

DOE Spent Nuclear Fuel Program

**"Charting a course for ultimate disposition of
DOE-owned Spent Nuclear Fuel"**

Presentation to the

**U.S. Nuclear Waste Technical Review Board
Panel on the Engineered Barrier System**

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DOE Spent Nuclear Fuel Program

DOE Spent Nuclear Fuel Program

- Established in 1993

Program Objectives:

- Provide DOE-wide SNF policy development
- Undertake SNF strategic planning
- Coordinate cross-cutting DOE department-wide SNF issues
- Provide oversight and program integration
- Chart a management course of action for ultimate disposition of all DOE SNF

DOE Spent Nuclear Fuel Program

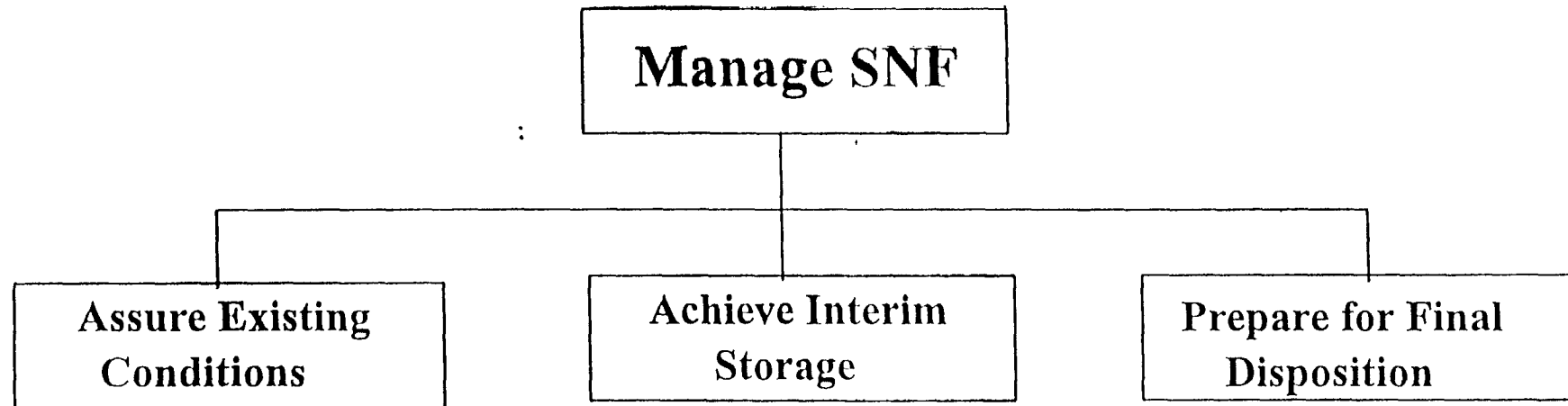
Mission

The mission of the DOE SNF Program is to safely, reliably, and efficiently manage DOE-owned SNF and **to prepare it for permanent disposal**

Core Functions for National SNF

Management Program

(Systems Approach)



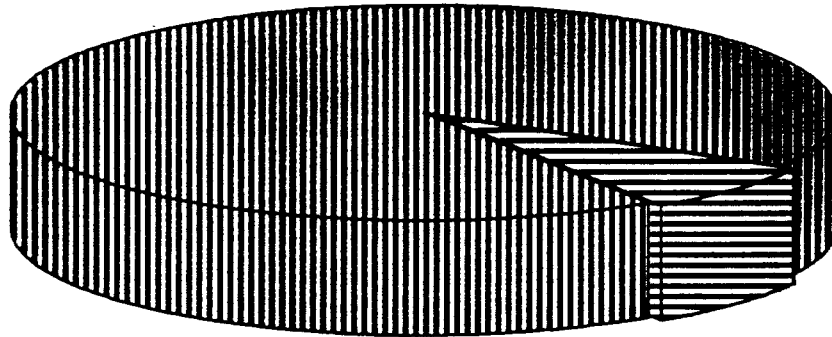
- Inventory & Characterize
- Resolve Vulnerabilities
- Store SNF
- Transfer SNF
- Release Facilities

- Inventory & Characterize
- Stabilize SNF
- Interim Store SNF
- Transfer SNF
- Release Facilities

- Inventory & Characterize
- Condition SNF
- Transfer SNF
- Release Facilities

TOTAL US SPENT FUEL MTHM

Commercial
92%

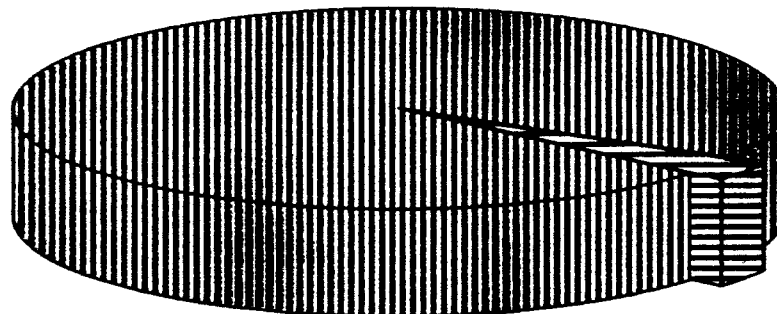


1995

DOE
8%

	1995	2035
DOE	2646	2742
Commercial	32300	86200
TOTAL:	34946	88942

Commercial
97%

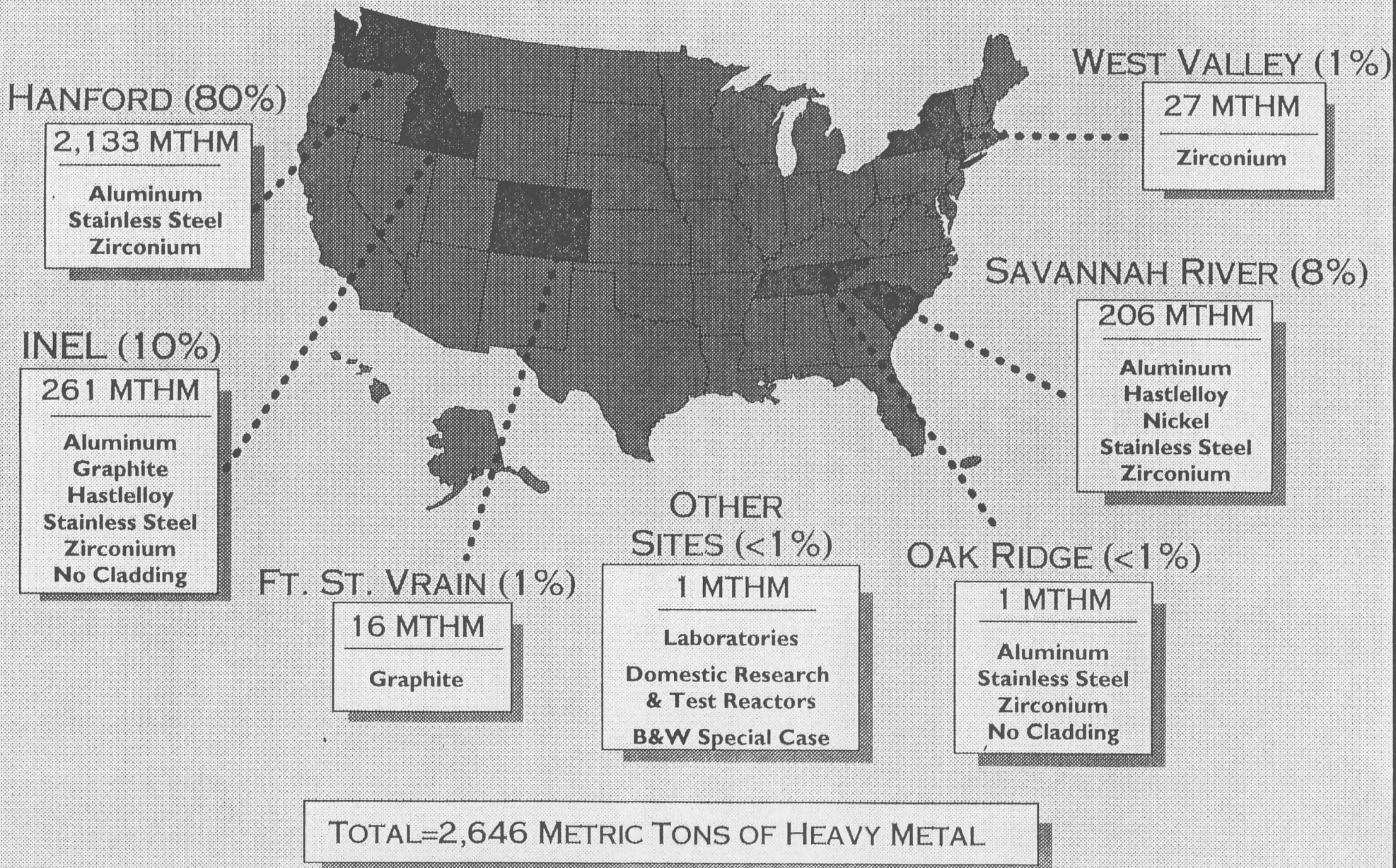


2035

DOE
3%

SPENT NUCLEAR FUEL IN DOE COMPLEX

MAY 1995



WHERE IS DOE SPENT NUCLEAR FUEL?

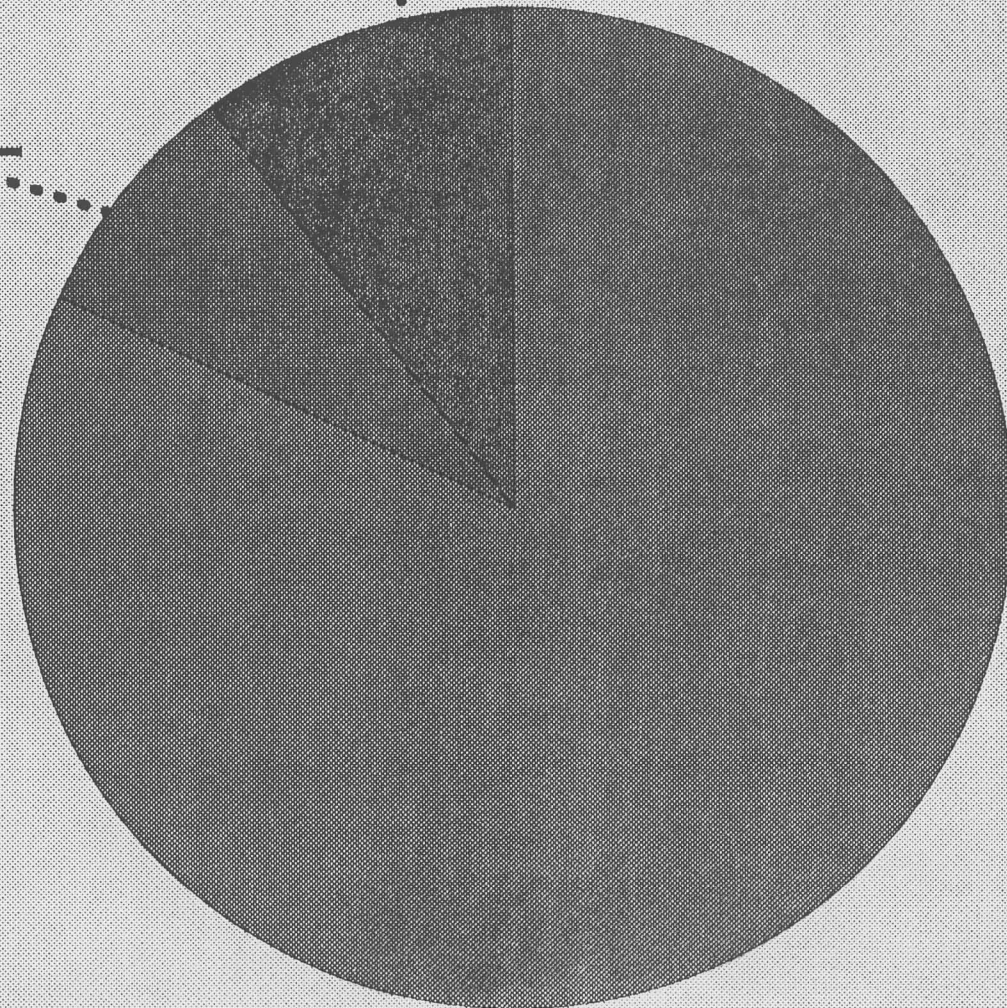
1995 EIS DATA

SAVANNAH RIVER SITE

206

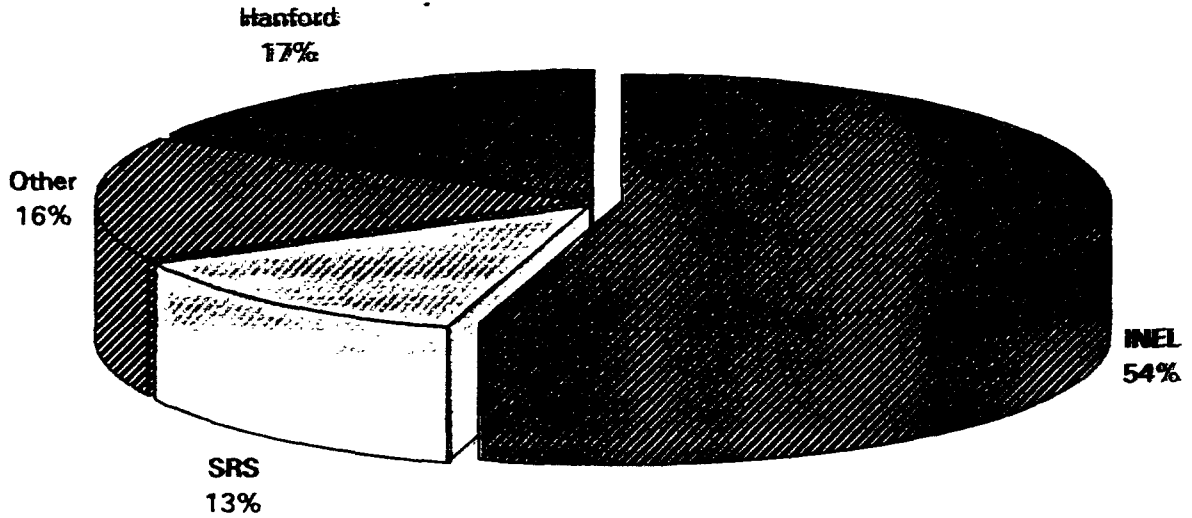
INEL
261

HANFORD
SITE
2,133



METRIC TONS HEAVY METAL

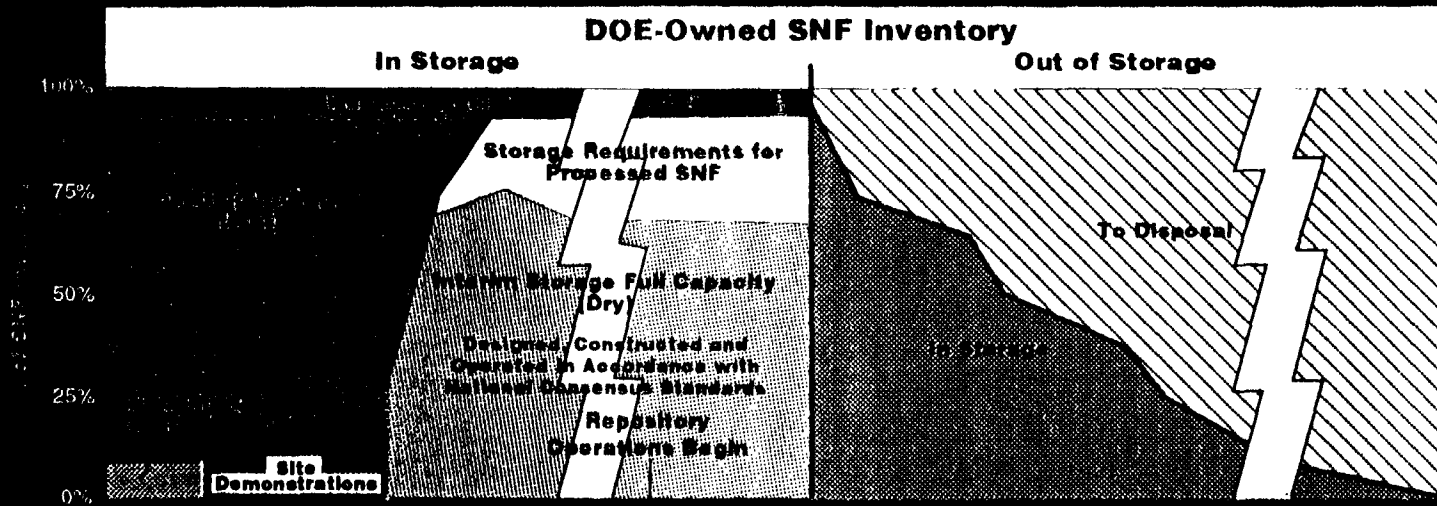
1995 Distribution of DOE SNF



Location	Volume (m ³)
Hanford	213
INEL	703
SRS	165
Other	203
Total	1284

Other Locations	Volume (m ³)
ANL-E	0.1
Brookhaven	3.4
LANL	0.6
ORNL	12.0
SANDIA	1.7
West Valley	11.7
B&W Lynchburg	0.1
Domestic non-DOE	3.4
Universities	9.7
Fort St. Vrain	160

Strawman for Top-Level Strategic Path Forward for DOE-Owned SNF



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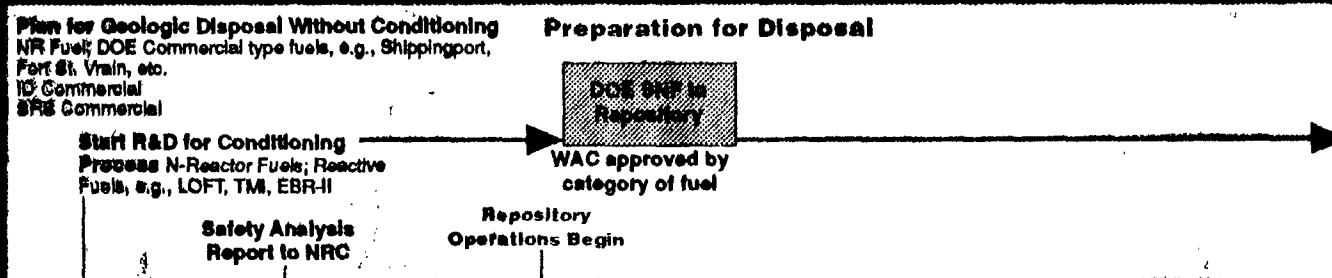
Current objective is to develop and implement a clear path for ultimate disposition of all DOE SNF.

- DOE policy directs placement of DOE SNF in repository
 - Recent Secretarial Action Memorandum (March 31, 1995)
 - Utilize 10% allocation for defense high level waste

- Disposition of DOE SNF in repository using screening criteria identifies
 1. SNF likely to go directly to repository
 - MPC preparation
 2. SNF requiring minor conditioning
 - Simple canning, surface passivation
 3. SNF likely requiring processing
 - Mechanical or chemical stabilization



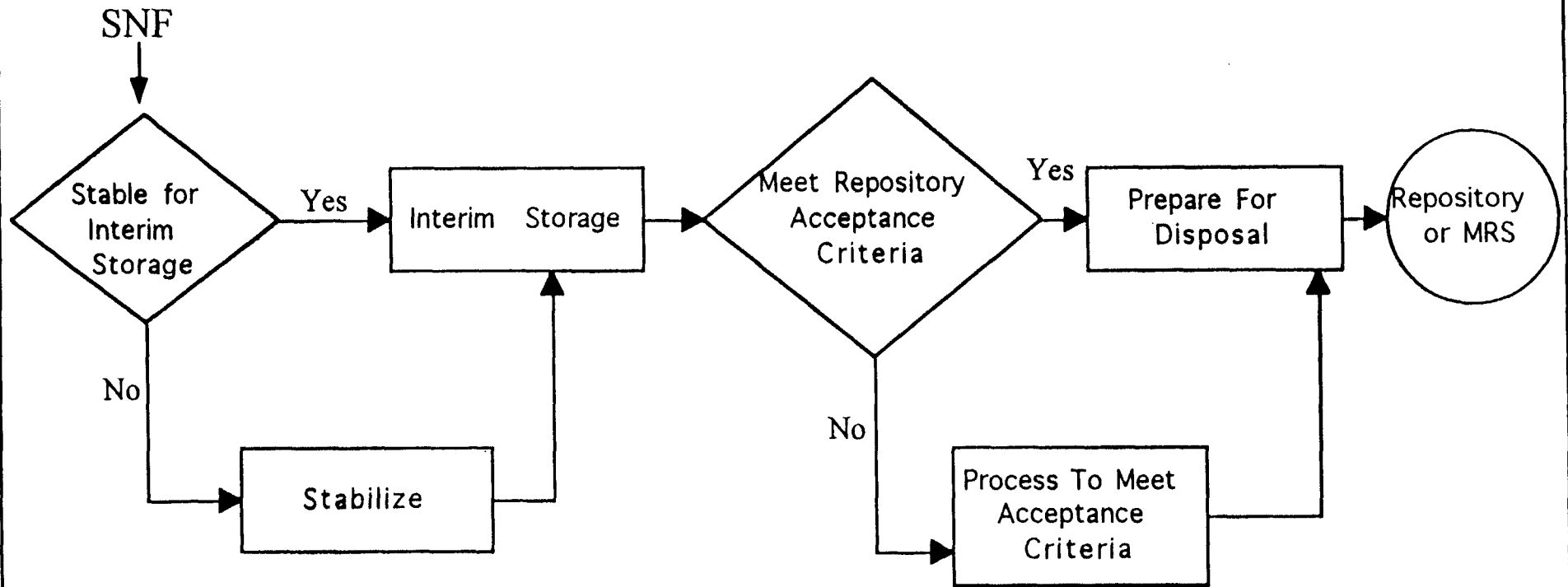
Strawman for Top-Level Strategic Path Forward for DOE-Owned SRF



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- Direct disposition of some DOE SNF appears likely
- Balance of DOE SNF may require conditioning prior to final disposition in repository

SNF STRATEGY/LOGIC



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Broad spectrum of DOE SNF types and conditions will determine specific path to repository.

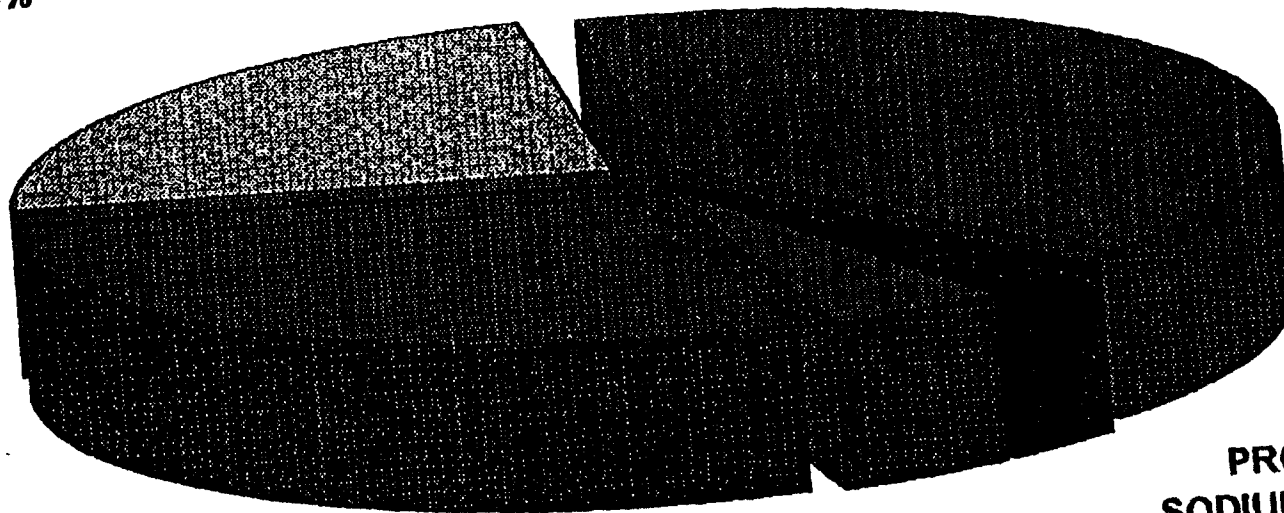
- Metal fuels are unlikely to qualify without some conditioning
- Sodium bonded fuels may have RCRA characteristics requiring conditioning
- Damaged fuels may require conditioning
- Aluminum fuels may be processed to meet HLW form (borosilicate glass logs/canisters)
- Some fuels will require additional characterization to determine a path forward for repository acceptance and disposition



SCREENING RESULTS

METAL
(N-REACTOR)
23%

LIKELY
40%



PROCESS AL
SNF AT SRS
29%

CHARACTERIZE
CAN
5%

PROCESS
SODIUM BONDED
3%

DATA IS PRESENTED IN MPC BASIS

DOE Spent Nuclear Fuel Program

DOE SNF Program is closely coupled with the Office of Civilian Radioactive Waste Management (OCRWM) to ensure successful acceptance and disposition in a repository.

- Management Steering Group now functioning
- Key issues being addressed
 - Waste Acceptance Criteria
 - License application
 - MTHM equivalence and fee payments
 - NEPA integration
 - Transportation
 - NRC interface
 - Regulatory and quality frame work



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DOE Programmatic SNF Management and INEL Environmental Restoration and Waste Management Program

Record of Decision

- Addresses
 - Where DOE should best locate interim SNF management activities
 - Capabilities, facilities, and technologies needed for SNF management
 - Research and development capabilities needed to support SNF management



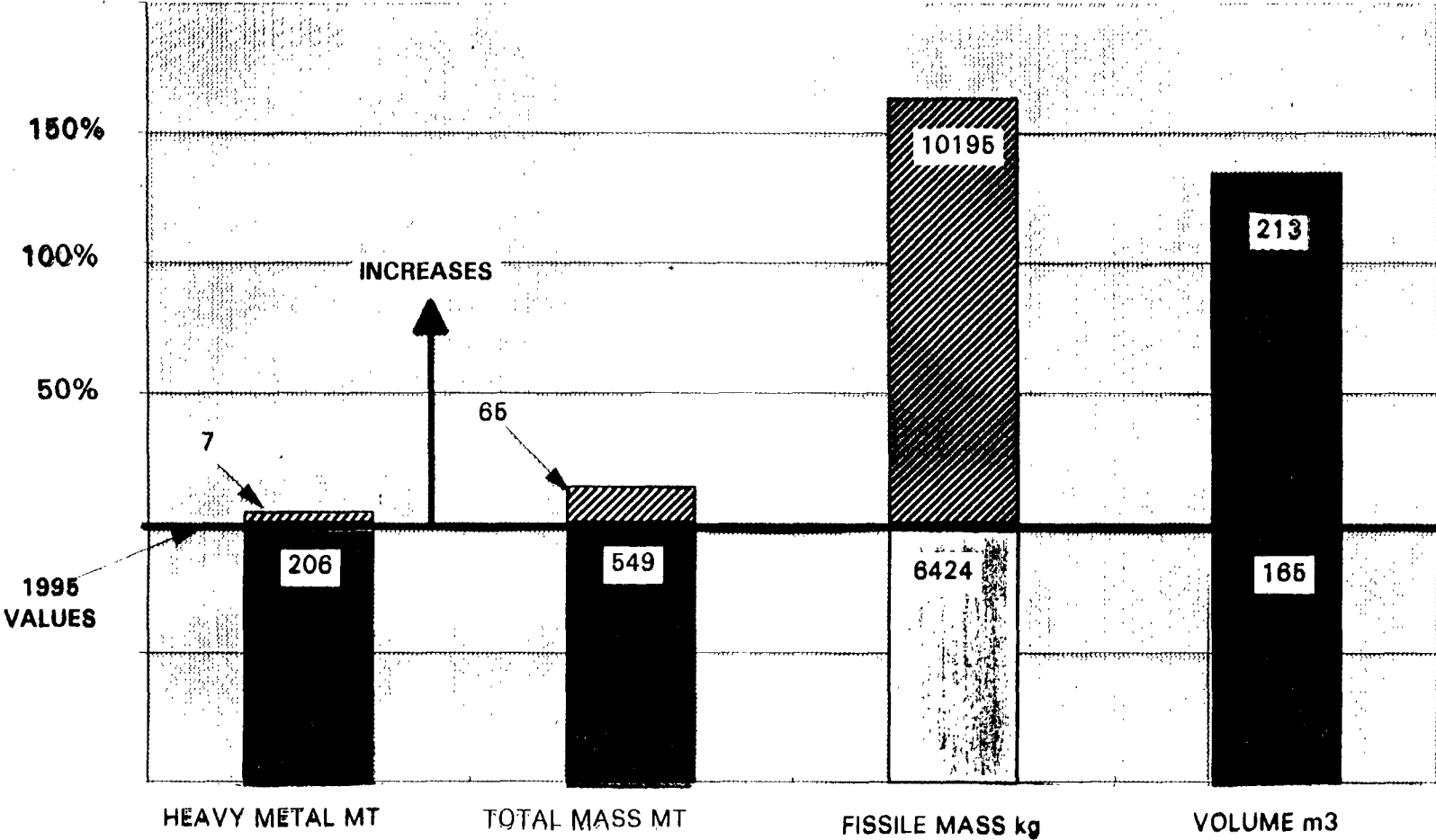
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Key Elements of DOE SNF Programmatic Decision

- Environmental impact is not discriminating among management alternatives
 - Impacts are small overall
 - Relative impacts among alternatives are small
- Cost is not a significant discriminator
 - Continued use of existing SNF facilities drives near term costs
 - Cost uncertainties yield overlap with all alternatives
 - No clear cost "winner"

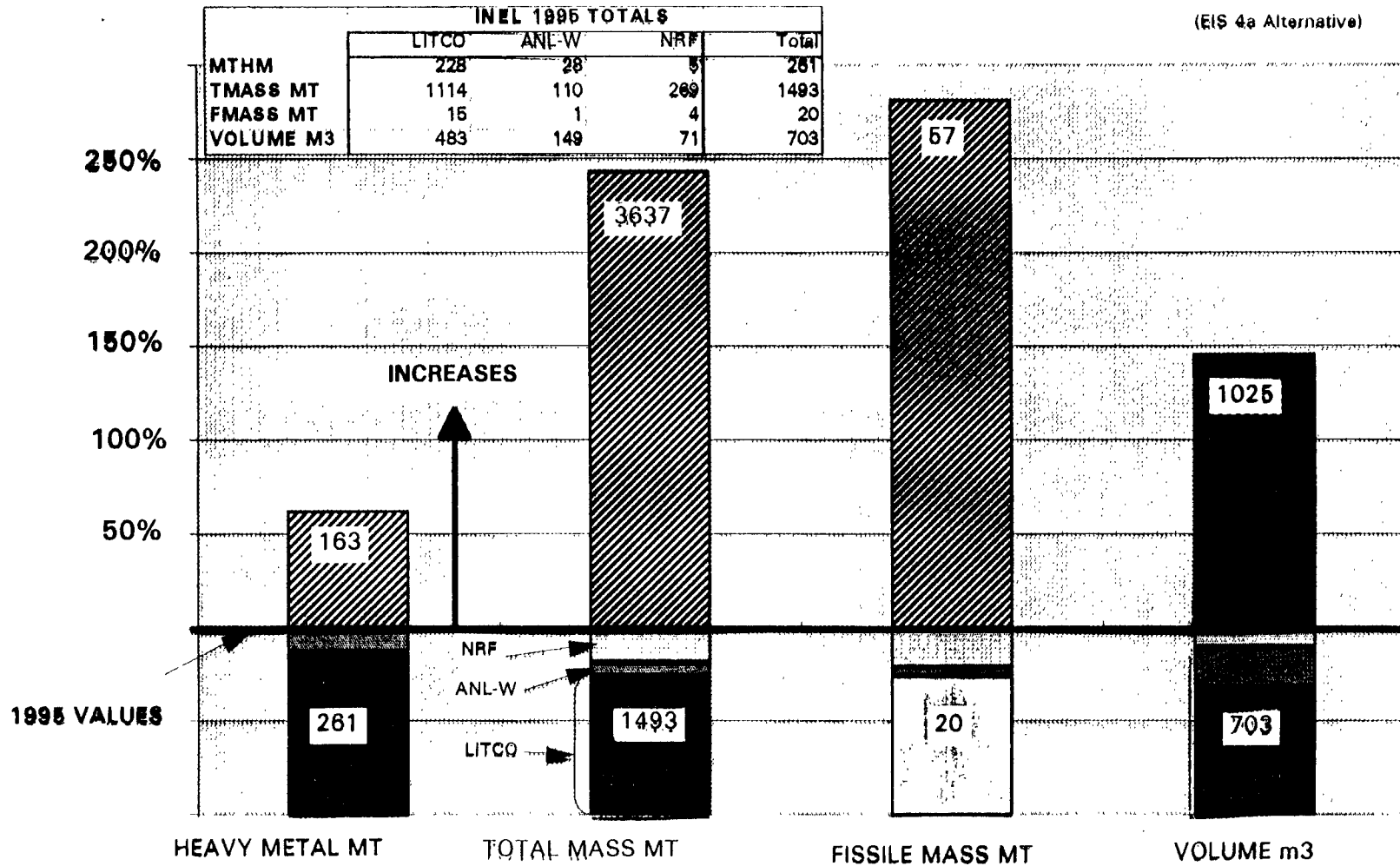
SRS SNF INCREASES THRU 2035

(EIS 4a Alternative)



INEL SNF INCREASES THRU 2035

(EIS 4a Alternative)



NOTE: INCREASES INCLUDE ON SITE GENERATION

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Key Elements of DOE SNF Programmatic Decision (continued)

- Establishing and supporting a path forward for ultimate disposition remains a dominating decision factor
 - Fuel type regionalization supports a reasoned path forward
 - Best balance of factors (infrastructure, technology, cost, transportation)

- Ability of DOE and Navy to accomplish established missions is an important factor
 - Defense, national security mission of Navy
 - Reactor (research, safety, medical) operations
 - Management path for safe interim storage and ultimate disposition

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Summary

- Management path for disposition of DOE SNF will closely parallel commercial program
- Where feasible, DOE SNF Disposition will model equivalent commercial solutions/approaches:
 - Singular regulatory framework
 - Comparable repository performance assessment
 - Comparable engineered barrier system
 - Comparable interim storage and transportation system
 - Multi-Purpose Canisters
 - "Road Ready" preparation for ultimate disposition