

Mr. James M. Taylor
Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Taylor:

SUBJECT: ISSUES PERTAINING TO EVOLUTIONARY AND PASSIVE LIGHT WATER
REACTORS AND THEIR RELATIONSHIP TO CURRENT REGULATORY
REQUIREMENTS

During the 383rd, 384th, and 385th meetings of the Advisory Committee on Reactor Safeguards, March 5-7, April 2-4, and May 6-9, 1992, we discussed with representatives of the NRC staff the staff's positions, recommendations, and resolution schedules concerning the certification issues for evolutionary and passive light water reactors contained in the draft SECY paper dated February 7, 1992. We also had the benefit of the documents referenced. The staff requested ACRS comments on the draft SECY paper. Our comments and recommendations on some of the staff's positions are given below.

I. SECY-90-016 Issues

Item M. Elimination of Operating Basis Earthquake

Appendix A to 10 CFR Part 100 currently establishes the Operating Basis Earthquake (OBE) at a level one-half of the Safe Shutdown Earthquake (SSE). With this specification, the OBE exerts undue influence over the seismic design and requires a full spectrum analysis in addition to that of the SSE. The staff's proposal is to effectively decouple the OBE from design. We agree with the staff's recommendation.

II. Other Evolutionary and Passive Design Issues

Item A. Industry Codes and Standards

We agree with the staff's recommendation to use the newest codes and standards that have been endorsed by the NRC in its reviews of both the evolutionary and passive plant design applications, and its recommendation that unapproved revisions to codes and standards be reviewed on a case-by-case basis.

Item D. Leak Before Break

We agree with the staff's recommendation to extend the application of the leak-before-break approach for both evolutionary and passive advanced light water reactors.

Item E. Classification of Main Steamlines of Boiling Water Reactors (BWRs)

We agree with the staff's recommendation for resolution of the main steamline classification for both evolutionary and passive BWRs.

Item F. Tornado Design Basis

Based on a study (NUREG/CR-4661) that compiled a considerable quantity of tornado data, the staff recommends that the maximum tornado wind speed of 300 mph (compared with the present 360 mph) be used for the design-basis tornado. We agree that the best available data should be used, but caution that design-basis specifications have sometimes been established conservatively to provide margins to deal with events not specifically addressed in the design basis. We recommend that the staff's position be approved with a qualification that the staff require assurance that other potential loads that may have been previously subsumed within the tornado design basis be taken into account if necessary.

Item H. Containment Leakage Rate Testing

The staff recommends that the maximum interval between Type C leakage rate tests for both evolutionary and passive designs be increased to a 30-month interval from the 24-month interval now required in 10 CFR Part 50, Appendix J. No significant safety penalty caused by this change has been identified. We agree with the proposed staff position.

Item I. Post-Accident Sampling System (PASS)

The staff is requesting approval of changes in requirements for the PASS currently found in 10 CFR 50.35(f)(2)(viii). These requirements, and the guidance contained in Regulatory Guide 1.79 and in NUREG-0737, resulted from consideration of the TMI-2 accident.

We agree with the staff's proposal but have the following comments:

1. The requirements as contained in the above referenced regulation refer to "the reactor coolant system and containment that may contain TID-14844 source term radioactive materials" and to measurement of these and other materials. In light of source terms now considered in severe accident analysis, it is advisable to revise this obsolete description.

2. The proposal for "Elimination of the Hydrogen Analysis of Containment Atmosphere Samples" is appropriate, given that safety grade hydrogen monitoring instrumentation will be installed.
3. The Electric Power Research Institute (EPRI) proposed elimination of an existing requirement for the capability to sample the reactor coolant at operating pressure in order to measure the dissolved gas and chloride in the coolant. EPRI claims that maintaining the systems on existing plants produces significant exposure of operating personnel, and that given a severe accident, no useful information, not otherwise available, is provided by this capability. The staff proposes to retain the requirement, but to change the time after accident onset at which the capability must be available from 8 to 24 hours. During our discussion with the staff, we were unable to elicit any reason for this requirement other than that it was established following the TMI-2 accident. We cannot endorse continuation of the requirement for high pressure sampling on the basis of information available to us.
4. The staff proposes approval of a position that "would require the capability to take samples for boron and for activity measurements 8 hours and 24 hours, respectively, after the end of power operation." The intent appears appropriate, however, we suggest that it might be better to specify a time at which the information from measurements becomes available to the operator rather than the time at which samples can be taken. Further, we assume that what is required is boron concentration rather than the presence or absence of boron. Finally, we suggest that the phrase "after the end of power operation" be made more specific.

Item N. Site-Specific Probabilistic Risk Assessment

If, as concluded by the staff, enveloping analyses are practical for both seismic events and tornadoes, it is appropriate that these be part of the submittal at the time of certification. However, enveloping analyses are not as practical for other external events such as river flooding, storm surge, tsunamis, hurricanes, and volcanism. Therefore, the staff recommends that these other types of site-specific PRA information be submitted at the combined operating license (COL) stage. We agree with this recommendation but would like to

hear more about how the staff proposes to deal with any unacceptable findings at the COL stage.

Sincerely,

David A. Ward
Chairman

References:

1. Draft SECY paper dated February 7, 1992, for the Commissioners, from James M. Taylor, NRC Executive Director for Operations, Subject: Issues Pertaining to Evolutionary and Passive Light Water Reactors and Their Relationship to Current Regulatory Requirements (Draft Predecisional)
2. SECY-90-016 dated January 12, 1990 for the Commissioners from James M. Taylor, NRC Executive Director for Operations, Subject: Evolutionary Light Water Reactor (LWR) Certification Issues and their Relationship to Current Regulatory Requirements
3. U.S. Nuclear Regulatory Commission, NUREG/CR-4661, Subject: Tornado Climatology of the Contiguous United States, dated May 1986