Proposal to Establish Alternate Requirements for Components Commensurate with Safety and Risk

NRC Public Meeting
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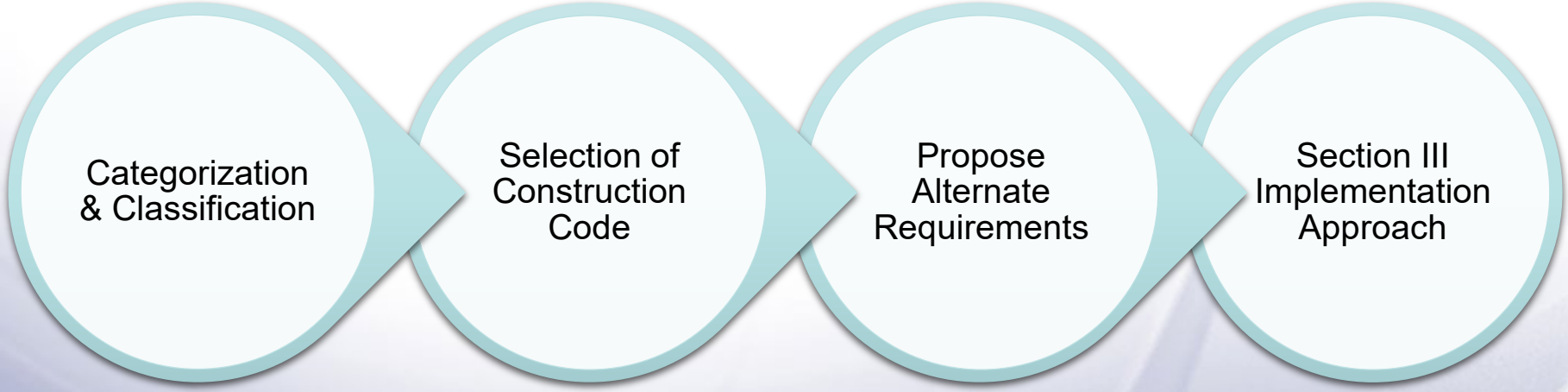
Introduction

Purpose:

Discuss the technical basis for proposed alternate requirements for the construction of ASME Section III nuclear items commensurate with an item's contribution to safety or risk

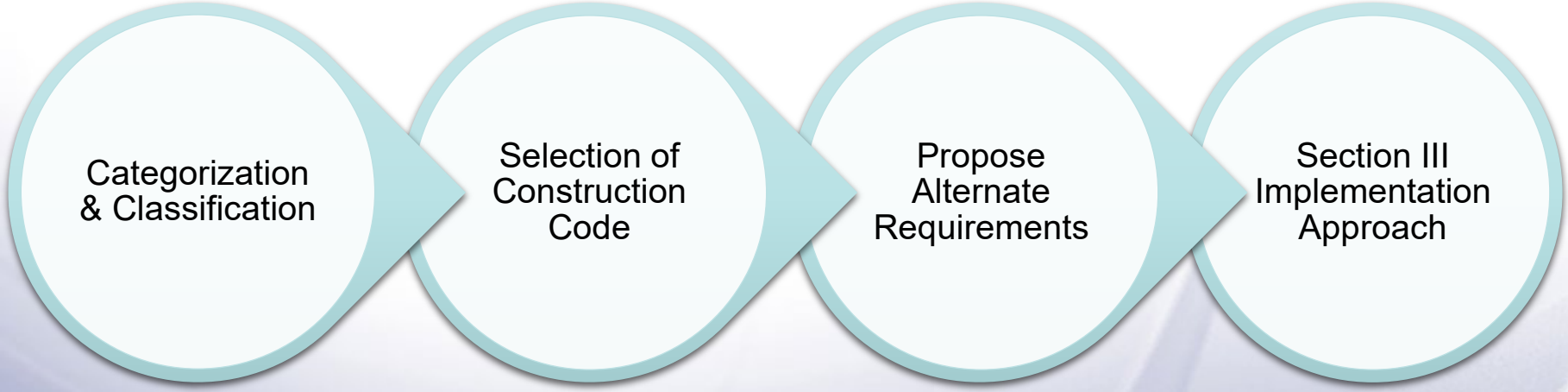


ASME SETTING THE STANDARD

Introduction

Desired Outcome:

Open and interactive discussion of viewpoints on technical basis and Section III approach to rules for these items, specifically focused on alternate examination and testing requirements



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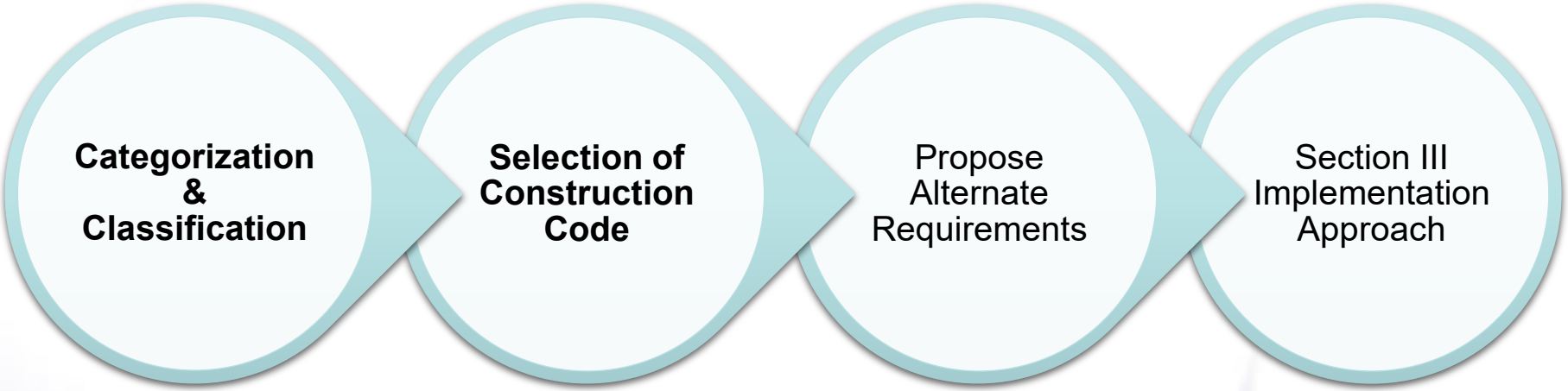
Section III Approach Summary

- Section III is developing alternative requirements commensurate with an item's contribution to safety and risk (e.g., NEI 18-04)
  - Results in increased value for construction
  - Aligned with the design needs of advanced reactors

ASME Section III	Industrial Codes + Additional Requirements
☑ Rules well suited for nuclear applications	☑ Value commensurate with item's contribution to safety and risk

Background



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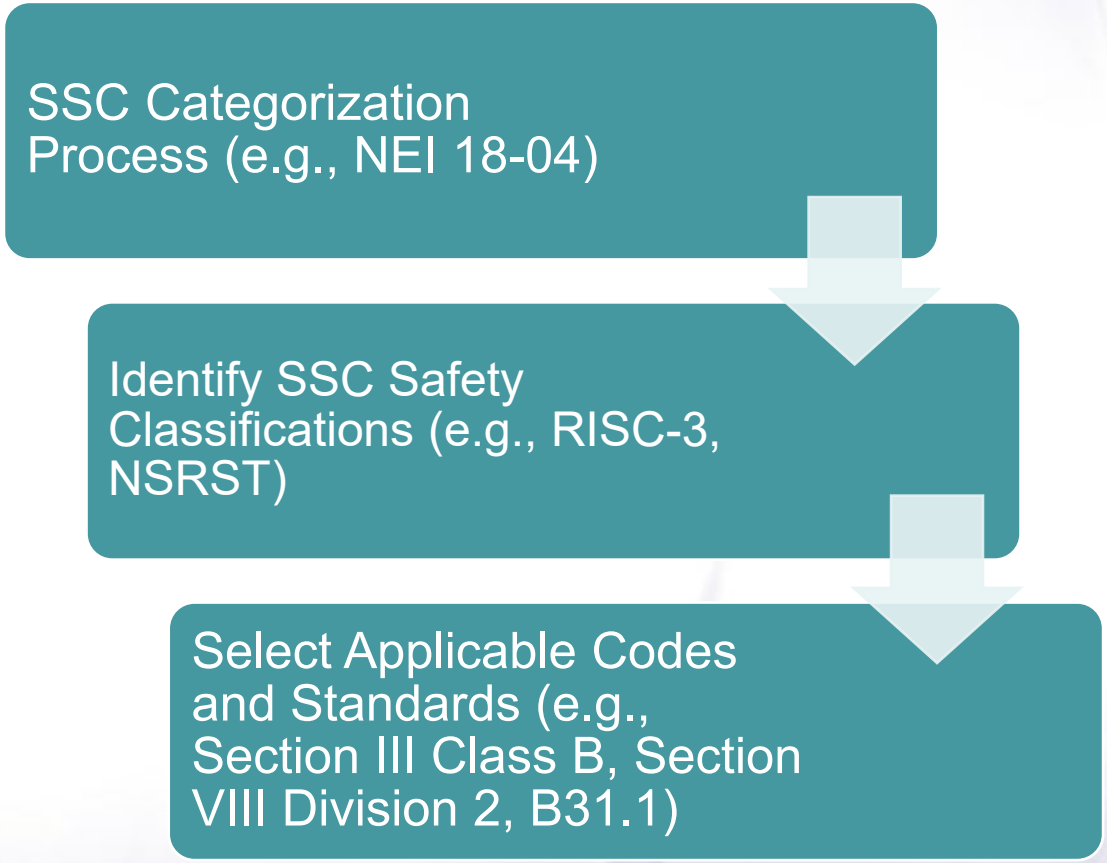
Categorization & Classification, Code Selections

- Paradigm shift in advanced reactor safety basis from traditional nuclear reactors
- Categorization processes developed, and some endorsed, that recognize this paradigm shift



Categorization & Classification, Code Selections

- Paradigm shift in ad… ba… nu…
- Ca… de… en… thi…

SSC Categorization

Nuclear Codes and Standards do not yet fully recognize advancements in categorization and classification of systems, structures, and components

…VIII Division 2, B31.1)

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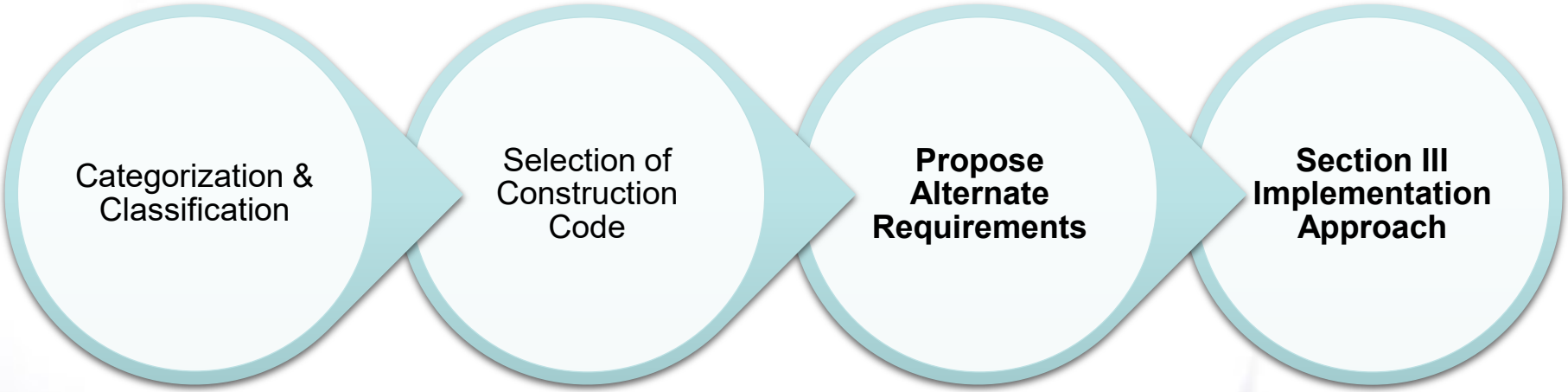
Proposed Changes



Proposed Alternate Requirements

- Provide a new construction ***option*** commensurate with an item's contribution to safety and risk via alternative requirements within Section III that:
  - ☑ Uses design rules developed specifically for nuclear applications
  - ☑ Aligns Section III construction requirements with typical industrial codes

Technical Basis:

- Nuclear design rules are already used in nuclear applications
- Construction of low safety significant items to industrial code requirements is already permitted (e.g., 10CFR50.69)

Proposed Alternate Requirements

- Materials, Fabrication, and Examination Requirements
  - Code revisions for alternate material procurement
  - Code Case to permit alternate methods for NDE and testing
- Quality Requirements
  - Subsection NCA revision for alternate quality requirements

Implementation Approach

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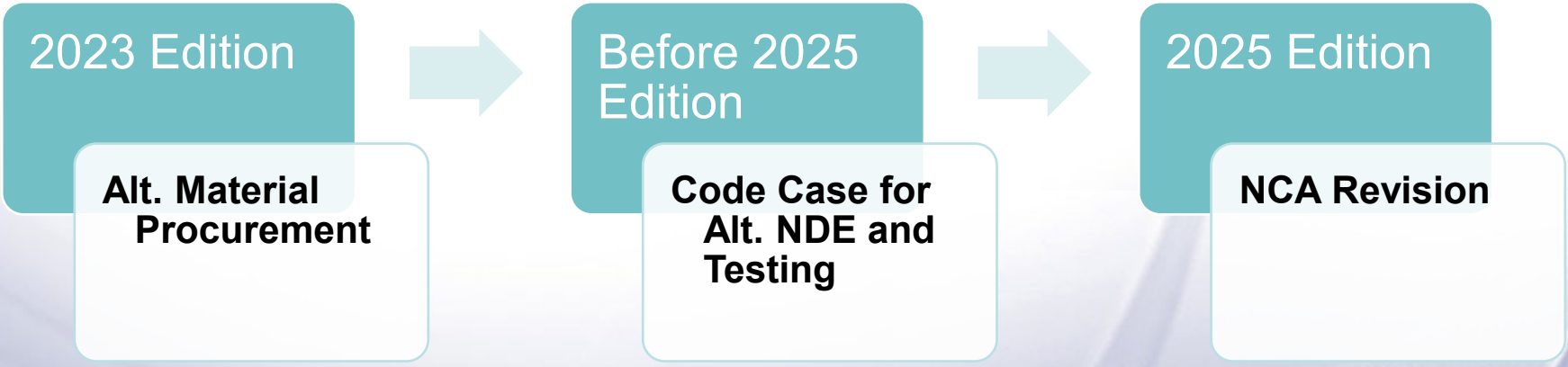

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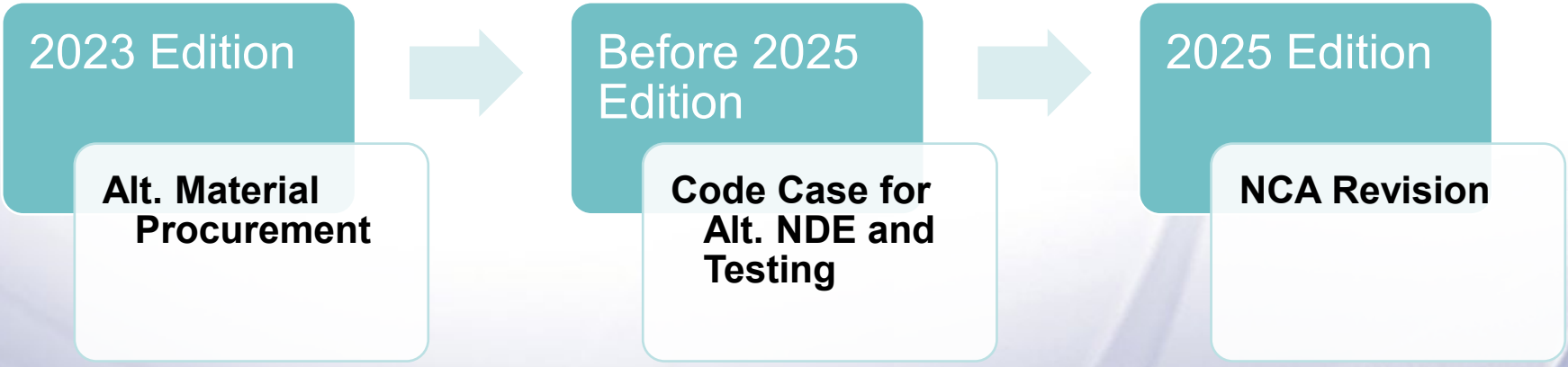

ASME SETTING THE STANDARD

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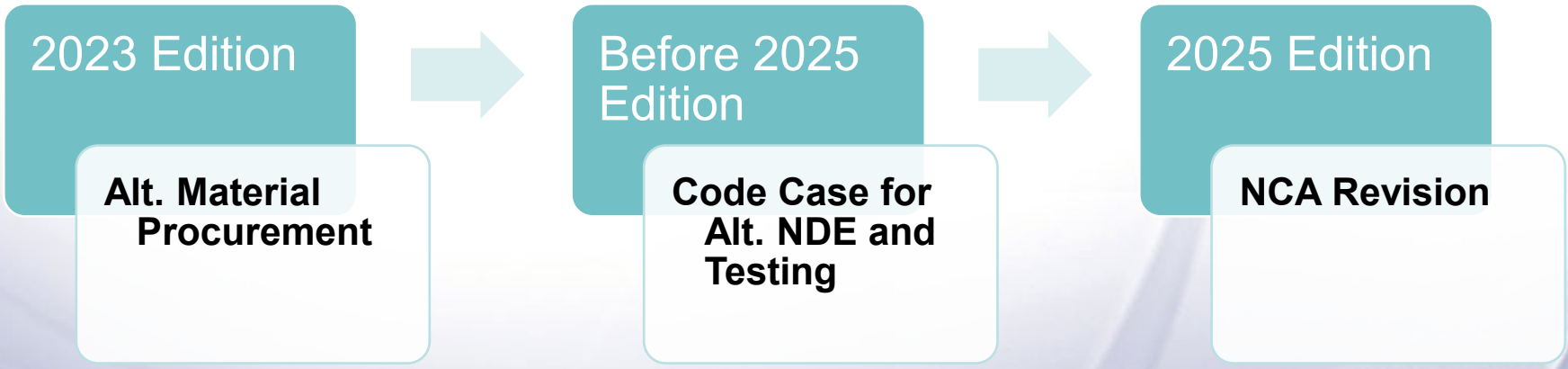

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Optional or Alternate Methods for NDE and Testing

- Record 23-15: Code Case to permit additional NDE and Testing Approaches
  - Modified original code case from Record 21-1257
    - Scope limited to only Division 5 technical requirements for alternate methods for NDE and testing
- Scope:
  - **Section III Division 5**
    - Class A Low Temperature and Elevated Temperature (Subsection HB)
    - Class B Low Temperature and Elevated Temperature (Subsection HC)
    - Supports, Low Temperature (Subsection HF)

Optional or Alternate Methods for NDE and Testing

- Examination rules
  - Option to perform UT
    - Permit UT as an option for NDE
  - Extent of examinations for moderate energy piping
    - Permit progressive random sampling for examinations
- Testing rules
  - Alternate hold times for valve shell hydrostatic and valve closure tests
    - Permit hold times consistent with B16.34 hold times
  - Alternate hydrostatic test rules for moderate energy piping
    - Permit service leak test as an option consistent with ASME B31.3 Category D fluid system

Optional or Alternate Methods for NDE and Testing

	UT permitted	Alt Extent of Piping Exams	Valve Test Hold Times	Alt to Piping Hydro
Class A, Low Temperature	X		X	
Class A, Elevated Temperature			X	
Class B, Low and Elevated Temperature	X	X – limited to moderate energy piping systems	X	X – limited to moderate energy piping systems
Supports	X			

Future Section III Engagement

- Code Case N-883
- Updates to Seismic Rules
- Alternate QA Requirements Commensurate with an Item's Contribution to Safety and Risk
- Ultrasonic Examinations During Construction
- Requirement for Code Case on Class 2/3 Small Piping Alternate