWR Internals Components (Cont.)

- Appendix Sections of BWRVIP guidelines are submitted as means of exchanging information with the NRC for the purpose or supporting generic regulatory improvements related to demonstrating compliance with LR information requirements.

- Example
  - "Appendix B, BWR Steam Dryer Demonstration of Compliance with the Technical Information Requirements of the License Renewal Rule [10 CFR 54.21]."

GALL Revision for PWR Internals

- Reference Chapter XI.M16 (PWR Vessel Internals) in GALL Tables
  - IV.B2 (Westinghouse)
  - IV.B3 (Combustion Engineering)
  - IV.B4 (Babcock & Wilcox)
- Update Chapter XI.M16 (PWR Vessel Internals)
  - Reference MRP-227 plus any other pertinent industry guidance
  - MRP could add an Appendix to MRP-227 or submit separate document as means of exchanging information

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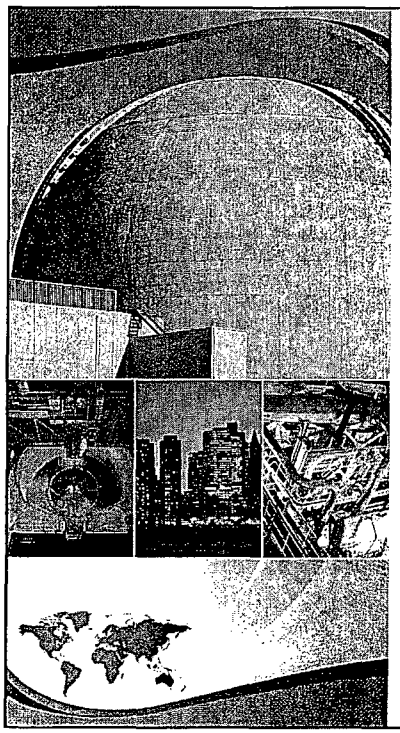

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Licensee Submittals (Prior To and After SER on MRP-227)

August 4, 2009

Presenter: Glenn Gardner, Dominion

EPRI Project Manager: Rick Reid

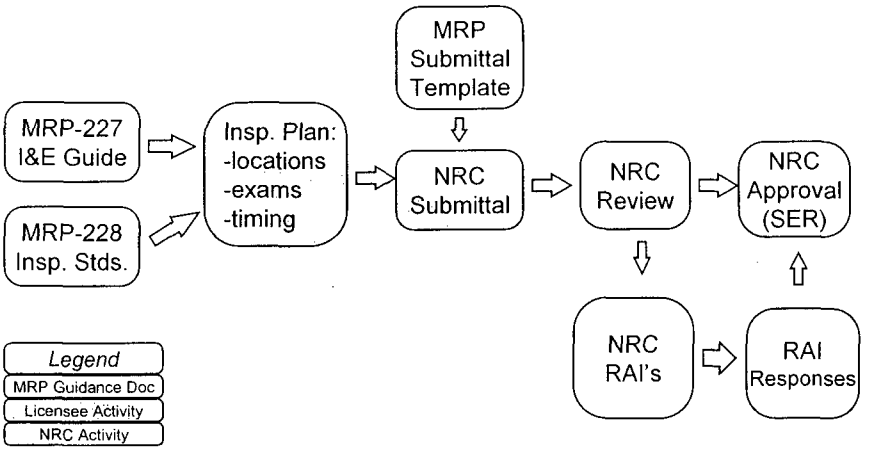
Outline

- Background
- Current Status
- BWR Approach
- PWR Proposal

Examples of Recent PWR Internals Commitments

- Plant will participate in the industry program for investigating and managing aging effects on reactor internals. This is an ongoing commitment.
- Plant will evaluate and implement the results of the industry programs, such as the EPRI MRP, as applicable to the reactor internals.
- Plant will submit an inspection plan for its reactor internals to the NRC for review and approval.

Implementation of MRP-227

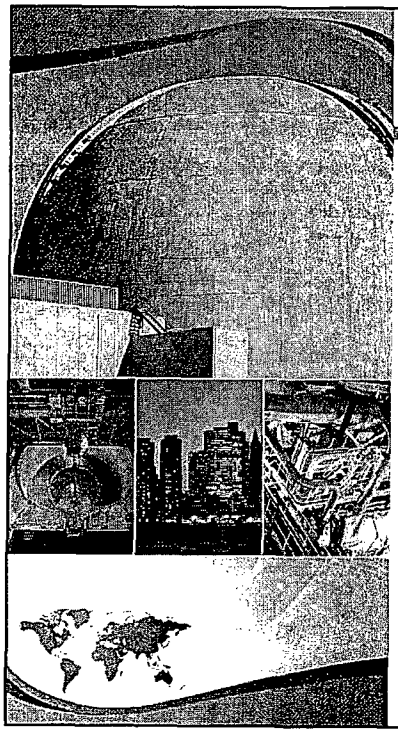


Goal for Future License Renewal Application (LRA) for Reactor Internals

- Ultimate goal for MRP-227 post-SER
  - AMP for future LRA references MRP-227 plus any additional applicable and pertinent industry guidance
- Template will include:
  - MRP-227 specifications
  - Licensee specific commitments
  - Additional OE incorporated as application

Goal for Existing License Renewal Application (LRA) for Reactor Internals

- Typical format updated to include:
  - MRP-227 requirements
  - Demonstration of plant specific application of MRP-227
- AMP for LRA content pre and post MRP-227 SER
  - Pre: detailed text
  - Post: simplified based on SER



Inspection Standard for PWR Vessel Internals (MRP-228) Update

August 4, 2009

Presenter: Tim Wells, Southern Nuclear

EPRI Project Manager: Jack Spanner

Outline

- Objective of MRP-228
- Approach
- Organization
- Status and Schedule

Objective

The objective of the Inspection Standard for PWR Internals Inspection is to provide a methodology requirements document supporting the PWR internals inspection I&E document (MRP-227)

Status: Published and provided to the NRC in July 2009

Approach

- Develop system qualification requirements based on an industry standard
  - ASME Section V, Article 14 used as the basis
  - Technical Justification (Low Rigor) for Qualification
  - No mandatory, quantitative, performance demonstrations
  - Mockup demonstrations only as needed for Technical Justification
    - Can use existing vendor/utility mockups
    - MRP developed mockups in some cases if
      - existing mockups are not satisfactory
      - no existing mockups

Strategy for Inspection Standard (How)

- Existing techniques used when feasible. For example NDE techniques for these components are considered to be adoptable for Internals:
  - Baffle-former and Core Barrel bolts: UT
  - Remote VT-1, EVT-1 and VT-3

Organization

- Chapter 1: Introduction
- Chapter 2: General Procedures
- Chapter 3: Accuracy of Flaw Length Measurement w/ VT
- Chapter 4: B&W Reactor Internals Inspection
- Chapter 5: C-E Reactor Internals Inspection
- Chapter 6: Westinghouse Reactor Internals Inspection
- Chapter 7: Implementation Requirements

Chapter 2: General Procedures

- Define the requirements for qualification of the NDE/Inspection System
  - Includes Procedure, Personnel, & Equipment
- Include discussion of vendor and MRP-developed mockups
  - Includes protocol and priorities for use of MRP mockups
- Provide specific requirements for the most widely used methods
  - Visual Examination (EVT-1, VT-1, VT-3)
  - Ultrasonic Examination (for Bolting)

Chapter 3: Measurement Uncertainty for Visual Examination

- Other industry groups, e.g., the BWRVIP, have conducted demonstrations of measurement accuracy for remote visual examination systems and techniques used for reactor internals examination
- The proposed MRP standard provides only guidance for determining the uncertainty
  - The demonstration/determination of uncertainty would only be required based on specific condition assessment need.

Chapters 4, 5, & 6: Specific Discussion of B&W, CE, & Westinghouse

- Provided for information only to NDE personnel
- Tables are organized by examination method, i.e., UT, EVT-1, VT-1, VT-3
- The tables combine the basic inspection information from the primary and expansion component tables in MRP-227 Chapter 4 along with listing the materials from MRP-227 Chapter 3 Tables 3-1, 2 & 3
- The expansion components description used was as listed in the expansion component tables
- Typical figures from MRP-227 included

Note: I&E requirements are in MRP-227, not MRP-228

Chapter 7: Implementation Requirements

- No requirements classified as Mandatory
- Needed:
  - Examination Procedures
  - Classification of Indications
  - Recording of Results
- Good Practice
  - Flaw length measurement for VT
  - Inspection planning

Status and Schedule

- Report published in July 2009
- Provided to the NRC in July 2009
- 2010-2011
  - Update Inspection Standard
  - Prepare training materials for 2010 PWR IVVI course