

# **Standardization of RCS Leak Rate Calculation WOG Project Authorization PA-OSC-0189**

Overview Presentation to NRC  
by  
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# Standardization of RCS Leak Rate Calculation

## Meeting Agenda

- Meeting Objective
- Background
- Program Objectives
- Major Tasks
- Examples of Areas to be Addressed
- Milestones
- Utility Questions and Issues
- Questions and Answers
- Wrap up

## Standardization of RCS Leak Rate Calculation

### **Meeting Objective**

- Inform the NRC of WOG initiative to standardize RCS leak rate calculation
- Provide the opportunity for NRC feedback
- Discuss potential regulatory activities

# Standardization of RCS Leak Rate Calculation

## Background

- Davis-Besse Event (Bulletin 2002-01)
- NRC Regulatory Issue Summary (RIS) 2003-13, “NRC Review of Responses to Bulletin 2002-01, Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity”
- NUREG/CR-6582, “Assessment of Pressurized Water Reactor Primary Systems Leaks”
- WOG RCS Leak Rate Workshop, June 2004

# Standardization of RCS Leak Rate Calculation

## Program Objectives

- Collect and review existing methods for leak rate monitoring programs
- Develop standard methods for leak rate determination (define the “Standard Plant”) for PWRs
- Investigate potential improvements to current methods in order to increase the sensitivity for early leak detection. Example: use of linear regression technique
- Provide standard definitions for leak rate terms and methods. Example: define “leakage volume” as gallons collected at STP (68°F, atmos.)
- Develop evaluation guidelines for plant use to enhance existing methods
- Provide consistent response to generic questions regarding RCS leak rate issues.

# Standardization of RCS Leak Rate Calculation

## Major Tasks

1. Collect and study methods currently in use
2. Define the “Standard Plant”
3. Document the basic process and inputs used to calculate identified and unidentified leakage
4. Develop a Standard Process and Methods to calculate identified and unidentified RCS leak rate (multiple parts)
5. Apply the Standard Process and Methods to pilot plants
6. Develop Evaluation Guide

# Standardization of RCS Leak Rate Calculation

## **Example Areas to be Addressed**

- Minimum level of detectability
- Required accuracy
- Methods to improve the accuracy, uncertainties, sensitivity and repeatability
- Constants and assumptions
- Optimal program “duration” and “frequency”
- Technical bases for statistical methods
- Techniques for applying linear regression and averaging
- Definitions such as ‘stable’ RCS conditions
- Techniques for reducing fluctuations in key inputs

# Standardization of RCS Leak Rate Calculation **Milestones**

- 01/01/2005 - Program Initiation
- 10/28/2005 - Issue Draft Standard Methodology
- 05/30/2006 - Apply Methodology to Pilot Plants
- 08/30/2006 - Deliver Final Standard Methodology and Evaluation Guide



# Standardization of RCS Leak Rate Calculation

## **Utility Questions and Issues**

- Is the NRC proposing any regulatory activities that may impact the objectives of this project, e.g. to Regulatory Guide 1.45 or the RCS Operational Leakage TS?
- Are there any conflicts between the objectives of this project and proposed changes to the Reactor Oversight Process Performance Indicator for RCS Leakage?

# Standardization of RCS Leak Rate Calculation

## Questions and Answers:

## Wrap-up: