

**U. S. Department of Energy  
Office of Civilian Radioactive Waste Management**

## **Overview of Systems Activities**

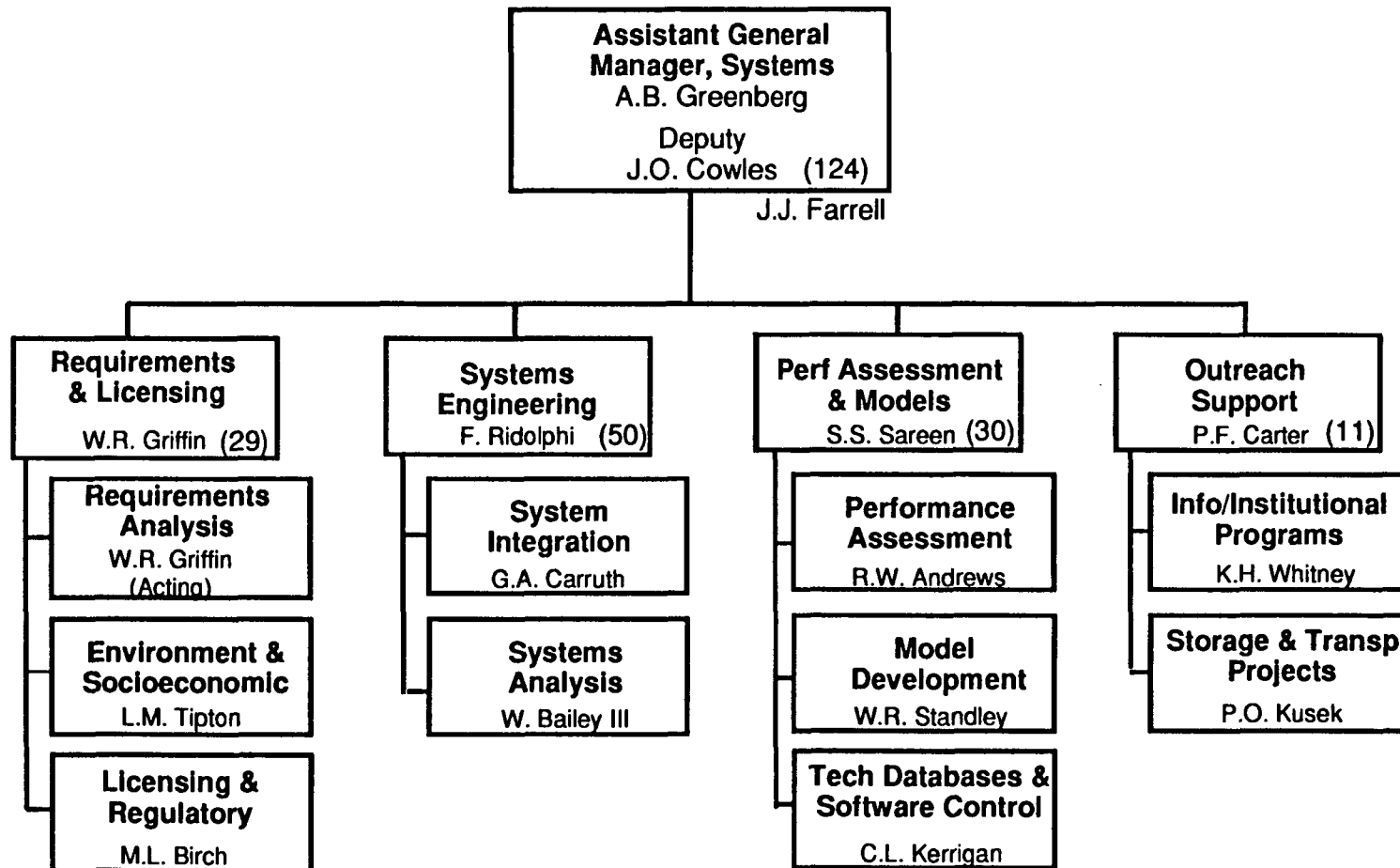
**Arthur B. Greenberg  
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M&O/R&D Associates  
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July 7, 1992

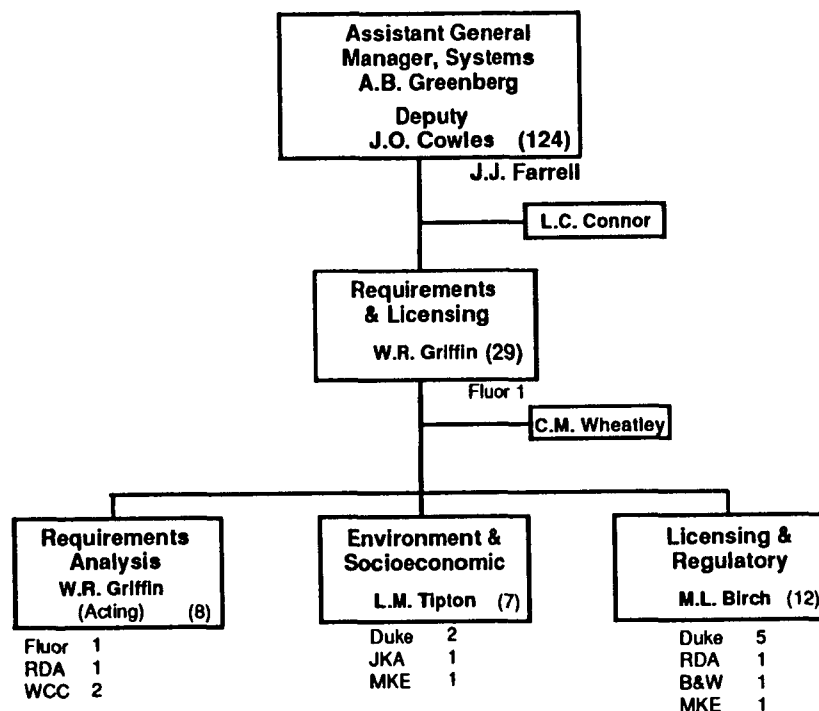
# **Role of Systems Organization**

- **Establish program management and engineering procedures**
- **Define and maintain program requirements, technical baselines and interfaces**
- **Identify, interpret and communicate program change requirements**
- **Confirm compliance of program activities with regulatory requirements**
- **Manage development of license applications**
- **Support external communications of project activities**

# Systems Organization



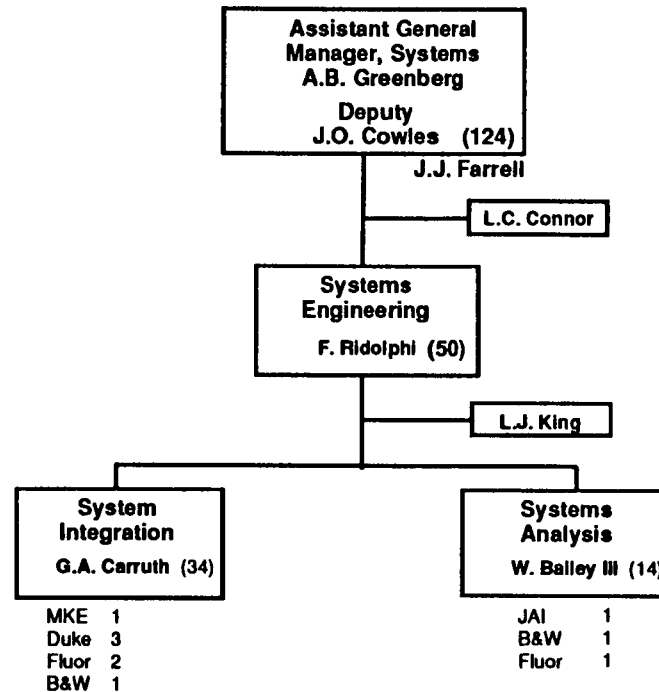
# Requirements and Licensing



- **Functions**

- Identify and interpret regulatory requirements
- Manage preparation of license applications
- Support interagency activities
- Manage Issue Resolution activities
- Provide technical support on environmental and socioeconomic programs

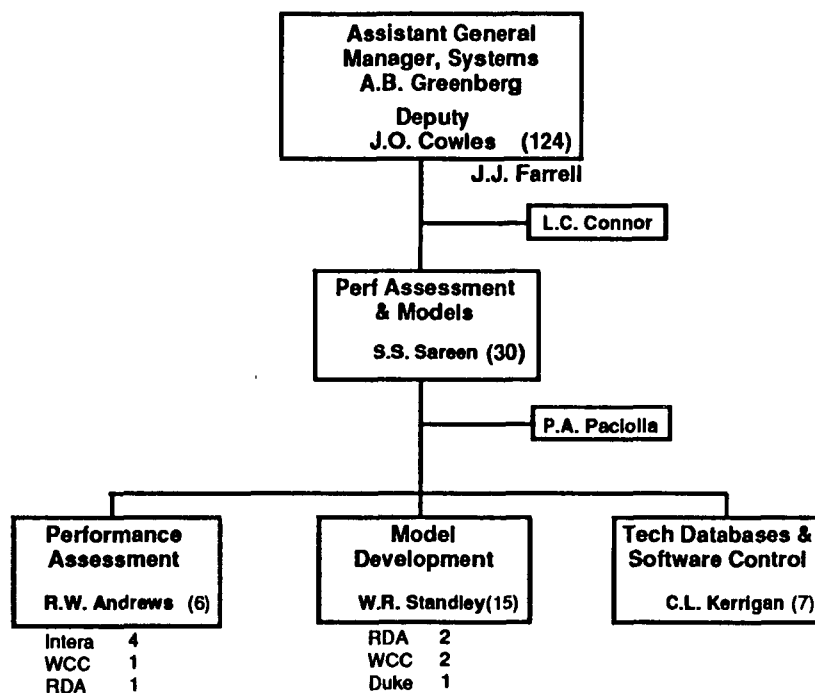
# Systems Engineering



- **Functions**

- Define and implement Management System Improvements
- Establish Program Management and Engineering Procedures (Program Management System Plan, Systems Engineering Management Plan, Baseline Management Plan)
- Define Systems Engineering QA procedures
- Establish System Requirements, Baselines and Interfaces
- Support Baseline Management
- Perform system level studies to define system requirements, evaluate alternative system concepts, and develop technical baselines

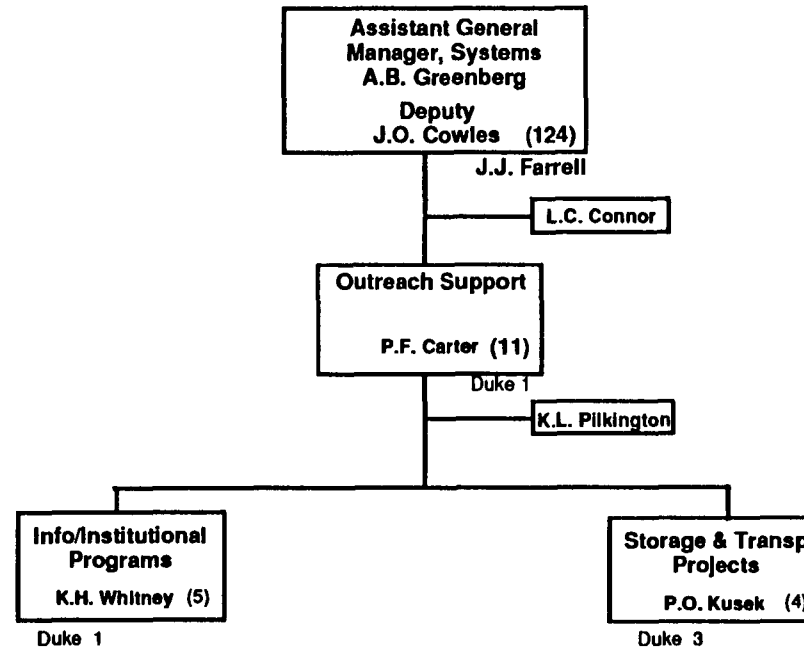
# Performance Assessment and Models



- **Functions**

- Acquire or develop models required for Systems Engineering, Transportation and MRS Design activities
- Evaluate and manage development of Performance Assessment models
- Support development and maintain related databases
- Establish procedures to verify, validate, document, and control models and databases

# Outreach Support



- **Functions**

- Identify and address program communication needs
- Develop public information programs and materials
- Support communications with interested or affected parties

# Requirements and Licensing

## Significant Accomplishments, FY'92

- **Initiated License Application Annotated Outline (AO) preparation**
  - First AOs for MGDS and MRS completed and submitted to NRC
- **Issue Resolution process defined and initiated**
  - Resolution plans and schedules developed
  - First issue (erosion) presented to NRC
- **Supported RW/EPA interactions on repromulgation of 40CFR191**
  - Management, execution and integration of RW tasks accomplished
- **Regulatory requirements assembled for inclusion into Automated Requirements Management System (ARMS)**
- **Preparations completed for MRS Environmental Assessment(s)**



# Requirements and Licensing (Cont'd)

## Major Tasks, FY92/93

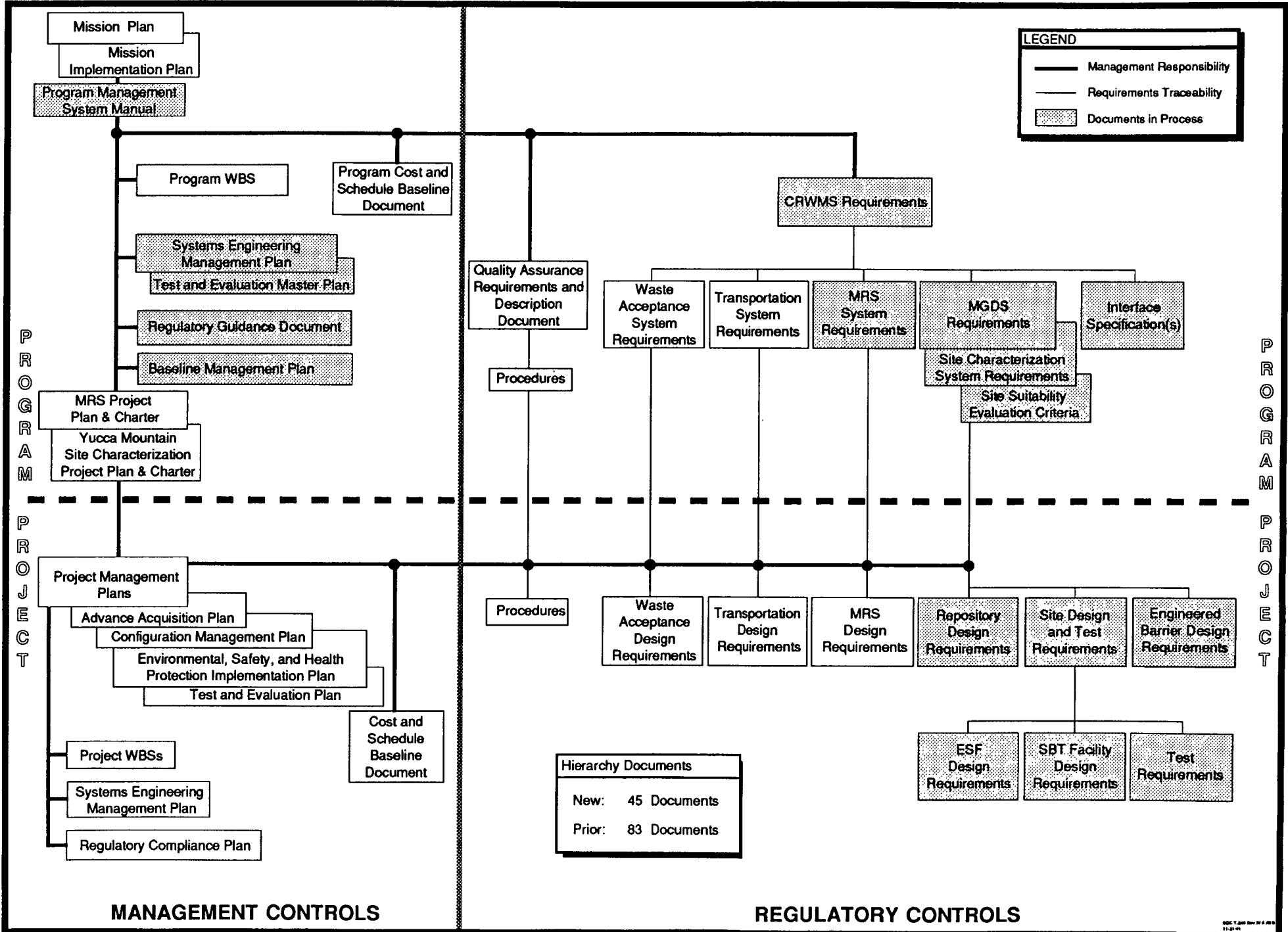
- **Produce semi-annual updates of License Application Annotated Outlines for MRS and MGDS**
- **Focus and manage Issue Resolution activities to:**
  - Obtain effective pre-licensing consultation with NRC staff
  - Provide guidance for convergence of site characterization activities
- **Develop and implement Safeguards and Security policy and guidance**
- **Prepare Environmental Assessment(s) for MRS siting**
- **Ensure compliance of project activities with regulatory requirements**

# **Systems Engineering**

## **Significant Accomplishments, FY'92**

- **Completed and currently implementating the Management System Improvement Strategy**
- **Supported management system definition by DOE Document Hierarchy Task Force**
  - Streamlined the management system
  - Clarified program/project interfaces
- **System engineering QA procedures (13) written; approved by DOE**
- **Technical Baseline restructured to a specifications format**
- **System Engineering Management Plan completed**
- **Baseline Management Plan completed; Configuration Management System defined, installed and operational**
- **Management and regulatory documents in preparation**
- **M&O utilizing program-wide staff involvement to ensure integration of program and project activities**

# CRWMS DOCUMENT HIERARCHY



# Systems Engineering (Cont'd)

## Significant Accomplishments, FY'92 (Cont'd)

- **System-level studies initiated in FY'91; continued in FY'92**
- **Studies designed to examine system issues and emerging decision requirements**
  - Throughput Rate
  - Alternative Cask/Canister concepts
  - Waste Handlings
  - Thermal Management Scenarios
- **Special Task Force established to**
  - Define a long-term systematic studies program
  - Develop a Reference System Description

# **Systems Engineering (Cont'd)**

## **Major Tasks, FY92/93**

- **Complete the system and system element requirements documents**
- **Develop Interface Control Documents**
- **Implement configuration management program**
- **Implement system safety program**
- **Implement human factors engineering program**
- **Implement risk management program**
- **Complete the reference system description and studies roadmap**
- **Continue system studies program**

# Performance Assessment and Models

## Significant Accomplishments, FY'92

- **Existing models evaluated for support of systems engineering and studies**
  - New (or adapted) models in development
- **Performance Assessment research program reviewed**
  - PA model developments evaluated
  - Redirections recommended to DOE
  - PA management support transitioned; assigned to M&O/Las Vegas
- **Technical databases surveyed and evaluated**
  - Integrated Technical Database architecture developed
  - Transition plan developed for ORNL Characteristics Database (CDB)
- **QA procedures established for software and database management and control**

# **Performance Assessment and Models (Cont'd)**

## **Major Tasks, FY92/93**

- **Support DOE direction of PA program**
- **Complete development of Total System Model**
- **Provide MRS simulation support of SAR design**
- **Develop and implement Integrated Technical Database**
- **Transition the Characteristics Database**

# Outreach

## Significant Accomplishments, FY'92

- **Supported MRS Siting Process**
  - Preparation and distribution of public information materials
  - Compilation of demographic and geographic attributes of candidate sites
  - Transportation cask and fuel assembly exhibits
  - Nuclear station and spent fuel storage facility tours
  
- **Institutional Awareness Programs developed and presented on Native American issues**
  
- **Support provided to Transportation Outreach**
  - Transportation exhibits
  - OCRWM bulletin articles
  - Communications between federal agencies and interested or affected parties



# **Outreach (Cont'd)**

## **Major Tasks, FY92/93**

- **Develop communications support plan for MRS public hearings**
- **Develop Outreach plan for EIS**
- **Begin Outreach Plan for MRS license support**
- **Continue to produce communications support materials**
- **Organize and staff transportation and MRS exhibits**