UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

October 14, 1998

Mr. L. Joseph Callan
Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Dear Mr. Callan:

SUBJECT: RISK-INFORMED PILOT APPLICATION FOR HYDROGEN MONITORING AT ARKANSAS NUCLEAR ONE, UNITS 1 AND 2

During the 456th meeting of the Advisory Committee on Reactor Safeguards, September 30 - October 2, 1998, we reviewed the risk-informed pilot application for monitoring hydrogen concentration in containment at Arkansas Nuclear One (ANO), Units 1 and 2. In this application, the licensee requested that the required time for activating the hydrogen monitoring system after start of safety injection be changed from 30 minutes to 90 minutes to reduce burdens on operators at critical times. During this review, we had the benefit of discussions with representatives of the NRC staff and with a representative of Performance Technology, Inc. We also had the benefit of the documents referenced.

Recommendation

We agree with the supporting analyses for the ANO licensee's request and have no objection to the staff's approval.

Discussion

Entergy Operations, Inc. (EOI) requested relief from the requirement that the hydrogen monitoring system be activated within 30 minutes following the start of safety injection. EOI stated that the need for monitoring the hydrogen concentration for design-basis accidents (and presumably for higher probability accidents) only occurs after several hours following safety initiation. They also demonstrated that the hydrogen recombiners have insufficient capacity to significantly mitigate the hydrogen concentration resulting from severe accidents. Any short-term need to have early indication of core damage status is satisfied by other more appropriate and useful indicators.

The first 30 minutes after the start of safety injection is a crucial period in which plant operators are called upon to take numerous high-priority actions. The requirement to activate the hydrogen monitoring system during this period is an unnecessary diversion. EOI made a persuasive qualitative case that the removal of the diversion with this requested change has a high likelihood of actually decreasing risk. Inasmuch as defense-in-depth and the deterministic

regulatory requirements also appear to be appropriately treated in this change request, we believe that it would qualify as being acceptable under the Regulatory Guide (RG) 1.174 guidance. Although the licensee did not elect to use this approach, we believe that RG 1.174 provides appropriate guidance for the staff's review.

Although it is apparent that this requested change does not pose any undue risk, other, more significant, changes to the hydrogen recombiner systems could have implications with respect to the ability to manage or limit releases of smaller quantities of fission products from unfailed containments. The value of recombiner systems in this regard should be quantified prior to making decisions on licensee requests for removal of, or other significant changes to, these systems.

Sincerely,

R. L. Seale

R. L. Seale
Chairman

References:

1. Letter (undated), W. Reckley, NRR, to C.R. Hutchinson, Entergy Operations ANO, transmitting Confirmatory Order Modifying Post-TMI Requirements Pertaining to Containment Hydrogen Monitors for Arkansas Nuclear One, Units 1 and 2 (Predecisional Draft).
2. Letter dated September 9, 1998, from J. D. Vandergrift, Entergy Operations, Inc., to NRC, Subject: Proposed Change to Requirements Regarding Containment Hydrogen Monitors for Arkansas Nuclear One, Units 1 & 2.
3. Letter dated March 2, 1998, from D.C. Mims, Entergy Operations Inc., to NRC, Subject: NUREG-0737, Item II.F.1.6, Containment Hydrogen Monitor Request for Relief.
4. Letter dated October 28, 1997, from D.G. McDonald, Office of Nuclear Reactor Regulation, NRC, to N. S. Carns, Northeast Nuclear Energy Company, Subject: Withdrawal of Deviation Request for NUREG-0737, Item II.F.1.6, Containment Hydrogen Monitors - Millstone Nuclear Power Station, Unit No. 2.
5. Letter dated February 4, 1992, from J. J. Fisicaro, Entergy Operations, Inc., to NRC, Subject: NUREG-0737, Item II.F.1 Attachment 6, Hydrogen Analysis Capability.
6. Letter dated September 11, 1998, from, B. Christie, Performance Technology, to R. L. Seale, Advisory Committee on Reactor Safeguards, Chairman, transmitting information relevant to "Risk-Informed Pilot Application for Hydrogen Monitoring at Arkansas Nuclear One."
7. Letter dated September 21, 1998, from B. Christie, Performance Technology, to R. L. Seale, Advisory Committee on Reactor Safeguards, Chairman, Transmitting Letter dated September 10, 1998, from D. E. Nunn, Southern California Edison, Subject: Request for Exemption to 10CFR50.44, 10CFR50, Appendix A, General Design Criterion 41, and 10CFR50, Appendix E, Section VI. Proposed Technical Specification Change NPF-10/15-496, San Onofre Nuclear Generating Station, Units 2 and 3 (SONGS 2 & 3)