

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

PRESENTATION TO  
THE NUCLEAR WASTE TECHNICAL REVIEW BOARD

**SUBJECT: HUMAN FACTORS  
TRANSPORTATION MODAL MIX  
SPECIAL SERVICES**

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# **MODAL SPLIT**

**WHAT PERCENT OF HIGH-LEVEL WASTE WILL BE TRANSPORTED BY RAIL, TRUCK, AND BARGE?**

- **FACILITY INTERFACE CAPABILITY ASSESSMENT (FICA)**
- **NEAR-SITE TRANSPORTATION INFRASTRUCTURE STUDY (NSTI)**
- **MODAL OPTIONS STUDY**

# **FACILITY INTERFACE CAPABILITY ASSESSMENT (FICA) PROJECT**

- **OBJECTIVES**

- **DETERMINE AND DOCUMENT EXISTING AND PLANNED FACILITY CAPABILITIES TO STORE AND SHIP SPENT NUCLEAR FUEL (SNF)**
- **IDENTIFY FACILITIES WHERE POSSIBLE INTERFACE CHANGES COULD RESULT IN BENEFITS TO THE FWMS**
- **ADVANCE AND COMPLETE -- RW-859**

- **GENERAL SCOPE**

- **76 SITE VISITS**
- **122 FACILITIES FROM WHICH COMMERCIAL SNF WILL BE SHIPPED**

# **NEAR-SITE INFRASTRUCTURE PROJECT (NSTI)**

- **OBJECTIVES**

- **TO DETERMINE THE CAPABILITIES TO TRANSPORT CASKS BY TRUCK, RAIL, AND BARGE**
- **TO ASSESS THE UPGRADE POTENTIAL FOR EACH TRANSPORT MODE**

- **GENERAL SCOPE**

- **ASSESSMENTS WILL BE MADE WITHIN APPROXIMATELY 25 MILES OF EACH SITE**
- **76 SITE VISITS**

# **MODAL OPTIONS STUDY**

## **OBJECTIVES**

- **IDENTIFY TRANSPORT MODAL OPTIONS FOR SPENT NUCLEAR FUEL TRANSPORT**
- **COMPARE LIFE-CYCLE COSTS AND LIFE-CYCLE DOSE AMONG OPTIONS**

# POTENTIAL TRANSPORT MODES

<u>MODE</u>	<u>CASK SIZE</u>	<u>PWR/ BWR</u>
LEGAL WEIGHT TRUCKS (LWT)	28 TON CASK	3/7
OVERWEIGHT TRUCKS (OWT)	40 TON CASK	5/12
HEAVY-HAUL TRUCKS (HHT)	100 TON CASK	21/48
RAIL CARS		
– REGULAR RAIL	100 TON CASK	21/48
– HEFTY RAIL	125 TON CASK	24/60

# **EXAMPLE OF MODAL CASES STUDIED**

**100 PERCENT LEGAL WEIGHT TRUCK**

**44 PERCENT LEGAL WEIGHT TRUCK; 56 PERCENT  
REGULAR RAIL**

**100 PERCENT RAIL BY TRANSFERRING TRUCK CASKS  
TO RAIL**

**MAXIMIZE OVERWEIGHT TRUCK USE**

**MAXIMIZE LARGE CASK USAGE**

# MODAL SPLIT

## COMPARISON OF CASES SHOW

- **100 PERCENT LWT IS MOST COSTLY AND HAS HIGHEST DOSE COMPARED TO OTHER CASES**
- **BASE CASE -- 44 PERCENT LWT, 56 PERCENT REGULAR RAIL -- APPROXIMATE OPTIMUM COST SCENARIO**
- **MAXIMIZING RAIL BY UTILIZING RAIL TRANSFER FACILITIES DOES NOT SIGNIFICANTLY REDUCE COST**
- **TOTAL DOSE IS REDUCED BY MAXIMIZING RAIL**
- **100 PERCENT RAIL REDUCES DOSE BY MORE THAN 20 PERCENT FROM BASE CASE**
- **OVERWEIGHT TRUCK REDUCES COSTS AND RISKS SLIGHTLY**

# KEY MODAL COMBINATIONS

	<u>TOTAL COSTS, \$(BILLION)</u>	<u>TOTAL PERS. REM/ MTU</u>
1. 100 PERCENT LEGAL WEIGHT TRUCK	2.1	1.0
2. LEGAL WEIGHT TRUCK AND REGULAR RAIL (56%/44%)	1.4	0.53
3. LEGAL WEIGHT TRUCK/ OVERWEIGHT TRUCK AND REGULAR RAIL	1.3	0.39