

# Shield Building Steel Plate Modular Design Regulatory Issues

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## Objective

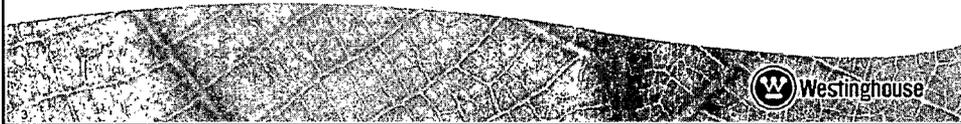
- Resolve questions and issues raised during the review of issues associated with NRC approval of the application of modular construction to the AP1000 Shield building.
- Refocus the review on regulatory requirements
- Demonstrate that the Westinghouse design methodology is an appropriate, conservative method to use.
- Support the staff in their determination that surface plate structural modules are an acceptable way to construct the shield building



## Approach for the Meeting

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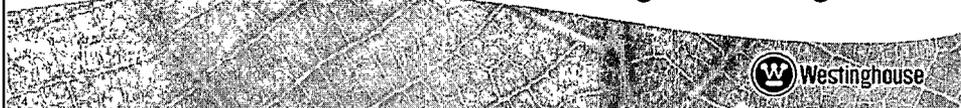
- Much of the discussion is planned to address the NRC recommendations in the NRC issues paper
  - Westinghouse should consider using a design method for which is derived from test data.
  - Westinghouse could apply the JEAG guideline
  - Westinghouse should consider using a non-linear inelastic analysis method
  - Westinghouse should consider conducting qualification tests for the anchorages.



## Background of Shield Building Change

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- AP1000 Certified Design used conventional reinforced concrete design principles
- Design was changed to steel surface plate technology to address aircraft impact.
- Aircraft impact was a concern at NRC highest level
- Enhanced Shield Building was included in DCD Revision 16.
- APP-GW-GLR-045 Revision 1 (November 2007) included Enhanced Shield Building wall design



## Regulatory Requirements

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- Shield Building is a Seismic Category I Structure
- Shield Building must function after a seismic event
- Supporting Functions
  - Support top of the air baffle and direct the containment cooling air flow
  - Contain water for passive containment cooling
  - Support passive containment cooling equipment
  - Protect containment vessel from impact
  - Provide Radiation Shielding for Severe Accidents



## Conclusion of Design Analysis

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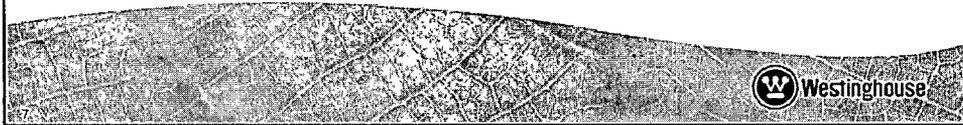
- There is reasonable assurance that the shield building functions are not adversely affected by design loads



## Capability of the Shield Building will be demonstrated in several ways

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- Satisfies the design requirements outlined in the DCD which are validated with test information.
- Verified using JEAG Guidelines on SC Construction
- Critical sections provide a detailed look at the Shield Building cylinder, air vent area, and roof and tank interface.
- Representative testing support SC designs.



## Plan for the balance of the meeting

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- Address the comments, assessment, and recommendations in the NRC issues paper.
- Provide a better explanation of the Westinghouse design and analysis methodology for the SC construction.
- Clarify and expand the validation of the Westinghouse design method by testing.
- Show that application of SC construction to the shield building satisfies regulatory requirements.



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Questions?

