

# INTRODUCTION/RELATIONSHIP OF TOTAL-SYSTEM PERFORMANCE ASSESSMENT KTI TO PROCESS KTIS

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DOE/NRC TECHNICAL EXCHANGE ON TOTAL-SYSTEM PERFORMANCE  
ASSESSMENTS (TSPA) FOR YUCCA MOUNTAIN

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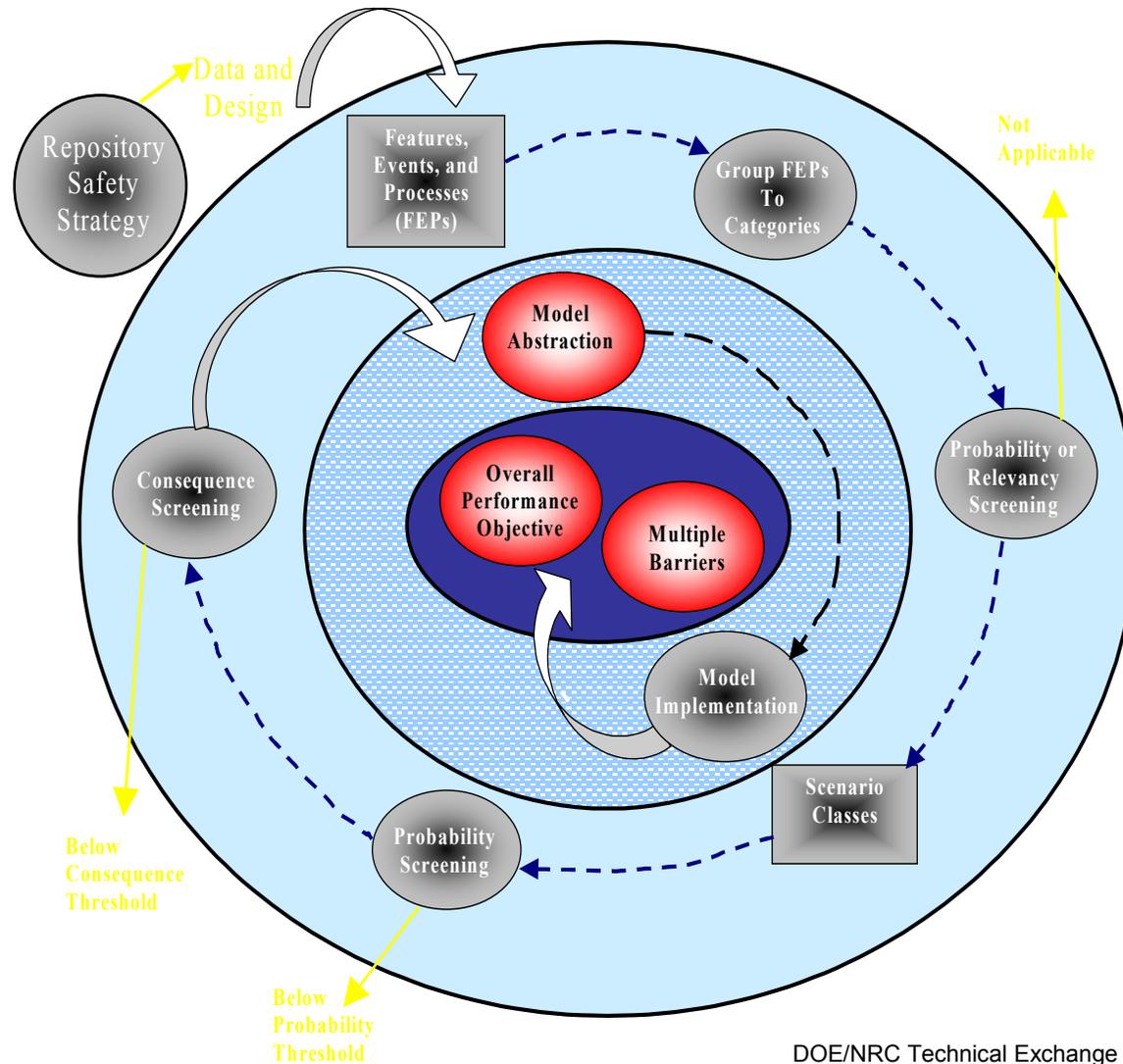
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# STATUS OF TSPAI SUBISSUES

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1. System Description and Demonstration of Multiple Barriers [OPEN]
2. Total System Performance Assessment Methodology: Scenario Analysis [OPEN]
3. Total System Performance Assessment Methodology: Model Abstraction [OPEN]
4. Demonstration of the Overall Performance Objective [OPEN]

# RELATIONSHIP OF DOE'S RSS TO TSPA SUBISSUES



# SCENARIO ANALYSIS

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## ■ SUBISSUE:

- ▶ Process of identifying possible processes and events that could affect repository performance and screening processes and events from further analysis

## ■ STATUS

- ▶ General agreement on methodology, but additional information is needed
- ▶ Every KTI will be involved in evaluating DOE's implementation of the scenario analysis methodology
  - ENFE KTI has provided feedback on DOE's implementation of FEPs related to the near-field environment

## ■ OUTLOOK

- ▶ Resolution of methodology issues expected over short-term
  - Provided DOE addresses remaining concerns
- ▶ Resolving implementation issues will be slower

# MODEL ABSTRACTION

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## ■ SUBISSUE:

- ▶ Need to integrate the relevant FEPs into the PA to ensure a comprehensive analysis of the total system

## ■ STATUS

- ▶ DOE needs to improve integration and coupling within the PA (compared to TSPA-VA)
- ▶ Process KTI subissues are partially resolved

## ■ OUTLOOK

- ▶ Remaining process KTI subissues need to be closed
- ▶ Integration issues need to be addressed
- ▶ Detailed discussions on information related to specific abstractions will be held during PMR Interactions

# SYSTEM DESCRIPTION/DEMONSTRATION OF MULTIPLE BARRIERS

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## ■ SUBISSUE:

- ▶ The documentation of the PA needs to be sufficiently transparent to allow an independent analysis of the results
- ▶ The capability of multiple barriers is documented and supported by analyses consistent with the PA

## ■ STATUS

- ▶ Transparency and traceability
  - PA process needs to be more transparent and traceable than TSPA-VA
  - Description and application of FEPs needs to be consistent
- ▶ Multiple barriers
  - DOE needs to demonstrate methodology for multiple barriers (expected in TSPA-SR)

# SYSTEM DESCRIPTION/DEMONSTRATION OF MULTIPLE BARRIERS (continued)

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## ■ OUTLOOK

- ▶ Progress expected on transparency and traceability through TSPA-SR development and documentation
- ▶ Acceptance criteria for demonstrating multiple barriers will be included in Rev. 3 of the TSPAI IRSR
  - Progress can be made on resolving multiple barriers subissue by LA
  - Limited progress possible on methodology before final 10 CFR Part 63

# OVERALL PERFORMANCE OBJECTIVE

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## ■ SUBISSUE:

- ▶ The use of the PA model to calculate the overall performance objective

## ■ STATUS

- ▶ DOE needs to implement and document PA for the current design and 10 CFR Part 63 performance objective
- ▶ Acceptance criteria for using the PA to calculate the overall performance objective will be included in Rev. 3 of the TSPA/IRSR
  - Progress can be made on resolving overall performance objective subissue by LA

# OVERVIEW

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## ■ Objectives

- ▶ Make progress on resolving all TSPA subissues
  - Scenario analysis (methodology) is closest to being resolved
  - Transparency and traceability issues can be resolved
  - Progress on model abstraction will occur through TSPA and PMR discussions
  - Progress towards resolving multiple barriers and overall performance objective subissues can be made using TSPA-SR
- ▶ NRC is continuing to review supporting documentation and will review TSPA-SR
  - Commitments made by DOE can lead to progress on issues