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

8/21/89
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

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

<table>
<thead>
<tr>
<th>Description</th>
<th>Total Costs, $(Billion)</th>
<th>Total Pers. Rem./MTU</th>
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<tbody>
<tr>
<td>1. 100 PERCENT LEGAL WEIGHT TRUCK</td>
<td>2.1</td>
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<td>2. LEGAL WEIGHT TRUCK AND REGULAR RAIL (56%/44%)</td>
<td>1.4</td>
<td>0.53</td>
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<tr>
<td>3. LEGAL WEIGHT TRUCK/OVERWEIGHT TRUCK AND REGULAR RAIL</td>
<td>1.3</td>
<td>0.39</td>
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</table>

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8/21/89