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GE Nuclear Energy

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November 12, 2001

Secretary, U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Attention: Rulemakings and Adjudications Staff
Mail Stop O-16C1

RE: Comments on Draft Rule Wording for 10 CFR Part 52; 66 Fed. Reg. 49324 (Sept. 27, 2001)

Dear Secretary:

On September 27, 2001, the NRC requested comments on a draft revision to 10 CFR Part 52 prepared by the NRC staff. GE Nuclear Energy (GE) appreciates the opportunity to provide the following comments on the draft rule language.

GE is a member of the Part 52 Licensing Issues Task Force established by the Nuclear Energy Institute (NEI). GE was also the applicant for design certification of the Advanced Boiling Water Reactor (ABWR). The design certification rule for the ABWR is contained in Appendix A to Part 52.

The NRC staff's draft revision to Part 52 would modify the design certification rule for the ABWR. It would also modify other provisions in Part 52 that would affect implementation of the design certification rules. As is explained in more detail in Attachment 1 to this letter, these draft revisions would impose additional burdens on applicants and licensees who may reference the ABWR design certification rule. Therefore, the draft revisions could adversely affect a company's decision to purchase an ABWR or apply for a license for a nuclear plant.

In particular, GE is concerned that the staff's draft rule would impose greater restrictions on the process by which an applicant or licensee could make changes in the severe accident analyses in Tier 2 of the design certification for the ABWR (and the other design certifications as well). The change control process for severe accidents was carefully worded and was based upon extensive interactions between the NRC, GE, and other stakeholders over a period of almost four years. The staff's draft rule threatens to upset the delicate balance embodied in the current rule, and would require prior NRC approval for trivial changes that have no significant impact on safety. GE strongly urges the NRC to delete this provision from the proposed rule.

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GE also endorses the comments of NEI on the NRC staff's draft rule. In this regard, GE believes that some of the proposed changes would create undue burdens for applicants and licensees of new plants. The NRC should delete or modify those provisions, as identified in NEI's comments on the draft revision to Part 52. Furthermore, the NRC staff's draft rule does not address many of the improvements recommended by the NEI Part 52 Licensing Issues Task Force in its letter of April 3, 2001. As a result, GE recommends that NRC revise Part 52 to include those improvements.

Finally, the draft rule does not correct any of the errors in the ABWR design certification rule previously identified GE. GE recommends that NRC make those corrections, as discussed in more detail in the attachment to this letter.

In summary, GE appreciates and commends the NRC for the openness of its process on the revision to Part 52, but believes that substantial changes are warranted in the draft rule.

Sincerely,

Stan A. Hucik

cc: William Borchardt (NRC)
James Lyons (NRC)
Jerry N. Wilson (NRC)
Ronald Simard (NEI)
Russell Bell (NEI)

ATTACHMENT 1

COMMENTS ON THE NRC STAFF's DRAFT REVISION TO PART 52 DATED SEPTEMBER 21, 2001h

1.0 Change Process for Evaluations of Severe Accidents

Section VIII.B.5.c of the design certification rules states that changes may be made in the resolution of a severe accident issue in Tier 2 of the design certification without prior NRC approval, unless the change would result in a "substantial increase" in the consequences or probability of a severe accident. The staff's draft rule would modify this provision to require prior NRC approval if there is "more than a minimal increase" in the consequences or probability of a severe accident.

1.1 Background

The significance of the staff's proposed change can only be understood in the context of the regulatory framework in Part 50 and Part 52 and the extensive interactions between the NRC and the industry on the severe accident change process.

Under 10 CFR § 50.34, a license applicant under Part 50 is required to include within its safety analysis report (SAR) an analysis of design basis accidents (DBAs). Following issuance of the license, the licensee may make changes in the SAR without prior NRC approval, provided that the changes satisfy the criteria in 10 CFR § 50.59. Part 50 does not require a license applicant to submit a probabilistic risk assessment (PRA) or to evaluate severe accidents that are beyond the design basis of the plant.

A design certification application is also required to include an analysis of DBAs and is subject to 10 CFR § 50.59 as incorporated by reference in 10 CFR § 52.63(b)(2). However, a design certification application must also include a PRA under 10 CFR § 52.47 and an evaluation of severe accidents pursuant to NRC's policies and guidance for new reactors. GE included this information in Chapter 19 of the Standard Safety Analysis Report (SSAR) for the ABWR.

When the NRC established the two-tier structure of the design certification rules and the requirements for a Design Control Document (DCD), it was generally understood that a

"50.59-like" process would apply to the information in Tier 2 (which generally corresponds to the SSAR). However, the NRC staff also took the position that the PRA and severe accident evaluations would not need to be included in Tier 2 of the DCD, and that instead Tier 2 would only include key PRA assumptions and severe accident insights.[1] As explained by the NRC staff in a meeting with the Commission, the staff did not want to place all of the PRA in the DCD because of the stringent change control process that applies to the DCD and NRC's expectation that the PRA would need to be updated as new methodologies and new data become available.[2] The staff's position was generally in accord with the industry's own views.

However, the staff later changed its position, which lead to a substantial dispute with the industry. That dispute was not resolved for almost four years. In particular, on August 26, 1993, the staff issued draft guidance for the content of the DCD, which stated that the DCD should include a PRA report (including key assumptions, results, insights, sensitivity study results, and importance rankings).[3] The industry objected to this guidance, noting that inclusion of PRA information in Tier 2 would inappropriately subject that information to the 50.59-like process.[4]

In an attempt to reach a resolution of this issue, on February 1, 1994 the industry proposed to include within Tier 2 a description of the important features identified by the PRA (e.g., a discussion equivalent to Section 19.8 of the SSAR for the ABWR).[5] Following a series of meetings between the NRC staff and the industry,[6] the NRC agreed that Tier 2 need only include PRA insights and assumptions as proposed by the industry,

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1 Letter dated March 31, 1993, from Jerry N. Wilson (NRC) to Patrick W. Marriott (GE), Enclosure p. 1.

2 Transcript of November 23, 1992 meeting of the Commission, pp. 23-29.

3 Letter [sent on August 26, 1993] from Dennis M. Crutchfield (NRC) to Patrick W. Marriott (GE), Enclosing Form and Content of a Design Control Document, pp. 3-4.

4 Letter dated November 8, 1993 from William H. Rasin (NUMARC) to Dennis Crutchfield (NRC).

5 Letter dated February 1, 1994 from Raymond N. Ng (NUMARC) to Dennis Crutchfield (NRC).

6 These include meetings on March 14, 1994 and April 25, 1994.

and that the details of the PRA need not be included.[7] Thus, the industry once again believed that this issue was closed.

However, this resolution again unraveled. In a meeting with GE on August 23, 1994, the NRC staff stated that Tier 2 would also need to include the deterministic evaluations in Chapter 19 of the SSAR. However, realizing that this could create concerns under the 50.59-like process, the staff also stated that the DCD Introduction could contain a provision stating that the evaluations need not be considered in performing 50.59 evaluations. GE submitted such a provision on August 30, 1994.[8] Once again, this issue appeared to be resolved.

However, in a meeting the very next day (August 31, 1994), the NRC staff informed ABB-CE that the deterministic evaluations in Chapter 19 must be subject to the 50.59-like process. The staff also stated that it would consider a provision that would allow a licensee to make changes in Chapter 19 if the changes involve an insignificant increase in probability or consequences of severe accidents.

In response, in a letter dated November 1, 1994, GE stated that Section 50.59 was intended to be applied to changes that affected DBAs, and that it would be inappropriate to apply the criteria in Section 50.59 to severe accident evaluations in Chapter 19 of Tier 2. GE explained that the application of Section 50.59 to severe accidents would require prior NRC approval for increases that were trivial to safety. Instead, GE proposed that severe accident evaluations be included in Tier 2, subject to a provision that would allow an applicant or licensee to make changes without prior NRC approval provided that the changes would not cause a "significant increase" in the probability or consequences of a severe accident evaluated in Chapter 19.[9] This proposal was discussed with the NRC staff during a meeting on November 2, 1994. At that meeting, the Director of Nuclear Reactor Regulation (NRR) proposed to allow applicants and licensees to make changes in Chapter 19 without prior NRC approval, unless the change would result in a "substantial increase" in probability of severe accidents such that the accident would become credible,

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7 Letter dated August 3, 1994, from William Travers (NRC) to Joseph Quirk (GE), Enclosure pp. 1-2.

8 Letter dated August 30, 1994, from Joseph F. Quirk (GE) to Tom Boyce (NRC), enclosing DCD Introduction, Section 3.8.

9 Letter dated November 1, 1994 from Steven P. Frantz (counsel for GE) to William T. Russell (NRC).

or result in a "substantial increase" in the consequences of a severe accident. GE agreed and submitted such a provision as Section 3.8 of the DCD Introduction for the ABWR on December 22, 1994.[10] Once again, the industry believed that this issue was resolved.

However, the staff again changed its position. When the NRC staff published the proposed design certification rule for the ABWR on April 7, 1995,[11] the criteria from Section 50.59 were made applicable to all of Chapter 19 of Tier 2, except for Section 19E. With respect to Section 19E of Tier 2, Section 8.b.5.iii of the proposed rule stated that an applicant or licensee could make changes in accordance with criteria that were discussed during the meeting on November 2, 1994.

In response to the unduly narrow scope of the exception, the industry submitted extensive comments on this issue in 1995[12] and again in 1996.[13] Additionally, public meetings were held on this matter on December 4, 1995, May 2, 1996 and July 15, 1996.

It was not until the final design certification rule for the ABWR was issued in May of 1997 that this issue was resolved by the Commission itself. In the Statement of Consideration for the final rule, the Commisssion explicitly stated:

> The Commission agrees that departures from Tier 2 information that describe the resolution of severe accident issues should use criteria that is different from the criteria in 10 CFR 50.59 for determining if a departure [requires a license amendment]. Because of the increased uncertainty in severe accident issue resolutions, the NRC has included "substantial increase" criteria in VIII.B.5.c of this appendix for Tier 2 information that is associated with the resolution of severe accident issues. The (§ 50.59-like) criteria in VIII.B.5.b of this appendix, for determining if a departure [requires a license amendment], will apply to the remaining Tier 2 information.[14]

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10 Letter dated December 22, 1994 from Joseph F. Quirk (GE) to NRC Document Control Desk.

11 60 Fed. Reg. 17902 (1995).

12 Letter dated August 4, 1995, from William H. Rasin (NEI) to Secretary of the Compassion, Attachment B, Section IV.

13 Letter dated July 23, 1996, from Thomas E. Tipton (NEI) to Secretary of the Commission.

14 62 Fed. Reg. 25800, 25806 (May 12, 1997).

This lengthy background demonstrates the following points:

- The severe accident change process was a highly contentious issue that required almost four years to resolve.

- In resolving this issue, the Commission clearly stated that changes related to severe accident issues should be governed by criteria that are different from the criteria in 10 CFR § 50.59.

- Changes related to severe accidents should be judged by the "substantial increase" criterion.

1.2 The Draft Rule Threatens to Undue the Carefully Crafted Resolution of the Issues Pertaining to the Severe Accident Change Process

The staff's draft rule is contrary to each of the three points discussed above.

First, the draft rule would reopen the severe accident change process. As discussed above, it took almost four years to resolve this issue, and consumed substantial resources by both the industry and the NRC. There is no reason to reopen this issue. Furthermore, reopening this issue is not necessary to account for any "lessons learned" from the design certification proceedings - - to the contrary, reopening this issue threatens a resolution reached after a lengthy and costly debate during the design certification proceedings.

Second, the language in the draft rule (i.e., "more than a minimal increase") directly parallels the language in 10 CFR § 50.59, as revised by the NRC in 1999. Thus, the draft rule would blur the distinction between severe accidents and design basis accidents, and essentially would apply the criteria in Section 50.59 to severe accidents. As a result, the draft rule violates the Commission's expressed direction that the criteria governing the severe accident change process should be different than the criteria in Section 50.59 (which governs changes affecting design basis accidents).

Third, the draft rule would abandon the "substantial increase" criterion. This proposed revision is also directly contrary to the Commission expressed direction that changes affecting severe accident issues shall be governed by the substantial increase standard.

1.3 The Draft Rule Is Unnecessary for Safety and Would Impose Significant New Burdens on Applicants and Licensees

The proposed change in the draft rule is not necessary for safety and would impose significant new burdens on applicants and licensees.

The draft rule would establish a "more than a minimal increase" criterion. NEI-96-07 provides guidance on the definition of "more than a minimal increase," as used in 10 CFR § 50.59. Sections 4.3.1 and 4.3.3 of NEI-96-07 state that an increase that does not

exceed 10% of the original value (or, in the case of consequences, 10% of the margin to the regulatory limit) may be considered as no more than minimal. While such a standard may be appropriate as applied to design basis accidents, it would be inappropriate if applied to severe accidents.

Many of the severe accidents evaluated for the design certifications have very low probabilities of occurrence. For example, for the certified designs, the frequencies of individual severe accidents are generally in the range of 10^{-8}/yr or 10^{-9}/yr or lower. Given their low probability, such accidents pose an extremely small risk (regardless of their consequences). Furthermore, under Section 2.4.2.1 of NRC Regulatory Guide 1.174, *An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Current Licensing Basis*, accident frequencies of less than 10^{-7}/yr are "very small" and do not warrant NRC technical and management review (even assuming that the accident involves early containment failure and substantial offsite consequences).

However, under the staff's draft rule and the 10% criterion in NEI-96-07, many increases in consequences and probabilities of severe accidents would require prior NRC approval that would not even warrant NRC attention under Regulatory Guide 1.174. For example, an increase of 100% in either the probability or consequences of an accident would constitute more than a minimal increase under NEI-96-07 and therefore require a license amendment under the staff's draft rule. However, if the accident in question is a severe accident with a frequency of 10^{-8}/yr or 10^{-9}/yr, the increase in consequences or probability would have no significance under Regulatory Guide 1.174 and yet still would require prior NRC approval under the staff's draft rule. This example clearly indicates the fallacy of applying the "more than minimal increase" criterion to severe accidents.

GE also notes that essentially all of the individual severe accidents evaluated for the ABWR have probabilities that are less than 10^{-7}/yr. For example, as shown on Table 19.1-2 of NRC's Final Safety Evaluation Report (FSER) Related to the Certification of the Advanced Boiling-Water Reactor Design (NUREG-1503), the top twenty severe accident sequences due to internal events each have a core damage frequency (CDF) of approximately 10^{-8}/yr or less. Therefore, a several-fold increase in either the consequences or frequency of such accidents would not be a concern under Regulatory Guide 1.174, but would require a license amendment under the staff's draft rule. Such a result would be nonsensical and clearly is unnecessary to protect the health and safety of the public.

Furthermore, such a result would be unduly burdensome to both the NRC and licensees. The draft rule would require prior NRC approval for changes that involve more than a minimal increase in consequences or probability, but a trivial increase in risk. Given the extremely low risk threshold that would be established by the draft rule, it may be expected that there may be numerous changes that would exceed the threshold and therefore require a license amendment. License amendment applications are costly for a licensee to prepare and for the NRC to review. This burden is simply not warranted for changes that have such a small impact on risk.

1.4 Summary

The severe accident change process was an extremely contentious matter during the design certification proceedings, and took almost four years to resolve. The staff is now proposing to reopen this matter, and to subject changes in severe accidents to the "more than a minimal increase" criterion derived from Section 50.59. This proposal is contrary to the Commission directions when it resolved this matter. Furthermore, the staff's proposal is unnecessary to protect safety and would require licensees to seek license amendments for changes that involve a trivial increase in risk and that would not warrant NRC attention under Regulatory Guide 1.174. For all of these reasons, it is not appropriate to apply the "more than a minimal increase" criterion in Section 50.59 to severe accidents, and the NRC should continue to use the "substantial increase" criterion in the current design certification rules.

2.0 Change Process for the Design Certification Rules

10 CFR § 52.63(a)(1) currently states that the Commission may not modify, rescind, or impose new requirements on a design certification, except by rulemaking in order to bring the plant into compliance with the regulations applicable to the certification or assure adequate protection of the public health and safety. The draft rule would revise Section 52.63(a)(1) to state that the Commission may not modify, rescind, or impose new *substantive* requirements, except for purposes of compliance or adequate protection.

The reason for this proposed change is unclear. As currently worded, Section 52.63(a)(1) is clearly intended to apply to changes in a plant as described in the standard design certification.[15] The plant for a standard design certification is described in the DCD. If a

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[15] GE has never interpreted Section 52.63(a)(1) as applying to the design certification rules themselves (i.e., to the language in the applicable appendices in Part 52), but only to the certified design. This focus on the design is indicated by the Statement of Consideration for Part 52, which indicates that the purpose of Section 52.63(a)(1) is to provide "assurance that standardization and the concomitant safety benefits will be preserved." (54 Fed. Reg. 15372, 15377 (April 18, 1989)). Therefore, GE believes that changes in the language in the appendices in Part 52 are not subject to Section 52.63(a)(1) (except to the extent that the change process in the Section VIII of the appendices implements Section 62.63(a)(1)), and that the language in the appendices to Part 52 may be revised in accordance with the provisions of Subpart H of 10 CFR Part 2.

change to the DCD is truly non-substantive, there is no reason for the NRC to go to the effort and expense of rulemaking to make the change. As a result, there would not appear to be any need for the rule revision being proposed by the NRC staff.

Furthermore, the term "substantive" is undefined and subjective. Changes that may be viewed as non-substantive by the NRC will not necessary be considered as non-substantive by the design certification applicant or other stakeholders. As a result, the staff's proposed revision could lead to extensive interactions and possibly litigation on whether a change is "substantive." Thus, the staff's proposed revision to Section 52.63(a)(1) is clearly detrimental to the stability and predictability of the certification and licensing process.

As a result, GE recommends that the staff's proposed revision be deleted.

3.0 Corrections to the ABWR Design Certification Rule

After NRC issued the design certification rule for the ABWR in 1997, counsel for GE identified several errors in the rule and brought them to the attention of the Office of General Counsel (OGC). OGC agreed that these matters might warrant an update to the ABWR design certification rule, and stated that NRC would give consideration to making these corrections as part of NRC's planned rulemaking to revise Part 52 to account for lessons learned from the design certifications. Since there was no immediate need for correction of the ABWR design certification rule, GE agreed that the process described by OGC was reasonable.

At a meeting between the NRC staff and the NEI Part 52 Licensing Issues Task Force on December 14, 2000, this matter was again raised by counsel for GE. OGC assured GE's counsel that it still had GE's list of suggested corrections for the ABWR design certification rule, and that NRC would consider making the corrections in the planned rulemaking. However, the staff's draft rule does not contain any of GE's recommended corrections.

GE urges NRC to use the current rulemaking to correct the ABWR design certification rule. GE's recommended corrections are as follows:

- Section III.B of the rule states that "Tier 2 references to the probabilistic risk assessment (PRA) in the ABWR Standard Safety Analysis Report do not incorporate the PRA into Tier 2." Tier 2 does not reference the PRA; instead, it references sections of the Standard Safety Analysis Report which relate to the PRA. Therefore, Section III.B should state that "Tier 2 references sections of the ABWR Standard Safety Analysis Report that relate to the probabilistic risk assessment (PRA) do not incorporate those sections into Tier 2."

- Section V.B of the rule omits reference to the exemption for the Operating Basis Earthquake (OBE). This reference should be added to Section V.B of the ABWR

design certification rule in order to be consistent with Section 3.1.1 of the NRC's FSER for the ABWR.

- Sections VI.B. 4 and 5 of the rule state that exemptions and license amendments have finality but "but only for that proceeding." This language is nonsensical (i.e, a proposed provision can only have finality with respect to future proceedings, not the proceeding in which the proposal is being considered). Instead, these sections should refer to "but only for that plant."

- Section VIII.B.5.f of the rule refers to "genuine issue of fact." This section should refer to "genuine issue of material fact" to be consistent with 10 CFR 2.749(d) and the corresponding section of the design certification rule for the AP600.

- Section VIII.B.6.a of the rule states that Tier 2* changes do not have finality, which is inconsistent with Section VI.B.5. Section VIII.B.6.a should state that "The departure will not be considered a resolved issue, except as provided by Section VI.B.5 of this appendix."

- To be consistent with Section VIII.C.1, Section VIII.C.3 and 5 of the rule should reference § 50.109, as well as § 2.758. The reference to both sections is necessary, because § 2.758 is only applicable to hearings and is not applicable to NRC staff reviews.

- Section VIII.C.4 of the rule states that "An applicant who references this appendix may request an exemption from . . . other operational requirements." To be consistent with Section VIII.B.5.e, Section VIII.C.4 of the rule should also state: "A departure from an operational requirement that does not involve a license amendment does not require an exemption from this appendix."