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DUKE POWER

October 6, 1988

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

Subject: Oconee Nuclear Station
Docket Nos. 50-269, 270, 287
NRC Bulletin No. 88-08
Thermal Stresses in Piping Connected to Reactor Coolant System

Gentlemen:

Pursuant to the requirements of NRC Bulletin No. 88-08, Thermal Stresses in Piping Connected to Reactor Coolant Systems, please be advised that Duke Power Company (Duke) has completed a review of appropriate Oconee Nuclear Station piping systems. All systems connected to the Reactor Coolant System (RCS) were reviewed to determine whether non-isolable sections of piping can be subjected to stresses from thermal stratification or temperature oscillations that could be induced by leaking valves and that were not evaluated in the design analysis of the piping.

The subject review indicated that the High Pressure Injection System (HPI) is the only system connected to the RCS which is capable of producing a pressure higher than the RCS pressure necessary for a scenario similar to the one described in Bulletin 88-08. Specifically, the check valves HP-152 and HP-153 separate the HPI system from the RCS for the emergency injection path. The normally stagnant line between crossover block valve HP-409 and HP-152/HP-153 could be pressurized greater than the RCS pressure if valve HP-409 were to leak. Thus, these two portions of the emergency injection lines located between valves HP-152/HP-153 and the RCS may be subject to the kind of thermal stresses described in Bulletin 88-08. A more detailed description of Duke's review is provided in Attachment 1 to this letter.

Duke will complete inspections of these pipings required per NRC Bulletin 88-08, Action 2 by the end of upcoming refueling outages EOC-11, EOC-10 and EOC-11 for Oconee Units 1, 2 and 3 respectively.

In response to Action 3 of the NRC Bulletin Duke intends to address this action item in a phased approach as follows:

1. Duke will perform a bounding analysis for the portions of the emergency injection piping identified in Attachment 1 by December 1, 1988 for all Oconee units. Should this analysis result in determining that no unacceptable stresses result from the kind of thermal stresses described in Bulletin 88-08 (Farley experience), no further action will be taken.

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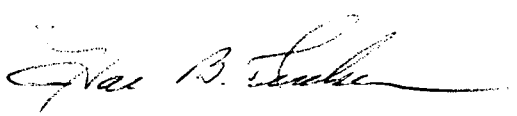
2. Should the bounding analysis determine that the fatigue life may be exceeded prior to end of life, an operability review will be performed to permit continued operation for the next cycle. Duke will then review alternatives including monitoring the piping for stratification, monitoring valves to assure no leakage and/or redesign the piping as required. Schedules for these actions will be established based on the alternatives chosen.

Duke believes this approach is prudent to permit safe and reliable operation of these units.

Duke will submit a letter within 30 days of completion of Action 2 and 3 confirming that these actions have been completed and describe the actions taken.

I declare under penalty of perjury that the statements set forth therein are true and correct to the best of my knowledge.

Very truly yours,



H. B. Tucker

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Attachment

xc: P. H. Skinner
NRC Resident Inspector
Oconee Nuclear Station

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ATTACHMENT 1

Duke Power Company
Oconee Nuclear Station
Response to NRC Bulletin No. 88-08 Action Item 1
Thermal Stresses in Piping Connected to Reactor
Coolant System

Action 1 of the NRC Bulletion 88-08 requests a review of the systems connected to the RCS to determine whether unisolable sections of piping connected to the RCS can be subjected to stresses from temperature stratification or temperature oscillations that could be induced by leaking valves and that were not evaluated in the design analysis of the piping.

A review of the Oconee plant was conducted for applicability of the Bulletin 88-08, "Thermal Stresses in Piping Connected to Reactor Coolant Systems." This review was limited to the High Pressure Injection (HPI) system. The HPI is the only system connected to the Reactor Coolant System (RCS) which is capable of producing a pressure higher than the RCS pressure. This higher pressu re criteria is necessary to produce a scenario similar to the one described in Bulletin 88-08.

There are three (3) possible paths for HPI to enter the RCS. These are as follows:

1. Through the normal injection nozzles on the cold leg.

2. Through the emergency injection nozzles on the cold leg.

3. Through the Auxiliary Pressurizer Spray line.

These three paths are addressed below.

Normal Injection

The HPI system is separated from the RCS by check valves HP-126 and HP-127 for the normal injection path. These valves have nozzle warming lines with continuous HPI flow on the RCS side of them. This will produce a fairly constant temperature gradient between the HPI system and the RCS. Alternating thermal stress cycles are highly unlikely with respect to this connection. Consequently, a scenario as described in Bulletin 88-08 is not probable.

Emergency Injection

The HPI System is separated from the RCS by check valves HP-152 and HP-153 for the emergency injection path. If crossover block valve HP-409 leaked, the normally stagnant line between HP-409 and HP-152/HP-153 could be pressurized greater than the RCS pressure. This pressure would be relieved through HP-152/HP-153 into the RCS. Consequently, a scenario similar to the one described in Bulletin 88-08 is possible.

Auxiliary Pressurizer Spray Line

The HPI system is indirectly connected to the RCS through the Auxiliary Pressurizer Spray line via the Low Pressure Injection (LPI) system. (Note: Normally closed globe valves LP-62 and LP-63 isolate the HPI system from the LPI system. This flow path is not being considered in this review since an Auxiliary Pressurizer Spray path failure plus the failure of one of these valves would be necessary to begin pressurizing the LPI system. Consequently, multiple failures would be required to produce a Bulletin 88-08 scenario). The check valve that would need to "burp" to admit cool water into the RCS would be LP-46. In order to pressurize the low pressure side of this check valve, all of the following normally closed valves would need to leak:

HP-472	(gate valve)
HP-355 or HP-473	(control valve (leakage class V) or globe valve)

Additionally, a normally open globe valve, HP-340, is available downstream of these valves. Due to the necessity for two (2) simultaneous failures, this path is not considered likely to produce a scenario similar to the one described in Bulletin 88-08.

Conclusion

The only piping which may be subject to a thermal stress scenario as described in Bulletin 88-08 is that located between valves HP-152/HP-153 and the RCS.