From: Thompson, Jon
Sent: Thursday, December 02, 2010 8:19 AM
To: Leisure, Mike
Cc: Ashe, Ken; 'Hart, Randy'; Kulesa, Gloria; Stang, John; Blechman, Paula; Chung, Pong; Guzzetta, Ashley
Subject: Request for Information for Amendment dated June 29, 2010

SUBJECT: CATAWBA NUCLEAR STATION, UNITS 1 AND 2 (CATAWBA 1 AND 2), AND MCGUIRE NUCLEAR STATION, UNITS 1 AND 2 (MCGUIRE 1 AND 2), REQUEST FOR ADDITIONAL INFORMATION (RAI) REGARDING LICENSE AMENDMENT RELATED TO REQUEST TO REVISE THE TECHNICAL SPECIFICATIONS (TSS) TO REFLECT THE RESULTS OF UPDATED SETPOINT CALCULATIONS (TAC NOS. ME4256, ME4257, ME4258, AND ME4259)

By letter dated June 29, 2010, Duke Energy Carolinas, LLC (the licensee), submitted a proposed license amendment to change the Catawba 1 and 2 and McGuire 1 and 2 Technical Specifications (TSs). The proposed change revises the TSs to reflect the results of updated setpoint calculations for the Reactor Trip System and the Engineered Safety Feature Actuation System.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the licensee's submittal and determined that additional information is needed in order to complete our review. The enclosed document describes this RAI. A written response should be provided to the NRC staff within 30 days of the issuance of this letter in order to support our timely review of this application. Please inform me if you are unable to support this response timeframe.

If you have any questions, please call me at 301-415-1345.

Sincerely,

Jon Thompson, Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-413, 50-414, 50-369 and 50-370

Enclosure:
As stated

REQUEST FOR ADDITIONAL INFORMATION (RAI)

BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REGARDING LICENSE AMENDMENT RELATED TO

REVISION OF THE TECHNICAL SPECIFICATIONS (TSS) TO REFLECT

THE RESULTS OF UPDATED SETPOINT CALCULATIONS

CATAWBA NUCLEAR STATION, UNITS 1 AND 2 (CATAWBA 1 and 2)

MCGUIRE NUCLEAR STATION, UNITS 1 AND 2 (MCGUIRE 1 AND 2)

The following RAI from the Nuclear Regulatory Commission (NRC) staff pertains to the revision of the TSs to reflect the results of updated setpoint calculations as described in the license amendment requests (LARs) sent by letter dated June 29, 2010 (Agencywide Documents Access and Management System (ADAMS), Accession No. ML101900267), submitted by Duke Energy Carolinas, LLC (the licensee).

1. On page 13, Enclosure 1 of the LAR, the licensee stated that the Allowable Value (AV) determination is based on the most conservative of either Method 1 or 2 in the licensee's Engineering Directives Manual (EDM)-102 "Instrument Setpoint/Uncertainty Calculations." Per the second equation on the same page, AV = SP ± $RU_{T\text{-}cal}$ (where SP is the nominal setpoint, RU is total random uncertainty, and T-cal includes representative (minimum) uncertainty term magnitudes associated with the portion of the loop tested and for the desired interval (attributed to the expected variation from "as-left" conditions)), EDM Method 1 is equivalent to the Method 3 of the AV calculation in ISA-RP67.04.02-1994. Method 3 of ISA-RP67.04.02-1994 may not provide adequate assurance that the actual trip point is conservative relative to the analytical limit (AL).

   Please provide the following:

   a. Provide summary calculations of the setpoint and AV using both EDM-102 Method 1 and 2 for each type of instrument channel. The summary calculation should provide the basis for calculating total loop uncertainty (TLU), nominal trip setpoint (NTSP), field trip setpoint, AV, as-found tolerance, and as-left tolerance.

   b. Identify all proposed functions with AV determined by EDM Method 1, list the values of $RU_{T\text{-}cal}$, RU_{NT} and safety margin for each of these functions, and describe which uncertainty terms are included in $RU_{T\text{-}cal}$ and RU_{NT} calculations.

   c. Demonstrate that with the instrument "as-found" value at the AV, under the worst-case condition the channel trip function will be achieved with a 95% probability before the AL is reached. Explain how you can ensure that the established AV is conservative to the AL with a 95% confidence level when applying EDM Method 1.

   d. On page 30 of LAR, the licensee stated: "A 95/95 tolerance is used to establish acceptable uncertainty values for the instrument strings. At the McGuire and Catawba Nuclear Stations, this is assured by means of the calculation methods, instrument string calibration, and setpoint verification." Justify and provide examples to demonstrate that the licensee has met 95/95 tolerance limit acceptable criteria for the instrument loop uncertainty. Alternatively, describe how the upper and lower bounds of each error term used in the determination of $RU_{T\text{-}cal}$ and RU_{NT} have been determined to a high confidence level comparable to the 95/95 criteria for each instrument channel uncertainty term.

e. Provide a copy (prefer electronic copy) of EDM-102 "Instrument Setpoint/Uncertainty Calculations."

2. The LAR would modify TS requirements by proposing new AVs in TS Table 3.3.1-1, “Reactor Trip System Instrumentation” and TS Table 3.3.2-1, “Engineered Safety Feature Actuation System Instrumentation” reflective of updated setpoint calculations in the conservative direction.

   Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 50.36(ii)(A), "Technical Specifications”, states in part that “Limiting safety system settings [LSSS] for nuclear reactors are settings for automatic protective devices related to those variables having significant safety functions. Where a limiting safety system setting is specified for a variable on which a safety limit has been placed, the setting must be so chosen that automatic protective action will correct the abnormal situation before a safety limit is exceeded….”

   Licensing basis safety analyses demonstrate that the LSSS is chosen such that automatic protective action will correct an abnormal situation before a safety limit is exceeded. The safety analysis defines LSSS analytical limits, upon which appropriate margin is added to the TS AV which includes uncertainties and response times. The LAR does not indicate that analytical limits associated with the requested LSSS revisions are changing.

   Please verify that this LAR does not modify any of the analytical limits that underlie the modified AVs.

E-mail Properties

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Subject: Request for Information for Amendment dated June 29, 2010
Sent Date: 12/1/2010 6:24:02 PM
Received Date: 12/2/2010 8:18:00 AM
From: Thompson, Jon

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Files	Size	Date & Time
MESSAGE	19419	12/1/2010

Options
Expiration Date:
Priority: olImportanceNormal
ReplyRequested: False
Return Notification: False

Sensitivity: olNormal
Recipients received: