

**TRANSMITTAL OF MEETING HANDOUT MATERIALS FOR
IMMEDIATE PLACEMENT IN THE PUBLIC DOMAIN**

This form is to be filled out (typed or hand-printed) by the person who announced the meeting (i.e., the person who issued the meeting notice). The completed form, and the attached copy of meeting handout materials, will be sent to the Document Control Desk on the same day of the meeting; under no circumstances will this be done later than the working day after the meeting.

Do not include proprietary materials.

DATE OF MEETING

08/29/2000

The attached document(s), which was/were handed out in this meeting, is/are to be placed in the public domain as soon as possible. The minutes of the meeting will be issued in the near future. Following are administrative details regarding this meeting:

Docket Number(s)

PROJECT NO. 669

Plant/Facility Name

EPRI

TAC Number(s) (if available)

Reference Meeting Notice

7/28/00

Purpose of Meeting
(copy from meeting notice)

TO DISCUSS EPRI RISK & PERFORMANCE

ACTIVITIES, SUCH AS AUGMENTED PIPING

INSPECTIONS AND CONTAINMENT INSPECTIONS

NAME OF PERSON WHO ISSUED MEETING NOTICE

L. N. OLSHAN

TITLE

PROJECT MANAGER

OFFICE

NRR

DIVISION

DLPM

BRANCH

PD II-1

Distribution of this form and attachments:

Docket File/Central File

PUBLIC



Risk & Performance- Inspired (RPI) Applications

**August 29, 2000
Two White Flint**

8_00_NRC_Mtg.ppt

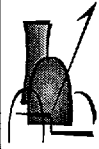
EPRI



Agenda

- **Purpose of Meeting**
- **RI-ISI Submittals**
- **BER**
- **Items for Clarification**
- **Additional RPi Activities**
- **Action Items**
- **Concluding Remarks**

EPRI



Purpose of Meeting

- Follow-up to Dec, 1999 meeting
- Continue NRC/Industry dialogue for Ongoing Risk and Performance Inspired Applications
- Provide to NRC, Status on Applications/Submittals
- Discuss Schedule

EPRI



RI-ISI Submittals

- Follow-on Plants (1999)
 - Fitzpatrick (October, 1999)
 - South Texas, Units 1 & 2 (December, 1999)

EPRI



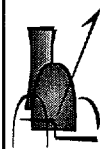
RI-ISI Submittals

- Follow-on Plants (2000)

- W - PWRs

- Braidwood, U1 & U2 [3Q]
- Byron, U1 & U2 [3Q]
- Callaway [4Q]
- Comanche Peak, U1 & U2 [4Q]
- Diablo Canyon, U1 & U2 [4Q]
- South Texas Project, U1 & U2 [4Q]
- Wolf Creek [4Q]

EPRI



RI-ISI Submittals

- Follow-on Plants (2000 cont.)

- BWRs

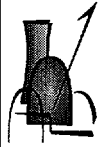
- Perry [3Q]
- WNP2 [4Q]
- Pilgrim [4Q]
- Dresden, U1 & U2 [3Q]
- LaSalle, U1 & U2 [3Q]
- Quad Cities, U1 & U2 [3Q]
- Nine Mile Point, U2 [4Q]*

- CE - PWRs

- Calvert Cliffs, U1 & U2 [4Q]*

* BER pilot plants

EPRI



RI-ISI Submittals

- **Follow-on Plants (2001)**

- **BWRs**

- Brunswick, U1 & U2 [1Q]
- Fermi [2Q]
- Clinton [3Q]
- Limerick, U1 & U2 [3Q]
- Peach Bottom, U1 & U2 [3Q]
- Monticello [4Q]
- Nine Mile Point, U1 [4Q]

EPRI



RI-ISI Submittals

- **Follow-on Plants (2001)**

- **W - PWRs**

- Indian Point, U2 [1Q]
- Indian Point, U3 [1Q]
- Seabrook [1Q]
- Point Beach, U1 & U2 [4Q]

- **B&W - PWRs**

- Crystal River [2Q]
- TMI [3Q]

- **CE - PWRs**

- Waterford [4Q]

EPRI



RI-ISI Submittals

- **Follow-on Plants (2002)**

- **BWRs**

- Duane Arnold [4Q]

- **W - PWRs**

- Kewaunee [4Q]
 - Prairie Island, U1 & U2 [4Q]
 - VC Summer [1Q]
 - HB Robinson [4Q]



Break Exclusion Requirements

- Historical Perspective
- Goals
- Impact on Existing Design Bases
- Adaptation of RI-ISI
- Schedule

EPRI



Break Exclusion Requirements

- Historical Perspective
 - Giambusso Letter, December 1972
 - O'Leary Letter, 1973
 - Regulatory Guide 1.46 "Protection Against Pipe Whip Inside Containment," May 1973
 - Standard Review Plan 3.6.1, "Plant Design for Protection Against Postulated Piping Failures in Fluid Systems Outside Containment," July 1981
 - Standard Review Plan 3.6.2, "Determination of Rupture Locations and Dynamic Effects Associated with the Postulated Rupture of Piping," July 1981
 - Many Specific Licensee/USNRC Agreements
 - ASME Boiler and Pressure Vessel Code, Section XI
 - USNRC Generic Letter 89-08 (FAC)

EPRI



Break Exclusion Requirements

- **Historical Perspective (cont.)**

- Individual Plant Requirements vary greatly:
 - Group A plants have no requirements for augmented examinations
 - Group B plants have a small number of augmented examinations
 - Group C plants meet SRP requirements,
 - Group D plants exceed SRP requirements
- Terminology includes BER, NBZ, HELB, AE...
- Requirements predate augmented inspection programs for FAC and Thermal Fatigue

- **Goals**

- A logical, consistent, stable and predictable process,
- Cost-effective implementation (RI-ISI process)

EPRI

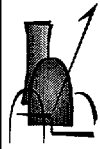


Break Exclusion Requirements

- **Impact on Existing Design Bases**

- Current Process
 - Very plant specific
 - Special rules for "BER piping"
- Proposal
 - Change is to inspection size, only

EPRI



Break Exclusion Requirements

- **Adaptation of RI-ISI (SCOPE)**
 - **BWRs:**
 - can be Class 1, 2, 3, NNS piping,
 - MS, FW, RWCU, HPCI
 - **PWRs:**
 - can be Class 2, 3 and NNS piping,
 - MS, FW, AFW, SGBD, CVCS, AS

EPRI



Break Exclusion Requirements

- **Adaptation of RI-ISI (FAILURE POTENTIAL)**
 - **Operating Experience for applicable systems**
 - the only significant failures are due to FAC and high temperature creep and creep/fatigue,
 - others failures or anomalies due to thermal fatigue and cavitation
 - **Impact of Inspections**
 - Creep and creep/fatigue n/a for NPPs
 - FAC programs are in place,
 - RI-ISI assesses susceptibility to thermal fatigue and cavitation

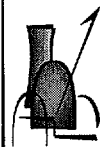
EPRI



Break Exclusion Requirements

- **Adaptation of RI-ISI (FAILURE POTENTIAL)**
 - Plant Specific Service History
 - ≥ 10 years of BER inspection history
 - susceptibility to waterhammer
 - other augmented inspections (e.g. FAC)
 - leak detection capability

EPRI



Break Exclusion Requirements

- **Adaptation of RI-ISI (CONSEQUENCE of FAILURE)**
 - Consequence of Failure (General)
 - no credit for equipment in the vicinity (e.g. inside containment vs outside containment),
 - if credited: successful and unsuccessful operation assessed,
 - some plants designed for breaks even in the "no break zone"

EPRI



Break Exclusion Requirements

- **Adaptation of RI-ISI**
 - **RISK SIGNIFICANCE** - no change
 - **INSPECTION SIZE** - no change
 - **Change in Risk**
 - meet R.G. 1.174 req'ts
 - provide for defense in depth

EPRI



Break Exclusion Requirements

- **Adaptation of RI-ISI**
 - **Licensee Submittals**
 - CCNP and NMP-2
 - Follow-on process
 - Other licensee commitments
 - Existing lack of consistency among the fleet

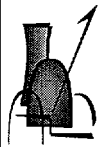
EPRI



Break Exclusion Requirements

- **Adaptation of RI-ISI**
 - **Schedule**
 - Draft Revision to RI-ISI TR [Sept, 2000]
 - CCNP, U1 & U2 [Oct, 2000]
 - NMP-2 [Oct, 2000]

EPRI



Items for Clarification

- **Class 1 applications**
- **Socket Welded Connections**
- **Credit for Augmented Examinations**
- **Delta Risk**
- **Program Implementation**

EPRI



Items for Clarification - cont.

- **Class 1 applications**
- **N560**
 - Applies to examination category B-J piping welds
 - Inspection size equals 10% of total population
- **N578**
 - TR-112657, section 3.6.4.2
 - Class 1 inspection populations substantially below 10% should be reviewed

EPRI



Items for Clarification - cont.

- **Socket Welded Connections**
 - TR does not provide inspection volumes for socket welded connections,
 - ANO-2 application to CAT4 locations (RT),
 - ASME Code Cases N577/578 call for VT-2 exams,
 - EPRI-MRP thermal fatigue task group,
 - EPRI NDE Center research,
 - ASME TG ISI Optimization - code action to eliminate surface exam

EPRI



Items for Clarification - cont.

- **Credit for Augmented Examinations**
 - TR-112657, section 3.6.4.2
 - risk ranking includes all potential degradation mechanisms
 - FAC & IGSCC inspections per augmented program,
 - RI-ISI exams for other mechanisms and CAT4 locations only
 - Fitzpatrick application
 - risk ranking with and without (FAC, IGSCC & MIC)
 - augmented exams fully credited towards RI-ISI population

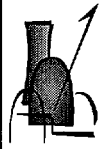
EPRI



Items for Clarification - cont.

- **Delta Risk is met if:**
 - System level criteria is met for each individual system, or
 - Cumulative impact for all systems meets the plant level criteria

EPRI



Items for Clarification - cont.

- **Program Implementation**
 - Implemented at the beginning of a ten year interval
 - Implemented within an interval provided IWA-2000 is met
 - Relief request

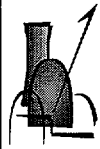
EPRI



Individual Licensee Issues

- **Per the SER, each applicant must address:**
 - inclusion of B-F welds
 - quality, scope and level of detail of PRA used,
 - walkdown procedure (direct and indirect effects of breaks)
 - criteria, information and operating experience for application to thermal fatigue & local corrosion
 - Use of Markov model, transition rates and data

EPRI



Additional RPi Activities

- **Living RI-ISI Program Requirements**
- **Inspection Volumes**
- **Relief Requests**
- **Alternative surface exam req'ts**
- **LCM/LR**
- **Integration Tasks**
- **Containment**

EPRI



Additional RPi Activities - cont.

- **Living RI-ISI Program Requirements**
 - 30 RI-ISI applications completed or underway
 - developing site specific and generic living program criteria
- **Inspection Volumes**
- **Relief Requests**

EPRI



Additional RPi Activities - cont.

- **Alternative surface exam req'ts**
 - Code case being letter balloted at WGIRBE
 - Subgroup Water Cooled System - Dec, 2000
 - Further supported by Task Group ISI Optimization Socket Welded Connection Whitepaper
- **LCM/LR**
 - open communication with EPRI/industry groups

EPRI



Additional RPi Activities - cont.

- **Integration Tasks**
 - BWRVIP-075
 - IGSCC in BWRs
 - SER (9/00) ?
 - EPRI-MRP thermal fatigue ITG
 - interim guidance
 - evaluation tools consistent with EPRI RI-ISI methodology
 - examination volumes
- **PDI**

EPRI



Additional RPi Activities - cont.

- **Containment**
 - Project delayed due to other priorities (e.g. RI-ISI piping applications)
 - Revised schedule:
 - start late 2000
 - NRC participation on plant inspections

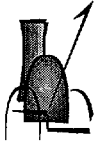
EPRI



Action Items (12/99)

- **Industry/NEI/NRC Senior Level Mgt**
 - RI-ISI submittals
 - Integration/Coordination
- **Containment Inspections (NRC participation)**
- **LR - coordination with 3 year plan**
- **BER/HELB White Paper**
- **Living Program Criteria**
- **Use C&S whenever appropriate**

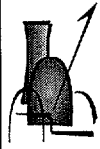
EPRI

**Action Items (8/00)**



**Action Items (8/00)**





Concluding Remarks

- Industry
- NRC

EPRI