

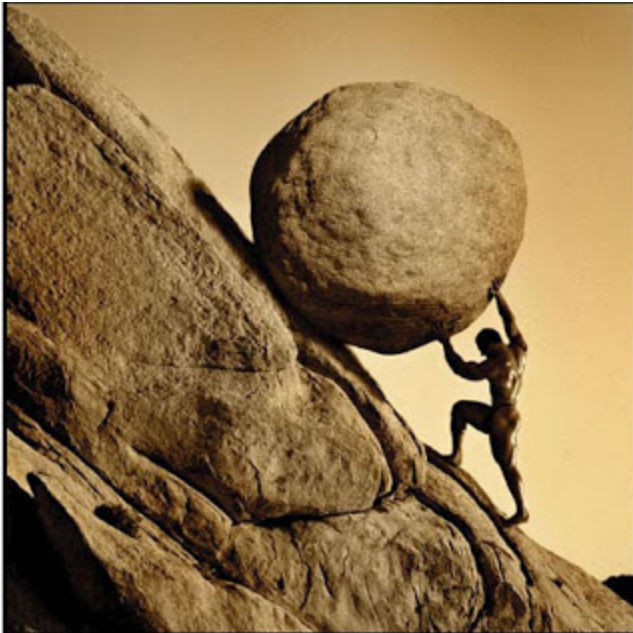


Application of Modeling Techniques

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Overview

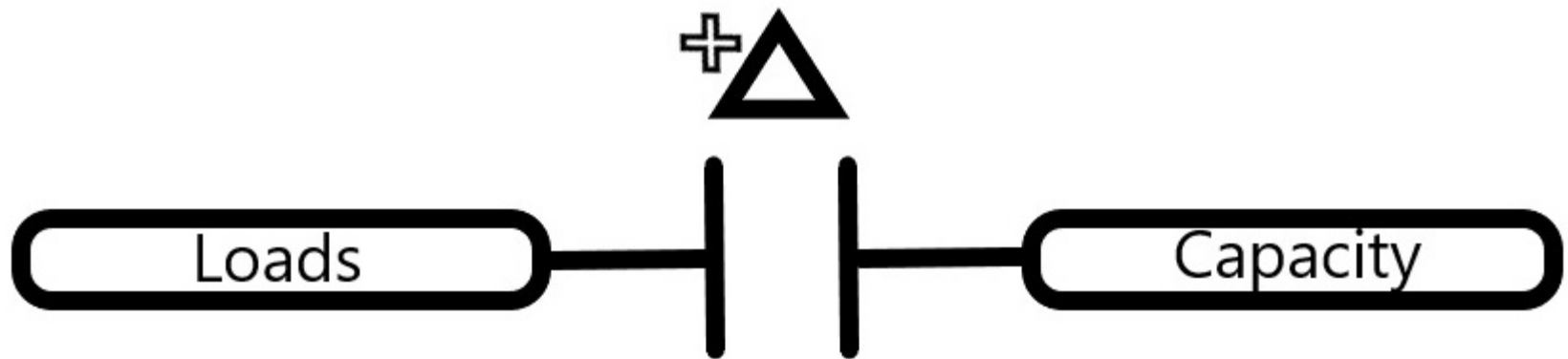
- Safety Considerations
- Margin
- Numerical Analysis
- Tools for Evaluation in Licensing

Safety Considerations

- Low risk* provided that... confinement is maintained.
- No uncontrolled criticality
- Dose limits to protect the public and workers
- Retrievability (assembly vs canister)

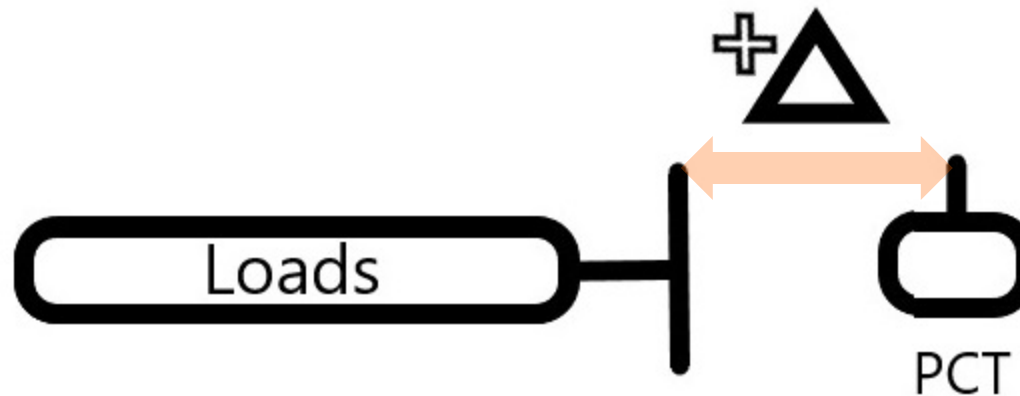
Margin (Structural)

Load and Resistance Factor Design



Margin (Thermal)

Thermal Design



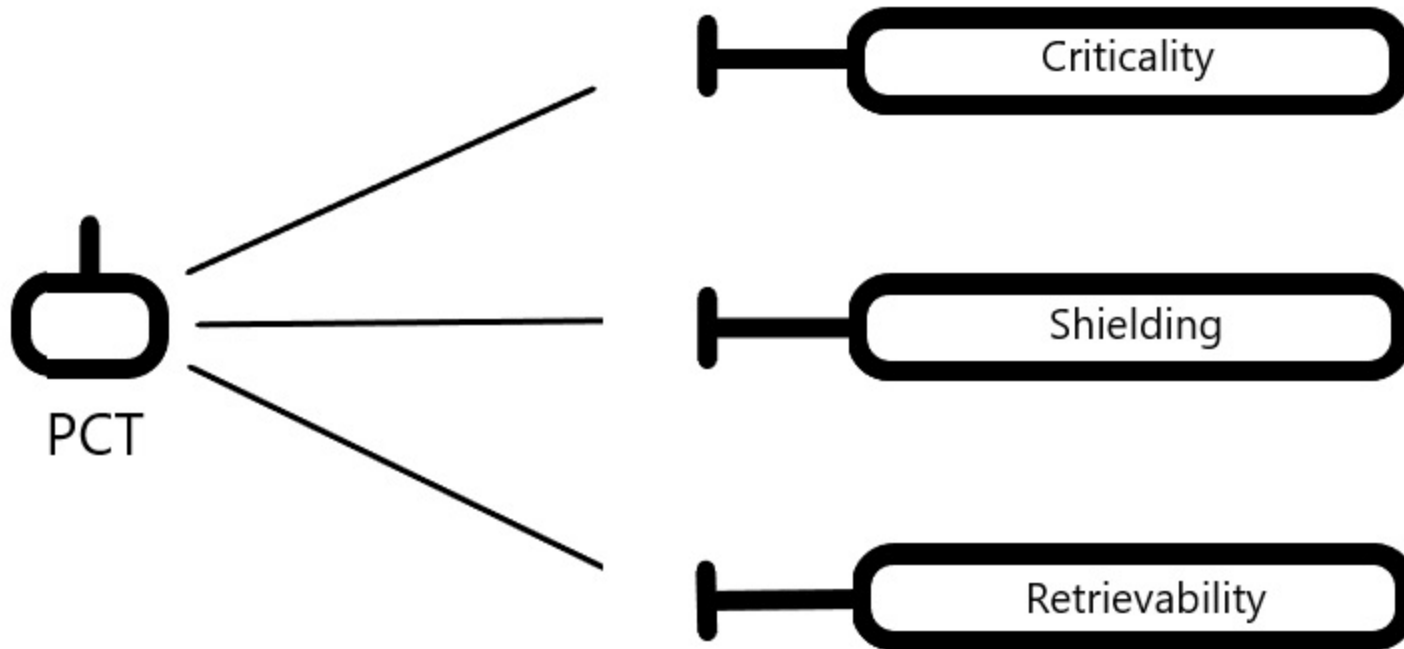
Note:

NO identified modifier increases for T...

NO identified modifier decreases for Design Limits...

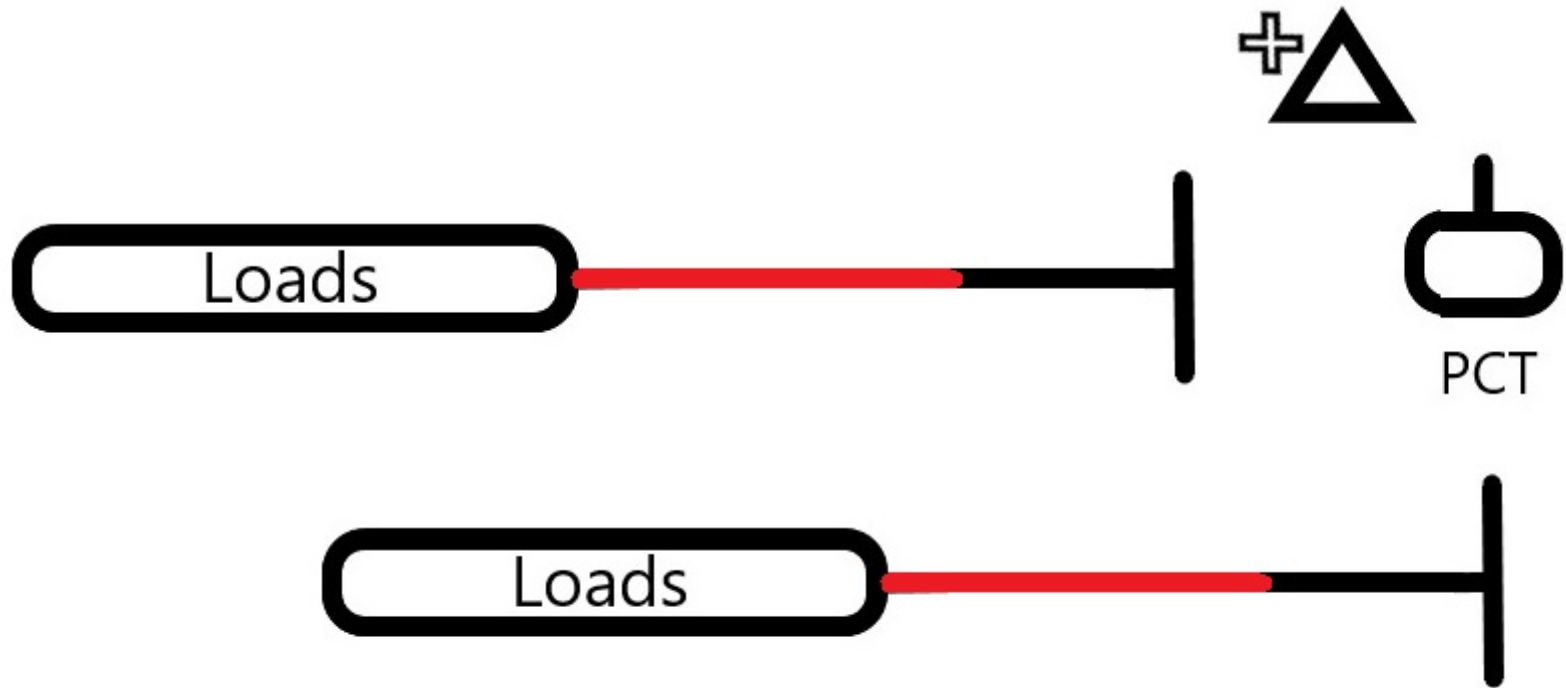
*PCT: Peak Cladding Temperature

Margin (Thermal)



Margin (Thermal)

(undefined conservatisms)



Margin (cont.)

Implication for Technical Review:

- Approval at requested capacity
- Consideration of as-loaded conditions
- Credit for 'conservatisms' (1) Identify (2) Justify (3) Quantify (4) Propose

Intermediate Conclusion

- Technical Staff evaluates designs
- Operational experience and undefined conservatism are not credited
- Licensing Basis

Numerical Analysis

- Current state of the art for numerical analysis
- Research (dry cask simulator, demo project)

Thus, numerical analysis by itself should not be an impediment to licensing. Why is it?

Reasonable Assurance of Adequate Protection

- Are we collectively doing too much technical review?
- What would minimal (or at least targeted) technical review look like?
- How can we make technical review, or at least parts of it, a defense in depth exercise?

Innovative Tools for Licensing Evaluations

Graded Approach ideas:

- Uncertainty Bands or Conservatisms
- Operational Experience
- Level of Review

Using the Whole Regulatory Toolkit

- Inspection Oversight Program
- Integration with Technical Review
- Using Technical Specifications

Summary & Conclusions

- Efficiency gains and review procedures → Today
- Technical rigor unchanged
- Review efficiency → future
- Implication → Change focus to big gains (amendments, change authority, scoping and acceptance reviews)

Questions