

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

**PRESENTATION TO
THE NUCLEAR WASTE TECHNICAL REVIEW BOARD**

**SUBJECT: OVERVIEW OF OCRWM
TRANSPORTATION PROGRAM**

PRESENTER: CHRISTOPHER A. KOUTS

**PRESENTER'S TITLE
AND ORGANIZATION: TRANSPORTATION BRANCH CHIEF
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U.S. DEPARTMENT OF ENERGY**

**PRESENTER'S
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TRANSPORTATION PROVISIONS OF THE NUCLEAR WASTE POLICY ACT

- **DOE RESPONSIBLE FOR TRANSPORT OF SPENT FUEL AND HIGH-LEVEL WASTE**
- **DOE TAKES TITLE AT REACTOR (SHIPPER OF RECORD)**
- **PRIVATE SECTOR TO BE USED TO “FULLEST EXTENT POSSIBLE”**
- **COSTS OF TRANSPORTATION TO BE COVERED BY WASTE FUND**

TRANSPORTATION PROVISIONS OF THE NUCLEAR WASTE POLICY AMENDMENTS ACT OF 1987

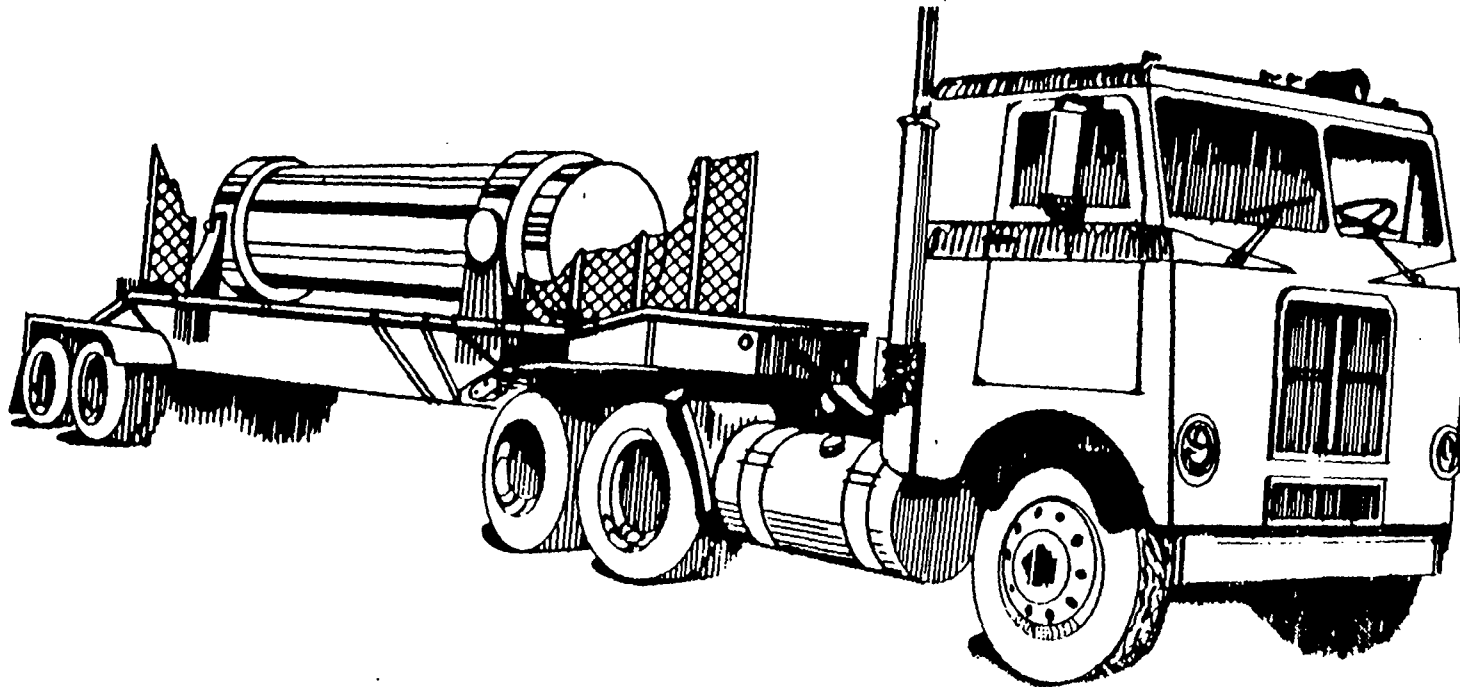
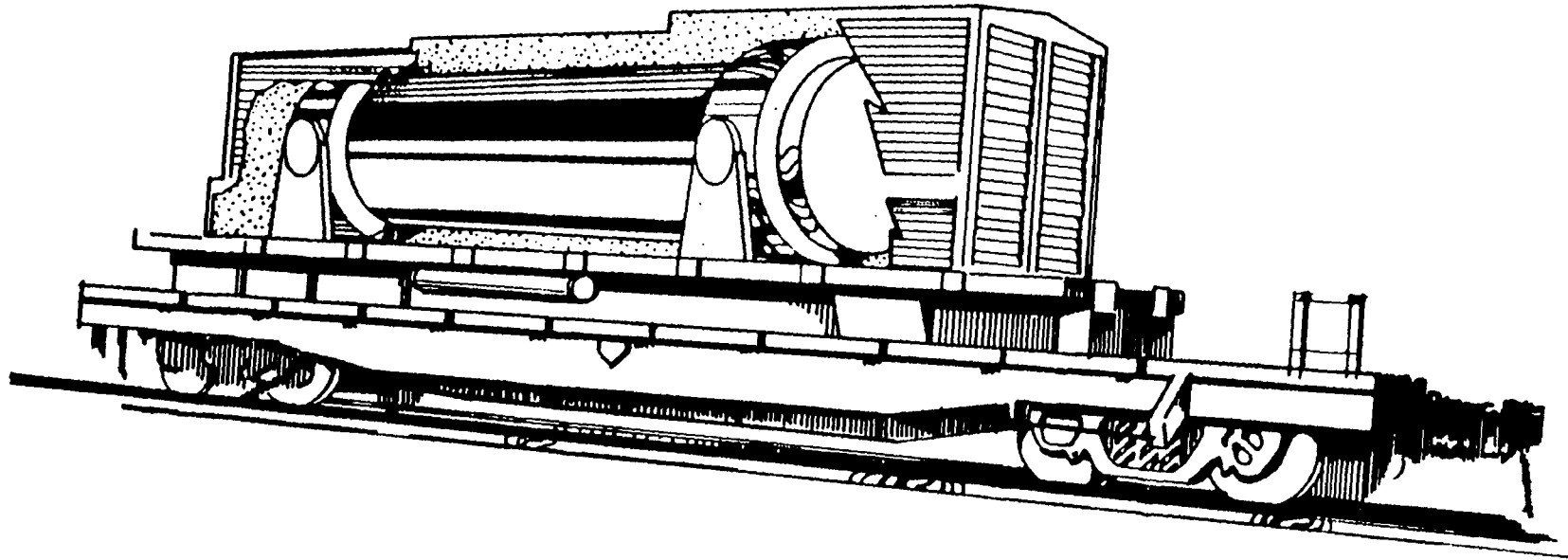
- **SECTION 180 (A) — USE NRC CERTIFIED TRANSPORTATION PACKAGE**
- **SECTION 180 (B) — PRENOTIFY STATES/LOCAL GOVERNMENTS UNDER NRC REGULATIONS**
- **SECTION 180 (C) — PROVIDE TECHNICAL ASSISTANCE AND FUNDING TO TRAIN LOCAL GOVERNMENTS & TRIBES ON ROUTINE TRANSPORTATION & EMERGENCY RESPONSE**

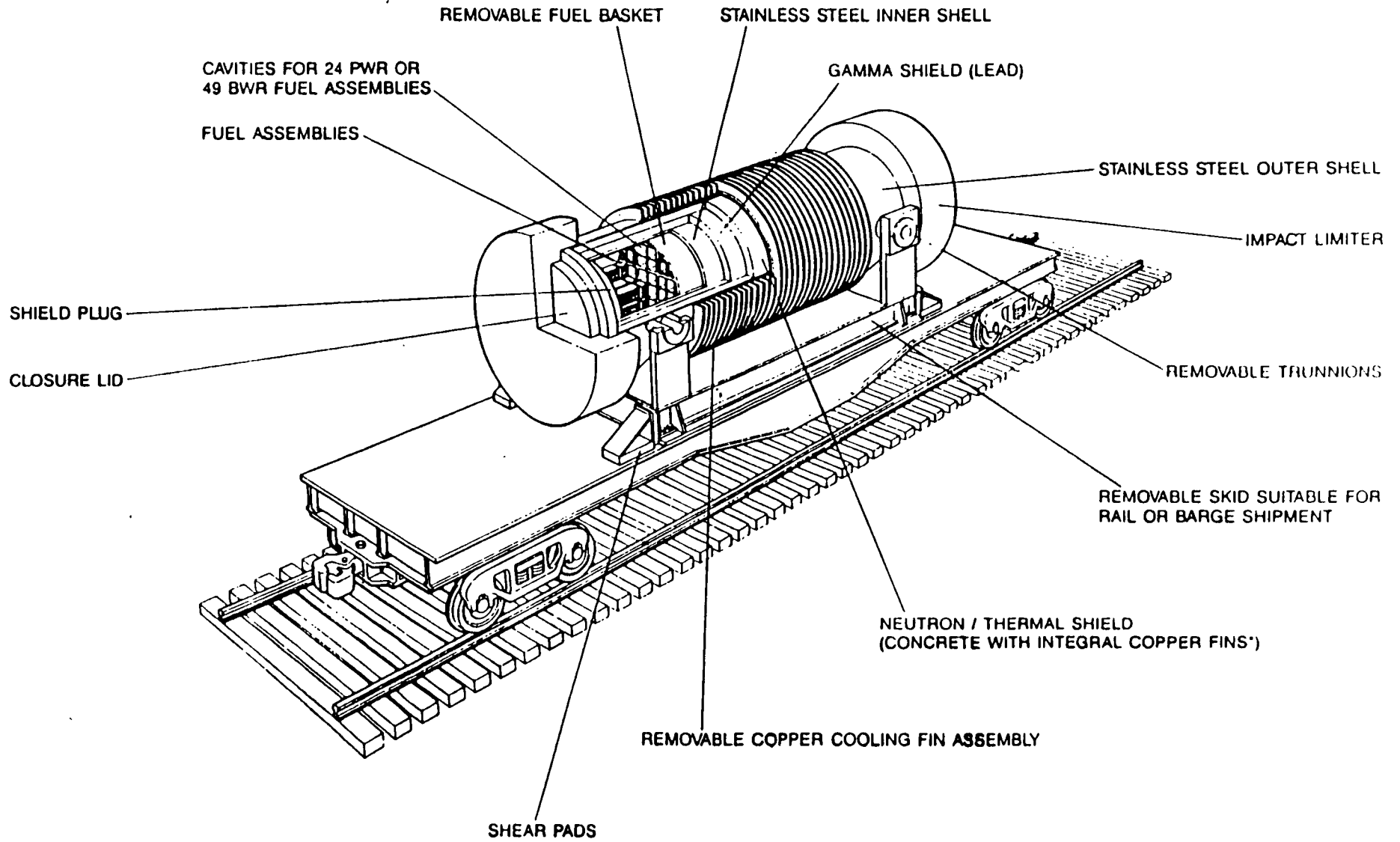
FOUR MAJOR GOALS OF OCRWM TRANSPORTATION ACTIVITIES:

- **PROTECTION OF PUBLIC HEALTH AND SAFETY**
- **PUBLIC PARTICIPATION IN ACTIVITIES**
- **USE OF PRIVATE INDUSTRY TO THE FULLEST EXTENT POSSIBLE**
- **COST EFFECTIVENESS**

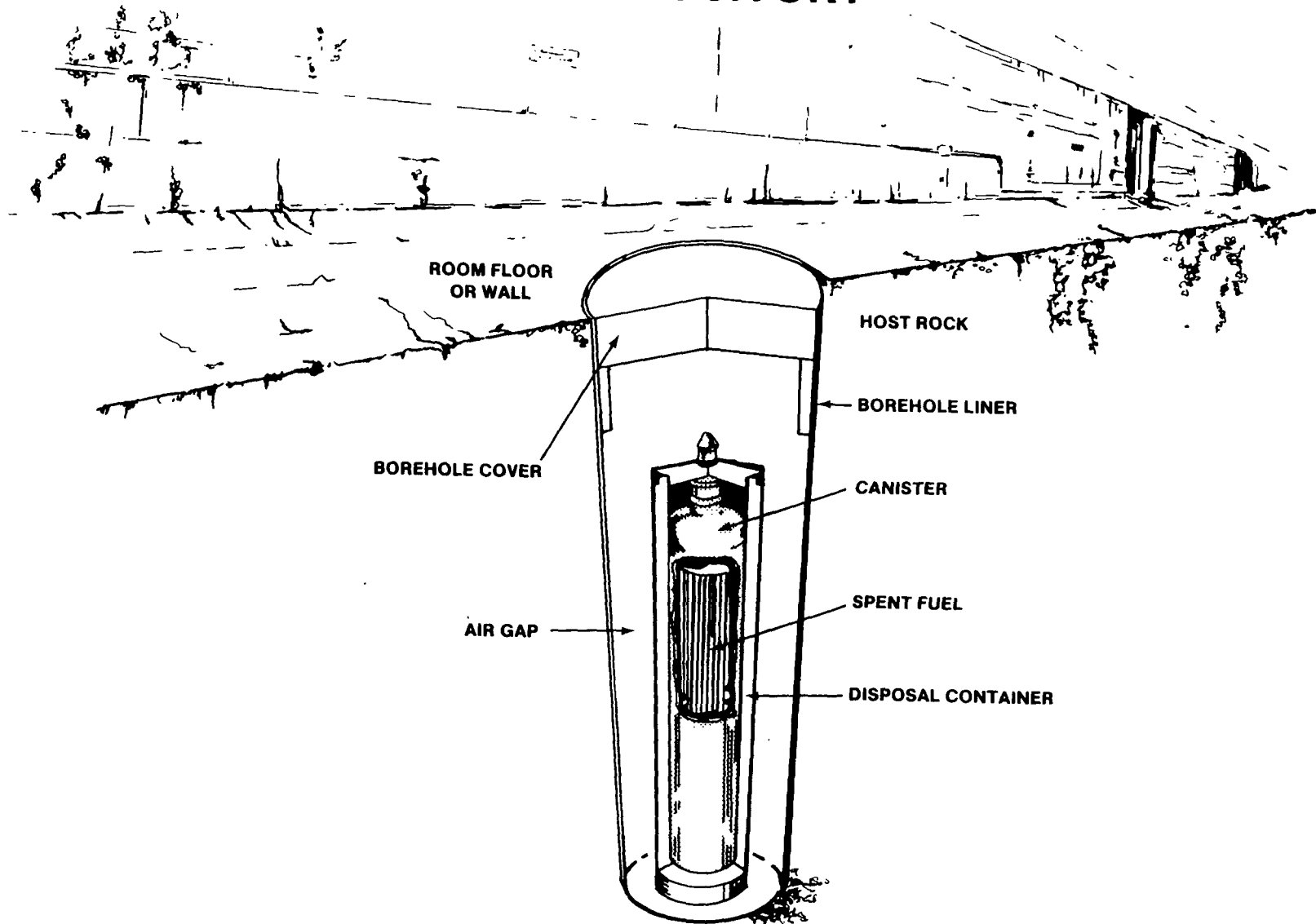
SAFETY

- **SAFETY IS A PRIMARY PROGRAM OBJECTIVE**
- **THERE IS A 40-YEAR HISTORY OF SAFE TRANSPORT OF RADIOACTIVE MATERIALS**
- **SAFETY OF CASK DESIGNS WILL BE CERTIFIED UNDER NRC REGULATIONS**
- **TRANSPORT WILL BE CONDUCTED UNDER DOT REGULATIONS**





WASTE PACKAGE EMPLACED IN REPOSITORY



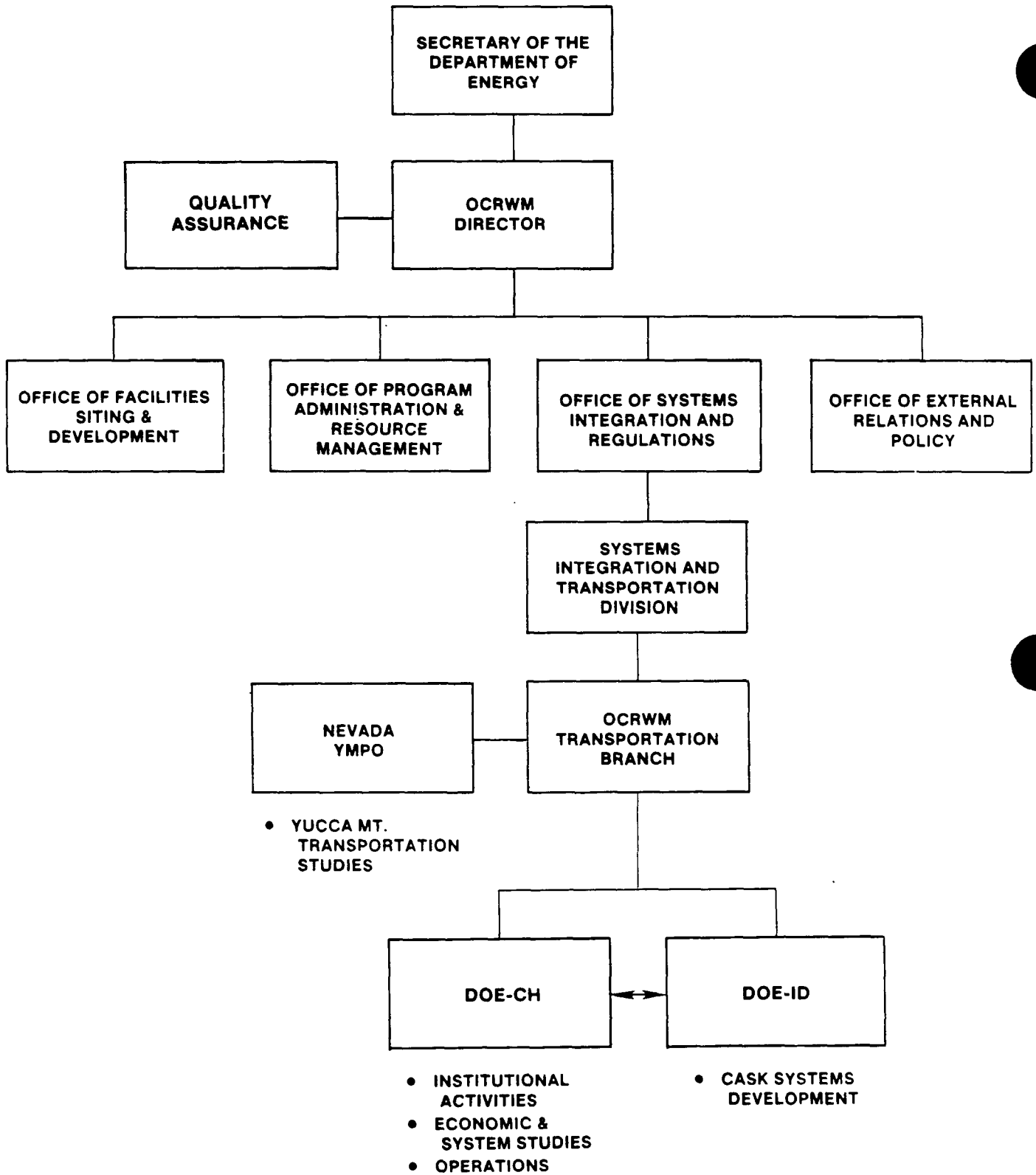
FEDERAL REGULATION OF TRANSPORTATION

**NUCLEAR REGULATORY
COMMISSION
(10 CFR 71, 73)**

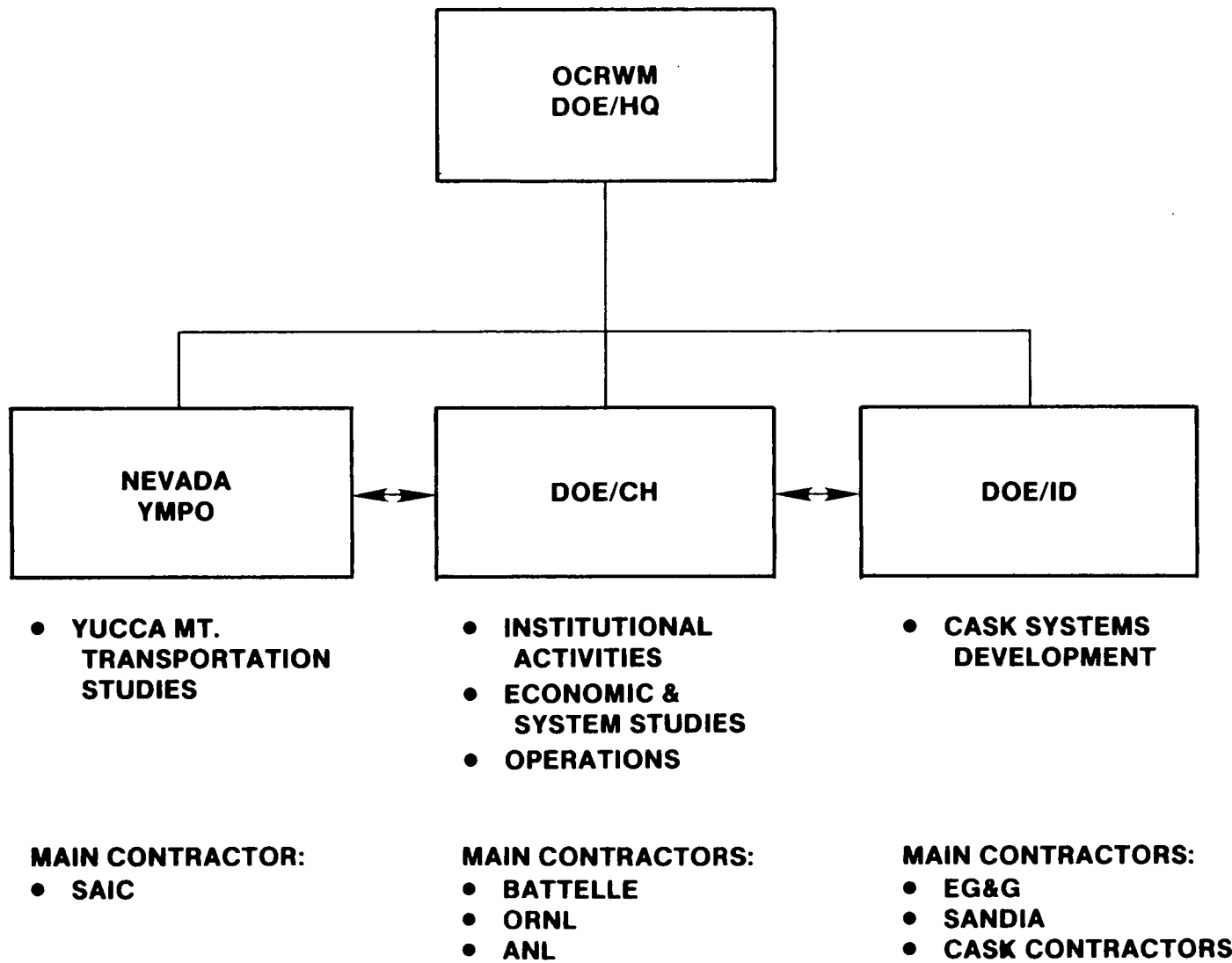
- **CASK DESIGN & TESTING**
- **PHYSICAL PROTECTION**
- **PRENOTIFICATION**

**DEPARTMENT OF
TRANSPORTATION
(49 CFR 106-399)**

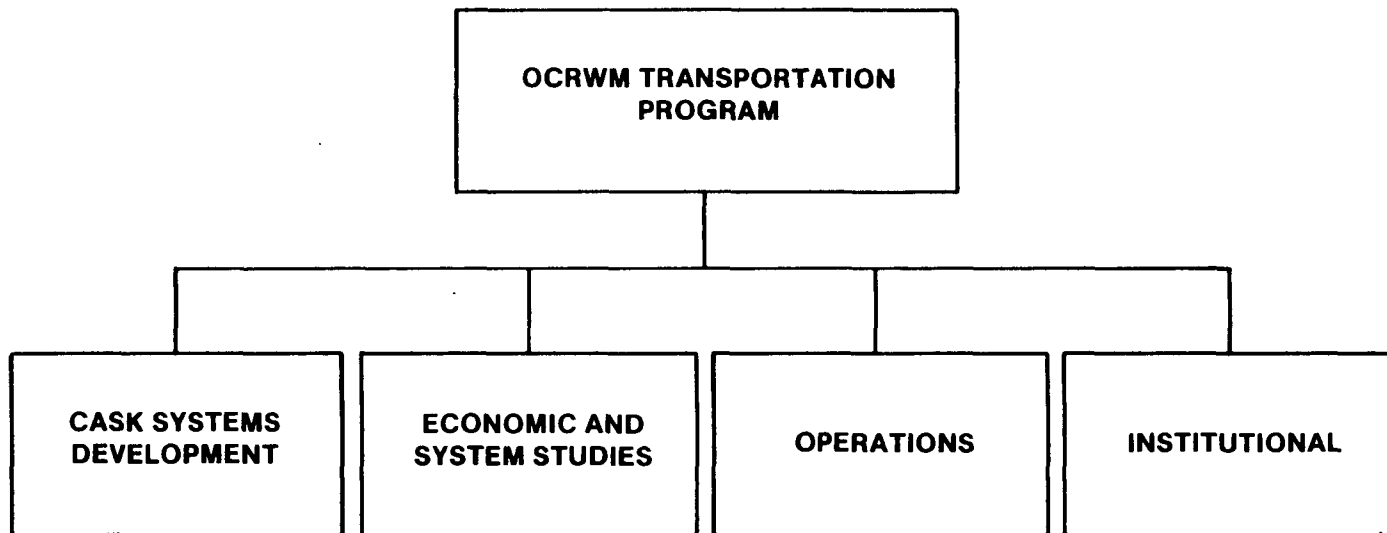
- **OPERATIONAL PROCEDURES**
- **LABELING, MARKING**
- **PLACARDING**
- **ROUTING**
- **DRIVER TRAINING**

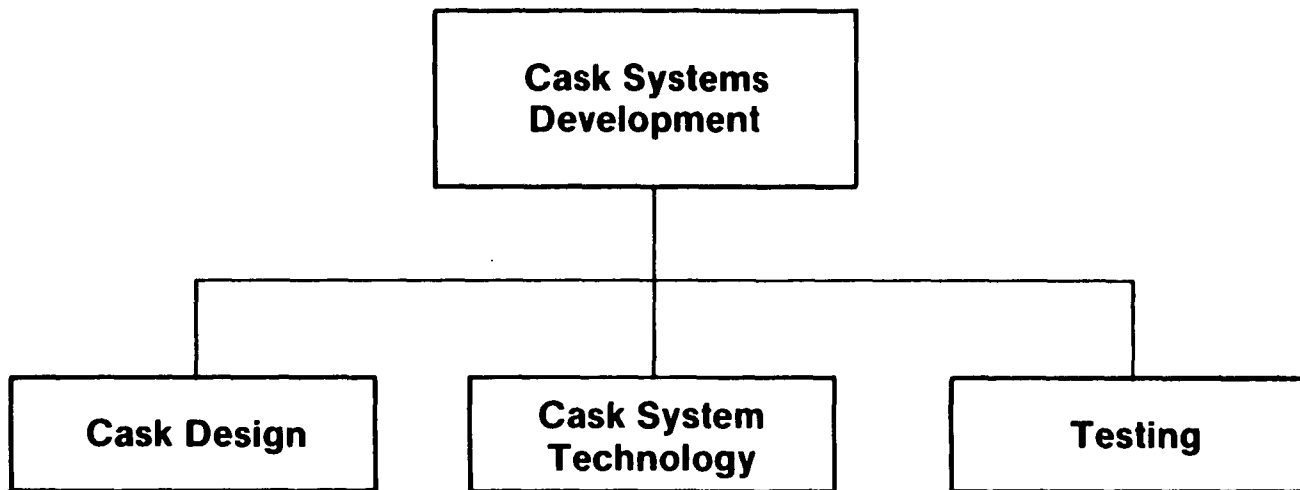


Overview of the OCRWM Transportation Participants.



**OCRWM TRANSPORTATION ACTIVITIES FALL INTO FOUR
MAJOR AREAS**





CASK DESIGN EFFORTS ARE COMPOSED OF FOUR INITIATIVES

- **FROM-REACTOR CASKS**
- **FROM-MRS-TO-REPOSITORY CASKS**
- **NON STANDARD SPENT FUEL AND COMPONENT (SPECIALTY) CASKS**
- **DEFENSE HIGH LEVEL WASTE CASKS**

CASK DEVELOPMENT FROM-REACTOR CASK INITIATIVE

NEW CASK BENEFITS

- **INCREASED CASK CAPACITIES**
- **DECREASED NUMBER OF SHIPMENTS**
- **LOWER TRANSPORT RISK**
- **LOWER TOTAL OPERATING COSTS**

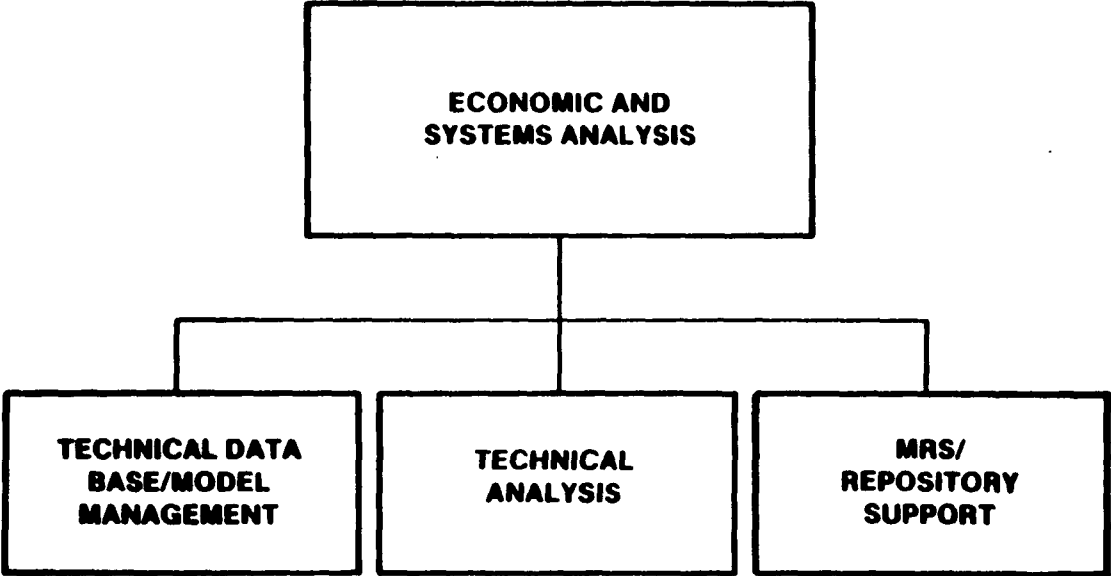
EXISTING vs. OCRWM CASK CAPACITIES

DESIGNATION

● EXISTING CASKS	PWR	BWR	MODE
NLI 1/2	1	2	TRUCK
TN-8/TN-9	3	9	OVERWEIGHT TRUCK
IF-300	7	18	RAIL
● OCRWM CASKS			
GA-4/GA-9	4	9	TRUCK
W TITAN-COMMON USE	3	7	TRUCK
NAC-CTC	26	52	RAIL/BARGE
NUPAC 140-B	21	48	RAIL/BARGE
B&W BR-100	21	52	RAIL/BARGE

CASK SYSTEM TECHNOLOGY DEVELOPMENT

- **ADDRESSES TECHNICAL ISSUES THAT PROVIDE COMMON BENEFITS TO CASK DESIGN**
- **INVOLVES ANALYSIS AND TESTS WITH GOALS TO:**
 - **TAKE CREDIT FOR REDUCED REACTIVITY OF SPENT FUEL (BURNUP) IN CRITICALITY CALCULATIONS**
 - **ESTABLISH ALLOWABLE LEAKAGE RATES USING TECHNICALLY DEFENSIBLE APPROACHES TO DETERMINING SPENT FUEL SOURCE TERMS**
 - **IMPROVE STRUCTURAL AND THERMAL ANALYSIS METHODS**
 - **ESTABLISH SPECIFICATIONS FOR CASK MATERIALS SUITABLE FOR INCORPORATION INTO NATIONAL STANDARDS**



TECHNICAL DATA BASE/MODEL MANAGEMENT

**EXPANDED AND MORE DETAILED DATA ARE BEING COLLECTED TO ENHANCE
TRANSPORTATION ANALYSES USING CURRENT, MODIFIED OR NEWLY
EMERGING MODELS**

- **DEVELOP DATA BASES**
 - **COLLECTED ACCIDENT RATES FOR RAIL AND ROAD TYPE**
 - **DEVELOPED UNIT COST AND RISK FACTORS FOR NATIONAL
TRANSPORTATION NETWORK ANALYSES**

- **DEVELOP MODELS**
 - **TRICAM DEVELOPED FOR OPTIMIZATION ANALYSES**
 - **CASKCOM APPLIED TO LIFE CYCLE COSTS ANALYSES**
 - **MODIFYING RADTRAN FOR MORE SPECIFIC ROUTE ANALYSES**
 - **UPDATING AND EXPANDING HIGHWAY AND INTERLINE FOR MODAL
ANALYSES**
 - **MODEL VERIFICATION AND DOCUMENTATION**

TECHNICAL ANALYSIS

COSTS AND RISKS OF VARIOUS TRANSPORTATION ALTERNATIVES/OPTIONS ARE EVALUATED IN TECHNICAL STUDIES

- **COST/RISK STUDIES**

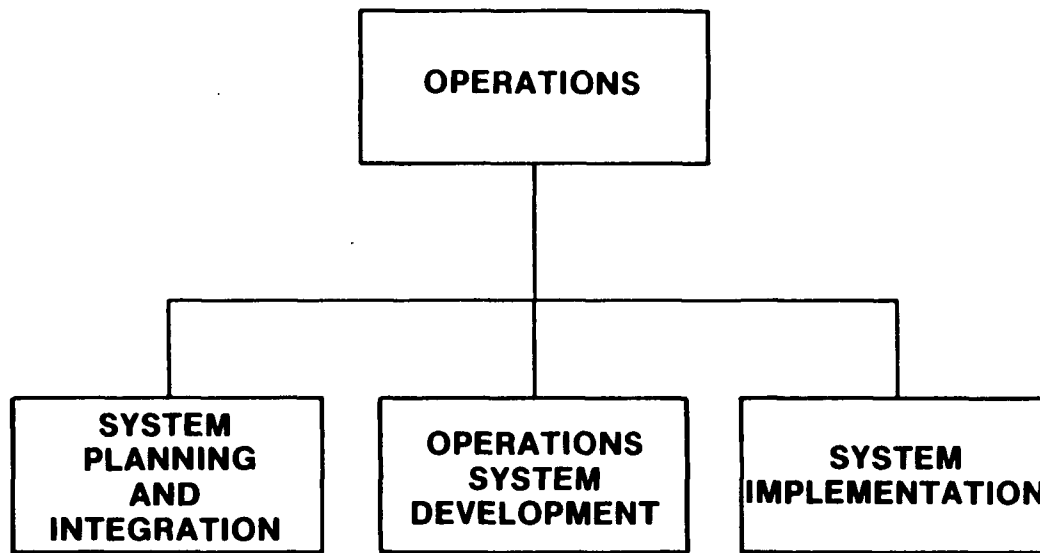
- **PREPARING ANALYSES ON DEDICATED TRAINS AND TRUCK CONVOYS**
- **ANALYZING OF SPENT FUEL CHARACTERISTICS AND THEIR IMPACT ON CASK CAPACITY**

- **SPECIAL STUDIES**

- **HUMAN FACTORS EFFECTS ON OPERATIONAL SAFETY**
- **NEAR-SITE INFRASTRUCTURE STUDY INITIATED**

MRS/REPOSITORY SUPPORT

- **ANALYZED TRANSPORTATION IMPACTS OF VARIOUS MRS SCENARIOS IN SUPPORT OF SYSTEM ANALYSES SUBMITTED TO THE MRS REVIEW COMMISSION**
- **PROVIDED TRANSPORTATION INPUT TO THE YUCCA MOUNTAIN SITE CHARACTERIZATION IMPACT REPORT (SECTION 175 REPORT) TO CONGRESS**



SYSTEM PLANNING AND INTEGRATION

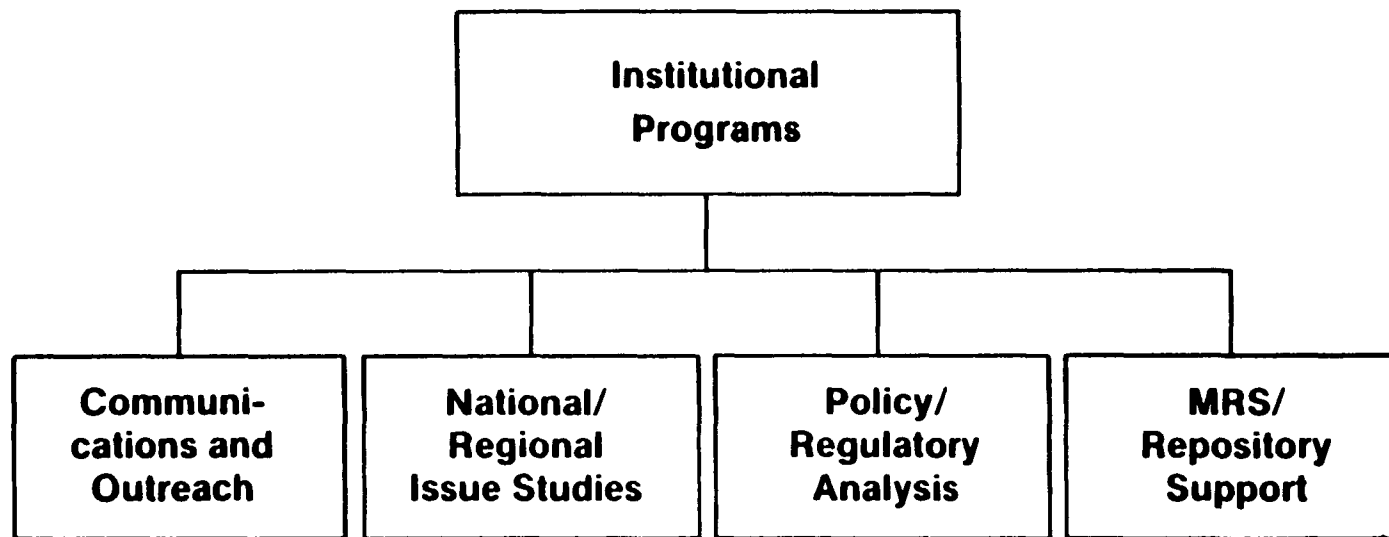
- **PERFORMING FUNCTIONAL ANALYSIS OF TRANSPORTATION OPERATIONS SYSTEM**
- **ANALYZING MANAGEMENT STRUCTURE OPTIONS**
- **IDENTIFYING REQUIREMENTS AND CONSTRAINTS OF STANDARD UTILITY CONTRACTS**
- **ANALYZING EXISTING COMMERCIAL CASK FLEET TO SUPPLEMENT OCRWM CASK SYSTEM**
- **EVALUATING REACTOR SITE HANDLING AND LOADING CAPABILITIES**

OPERATIONS SYSTEM DEVELOPEMENT

- **CARRIAGE DESIGN**
 - **EVALUATING LIGHT-WEIGHT TRACTOR SPECIFICATIONS**
 - **INTERFACING WITH CASK SYSTEM TRAILER DESIGN**
 - **DEVELOPING DEMONSTRATION PROGRAM**
- **SERVICING AND MAINTENANCE**
 - **PERFORMING CASK MAINTENANCE FACILITY FEASIBILITY STUDY**
 - **ANALYZING TECHNOLOGY FOR CASK MAINTENANCE**
- **FIELD OPERATIONS**
 - **OBSERVING CURRENT DOE AND UTILITY SHIPMENT ACTIVITIES**
 - **PARTICIPATING IN PREPARATIONS FOR NEAR-TERM R&D SHIPMENTS**

OPERATIONS SYSTEM IMPLEMENTATION

- **CASK DEVELOPMENT SUPPORT**
 - **DEVELOPING CHECKLIST OF OPERATIONAL CONSIDERATIONS FOR CASK DESIGNS**
 - **DESIGN REVIEW AND RECOMMENDATIONS FROM OPERATIONAL PERSPECTIVE**
- **OPERATIONAL TESTING PLANS FOR**
 - **VEHICLES**
 - **CASKS**
 - **FACILITIES**
 - **PROCEDURES**
- **OPERATIONS PLANNING**
 - **ASSESSING SYSTEM SCENARIOS**
 - **DEVELOPING GENERIC SYSTEM PLANS**
 - **DEVELOPING SITE-SPECIFIC SERVICING PLANS**



OCRWM TRANSPORTATION COMMUNICATIONS AND OUTREACH

- **PUBLICATIONS (OCRWM BULLETIN, BACKGROUNDEERS, FACT SHEETS)**
- **SLIDES, AUDIOVISUALS, EXHIBITS**
- **TRANSPORTATION COORDINATION GROUP MEETINGS**
- **REGIONAL/NATIONAL STATE ASSOCIATION MEETINGS**
- **NATIONAL INDIAN ASSOCIATION MEETINGS**
- **UTILITY COORDINATION GROUP MEETINGS**
- **COORDINATION WITH OTHER DOE OFFICES**
- **MEETINGS WITH OTHER FEDERAL AGENCIES**

1989 COOPERATIVE AGREEMENTS BETWEEN OCRWM TRANSPORTATION BRANCH AND SEVERAL NATIONAL AND REGIONAL GROUPS

- **SOUTHERN STATES' ENERGY BOARD (SSEB)**
- **WESTERN INTERSTATE ENERGY BOARD (WIEB)**
- **MID-WEST OFFICE OF THE COUNCIL OF STATE GOVERNMENTS (COSG)**
- **NATIONAL CONGRESS OF AMERICAN INDIANS (NCAI)**
- **NATIONAL CONFERENCE OF STATE LEGISLATURES (NCSL)**
- **COMMERCIAL VEHICLE SAFETY ALLIANCE (CVSA)**
- **COUNCIL OF RADIATION CONTROL PROGRAM DIRECTORS (CRCPD)**
- **AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)**

GENERAL SCHEDULE FOR TRANSPORTATION ACTIVITIES

1989

- COMPLETION OF PRELIMINARY "FROM-REACTOR" CASK DESIGNS
- STUDY OF TECHNICAL CASK-DESIGN ISSUES
- ISSUANCE OF TRANSPORTATION DOCUMENTS
- CONDUCT SYSTEM STUDIES
- REVIEW MODIFICATIONS TO RISK METHODOLOGIES

1990

- REVIEW PROGRESS ON OWT UNIFORM PERMIT
- DECISION ON USE OF OWT
- COMPLETE FINAL DESIGN OF "FROM REACTOR" CASKS
- DEVELOP & RELEASE STRATEGY FOR IMPLEMENTING TRAINING-ASSISTANCE REQUIREMENTS

GENERAL SCHEDULE FOR TRANSPORTATION ACTIVITIES (CONT.)

1991-1997

- **COMPLETE TRANSPORTATION STUDIES FOR EIS**
- **SUBMIT SAFETY ANALYSIS REPORTS TO NRC FOR CASK DESIGNS (FROM-REACTOR)**
- **DETERMINE NEEDS FOR MRS CASKS, SPECIALTY CASKS, DEFENSE-WASTE CASKS AND INITIATE DEVELOPMENT, IF APPROPRIATE**
- **DETERMINE PREFERRED OPTION FOR MANAGING TRANSPORT OPERATIONS**
- **FINALIZE PLANS FOR TRAINING ASSISTANCE**
- **INITIATE EQUIPMENT ACQUISITION**

GENERAL SCHEDULE FOR TRANSPORTATION ACTIVITIES (CONT.)

1998-2002

- **DRAFT OPERATIONAL PROCEDURES**
- **DEVELOP LIMITED SHIPPING CAPABILITY, IF NEEDED**
- **IDENTIFY MODAL MIX**
- **IDENTIFY POTENTIAL ROUTES FOR EMERGENCY PREPAREDNESS PURPOSES**
- **BEGIN PROVIDING TRAINING ASSISTANCE**
- **ISSUE CASK-FLEET CONTRACT**

2003

- **INITIATE OPERATIONS**