



Advanced Reactor Guidance Documents

April 5 & 6, 2018



Bridge Number
(888) 793-9929

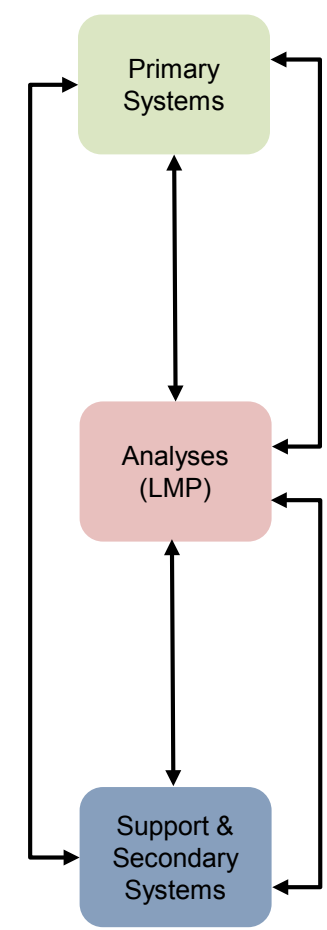
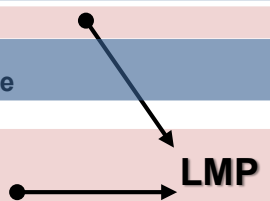
Pass Code
87972

Discussion Topics

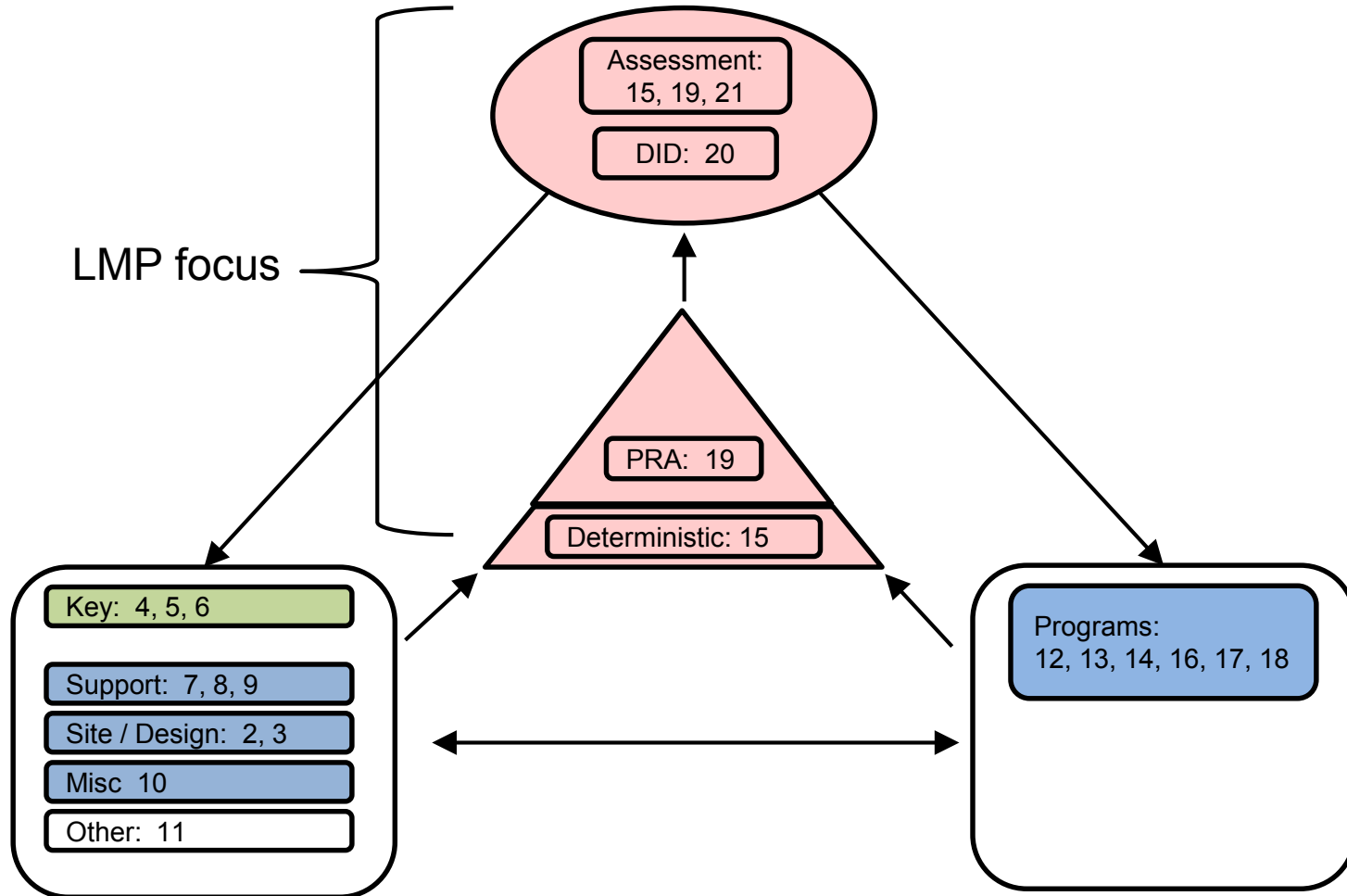
- Any limitations on scope in terms on non-LWR designs, technologies, or sizes (micro through large) ?
- NRC to provide feedback following meeting to support next revision / meeting

Guidance Scope / Context (content & level of detail)

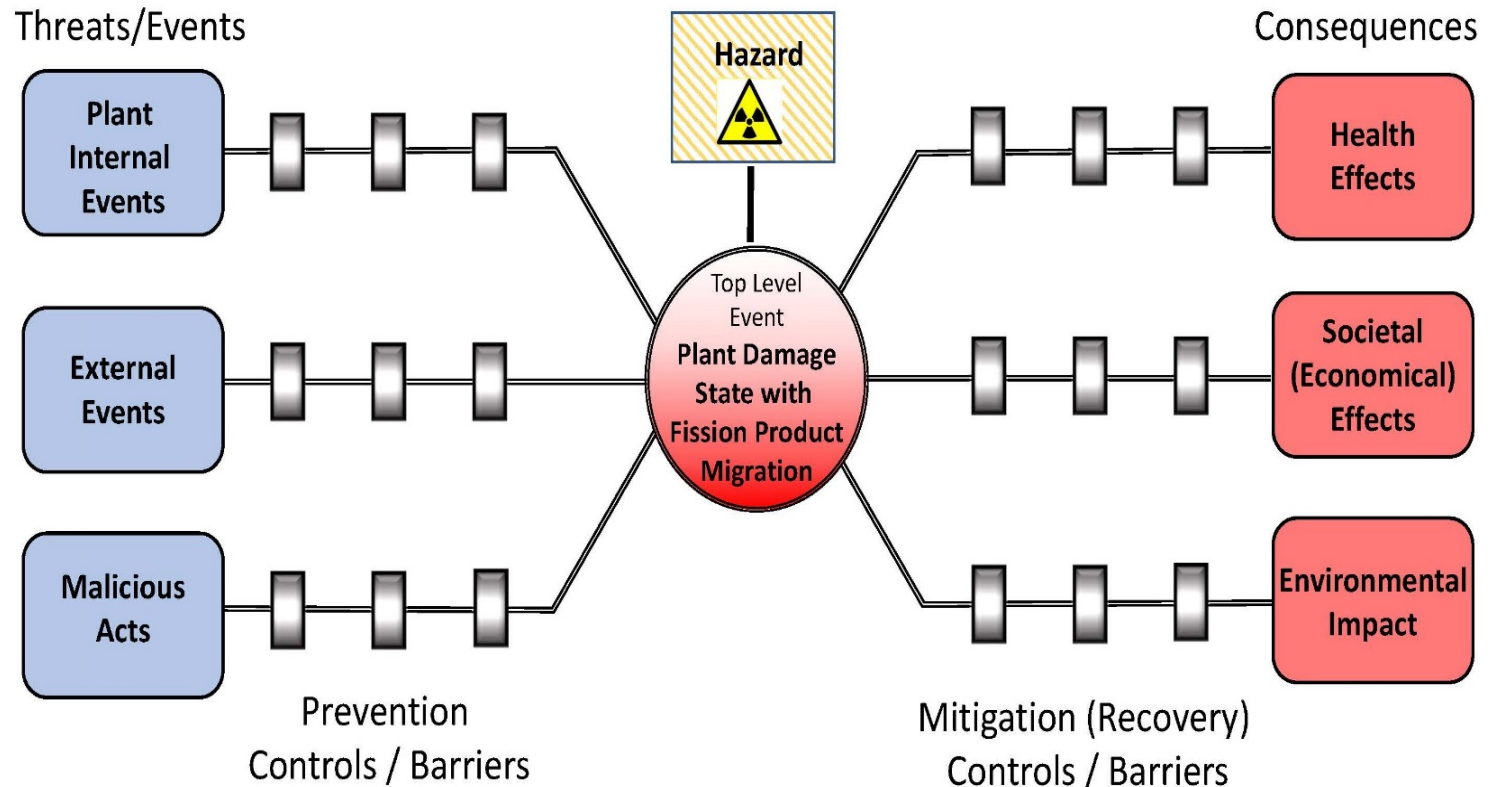
- General Description of the Plant
- Site Characteristics
- Design of SSCs and Equipment
- **Reactor**
- **Reactor Coolant and Connecting Systems**
- **Engineered Safety Features**
- Instrumentation and Controls
- Electric Power
- Auxiliary Systems
- Steam and Power Conversion System
- **Radioactive Waste Management**
- **Radiation Protection**
- Conduct of Operations
- Verification Programs
- Transient and Accident Analyses
- Technical Specifications
- Quality Assurance and Reliability Assurance
- Human Factors Engineering
- Probabilistic Risk Assessment/Severe Accident Evaluation
- Defense in Depth
- Emergency Planning
- Security
- Staffing
- Fire Protection
- Mitigating Strategies
- Aircraft Impact Assessment
- Environmental Report
- Financial
- Inspections, Tests, Analyses, and Acceptance Criteria
- Insurance
- Other (design or technology specific)



Advanced Reactor Program



Integrating Activities



- Regulatory foundations/precedents (p7)
- Event category frequency and dose ranges (p8 - 11)
 - Staff needs to accept or propose revisions
- LBE metrics and reduced EPZ (p8) and throughout when referring to F-C targets
- Plant, multi-module, fleet (p9)
- External events (p14) – needs additional discussion, clarity related to establishing design basis external hazards, deterministic and PRA treatments

Note – blue text indicates LMP discussion topic within Draft H of guidance document (ML18094B085).

Discussion Topics

- LBE against F-C target (p 13-14) – barrier integrity approach as possible means to meeting F-C target and then throughout in terms of performance metric. Possible for some designs to adopt “maximum hypothetical accident” approach similar to analyses for research & test reactors
- Role of PRA in LBE selection – consider other aspects of PRA within licensing basis – through plant design and operation (not necessarily address here but lay potential groundwork)
- Safety functions; required/supportive (p 23) – example of building a logic to determine scope and depth of content of other parts of SAR (e.g., system descriptions); see also discussions page 39 on design and performance requirements (see also § 4)
- PRA technical adequacy (p29)

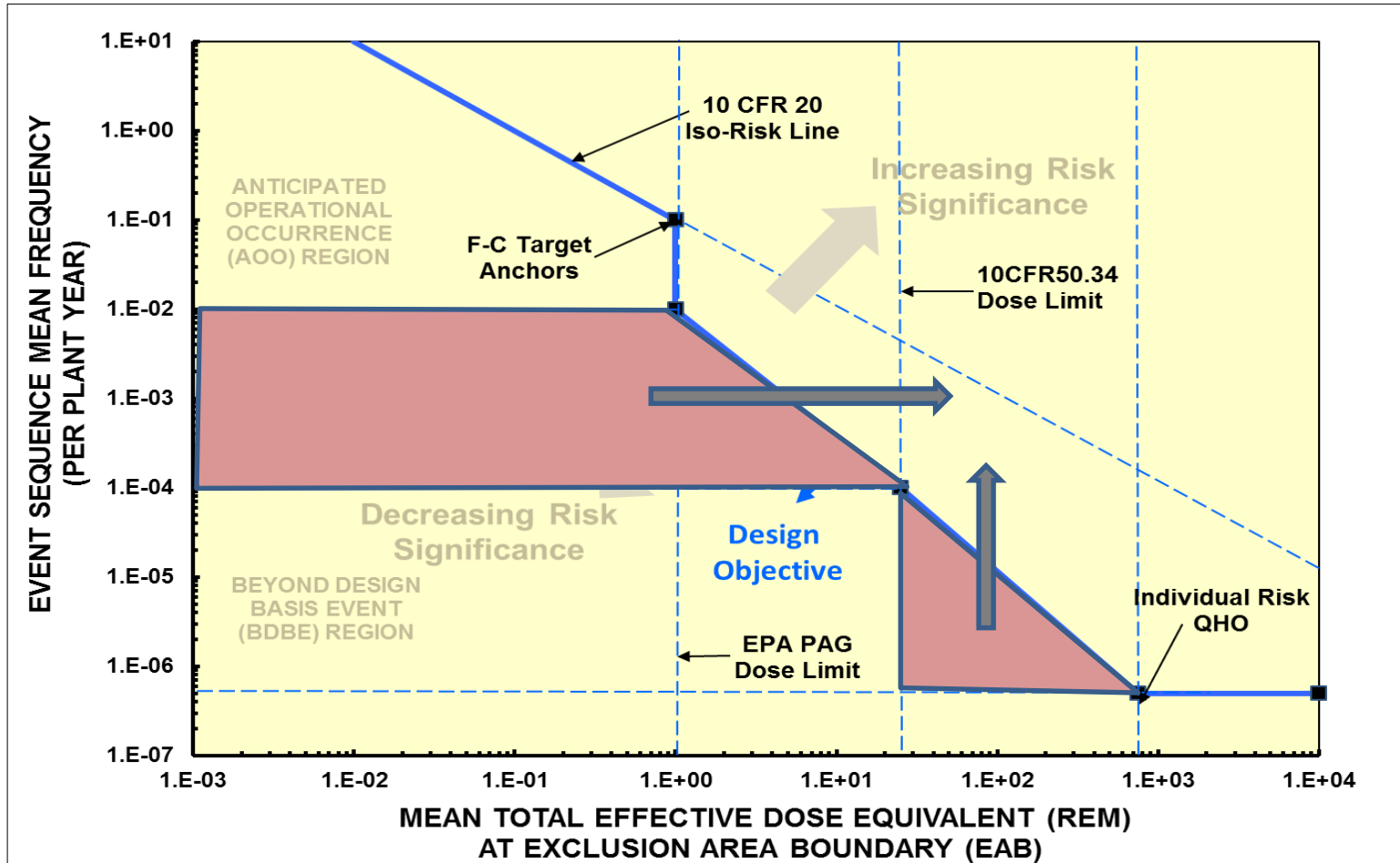
Discussion Topics

- Content needed regarding comparison/contrast to 10CFR50.69 and related processes (p 37)
- Content needed regarding conformity of SSC classification approach to RIPB principles (p 39)
- “Barrier design requirements” equivalent to or at least consistent with functional containment performance criteria ?
- Safety margins (p 43) – include engineering, reliability, and F-C targets (terminology vs existing use, usually related to engineering)

Discussion Topics

- Table 4-1 (p 45) – good summary but need some time to evaluate
- Adequacy of Defense in Depth (p 62) – Layer 4 does not necessarily require severe accident design features
- Accident sequence framework (p 66) similar to current activity NRC sponsoring at SNL (compare insights)
- Cliff edge (p 67) – do we need to describe in terms of loss of function when a hazard exceeds certain threshold
- Programmatic DID (p 70) – good summary but need some time to evaluate

Discussion Topics



Supporting Discussion of criteria for classification as safety related



Key Review Considerations

Safety-significance		Regulatory compliance		Novel design	Shared structures, systems, and components		Licensing approach	
Safety margin	Defense -in- depth	Operational programs		Impact on safety functions		Additional risk insights	Other considerations	

Review Tool



Output:

Scope and Depth of Review

- Provide supplemental approaches for implementation of NUREG-0800, Introduction - Part 2 and Design Specific Review Standard reviews
- Systematic thought process applicable to non-structure, system, or component and programmatic reviews

Discussion