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SUBJECT: Responds to unreviewed safety question re standby gas treatment sys.

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September 25, 1990
G02-90-155

Docket No. 50-397

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Gentlemen:

Subject: NUCLEAR PLANT NO. 2, OPERATING LICENSE NPF-21
STANDBY GAS TREATMENT SYSTEM (TAC NO. 75048)

Reference: Letter, G02-89-176, GC Sorensen (SS) to NRC, "Unreviewed Safety Question Regarding Standby Gas Treatment", dated September 29, 1989

In the reference letter the Supply System notified the NRC of a concern with the ability of the WNP-2 Standby Gas Treatment (SGT) System to establish secondary containment negative pressure under certain meteorological conditions. We met with the staff on January 16, 1990 to present our proposed methodology and assumptions to achieve resolution of the identified concern.

The purposes of this letter are to respond to the input received from the NRC at the January meeting and to inform the NRC of our plan for final resolution of this concern for WNP-2. The three specific areas of discussion at the meeting related to: the potential for increasing SGT flow, our use of a uniform leakage model for secondary containment and taking credit for suppression pool scrubbing. These are addressed in this letter.

The Supply System is currently proceeding with resolution of this issue with the plan and schedule outlined herein. It is important that we receive timely NRC response to this plan since it continues to involve a significant analytical and documentation effort by the Supply System and will require an eventual request for a change to our Technical Specifications.

The resolution of the secondary containment performance concern will involve the following:

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Design Changes

The SGT System will be made single failure proof with respect to obtaining and maintaining SGT flow from both trains. This will be accomplished by modification to the two SGT trains to ensure there is no post-accident single failure that will result in closure of the SGT inlet valves (V-2A and -2B). The normal position of these valves will also be changed because they are currently "normally closed". This will result in both trains of SGT being available during a design basis accident condition such that the available SGT flow is double that currently available given a single failure. A single failure analysis has confirmed that with this modification, both trains of SGT will be available for the most limiting single active failure. A key to the success of this analysis was, of course, that the current design has redundant fans and heaters in each train of SGT with each powered from a separate division. This design change, which results in the doubling of SGT flow, addresses the NRC comment regarding the potential for increasing SGT flow to aid in the resolution of the concern.

Model

The discussion here only addresses major changes and additions to the model that are different from that presented at the January 16 meeting.

- Leakage

  The previous secondary containment uniform leakage model has been revised to characterize leakage as split between high and low elevations. This more accurately reflects the leakage paths of the WNP-2 secondary containment. The upper 60 feet of secondary containment is covered with siding with significant linear footage of lap seams, while the majority of building penetrations and air lock entrances are closer to grade level. Testing and inspection during our spring 1990 refueling outage supports the assumption that the majority of the leakage is through the siding seams. The leakage assumptions will conservatively place the major leakage at grade level in the wintertime and at the higher elevation in the summertime. The wintertime grade level leakage will be assumed to be 60 to 70 per cent of the total and the summertime higher level leakage will be assumed to be 90 to 100 percent of the total.

- Scrubbing

  The WNP-2 model will not take credit for suppression pool scrubbing as the complexities involved in quantifying and justifying this credit negate its benefits.

The incorporation of a split model and not taking credit for suppression pool scrubbing address the NRC comments regarding the use of a uniform leakage model and suppression pool scrubbing.

The secondary containment leakage analysis will be based upon meteorological conditions with more than five percent frequency as discussed in our January 16, meeting.

Source Terms

We have informally discussed with the staff the use of proposed new source terms that include a delay in the release of the radionuclides to containment which would aid in the resolution of the concern. Our suggestion was for either early NRC approval of this aspect of the new source terms to aid in the resolution of this issue for all impacted BWRs or a willingness by the NRC to review a WNP-2 specific application of a delayed release for specific resolution of the WNP-2 secondary containment performance issue. We were discouraged from planning for either approach. The model therefore uses Regulatory Guide 1.3 source terms. As we believe the source term delay is an appropriate assumption for this analysis, our results will be very conservative with regards to control room and offsite consequences. As discussed below, we may redo the analysis should the NRC provide for acceptance of revised source terms in the future.

Input to Model

Previously the failure of a SGT train was the most limiting single failure. With the hardware modifications discussed above this is no longer credible. The most limiting active failure is now the loss of one train of Standby Service Water. This is more limiting than the failure of any of the emergency diesel generators because of the continued heat load their outputs provide. Thus, during the event, both emergency diesel generators and the High Pressure Core Spray diesel generator will conservatively be assumed operable and continuing to power heat producing equipment in the Reactor Building.

The initial spray pond temperature will be assumed to be the Technical Specification upper limit of 77°F. At our January meeting we had proposed a lower wintertime value which would have enhanced the performance of the SGT System relative to secondary containment draw down.

The current Technical Specification secondary containment leakage value of 2240 cfm will most likely be retained. A lower value (1475 cfm) is used in the existing justification for continued operation and we had previously believed a value of less that 2240 cfm would be required for final resolution of the concern. As discussed below, changes to the Technical Specifications to clarify the significance of the leakage parameter will, however, be required.

The design basis flow for each SGT train will be increased from 4460 to 5300 cfm. With two trains of SGT operating, the total will be 10,600 cfm.

Technical Specification Changes

As discussed above, we currently expect that the secondary containment leakage value of 2240 cfm will not need to be changed. However, the Technical Specifications will need to be clarified to explain that the leakage value reflects standard conditions (i.e., without consideration of the temperature or wind effects).

As two trains of SGT will be assumed to be available, a new LCO will be required for the removal of one train for testing and maintenance. The LCO will be based upon maintaining less than the full -0.25" wg differential pressure at the reactor building roofline during wintertime post-accident meteorological conditions. The limiting conditions will be supported by the design basis analysis modeling of single SGT train operation.

Normal Secondary Containment Pressure Control

The SGT will maintain the differential pressure across all surfaces of secondary containment at or greater than -.25" wg following the accident. However, during normal operation certain surfaces will be maintained only slightly negative (about -0.1" wg or less). The plan to reduce the normal operating condition from -0.25 to about -0.1" wg follows analyses of the factors which affect pressure control. Immediately after the onset of the accident the building pressure becomes positive and remains so until SGT System operation begins. The establishment of the -0.25" wg following the event is not greatly influenced by the initial building pressure. Any impact of this change in normal plant operation will be addressed more quantatively when we present the results of the final analysis.

Schedule

The following is our schedule for achieving final resolution of the SGT and secondary containment performance concern:

- Submit results and conclusions of the final analysis to NRC. — 1/91
- Submit proposed changes to the Technical Specification with the improved technical specification submittal. — 5/91
- Update FSAR SGT System description and Chapter 15 accident analysis. — 9/91

As discussed above, we may in the future revise our analysis based upon changes to Regulatory Guide 1.3 or other NRC communication approving the use of alternate source terms. One purpose of such a reanalysis would be to establish a greater margin between General Design Criterion 19 and 10 CFR 100 acceptance criteria and the consequences of a design basis LOCA for WNP-2.

Very truly yours,

G. C. Sorensen, Manager
Regulatory Programs

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