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Document Control Branch (Document Control Desk)

SUBJECT: Responds to NRC 940921 ltr re violations noted in insp repts 50-269/94-24,50-270/94-24 & 50-287/94-24.Corrective action: administrative actions have been taken to minimize possibility of ABVS equipment being taken out of svc.

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DUKE POWER

October 19, 1994

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Subject: Oconee Nuclear Site
Docket Nos. 50-269, -270, -287
Inspection Report 50-269, -270, -287/94-24
Reply to Notice of Deviation

Dear Sir:

By letter dated September 21, 1994 the NRC issued a Notice of Deviation as described in Inspection Report No. 50-269/94-24, 50-270/94-24, and 50-287/94-24.

Pursuant to the provision of 10 CFR 2.201, I am submitting, per the attachments, a written response to the deviations identified in the above Inspection Report.

Very truly yours,

J. W. Hampton

Attachments

cc: Mr. S. D. Ebneter, Regional Administrator
U. S. Nuclear Regulatory Commission, Region II

Mr. L. A. Wiens, Project Manager
Office of Nuclear Reactor Regulation

Mr. P. E. Harmon
Senior Resident Inspector
Oconee Nuclear Site

Attachment 1
Reply to Notice of Deviation
Deviation 269,270,287/94-24-04

Final Safety Analysis Report, Section 6.2.4.2, "Continuous Leakage Monitoring," states in part that all penetrations except the following are grouped within or vented to the penetration room. Any leakage that might occur from these penetrations will be collected and discharged through high efficiency particulate air (HEPA) filters and charcoal filters to the unit vent. In this manner, leakage which might occur from these penetrations will be isolated from leakage which might occur through the Reactor Building itself.

Safety Analysis Report, page 14-63, states in part that it is assumed that 50 percent of the Reactor Building leakage will go into the penetration rooms which will be maintained at a negative pressure as described in FSAR 6.5. The atmosphere in these rooms is discharged through charcoal filters to the unit vent. The charcoal filters are assumed to be 90 percent efficient for iodine removal. The remaining 50 percent of the Reactor Building leakage is assumed to escape directly to the atmosphere. By this method a maximum of 55 percent of the iodine released from the Reactor Building is released to the atmosphere.

Contrary to the above, testing conducted during 1992 revealed that the Penetration Room Ventilation System (PRVS) could not maintain a negative pressure relative to the surrounding auxiliary building with certain auxiliary building ventilation system (ABVS) fans and/or air handling units out of service. Therefore, there was no assurance that all leakage into the penetration rooms would be filtered prior to release to the atmosphere, without reliance on the nonsafety-related ABVS.

RESPONSE:

1. *The reason for the deviation:*

Duke Power Company acknowledges this deviation.

The original FSAR requirements required the PRVS to be able to produce and maintain a vacuum to ensure inleakage. No mention is made as to the reference point for this measurement. Additional sections of the original FSAR did reference a value of > 0.06" wg and the implication is that the measurement is against outside atmosphere. Based on this the interpretation was made that PRVS operability was based on its ability to produce and maintain a vacuum of > 0.06" wg with respect to the outside atmosphere.

Attachment 1
Reply to Notice of Deviation
Deviation 269,270,287/94-24-04

1) *continued*

In the 1978-79 timeframe a decision was made to start taking vacuum measurements which included the Auxiliary Building atmosphere. These readings were not used to determine system operability, but were used to track system performance for degradation. When problems were found repair work requests were written to have problems corrected.

Between this timeframe and the present, revisions were made to the FSAR to clarify PRVS operability requirements. In 1991-92, a conservative decision was made to begin declaring LCO's when the PRVS could not produce and maintain a vacuum with respect to ALL adjacent zones. This change was based on the interpretation of the FSAR requirements and on how it was felt the system should perform.

As currently written, our FSAR requires us to be able to produce and maintain a measurable vacuum with respect to the outside atmosphere and all adjacent areas (i.e., auxiliary building). Under all configurations of plant ventilation equipment we may not be able to meet this requirement as written for all three Penetration Rooms. In 1991 an interaction was found to exist between the Penetration Room Ventilation Systems (PRVS) and Auxiliary Building Ventilation Systems (ABVS) systems. Since that time additional testing has been performed and it has been identified that the operational status/configuration of certain ABVS (non-safety) equipment affects the absolute negative pressure in the Auxiliary Building achieved and maintained by the ABVS and thus the relative ΔP of certain areas measured with respect to the Penetration Room.

The purpose of the PRVS system is to collect and process leakage from the Rx Bldg during a Maximum Hypothetical Accident (MHA), to minimize off-site dose. Original design considerations dealt only with the dP to the outside. However, as stated above, it is now realized that the intent of the PRVS system should be to produce and maintain a vacuum with respect to ALL surrounding areas (under all circumstances). Based on this interpretation and the wording in our current FSAR we are currently in deviation of this requirement. One point that should be made at this time is that just because portions of the Auxiliary Building are at times at greater vacuum than the Penetration Room does not mean that a leakage pathway exists. A dP can exist between two areas without any actual leakage.

2. *The corrective steps which have been taken and the results achieved:*

The extent of the system interaction has been identified and administrative actions have been taken to minimize the possibility of the ABVS equipment being taken out of service and/or failing without knowledge. Efforts are on-going to identify leakage pathways between the Penetration Rooms and their respective adjacent areas. The metal walls in the Penetration Rooms to the outside have been sealed to prevent/minimize leakage through this wall. The PRVS system is sized such that each train will evacuate 1000 SCFM of air from the Penetration Room through filters and up the vent stack. The design basis leakage is very small compared to this number (~7.8 SCFM) and would be entering into the Penetration Room via the Reactor Building exterior wall that is in the East and West Penetration Rooms. Over the past two years flow dP and leakage (fog) testing have been extensively performed to help fully identify where potential problems exist. The identified leakage pathways are not in any one area, therefore, there is no large pathway to any one area. Testing has shown that the areas with the largest identified potential leakage pathways are 1) to rooms and areas that either have no ventilation equipment serving them or 2) to areas where failure of the ventilation equipment would have no affect on the ability of the Penetration Room to produce and maintain a vacuum with respect to that area or room to ensure inleakage.

In addition to the sealing that is being done, current & past operability of the system was reviewed to see if the system met its intended design function of collecting and processing Reactor Building leakage during a MHA. This analysis confirmed that the PRVS System's were past operable and are presently operable. This determination is based on system sizing and identified leakages from the Reactor Building and in the walls to adjoining areas.

3. *The corrective steps which will be taken to avoid further deviations:*

Leakage Paths identified by the leakage (fog) testing will be sealed and the rooms will be made as "air tight" as possible. Additional testing of the fans is in progress to show optimum performance is being achieved from the existing system components.

Based on the results of the Penetration Room sealing and enhancements made to system components, a modification to increase system flowrates may be deemed necessary. A decision on the need for modifications will not be made until late 1995.

In addition, modifications are in process to install instrumentation that will allow testing of the PRVS against multiple adjacent zones in the Aux Building. Installation of these "testing manifolds & manometers" will allow for better monitoring of system degradations since multiple data points will be obtained.

Installation of this modification was completed on Unit 1 in May 1994, and should be completed on the other two units by late 1995.

4. *The date when corrective actions will be completed:*

Leakage testing has been completed on Units 2 and 3 and the problems identified are being repaired. Currently the Unit 1 PRVS system has better performance than the other two units and meets all FSAR requirements. Since the Unit 1 PRVS operability is not affected by the operating configuration of the ABVS, leakage testing will not be performed until early 1995 with repairs to identified leakage pathways to be completed by June 1995. After completion of these repairs additional testing will be performed to verify their effectiveness. Based on this analysis further actions will be taken as needed (i.e., system modifications). A completion date for these modifications (if needed) can not be established at this time. Modification of the system components will require an outage to implement, therefore their completion date could take several years.

<u>**Attachment 2**</u>
<u>**Reply to Notice of Deviation**</u>
<u>**Deviation 269,270,287/94-24-05**</u>

Final Safety Analysis Report, section 3.2.2.1, "System Classifications," states in part that those portions of the Engineered Safeguards Systems which may see recirculated reactor building sump water following a Loss of Coolant Accident are required to be Class II (Duke Class "B").

Contrary to the above, the portions of the high pressure injection system downstream of the high pressure injection mini-flow recirculation manual isolation valves are classified as Class III (Duke Class "C"), even though this piping may see recirculated reactor building sump water following a Loss of Coolant Accident.

<u>**RESPONSE**</u>:

1. ***The reason for the deviation:***

Duke Power Company (DPC) denies this deviation based on the following discussion:

a. Although the FSAR defines piping systems that may see recirculated Reactor building sump water following a LOCA as Class II, additional qualifying statements are included that serve to exclude the HPI minimum recirculation piping from the Class II classification. Specifically, the FSAR (original as well as current revisions) states as a preface to the Class I, II, III descriptions that "*in-line instrument components such as turbine meters , flow nozzle assemblies, and control valves, etc. are classified with their associated piping unless their penetration area is equal to or less than that of a 1 inch I. D. pipe of appropriate schedule for the system design temperature and pressure, in which case they are placed in Class III.*" The FSAR in a subsequent paragraph also states that "*valves, piping, instrument fittings and thermowells with a penetration area equal to or less than a 1 inch I. D. pipe or less (all schedules) are placed in Class III regardless of system temperature or pressure, <u>when such equipment is connected to Class I, II, or III systems</u>.*" The pressure break-down orifices installed in the minimum recirculation piping may be categorized as such components for the following reasons:

1. two orifices are located within each minimum recirculation line, each having ten enclosed orifice plates

2. each orifice opening is $\leq$ 9/16"

1) *continued*

Therefore, the orifices could technically have been classified as Duke Class C (Class III). Nevertheless, the class break from Class II to Class III was chosen to be downstream of the orifices, at the check valve outlet. Reasoning follows that if the orifices could have been correctly classified as Class III, then the 1½" diameter piping downstream could also be classified accordingly since there are no known instances of individual components within Oconee piping systems being classified differently from the contiguous piping.

The basis for the 1" I. D. piping exclusion is unknown. Original Duke/B&W files are not explicitly documented with respect to this subject. However, original revisions of the FSAR, to which the Oconee plant was to comply, contained this exclusion.

b. The FSAR states that "*Class III systems, or portions of systems, are those which would normally be Class II except that the contained fluid is less than 212° F.*" Fluid temperature at the suction of the HPI Pumps during the sump recirculation mode will not exceed 180° F according to Oconee calculations. Therefore, when considering temperature requirements related to classification of piping systems, Class III is appropriate for the HPI pump minimum recirculation lines.

c. Original piping system descriptions used during construction of the plant in conjunction with early revisions of piping outline drawings clearly define the class break from Duke Class B (Class II) to Duke Class C (Class III) as being located at the downstream side of the check valves. This configuration is consistent with present-day Oconee Flow Diagrams.

Although subject to interpretation as reflected by the deviation report, FSAR Section 3.2.2.1 contains adequate justification for installation of the HPI minimum recirculation piping as Class III when considering all delineating statements therein that apply to classification of Oconee piping systems.

Attachment 2
Reply to Notice of Deviation
Deviation 269,270,287/94-24-05

2. *The corrective steps which have been taken and the results achieved:*

Review of FSAR Section 3.2.2.1 by Systems Engineering with respect to the subject NRC Deviation Report is complete. As a result, the HPI Pump minimum recirculation piping is determined to be in accordance with descriptions contained within the FSAR and therefore properly designated as Class III, Duke Class C.

3. *The corrective steps which will be taken to avoid further deviations:*

Duke Power Company maintains that a violation was not committed; no further actions are required.

4. *The date when corrective actions will be completed:*

Duke Power is in full compliance.