



Nebraska Public Power District

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NLS2006045
May 17, 2006

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

Subject: Response to Request for Additional Information Regarding License
Amendment Request for a One-Time Extension of the Integrated Leakage
Rate Test Interval
Cooper Nuclear Station, Docket No. 50-298, DPR-46

- References:**
1. Letter from Brian Benney, U.S. Nuclear Regulatory Commission, to Randall K. Edington, Nebraska Public Power District, dated April 18, 2006, "Cooper Nuclear Station – Request for Additional Information Re: One-Time Extension of the Integrated Leakage Rate Test" (TAC No. MC9732)
 2. Letter from Randall K. Edington, Nebraska Public Power District, to U.S. Nuclear Regulatory Commission, dated January 30, 2006, "License Amendment Request for a One-Time Extension of Containment Integrated Leakage Rate Test Interval" (NLS2006002)

The purpose of this letter is to submit a response to the Nuclear Regulatory Commission (NRC) Request for Additional Information (RAI) sent to Nebraska Public Power District (NPPD) by letter dated April 18, 2006 (Reference 1). In Reference 1 the NRC indicated this information is needed to support their review of the NPPD license amendment request for a one-time extension of the Integrated Leakage Rate Testing interval for the Cooper Nuclear Station, submitted by letter dated January 30, 2006 (Reference 2). The response to the RAI is provided in the attachment.

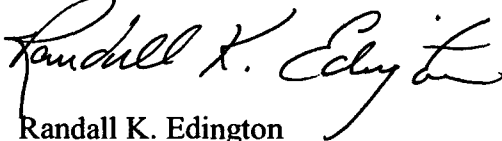
Should you have any questions regarding this submittal, please contact Paul Fleming, Licensing Manager, at (402) 825-2774.

A017

I declare under penalty of perjury that the forgoing is true and correct.

Executed on 5/17/06
(Date)

Sincerely,



Randall K. Edington
Vice President-Nuclear and
Chief Nuclear Officer

/rr

Attachment

cc: Regional Administrator w/ Attachment
USNRC - Region IV

Cooper Project Manager w/ Attachment
USNRC - NRR Project Directorate IV-1

Senior Resident Inspector w/ Attachment
USNRC - CNS

NPG Distribution w/o Attachment

CNS Records w/ Attachment

Attachment

**Response to Request for Additional Information Regarding License Amendment Request
for One-Time Extension of the Integrated Leakage Rate Test Interval**

Cooper Nuclear Station, Docket No. 50-298, DPR-46

Reference: Letter from Randall K. Edington, Nebraska Public Power District, to U.S. Nuclear Regulatory Commission, dated January 30, 2006, "License Amendment Request for a One-Time Extension of Containment Integrated Leakage Rate Test Interval" (NLS2006002)

1. NRC Request

The analysis of external events in Appendix B of the January 30, 2006, submittal presents the estimated delta large early release frequency (Δ LERF) associated with extending the test frequency from one test in 10 years to one test in 15 years. Please provide the estimated Δ LERF (for combined internal and external events) associated with extending the test frequency from the original three tests in 10 years to one test in 15 years (using the Nuclear Energy Institute Interim Guidance.)

NPPD Response

The following Table 1 provides a bounding estimate of Δ LERF (LERF increase) for combined internal and external events associated with extending the test frequency from the original three tests in 10 years to one test in 15 years using the Nuclear Energy Institute (NEI) Interim Guidance.

The method used in Table 1 and Appendix B of the January 30, 2006 submittal provided a bounding external event LERF increase by counting the full estimated seismic and fire Core Damage Frequency (CDF) against the 3b Electric Power Research Institute (EPRI) Accident Class (Large Isolation Failures) frequency.

The results of Table 1 indicate that when the internal and bounding external events LERF increase contributions are summed, the total bounding estimated increase in LERF is $4.08E-07/\text{yr}$. This increase is in the range of $1E-07/\text{yr}$ to $1E-06/\text{yr}$; therefore calculation of total LERF is performed to show that it remains less than $1E-05/\text{yr}$ (Region II of Regulatory Guide (RG) 1.174 Figure 4, Acceptance Guidelines for LERF).

TABLE 1: CALCULATION OF LERF INCREASE USING NEI INTERIM GUIDANCE			
Probabilistic Risk Assessment Element	3b Frequency (3-per-10 year ILRT)	3b Frequency (1-per-15year ILRT)	LERF Increase (3-per-10 to 1-per-15)
Bounding External Events	1.00E-07	5.02E-07	4.07E-07
Internal Events	1.58E-09	7.90E-09	6.32E-09
Combined (Internal + Bounding External)	1.02E-07	5.10E-07	4.08E-07

Table 2 provides the estimated Total LERF (for combined internal and external events) associated with extending the test frequency from the original three tests in 10 years to one test in 15 years using the NEI Interim Guidance. Two cases were examined in table 2:

- Case 1 calculates the external event Base LERF assuming the fractional contribution of external event CDF is the same as the internal event fraction.
- Case 2 calculates the external event Base LERF assuming 10% of the external event CDF contributes to LERF.

From Table 2, the results for both sensitivity cases indicate that when the internal and external events contributions are summed, the total bounding estimated LERF is 4.69E-06/yr. This is within the acceptance guidelines for Region II of RG 1.174 Figure 4.

TABLE 2: CALCULATION OF TOTAL LERF (INTERNAL+EXTERNAL)	
Base CDF (Internal)	1.30E-05
Base CDF (External)	3.72E-05
Base LERF (Internal)	5.60E-07
Case 1: LERF Split Fraction Based on Internal Events	
Base LERF (External)	1.60E-06
Base LERF (Internal+ External)	2.16E-06
Total LERF [(Internal+ External), (Base LERF + ΔLERF)]	2.57E-06
Case 2: LERF Split Fraction Based on 10% of CDF	
Base LERF (External)	3.72E-06
Base LERF (Internal+ External)	4.28E-06
Total LERF [(Internal+ External), (Base LERF + ΔLERF)]	4.69E-06

Realizing the conservatism contained in the ΔLERF calculated by assuming 100% of the external event CDF contributes to EPRI class 3b frequency, a sensitivity calculation was performed for ΔLERF assuming the external event CDF contribution equals the internal event fraction for class 3b.

From Table 9-1 of the enclosure to the January 30, 2006 submittal, approximately 0.01% of CDF contributed to the internal events class 3b frequency. Assuming approximately 0.01% of the external event CDF contributes to the EPRI class 3b frequency results in an estimate of $2.44E-8/\text{yr}$ ΔLERF (LERF increase) for combined internal and external events associated with extending the test frequency from the original three tests in 10 years to one test in 15 years using the NEI Interim Guidance. This shows the bounding nature of the ΔLERF calculated in Table 1 and Appendix B of the January 30, 2006 submittal.

2. NRC Request

Clarify whether the baseline LERF value of $5.60E-7/\text{year}$, reported in Appendix B, is based on internal events only, or internal and external events. If the former, provide the total LERF for internal and external events, including the impacts of the requested change.

NPPD Response:

The LERF value of $5.6E-07/\text{yr}$ is based on internal events only. The total LERF for internal and external events, including the impacts of the requested change, is provided in the response to Request for Additional Information Question No. 1.

3. NRC Request

Reconcile the low baseline LERF value of $5.60E-7/\text{year}$ reported in Appendix B with the much higher early containment failure frequency of $5.49E-6/\text{year}$, reported in Table 6-5 of the Enclosure to the January 30, 2006, submittal.

Describe the definition of LERF used in the Cooper probabilistic risk assessment, and provide an accounting of how the major sequences contributing to internal and external event core damage frequency are classified (as LERF and non-LERF) using this definition.

NPPD Response:

A large early release from containment is defined as a radionuclide release of sufficient magnitude to have the potential to cause early fatalities and occurs in less than 4 hours following declaration of General Emergency, typically when minimal offsite protective measures have been accomplished. Using site-specific thermal-hydraulic calculations, this is interpreted as fractional release of CsI compound exceeding 10% of core inventory in less than 4 hours of the expected Emergency Action Level requiring General Emergency and evacuation.

Many of the early containment failure modes do not result in a large early release. The LERF frequency of $5.6E-07$ /year is comprised of early containment failure modes that result in a large release (e.g., releases through the drywell without the benefit of wetwell scrubbing). The values of release frequency reported in Table 6-5 of the enclosure to the January 30, 2006 submittal includes all release magnitudes and timing classifications. Only approximately 9% of the total release frequency associated with early containment failure meets the definition of LERF. Potential mitigation from RPV, primary containment, and reactor building filtration, as well as the probability of suppression pool bypass result in a lower fraction of large magnitude releases than the early containment failure mode total release frequency. Additionally, early containment failure is defined as occurring immediately following vessel failure, thus for some plant damage states (PDS) (e.g. Station Black Out with injection until battery depletion or loss of containment heat removal type PDS) the fraction of early containment failure resulting in LERF is reduced due to predicted vessel failure occurring at intermediate times (i.e., between 4 and 24 hours after General Emergency Declaration).

Correspondence Number: NLS2006045

The following table identifies those actions committed to by Nebraska Public Power District (NPPD) in this document. Any other actions discussed in the submittal represent intended or planned actions by NPPD. They are described for information only and are not regulatory commitments. Please notify the Licensing Manager at Cooper Nuclear Station of any questions regarding this document or any associated regulatory commitments.

COMMITMENT	COMMITMENT NUMBER	COMMITTED DATE OR OUTAGE
None		