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December 17, 1998

U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Document Control Desk

Subject: Oconee Nuclear Station, Units 1, 2, and 3
Docket Nos. 50-269, 270, and 287
Response to Request for Additional Information
Related to the Oconee Nuclear Station's Response
to Generic Letter 96-06.

In a letter dated October 7, 1998, the NRC issued a request for additional information (RAI) related to the Oconee Nuclear Station's response to Generic Letter (GL) 96-06, "Assurance of Equipment Operability and Containment Integrity During Design-Basis Accident Conditions." Enclosure 1 contains the Duke Energy Corporation response to this RAI.

Enclosure 2 contains revisions to Attachment 3 of Duke Energy Corporation's January 28, 1997 submittal related to GL 96-06. These revisions were identified during the modification design process undertaken in response to GL 96-06. The updated information does not alter the original conclusion contained in the January 28, 1997 submittal that thermally-induced overpressurization does not impact the operability of the penetrations during an accident.

A072

If there are any additional questions, please call J. E. Burchfield, Jr. at (864) 885-3292.

Very truly yours,

W. R. McCollum, Jr., Site Vice President
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Enclosures

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U. S. Nuclear Regulatory Commission
December 17, 1998

DUKE ENERGY CORPORATION

OCONEE NUCLEAR STATION

ENCLOSURE 1

RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION

GENERIC LETTER 96-06

ENCLOSURE 1

Response to RAI for GL 96-06
Thermal Overpressurization of Closed End Piping

In a letter dated October 7, 1998, the staff requested additional information (RAI) on Oconee's plans to modify penetrations susceptible to thermal overpressurization during a design basis accident. Oconee had previously communicated to the staff plans for long term resolution of this issue that included the installation of relief valves, check valves, insulation, or other appropriate devices on twenty eight (28) penetrations and the possible modification of one piping segment in the decay heat drop line of each unit. The staff, in the RAI, requested a specific description of the modifications to these piping segments. Additionally, the staff requested that if the modifications involve heat transfer and/or structural analyses of the piping segments, additional information was needed that pertained to the details of those analyses.

During the current modification planning and design phase, Oconee re-reviewed the containment closed end penetrations and other instances of closed end piping that may be susceptible to thermal overpressurization during a LOCA. From this review, additional penetrations were conservatively selected for modifications. These additional penetrations were selected for modifications in order to preclude long term reliance on specific system operations in preventing thermal overpressurization. This review dispositioned one hundred sixty three (163) of the total of two hundred twelve (212) mechanical penetrations as not requiring any modifications. Thirty-six (36) were identified as requiring the installation of new relief valves, six (6) were identified as requiring the installation of leak off lines with check valves, four (4) were identified to be cut, capped, and abandoned and three (3) were identified as requiring administrative control to drain the lines prior to power operations. Additionally, one (1) piping segment in the decay heat drop line of each unit was identified as requiring administrative controls to partially drain the line prior to power operations. The

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administrative controls for these piping segments were previously identified as interim. Upon further review, the administrative controls have been instituted as permanent solutions.

Oconee has not qualified (for long term compliance) any closed end penetration considering less than perfect heat transfer through the containment/penetration/piping boundary. No credit was taken for the timing of heat transfer gradients across the piping and or insulation during the event. All penetrations dispositioned as requiring new relief valves used the temperature corresponding to the maximum containment temperature during a LOCA as the temperature prevalent in the piping.

As such, the additional questions posed by the staff concerning details of the heat transfer analyses and or structural analyses are not applicable to Oconee's planned modifications.

Several attachments follow which provide a description of the modifications and or administrative actions being implemented at Oconee to resolve the thermal overpressurization issue.

Attachment 1 contains the list of penetrations dispositioned as requiring the installation of relief valves. Since the design of the planned modifications are in process, details in Attachment 1 should be viewed as preliminary. Included in Attachment 1 are the LOCA Design Conditions for each penetration and the new relief valve setpoint. The LOCA design temperature was set as the maximum containment LOCA temperature (286 °F). In some cases, the design pressure of the affected piping segment has been increased to allow for higher relief valve setpoints in order to avoid spurious relief valve actuations. The higher piping segment design pressure also provides increased margin to accommodate for setpoint drift. In the cases where the system design pressure was increased, all pertinent piping components were reevaluated for the new pressure.

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Attachment 2 contains the list of penetrations dispositioned as requiring a leak off line with check valves or dispositioned to be cut, capped, and abandoned. Design parameters were set equal to the original system design for the leak off line modifications.

Attachment 3 contains the list of penetrations and the identified piping segments in the respective unit decay heat lines dispositioned as requiring administrative controls. The penetrations identified are normally used only during an outage, and the administrative controls are necessary in order to drain the penetrations prior to power operations. The administrative controls to partially drain the decay heat line segments are necessary to admit cushioning air to the space between the valves prior to power operation.

Oconee Nuclear Station Units 1, 2, & 3

GL 96-06 Thermal Overpressurization

List of Penetrations that require Relief Valve Installation

Pen.	Unit	Service	OFD Reference	Piping Section of Concern between boundary valves:	LOCA Design Conditions Temp (F)	LOCA Design Conditions Press. (psig)	Relief Valve Setpoint (psig)
1	1	Prz. Liquid Sample	110A-1.1	1RC-5, -6, & -7	286	3000	2790
2	1-3	OTSG A Sample	110A-1.1,-2.1,-3.1; 121B-1.5,-2.5,-3.5	FDW-105, -106	286	1300	1170
4	1-3	OTSG B Drain	121B-1.5,-2.5,-3.5	FDW-104, -332, & -335	286	1300	1170
6	1-3	RC Let Down	101A-1.1,-2.1,-3.1	HP-3, -4, & -5	286	2950	2790
7	1-3	RC Seal Return	101A-1.1,-2.1,-3.1	HP-20 & -21	286	2950	2790
11b	1-3	RC Makeup Pump Suction	104A-1.1,-2.1,-3.1; 101A-1.5,-2.5,-3.5	SF-72, -73, -74	286	150	70
11b	1-3	RC Makeup Pump Suction	104A-1.1,-2.1,-3.1; 101A-1.5,-2.5,-3.5	SF-82, -97	286	150	70
11b	1-3	RC Makeup Pump Suction	104A-1.1,-2.1,-3.1	SF-74, -118	286	150	70
12b	1-3	RC Makeup Pump Discharge	104A-1.1,-2.1,-3.1; 101A-1.5,-2.5,-3.5	HP-405, -417, -426, -428	286	2790	2790

Oconee Nuclear Station Units 1, 2, & 3

GL 96-06 Thermal Overpressurization

List of Penetrations that require Relief Valve Installation

Pen.	Unit	Service	OFD Reference	Piping Section of Concern between boundary valves:	LOCA Design Conditions Temp (F)	LOCA Design Conditions Press. (psig)	Relief Valve Setpoint (psig)
43	1-3	OTSG A Drain	121B-1.5,-2.5,3.5	FDW-103, -330, & -334	286	1300	1170
54	1-3	Component Cooling Outlet	144A-1.2,-2.2,-3.2	CC-7 & -8	286	210 Inside RB, 250 Outside RB	170
56	1-3	SF Canal Fill and Drain	104A-1.1,-3.1	SF-60 & -61	286	200	140
56	1-3	SF Canal Fill and Drain	104A-1.1,-3.1	SF-61, -62, -75, -117; LP-24	286	200	170
58a	2,3	Prz. Liquid Sample	110A-2.1,-3.1	2,3RC-5, -6, & -7	286	3000	2790
58b	1-3	OTSG B Sample	110A-1.1,-2.1,-3.1; 121B-1.5,-2.5,-3.5	FDW-107, -108	286	1300	1170
59	1-3	CF Tank Sample	102A-1.3,-2.3,-3.3	CF-3, -4, -7, & -19	286	880	780

Oconee Nuclear Station Units 1, 2, & 3

GL 96-06 Thermal Overpressurization

List of Penetrations that require Other Modifications

Pen.	Unit	Service	OFD Reference	Piping Section of Concern between boundary valves:	Other Modifications Planned
5b	1-3	Post Accident Liquid Sample	110A-1.4,-2.4,-3.4	RC-162, -163; RC-163, -164	Check Valves to be installed to vent piping back to RCS.
29	1-3	Quench Tank Drain	107A-1.2,-2.2,-3.2	CS-5 & -6	Check Valves to be installed to vent piping back to CS System.
46	1-3	Filtered Water	106E-1.1,-2.1,-3.1	FW-64 & -65	Piping in penetration to be cut and capped, penetration to be abandoned in place.
47	1	Demin Water	106E-1.1	DW-155, -157, -158, -159, -160	Piping in penetration to be cut and capped, penetration to be abandoned in place.

Oconee Nuclear Station Units 1, 2, & 3

GL 96-06 Thermal Overpressurization

List of Penetrations that require Administrative Controls to prevent Overpressurization

Pen.	Unit	Service	OFD Reference	Piping Section of Concern between boundary valves:	Adminstrative Controls
55	1-3	Demin Water	106E-1.1,-2.1,-3.1, 106E-1.2,-2.2,-3.2	DW-59 & -60· DW-60, -128, Hose Stations	Affected piping only used during outages, piping will be drained prior to power operations

List of Closed End Piping that require Administrative Controls to prevent Overpressurization

	Unit	Service	OFD Reference	Piping Section of Concern between boundary valves:	Adminstrative Controls
	1-3	Decay Heat Removal	102A-1.1, 2.1, & 3.1,	LP-1 & LP-2, LP-103 & LP-104	Piping to be partially drained prior to power operations

U. S. Nuclear Regulatory Commission
December 17, 1998

DUKE ENERGY CORPORATION

OCONEE NUCLEAR STATION

ENCLOSURE 2

REVISIONS TO DUKE ENERGY CORPORATION'S JANUARY 28, 1997

SUBMITTAL RELATED TO GENERIC LETTER 96-06

ENCLOSURE 2

Revisions to Attachment 3 of Duke Energy Corporation's
January 28, 1997 Submittal Related to Generic Letter 96-06

Attachment 3 to Duke Energy Corporation's January 28, 1997 submittal provided the Oconee Nuclear Station specific response to Generic Letter 96-06. The response to "Requested Action 2", Section I, "Reactor Building Penetrations" provided the bases for why the listed penetrations did not require thermal overpressurization protection. Item B in Section I has been revised to reflect a more accurate bases for penetrations 5b, 36, and 37. The bases for penetrations 5a and 40 remain unchanged.

Please replace Item B of Section I in its entirety with the revised Item B provided below.

B. Penetrations where one or both containment isolation valves are located outside containment and temperature variations are minimal. Thermal overpressure protection is not required.

Penetration #- 5a - Reactor Building Normal Sump
5b - Post Accident Liquid Sample
Although the containment isolation valves for penetration 5b are located outside containment, there are two closed valves (RC-162, RC-163) located inside containment upstream of penetration 5b. RC-162 and RC-163 are not containment isolation valves. Therefore, it is unlikely that the valves are leak tight which would preclude the occurrence of thermal overpressurization of penetration 5b. However, even if these valves (RC-162 and RC-163) remain leak tight during an accident, thermal overpressurization would not prevent accident mitigation. Penetration 5b runs through penetration 5a using a metallic flex hose. The flex hose is considered the weakest link

ENCLOSURE 2

of penetration 5b. With the failure of the flex hose due to thermal overpressurization, containment isolation would be maintained by means of the containment isolation valves for penetrations 5a and 5b (RC-164, RC-165, LWD-1, LWD-2). The use of the post accident liquid sample system penetration, itself, is not required for accident mitigation. Overpressurization of penetration 5a postulating the flex hose failure is not a concern since the piping is open ended within the reactor building. Therefore, even postulating that the upstream valves of penetration 5b remain leak tight, containment isolation and other required accident mitigation functions would be maintained.

36 - Reactor Building Emergency Sump (Single Valve)

37 - Reactor Building Emergency Sump (Single Valve)

Note: In addition to the containment isolation valve for penetrations 36 and 37 being outside of containment, the piping for these penetrations open directly to the reactor building emergency sump. The open piping, itself, would prevent any thermal overpressurization.

40 - Reactor Building Emergency Sump Drain

Total number of penetrations - 15.