



RIC 2010 Aircraft Impact Assessment (AIA) Of New Reactor Designs

Dr. Bhagwat Jain
Division of Engineering
Office of New Reactors

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Purpose

- Provide information about new and different regulatory requirements and review methods associated with the Aircraft Impact Assessment of new reactor designs:
 - Beyond design basis rule
 - Assessment of structures, systems, and components
 - Regulatory reviews and inspection

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Introduction

- New AIA rule (10CFR50.150)
 - Highlights
 - Requirements
- Design certification AIA submittals
- Regulatory approach
 - DCD chapter 19 AIA reviews
 - Inspection
- Path Forward

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AIA Rule - Highlights

- Goal is to enhance the safety and robustness of new reactor designs at the design stage
- Beyond-design-basis rule; not necessary for 'adequate protection' to public health & safety
- 10CFR 50.54(hh) provides assurance of adequate protection to public health & safety

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AIA Rule Requirements

- Applicants must perform rigorous design-specific aircraft impact assessment
- AIA methods should be based on realistic assumptions
- Applicants must incorporate design features to show facility can withstand aircraft impact with reduced use of operator action
- Resulting design must meet two sets of acceptance criteria:
 - Either the reactor core remains cooled or the containment remains intact, and
 - Either spent fuel cooling or spent fuel pool integrity is maintained

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AIA Regulatory Requirement

- Applicant must perform design-specific aircraft impact assessment
- As a result of the aircraft impact assessment, applicant must include in DCD Chapter 19 AIA submittal:
 - A high-level description of assessment scope and methodology
 - A description of the design features and functional capabilities identified as a result of the aircraft impact assessment
 - A description of how those features and capabilities show, with reduced use of operator action, that the acceptance criteria in 10 CFR 50.150(a)(1) are met

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AIA Regulatory Requirement - Inspection

- Aircraft impact assessments will be subject to inspection
- Applicants are not required to submit actual assessment of the aircraft impact
- NRC may take appropriate enforcement action for any violations, including the preparation of an inadequate assessment or failure to prepare any assessment

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Staff Review

- Staff will review AIA DCD submittal to assess the compliance with the rule and will determine if:
 - Applicant adequately described AIA design features and functional capabilities
 - Applicant adequately described how AIA design features and functional capabilities show that:
 - Either the reactor core remains cooled or the containment remains intact, and
 - Either spent fuel cooling or spent fuel pool integrity is maintained

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AIA Guidance

- NEI 07-13, *Methodology for Performing Aircraft Impact Assessments for New Plant Designs*
 - Developed by NEI and reviewed by staff
 - NRC staff is endorsing NEI 07-13 in Regulatory Guide (RG) 1.217
- Provides an acceptable methodology to assess the effects of a large commercial aircraft impact on new reactors design

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AIA Guidance

- ❑ Developed based on insights gained from NRC and industry assessments of operating and new reactor designs
- ❑ Methodology in NEI 07-13 to evaluate physical damage, fire, and shock effects
- ❑ Assessment of the structural integrity of the containment & spent fuel pool
- ❑ Assessment of structures containing equipment necessary for heat removal to maintain fuel cooling

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AIA Rule Implementation

- ❑ NRC staff will review AIA DCD submittal and develop its safety evaluation report.
- ❑ Independent of the licensing action, staff will inspect the aircraft impact assessment and confirm its adequacy.
- ❑ Regulatory challenge - perform safety evaluation based on the description provided in DCD without the benefit of reviewing underlying assessment that will be scheduled after the safety review is complete.
- ❑ NRC decision on DCD subject to 10CFR 50.150 will be separate from the determination of the adequacy of the aircraft impact assessment.

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AIA Inspection

- ❑ Staff will confirm:
 - A rigorous, design-specific assessment was performed consistent with 10 CFR 50.150(a) & NEI 07-13
 - The applicant has identified design features and functional capabilities to show that the acceptance criteria in 10 CFR 50.150(a)(1) are met
- ❑ Inspections will likely be scheduled to occur after NRC review of DCD submittal and be completed before DC rulemaking is completed (although this is not required)

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AIA Path Forward

- NRC staff reviews of AIA submittals in-progress
- NRC staff scheduled to perform pilot inspection
- Based on lessons learned from pilot inspection, additional inspections will be scheduled
- Inspections will likely be scheduled to occur after industry peer review is complete
