


Regulatory Guidance for Applicants  
for New Nuclear Power Plant Designs  
Contained in Appendix A  
to Draft Regulatory Guide DG-1301  
(*Proposed New Regulatory Guide 1.226*)  
Flexible Mitigation Strategies for Beyond-  
Design-Basis Events

July 1, 2015



# Outline

- Status
- Overview of DG-1301 Appendix A
- Proposed Guidance
  - Coping durations and human actions
  - Phased approach
  - Protection from external hazards
  - Supplemental AC
  - Shutdown and refueling modes
- Summary

# Status

- DG-1301 is in a draft form, pending finalization of industry guidance
- Final draft guide to be completed and published in conjunction with MBDDBE Proposed Rule (SECY-15-0065)

# Overview



- DG-1301 Appendix A builds on DG-1301 and provides positions for applicants for new nuclear power plant designs to satisfy proposed regulations under 10 CFR 50.155(d), “Design Features”

# Coping Durations and Human Actions

- *Enhance coping durations*
  - The design features should increase the amount of time that safety functions can be maintained before the transition from the permanently installed equipment to portable equipment
- *Minimize reliance on human actions*
  - The design features should either obviate or reduce, to the extent practical, the need for operator actions during the early phases of the event

# Phase 1

- Rely on installed equipment from 0 to 24 hours
- Capability to function throughout the external event
- Use modern design basis hazard analysis (e.g., flooding)
- Include a safety margin for site seismic hazard
- Credit for supplemental ac after 8 hours
- Minimal operator actions at limited and protected locations

# Phase 2 and 3

- Phase 2: Use of on-site portable equipment and consumables from 24 - 72 hours
- Plant equipment and their connections have the capability to function after the external event
- Phase 3: Use of off-site equipment after 72 hours

# Protection from External Hazards

- Phase 1
  - “Safety-related” criteria
  - Alternative seismic approach for installed equipment protection based on site specific hazard plus safety margin
  - Protected regardless of warning time
- Phase 2
  - Safety-related structure or designed for design-basis wind hazards; no option to credit building separation for tornado events



# Supplemental AC

- May be credited after 8 hours
- Permanently installed and normally disconnected from the bus
- Diverse and independent from the emergency ac source
- Supplemental ac source, distribution system, and loads qualified and protected to Phase 1 standards
- Minimally dependent on auxiliary systems

# Shutdown and Refueling Modes

- Mitigating strategies for shutdown and refueling modes should be addressed at the design stage
- Positions outlined in the DG-1301 Appendix A apply to all modes, including shutdown and refueling modes

# Summary

- DG-1301 Appendix A provides positions to satisfy the proposed rule requiring design features sufficient to “...enhance coping durations and minimize reliance on human actions...”
- DG 1301 Appendix A endorses the three-phase approach discussed in NEI 12-06, with clarifications
- Enhancing phase 1 is the focus for new reactor designs