



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

January 30, 2004

Mr. James W. Davis
Director, Operations
Nuclear Generation Division
Nuclear Energy Institute
1776 I Street, N.W. Suite 400
Washington, D.C. 20006-3708

SUBJECT: NEI DRAFT WHITE PAPER, USE OF THE GENERIC LETTER 91-18
PROCESS AND ALTERNATIVE SOURCE TERMS IN THE CONTEXT OF
CONTROL ROOM HABITABILITY

Dear Mr. Davis:

By letter dated October 22, 2003,¹ you submitted a draft white paper for review and comment by the Nuclear Regulatory Commission (NRC) Licensing Action Task Force (LATF). The process for review and comment on this type of document was discussed during Licensing Forum 2003 held in October 2003. Specifically, we discussed a process by which the Nuclear Energy Institute (NEI) LATF could submit white papers and problem statements to the NRC staff to identify problems, ensure mutual understanding of issues, and seek resolution of items in a timely and public manner. These discussions were documented in my letter to you dated November 24, 2003.² We continue to believe in the use of this type of communication and associated publicly available documentation in addressing specific items of interest. We understand that the purpose of your white paper is to address the use of alternative source term (AST) methodologies in support of operability determinations evaluating control room in-leakage test results.

Neither Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.67, "Accident source term," nor the Statements of Consideration for 10 CFR 50.67, discusses the use of an AST in an operability determination. The only use of an AST discussed in the regulation and supporting documentation is revising the current accident source term used in the design basis radiological consequence analyses. Questions regarding the use of AST methodologies in other processes such as operability determinations have been raised by licensees and NRC personnel.

In summary, NRC staff finds that, subject to the limitations described below, if control room envelope in-leakage is greater than the amount assumed in the licensing basis radiological consequence analyses, the licensee may use AST analytical methods in performing its operability determination to verify that the control room ventilation system can accomplish its

¹NEI letter dated October 22, 2003, from J. W. Davis, NEI, to L. B. Marsh, NRC, (ADAMS Accession No. ML033160446. This document was originally mischaracterized as non-publicly available.).

²NRC letter dated November 24, 2003, from E. J. Leeds, NRC, to J. W. Davis, NEI, (ADAMS Accession No. ML033250121.).

specified safety function. In the following paragraphs, we discuss the process for operability determinations described in NRC guidance, provide our position on the subject white paper, and provide our specific comments on the white paper.

Background - Operability Determinations and Degraded/Non-Conforming Condition Resolution

The process following the discovery of a degraded or nonconforming condition has two major parts: 1) operability determination; and 2) condition resolution.³ After a licensee identifies a problem, it promptly begins an operability determination to establish whether the structure, system, or component (SSC) can perform its specified safety function consistent with the current licensing and design bases acceptance criteria. This operability determination can be based on analysis, a test or partial test, experience with operating events, engineering judgment, or a combination of these factors. This determination should be made as soon as possible, consistent with the safety importance of the SSC affected. This process is described in NRC Inspection Manual (IM), Part 9900: Technical Guidance "Operable/Operability: Ensuring the Functional Capability of a System or Component." It is at this time that the licensee, as part of an analytical method or engineering judgment, could potentially use AST methods in performing an operability determination.

If the licensee determines that the affected SSC is operable but degraded/non-conforming using analyses, testing, experience, and/or engineering judgment,⁴ it must determine the planned resolution of the degraded/non-conforming condition as described in IM 9900: Technical Guidance, "Resolution of Degraded and Nonconforming Conditions." The use of IM 9900 is described in Generic Letter (GL) 91-18, Revision 1, "Information to Licensees Regarding NRC Inspection Manual Section on Resolution of Degraded and Nonconforming Conditions." The licensee's corrective action options include: 1) full restoration to the final safety analysis report (FSAR) described condition; 2) a change to its licensing basis/design basis; 3) some modification of the facility other than restoration to the original FSAR condition; or 4) a combination of options 2) and 3). If the licensee chooses an option other than full restoration to the FSAR described condition, then the planned actions must be reviewed in accordance with the requirements of 10 CFR 50.59, "Changes, tests, and experiments," to determine if they can be implemented without prior NRC approval.

Corrective actions chosen by the licensee must be implemented within a time commensurate with the safety significance of the degraded/non-conforming condition, following the guidance of Section 4.3 of the IM 9900 Technical Guidance, which states that "The NRC expects time frames longer than the next refueling outage to be explicitly justified by the licensee..." As discussed in the aforementioned IM 9900 Technical Guidance, "If the licensee, without good cause, does not correct the nonconformance at the first available opportunity, the staff concludes that the licensee has failed to take prompt corrective action and, thus, is in violation of 10 CFR 50 Appendix B (Criterion XVI)."

³This is accomplished through application of the licensee's corrective action program in accordance with the requirements of 10 CFR Part 50, Appendix B.

⁴Upon discovery, a degraded/non-conforming condition will be entered into the licensee's 10 CFR Part 50, Appendix B corrective action program. Planned resolution of the condition will be developed and implemented in accordance with the corrective action program whether the affected SSC is determined to be inoperable or operable but degraded/non-conforming.

Position

To respond to your request for review and comment on the white paper in a timely manner, we have, consistent with your request, restricted our review to the acceptability of using alternative source terms to evaluate control room in-leakage test results. While the position presented here may have broader applicability, we would recommend additional discussions on specific situations where application of AST analytical methods in support of operability determinations may be technically justified.

In addressing control room envelope in-leakage testing, the NRC staff finds that if in-leakage is greater than the amount assumed in the licensing basis radiological consequence analyses, the licensee may use AST analytical methods in performing its operability determination to verify that the control room ventilation system can accomplish its specified safety function.

A licensee must ensure that results of analysis performed using AST analytical methods are expressed in a manner consistent with its current licensing basis acceptance criteria for control room habitability. A licensee that has implemented an AST under the provisions of 10 CFR 50.67, in whole or for specific analyses, would have total effective dose equivalent-based limits as its current licensing basis acceptance criteria for analyses that have been revised pursuant to 10 CFR 50.67. However, a licensee with its current licensing basis source term based on Technical Information Document-14844, dated March 23, 1962, that desires to use the AST methodology in operability determinations must calculate whole body and critical organ doses for comparison with its current licensing basis acceptance criteria. Any proposed changes to the licensing basis acceptance criteria must be reviewed in accordance with the requirements of 10 CFR 50.59 and 10 CFR 50.67.

If the corrective action taken to resolve the degraded/non-conforming condition involves a change to the licensing basis, such as changing the source term used in its design basis radiological consequence analyses (i.e., the alternative source term described in 10 CFR 50.67), then a license amendment must be submitted for review and approval.

Comments

In addition, the NRC staff provides the following comments on the NEI draft white paper.

Section III - The GL 91-18 Process

This section should include reference to NRC IM Part 9900, as another source of guidance on operability. Since the Standard Technical Specifications define OPERABLE in part as "capable of performing its specified safety function," it is appropriate to use the phrase "specified safety function" in lieu of "functionality" or "safety function" throughout this document. This will minimize the potential for the term "functionality" to be misconstrued as equivalent to commonly used terms such as "available" that are not clearly defined or for the term "safety function" to be considered in a manner inconsistent with the technical specification definition of OPERABILITY. While 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," clearly states that conditions adverse to quality and significant conditions adverse to quality must be promptly identified and corrected, it is not clear to the NRC staff how this equates to "defining the restoration of 'full qualification.'"

Some actions, such as reliance on operator action⁵ in lieu of licensing or design bases automatic actions have sometimes been referred to as "compensatory actions." These actions may be considered within the context of analyses, testing, experience, and/or engineering judgment used to make operability determinations in a limited manner, consistent with the NRC IM Part 9900 guidance. However, in an effort to improve the clarity of communications, use of the phrase "compensatory actions" should be restricted to situations where additional actions are taken to offset or counterbalance the effect of an SSC that has been determined to be operable but degraded/non-conforming, rather than in the context of making an operability determination.

The discussion of operability determinations should clearly state that these determinations assess the capability of an SSC to perform its specified safety function using the current licensing and design bases acceptance criteria. A licensee must review changes to these acceptance criteria in accordance with the requirements of 10 CFR 50.59 to determine if implementation requires prior NRC approval.

Section IV - The Alternative Source Term Regulation (10 CFR 50.67)

In the third paragraph of Section IV, when discussing the potential to use an "engineering evaluation to establish interim operability" the white paper departs from the accepted terminology in NRC guidance documents. This wording should be revised to state "operability determination using analyses, testing, experience, and/or engineering judgment to conclude that the SSC is operable but degraded/non-conforming."

Section V - Use of Alternative Source Terms in a GL 91-18 Evaluation of Control Room Habitability

This section should further clarify that the use of self-contained breathing apparatus and potassium iodide is not appropriate for consideration as part of analysis or engineering judgment performed to restore or establish operability, since these measures do not support the capability of an SSC to perform its specified safety function consistent with the current licensing and design bases acceptance criteria. The use of self-contained breathing apparatus and potassium iodide may provide reasonable compensatory actions (i.e., additional actions taken to offset or counterbalance the effect of an SSC that has been determined to be operable but degraded/non-conforming) to ameliorate the impact of the degraded/non-conforming condition.

Section VI - Industry Proposal

In this section, the white paper states, "the least burdensome corrective action to establish interim operability would be to perform an engineering evaluation based on an alternative source term." This sentence should be revised to simply reflect the acceptable actions as follows, "If a tracer gas test indicates a degraded or nonconforming condition (design or licensing basis control room in-leakage assumptions are not satisfied), verify that the SSC is operable but degraded/non-conforming using analyses, testing, experience, and/or engineering judgment." The sentence with the phrase, "to exit the corrective action process," should be revised to state, "resolve the degraded/non-conforming condition," more clearly reflecting the need to resolve the degraded/non-conforming condition.

⁵As stated in NRC IM Part 9900, "Although it is possible, it is not expected that many determinations of operability will be successful for manual action in place of automatic action."

J. Davis

- 5 -

We look forward to receiving your feedback on our comments and the subsequent issuance of the final white paper. We currently plan to further document the position described in this letter in an appropriate regulatory vehicle (e.g., a Regulatory Issue Summary). If you have any questions concerning this matter, please contact Steven Bloom at 301-415-1313 or Harold Chernoff at 301-415-4018.

Sincerely,

A handwritten signature in black ink, appearing to read "E. Leeds", written in a cursive style.

Eric J. Leeds, Deputy Director
Division of Licensing Project Management
Office of Nuclear Reactor Regulation