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December 14, 2010

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

Subject: Duke Energy Carolinas, LLC
McGuire Nuclear Station, Units 1 and 2
Docket Nos. 50-369 and 50-370

Response to Request for Additional Information Related to Generic Letter (GL)
2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat
Removal, and Containment Spray Systems"

This letter provides the responses to a request for additional information (RAI) regarding the McGuire response to GL 2008-01 dated October 13, 2008 and supplemented on February 3, 2009 and January 6, 2010. The RAI request was conveyed by the NRC staff via electronic mail from Jon Thompson on November 10, 2010. The NRC staff's questions and Duke Energy's responses are provided in Attachment 1.

This letter contains no regulatory commitments. Please contact Lee A. Hentz at 980-875-4187 if additional questions arise regarding these RAI responses.

Sincerely,

Regis T. Repko

Attachment

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NRR

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cc: w/attachment

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OATH AND AFFIRMATION

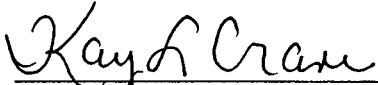
Regis T. Repko affirms that he is the person who subscribed his name to the foregoing statement, and that all the matters and facts set forth herein are true and correct to the best of his knowledge.



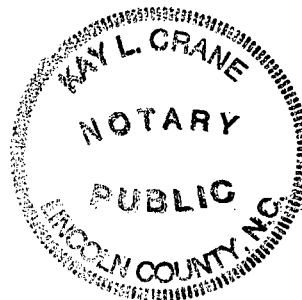
Regis T. Repko, Site Vice President

Subscribed and sworn to me: 12-14-2010

Date



Notary Public



My commission expires: 4-1-2012
Date

ATTACHMENT 1

REQUEST FOR ADDITIONAL INFORMATION (RAI)

The following Request for Information (RAI) from the Nuclear Regulatory Commission (NRC) staff pertains to the response of Duke Energy Carolinas, LLC (the licensee) to GL 2008-01. Previously the licensee has responded to this GL by letters dated May 8, 2008 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML081340312), October 13, 2008 (ADAMS Accession No. ML082900490), February 3, 2009 (ADAMS Accession No. ML090370415), and January 6, 2010 (ADAMS Accession No. ML100200272).

Guidance on NRC staff expectations is provided by Reference 1 which is generally consistent with the Nuclear Energy Institute (NEI) guidance provided to industry in Reference 2 as clarified in later NEI communications. The NRC staff recommends that the licensee consult Reference 1 when responding to the following request for additional information (RAIs):

NRC REFERENCES

1. Ruland, William H., "Preliminary Assessment of Responses to Generic Letter 2008-01, 'Managing Gas Accumulation in emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems,' and Future NRC Staff Review Plans," NRC letter to James H. Riley, Nuclear Energy Institute, (ADAMS Accession No. ML091390637), May 28, 2009.
2. Riley, James H., "Generic Letter (GL) 2008-01, 'Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Contain Spray Systems Evaluation and 3 Month Response Template,' Letter to Administrative Points of Contact from Director, Engineering , Nuclear Generation Division, Nuclear Energy Institute, Enclosure 2, "Generic Letter 2008-01 Response Guidance," March 20, 2008.
3. Case, Michael J. "NRC Generic Letter 2008-01: Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems," Letter from Director, Division of Policy and Rulemaking, Office of Nuclear Regulation, NRC, (ADAMS Accession No. ML072910759), January 11, 2008. "Guidance to NRC/NRR/DSS/SRXB Reviews for writing TI suggestions for the Region Inspections," (ADAMS Accession No. ML10200053), August 18, 2010.

1. Residual Heat Removal (RHR) venting is procedurally controlled; but without surveillance requirements. How is the frequency of venting determined or adjusted in the absence of surveillance requirements?

McGuire Response:

The Residual Heat Removal (RHR) system provides both an Emergency Core Cooling System (ECCS) function, and a decay heat removal function. RHR system venting is performed monthly as part of surveillance procedure PT/1(2)/A/4200/019, "ECCS Pumps and Piping Vent," Enclosure 13.1 to satisfy Technical Specification surveillance requirement 3.5.2.3. Monthly venting is performed for RHR system locations deemed to be potentially susceptible to gas intrusion.

2. What is the rationale that permits delaying RHR system venting surveillance until the TSTF process is completed?

McGuire Response:

Refer to the above response to Question 1. RHR system venting is performed currently, and is included in the Tech Spec Bases (for SR 3.5.2.3). There is no delay related to the TSTF process involved.

3. The surveillance procedures are stated to have a low threshold for as found gas, which is defined as a void fraction that would not be large enough to challenge system operability. Please provide specific volumes for as found gas that are considered acceptable for not challenging system operability and describe how these are determined with respect to the acceptable pump inlet void criteria described in section 1.4 of Reference 3. Is this void fraction dependent upon the temperature and pressure conditions under which the system is required to operate? If yes, what are they? What is the process that is followed if gas is found that is less than the acceptable threshold?

McGuire Response:

Currently, McGuire relies on the performance of physical venting (PT/1 (2)/A/4200/019) to characterize as-found gas volumes. McGuire plans to implement use of Ultrasonic Testing for characterization of as-found gas volumes, due to the recognized limitations associated with void size characterization by the performance of physical venting. Current procedural controls are provided to enhance the repeatability of the venting evolution, and the ability to characterize gas volume. For example, for vent valves manufactured by Kerotest, the procedure requires the valve be positioned one quarter turn open and the time to achieve water solid conditions is timed. Formal entry into the Corrective Action Process (CAP) and system engineering notification is required if an observed vent duration exceeds five seconds. This venting duration was selected based on engineering judgment and operating experience. As-found venting durations are trended, and are routinely less than or equal to one second.

Additionally, the McGuire Engineering Support Program requires routine system trending to aid in early detection of a potential gas intrusion mechanism. The trending results are evaluated to access the potential need for more frequent supplemental venting, and/or additional venting locations. Examples of trending parameters include:

- Monthly ECCS venting surveillance vent durations,
- RHR system pressure decay subsequent to pump runs,
- Cold Leg Accumulator levels and pressures, make-up frequency,
- ECCS pump suction and discharge pressures

When greater than five seconds of gas is found, the surveillance procedure requires entry into the CAP program, and it is evaluated with respect to acceptable pump inlet void criteria and the capability of related systems to perform their required safety functions. This is on a case-by-case basis, using vendor-supplied information, operational and post-accident conditions, and piping geometry (in addition to temperature and pressure). There is not a single set of criteria (such as the acceptable pump inlet void criteria described in Section 1.4 of Reference 3) that is applied in all cases.

4. What is the status of the commitments listed in Attachment 5 of the Nine-Month Response?

McGuire Response:

Four Commitments were made by McGuire in Attachment 5 of the Nine-Month Response. The following is each Commitment and its status:

1. Monitor the status of the TSTF effort to provide revisions to NUREG-1431 Technical Specifications and their associated Bases in regard to the periodic venting surveillance. McGuire will evaluate the resolution of TS issues with respect to the changes contained in the TSTF traveler, and submit a license amendment request based on this evaluation within 180 days following NRC approval of the TSTF.

Status: TSTF-523 proposes to delete Technical Specification Surveillance Requirement (SR) 3.5.2.3, "Verify ECCS piping is full of water," and update the Bases in accordance with the NRC GL 2008-01 effort. The TSTF also proposes to make ECCS gas management a UFSAR mandated program. The proposed TSTF has been submitted to the NRC and is currently under review. McGuire Regulatory Compliance monitors the status of this TSTF.

2. Revise the UFSAR in regard to gas accumulation and venting consistent with the guidance described in GL 2008-01.

Status: The UFSAR revisions are complete and are incorporated into UFSAR Revision 15, effective date October 10, 2009.

3. Revise SOMP for Safety Tagging and Configuration Control to include the Containment Spray and Residual Heat Removal systems.

Status: The SOMP revision is complete and the changes were incorporated into Revision 4.

4. Duke will monitor the results of the industry testing and analytical programs associated with allowable gas volume limits and gas transport for pumps and piping. Then Duke will evaluate the results to determine if additional changes to the applicable acceptance criteria are required.

Status: Industry initiatives (projects authorized by Pressurized Water Reactor Owners Group (PWROG)) are scheduled for analysis and testing to address gas transport in pump suction piping (and developing guidance on use of gas transport tools), as well as developing guidance on dynamic venting and gas intrusion evaluations for closed cooling water systems. PWROG efforts (to establish the population of pumps and service conditions for PWROG utilities, and assess the extent of applicability of the Simplified Equation as a basis for justifying an allowable void fraction for PWROG utilities for operability assessment purposes) regarding allowable gas volume limits are in progress. Duke Energy Engineering monitors the status of this industry effort.

ATTACHMENT 1

5. Training was not identified in the GL Reference 4 but is considered to be a necessary part of applying procedures and other activities when addressing the issues identified in the GL. This was identified in the Reference 2 NEI template as an item that should be addressed in the GL. This is not addressed in the response. Please provide a brief description of planned training and its schedule.

McGuire Response:

The Operations training on SOER 97-1, "Potential Loss of High Pressure Injection and Charging Capability From Gas Intrusion" was given in mid-2008 (module was entitled "SER 02-05 Gas Intrusion in Safety Systems", and included training on SOER 97-01, SER 02-05, and Generic Letter 2008-01). Gas intrusion will be again covered during training for the new ultrasonic equipment (basic operating steps for this equipment is to be provided to Operations in 2011).

Engineering (classroom) training on SOER 97-1 was given in 2007, and included SER 02-05, and the ECCS Refresher classroom training given in 2008 included SOER 97-01, SER 02-05, and Generic Letter 2008-01. Gas intrusion is included as an Engineering continuing training topic scheduled for early 2011.