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U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

Subject: Duke Energy Carolinas, LLC (Duke)
McGuire Nuclear Station, Units 1 and 2
Docket Number 50-369 and 50-370
Notice of Enforcement Discretion Request
Technical Specification 3.7.10, Control Room Area Chilled Water System

This letter documents the background and technical information supporting the McGuire Nuclear Station, Units 1 and 2, Notice of Enforcement Discretion (NOED) request discussed with NRC staff during a telephone conference call held on January 13, 2010. On January 13 at 04:30, Duke received verbal approval from the NRC staff for the NOED. This submittal fulfills the requirement that a written NOED request be submitted to the NRC within two working days following NRC verbal approval of an NOED. The Attachment provides the basis for the NOED.

As discussed and detailed in the Attachment, Duke requested discretion from enforcing Technical Specification (TS) Limiting Condition for Operation (LCO) 3.7.10, "Control Room Area Chilled Water System (CRACWS)," as it pertains to Condition "E". Condition "E" applies in the event both CRACWS trains are inoperable in Modes 1 through 4, and requires immediate entry into LCO 3.0.3. LCO 3.0.3 requires the units to be placed in Mode 3 within 7 hours, Mode 4 within 13 hours, and Mode 5 within 37 hours. McGuire entered Condition "E" at 23:32 on January 12, 2010.

The two McGuire units share a Control Room. The CRACWS consists of two independent and redundant trains which are shared between the units. At the time of the January 13 conference call, the "A" CRACWS train was inoperable due to planned maintenance, and the "B" CRACWS train had become inoperable due to an unanticipated refrigerant leak, resulting in entry into LCO 3.7.10 Condition "E" and subsequent commencement of the shutdown of both units. As the shutdown proceeded, Duke requested discretion to not comply with LCO 3.7.10 Condition "E" and LCO 3.0.3, for a maximum of 36 hours, in order to allow time to restore at least one CRACWS train to an operable status.

The "A" CRACWS train was returned to operable status on January 13, 2010 at 21:57 thereby using approximately 22 hours of the requested 36 hour NOED period.

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This request for enforcement discretion has been approved by the McGuire Nuclear Station Plant Operations Review Committee (PORC).

This submittal contains no regulatory commitments.

Questions on this matter should be directed to K.L. Ashe at 980-875-4535.

Sincerely,

Regis T. Repko

Attachment

xc with Attachment:

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Duke Energy Carolinas, LLC
McGuire Nuclear Station, Units 1 and 2
Notice of Enforcement Discretion (NOED) Request
Technical Specification 3.7.10
Control Room Area Chilled Water System

Background

On January 12, 2010 at 23:32, the second train of the McGuire Control Room Area Chilled Water System (CRACWS) was declared inoperable. At the time, McGuire Unit 1 and Unit 2 were in Mode 1 at 100% power operation. This NOED requests discretion from compliance with McGuire Technical Specification (TS) 3.7.10, Condition "E", which requires an immediate entry into TS Limiting Condition for Operation (LCO) 3.0.3 when two CRACWS trains are inoperable in Modes 1, 2, 3, or 4.

Duke Energy Carolinas, LLC (Duke) is requesting an additional 36 hours before the current LCO 3.7.10 Condition "E" and LCO 3.0.3 are enforced. This request is reasonable since one CRACWS chiller, as discussed below, remains fully functional and capable of performing its intended function. This CRACWS chiller is currently in operation, providing its intended function of cooling the Control Room.

On January 12, 2010, annual preventative maintenance and a chiller modification was being performed on the "A" CRACWS chiller when the "B" CRACWS chiller developed a refrigerant leak. With both CRACWS chillers inoperable, LCO 3.7.10 Condition "E" became applicable.

A temporary repair was placed on a leaking elbow on a pipe between the "B" CRACWS chiller condenser and evaporator, reducing the refrigerant leakage rate to a minimal, stable rate that is easily made up with existing on-site refrigerant supplies. The "B" CRACWS chiller is operating with all parameters in their normal ranges, with accident loads similar to normal operating loads. The "B" CRACWS chiller is considered available. The "B" CRACWS chiller is expected to remain available for the duration of the restoration activities on the "A" CRACWS chiller based on the success of the temporary repair and characterization of the leakage path. Environmental conditions were also evaluated in the area of the chiller during accident conditions and determined to be acceptable for Maintenance personnel.

The current TS requirement to immediately enter LCO 3.0.3 does not provide enough time to return the "A" CRACWS chiller to operable status. However, during the period requested within this NOED, the Control Room will continue to be cooled by the "B" CRACWS chiller, which (at the time of the NOED request) was operating and functional, albeit technically inoperable, as discussed above.

The CRACWS provides temperature control for the Control Room following isolation of the Control Room. The CRACWS consists of two independent and redundant trains that provide cooling of recirculated control room air. Each train consists of cooling coils,

instrumentation, and controls to provide for Control Room temperature control. The CRACWS is a subsystem providing air temperature control for the Control Room.

The CRACWS is an emergency system, parts of which may also operate during normal unit operations. A single train will provide the required temperature control to maintain the control room at approximately 75°F.

Need for NOED

Duke is requesting that the NRC exercise discretion in enforcing compliance with the TS LCO 3.7.10, Condition "E" and LCO 3.0.3 requirements for 36 hours. The NOED will allow McGuire Unit 1 and Unit 2 to remain in operation, thereby avoiding an unnecessary shutdown.

Basis for NOED

Duke has reviewed NRC Regulatory Issue Summary 2005-01, "Changes to Notice of Enforcement Discretion (NOED) Process and Staff Guidance," and the accompanying NRC Inspection Manual Part 9900 Technical Guidance, "Operations – Notices of Enforcement Discretion," and has concluded that Part 9900 Section B.2.1, "Situations Affecting Radiological Safety – Regular NOEDs," Criterion 1.a is satisfied. This criterion applies to plants in power operation desiring to avoid unnecessary transients as a result of compliance with the license condition and, thus, minimize the potential safety consequences and operational risks. The basis for this conclusion and other information required to support a request for NOED is provided below.

1. The TS or other license conditions that will be violated.

   Response:

   Declaring both trains of the CRACWS inoperable caused McGuire Unit 1 and Unit 2 to enter TS 3.7.10, "Control Room Area Chilled Water System," Condition "E", which applies when two CRACWS trains are inoperable in Mode 1, 2, 3 or 4. Required Action E.1 mandates an immediate entry into LCO 3.0.3. Entry into LCO 3.0.3 requires that action be initiated within 1 hour to place the unit, as applicable, in Mode 3 within 7 hours, Mode 4 within 13 hours, and Mode 5 within 37 hours.

2. The circumstances surrounding the situation: including likely causes; the need for prompt action; action taken in an attempt to avoid the need for an NOED; and identification of any relevant historical events.

   Response:

   On January 10, 2010 at 16:23, "A" CRACWS train was declared inoperable in preparation for performing scheduled annual maintenance activities associated with "A" CRACWS chiller. This maintenance evolution was scheduled to be completed on Wednesday, January 13, 2010.

On January 11, additional tasks associated with the implementation of a chiller modification to improve refrigerant leak reliability were identified. This scope increase required the issuance of an engineering change on a threaded connection.

On January 12 at approximately 18:00, all paperwork and engineering change requirements were complete and repair tasks on the threaded connection commenced.

On January 12 at approximately 22:00, a refrigerant leak was identified on the CRACWS "B" chiller in an elbow on a section of piping between the chiller condenser and evaporator.

On January 12 at 23:32, CRACWS "B" train was declared inoperable.

On January 13 at 01:30, a temporary repair was placed on the leaking elbow, reducing the leakage rate to a minimal, stable rate which is easily made up with the onsite stocked refrigerant.

On January 13 at 01:50, the repair task associated with CRACWS "A" chiller threaded connection was completed and tasks to transfer refrigerant back into the "A" chiller began with an estimated time duration of 18 to 24 hours to completion. Equipment functional testing will follow.

Upon "A" CRACWS chiller returning to operable status, maintenance tasks will commence on the "B" CRACWS chiller to repair the refrigerant leak.

3. Information to show that the cause and proposed path to resolve the situation are understood by the licensee, such that there is a high likelihood that planned actions to resolve the situation can be completed within the proposed NOED time frame.

Response:

The occurrence of the refrigerant leak on the "B" CRACWS chiller during the scheduled maintenance evolution on the "A" CRACWS chiller presents the current challenge. The leak rate reduction method along with the ability to makeup refrigerant charge will allow continued functionality of the "B" CRACWS chiller until the maintenance tasks associated with "A" CRACWS chiller are complete and "A" CRACWS chiller is returned to operable status.

The susceptibility of a similar "A" CRACWS chiller elbow failure is minimized by recent completion of visual material and weld inspections.

The success path of "A" CRACWS chiller would be to pressure test, draw vacuum, pressurize with refrigerant, and perform equipment functional testing.

There is confidence that these activities can be completed within the proposed NOED time frame.

4. The safety basis for the request, including an evaluation of the safety significance and potential consequences of the proposed course of action.

   a. Provide the incremental conditional core damage probability (ICCDP) and incremental conditional large early release probability (ICLERP) associated with the period of enforcement discretion.

      Response:

      The impact on the ICCDP is expected to be much less than 5E-07 and the impact on the ICLERP is expected to be much less than 5E-08 (also see Part 4.b below).

   b. Discuss the dominant risk contributor (cutsets/sequences) and summarize the risk insights for the plant-specific configuration the plant intends to operate in during the period of enforcement discretion.

      Response:

      Core Damage Frequency (CDF)

      The CRACWS System has no impact on the calculated CDF at McGuire. The CRACWS system, and specifically the control room chillers are not included in the Level One Probabilistic Risk Assessment (PRA) model. The safety significance of the CRACWS system is low because of the opportunity to mitigate the consequences with plant Abnormal Procedures (AP). When Control Room temperature becomes elevated, the Control Room Senior Reactor Operator will enter AP-39, "Control Room High Temperature." This procedure will direct the control room crew to monitor and take actions necessary to cool the control room via opening doors and placing forced fans at prescribed strategic locations. As a result, the loss of the CRACWS has been screened out of the McGuire PRA as either an initiating event or as a support system failure since it is a slow moving transient due to the preplanned actions described above. The loss of CRACWS can be mitigated by the following remedial measures:

      - The Control Room and its equipment can be cooled by opening the Control Room doors and allowing the computer area cooling system to provide some heat removal capability along with the additional air flow achieved with the doors open. Cabinet doors can be opened as needed to help ventilate equipment in the Control Room, and portable fans and cooling equipment can be used as needed to control the temperature in the Control Room area.

- The essential switchgear rooms are also cooled by the CRACWS system. Adequate cooling for these rooms can be maintained by opening doors and using portable ventilation equipment.

- The plant can also be maintained in hot standby from the Standby Shutdown Facility (SSF). Reactor coolant pump seal injection and heat removal can be maintained independent of any equipment affected by a loss of CRACWS. Seal injection can be maintained by the standby makeup pump controls along with the necessary valve controls. Seal injection can be verified at the SSF by use of the discharge flow gauge. The indications for control of the Auxiliary Feedwater System (AFW) are also available in the SSF to ensure an adequate heat sink is maintained.

- The units can be maintained in a stable condition from remote locations. The auxiliary shutdown panel (ASP), located in the AFW Pump Room, can be used to provide control for all systems needed to maintain a hot standby condition and cooldown the unit to cold shutdown conditions. In addition to AFW, these systems include the Nuclear Service Water System (RN), the Chemical and Volume Control System (NV), the Residual Heat Removal System (ND), and the Component Cooling Water System (KC).

Large Early Release Frequency (LERF)

The CRACWS system has no impact on the calculated LERF at McGuire. The CRACWS system and specifically the chillers are not included in the LERF model for the reasons described previously.

In summary, the conclusions for the CRACWS system having minimal safety significance are:

- Slow moving transient- there is time to react before failures occur and there are preplanned remedial actions available.

- Control from ASP is available.

- Control from SSF is available.

Therefore, as stated in Item 4.a, the impact on the ICCDP is expected to be much less than 5E-07 and the impact on the ICLERP is expected to be much less than 5E-08.

c. Explain compensatory measures that will be taken to reduce the risk associated with the specified condition.

Response:

As a result of a review of the base case PRA model and the specific CRACWS issue, the following compensatory measures are being taken to reduce risk during the NOED period:

1. Protect the "B" CRACWS chiller, RN, and normal and emergency power.

2. Defer non-essential activities where human error could contribute to the likelihood of a plant transient and subsequent demand on mitigating systems.

3. Defer non-essential switchyard and transformer yard activities where human error could contribute to the likelihood of a loss of offsite power.

4. Defer non-essential surveillances or other maintenance activities on other risk significant equipment, such as the Emergency Diesel Generators (EDG), SSF, and the ASP.

5. Defer non-essential maintenance activities on fire detection and suppression systems.

6. Brief each operating shift on the actions required by AP-39.

7. Verify inventory of the AP-39 equipment.

d. Discuss how compensatory measures are accounted for in the PRA. These modeled compensatory measures should be correlated, as applicable, to the dominant PRA sequences identified in Item 4.b above. In addition, other measures not directly related to the equipment out-of-service may also be implemented to reduce overall plant risk and, as such, should be explained. Compensatory measures that cannot be modeled in the PRA should be assessed qualitatively.

Response:

The compensatory actions listed above are not modeled in the PRA. However, since they are aligned with the dominant risk contributors, they should result in a significant risk reduction during the NOED period, such that proposed NOED does not result in any net increase in radiological risk to the public.

e. Discuss the extent of condition of the failed or unavailable component(s) to other trains/divisions of equipment and what adjustments, if any, to the PRA common cause factors have been made to account for potential increases in the failure probabilities. The method to use to determine the

extent of condition should be discussed. It is recognized that a formal root cause or apparent cause is not required given the limited time available in determining acceptability of a proposed NOED. However, a discussion of the likely cause should be provided with an associated discussion of the potential for common cause failure.

Response:

No common cause failure modes were considered in the PRA analysis for the CRACWS system. Therefore, no adjustments are required in the common cause analysis.

f. Discuss external event risk for the specified plant configuration. An example of external event risk is a situation where a reactor core isolation cooling pump (RCIC) has failed and a review of the licensee's individual plant examination of external events or full-scope PRA model identifies that the RCIC pump is used to mitigate certain fire scenarios. Action may be taken to reduce fire ignition frequency in the affected areas or reduce human error associated with time critical operator actions in response to such scenarios.

Response:

External events are accounted for in the PRA model. All fire detection and suppression systems remained operable during the NOED period, with the exception of a fire impairment for the sprinkler system in the cable spreading room, for which a continuous fire watch has been established. This is important since fire is a significant contributor to the CDF at McGuire.

g. Discuss forecasted weather conditions for the NOED period and any plant vulnerabilities related to weather conditions.

Response:

No severe weather (defined as winds greater than 58 mph and/or hail 3/4" or larger) that could cause a plant transient is in the forecast for today and tomorrow. The forecast for January 13, 2010 as updated at 02:30 on January 13 was:

> Overnight clear, with lows around 20 degrees and north winds around 5 mph. Wednesday, sunny with highs in the upper 40s and southwest winds around 5 mph. Wednesday night, clear with lows in the 20s and southwest winds around 5 mph. Thursday, sunny with highs in the middle 50s, light south to southwest wind.

5. The justification for the duration of the noncompliance.

Response:

The 36-hour period of enforcement discretion to not comply with the Completion Time for LCO 3.7.10 Condition "E" and LCO 3.0.3 was viewed to be adequate for completing the maintenance and administrative activities necessary for returning the "A" CRACWS chiller to operable status.

6. The condition and operational status of the plant (including safety-related equipment out of service or otherwise inoperable).

Response:

Duke has reviewed the Technical Specifications, the plant Operating Schedule, and the Work Management System. This review determined that there was no significant safety related equipment out of service at this time. Also, this review identified no other equipment that is scheduled to be out of service, nor are there any scheduled plant conditions that present any additional increase in plant risk during the NOED period.

7. The status and potential challenges to off-site and on-site power sources.

Response:

There are no activities scheduled in the switchyard or on the plant transformers that will adversely affect risk during the 36-hour period. Administrative controls would require that any emergent activities relating to risk significant items related to this determination be reevaluated.

8. The basis for the licensee's conclusion that the noncompliance will not be of potential detriment to the public health and safety.

Response:

Duke performed a qualitative PRA risk analysis to support this NOED request to determine that the proposed NOED does not result in any net increase in radiological risk to the public. This analysis, which involved a review of the base case PRA model to identify risk benefits attributable to planned compensatory measures, concluded that the risk of continued operation was small during the period of non-compliance. Further, there are no activities affecting the supporting systems and equipment, including offsite and onsite power sources, for the "B" CRACWS chiller that will adversely affect risk during the 36-hour period. Any emergent activities relating to risk significant items would require this determination to be reevaluated. There was no net increase in radiological risk to the public by avoiding the unnecessary transient imposed through compliance with LCO 3.0.3 and safety continued to be assured by the operation of the "B"

CRACWS chiller which was performing its intended function of maintaining control room temperature.

9. The basis for the licensee's conclusion that the noncompliance will not involve adverse consequences to the environment.

Response:

This request for enforcement discretion will not result in any significant changes in the types, or significant increase in the amounts, of any effluents that may be released offsite. In addition, no significant increase in individual or cumulative occupational radiation exposures will be involved as a result of the request. Therefore, it can be concluded that the NRC's granting of this request for enforcement discretion will not involve any adverse consequences to the environment.

10. A statement that the request has been approved by the facility organization that normally reviews safety issues (Plant On-site Review Committee, or its equivalent).

Response:

This NOED request was reviewed and approved by the McGuire Plant Operations Review Committee (PORC) on January 13, 2010.

11. The request must specifically address which of the NOED criteria for appropriate conditions specified in Section B is satisfied and how it is satisfied.

Response:

Duke is submitting this NOED request in accordance with NRC Inspection Manual Part 9900 Technical Guidance, "Operations – Notices of Enforcement Discretion," and is requesting discretion based on Section B.2.1, "Situations Affecting Radiological Safety – Regular NOEDs," Criterion 1.a. This criterion applies to plants in power operation desiring to avoid unnecessary transients as a result of compliance with the license condition and, thus, minimize the potential safety consequences and operational risks. The safety consequences and operational risks for McGuire were reviewed as a part of this NOED request and are documented within this submittal.

12. Unless otherwise agreed as discussed in Section B, a commitment is required from the licensee that the written NOED request will be submitted within 2 working days and the follow-up amendment will be submitted within 4 working days of verbally granting the NOED. The licensee's amendment request must describe and justify the exigent circumstances (see 10 CFR 50.91(a)(6)). The licensee should state if staff has agreed during the teleconference that a follow-up amendment is not needed. If the licensee intends to propose a temporary

amendment, the licensee's amendment request shall include justification for the temporary nature of the requested amendment.

Response:

Duke is submitting this written NOED request within 2 working days of the NRC's verbal approval (Thursday, January 14, 2010).

As previously committed in the letter dated November 15, 2007, Duke plans to submit a license amendment request (LAR) to address the operability requirements for the CRAVS and CRACWS systems. Submittal of the LAR will follow NRC approval of TSTF-426, "Revise or Add Actions to preclude entry into LCO 3.0.3," NRC approval of WCAP-16125, Rev. 1, "Justification for Risk Informed Modifications to Selected Technical Specifications for Conditions Leading to Exigent Plant Shutdown," and submittal by the Technical Specification Task Force of the corresponding Traveler applicable to Westinghouse plants (currently under development) and subsequent NRC approval of this Traveler.

13. In addition to items 1-12 above, for a severe-weather NOED request the licensee must provide additional specified information.

Response:

This is not a severe-weather NOED request. Weather considerations are discussed in Item 4.