October 31, 2005

Mr. R. T. Ridenoure
Vice President - Chief Nuclear Officer
Omaha Public Power District
Fort Calhoun Station FC-2-4 Adm.
Post Office Box 550
Fort Calhoun, NE 68023-0550

SUBJECT: FORT CALHOUN STATION, UNIT NO. 1 - REQUEST FOR ADDITIONAL INFORMATION RELATED TO TECHNICAL SPECIFICATIONS FOR STEAM GENERATOR BLOWDOWN ISOLATION (TAC NO. MC7524)

Dear Mr. Ridenoure:

By letter dated July 1, 2005 (Agencywide Documents Access and Management System Accession No. ML051950401), Omaha Public Power District (OPPD/the licensee) requested a license amendment for changing the Updated Safety Analysis Report to credit operator action to isolate steam generator blowdown during a loss-of-main feedwater event. As a result of our review of OPPD's submittal, we have determined that additional information is needed to complete our review. The Nuclear Regulatory Commission staff's request for additional information (RAI) related to OPPD's request is attached. This request was discussed with Thomas Matthews of your staff and it was agreed that a response would be provided within 30 days of receipt of this letter.

Fort Calhoun has been selected to be part of the RAI Data Collection-Pilot Effort. As discussed previously, the RAIs have been assigned a category to be used in our pilot effort. If you have any questions or comments on the RAIs or their categorization, please contact me at 301-415-1445.

Sincerely,

/RA/
Alan B. Wang, Project Manager, Section 2
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-285

Enclosure: Request for Additional Information

cc w/encl: See next page

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REQUEST FOR ADDITIONAL INFORMATION

TECHNICAL SPECIFICATION RELATED TO

STEAM GENERATOR BLOWDOWN ISOLATION

PREPARED BY THE OFFICE OF NUCLEAR REACTOR REGULATION

OMAHA PUBLIC POWER DISTRICT

FORT CALHOUN STATION, UNIT 1

DOCKET NO. 50-285

By letter dated July 1, 2005, Omaha Public Power Company (OPPD) requested a license amendment for changing the Updated Safety Analysis Report to credit operator action to isolate steam generator blowdown during a loss-of-main feedwater event (LMFW). As a result of the Nuclear Regulatory Commission (NRC) staff's review of OPPD's submittal, we have determined that the following additional information is needed to complete our review: Codes provided in parenthesis after each question refer to the RAI categorization codes listed at the end of the RAI questions.

(1) Steam Generator (SG) Blowdown Isolation

Confirm that the SG blowdown isolation system is a safety-grade system. If it is not a safety-grade system, justify that its isolation function can be achieved on demand during the limiting transient for determining the required operator action for SG blowdown isolation. Does this function need to be included as a technical specification surveillance requirement to assure the reliability of the isolation system?

Also, confirm that taking credit for the operator action for SG blowdown isolation will not inadvertently affect the results of any loss-of-coolant accident (LOCA) and non-LOCA transients. (2a)

(2) SG Heat Transfer Model

Discuss the SG heat transfer model in S-RELAP5 for events that experience SG dryout. Provide the values of SG dryout heat transfer coefficients used in the analysis of non-LOCA transients. In particular, include the values for the LMFW and feedwater line break (FLB) events.

The Semi-scale test data for FLB (as discussed in Section 4.3.3.1 of NUREG/CR-4945, dated July 1987) demonstrates that the SG heat transfer capacity remains unchanged until the SG liquid inventory is nearly depleted. This is followed by a rapid reduction to zero percent heat transfer with little further reduction in the SG water inventory. In light of these test data, OPPD is requested to verify that the heat transfer model used in the LMFW and FLB events (that

experience SG dryout) is conservative as compared to the Semi-scale test data. In addition, please provide:

a) a sketch of the four vertically-stacked control volumes showing the volumes from top to bottom and associated void fractions, (2b)

b) a combining of Figures 4 and 5 so that the conservatism can be readily apparent, and (2b)

c) a justification for why S-RELAP5 is conservative with respect to semi-scale tests for FLBs from 14 to 40 percent. (2b)

(3) Initial Conditions

Discuss the effects of each parameter of the plant's initial conditions listed in Table 1 and 3 of Attachment 3 to the July 1, 2005, letter on the LMFW and FLB analysis, respectively. Justify that the values of the parameters used in the analysis are conservative in determination of the shortest-required operator action time for the SG blowdown isolation. The discussion should include all of the parameters of Table 1 (such as initial pressurizer pressure and level, initial SG pressure, and the reactor protection system trip on low SG level, etc.) and justify why the values used in the analysis are conservative with respect to the shortest time required for operator action to isolate blowdown. (2a)

(4) Non-Safety Grade Components and/or Systems

Identify any non-safety grade systems and/or components that were credited for consequence mitigation in the LMFW and FLB analysis, and justify that the use of identified non-safety systems and/or components for event mitigation is acceptable. Provide examples of non-safety grade systems that exacerbate the consequences of the LMFW and/or feedwater line break event. (2a)

(5) CESEC and S-RELAP5 Comparison

Identify the differences of SG blowdown isolation models used in CESEC and S-RELAP5. (2b)

Both codes were approved by the NRC for use in the analysis of non-LOCA transients. Identify the fuel cycle number that started using S-RELAP5 to replace CESEC for the reload analysis. Explain why the need of operation action for SG blowdown was not identified in the current Cycle 23 reload analysis, instead, it was identified for Cycle 24 reload analysis that simulated the replacement SG, pressurizer and reactor vessel head to be installed in 2006. Are there any effects on the LOCA and non-LOCA transient analysis (in particular, the LMFW and FLB analysis) caused by the replacement SG, pressurizer and reactor vessel? (3e)

Provide a statement discussing why Criterion 2 on page 8 of the Auxiliary Feedwater Actuating System Setpoint report is acceptable. In particular, justify that the conditions with $T_h < 600^o$ F and RCS subcooling $\geq 20^o$ F will assure fuel cladding integrity in meeting the plant-specific departure from nucleate boiling ratio safety limit and fuel centerline melting limit. (2b)

RAI CATEGORIES

1. More information is needed because of:

   a. complexity of request
   b. first-of-a-kind nature of request
   c. NRC change in regulatory significance or focus
   d. NRC questions on previously used methodology or guidance
   e. licensee change to previously used methodology
   f. licensee reduction in current safety margin

2. The review can not be completed without additional explanation or clarification of:

   a. input variables or analytical assumptions
   b. methodology used or results obtained
   c. applicability or bounding nature of third party analyses or data correlations
   d. differences from NRC guidance documents (SRP, RG, etc.)
   e. no significant hazards consideration discussion
   f. environmental considerations discussion
   g. applicable regulatory requirements discussion
   h. information that appears to be incorrect and needs to be corrected
   i. response to previous RAI appears inadequate

3. Reviewer requesting information even though the question is, or the question asks for:

   a. not directly related to the request
   b. inconsistent with applicable codes, standards, RGs, or SRP sections
   c. information accessible from readily available sources and was explicitly referenced
   d. Information does not appear needed given the precedent cases discussed in the request
   e. information that is not safety significant or pertinent to the regulatory finding
   f. information that is known to engineers who work in the general technical area
   g. going beyond the current licensing basis and doesn't need to be asked
   h. a formal commitment

4. Other (please specify)

cc:
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