

November 4, 1999

Mr. Anthony Pietrangelo, Director
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Nuclear Energy Institute
1776 I Street, NW
Washington, DC 20006-3708

SUBJECT: STAFF COMMENTS ON DRAFT REVISION TO NEI 96-07, "GUIDELINES FOR
10 CFR 50.59 EVALUATIONS"

Dear Mr. Pietrangelo:

This letter forwards staff comments on the draft revision to NEI 96-07 submitted by NEI in a letter dated September 17, 1999. Preliminary comments were discussed with you during meetings on September 2, and October 6, 1999. Minor comments noted in the meeting summaries from those meetings are not included in the enclosure, since it is our understanding that you had already agreed to revise the document to respond to those items.

As noted in the enclosure, at this time, we do not agree that the proposed guidance concerning use of a method of evaluation which has been approved only for a plant-specific application is sufficient. During the meeting on this subject on November 2, 1999, we discussed ways in which the guidance could be supplemented.

The enclosed comments are provided for your use in preparing the version of NEI 96-07 to be submitted in November for NRC endorsement. Please feel free to call me or Eileen McKenna of my staff with any questions.

Sincerely,

/s/ Scott Newberry

for: David B. Matthews, Director
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Project No. 689

Enclosure: As stated

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WASHINGTON, D.C. 20555-0001

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Sincerely,

A handwritten signature in black ink, appearing to read "David B. Matthews".

David B. Matthews, Director
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Project No. 689

Enclosure: As stated
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COMMENTS ON DRAFT REVISION TO NEI 96-07 (dated September 1999)

A. COMMENTS RELATING TO 10 CFR 50.59

1. The second \diamond in Figure 1 on page 4 should be modified to read, "Is the Activity Controlled by Another Regulation or that contains a Change Process?" The rule only allows exclusion when another regulation contains a change process. The ensuing reference to 10 CFR 50.65 also needs to be removed because it does not contain a change process. Conforming changes need to be made in section 4.1.2. Contemplating adding new loads on a safety bus without a performing a 50.59 evaluation by considering it maintenance on a bus is not acceptable. Similarly, contemplating new reactor fuel without a performing a 50.59 evaluation by considering it maintenance on the core is also not acceptable.
2. It would be helpful to clarify the definition of "design function" to explain how redundancy, diversity and defense-in-depth are captured (pg 11).
3. Item (c)(2) in section 4.3.2 is not clear. What is meant by increasing challenges such that performance is degraded below some point? It would be helpful for this to be clarified.
4. It would be helpful to clarify the definition of "essentially the same." The last sentence provides examples that may confuse users because it states, "examples of departures that would be considered 'essentially the same.'" It is important to stress the essentially the same standard is applied to the results of a method, not to the departure from a method itself. Although we would expect the results of these examples to be essentially the same, the guidance may be interpreted to imply that for these types of changes the "essentially the same" standard does not need to be demonstrated on the results. It may be helpful to provide examples that apply the definition, "within the margin of error for the type of analysis being performed...." For example, a method is applied using a different computational platform (mainframe vs workstation), however, when cases were run on the two systems, the difference in the results was always less than 1%. This is less than the margin of error for this type of calculation and the results are essentially the same (pg. 13). Conforming changes also need to be made in section 4.3.8.2.
5. The definition for "approved by NRC for the intended application" and the related guidance in section 4.3.8 need to be supported by additional guidance that indicates that a licensee should have established a program that conforms with the guidelines in GL 83-11, as well as further information to assist licensees with how they would determine that a particular application of a different method is technically appropriate for the intended application, and within the bounds of what has been found acceptable by NRC.
6. On the bottom of page 32 of the guidance, the sentence, "This is not to say that if plant-specific accident frequency calculation or PRA can be used to evaluate a proposed activity in a quantitative sense, it should not be used." is unclear and is unnecessarily negative. Suggest deletion in favor of the clearer statement in the first complete paragraph on page 33.
7. With regard to the increases in the likelihood of SSC malfunctions, a factor a 2 was proposed as the criterion. Although this criterion is reasonable (on a component level), the guidance needs to be clear at what level this criterion should be applied. For example, a change is being contemplated to a breaker associated with a diesel, should the factor of 2 increase be applied to the breaker, the diesel, the safety train, the onsite electrical power system, or the electrical

power system? The guidance states that the evaluation be performed at the same level as the failure modes and effects analysis, however, this is not always clear. Please provide a clear discussion of the level at which the factor of 2 should be applied and provide a rationale for its use.

8. In the discussion of direct vs. indirect effects, it would be helpful to describe the extent to which indirect effects need to be considered. For example, a change being contemplated to a cooling water system. Should the effect of the change be evaluated on the cooling water system alone or should it extend to the systems the cooling water systems support? Please clarify the extent to which indirect effects need to be considered and provide the rationale.

9. The discussion on screening changes to methods of evaluation in section 4.2.1.3 needs to be modified. The position that a method referenced, but not described, in the FSAR does not require a 50.59 evaluation is not acceptable. Similarly, if a change to an element of a method is being considered, and the method is described in the FSAR, a 50.59 evaluation needs to be performed, regardless of whether the element (of the method) is described in the FSAR. The position that a departure can be screened out without a 50.59 "provided the changes do not affect the UFSAR description" of the method is not acceptable, because the FSAR descriptions of the methods are generally not comprehensive descriptions of the methods. Additionally, the guidance should be clear that any changes to methods that are referenced by another method subject to 50.59 need to be changed in accordance with 50.59. For example, a topical for a non-LOCA transient analysis is referenced in the FSAR. The topical describes the use of a system transient code as the basis for the topical. Changes to the system code that affect the non-LOCA transient analysis need to be evaluated under 50.59. Conforming changes also need to be made in section 4.3.8.1.

10. The manner that redundancy, diversity, and separation are discussed in sections 4.3.2 and 4.3.6 for the different criteria in the rule should be clarified. It appears, through the examples that a reduction in the level of independence would not be permitted by one criterion but may be permitted by another. It may be helpful to provide an example how a reduction in the level of redundancy, diversity or independence would be treated by the guidance as a whole.

11. The guidance on identifying the design basis limits in section 4.3.7 is not consistent with the rule SOC in SECY-99-130. The test of whether the "parameter is crucial to the barrier integrity," or if exceeding the limit "alone would be sufficient for the barriers integrity to be questioned" is too narrow and somewhat subjective. The SOC for the rule defines "design basis limit for a fission product barrier" as "any parameter used to measure the integrity of a barrier." This is a simpler definition that is much less subjective and should be used in the guidance. Additionally, the list of example parameters should be expanded to include fuel rod linear heat rate, fuel burn-up limits, RCS heat-up and cool-down limits, RCS usage factors, and containment temperature to have a more complete set of parameters.

12. The second bullet describing conditions not considered departures is not clear (pg 53) because terms like "fundamental assumptions" are not well understood, in all cases. Additionally, the description does not appear to be consistent with the rule definition of departure, because it implies that certain changes can be considered not departures, even if they are not NRC approved and not essentially the same (or conservative).

13. Section 4.3.3 on p. 38 describes in detail current dose guidance in Parts 50 and 100 and SRPs in terms of whole body and thyroid doses. A new final rule amending Part 50 for the voluntary use of alternative source terms (in terms of TEDE dose) is expected to be approved soon. It may be helpful to reference this rule and its provisions once it is issued.

14. NEI 96-07 does not provide any specific guidance regarding application of 10 CFR 50.59 for the review of digital retrofits. A large effort was undertaken by the staff, EPRI, NEI, and the utilities to establish guidance (Generic Letter 95-02) for determining which digital retrofits could or could not be implemented without NRC review under the existing rule requirements. NEI 96-07 should provide detailed guidance that is both clear and unambiguous regarding digital retrofits (which ones can and cannot be retrofitted without NRC review). Examples would be helpful in this regard.

15. The discussion provided in Section 4.2, "SCREENING", seems to indicate that all safety related digital retrofits and non-safety related digital retrofits that impact SSC's are controlled by the 10 CFR 50.59 process. This would include new technology such as digital/software that is not an existing part of a plant's design basis. This would mean that an analysis per 10 CFR 50.59 process is required. Is this the intent of the NEI guidance? If not, there should be more detailed guidance regarding the systems and their subsequent inclusion into the 50.59 screening process. Factors that would lead to this somewhat all-inclusive screening process would be the introduction of a need for the determination of software quality, the increased susceptibility to EMI/RFI, the change in systems response times and the change in system calibration procedures including possible set point and allowable value changes due to increased accuracies. Examples in this area would be helpful for the licensee to aid in its decision making process.

16. 10 CFR 50.59 Criterion 2 addresses a minimal increase in the likelihood of occurrence of a malfunction. The NEI guidance document indicates that changes in design requirements affect the likelihood of a malfunction (design requirements could include software quality, EMI/RFI, and operability characteristics). Since a digital retrofit invalidates some of the analog design requirements/characteristics, this would appear to result (according to Section 4.3.2) in more than a minimal increase in the likelihood of malfunction. System reliability when reviewed along with the UFSAR FMEA for digital retrofits leads to questions as to what the quantifiable change in reliability would be since digital system reliability is extremely difficult to quantify or even estimate. A detailed writeup using several digital retrofit examples would be beneficial.

17. In sections 3.11 and 4.1.4 on procedures, it may be helpful to add a short discussion that explains why procedures for work control or for conduct of operations are not included (in contrast to procedures that concern individual system operation) to assist in the screening process.

18. Page 37: In this section, the guidance gives examples of when there is **less** than a minimal increase in the likelihood of occurrence of a malfunction of a SSC important to safety (i.e., when NRC review is not required). The guidance states, "(when) the change would not cause applicable design stresses to exceed their code allowables." This example could be misleading to the reader. In many cases, a component's functionality is established by vendors at a lower stress or deformation limit than those required by a code. For example, the ASME Boiler and Pressure Vessel Code establishes stress limits for piping, pumps, valves, etc. to ensure the

pressure integrity of the component - not necessarily the **functionality** of the component. It is not unusual for a pump vendor to specify stress limits for its casing (that are much lower than ASME Code allowable stress limits) to ensure that the pump will not bind. Similarly, NSSS vendors often specify lower stress limits or deformation limits for certain reactor internals that are below the Code allowables to ensure the functionality of the reactor internals (e.g., rod insertion) under design basis loading conditions.

As stated, the document gives the impression that there is less than a minimal increase in the likelihood of occurrence of a malfunction of a SSC as long as design stresses remain within code allowables. The NEI document should acknowledge that requirements to ensure the functional capability of SSCs might be more restrictive than code allowables.

19. Page 46: In NEI's table, NEI provides typical design basis limits. For the RCS boundary, NEI notes that "Stresses" (as well as clad temperature and clad oxidation) are "commonly controlled by 10 CFR 50.46 and/or a specific Technical Specification and therefore would not be subject to evaluation under this criterion." RCS boundary stresses are controlled under 10 CFR 50.55a, not 50.46 or Tech Specs.

20. As discussed in Section B.2 of the SOC for 10 CFR 50.59 (64 FR 53587), supplemental guidance or examples are needed for implementation specific to 10 CFR Part 54, the license renewal rule. As required by 10 CFR 54.21(d), summary descriptions of programs for managing the effects of aging and the evaluation of time-limited aging analyses (TLAAs) must be incorporated into the FSAR. As discussed in the SOC for license renewal, [60 FR 22482], by incorporating the descriptions into the FSAR, subsequent changes are controlled by §50.59. Guidance and examples should be added (either to 1.2, 3.6, 3.11, or 4.2.1), to discuss applicability of the 50.59 process to the summary descriptions of license renewal programs and TLAAs contained in the FSAR (as updated).

21. In section 4.1.3, the applicability guidance provides an example of FSAR changes that would not be subject to the 50.59 process, i.e., minor changes to drawings such as correcting mislabeled valves. It may be helpful to provide an example of what might be viewed as "a minor change to a drawing", but which would require further evaluation (either screening or 50.59 evaluation). For instance, consider a change to a standby lineup to reposition a valve in a safety system from the position noted on an FSAR drawing.

22. In section 3.3, p.11, The definition of temporary change should be revised to include bypasses installed to support maintenance activities that are no longer "in progress". (This comment relates to the broader issue of when "indefinite out-for-maintenance" becomes a change).

23. In section 3.7, p. 15, second paragraph, fourth sentence, revise to read "Therefore pending UFSAR revisions that have received final approval for incorporation..."

24. It may be helpful to include a cross-reference in section 4.2.1 to the guidance on compensatory actions in section 4.4 (one can get there through the definition of change, in section 3.3, but a simpler reference is suggested).

B. COMMENTS RELATING TO APPLICATION TO 72.48

[Note that further changes to NEI 96-07 may be identified after NEI provides specific 72.48 guidance and examples in a future revision of this document.]

1. Replace the text for Section 1.4, (pp. 5) with the following:

Concurrent with the rulemaking to amend 10 CFR 50.59, the NRC made conforming changes to analogous provisions in 10 CFR 72.48 controlling licensee changes, tests and experiments to Independent Spent Fuel Storage Installations (ISFSIs). The provisions of 10 CFR 72.48 were also extended to holders of Part 72 Certificates of Compliance. As a result, 10 CFR 72.48 establishes criteria identical to those in 10 CFR 50.59 under which both an ISFSI license holder and a certificate holder may make changes to the facility or cask design, respectively, changes to procedures, and conduct tests or experiments, without prior NRC approval.

The intent of conforming 10 CFR 72.48 to the terms of 10 CFR 50.59 was to provide for consistent implementation of these two analogous regulations. Consistent with this intent, the guidance herein on implementing 10 CFR 50.59 may be applied to support implementation of 10 CFR 72.48.

2. Add the following text to the end of the last paragraph in Section 1.5 (pp. 6):

...to changes involving independent spent fuel storage installations and spent fuel storage cask designs.

3. Add the following new paragraph after the last text in Section 2.0 (pp. 8):

For ISFSIs or spent fuel storage cask designs, a reduced number of physical barriers typically exists. Only two or even one fission product barrier may exist for a particular facility or cask design.

4. Numeric factors for "minimal increase"

Section 4.3.1 (pp. 33); page 37, section 4.3.2 (pp. 37); and page 39, section 4.3.3 (pp.39): All three of these sections provide 'definitions' of a 'minimal increase', such as 10% or a factor of two. Does NEI believe these values are also appropriate for changes to ISFSIs or spent fuel storage cask designs, or are different values needed for 72.48 evaluations?

C. EDITORIAL CHANGES

p. 22, first paragraph - replace "Likewise" with "However"

p.25, first paragraph under 4.2.1.1, revise to "will be accomplished that is explicitly..."

p. 30, second line from bottom - add "("

p.33, last paragraph, revise lead-in sentence to "in making the determination regarding a more than minimal increase in the frequency of an accident."

p. 39, third paragraph, edit to read "an exclusion area and a low population zone...at any point on these boundaries..."

p.46, last paragraph, delete extra "criterion" in first line.

p.57, middle, revise sentence to read "The following is an example that illustrates the process:"

p. 59, first full paragraph - perhaps should appear at end of p.57 instead

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