PART 60 SUBSYSTEM PERFORMANCE OBJECTIVES

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HLW REGULATION CIRCA 1978

Basic Philosophy: Regs Should Match Rep. Design

- Reprocessing Wastes - 1,000 Year Problem
- No Waste Package Containment
- Glass Waste Form Being Questioned
- Site to Provide Waste Isolation

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REVISED NRC STAFF VIEWS CIRCA 1979

Basic Philosophy: Design Should Meet Reg. Objectives
Staff Goal: Three-Way Redundancy

- 1,000 Year Containment By Canisters
- 1,000 Year Containment By Repository
- 1,000 Year Containment By Site

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1980 ANPR

No Reprocessing -- 10,000 + Year Problem

Philosophy: Multiple Barriers with Min. Perf. Req.

- 1,000 Year Containment By Canisters
- 1,000 Year Containment By Underground Facility
- 1/100,000 Annual Release Rate After 1,000 Years
- 1,000 Year Radionuclide Travel Time
- No Correlation With EPA Standards

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1981 PROPOSED RULE

Philosophy: Continued Multiple Barrier Requirement

- 1,000 Year Waste Package Containment
- 1/100,000 Annual Release Rate After 1,000 Years
- 1,000 Year Pre-Emplacement Groundwater Travel Time From Disturbed Zone to Environment
- No Correlation With EPA Standards

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1983 FINAL RULE

Philosophy: Multiple Barriers, But Explicit Provision for "Trade-Offs" Among Barriers

- 300-1,000 Year Waste Package Containment
- 1/100,000 Annual Release Rate After Containment
- 1,000 year Pre-Emplacement Groundwater Travel Time From Disturbed Zone to Environment
- Approval or Specification of Alternatives
- NUREG-0804 Shows More Likely to Meet EPA Standards, But Objectives Neither Necessary Nor Sufficient to Ensure Compliance

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CURRENT STATUS

Continued Criticism By DOE and Technical Community
Reasons:

- Basic Regulatory Philosophy: Many Prefer "Overall Systems" Approach

- Specific Wording of Performance Objectives

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FUTURE EFFORTS

Continue Work to Improve Wording

- Substantially Complete Containment
- Pre-Emplacement Groundwater Travel Time
- Flexibility Provision

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FUTURE EFFORTS (CONTINUED)

Continue With Iterative Performance Assessments

- Develop the Capability to Evaluate Both Individual Barrier and Overall System Performance

- Exercise the Capability for Yucca Mountain

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FUTURE EFFORTS (CONTINUED)

"Conforming Amendments"

- Adopt Applicable Parts of EPA Standards

- Reevaluate Relationship Between EPA Standards and Subsystem Performance Objectives

  -- EPA's Release Limits Have Increased
  -- New Ind. and Groundwater Protection Requirements
  -- Other Changes May Occur, e.g., C-14 Limits

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