U.S. DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

NUCLEAR WASTE TECHNICAL REVIEW BOARD
FULL BOARD MEETING

SUBJECT: DECIDING WHEN ENOUGH IS ENOUGH

PRESENTER: DR. J. RUSSELL DYER

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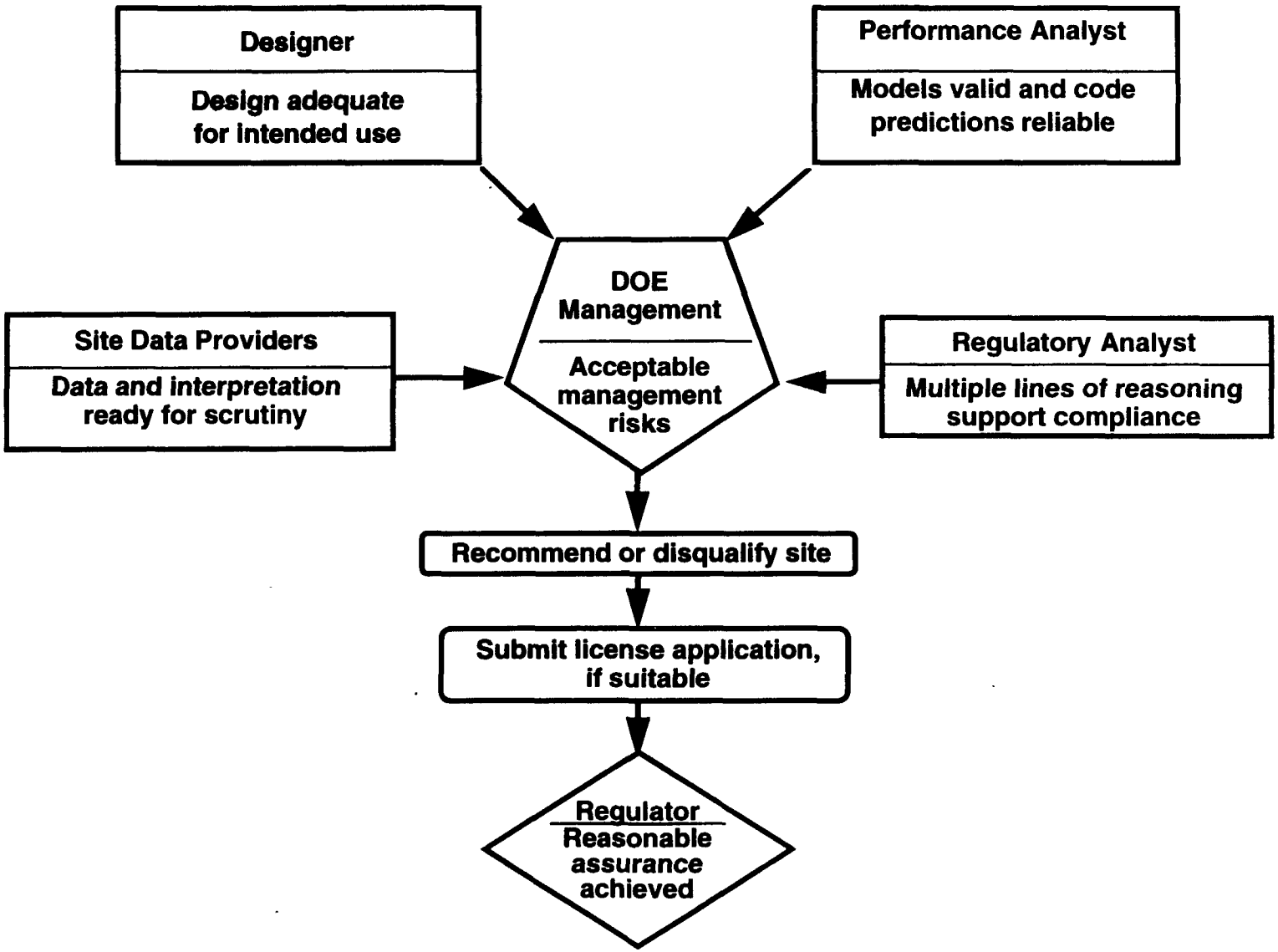
RENO, NEVADA
APRIL 21-22, 1993

Overview

- Who decides and on what basis?
- What are the questions?
- How are decisions made?
- When are decisions made?

Who Decides and on What Basis?



4DWHRDPT.125.NWTRB/4-21-93

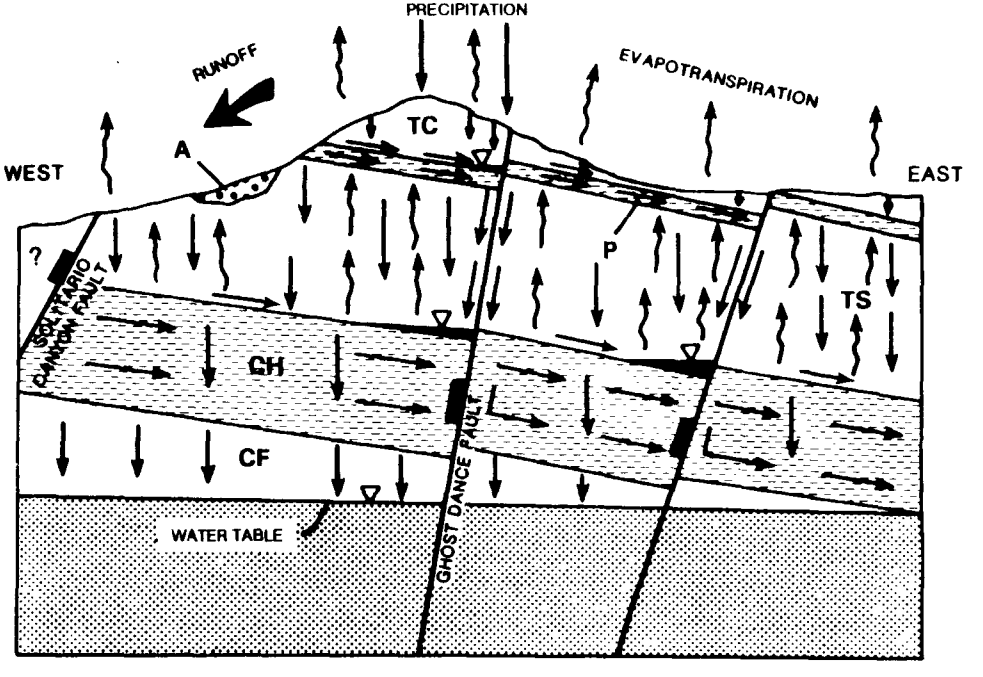
Who Decides and on What Basis?

- **Providers of Site Data:** data and interpretation ready for scrutiny by others
- **Designer:** design is adequate for intended purpose
- **Performance Analyst:** validity of models adequate and code predictions reliable for use in predicting performance
- **Regulatory Analyst:** multiple lines of reasoning provide basis for demonstrating compliance
- **DOE:** management risks acceptable to proceed
- **Regulator:** reasonable assurance has been achieved

What are the Questions?

Providers of Site Data

- What means are available to understand current site conditions and processes?
- How can the potential for changes in site conditions and processes be established?
- How will I ensure I have representative data?



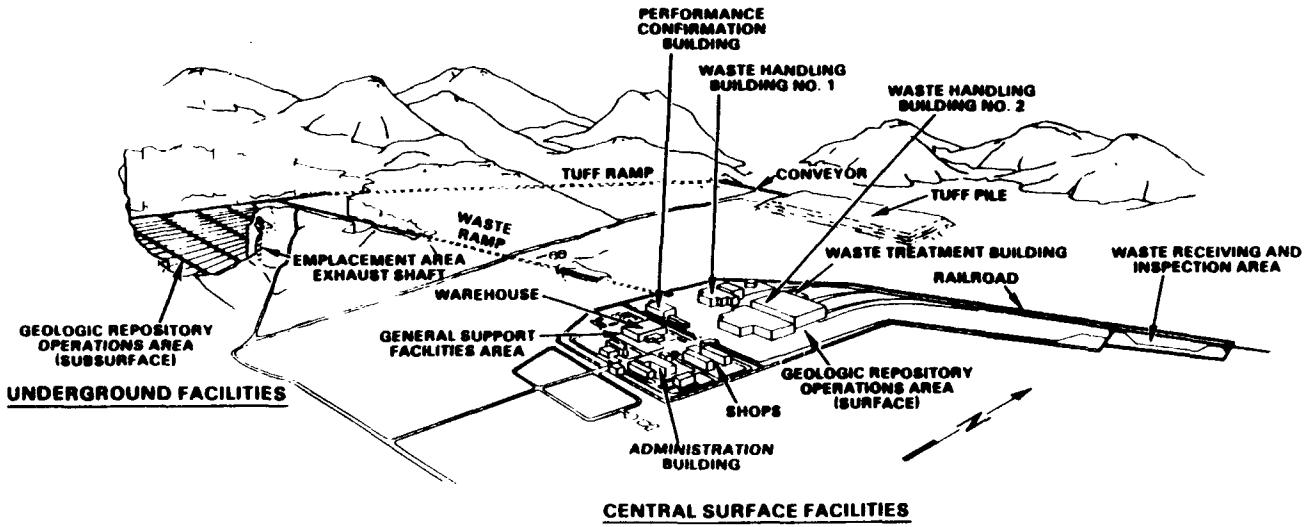
What are the Questions?

(Continued)

Designer

- Are data adequate to support design?
- Is the design constructable?
- Is the design sufficiently optimized?
- Is there sufficient design safety margin?

Preliminary Drawing of Repository Complex



What are the Questions?

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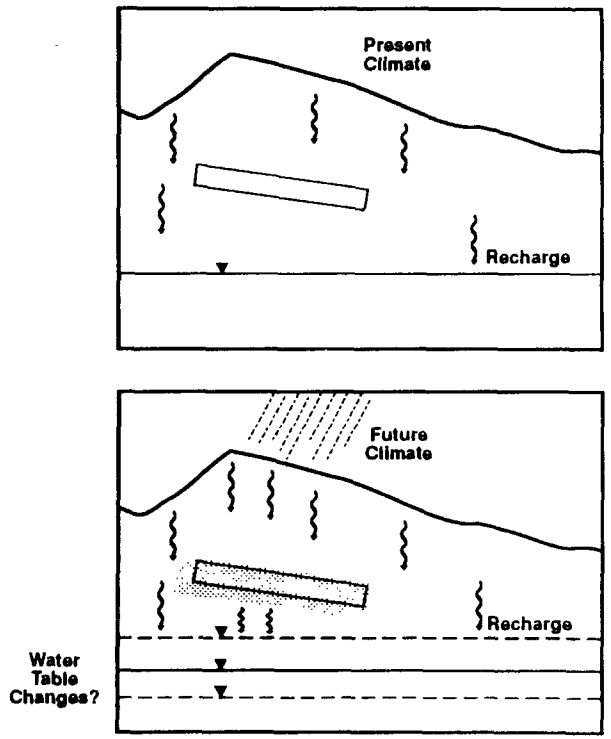
Performance Analyst

- Are models valid for their intended use?
- Do plausible alternative models exist?
- Do alternative models produce significantly different results?
- Are codes verified?

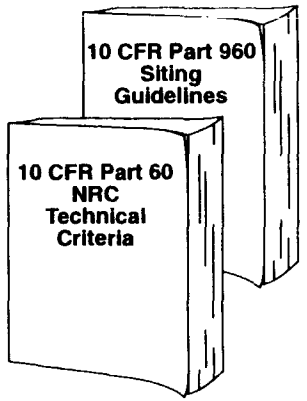


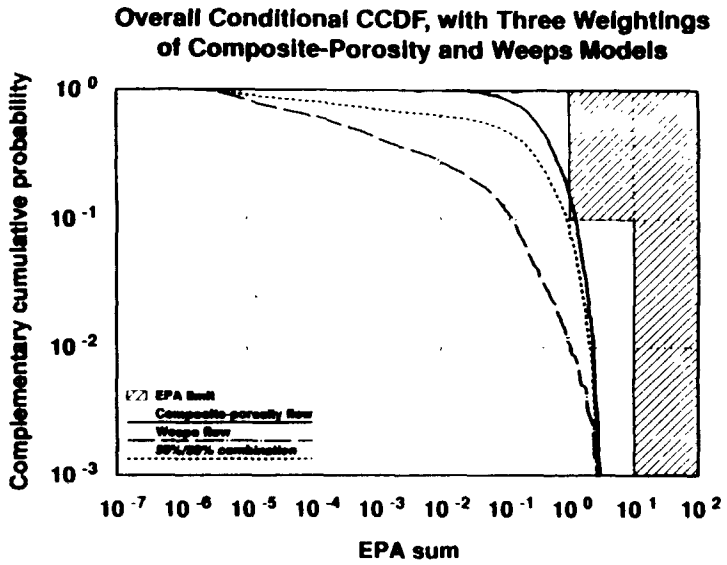
What are the Questions?

(Continued)

Regulatory Analyst

- What regulatory questions need to be answered?
- Does consensus exist about the preferred site model/models?
- Do alternative models produce significant differences in results?
- Do predictions meet regulatory criteria?
- Are there multiple lines of evidence supporting compliance?





What are the Questions?

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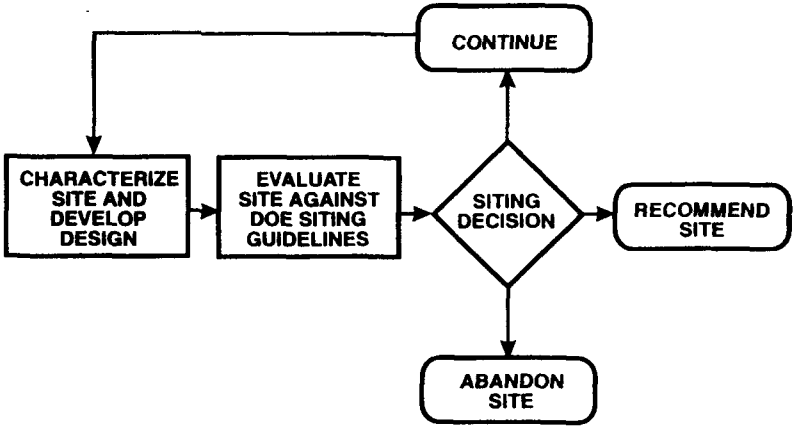
DOE

Is performance appropriately allocated among system elements?

What is value of obtaining additional site data vs. cost?

What is cost/benefit of additional performance assessment?

How strong is the case for compliance?



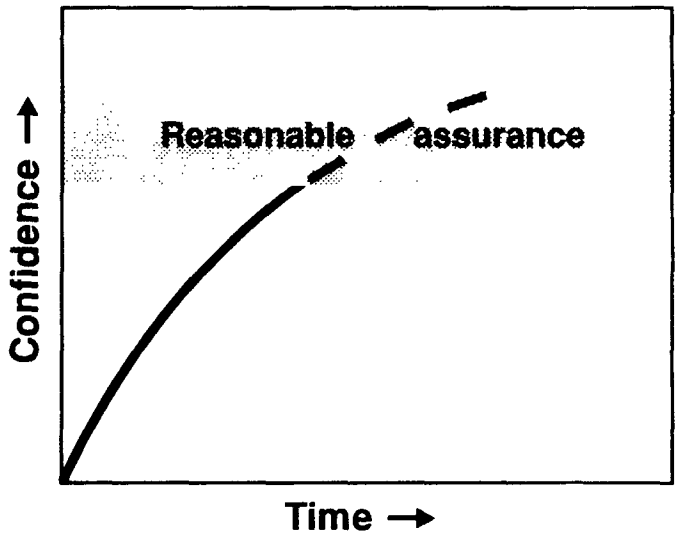
What are the Questions?

(Continued)

Regulator

Must determine:

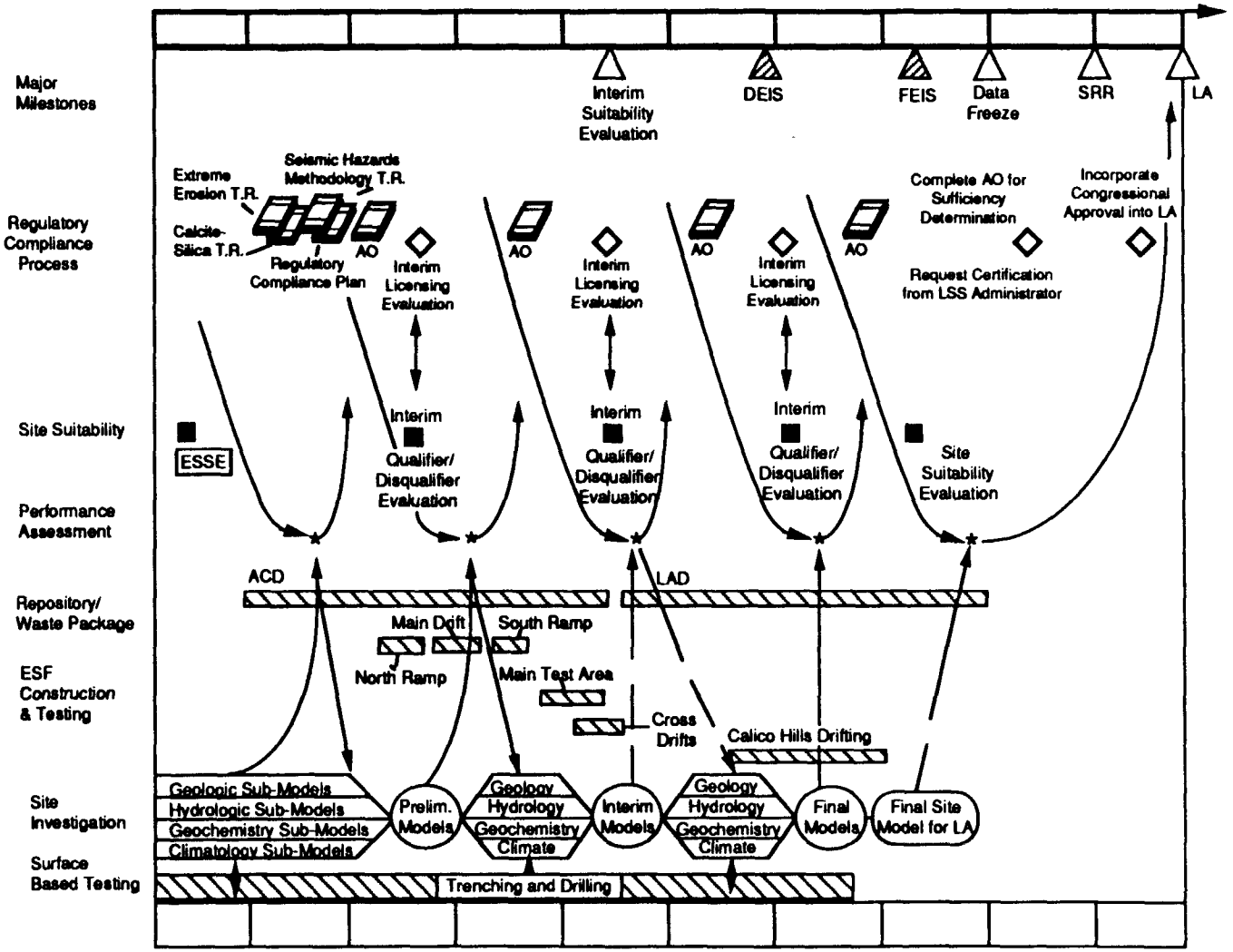
"...there is reasonable assurance that ...radioactive materials can be received, possessed, and disposed of in a geologic repository operations area...without unreasonable risk to the health and safety of the public..." [60.31(a)]



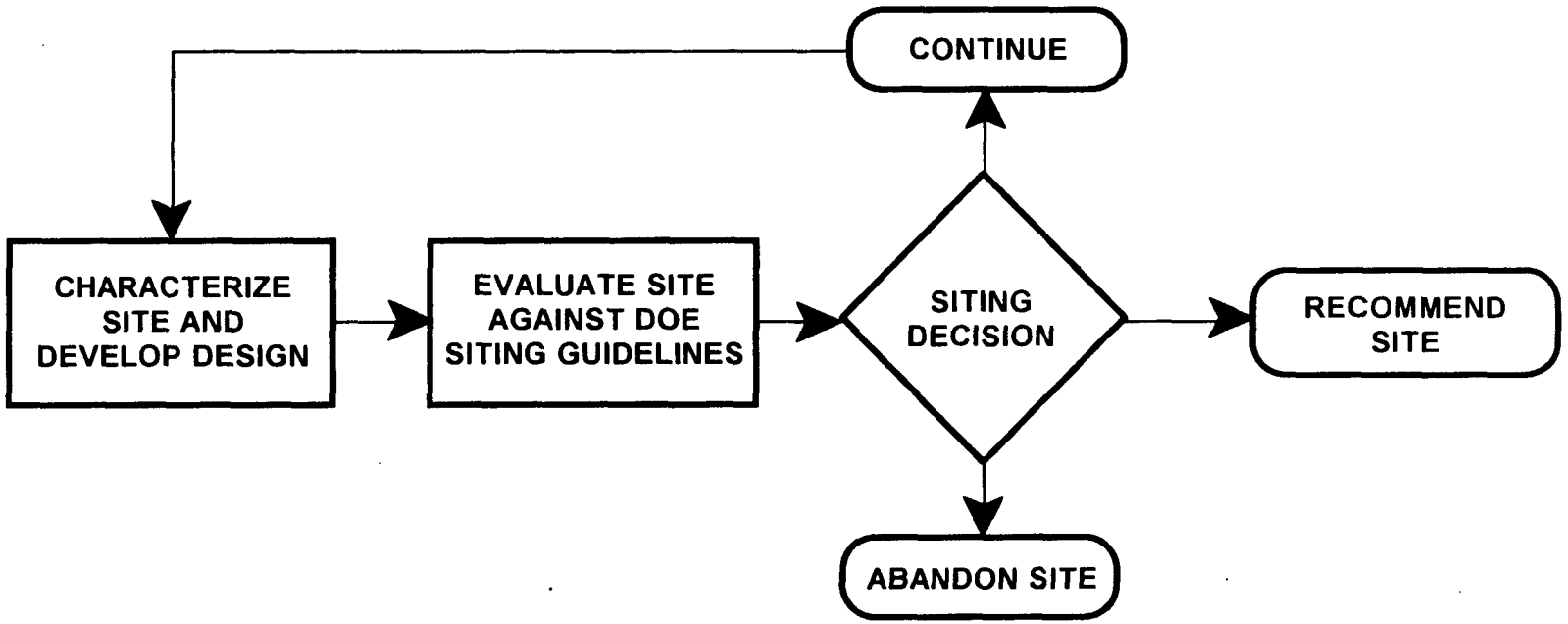
What Tools can Assist Decision-Making?

●Providers of Site Data:	Scientific method, expert judgment, peer review
●Designer:	Applicable design codes, safety factor evaluations
●Performance Analyst:	Sensitivity and uncertainty analysis, expert judgment
●Regulatory Analyst:	Applicable precedent, weight of multiple lines of evidence
●DOE:	Formal peer reviews, expert judgment, feedback from oversight groups and regulator, decision analysis
●Regulator:	Weight of evidence, expert judgment, independent evaluations

DOE Perspective
When are Decisions Made?



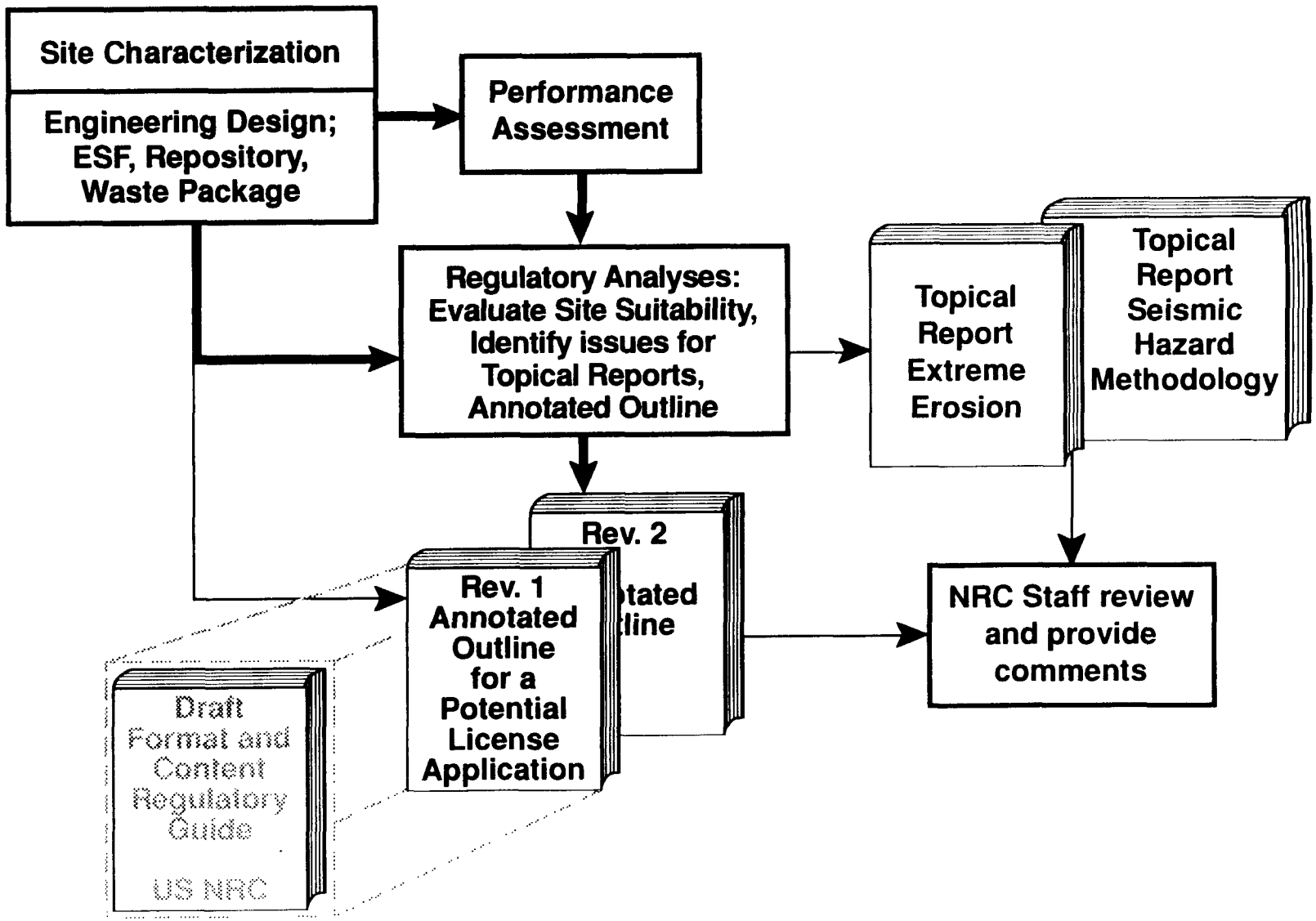
An Iterative Process is Used for Evaluating Site Suitability



Suitability Decisions

- **Early Site Suitability Evaluation recommended Ground-Water Travel Time as an area requiring more study before a suitability decision could be made**
- **DOE decision--allocate resources to ensure that high-priority surface-based and underground geohydrologic tests are accomplished and data evaluated in a timely manner**

Current Issue Resolution Process



Issue Resolution Process

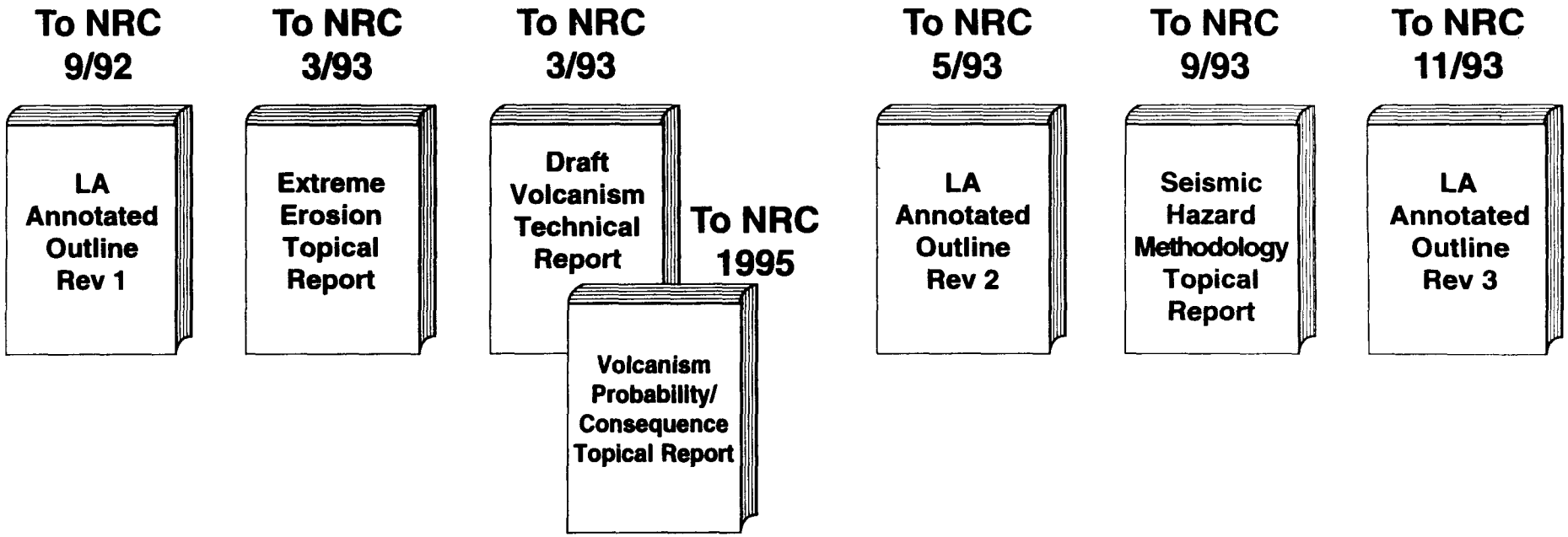
- From suite of potential issues, identify candidates for early resolution
  - site conditions and processes understood
  - consequences for performance documented and acceptable
  - evidence supporting compliance adequate to proceed

For each issue:

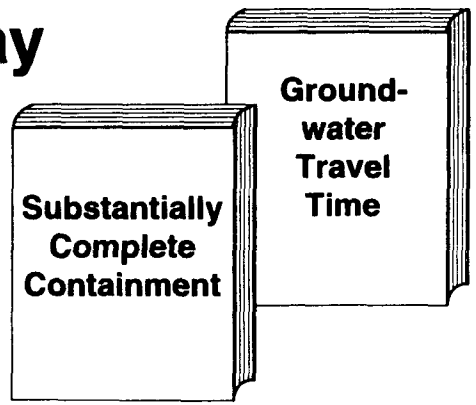
Determine if Topical Reports or other actions (e.g., rulemaking) are necessary

Prepare Topical Reports as needed and include information in Annotated Outline

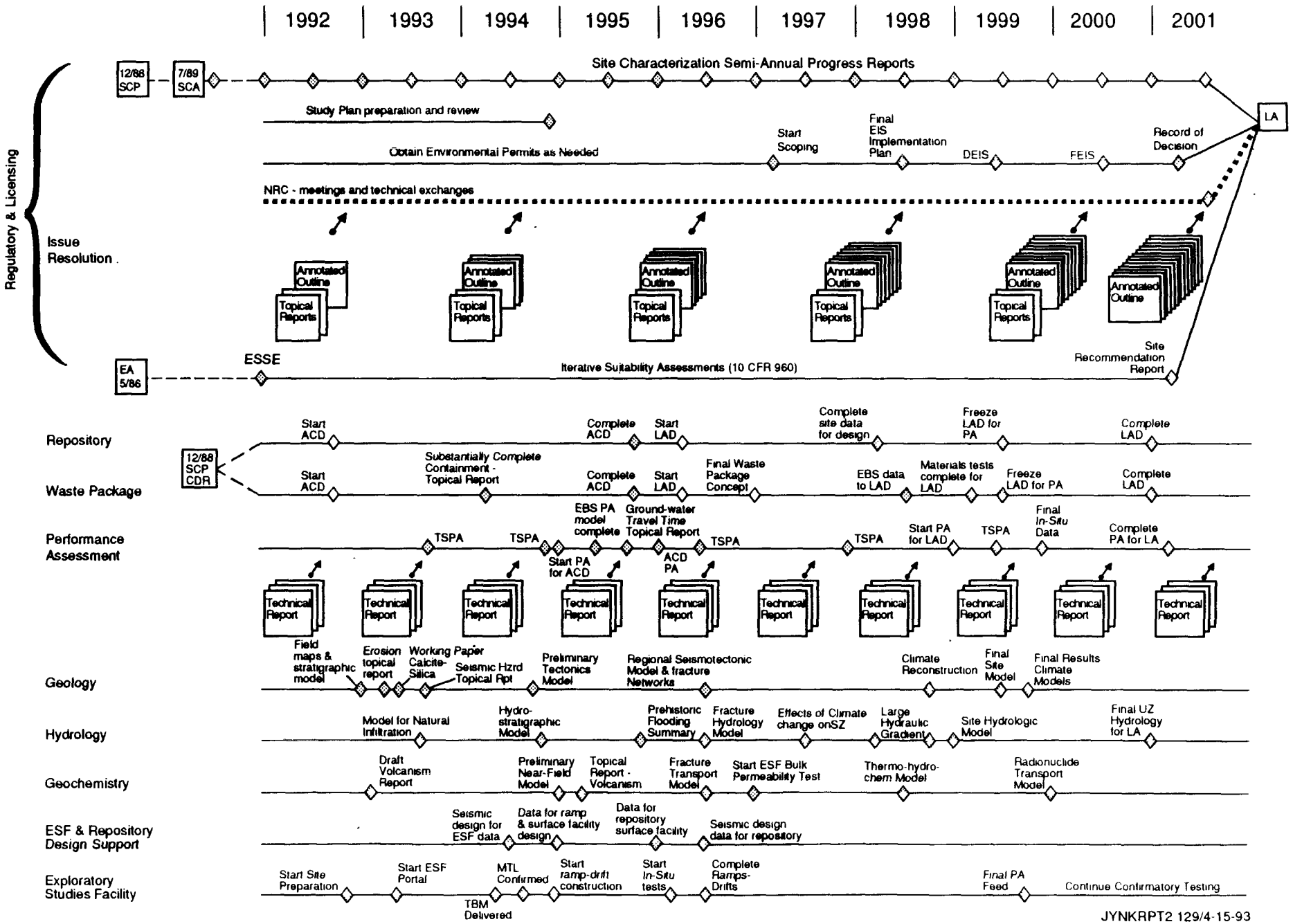
Ongoing Issue Resolution Initiative



Other Actions Underway



Site Characterization Phase of Mined Geologic Disposal System Program



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