COMMENTS ON NEW REACTOR LICENSING

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My views have the benefit of:

- ACRS Subcommittee on Advanced Reactors
- ACRS Workshop on Future Reactors (June 2001)
- Workshop on High Temp. Gas-Cooled Reactor Safety and Research Issues (October 2001)
- Discussions at ACRS retreat (January 2002)

Certification of new-technology reactors could take either of two courses:

- Fit into current regulatory structure with risk-informed modifications [AP1000; IRIS; PBMR; GA-MHR]
- Await the recrafting of the regulatory system to be technology neutral

A major impediment could be the lack of high-level risk acceptance criteria for the full range of regulatory objectives:

- CDF & LERF are insufficient

- **Acceptance criteria on frequency of release of any magnitude [e.g. F-C Acceptance Curves] is needed. These could be made consistent with the frequency-cost product of the prompt fatality safety goal**

Other impediments could be:

- Defense in Depth (setting necessary and sufficient limits)
- Criteria for selecting design basis accidents (DBA)

The objective of selecting DBA is that:

When these are "dealt with" according to the requirements of the regulations, the excluded low-frequency severe accident events will also be "dealt with" by the same safety provisions to the extent that the summation of risk contributions over all events renders an acceptable risk level.

SELECTING DBA WILL REQUIRE:

1. Identifying the initiating event frequencies
2. Selecting a cut-off value
3. Developing a design according to DBA Regulatory Requirements
4. Developing a design-specific PRA

5. Having high-level frequency acceptance criteria for the full range of consequences
6. Iterating on items 2 to 5 above until risk acceptance criteria are met