

# ASME Codes and Standards

NRC SMR Licensing Workshop

June 15, 2011



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# Vendor Evaluation of Boiler and Pressure Vessel Code

- iPWR vendors plan to, in general, implement the ASME Boiler and Pressure Vessel Code as is
  - For each design, a very small number of exceptions may be pursued because of non-applicability
  - Vendors tentatively plan to submit code cases to support this
  - Once endorsement from NRC staff is achieved, it is anticipated that minimal NRC resources will be needed

## Future Work

- A few unique aspects related to operational programs will need to be addressed later
  - Example: In-Service Inspection
  - Cannot be fully evaluated now
- Defining the code year(s) that will be accepted
- Consider other codes and standards
- Interested in iterating approach after feedback from NRC staff

# Industry Security Position Paper Update

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# Overview

- Focus of position paper
- Relevant SMR features
- Considerations unique to SMRs
- Position paper path forward

# Focus of Position Paper

- Evaluate relevant factors in an integrated manner
- Plan to focus on potential changes to guidance rather than pursuing rulemaking
- For iPWRs
  - Use current licensing framework
  - May utilize provisions of 10 CFR 95.11 as appropriate
- Later, technology neutral licensing framework for non-LWR SMR designs could be developed

## Relevant SMR Features

- These features are being evaluated for developing more appropriate means of implementing security regulations for SMRs
  - Small size with limited access control
  - Reactor coolant boundary entirely within the reactor vessel
  - Long refueling intervals

## Relevant SMR Features (cont)

- Features are being evaluated (cont)
  - Simplified operations
  - Passive physical barriers
  - Passive safe shutdown capability
  - Immediate operator action sufficient to address security events
  - Multi-module considerations



# Considerations Unique to SMRs

- Plant layout
  - Optimal security personnel to maintain SMRs in a safe and secure manner
  - Smaller owner controlled areas and vital areas
  - Smaller number of target sets

## Considerations Unique to SMRs (cont)

- Underground siting and hardened facilities
  - Limited access points
  - Loss of large areas exposure

# Preliminary Conclusions

- For near-term applications, current regulations can be implemented
  - New approaches to implementation may be appropriate
  - Provisions of 10 CFR 95.11 may be sparsely utilized
  - Optimal security staffing levels may appreciably differ from current levels
- Additional regulatory guidance may reduce risk of negative impact on plant design

- Inherent SMR features should be considered

# Position Paper Path Forward

- Draft position paper under development and discussion
- Expanded discussion at future workshop is desired
- Anticipate completion in 3<sup>rd</sup> quarter 2011

# **Status Control Room Staffing Position Paper Related to SMR Licensing**

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# Control Room Staffing

- Identified as high priority per direction from SMR Working Group and SMR Oversight Committee
- Will evaluate approaches to determining appropriate control room staffing levels for SMRs
- Plan to engage with NRC staff as SECY on staffing is developed

# Position Paper Objectives

- To identify any new regulations or regulatory policy changes needed to support licensing SMRs
- To recommend approaches for assessing staffing levels for licensed operating personnel
- To recommend approaches for ensuring licensed operator staffing is achieved in timeframes that support SMR design, construction and startup

## Team Composition

- Industry and vendor experts in
  - Operator licensing and training
  - New plant design and operations
- Representation from
  - Vendors (B&W, NuScale, Westinghouse)
  - Utilities (Duke, FirstEnergy, Southern, TVA)
  - INPO
- Experienced in relevant discussions with NRC staff





# Near-Term ALWR Lessons Learned

- Considering lessons learned from the New Plant Licensing Operator Task Force
- Recognized early need for
  - Simulator
  - Systematic Approach to Training
  - Knowledge and Abilities Catalog Development
  - Revision of NEI 06-13A, “Template for Industry Training Program Description” specific to SMRs

# Evaluation of Current Regulatory Framework

- Reviewing regulatory foundation
  - First-of-a-kind deployment will follow existing regulations
  - Exemption requests may be pursued as allowed per current regulations
- Staffing requirements exemption guidance in NUREG 1791 informs the SMR optimized staffing
  - Nine review areas provide a template

# NUREG 1791

- Review areas
  - Concept Operations
  - Operational Conditions
  - Operating Experience
  - Functional Requirements Analysis and Function Allocation
  - Task Analysis
  - Job Definitions
  - Staffing Plan
  - Additional Data and Analyses
  - Staffing Plan Validation

# Consideration of Early NRC Feedback

- Optimal to receive conceptual feedback from NRC prior to finalization of paper
- Logistics of exemption request process
  - Inspection plan
  - Number of audits
  - Anticipated review time

# Near and Long Term Approaches

- Near term deployment
  - Existing regulatory framework
  - Exemption process if needed
- Subsequent deployment would benefit from
  - Proof of concept
  - Completion of first iteration of task analysis
  - Operating experience

# Areas of Consideration

- Expertise in control room
  - Optimal staffing numbers
  - Potential for exclusive use of SROs
- Impact of fleet operations/shared resources
  - Personnel
  - Facilities
  - Simulator
- Use of operating companies
- Appropriate training for subsequent licenses
- Task-informed staffing to use emerging technologies

# Training Timeline

- Interaction between evolution of design knowledge and timeline for licensed operator training and simulator certification
  - Simulator development and certification
  - Systematic Approach to Training development
  - Procedures development
  - Knowledge & Abilities Catalog
  - Overlay with supporting programs

# Position Paper Schedule

- Draft position paper in progress
- In-depth interactive discussion desired at August SMR Licensing Workshop
- NRC submittal expected for 3<sup>rd</sup> quarter