



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

April 21, 2009

Mr. Stewart B. Minahan
Vice President-Nuclear and CNO
Nebraska Public Power District
72676 648A Avenue
Brownville, NE 68321

SUBJECT: COOPER NUCLEAR STATION - REQUEST FOR ADDITIONAL INFORMATION
RE: ALTERNATIVE SOURCE TERM (TAC NO. MD9921)

Dear Mr. Minahan:

By application dated October 13, 2008, to the U.S. Nuclear Regulatory Commission (NRC) (Agencywide Documents Access and Management System Accession No. ML082910760), Nebraska Public Power District (NPPD, the licensee) requested NRC staff approval of an amendment to the Cooper Nuclear Station facility operating license and technical specifications (TSs) to adopt the Alternative Source Term (AST) for use in calculating the Loss-of-Coolant Accident (LOCA) dose consequences.

The NRC staff reviewed the information provided in your application and determined that additional information is required in order to complete its review. Please provide a response to the enclosed questions by May 29, 2009.

The NRC staff considers that timely responses to requests for additional information help ensure sufficient time is available for NRC staff review and contribute toward the NRC's goal of efficient and effective use of NRC staff resources. If circumstances result in the need to revise the requested response date, please contact me at (301) 415-2296.

Sincerely,

A handwritten signature in black ink that reads "CF Lyon".

Carl F. Lyon, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-298

Enclosure:
Request for Additional Information

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REQUEST FOR ADDITIONAL INFORMATION

ALTERNATIVE SOURCE TERM

COOPER NUCLEAR STATION

DOCKET NO. 50-298

Meteorological

1. With respect to statements in Section 4.2 (pages 14 and 15) of Attachment 1 to the license amendment request (LAR) for Cooper Nuclear Station (CNS) dated October 13, 2008 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML082910768), concerning the control room atmospheric dispersion factors (χ/Q values), please provide reference citations for:
 - the hourly meteorological data files, by name, previously submitted and found acceptable by the U.S. Nuclear Regulatory Commission (NRC) and
 - documents confirming the acceptability of the specific χ/Q values presented in Table 1 of the October 13, 2008, LAR.

Otherwise, NRC staff notes that Section 3.1.2 of the safety evaluation (SE) associated with CNS Amendment No. 196 (ADAMS Accession No. ML030560804) dated February 21, 2003, states that the NRC staff had concerns about the quality of the data collected from 1994 through 1998. The χ/Q values presented in Table 3 of the SE associated with Amendment No. 196 were based upon the single year of meteorological data resulting in the limiting χ/Q values rather than the entire 5-year period. In the SE, the NRC staff remarked that the licensee stated that a series of measures were initiated in 1998 to improve the meteorological measurements program and the NRC staff recommended that data from the improved program be considered for use in any future calculations. Therefore, please explain how the hourly data from the upgraded meteorological program compare with meteorological data measured from 1994 through 1998, and demonstrate that use of the 1994 through 1998 data is acceptable.

2. Section 3.1.2 of the SE associated with Amendment No. 196 states that use of the diffuse source χ/Q values for the CNS turbine building is acceptable on a case-specific basis for modeling the dispersion of low level (i.e., 10 standard cubic feet per hour) main steamline isolation valve leakage during a loss-of-coolant accident (LOCA) and for modeling the dispersion of the 1 percent volume per day leakage from the condenser for the control rod drop accident. Will these and other applicable criteria still be met in the proposed license amendment? Will the set of χ/Q values for the loss of offsite power (LOOP) case still bound the set of χ/Q values for the non-LOOP case?
3. The October 13, 2008, LAR requests approval for changes to the CNS technical specifications to establish a higher leakage limit for the newly defined main steam pathway and to credit the standby liquid control system for LOCA mitigation. Do changes proposed in the October 13, 2008, LAR introduce any new release pathways or other changes in the dose scenario that would affect use of the current licensing basis

Enclosure

χ/Q values? If so, please provide the following information or cite references where the information has been previously docketed.

- Input files (electronic files for data input into the ARCON96 computer code) and a discussion of assumptions used to generate the χ/Q values and summary output files. These input files should clearly indicate the release height, receptor height, distance, and direction (with respect to true north) for each release/receptor pair analyzed.
 - Figures which support the selection of the inputs and assumptions used to calculate all of the onsite χ/Q values. Include a figure of the general arrangement of plant structures, drawn approximately to scale and showing true north, sufficient to enable the NRC staff to make confirmatory estimates of the selected inputs and assumptions and resultant χ/Q values. Highlight the postulated release and receptor locations including control room locations that may experience unfiltered inleakage.
4. Which χ/Q values were used for assumed unfiltered inleakage into the control room and why are those χ/Q values appropriate?

Accident Dose Consequences

1. Page 1 of the LAR dated October 13, 2008 (ADAMS Accession No. ML082910768) states that the requested license amendment represents a "selective scope" application of the alternative source term (AST) at CNS; however, the LAR includes a reanalysis of the design basis LOCA using the AST, commensurate with the regulatory position 1.2.1, "Full Implementation," of Regulatory Guide (RG) 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors." Therefore, please explain why selective implementation, as opposed to full implementation, of the AST is requested for CNS.
2. Analysis ALION-CAL-NPPD-3236-002, Rev. 1, as included in Enclosure 1 to the October 13, 2008, submittal, states that dose to the control room occupants due to direct shine was not calculated in the submitted analysis; instead it was calculated in the analysis NEDC 05-045, "LOCA Shine." Therefore, please either provide NEDC 05-045, or thoroughly explain how the Rev. 1 direct shine dose to the CNS control room of 0.319 rem total effective dose equivalent was calculated, as reported on page 8 of Enclosure 1 to the October 13, 2008, LAR, NEDC 07-082, Rev. 2. Also, please provide all additional information needed to characterize the direct shine dose sources following the postulated LOCA, including plume location, concentration, and orientation with respect to the CNS control room.
3. Page 16 of analysis ALION-CAL-NPPD-3236-002, Rev. 1, states the following

The no holdup (no mixing) assumption is included in the input by setting the fraction retained, $Frac$, within the volume in a unit of time at less than 0.1% and then solving for the reactor building volume from the transient exhaust equation shown below.

Please explain how it was determined that a retention fraction of 0.1 percent was sufficiently low enough to model, or accurately simulate, no mixing.

4. Page 26 of analysis ALION-CAL-NPPD-3236-002, Rev. 1, states that the lower bound of the uncertainty in the Control Room Emergency Filtration System intake flow was used to minimize the removal rate of radionuclides from the control room following isolation. Please explain how it was determined that this treatment was indeed conservative, and that doing this does not inadvertently slow the buildup of activity in the control room, thereby reducing the accumulated dose.
5. Please provide a direct comparison of the elemental iodine removal efficiencies calculated for a condenser in NEDC-31858P-A, Rev. 2, and those calculated for CNS condenser. Also, please explain and justify any deviations or extrapolations from the methodology presented to calculate elemental iodine removal in the condenser in NEDC-31858P-A, Rev. 2.

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Sincerely,
/RA/

Carl F. Lyon, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
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*memo dated

OFFICE	NRR/LPL4/PM	NRR/LPL4/LA	AADB/BC	NRR/LPL4/BC	NRR/LPL4/PM
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DATE	4/20/09	4/14/09	4/10/09	4/21/09	4/21/09

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