



ELECTRIC POWER  
RESEARCH INSTITUTE

## Proposed CRDM Performance Demonstration Program and BMNs

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Meeting**

**Southport, NC**

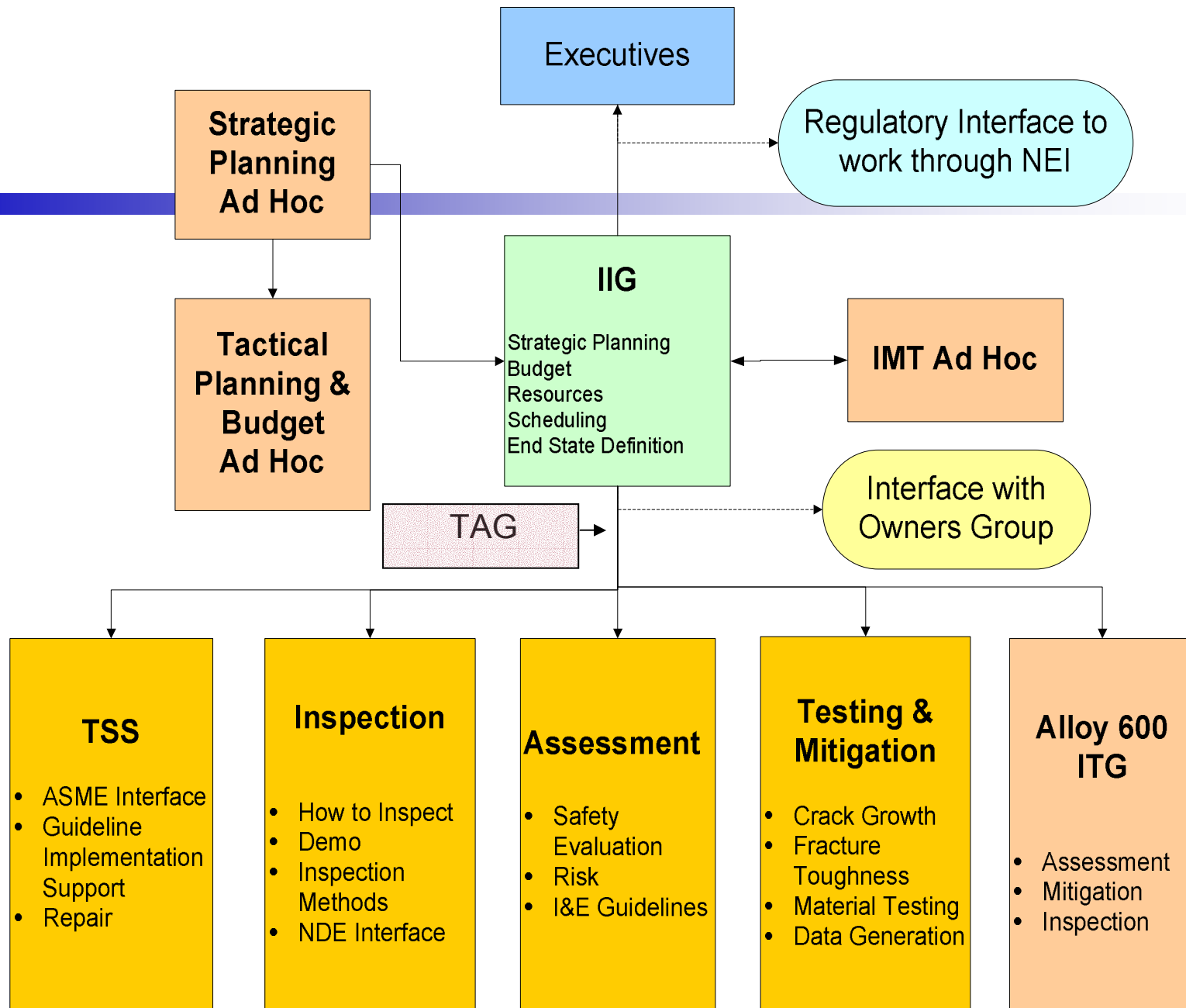
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# Topics

- **Decision to Qualify**
- **Status of Program**
- **Technical Justification**
- **Security**
- **Procedure Qualification**
- **Personnel Qualification**
- **Proposed Milestones**
- **BMN Status**





**Not current**

# MRP IIG Recommendation for CRDM Qualification

- A qualification program is required to ensure that the CRDM examinations for the fleet are **consistently reliable** (similar to those qualified through BWRVIP, SGMP and Appendix VIII). The program will be designed to **ensure confident comparison of examination results** across the industry. For example, the industry program will ensure that flaws of similar size and location will be detected at PWR plants reliably. The program will ensure **consistent fleet compliance with relevant requirements of Appendix B** Special Processes and Programs. It is expected that the CRDM examination program will use the flaw tolerance and inspection volume information from the Upper Head Safety Assessment work to determine acceptance criteria for the CRDM examinations and qualifications. The Inspection **ITG will develop an NDE qualification program** that addresses the relevant inspection attributes and ensures the reliability of CRDM examinations.



# MRP IIG Recommendation for CRDM Qualification (Cont'd)

- The MRP needs to **proactively address qualification of the CRDM** examination procedures and personnel, thus, the project should be planned such that the qualification program will be complete by a date determined by the Inspection ITG and confirmed by the IIG. Examinations conducted after that date will be qualified accordingly. The existing MRP demonstration program will be critically examined to maximize the use of existing resources and results. **This project must communicate with NRC – and recognize them as stakeholders.**

# Qualification Attributes

- Reliable & repeatable examinations
- Quality program
- Tends to be statistically based
- Maintaining truth data security drives program
  - Can't assist examiners
  - Pass/Fail & False Call criteria
  - Digital data security
  - Fingerprinting mockups
  - Must qualify procedure then personnel
  - Increased costs

# Demonstration vs. Qualification

## CRDM Program Comparison

- Demonstration
  - Measures capability
  - No QA
  - Open & Blind mockups
  - Assist vendor/lessons learned
  - Procedure not personnel
  - Document results
  - Results in effective procedure
  - CRDMs, Core shrouds, turbines, FdWtr Nozzles
- Qualification
  - Pass/Fail criteria
  - QA/NRC
  - Open & Blind mockups
  - Little assistance
  - Certs-No truth data
  - ASME SC V, Art. 14 Intermediate Rigor
  - Qualified procedure, equipment & personnel
  - SGMP and PDI

# SC V, Article 14 vs. SC XI, App. VIII (PDI)

- ASME SC V, Art. 14
  - Two parties agree on program
  - Flexible
  - PDI & SGMP are Intermediate (statistical) rigor
  - Can back fit most of current CRDM program
  - Must have Technical Justification (TJ)
  - Art. 14 requires no Code action
- ASME SC XI, App. VIII
  - ASME provides requirements
  - Inflexible & currently not applicable to Eddy Current method
  - PDI for RPV, bolting & piping
  - Not required but PDI developed TJs
  - Code change required for CRDMs



# Overview of CRDM Program

- IIG provided Inspection ITG charter
- Developing Technical Justification (TJ)
- Assessment ITG providing Acceptance Criteria
- **Draft** Goals
  - 1<sup>st</sup> ITG meeting week of Feb 20; next is June 19-20
  - Procedure demos & mockups in place by 2006
  - Complete TJ in 2006
  - Personnel qualifications in 2007
  - Maximize use of current demonstrations & mockups
- Developing generic qualification program at NDEC
  - QA program
  - Using applicable PDI procedures & instructions

# STATUS OF CRDM PROGRAM

- Started Project Quality Plan Development
- Writing Quality Program Instructions (QPI) for Performance Demonstration Program
  - Organization and Responsibilities
  - Demonstration Protocol
- Implemented Security activities under PDI program QPI's
  - This covers both mock ups and documentation
- Will implement fabrication of new mock ups, if required, under present PDI's Project Quality Plan
  - Future mock ups; ie BMI, internals, etc.
  - Present mock ups will have Commercial Grade Dedication under QAP 7.2

# TECHNICAL JUSTIFICATION for Qualification Process

- Justification is following basic requirements of Code Case N-729-1 and Section V, Article 14
  - Using Intermediate Rigor-not Low Rigor
    - Procedure: 100% flaw detection
    - Personnel: 80% flaw detection; < 20% false call
- Most of the Justification is complete
  - Assessment & Inspection ITGs to review
  - Review and approval by IIG
- Two party agreement between Utilities & EPRI
  - MRP's Inspection ITG
  - NRC and ANII's will be involved

# SECURITY

- Implemented the PDI Security QPI's
  - Mock ups security and shipment
  - Offsite policies for demonstrations
  - Document security
    - Mock ups answer keys
    - Testing results
    - Test data
- Personnel trained to PDI's QPI's



# PROCEDURE QUALIFICATIONS

- Demonstrated procedures are being assembled
  - Reviewed against the protocol
  - Second review of essential variables to assure proper documentation
- Will likely maintain procedure and personnel qualifications on web site

# Personnel Qualification Goals

- Will develop personnel qualification for Spring 2007 outages
  - Development of data base for individual qualifications
- Some vendor personnel may be qualified under old protocol if sufficient documentation demonstrates the individual's qualification
  - Personnel that performed the procedure qualification normally obtain personnel qualification
  - Personnel must meet new program's protocol

# Project Milestones

- Approval of TJ for qualification by MRP & concurrence by NRC
  - 2 party agreement required by SC V, Art. 14
- A major milestone is NRC involvement/concurrence with industry strategy
  - Schedule?
  - Mechanism?
- Acceptance of present mockups using Commercial Grade Dedication program
- Vendor procedures qualified by 2006 including upgrade or new qualifications
- Personnel qualifications by April 2007
  - Some personnel will be qualified during procedure qualification
  - Will probably need to acquire samples

# Bottom Mounted Nozzle Status

- MRP Assessment ITG is developing I&E Guidelines
  - Meetings held May 2-3, 2006 in Lynchburg
  - Discussed strategy, technical basis, examination volumes/surfaces, frequency, NDE demonstration strategy
- EPRI has performed a few capability demonstrations
  - B&W and Westinghouse Mockups (3 & 4 loop)
  - Repaired B&W BMNs can have loss of contact region
- NDE demonstration/qualification program will be based on I&E Guideline