

# Advanced Non-Light Water Reactor Design Criteria

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# Overview

- Brief background of the initiative to develop non-Light Water Reactor (LWR) design criteria
- Current Status of the non-LWR design criteria initiative
- Future Activities for non-LWR design criteria

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# Background

- DOE and NRC agreed in June 2013 to pursue a joint initiative to formulate guidance for developing principal design criteria (PDC) for non-light water reactor designers
  - NRC Regulations 10 CFR Part 50 Appendix A establish General Design Criteria (GDC) specific to LWRs and “generally applicable” to non-LWRs
  - Applicants must establish PDC based on the GDC (10 CFR Part 50.34(a)(3), 10 CFR Part 52.47(a)(3), etc.)

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# Background cont.

- Phased Approach
  - “Phase 1” – DOE expertise is applied to research, analysis, evaluation, documentation
    - DOE report, “Guidance for Developing Principal Design Criteria for Advanced (Non-Light Water) Reactors” completed December 2014
  - “Phase 2” – NRC considers the DOE report and develops regulatory guidance
    - Issue regulatory guidance commensurate with an official NRC staff position



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# Current Status

- NRC staff has reviewed the DOE report, “Guidance for Developing Principal Design Criteria for Advanced (Non-Light Water) Reactors”
- NRC staff has developed:
  - Advanced Reactor Design Criteria,
  - Sodium-Cooled Fast Reactor Design Criteria, and
  - modular High Temperature Gas –Cooled Reactor Design Criteria
- The NRC version of the Design Criteria sent out for 60 day informal comment on April 7, 2016
- Public Meeting held May 17, 2016

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# Security Design Considerations

- Security Design Considerations (SDCs) were developed in addition to the non-LWR design criteria
- SDCs help designers identify opportunities for resolving security issues through:
  - the facility design
  - engineered security features
  - formulation of mitigation measures
  - reduced reliance on human actions
- NRC is working to issue these for informal public comment
- Security Design Considerations will be included as part of the non-LWR design criteria regulatory guide

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# Further Engagement

- The NRC expects further engagement on key issues in design criteria for non-LWRs
  - mHTGR-DC 16 Functional Containment
  - mHTGR-DC 10 Reactor Design
  - ARDC 17 Electric Power Systems
  - ARDC 35 Emergency Core Cooling
  - Security Design Considerations

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# Future Activities

- Non-LWR Design Criteria informal 60-day comment period ends June 8, 2016
- Security Design Considerations to be issued for an informal 45-day comment period
- Comments received on both will be considered in development of the draft regulatory guide
- ACRS meeting July 6, 2016
- Public meeting(s) during the summer / fall 2016
- Formal 60-day public comment period for draft regulatory guide
- Final regulatory guide issuance planned for 2017

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# Summary

- The initiative to develop a regulatory guide for non-LWR design criteria continues to progress
- Security design considerations were developed to help designers resolve security issues through the facility design
- Further engagement is expected on key issues in design criteria for non-LWRs
- Future activities include developing draft Reg. Guide, ACRS interaction, public meetings/comment period, and developing final Reg. Guide