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# Light Water Reactor Risk- Informed, Performance- Based Design

An American National Standard

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**American National Standard  
Light Water Reactor Risk-  
Informed, Performance-  
Based Design**

Secretariat  
**American Nuclear Society**

Prepared by the  
**American Nuclear Society  
Standards Committee  
Working Group ANS-30.3**

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## Foreword

(This foreword does not contain any requirements of American National Standard “Light Water Reactor Risk-Informed, Performance-Based Design,” ANSI/ANS-30.3-2022,” but is included for informational purposes.)

This standard provides requirements for the incorporation of risk-informed, performance-based (RIPB) principles and methods into the nuclear safety design of commercial light water reactors. The process described herein establishes a minimum set of process requirements the designer must follow in order to meet the intent of this standard and to appropriately combine deterministic, probabilistic, and performance-based methods during design development.

The plant designer is responsible for selecting and implementing specific design requirements necessary for implementation of this standard, including support for identifying accidents or expected operational characteristics through design analyses, models, conformance with applicable industrial codes and standards, or experience gained from similar designs.

The main provisions of this standard provide specific process requirements and references to additional American National Standards for defining safety requirements; selecting licensing-basis events; performing design-basis and severe accident analysis; classifying and categorizing structures, systems, and components; establishing systematic defense-in-depth (DID) measures; evaluating DID adequacy; and implementing a performance-based decision analysis process.

Reactor design organizations could improve the quality and transparency of their design decisions by implementing the provisions specified in this standard from both a public safety perspective and a cost perspective. This can be achieved only if clear RIPB goals are established early in the design process and if technical progress is frequently assessed against these goals to support effective decision-making.

This standard might reference documents and other standards that have been superseded or withdrawn at the time the standard is applied. A statement has been included in the references section that provides guidance on the use of references.

This standard also includes the concepts of a graded approach to quality assurance.

This standard was prepared by the ANS-30.3 Working Group of the American Nuclear Society. The following members contributed to this standard:

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# Contents

<b>Section</b>	<b>Page</b>
<b>1</b> Purpose, scope, and application.....	1
1.1 Purpose.....	1
1.2 Scope.....	1
1.3 Application.....	1
<b>2</b> Acronyms and definitions.....	2
2.1 Acronyms .....	2
2.2 Shall, should, and may .....	3
2.3 Definitions.....	3
<b>3</b> Nuclear reactor design process.....	9
3.1 Design process requirements.....	10
3.2 DID principles.....	10
3.3 Structured DID.....	11
3.4 Independent and expert reviews.....	11
3.5 Importance of formal decision analysis process.....	12
3.6 Importance of systems engineering.....	12
<b>4</b> Safety requirements and functions .....	13
4.1 Requirements analysis process.....	13
4.2 Establishing nuclear safety design criteria using system engineering methods .....	13
4.3 Risk-informed safety requirements .....	15
4.4 Performance-based safety objectives .....	16
<b>5</b> LBE identification .....	16
5.1 Initiating event selection .....	17
5.2 Identification of DBEs .....	18
<b>6</b> Design-basis safety analysis .....	21
6.1 DBA assumptions.....	22
6.2 Selection of bounding events .....	22
6.3 Acceptance criteria.....	22
6.4 SE identification and analysis .....	22
6.5 Design-basis safety margins.....	23
6.6 Risk-informed single-failure criterion consideration .....	23
<b>7</b> Probabilistic risk assessment .....	23
7.1 PRA scope.....	23
7.2 PRA technical adequacy.....	25
7.3 Risk insights.....	26
<b>8</b> Severe accident considerations.....	27
8.1 Severe accident mitigation design alternatives .....	27
8.2 EPZ sizing.....	28
<b>9</b> Classification and categorization of SSCs.....	29
9.1 Classification.....	29
9.2 Categorization .....	30
9.3 Classification and categorization .....	31
<b>10</b> Systematic DID .....	32
10.1 Relationship between plant capability and programmatic DID.....	33
10.2 Plant capability DID evaluations.....	33
10.3 Programmatic actions for reasonable assurance of DID .....	35

<b>11</b>	Performance-based decision-making.....	37
11.1	Establish a performance-based decision analysis process.....	38
11.2	Define performance-based criteria for evaluating decisions.....	38
11.3	Evaluate alternatives and select recommendations.....	39
11.4	Addressing regulatory conformance using the decision analysis process.....	40
<b>12</b>	References.....	41

**Tables**

Table 1	Plant capability DID attributes.....	34
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**Figures**

Figure 1	Relationship structure for safety functions, safety requirements, and physical architecture.....	14
Figure 2	Selection of LBEs.....	17