

RIC 2005
Session A1
Risk-Informing ECCS Analysis
Requirements (50.46)

**BWR Owners' Group Approach
to Risk-Informing 10 CFR 50.46**

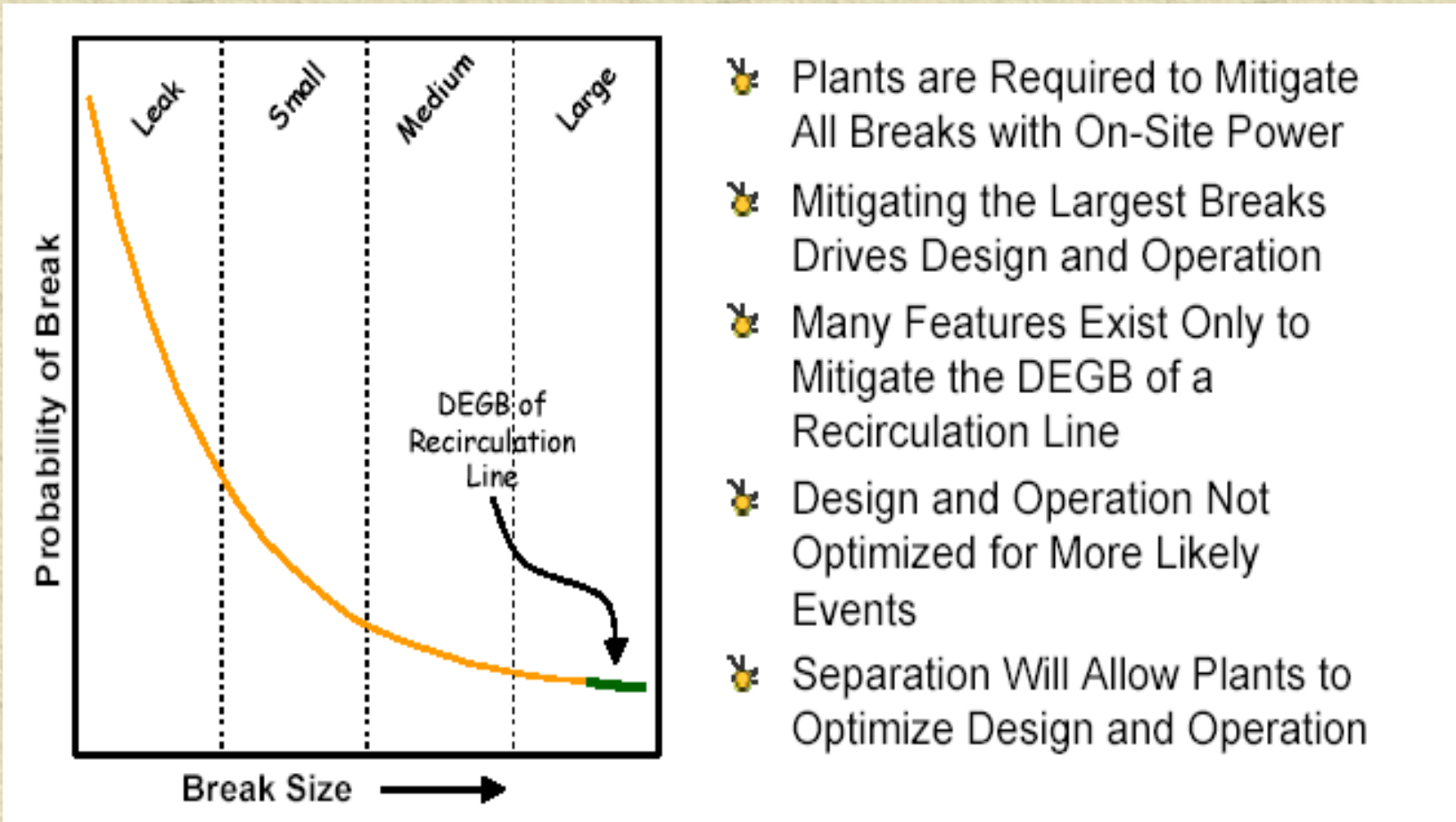
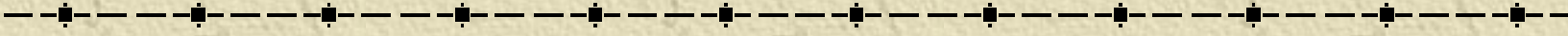
Tony Browning
Principal Engineer – Regulatory Affairs
Nuclear Management Company
March 8, 2005



BWR Owners' Group Approach to Risk-Informing 10 CFR 50.46

- ✦ Current Requirement to Assume Simultaneous Loss-of-Offsite Power (LOOP) with the Large Break Loss-of-Coolant Accident (LBLOCA) is not “Risk Informed”
- ✦ Cornerstone of Approach - $P(\text{LOOP}) \times P(\text{LBLOCA}) < \text{RG 1.174 Criteria}$ for “risk significant” change
 - ◆ Independent of TBS in LBLOCA Redefinition
 - ◆ Flexibility w.r.t. LOOP Probability Studies

BWR Owners' Group Approach to Risk-Informing 10 CFR 50.46



- ✦ Plants are Required to Mitigate All Breaks with On-Site Power
- ✦ Mitigating the Largest Breaks Drives Design and Operation
- ✦ Many Features Exist Only to Mitigate the DEGB of a Recirculation Line
- ✦ Design and Operation Not Optimized for More Likely Events
- ✦ Separation Will Allow Plants to Optimize Design and Operation

BWR Owners' Group Approach to Risk-Informing 10 CFR 50.46

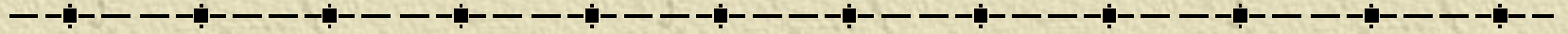
✦ Anticipated Safety Gains

- ✦ Improved Diesel Generator Reliability
 - Slower Start Times
 - Less Strenuous Loading Sequences
 - Eliminate LOCA Start Signal (Fewer Spurious Starts)
- ✦ Optimized ECCS Performance
 - MOV Stroke Times
 - Simplify Injection Logic (LPCI Loop-Select)
- ✦ Enhanced Decay Heat Removal Capability
- ✦ Simplified Technical Specification Surveillance Requirements

BWR Owners' Group Approach to Risk-Informing 10 CFR 50.46

- ✦ BWROG Submitted a Licensing Topical Report (LTR) in April 2004 for NRC Review
 - ◆ NEDO-33148 – “Separation of Loss of Offsite Power from Large Break LOCA”
- ✦ LTR Approach – RG 1.174 Structure
 - ◆ Defined List of Plant Changes are Evaluated
 - ◆ Representative Plant Risk Model (PRA)
 - Proposed Changes achieve Risk Balance
 - ◆ Demonstration of Defense-in-Depth (T/H Analysis)
 - Coolable Geometry is maintained with changes
 - ◆ Plant-specific Implementation Guide (Sensitivity Studies)
 - Results are bounding for BWR Fleet

BWR Owners' Group Approach to Risk-Informing 10 CFR 50.46



✦ Lead Plant Submittal (§50.12 & §50.90)

✦ “Proof of Concept”

- Demonstrate LTR Approach is Sound
- Demonstrate LTR PRA & T/H Evaluations are Bounding
- Validate Implementation Guide

BWR Owners' Group Approach to Risk-Informing 10 CFR 50.46

✦ Target Review Timeline

- ◆ LTR Submitted – April 2004
- ◆ NRC LTR Acceptance Review – July 2004
- ◆ NRC Begins LTR Review – June 2005
- ◆ Lead Plant Submittal – July 2005
- ◆ NRC RAIs on LTR – September 2005
- ◆ NRC RAIs on Lead Plant Submittal – October 2005
- ◆ LTR RAI Responses – January 2006
- ◆ Lead Plant RAI Responses – February 2006
- ◆ NRC Approval of Lead Plant Submittal – July 2006
- ◆ NRC Approval of LTR – July 2006