

# Instrumentation and Controls

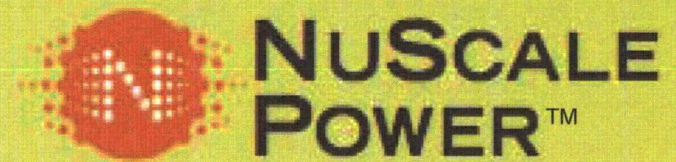
## Chapter 7



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*NuScale Nonproprietary*



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# Agenda

- Purpose
- Background
- NuScale-specific DSRS comments
- Digital reactor protection system (RPS) project plan overview
- Results achieved and path forward

# Purpose

- Discuss NuScale design-specific comments on Chapter 7 of mPower DSRS
- Provide an overview of the NuScale digital RPS project plan
  - development activities
  - licensing activities
- Discuss plan for future Chapter 7 engagement

# Background

- Standard Review Plan (SRP), Chapter 7
- Superseded by mPower design-specific review standard (DSRS) for Chapter 7
  - detailed NuScale comments on Chapter 7 of mPower DSRS generated and provided to NRC
- DI&C-ISG-06
  - utilizing applicable guidance

# NuScale-Specific Design-Specific Review Standard Comments

# Auxiliary Feedwater System

DSRS sections requiring compliance with 10 CFR 50.34(f)(2)(xii)

- Section 7.0, Table 7.1, page 7.0-20
- Section 7.2, page 7.2-53, 7.2.13 Displays and Monitoring, Section II Acceptance Criteria, Requirements, Item 5
- Section 7.2, page 7.2-59, 7.2.13 Displays and Monitoring, Section III Review Procedures, TMI Action Items, Item 4

10 CFR 50.34 (f)(2)(xii) - "Provide automatic and manual auxiliary feedwater (AFW) system initiation, and provide auxiliary feedwater system flow indication in the control room."

- NuScale design does not include an auxiliary feedwater system

# Power-Operated Relief Valves

DSRS sections requiring compliance with 10 CFR 50.34(f)(2)(xx)

- Section 7.0, Table 7.1, page 7.0-21
- Section 7.2, page 7.2-52, 7.2.13 Displays and Monitoring, Section I Areas of Review, Review Interfaces 2
- Section 7.2, page 7.2-53, 7.2.13 Displays and Monitoring, Section II Acceptance Criteria, Requirements, Item 9
- Section 7.2, page 7.2-59, 7.2.13 Displays and Monitoring, Section III Review Procedures, TMI Action Items, Items 8 and 10

10 CFR 50.34(f)(2)(xx) – “Provide power supplies for pressurizer relief valves, block valves, and level indicators such that...”

- Partially applicable
  - NuScale design does include level indicators
  - NuScale design does not include powered pressurizer relief valves or block valves

# B&W Reactor Type Specific Criteria

DSRS sections requiring compliance with 10 CFR 50.34(f)(2)(xxii)

- Section 7.0, Table 7.1, page 7.0-21
- Section 7.2, page 7.2-63, 7.2.15 Capability for Test and Calibration, Section II Acceptance Criteria, Requirements, Item 3

DSRS sections requiring compliance with 10 CFR 50.34(f)(2)(xxiii)

- Section 7.0, Table 7.1, page 7.0-21
- Section 7.2, page 7.2-37, 7.2.8 Auxiliary Features, Section II Acceptance Criteria, Requirements, Item 3
- Section 7.2, page 7.2-38, 7.2.8 Auxiliary Features, Section III Review Procedures, Item 3

10 CFR 50.34(f)(2)(xxii) and (xxiii) requirements do not apply to the NuScale design

# Anticipated Transients Without Scram

- The ATWS rule (10 CFR 50.62), as it applies to the NuScale design, is currently being investigated
- NuScale plans to engage NRC on this topic (December 2013)

# Digital Reactor Protection System Project Plan

# Digital RPS Project Plan

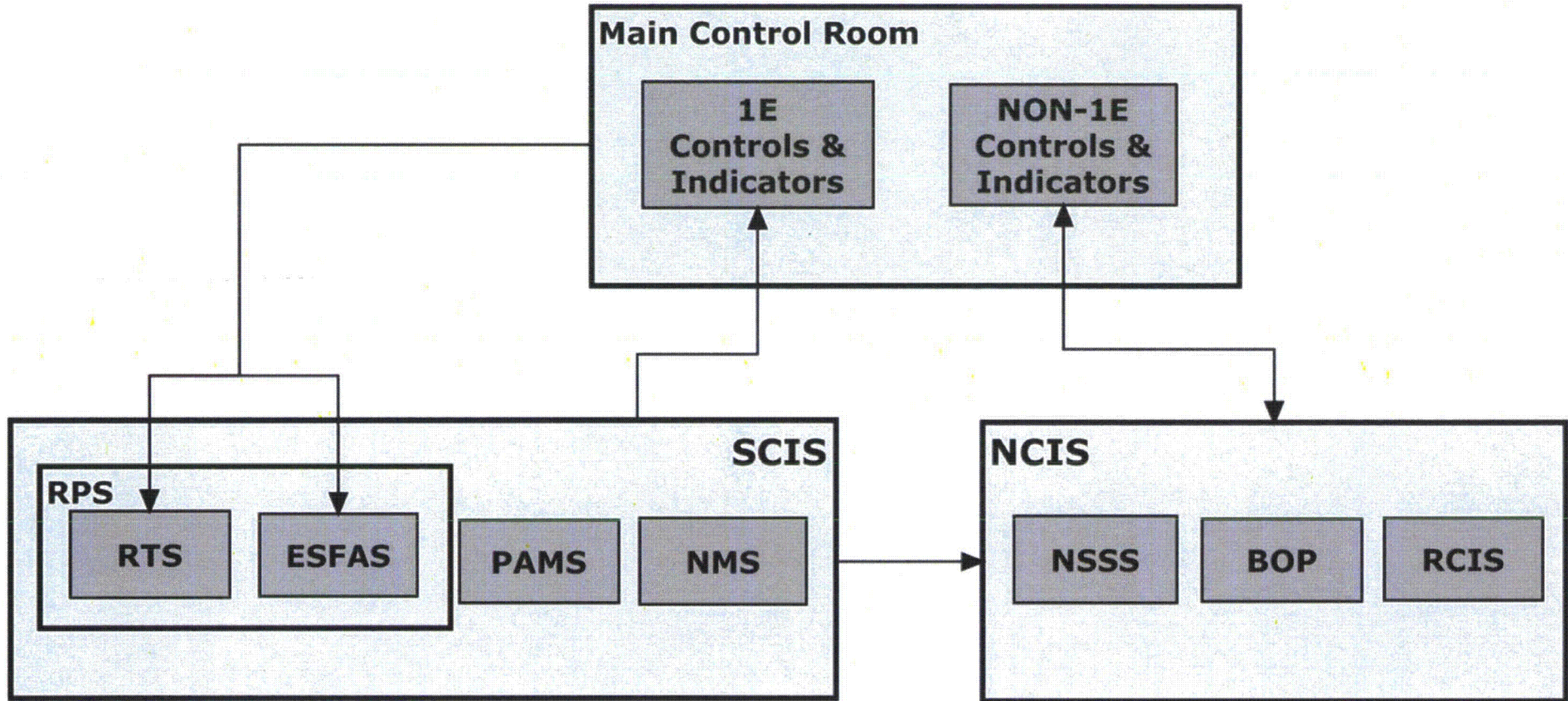
## Purpose

- Describe the framework used to design and develop the NuScale power module's safety digital RPS
- Demonstrate the use of a robust design development process

## Guidance

- NUREG-0800, Branch Technical Position 7-14
- Draft mPower DSRS
- DI&C-ISG-06 (in part)

# I&C Overall Architecture



# Digital RPS Project Plan

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# Digital RPS Project Plan

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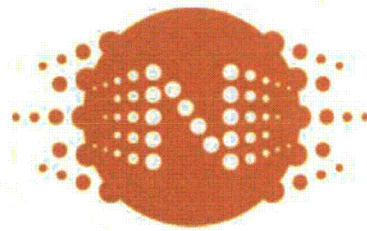
# Digital RPS Project Plan

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}}3(a) and (c)

# Results Achieved and Path Forward

- NRC understanding of NuScale digital RPS project plan
- Common understanding of DSRS implications
  - common understanding of other information required to develop DSRS
- Plan for future interactions
  - technical and topical reports submittal plan
  - details of hazards analysis



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