RIC 2005
SESSION A1

RISK-INFORMING ECCS ANALYSIS REQUIREMENTS 10CFR50.46

WHY ?

Dr. L. E. Hochreiter
Professor of Nuclear and Mechanical Engineering
The Pennsylvania State University
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- Current 10 CFR 50.46 deterministic analysis has served the industry and NRC well.
  - Brought stability to the licensing process for ECCS.
  - It is a “go/no-go” process, knew where you were.

- Was more bounding approach, did not have to argue about probabilities.

- Appendix K role change in 1988, gave the industry additional flexibility and margin.

  – Use of Best-Estimate analysis resulted in LOCA margin, allowed power up-rates, improved fuel utilization and economics.

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- Best-Estimate approach gave incentive for modeling improvement, gain margin.

- Best-Estimate analysis does reduce conservatism or margin.

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- After TMI, it was believed that PRA should be used to identify events and sequences that were not previously addressed, but NOT to be used to decrease robustness or margin of the deterministic design.

- With PRA, I have concern on our complacency, we appear to know all, nothing is unforeseen, nothing can happen.

- The proposed changes to 10 CFR 50.46 erodes margin at a time when the plants are being driven harder and are older.

- Proposed changes to GDC clearly reduce the plant “forgiveness” for unforeseen events, make the plants/systems less robust, degrades defense in depth for the plant response.

- Proposed changes removes single failure requirements for breaks beyond TBS,
  - GDC 17 Electrical Power Systems
  - GDC 35 Emergency Core Cooling
  - GDC 38 Containment Heat Removal
  - GDC 41 Containment Cleanup
  - GDC 44 Cooling Water

- The proposed changes degrade the mitigation capability of the ECCS and containment cooling systems, for breaks greater than TBS, this will increase risk.

- Proposed method for breaks larger than TBS only addresses the plant NOMINAL operating conditions, not the complete reactor allowable operating space.

- This may lead to PCTs > 2200 ^{0} F
  - Un-coolable Core Geometry (not defined).

- Proposed changes make the analysis more complex since there are now two different break ranges with two different criteria.
  - Different analysis methods/tool/assumptions would be used.

- Significant burden on the utility to justify changes via PRA and deterministic analysis.

- There has also been discussion of making some safety functions operator initiated, not automatic: This is not good, operators are not trained for this.

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- Areas of potential safety improvements can be achieved with current regulations using Best-Estimate LOCA.
  - Different ECCS set-points, Accumulators, LHSI systems, containment sprays.
  - Diesel delay times
  - Sequencing ECC and Containment Cooling Systems.

- NRC also indicates that 10 CFR 50.46 changes help with the containment sump and switch-over to sump re-circulation issues.

- These are issues which should be handled separately.

- 10 CFR 50.46 AIN'T BROKE, SO WE SHOULD NOT TRY TO FIX IT.