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23

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OFFICE OF SECRETARY
RULEMAKINGS AND
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Ms. Annette L. Vietti-Cook
Office of the Secretary
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: NEI Comments on NRC Proposed Rulemaking on the Consideration of Aircraft Impacts for New Nuclear Power Reactor Designs (*72 Fed. Reg. 56287*) (Oct. 3, 2007)

Project Number: 689

Dear Ms. Vietti-Cook:

The Nuclear Energy Institute (NEI)¹ is pleased to submit the following comments in response to the NRC Proposed Rulemaking on the Consideration of Aircraft Impacts for New Nuclear Power Reactor Designs, published at *72 Fed. Reg. 56,287* (Oct. 3, 2007). Detailed comments and responses to the specific questions and topics listed in the notice are provided in the enclosure.

NEI supports the intent of the proposed rule. We believe that all new plants being licensed should address aircraft impacts. This would be accomplished by:

- Requiring the assessment as part of design certification;
- Voluntarily amending existing design certifications; or
- Requiring the assessment at the time of the combined license (COL) application.

These actions, when implemented along with other measures associated with beyond design basis accidents, will improve the robustness of the design to withstand severe accidents.

¹ The Nuclear Energy Institute (NEI) is the organization responsible for establishing unified industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, nuclear materials licensees, and other organizations and individuals involved in the nuclear energy industry.

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The NRC review and the criteria for NRC approval for assessments of amendments to a certified design should be the same as that being used to assess designs in an initial design certification application. The design features and mitigation activities resulting from the aircraft impact assessment are part of the design and are not part of the physical security requirements of the plant. As such, it is appropriate for the rule to be in 10 CFR Part 52, as opposed to 10 CFR Part 73.

The notice requests public comment and input on specific questions and topics. NEI's detailed comments and responses on the specific questions and topics (described in the enclosure) can be summarized as follows:

- We agree with the criterion of practicability in the rule. This criterion would be enhanced by including the following criteria in regulatory guidance for the rule:
 - Demonstrate that the reactor core remains cool or the containment remains intact, and
 - Demonstrate that spent fuel cooling or spent fuel pool integrity is maintained.
- We agree that initial construction permits should be required to meet the rule, because no construction has started. The rule should not apply to holders of construction permits and plants where construction is substantially complete because it would be impractical.
- NEI agrees that the aircraft impact rule should not be applied to existing operating plants. The security programs mandated by the NRC's orders, the Design Basis Threat rule, and the protection provided by other federal, state, and local entities, provide an adequate level of protection against the effects of aircraft impacts.
- A summary description of the assessment and the methodology should be included in the application. The details of the assessment would be available for NRC inspection. This is consistent with other beyond design basis assessments that are required by Part 52 and acknowledges the difficulty of dealing with Safeguards information in a public arena.

The industry agrees that the impact of a large, commercial aircraft is a beyond-design-basis event. The proposed rule is consistent with NRC's "Policy Statement on Severe Reactor Accidents Regarding Future Designs and Existing Plants," published at *50 Fed. Reg. 32,138* (Aug. 8, 1985), and the "Policy Statement on the Regulation of Advanced Nuclear Power Plants," dated July 8, 1986.

Ms. Annette L. Vietti-Cook

December 17, 2007

Page 3

NEI encourages the NRC to move forward promptly with finalization of the proposed rule. Should there be questions on these comments, please contact Jim Fisicaro (202) 739-8018; jif@nei.org or me.

Sincerely,



Adrian P. Heymer

Enclosure

c: The Honorable Dale E. Klein, NRC
 The Honorable Gregory B. Jaczko, NRC
 The Honorable Peter B. Lyons, NRC
 Mr. Luis A. Reyes, NRC
 Mr. Bruce S. Mallett, NRC
 Mr. Roy P. Zimmerman, NRC
 Mr. R. William Borchardt, NRC
 Mr. Gary M. Holahan, NRC
 NRC Document Control Desk

COMMENTS ON THE PROPOSED RULE ON AIRCRAFT IMPACTS

This enclosure provides NEI's detailed comments and responses to the eight questions in the Notice of Proposed Rulemaking (NOPR) at *72 Fed. Reg. 56,287*. The comments are organized in accordance with the paragraphs in the NOPR Supplemental Information.

I. Introduction

As required by NRC orders, the U. S. nuclear industry has evaluated existing plant design capabilities to withstand aircraft impacts and determined that adequate measures are in place to protect the public should a large aircraft damage the plant and its safety systems. In light of these existing capabilities, NEI agrees that the proposed rule, if adopted, would reduce the need for reliance on operator mitigation measures in regard to potential new plant aircraft impacts.

NEI agrees with the NRC that the aircraft impact rule is an enhancement above and beyond what is necessary for adequate protection and that the impact of a large, commercial aircraft is a beyond design-basis event. An assessment of aircraft impacts and an evaluation of design features to address the effects of a beyond design-basis aircraft impact is consistent with the NRC's "Policy Statement on Severe Reactor Accidents Regarding Future Designs and Existing Plants," published at *50 Fed. Reg. 32,138* (Aug. 8, 1985), and the "Policy Statement on the Regulation of Advanced Nuclear Power Plants," dated July 8, 1986.

In the Supplemental Information for the proposed rule, the NRC states that "[d]esigners of new facilities are encouraged to account for the provisions of 10 CFR 73.55 in the facility design so as to minimize more costly, post-design features to meet those requirements." *72 Fed. Reg. 56,287*. The rule should clarify that the design features and related mitigation measures are part of the design certification and are not part of the physical security requirement of the plant. Consequently, these design features and mitigation measures would not be subject to review at the time of the COL.

II. Currently Operating Power Reactors

NEI agrees that the aircraft impact rule should not be applied to existing operating plants. The security programs mandated by the NRC's orders, the Design-Basis-Threat rule, and the protection provided by other federal, state, and local entities, provide an adequate level of protection against the effects of aircraft impacts. Further, the industry believes that the rule should not apply to holders of construction permits and plants where construction is substantially complete even if the permit is being renewed because it would be impractical. These plants should be subject to the same requirements as operating plants. However, we agree that initial construction permits would be required to meet the rule, because no construction has started.

III. Currently Approved Standard Design Considerations

We agree that an assessment of the effects of an aircraft impact should be performed as part of the design certification or at the time of the combined license (COL) application. This action, when implemented along with other measures associated with beyond design-basis

accidents, will improve the robustness of the design to withstand severe accidents and reduce the reliance on mitigation measures.

For designs that are not certified, the assessment should be performed and reviewed as part of the certification process.

Section 52.500 (a) should be amended to clarify that COL applicants that are referencing design that was certified before the effective date of the aircraft impact rule should perform the assessment, unless the design entity agrees voluntarily to perform the assessment and submit an amendment to the certified design.

The NRC should use the same standard for evaluating the assessments in an amendment to a certified design as that used for new certification applications.

IV. Renewal of a Standard Design Certification, Combined License, or Manufacturing License

NEI agrees that the aircraft impact assessment need not be updated as part of an application for renewal of a design certification, combined license, or manufacturing license.

V. Newly Designed Power Reactors (72 Fed. Reg. at 56,291)

A. *Introduction* -- No comments

B. *Description of Beyond Design-Basis Aircraft Impact*

NEI agrees with the NRC on the general description of the aircraft characteristics that should be used in the assessment.

C. *Aircraft Impact Assessment*

1. The aircraft impact assessments should utilize a consistent methodology.

NEI has submitted draft guidance on performing assessments of the effects from an impact of a large commercial aircraft to the NRC for review and endorsement. Use of a consistent methodology, to the extent applicable, taking into account the difference in designs will ensure that the assessment is conducted consistently.

The rule should make clear that the detailed assessment for shock should be based upon practical and realistic criteria and methodologies. The standard methodology being developed by the industry breaks equipment down into four fragility classes with a damage envelope based on distance from the point of impact for each class. This provides a consistent approach for all designers to use and is based on information the NRC provided to the industry when the current plants were being evaluated.

2. Realistic assumptions regarding the overall response of the plant should be used in the assessment to be consistent with other severe accident evaluations and methodologies that are required by 10 CFR Part 52.

While the Supplemental Information allows for the use of realistic assumptions (see 72 Fed. Reg. at 56,292), the rule language itself does not reflect this aspect of the

assessment. The final rule should allow the use of realistic assumptions relative to the overall response of the plant to this event. NEI therefore recommends the following revision to proposed 10 CFR 52.500(b):

(b) Each applicant for a standard design certification not referencing a standard design approval; a standard design approval; a combined license not referencing a standard design certification, standard design approval, manufacture reactor; or a manufacturing license not referencing a standard design certification or standard design approval shall perform a design-specific assessment of the effects on the designed facility of the impact of a large, commercial aircraft. Such assessment must be based on the Commission's specified aircraft characteristics used to define the beyond design-basis impact of a large, commercial aircraft used for long distance flights in the United States, with aviation fuel loading typically used in such flights, and an impact speed and angle of impact considering the ability of both experienced and inexperienced pilots to control large, commercial aircraft at the low altitude representative of a nuclear power plant's low profile. Such assessment shall use realistic assumptions regarding the overall response of plant design features, functional capabilities, and strategies.

D. Evaluation of Design Features, Functional Capabilities, and Strategies

We concur with the use of the "to the extent practicable" criteria for the evaluation of the design features, functional capabilities and strategies to avoid or mitigate the effects of the applicable aircraft impact (*72 Fed. Reg. 56,293*). This standard will allow each designer to evaluate each feature or function within their own design and give consideration to all the competing aspects involved.

- (i) The language in the rule should be clarified to indicate that a plant design response is acceptable if (a) either containment integrity or core cooling capability is maintained; and (b) spent fuel pool integrity or spent fuel cooling is maintained.

The current rule language requires both containment integrity and core cooling to be evaluated. However, if core cooling is maintained, there will be no significant release to the public, even if containment integrity is breached, because the source term would be small. Conversely, as long as containment integrity is maintained, there is minimal threat to the public health and safety because there is minimal potential for a radioactive release. Accordingly, NEI recommends that the proposed rule be revised.

Also, it is not necessary for the spent fuel pool integrity to be maintained as long as fuel cooling capability is maintained. Some of the pool water may be lost, yet the fuel can still be cooled. Therefore either the spent fuel pool integrity or spent fuel cooling must be maintained.

- (ii) In recognition of the general movement toward performance-based regulation, the industry believes that the regulations should describe "what" is required, not how an applicant meets the requirement. The "how to" should be part of regulatory guidance.

These recommendations are consistent with the intent of the proposed rule. The NRC acknowledges, *72 Fed. Reg. 56,293*, that plant structures may be breached by aircraft parts and jet fuel, but suggests evaluation of plant structures and layouts with respect to maintaining key safety functions by addressing equipment survivability and its ability to respond to the event

Accordingly, NEI recommends that proposed 10 CFR § 52.500(c) be revised as follows:

- (c) Based upon the insights gained from the aircraft impact assessment as stated in paragraph (b) of this section, the application must include a description and evaluation of the design features, functional capabilities, and strategies to avoid or mitigate the effects of the applicable, beyond design-basis aircraft impact. The evaluation of such design features, functional capabilities, and strategies must include 1) core cooling capability or containment integrity, or both, and 2) spent fuel pool integrity or spent fuel cooling or both. The application must describe the design features, functional capabilities, and strategies that avoid or mitigate, to the extent practicable, the effects of the applicable aircraft impact with reduced reliance on operator actions.
- (iii) The final rule should provide that if the existing features are determined to be sufficient, the evaluation need not discuss any new design features.

The Supplemental Information suggests that applicants perform an evaluation of the alternatives (*72 Fed. Reg. 56,293*). The industry believes that should the assessment conclude that the existing design and functional capabilities are sufficient to maintain containment integrity or core cooling and maintain spent fuel pool integrity or spent fuel cooling, then no further assessment is required.

The proposed language should be revised to clarify that an applicant need not evaluate or adopt practicable design alternatives for preventing or mitigating aircraft impact, if the impact assessment performed in accordance with proposed 10 CFR § 52.500(b) demonstrates that the plant's design capabilities provide protection against aircraft impacts. For example, if the assessment in proposed Section 52.500(b) determines that the reactor containment remains intact or that the core remains cooled, and also determines that spent fuel cooling is maintained following an aircraft impact, then the applicant would not have to perform the alternative evaluations suggested by Section 52.500(c) but would only need to describe the existing design features, functional capabilities and strategies to avoid or mitigate the effects of the aircraft impact.

If, however, the proposed Section 52.500(b) assessment does not conclude that the design will provide sufficient protection against an aircraft impact, then the applicant would modify the design and/or strategies to meet the new plant acceptance criteria for protection against an aircraft impact, within the confines of the "practicability" standard.

Consistent with the above comments, in the November 15, 2007 NRC public meeting, the NRC staff commented that an evaluation of a range of alternative design features need not be performed if the plant design has sufficient features, capabilities or strategies to avoid or fully mitigate aircraft impacts.

Given the above comments, NEI recommends that the following provision be added as 10 CFR 52.500(d) to the final rule:

(d) If the assessment required by paragraph (b) demonstrates that (1) containment integrity or core cooling is maintained and (2) spent fuel pool integrity or spent fuel pool cooling is maintained, then the applicant is not required to evaluate the practicability of additional or different design features, functional capabilities, and strategies required by paragraph (c). The application need only state this conclusion and indicate that no further evaluation is required.

(iv) Costs should be considered in the evaluation for determining what is "practicable."

Consideration of cost is appropriate for beyond design-basis events such as aircraft impacts. This is consistent with the Commission's Policy Statement on Severe Reactor Accidents, which states that "[t]he inherent flexibility of this Policy Statement . . . encourages thereby innovative ways of achieving an improved overall systems reliability at a reasonable cost." Finally, such a change would be appropriate because a change that is technically "realistically and reasonably feasible" could be cost prohibitive. This cost screening would only be applied on an individual design feature basis and not the complete scope of features considered.

(v) Control of Changes to FSAR Information

The final rule should clarify that simplified assessment impact techniques may be used by licensees to evaluate design changes. Proposed 10 CFR 52.502(c) states that, if a licensee changes its design, the licensee must "re-perform that portion of the evaluation" of aircraft impacts, addressing the design change. It may not be necessary to re-perform the entire evaluation; instead, it may be possible to demonstrate that the design change is bounded by the original design, or that the change provides an equivalent level of protection, without re-performing the original evaluation. Therefore, we recommend that proposed 10 CFR 52.502(c) be revised as follows:

(c) For combined licenses which are subject to 10 CFR 52.500, if the licensee changes the information required by 10 CFR 52.79(a)(47) to be included in the final safety analysis report, then the licensee shall re-perform that portion of the evaluation required by 10 CFR 52.500(e) addressing the changed feature, capability, or strategy, and describe, in the re-evaluation, evaluate how the modified design features, functional capabilities, and strategies affect the ability of the plant to avoid or mitigate, to the extent practicable, the effects of the applicable aircraft impact with reduced reliance on operator actions.

(vi) Regulatory Treatment of the Evaluation

NEI recommends that applicants submit a summary level description and not details of the design features and mitigative actions as part of the application. Submitting the details would be inconsistent with the treatment of the other specific beyond design-basis requirements listed in Part 52. In addition, for aircraft impact, it would

result in the submittal being classified as a Safeguards document. Consistent with the treatment of submittals on other specific beyond design-basis events, the details would be available for NRC audit and inspection.

VII. Specific Request for Comments

#1 – Should the Impact Assessment be included in the application? (72 Fed. Reg. 56,298)

No, the detailed analyses for the impact assessment should not be included in the application. A description and evaluation required by 10 CFR 52.500(c) is sufficient.

Maintaining the detailed assessment at the applicant's facilities and submitting only the description as part of the application required by proposed 10 CFR 52.500(c) is consistent with the NRC's treatment of similar assessments. For example, licensees are not required to submit the entire Probabilistic Risk Assessment (PRA); instead, the NRC only requires that a summary report be submitted. This is also consistent with discussion in the SOC for the new Part 52 rule, where the NRC stated that it "believes that the PRA and SAMDA evaluations do not need to be included in Tier 2 because they are not part of the design-basis information." *72 Fed. Reg. 49,352, 49,380* (Aug. 28, 2007). Thus, NEI agrees with the NRC that the assessment required by the proposed rule need not be provided in an application.

#2 – Should the NRC add acceptance criteria to the Proposed Rule that would reference the dose limits in Part 100? (72 Fed. Reg. 56,298-99)

While the industry supports the inclusion of acceptance criteria in guidance, we do not support using 10 CFR Part 100 dose limits. The adoption of Part 100 dose limits would imply that the aircraft impact is a design-basis event. It is not. The Commission has recognized, it is a beyond design-basis event. To impose Part 100 as the acceptance criterion could be misinterpreted and result in an unnecessary expenditure of industry and NRC resources.

NEI considers the criterion of practicability to be sufficient for the NRC to make an application determination on issuing the design certification or combined operation license. Under the proposed rule, an applicant must describe "design features, functional capabilities, and strategies that avoid or mitigate, to the extent practicable, the effects of the applicable aircraft impact with reduced reliance on operator actions."

The industry prefers that acceptance criteria be part of implementing guidance rather than the rule.

While the industry supports the practicability standard, we believe that it may be useful to include the following alternative:

- (1) Demonstrate that the reactor core remains cool or the containment remains intact, and
- (2) Spent fuel pool integrity or spent fuel cooling is maintained.

#3 – Records Retention (72 Fed. Reg. 56,299)

NEI believes that the existing requirements are adequate to cover the records retention requirements.

#4 – Should the NRC treat voluntary requests to amend existing design certifications to address aircraft impacts the same as it treats new applications for design certification? (72 Fed. Reg. 56,299)

Yes, we believe that voluntary requests to amend existing design certifications to address aircraft impacts should be held to the same standard as new design certification applications. To do otherwise would introduce inconsistency into the regulatory process.

#5 – Should the Proposed Rule apply to future 10 CFR Part 50 license applicants? (72 Fed. Reg. 56,299)

Future applicants for new construction permits under Part 50 should be required to meet the rule. However, plants with construction permits and plants where construction is essentially complete together with operating plants should not be required to comply with the rule. Plants with an existing construction permit and plants where construction is essentially complete would be subject to the same requirements as operating plants, which are required to have mitigation actions for large area fires and explosions. To require otherwise would be impractical and result in a financial burden in changing a design that is essentially built.

#6 – Should the new requirements be placed in 10 CFR Part 50 or Part 52? (72 Fed. Reg. 56,299-300)

The new requirements should be placed in 10 CFR Part 52 because this assessment relates to a beyond design-basis event and is intended to apply to design certifications.

#7 – Applicability to design approvals and manufacturing licenses. (72 Fed. Reg. 56,300)

Yes, NEI believes that the NRC should eliminate the applicability of proposed 10 CFR 52.500 requirements to future applicants for design approvals and manufacturing licenses.

#8 – Should the scope of the impact assessment for a COL applicant be larger than for a design certification applicant? (72 Fed. Reg. 56,300)

No, the scope and acceptance standard should be the same for a COL applicant that is referencing a design that was certified prior to the effective date of the rule. A COL applicant that references a design where the assessment has been completed, the provisions of design certification apply and the COL applicant would not have to take action.

CHAIRMAN - NEI Comments on NRC Proposed Rulemaking on the Consideration of Aircraft Impacts for New Nuclear Power Reactor Designs (72 Fed. Reg. 56287) (Oct. 3, 2007)

From: "HEYMER, Adrian" <aph@nei.org>

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Subject: NEI Comments on NRC Proposed Rulemaking on the Consideration of Aircraft Impacts for New Nuclear Power Reactor Designs (72 Fed. Reg. 56287) (Oct. 3, 2007)

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Dear Ms. Vietti-Cook:

The Nuclear Energy Institute (NEI) is pleased to submit the following comments in response to the NRC Proposed Rulemaking on the Consideration of Aircraft Impacts for New Nuclear Power Reactor Designs, published at 72 Fed. Reg. 56,287 (Oct. 3, 2007). Detailed comments and responses to the specific questions and topics listed in the notice are provided in the enclosure.

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