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SUBJECT: Forwards rev 0 to Technical Memorandum TM 2025, "Secondary Containment/Standby Gas Treatment Design Basis."

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December 22, 1992
G02-92-0268

Docket No. 50-397

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

Gentlemen:

Subject: WNP-2, OPERATING LICENSE NPF-21
STANDBY GAS TREATMENT/SECONDARY CONTAINMENT
(TAC NO. M 75048)

References:
1) Letter G02-89-176, dated September 29, 1989, GC Sorensen (SS) to NRC, "Unreviewed Safety Question Regarding Standby Gas Treatment"
2) Letter dated January 3, 1990 RB Samworth (NRC) to GC Sorensen (SS), "Evaluation of JCO Regarding Standby Gas Treatment System Attainment of Secondary Containment Pressure (TAC No. 75048)"
3) Letter G02-89-216, dated November 30, 1989, GC Sorensen (SS) to NRC, "Unreviewed Safety Question Regarding Standby Gas Treatment (SGT) System"
4) Letter, G02-90-027, dated February 16, 1990, GC Sorensen (SS) to NRC, "Standby Gas Treatment System (TAC No. 75048)"
5) Letter G02-90-155, dated September 25, 1990, GC Sorensen (SS) to NRC, "Standby Gas Treatment System (TAC No. 75048)"
6) G02-92-076, dated March 31, 1992, JW Baker (SS) to NRC, "Licensee Event Report No. 92-008-00"

In Reference 1 the Supply System identified a concern relative to the ability of the WNP-2 Standby Gas Treatment (SGT) System to drawdown the secondary containment to the licensing basis -0.25" water gauge (w.g.) at the building roofline. The original loss of coolant accident (LOCA) analysis for WNP-2 assumed that this pressure differential was re-established within two minutes of the initiation of SGT at which time secondary containment unfiltered releases were assumed to be terminated. Reference 1 stated that the time to re-establish the -0.25" w.g. would be greater than two minutes and that under some meteorological conditions this differential pressure would never be obtained. The purpose of this letter, with its enclosure, is to inform the NRC of the proposed final resolution of this issue for WNP-2.

Background

In 1987 Niagara Mohawk Corporation submitted an LER on NMP-2 following discovery that assumptions used to evaluate secondary containment differential pressure drawdown time following a postulated LOCA with a coincident loss of offsite power (LOOP) were not conservative with regard to the assumed Reactor Building-to-service water differential temperature and the vertical temperature gradient within the Reactor Building. Upon review of WNP-2 calculations of drawdown time, it was found that the WNP-2 analysis was also nonconservative in these areas. Further, the original WNP-2 analysis did not consider adverse meteorological conditions of wind and temperature that increase secondary containment leakage. Wind increases the demand on the SGT to hold the leeward side and roof of the Reactor Building sufficiently negative while simultaneously increasing the differential pressure and thus the in-leakage on the windward side of the building. Differential temperature between the inside and outside of the building creates a differential pressure gradient from the bottom to the top of the building due to the density difference of the air inside and outside the building. As a result, the lower portion of the building must be held at a high differential pressure to assure the -0.25" w.g. at the roofline. These considerations were discussed in Reference 1.

Summary of the SGT/Secondary Containment Issue for WNP-2

Included with Reference 1 was a Justification for Continued Operation (JCO). The JCO concluded that the offsite and control room doses would remain within the guideline values of 10CFR100 and the limits of General Design Criterion 19 respectively with the following assumptions:

- An assumed single train SGT flow of 5600 cfm, rather than the design flow of 4457 cfm.
- A secondary containment leakage assumption of 1475 cfm rather than the Technical Specification maximum allowable value of 2240 cfm.
- A reasonably conservative meteorology (i.e., -8 °F with a 10 mph wind and -23 °F without wind).
- Periodic testing would be performed to ensure the above SGT flow performance and secondary containment leakage assumptions remained valid.

In Reference 2 the NRC found this JCO provided sufficient justification to allow for continued operation for a short time. This NRC letter did raise two concerns relative to a program plan for final resolution and the need for additional testing. These were responded to in References 3 and 4.

On January 16, 1990 the Supply System met with the NRC to discuss the proposed plan for resolution of this issue. At that meeting the Supply System received comments from the NRC relative to the program plan and the analytical model used to evaluate SGT/Secondary Containment performance. These concerns were addressed by Reference 5. The reference stated that the resolution would include the following elements:

Design Changes The SGT System will be made single failure proof with respect to obtaining and maintaining SGT flow from both trains. This change will double SGT flow and address NRC comments regarding the potential for increasing SGT flow to aid in resolution of the concern.

Model The uniform leakage model has been revised as suggested by the NRC to characterize leakage as split between high elevations (with metal siding) and low elevations (with the majority of the penetrations and air locks). The leakage analysis would be based upon the combination of adverse wind speed and temperature that would not be exceeded 95 percent of the time. No credit would be taken for suppression pool scrubbing and no request would be made to consider LOCA source terms different from those required by Regulatory Guide 1.3. The final analysis would most likely use the current Technical Specification secondary leakage value of 2240 acfm but the single train SGT flow would be increased from 4457 to 5300 acfm for a total SGT flow of 10,600 acfm.

Proposed Final Resolution for WNP-2

The enclosure to this letter provides details for the final resolution of this issue for WNP-2. With two exceptions, the proposed resolution is unchanged from that previously discussed with the NRC at the January 16, 1990 meeting and presented to the Staff in References 4 and 5. This can be most quickly recognized by review of cases 2A and 3 of Table 1 of Attachment 3 of the enclosure. Cases 2A/2B represent the analyzed conditions upon which the Reference 6 submittal was based and case 3 is the final resolution presented in this letter. The two exceptions both apply to single failure protection considerations. The exceptions are:

1. Previous submittals to the NRC on this issue did not address the potential need to protect against circuit faults that might occur during the time required for SGT operation. Circuit faults, which include hot shorts (conductor-to-conductor), opens and grounds, may be created by component failures. This may result in excessive electrical currents due to the electrical circuit protection (fuse or breaker) finite time to activate and, subsequently, cable/wire jacket failures and localized fires. For the SGT System, these circuit faults have the potential to cause key system valves to misposition and to prevent the start of the lead fan in a subsystem. The net effect of these circuit faults would act to degrade overall SGT capacity but in all cases at least one SGT subsystem would remain available. Redundant division separation is maintained in all instances; intra-divisional separation is the only concern.

The enclosure, in Section 5.2.4 provides the results of a Probablistic Risk Analysis that supports a conclusion that providing design modifications to protect against intra-divisional hot shorts in a specific set of SGT valve operators and fan motors does not provide a significant safety benefit nor an increase in system availability.

2. The SGT trains are provided with heaters for humidity control of the influent. It is currently proposed that no changes be made to provide for automatic transfer to the backup heater should the lead heater fail (a single failure). The basis for not making this change is that the planned revision of the secondary containment post accident analysis to reflect the new SGT design may demonstrate that the heaters are not required to ensure that the humidity of the influent to the charcoal beds remains below 70 percent as required by Regulatory Guide 1.52. This is discussed in Section 5.2.3 of the enclosure.

Implementation of the Proposed Resolution

Preliminary review of the proposed changes by the Supply System has lead to the conclusion that the individual hardware and procedure changes can be implemented without creating an Unreviewed Safety Question. Therefore, it is our plan to move forward with these changes to increase SGT performance. Also, while we do not believe that the need for a JCO can be removed until we have received NRC approval of the proposed resolution, by moving forward with the changes the improvements in post accident response can be realized more quickly.

After completion of the hardware and procedure changes there will be considerable design documentation remaining to be updated. This documentation is related to new design basis associated with the SGT/Secondary Containment issue. Documentation related to the specific modifications to be implemented will be updated as part of those design changes. We will begin the process of revising the remaining design basis documentation when a favorable Safety Evaluation Report is received from the NRC which resolves this issue for WNP-2.

Technical Specification Changes

When a SER is received from the NRC and any concerns it may raise have been resolved, the Supply System will submit a request for appropriate changes to the Technical Specifications. Technical Specification 4.6.5 will need to be revised to reflect the new SGT design basis. It is not expected that a change to the SGT seven day Allowable Outage Time (AOT) for one SGT subsystem out of service will be requested. However, the basis will be revised to establish the current AOT is acceptable based upon the fact that even with single train operation the reactor building will be drawn to a negative value within the time period necessary to maintain dose levels within 10CFR100 and General Design Criterion 19 limits.

Our Technical Specification change submittal will request that the implementation statement to be included with the change when issued not establish a firm schedule for closure of all documentation related to the new design basis for SGT. An implementation statement that would require completion of drawing and procedure revisions and training within 60 days of receipt of the Technical Specification change would be acceptable.

Sincerely,

G C Sorensen

G. C. Sorensen, Manager
Regulatory Programs (Mail Drop 280)

AGH/bk
enclosure

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