SUBJECT: REPOSITORY BASELINE DESIGN

PRESENTER: DR. THOMAS O. HUNTER

PRESENTER'S TITLE AND ORGANIZATION: TECHNICAL PROJECT OFFICER, SANDIA NATIONAL LABORATORIES ALBUQUERQUE, NEW MEXICO

PRESENTER'S TELEPHONE NUMBER: (505) 844-9160

MARCH 19-20, 1990
PHOTOGRAPH OF
CONCEPTUAL DESIGN REPORT
## DESIGN BASIS SUMMARY
### WASTE PARAMETERS

<table>
<thead>
<tr>
<th>WASTE FORM</th>
<th>REPOSITORY CAPACITY (MTU)</th>
<th>ASSEMBLIES</th>
<th>CONTAINERS</th>
<th>WATTS/CONTAINER</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPENT FUEL</td>
<td>62,000</td>
<td>215,900</td>
<td>24,600</td>
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</tr>
<tr>
<td>PWR</td>
<td>37,200</td>
<td>80,600</td>
<td>15,200</td>
<td>3,000</td>
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<tr>
<td>BWR</td>
<td>24,800</td>
<td>135,300</td>
<td>9,400</td>
<td>2,000</td>
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<tr>
<td>DHLW</td>
<td>7,360</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WVHLW</td>
<td>640</td>
<td></td>
<td>14,720</td>
<td>200</td>
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</tbody>
</table>

### SHIPPING CASKS

<table>
<thead>
<tr>
<th>WASTE FORM</th>
<th>RAIL</th>
<th>TRUCK</th>
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<tbody>
<tr>
<td>SPENT FUEL</td>
<td>2,900</td>
<td>47,000</td>
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<tr>
<td>PWR</td>
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<tr>
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</tr>
<tr>
<td>DHLW</td>
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</tr>
<tr>
<td>WVHLW</td>
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### RECEIPT RATES (MTU/yr)

<table>
<thead>
<tr>
<th>YEAR</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<tbody>
<tr>
<td></td>
<td>400</td>
<td>900</td>
<td>1,800</td>
<td>3,000</td>
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<tr>
<td></td>
<td>240</td>
<td>540</td>
<td>1,080</td>
<td>1,800</td>
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<tr>
<td></td>
<td>160</td>
<td>360</td>
<td>720</td>
<td>1,200</td>
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</tbody>
</table>

N MREP5P.A25/3-19/20-90
WASTE RECEIVING OPERATIONS
SPENT FUEL CONSOLIDATION OPERATIONS

- Crane Maintenance Room
- Bridge Crane
- Shield Door
- Facility Grapple
- Fuel Assembly
- Shield Valve
- Fuel Transfer Tunnel
- Consolidation Hot Cell
- Manipulator
- Consolidation System
- Fuel Rod Collector
- Fuel Assembly
- Intercell Seal Value
- Telescoping Cylinder
- Container Sector Collect Device
- Traversing Carriage
USABLE AREA FOR NUCLEAR WASTE DISPOSAL IN YUCCA MOUNTAIN

CONSTRAINTS:
- SITING GUIDELINES:
  - 200 m OVERBURDEN
  - ROCK CHARACTERISTICS
    * LITHOPHYSAE
    * VITROPHYRE

- MINING/WASTE HANDLING
  EQUIPMENT LIMITATIONS:
  - 10% MAXIMUM GRADE

MODEL:
- 3-D GRAPHICS
  REPRESENTATION OF YUCCA MOUNTAIN
UNDERGROUND DESIGN FOR HORIZONTAL EMPLACEMENT

NOTES:
1. ACREAGE WITHIN BOUNDARY = 1,420 ACRES
2. BASED ON CDR

12.300’

8,000’

12’6”

22’
UNDERGROUND DESIGN FOR VERTICAL EMLACEMENT

NOTES:
1. ACREAGE WITHIN BOUNDARY = 1,420 ACRES
2. BASED ON CDR
PANEL DETAILS
HORIZONTAL EMLACEMENT

HORIZONTAL EMLACEMENT DRIFT
363' HOLE LENGTH
37' DIA. HORIZONTAL BOREHOLES

HORIZONTAL BOREHOLE DETAIL - SPENT FUEL
297' BOREHOLE LENGTH
94' STANDOFF
DUMMY CONTAINERS 8 EACH

SECTION A
SPENT FUEL CONTAINERS 14 EACH

HORIZONTAL BOREHOLE DETAIL - DEFENSE HIGH-LEVEL WASTE
13.5'
SECTION B
NOT TO SCALE

NOTES
1. DIMENSIONS SHOWN ARE EXCAVATED.
2. DETAILS BETWEEN BOREHOLE AND CONTAINERS NOT SHOWN.

TYP. - TYPICAL
DIA. - DIAMETER

NOT TO SCALE
PANEL DETAILS - VERTICAL EMPLACEMENT

VERBAL EMPLACEMENT

VERTICAL EMPLACEMENT PLAN

NOTE
DIMENSIONS SHOWN ARE EXCAVATED.

DIA. - DIAMETER

SECTION A

SECTION B

SPENT FUEL

DEFENSE HIGH-LEVEL WASTE

EMPLACEMENT DRIFT

SHIELD PLUG

15' BOREHOLE SPACING

92.5' STANDOFF

7.5' BOREHOLE SPACING

85' STANDOFF

126' X 126' X 126'

MIDPANEL DRIFT

PANEL ACCESS DRIFT

85'

10'

20'

22'

29' DIA.