



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELIEF REQUEST FROM THE REQUIREMENTS OF NUREG-0737, II.F.1, ATTACHMENT 6

ENTERGY OPERATIONS, INC.

ARKANSAS NUCLEAR ONE, UNIT 2

DOCKET NO. 80-368

1.0 INTRODUCTION

On January 19, 1990, the licensee requested relief from the requirement of NUREG-0737, Item II.F.1, Attachment 6, to have hydrogen monitoring available within 30 minutes of the initiation of safety injection. The request was made because of the licensee's concern that unforeseen failures could complicate the sequence of steps to initiate the hydrogen monitoring system within 30 minutes. Therefore, the licensee requested that the time to have hydrogen monitoring available be changed from 30 minutes to one hour and 30 minutes. The staff determined in a November 30, 1990, safety evaluation that the capability for monitoring hydrogen concentration levels in the containment structure following a loss-of-coolant accident should be available in no more than thirty minutes, as stated in NUREG-0737.

Entergy Operations' letter dated February 5, 1991, committed to implement modifications on Arkansas Nuclear One, Unit 2 (ANO-2) to ensure a representative sample of containment atmosphere hydrogen concentration could be obtained within 30 minutes of the initiation of safety injection following an accident. However, due to the high cost of the modifications, the licensee further explored their desire to obtain relief from the 30-minute requirement and requested, in a February 4, 1992 letter, that the staff review an attached report entitled, "Monitoring Hydrogen Gas in Containment During the Early Phases of a Severe Accident". The study was performed by Combustion Engineering (CE) on behalf of ANO in conjunction with other CE owners who had shown an interest in the technical requirement associated with hydrogen monitoring.

2.0 EVALUATION

Although there are instruments such as core exit thermocouples, containment radiation monitors, and ex-core detectors that will provide an indication of core damage other than the hydrogen monitor, it is the staff's belief that the hydrogen monitor is the operators most direct indication of the degree of core damage. This belief formed part of the basis for the NUREG-0737 requirement. In fact the original intent of the regulation was to have a continuous hydrogen monitoring capability inside containment in order to provide immediate indication to plant personnel. A compromise was arrived at between

the staff and those licensees that did not have continuous indication because of equipment limitations. It was and still is the staff's opinion that a continuous indication within 30 minutes of the initiation of safety injection is a reasonable time limit using existing technology.

The staff finds that allowing more than 30 minutes to elapse following the initiation of safety injection is not justified since industry has shown the ability to meet this criteria. Therefore, the staff finds that the intent of NUREG-0737 would not be met and that the licensee's request for an extension of the requirement from 30 minutes to one hour and 30 minutes is unacceptable.

### 3.0 CONCLUSION

Based on our review, the staff concludes that the licensee's proposed request to allow a one hour extension to the 30 minute requirement of NUREG-0737 for post-accident hydrogen monitoring is unacceptable because it does not meet the intended position in NUREG-0737, Item II.F.1, Attachment 6.

Principal Contributor: M. Snodderly, SPLP

Date: August 13, 1992

Docket No. 50-368

August 13, 1992

Mr. Neil S. Carns  
Vice President, Operations ANO  
Entergy Operations, Inc.  
Route 3 Box 137G  
Russellville, Arkansas 72801

Dear Mr. Carns:

SUBJECT: RELIEF REQUEST FROM NUREG-0737 - HYDROGEN MONITORING REQUIREMENT  
FOR ARKANSAS NUCLEAR ONE, UNIT 2 (TAC NO. M82714)

By letter dated February 4, 1992, Entergy Operations requested relief from the 30 minute operability requirement in NUREG-0737 for the hydrogen monitoring system. The staff has reviewed the submittal and documented its findings in the enclosed Safety Evaluation (SE).

Based on our evaluation, the staff finds the request unacceptable and is hereby being denied. The staff maintains that the requirement to detect hydrogen concentration in containment within 30 minutes after a loss-of-coolant accident (LOCA) is critical to timely and proper determination of plant condition and effective operator actions to mitigate the accident.

Sincerely,

ORIGINAL SIGNED BY  
Thomas W. Alexion, Project Manager  
Project Directorate IV-1  
Division of Reactor Projects III/IV/V  
Office of Nuclear Reactor Regulation

Enclosure:  
As stated

cc w/enclosure:  
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