



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

January 3, 1990

602-90-027  
2/16/90612-90-009

Docket No. 50-397

Mr. G. C. Sorensen, Manager  
Regulatory Programs  
Washington Public Power Supply System  
P.O. Box 968  
George Washington Way  
Richland, Washington 99352

Dear Mr. Sorensen:

SUBJECT: EVALUATION OF JCO REGARDING STANDBY GAS TREATMENT SYSTEM ATTAINMENT  
OF SECONDARY CONTAINMENT PRESSURE (TAC NO. 75048)

By letter dated September 29, 1989 (602-89-176) you identified a concern for WNP-2 with respect to establishing secondary containment pressure under certain circumstances. You provided a justification for continued operation (JCO) while resolution of the concern is being pursued. We have reviewed your submittal and have concluded that sufficient justification has been provided to allow continued operation for a short time. However, there are two additional items which should be provided to NRC for evaluation to allow operation until final resolution is accomplished.

Within thirty days of receipt of this letter, provided the program plan for resolution, including a schedule for all significant milestones. Secondly, we believe that additional testing is necessary to verify both the SGT fan capacity and the secondary containment in-leakage.

A meeting between your staff and NRC staff has been scheduled for January 16, 1990. These two items should be addressed at that meeting.

The enclosed SER provides the basis for these findings.

Sincerely,

A handwritten signature in cursive script, reading "Robert B. Samworth".

Robert B. Samworth, Senior Project Manager  
Project Directorate V  
Division of Reactor Projects III,  
IV, V and Special Projects  
Office of Nuclear Reactor Regulation

Enclosure: Safety Evaluation

cc w/enclosure:  
See next page

Mr. G. C. Sorensen

WPPSS Nuclear Project No. 2  
(WNP-2)

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Enclosure 1

Safety Evaluation Report  
for WNP-2  
on JCO for Standby Gas Treatment Operability  
Docket No. 50-397

## 1.0 INTRODUCTION

The concern relative to secondary containment performance was initially evident to the staff when Niagara Mohawk Corp. filed an LER on NMP-2 in Mid-87. The LER indicated that assumptions used to evaluate secondary containment differential pressure draw-down time following a postulated LOOP/LOCA were not conservative. Believing that there may be generic aspects, the staff issued an Information Notice (IN-88-76) "Recent Discovery of a Phenomena not Previously Considered in the Design of Secondary Containment Pressure Control" dated September 19, 1988 to all affected plants. IN 88-76 forwarded the information learned from the NMP-2 experience.

WNP-2 calculations of the draw-down time were reviewed and also found to be non-conservative under specific conditions. An assumed failure of certain emergency power buses can cause a delay or an inability to achieve the required Secondary Containment negative pressure. In addition, the WNP-2 analysis did not consider wind conditions which would increase secondary containment leakage.

The inability of the Standby Gas Treatment System (SGTS) to perform as indicated by the FSAR was caused by not considering two factors in the analysis. The first affect is the relative density differences between a column of heated air and cold ambient air. This factor, which was the focus of the above IN, is important if the pressure sensors are located at the ground floor. To assure a -0.25 water gauge (wg) at the roof of the secondary containment, the ground level pressure must be as low as -0.75 wg. This effect increases with decreasing outside temperature. Therefore, it is only a factor in the SGTS performance during the winter months when the temperature is significantly below freezing.

The second factor is the wind condition assumed in the analysis. The original analysis considered zero wind since it would yield the worst meteorology. However, the Supply System found that moderate winds could yield more limiting conditions. In fact, a wind speed of 10.3 mph was found to be the bounding case.

Both of the above factors tend to increase the in-leakage of the secondary containment. This increased load on the SGTS has caused the amount of time to reach -0.25 wg to either increase beyond the specified 2 minute limit in the FSAR or become totally unable to reach the required negative pressure.

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The ability to draw-down the secondary containment is not only effected by the above two factors, but also by the overall in-leakage and the fan capacity of the SGTs. Therefore, the important factors now consist of:

1. secondary containment in-leakage
2. SGTs fan capacity
3. outside temperature
4. wind speed (10.3 mph is bounding)

The Supply System has performed a variety of analyses using "as-measured" values rather than those specified within the Technical Specifications (TS) and the FSAR. The purpose of these calculations was to assess the realistic consequences in the event that the limiting LOCA was to occur prior to final resolution of this issue. The results served as part of the basis for a JCO.

## 2.0 DISCUSSION

Having established that the above concerns may be applicable to WNP-2, the Supply System reviewed the plant condition relative to the requirements of 10 CFR 50.59 and determined that it represents an unreviewed safety question. The licensee used the guidance provided in NSAC-125 and concluded that the situation represents an increase in the consequences of an accident previously evaluated and documented in the FSAR. Therefore, the modifications of either the design and/or procedures that evolve when final resolution is reached will be submitted to the NRC for approval prior to implementation.

In parallel with the above efforts, the Supply System also undertook an effort to determine if continued operation was possible. To assist in this determination, the licensee performed a series of "best estimate" calculations to show whether or not the "as measured" plant systems would be within the guidelines of 10 CFR 100.

The values used for the "best estimate" calculations are shown below along with the FSAR or TS values.

PARAMETER	BEST ESTIMATE VALUE	FSAR VALUE
SGT Flow, cfm	5500	4460
In-leakage, cfm	1475	2240
Wind speed, mph	10.3	0
Outside temperature, F	12	NA

The licensee indicated that using reasonably conservative meteorology, the analysis shows doses within 10 CFR 100 values and the limits are within GDC 19 guidelines. These radiological results were met even though the time to achieve the minimum negative pressure within the secondary containment was calculated to be greater than the 2.0 minutes specified in both the TSs and the FSAR. (The adequacy of the radiological models used in this analysis will be reported via a separate memorandum.)

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The SGT flow rate was the actual capacity of the on-site unit while the in-leakage represents a value that is approximately 20 percent greater than the "as measured" value. A test conducted on September 26, 1989 showed that the plant had an in-leakage of 1228 cfm.

The staff has reviewed the results of the analyses used to form the bases for a JCO and concurs with the assessment of the Supply System. The results show that the secondary containment can be drawn down to acceptable negative pressures within 3.5 minutes using "best estimate" values. However, the selection of the FSAR values was based on some degree of degradation in performance during the time period between tests. The use of the values selected for the supporting JCO analysis has greatly reduced these margins. Therefore, pending acceptance of the radiological models, the staff finds that WNP-2 can be operated within the guidelines provided in 10 CFR 100 and GDC 19 assuming that the fan capacity and secondary containment in-leakage values are periodically verified to be equal to or as conservative as the "as tested" values. This verification should be conducted only during the winter season, since the newly discovered consideration are significant only during cold weather.

### 3.0 CONCLUSION

The staff, based on a review of the supporting analyses, has concluded that there is sufficient justification provided in the form of a JCO to allow continued operation of WNP-2 until a final resolution is achieved. However, the staff believes that operation of a plant using parameters different than the FSAR should also be minimized. Also, the validity of critical parameters should be reestablished by testing, whenever practical, on a more frequent interval during the interim period. The testing frequency will be discussed with the licensee in an upcoming meeting.

Acknowledging the above operational goals, the staff will require the following during the time period prior to final resolution.

1. As early as practical, the Supply System should provide the staff with a program for resolution. This submittal should clearly identify areas where there are deviations from either the original design basis for WNP-2 or SRP guidance. A schedule for completion of all significant milestones should accompany the program description.
2. The licensee should address additional testing to verify both the SGT fan capacity and the secondary containment in-leakage at an upcoming meeting with the staff. These additional tests should be conducted at the onset of the winter season and midway through the winter.
3. No additional testing beyond those identified in item 2 and the existing TS will be required.
4. The testing described in the Supply System letter dated September 29, 1989, will satisfy the testing needed at the onset of this upcoming winter season.

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If the program as described above is followed, the staff believes that there will be no undue risk to the public during the period before final resolution of the outstanding issues described in this SER. Therefore, the staff supports continued operation of WNP-2.