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Graded Approach - Potential Criteria for Improving Certificate of Compliance and Technical Specification

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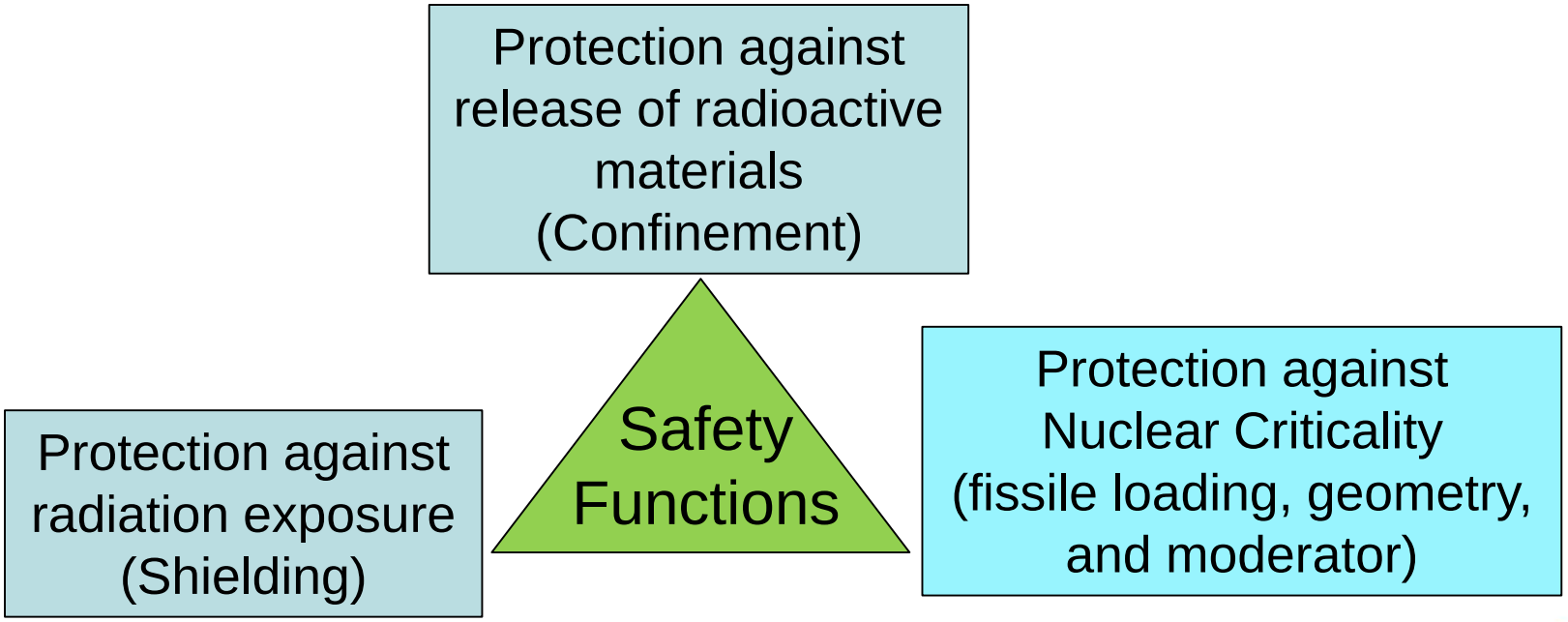
Spent Fuel Dry Storage System Safety Functions



Defense-in-Depth

- Level 1 - Prevention
- Level 2 - Mitigation
- Level 3 - Emergency Actions

Risk Insight

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Risk can be addressed systematically using the “Risk Triplet”:

- What can go wrong?
- How likely is it?
- What are the consequences?

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Why is it important to consider risk insights?

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- Probabilistic Risk Assessments (PRA)s has shown the risk of failure for dry storage systems to be very low*
- Regulatory efficiency can be gained by appropriate application of resources

*NUREG-1864, A Pilot Probabilistic risk Assessment of a Dry Cask Storage System At a Nuclear Power Plant
*Probabilistic Risk Assessment (PRA) of Bolted Storage Casks: Updated Quantification and Analysis Report, EPRI, Palo Alto, CA: 2004. 1009691

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Commission's Direction on Applying Risk Insights

- NRC PRA Policy Statement, August 16, 1995.
- Staff Requirements-SECY-98-144-White Paper on Risk-Informed and Performance-Based Regulation, March 1, 1999.
- Staff Requirements-SECY-99-100-Framework for Risk-Informed Regulation in the Office of Nuclear Material Safety and Safeguards, June 28, 1999.
- Staff Requirements-SECY-11-0024-Use of Risk Insights to Enhance the Safety Focus of Small Modular Reactor Reviews, May 11, 2011.
- Staff Requirements Memorandum for Project AIM, June 8, 2015.

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Guidance Documents for Licensing Activities

- NUREG-1745, Standard Format and Content for Technical Specifications for 10 CFR Part 72 Cask Certificates of Compliance
- NUREG-1536, Standard Review Plan for Spent Fuel Dry Storage Systems at a General License Facility

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Potential Criteria for Graded Approach

Safety Functions

1. Provide confinement
2. Provide radiation shielding
3. Prevent criticality

Risk Insights

1. Frequency of initiating events (what can go wrong)
2. Likelihood of reduced safety function
3. Consequence to public health and safety

References

- Code of Federal Regulations, Title 10, Part 72 – Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater Than Class C Waste.
- NUREG-1536, Standard Review Plan for Spent Fuel Dry Storage Systems at a General License Facility
- NUREG-1745, Standard Format and Content for Technical Specifications for 10 CFR Part 72 Cask Certificates of Compliance
- NUREG-1864, a PILOT Probabilistic Risk Assessment of a Dry Cask Storage System at a Nuclear Power Plant
- Probabilistic Risk Assessment (PRA) of Bolted Storage Casks: Updated Quantification and Analysis Report, EPRI, Palo Alto, CA: 2004. 1009691.