Yucca Mountain Integrated Project Mission

The Project

Regulatory Mission - Suitability, NEPA, Licensing

Performance Assessment

Site Characterization

Design and Construction

Models & Sensitivities

Requirements & Constraints

Data & Requirements

Congress
Regulators
Oversight
Program

External
YUCCA MOUNTAIN
INTEGRATED
PROJECT MISSION

THE PROJECT

REGULATORY MISSION
Suitability, NEPA, Licensing

PERFORMANCE ASSESSMENT

SITE CHARACTERIZATION

DESIGN and CONSTRUCTION

EXTERNAL INTERFACES

Congress
Regulators
Oversight
Program

INTERFACES

INTERFACES

INTERFACES
Implementation is Accomplished Through the Baseline Control Process

LEVEL 1
Program Baseline Change Control Board

LEVEL 2
YMSCO Project Office Baseline Change Control Board

LEVEL 3
Contractor Baseline Control Boards
Items Controlled by the Project Change Control Board

- The Technical Baseline is controlled by the Project Change Control Board and contains
  - Technical requirements for design
  - Technical requirements for site characterization
  - Design specifications
  - Design configurations
  - Controlled reference information*
  - Interfaces and interface drawings

* Controlled not baselined
Why Do We Use A Technical Baseline Approach?

- Requirements and reference information must be documented and/or controlled in the technical baseline to ensure
  - All participants use the same information in the development of the entire system
  - All changes to the baseline are evaluated and controlled by a uniform process
  - All changes and impacts of changes are traceable
Systems Engineering Activities/Products Influence Integration

- Systems products are developed using the Integrated Product Team (IPT) philosophy.

- System studies provide a clear example of integrated products.
Integration Through System Studies

Significant Issue for Study

Structured Interactions

IPT Member -- IPT Member -- IPT Member -- IPT Member:

Technical Basis for Decision

STUDY

REPORT

INTERACTIONS

Structured Interactions

Informal Interactions
External
SIGNIFICANT ISSUES

Congress
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PERFORMANCE ASSESSMENT

SIGNIFICANT ISSUES

SITE CHARACTERIZATION

SIGNIFICANT ISSUES

DESIGN and CONSTRUCTION

SIGNIFICANT ISSUES
Significant System Studies Examples

• FY93
  – Issue
    » Thermal loading of repository
  – Key Customers
    » Design/Performance Assessment/Site Characterization
  – Recommendations
    » Keep thermal load below 100 MTU/acre; maintain SCP thermal goals
  – Program Implementation
    » Preferred loading 80-100 MTU/acre; thermal goals maintained

• FY94
  – Issue
    » Length of retrievability period
  – Key Customers
    » Design/Performance Assessment /Performance Confirmation
  – Recommendations
    » 50 years is sufficient, up to 100 years can be achieved cost effectively
  – Program Implementation
    » Adopted 100-year retrievability period
Significant System Studies Examples

(Continued)

- **FY95**
  - **Issue**
    » Necessary characterization of Calico Hills unit
  - **Key Customers**
    » Site Characterization/Design/Performance Assessment
  - **Recommendations**
    » Satisfaction of most potential performance standards (long-term or short-term cumulative release) has little dependence on CHn unit
    » If greater understanding and confidence in CHn desired, then borehole and minimal drifting required
  - **Program Implementation**
    » CHn exploration postponed
  - **Issue**
    » Feasible Nevada transportation
  - **Key Customers**
    » Design/Regulatory (NEPA)
  - **Recommendations**
    » Identified four rail corridors, showed feasibility of heavy haul
  - **Program implementation**
    » Rail corridors and heavy haul options utilized in Repository EIS scoping hearings
Significant System Studies Examples
(Continued)

• FY96
  - Issue
    » Engineered barrier performance requirements - backfill?
  - Key Customers
    » Design/Performance Assessment
  - Recommendations
    » In progress
  - Program Implementation
    » To be determined; due 8-30-96
  - Issue
    » Performance confirmation program definition/requirements
  - Key Customers
    » Design/Regulatory/Performance Assessment
  - Recommendations
    » In progress
  - Program Implementation
    » To be determined; due 8-30-96
Significant System Studies Examples (Continued)

- **FY96** (continued)
  - **Issue**
    » Thermal loading alternatives
  - **Key Customers**
    » Design/Performance Assessment/Site Characterization
  - **Recommendations**
    » In progress
  - **Program Implementation**
    » To be determined; due 8-30-96
Additional Information
Regulatory - Performance Assessment Interfaces

- Project Integrated Safety Assessment (PISA)
- Input to Site Recommendation Report
- Compliance Arguments
- Total System Performance Assessment (TSPA)
- Input to NEPA Process
Regulatory - Site Characterization Interfaces

- Project Integrated Safety Assessment
- Reference Information Base (RIB)
- Environmental Data
- Performance Requirements
- Technical Requirements Documents
Regulatory - Design Interfaces

- Technical Requirements Documents
- Project Integrated Safety Assessment
- Radiological Safety Analyses
- Determination of Importance Evaluations
- MGDS Design Products
- Sufficiency of Design Detail for Licensing
Site Characterization - Design Interfaces

- Reference Information Base (RIB)
- DIE Constraints
- Project Integrated Safety Assessment
- MGDS Design Products
- Technical Database
- Technical Requirements Documents
Performance Assessment - Site Characterization Interfaces

- Process Models
- Reference Information Base
- Feedback for Confirmation Testing
- Technical Database
- Sensitivity Studies
- Total System Performance Assessment
Performance Assessment - Design Interfaces

- MGDS Design Products
- Process Models
- Total System Performance Assessment
- Sensitivity Studies
- Technical Requirements Documents