

NNSA's REVIEW on SQUIB-VALVE of AP1000

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Questions

- Design information, failure mechanism, failure mode is needed
- No specified information was answered yet.

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Questions

- Provide detail information of the structure, technical specification, qualification and test.
- No specified information was answered yet.

Questions

- Provide the information of ISI
- No specified information was answered yet.

Expectation

- Would like to know the progress of NRC's review and assessment on the qualification & testing of squib-valve.

Thank you for your attention

NNSA's REVIEW on CRDM of AP1000

HU Liguang

Content

- Testing of control rod dropping time
- Seismic impact on the control rod dropping time during reactor scram in safety analysis
- Seismic qualification of CRDS

Testing of control rod dropping time

- NRC bulletin 88-47: type of testing
 - Dropping one by one----short time
 - Dropping together----long time
- The B 88-47 is a kind of reminding, not a requirement, and NRC accept "dropping one by one" for AP1000
- Acceptable, but the margin should be kept in accidental analysis for conservation.

Seismic impact on the control rod dropping time during reactor trip in safety analysis

- Seismic impact on the CR dropping time was normally considered in China conventional PWR as well as some international practice.
- It is not required by both China and US regulation or code.
- Considering the low probability of the site, it could be acceptable for accidental analysis.

Seismic qualification of CRDS

- HAF J.0053<Guideline of seismic qualification of nuclear equipment>
- Require the equipment of seismic ^I Class should be qualified by testing in case of their function could not be certified by analysis. CRDM belong to safety 3 Class, so the seismic qualification is needed.

Seismic qualification of CRDS

- The opinion of licensee: Seismic qualification is not needed because, according to the classification of AP1000, the CRDM is belong to "D Class" except the primary boundary which has been qualified by analysis.
- NNSA staff review: not conform with ANSI51.1 and the commitment of PSAR
- Need further discussion.

NNSA's REVIEW on SHIELD BUILDING of AP1000

HU Liguang

Content

- General opinions
- Specific Questions

General opinions

- Protection from malice attack of commercial airplane
 - BDDBA
 - Accepted in Samen 1st unit, needs further following on the WEC and NRC
 - 10 CFR Part 50.150, “Consideration of Aircraft Impacts for New Nuclear Power Reactor Designs” (NRC-2007-0009)

General opinions

- The reactor qualified after 13th, July, 2009, shall evaluate this impact on safety
- NNSA staff's opinion:
 - ✓ renew requirements in regulations in the future
 - ✓ the modification in Haiyang NPP is acceptable

General opinions

- WEC standard design in soft bedrock
 - DCD 15 renewed by DCD 16, reinforce the structure to fit the soft bedrock
 - ALL the existed sites in China are on hard rock, NNSA staff accept the standard design based on DCD 16

General opinions

- The new structure of shield building
 - A new concrete structure with steel reinforced on both sides or single side was adopted
 - It was not required to protection against commercial airplane, so it is acceptable, for the strength is to be reinforced by new design

General opinions

- Design of joint between conventional and steel reinforced concrete needs further assessment
- Justification on the design codes and technical basis are needed before accepted by NNSA

Thank you for your attention