NRR-DMPSPEm Resource

From: Klos, John
Sent: Tuesday, August 14, 2018 7:27 AM
To: Garcia, Richard M.
Cc: Klos, John
Subject: WITHDRAWAL of RAI to Energy Northwest concerning Columbia request for clarification, editing of 2006 AST amendment

Importance: High

Rick,

I am writing to formal retract and withdraw the RAI below.

The NRC staff has further review this licensing action and determined that the additional information below is not required.

Thank you,

John Klos
DORL Callaway, Columbia Project Manager
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John.Klos@NRC.gov

From: Klos, John
Sent: Tuesday, July 17, 2018 1:48 PM
To: Garcia, Richard M.
Cc: Klos, John
Subject: Formal RAI release to Energy Northwest concerning Columbia request for clarification, editing of 2006 AST amendment

Rick,

By letter dated January 31, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession Number ML18032A458), Energy Northwest (EN) the licensee, requested a clarification to Columbia Generating Station's (CGS) 2006 Alternate Source Term (AST) license amendment.

Specifically, the licensee requested clarification of the verbiage in the amendment's issuance concerning continuous spray versus intermittent spray for aerosol removal related to a loss of coolant accident's (LOCA) analysis.

During the Nuclear Regulatory Commission (NRC) staff's review the NRC staff determined that more information was needed to complete the review.

A clarification call was held on July 17, 2018 and below is the final text for one question which requires no further clarification. This request for additional information (RAI) is now released formally with a 30 day calendar response time; thereby, these RAIs are due on Thursday August 16, 2018.

Regulatory Basis

In 10 CFR Part 50, “Domestic Licensing of Production and Utilization Facilities,” Section 50.34, “Contents of Applications; Technical Information,” requires that each applicant for a construction permit or operating license provide an analysis and evaluation of the design and performance of structures, systems, and components of the facility with the objective of assessing the risk to public health and safety resulting from operation of the facility.

In December 1999, the U.S. Nuclear Regulatory Commission (NRC) issued a new regulation, 10 CFR 50.67, "Accident Source Term," which provided a mechanism for licensed power reactors to replace the traditional accident source term, used in their design-basis accident (DBA) analyses, with an AST. Regulatory guidance for the implementation of these ASTs is provided in Regulatory Guide (RG) 1.183. A licensee seeking to use an AST is required by 10 CFR 50.67 to apply for a license amendment. An evaluation of the consequences of affected DBAs is required to be included with the submittal.

ARCB-RAI-1

Energy Northwest’s clarification request proposes the following clarification text be used to amend the 2006 safety evaluation and amendment issuance:

> EN assumes that a portion of the fission products released from the reactor pressure vessel will be removed by drywell sprays. Fission product removal by drywell sprays is credited from 15 minutes through 24 hours based upon the approved methodology. The sprays are operated as directed by the [Emergency Operating Procedures/Severe Accident Management Guidelines] EOP/SAMG procedures.

The licensee’s clarification letter request states that the NRC staff’s 2006 amendment issuance and its’ safety evaluation (ADAMS Accession no. ML062610440, Section 3.1.1.2, “Release Pathways” states that:

> EN assumes that a portion of the fission products released from the reactor pressure vessel will be removed by drywell sprays. The sprays are assumed to be initiated at 15 minutes and turned off after 1 day.

In the licensee’s clarification request letter concerning the 2006 CGS AST LAR issuance, the licensee states that the securing of drywell sprays prior to 24 hours does not impact the aerosol removal rates assumed in their loss of coolant accident (LOCA) analysis and that a separate aerosol removal sensitivity analysis considering the effect of securing drywell sprays during the 24 hour period. The separate aerosol removal sensitivity analysis is identified in the licensee’s clarification letter request as Reference 4’s Enclosure 3 which was part of a request for additional informational response, dated March 21, 2006 (ADAMS Accession No. ML060900602).

Additionally, the licensee’s clarification request letter also states that the EOP/SAMG direction to secure drywell sprays based upon containment pressure is consistent with, and bounded by the design basis LOCA analysis and its assumption regarding drywell sprays.

The CGS design basis associated with design basis LOCA analysis and drywell sprays is calculated using the equation stated in Standard Review Plan (SRP) 6.5.2, and conforms with Regulatory Guide 1.183, Revision (Rev.) 1, July 2000 (ADAMS Accession No. ML003716792) as stated in CGS’ Final Safety Analysis Report (FSAR), amendment 64, ADAMS accession no. ML17355A661, Section 1.8 “Conformance to NRC Regulatory Guides.”

This SRP is utilized to calculate the removal coefficient for particulates (λ_p),

SRP 6.5.2, Revision 2, Section III.4.C.4., "Particulates," dated March 2007, ADAMS Accession No. ML070190178 which states that the first-order removal coefficient for particulates can be estimated by:

$$\lambda_p = \frac{3hFE}{2VD}$$

In this equation F is the spray flow, so when drywell sprays are secured, F becomes 0 and the value of λ_p is then 0.

CGS' design basis LOCA analysis assumes that the containment spray removal rates related to the coefficients for particulates, (ADAMS, Accession No. ML17355A670, FSAR, amd 64 Chp 15, Table 15.6-8, "Loss-of-Coolant Accident – Parameters, Tabulated for Postulated Accident Analysis" states that

Time, hr Removal Rate, 1/hr
0 0.00
0.25 6.20
2.44 0.62
24.0 0.00

Assuming a removal coefficient for particulates of 6.2 or 0.62 when drywell sprays are secured is a non-conservative assumption that is not consistent with SRP 6.5.2, Rev. 2.

In addition, the aerosol removal sensitivity analysis identified in the licensee's clarification letter request as Reference 4's, Enclosure 3, dated March 2, 2006 (ADAMS Accession No. ML060900604, "PSAT CI10.03, Revision 0, "Polestar Applied Technology Topical Report on Alternative Source Term Application," non-public document) considers the effect of securing drywell sprays during the 24 hour period; however, this document does not appear to support the conclusion stated in the clarification letter request that securing the drywell sprays, prior to 24 hours, has no impact on the aerosol removal rates.

However, the stated conclusion is not reflected in the design basis LOCA analysis at CGS. Therefore, it is not clear to the NRC staff how the aerosol removal sensitivity analysis supports the proposed safety evaluation clarification.

Based on the review above, the NRC staff is requesting that the licensee provide a detail explanation that clearly demonstrates how securing the drywell sprays prior to 24 hours has no impact on the drywell spray removal coefficient for particulates at CGS yet meets the design basis LOCA and remains consistent with EOP/SAMG.

NOTE: If a detailed explanation is not available, then submit an updated LOCA analysis that shows that the regulatory limits are met and reflects the removal coefficient for particulates of 0 when drywell sprays are secured in accordance with the EOP/SAMG, in order for the CGS licensing basis to be consistent with EOP/SAMG operations.

John Klos
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From: Klos, John
Sent: Tuesday, June 26, 2018 9:57 AM
To: Williams, Lisa L. <llwilliams@energy-northwest.com>
Cc: Klos, John <John.Klos@nrc.gov>; Bucholtz, Kristy <Kristy.Bucholtz@nrc.gov>
Subject: Draft RAI concerning Columbia request for clarification, editing of 2006 AST amendment, clarification call required for RAI?

Lisa,

Attached is a draft public version of our RAIs for this licensing action.
Please review the draft RAI and let me know if you would like to have a clarification call by Tuesday July 3rd.

I am on vacation all next week so my first availability for a call would start on Monday July 9th.

Thanks in advance,

John Klos
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From: Klos, John

Created By: John.Klos@nrc.gov

Recipients:
"Klos, John" <John.Klos@nrc.gov>
Tracking Status: None
"Garcia, Richard M." <rmgarcia@energy-northwest.com>
Tracking Status: None

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