**WEC-STP-2009-0031 NP-Attachment**

# "STP 3&4 ABWR Technical Specification Setpoints Methodology Report Overview"

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# STP 3&4 ABWR Technical Specification Setpoints Methodology Report Overview

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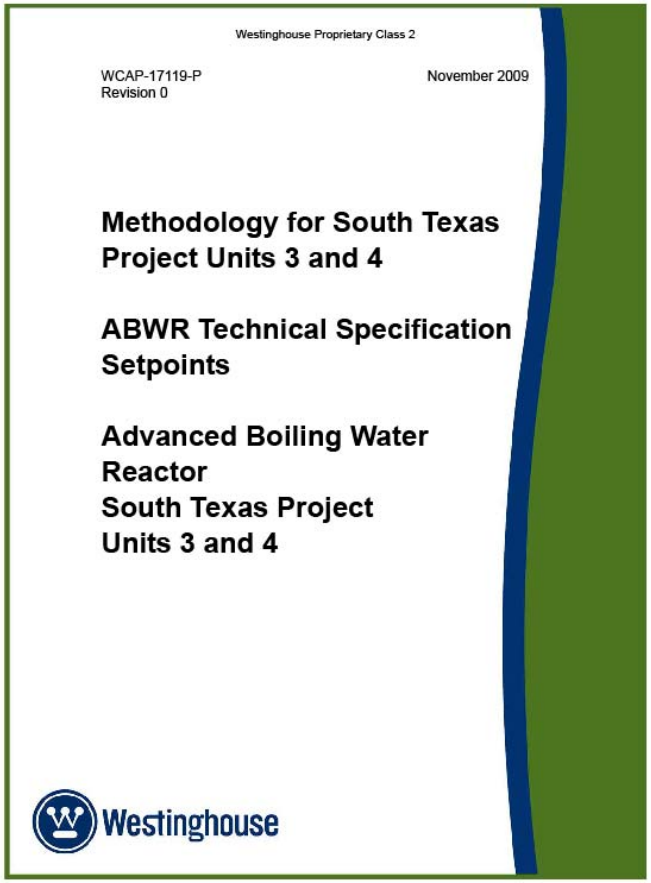
# Setpoint Methodology Overview

- STP 3&4 ABWR setpoint methodology report overview
- Summary of Follow Up Items from May 2009 Meeting

# Methodology Report Overview

- Methodology Report to be submitted by November 30th, 2009
  - 112 pages
  - Not complex, methods have been previously reviewed by NRC
  - Straightforward review

- Methodology Report will include the following:
  - Definitions of Uncertainty Components
  - Consistency statement with regards to NRC and ISA guidance
  - Basic Combination Algorithm
  - Individual Protection Function Uncertainty Terms
  - Typical ABWR setpoint values



# STP 3&4 ABWR Methodology Algorithm

- Basic Combination Algorithm and Uncertainty Terms

  *CSA={(PMA)2 + (PEA)2 + (SRA)2 + (SMTE + SD)2 + (SMTE + SCA)2 + (SPE)2 + (STE)2 + (RRA)2 + (RMTE + RD)2 + (RMTE + RCA)2 +(RTE)2 }1/2 + EA + BIAS*

- ABWR approach is consistent with Westinghouse AP1000 methodology
  - Consistent with ISA 67.04.01
  - Consistent with Nuclear Regulatory Guide 1.105 Rev. 3

# Individual Protection Uncertainty Terms

For each protection function:

- Protection Functions based on ABWR Technical Specifications
- Uncertainty Terms for each component presented in table format
- Calculated Channel Statistical Allowance using Methodology approach

# Example of Uncertainty Terms Table – Reactor Vessel Steam Dome Pressure- RPS

- **Process Uncertainties**

[ – – ] a, c

- **Transmitter Uncertainties**

**Using a Rosemount 1153 Transmitter**

[ – – – – – – ] a, c

- **Rack Uncertainties Using Common Q Hardware**

[ – – – – – ] a, c

[ ] a, c

# Example of Uncertainty Terms Table – Reactor Vessel Steam Dome Pressure- RPS

- [ – ] a, c
- [ – ] a, c

- **Using ABWR Algorithm:**

$$CSA = \{(PMA)^2 + (PEA)^2 + (SRA)^2 + (SMTE + SD)^2 + (SMTE + SCA)^2 + (SPE)^2 + (STE)^2 + (RRA)^2 + (RMTE + RD)^2 + (RMTE + RCA)^2 + (RTE)^2\}^{1/2} + EA + BIAS$$

[ ] a, c

[ ] a, c

# Summary Table for Typical Setpoints

- Typical Setpoints provided in Summary Table which will include the following:
  - List of Protection Functions based on ABWR Technical Specifications
  - Safety Analysis Limits based on
    - ABWR DCD (Functions based Analysis)
    - Japanese ABWR Experience (Functions based on procurement (e.g., Emergency Core Cooling Systems))
  - Calculated Typical Setpoints
  - Total Allowance between Safety Analysis Limit and Typical Setpoint
  - Calculated Channel Statistical Allowance
  - Margin Availability

# Example of Typical Setpoint – Reactor Vessel Steam Dome Pressure – RPS

- For Reactor Vessel Steam Dome Pressure – RPS, summary table to include the following:
  - Safety Analysis Limit Based on ABWR DCD: [ ]a, c
  - Nominal Setpoint: comparable to operating BWRs: 7.34 MPaG (1064.6 psig)
  - Total Allowance = [ ]a, c
  - Calculated Channel Statistical Allowance = [ ]a, c
  - Margin Availability = [ ]a, c

# Follow Up Items from May 2009 Meeting

- Review of operational experience of Japanese ABWR plant setpoints
- Describe the conservatism in the as found versus the as left values since they are the same
- Discuss the requirements and guidance in RG 1.105, 10CFR50.36, ISA 67.04.01
- Discuss additional information on the Setpoint Control Program and the requirements and guidance in BTP 7-12

# Follow Up Items from May 2009 Meeting

Review of operational experience of Japanese ABWR typical setpoints

- Japanese ABWR setpoints were collected and reviewed
- Japanese setpoints were compared to typical setpoints calculated for STP 3 & 4
- STP 3 & 4 typical setpoints were found to compare favorably to setpoints used by operating Japanese ABWRs.

# Follow Up Items from May 2009 Meeting

Describe the conservatism in the as found versus the as left since they are the same

- As Found Tolerance = As Left Tolerance
- By definition, this is conservative as digital process racks do not experience significant drift

# Follow Up Items from May 2009 Meeting

Discuss the requirements and guidance in RG 1.105, 10CFR50.36 and ISA 67.04.01

- 10 CFR50.36 ABWR Technical Specifications
  - Review of 10CFR50.36 Technical Specification conducted
  - Typical Setpoints calculated for methodology report based on 10CFR50.36 ABWR Technical Specifications
- NRC Regulatory Guide 1.105 Rev. 3:
  - STP 3&4 ABWR Methodology is based on same methodology used for Westinghouse AP1000
  - Methodology is consistent with Reg. Guide 1.105 Rev. 3
- ANSI/ISA – 67.04.01-2006
  - Methodology is consistent with standard

# Follow Up Items from May 2009 Meeting

Provide additional information on the Setpoint Control Program and the requirements and guidance in BTP 7-12

- As described in the STP 3&4 Setpoint Control Program Plan, the Setpoint Control Program will include:
  - Graded Approach
  - Scaling Program
  - Development of Setpoint and Instrument Surveillance Program
  - Evaluation of As Left/As Found Data
  - Maintenance of Setpoints
  - Instrument Setpoint Methodology falls under the Setpoint Control Program and required by program to meet ANSI/ISA – 67.04.01-2006
  - Program designed to meet Reg. Guide 1.105 Rev. 3
- The Setpoint Control Program and Methodology will satisfy the requirements of BTP 7-12