



# RIC 2010

## Aircraft Impact Assessment (AIA) Of New Reactor Designs

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# Purpose

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- 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

# Introduction

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

# AIA Rule - Highlights

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- ❑ 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

# AIA Rule Requirements

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- ❑ 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

# AIA Regulatory Requirement

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- 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

# AIA Regulatory Requirement - Inspection

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- ❑ 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

# Staff Review

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- 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

# AIA Guidance

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- 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

# AIA Guidance

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- ❑ 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

# AIA Rule Implementation

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- ❑ 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.

# AIA Inspection

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- 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)

# AIA Path Forward

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- ❑ 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