

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

**NUCLEAR WASTE TECHNICAL REVIEW BOARD
FULL BOARD MEETING**

**SUBJECT: Alternative Program Strategy Task
Force Report**

PRESENTER: Tom Isaacs

**PRESENTER'S TITLE
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**ARLINGTON, VIRGINIA
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Charter & Ground Rules

*• Basic decision: Don't recommend reopening the Waste Policy Act.
• Task force had 7 weeks to do its job.*

- **For DOE**
 - **Secretary to Senator Johnston letter (January 12, 1993)**
 - **Undersecretary memo (January 15, 1993)**
 - **Small ad hoc Task Force**
- **Conceptual revised strategy**
 - **Focus on disposal, not on storage**
- **Delivered final report to Acting OCRWM Director March 31, 1993**
- **For broad public review and discussion**
 - **Point of departure**

Task Force Members and Key Participants

TASK FORCE ON AN ALTERNATIVE PROGRAM STRATEGY

Thomas Isaacs (U.S. Department of Energy), Chairman

Maxwell B. Blanchard (U.S. Department of Energy)

MAJOR CONTRIBUTORS

Kenneth Baskin (Consultant)

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TASK FORCE SUPPORT

John Burns (M&O/JK Research Associates)

Robert Waxman (U.S. Department of Energy)

Task Force Approach

- **Draw on existing wealth of advice and experience**
 1. **External expert advice**
 - **NWTRB reports**
 - **NAS "Rethinking" report**
 - **OTA report**
 2. **4 years of DOE analyses/stakeholder discussions**
 3. **European and Canadian experience**
- **Develop a coherent alternative disposal strategy that**
 - **Reflects external expert recommendations**
 - **Responds to key stakeholder concerns**
 - **Draws on foreign experience**

Task Force Approach (Continued)

- **Thus, individual elements of strategy not new**
- **What's new is integration into overall approach to better**
 - **Meet program's objectives, and**
 - **Address expert and stakeholder concerns**

Public Review and Discussion

- **Alternative strategy designed as point of departure for extensive review and discussion**
 - **By external expert and regulatory bodies (NWTRB, BRWM, ACNW)**
 - **Through stakeholder forums convened by recognized, independent, consensus building group**
 - **By broad public through Federal Register notice and review**

For Public Review and Discussion

- **"a conceptual revised strategy for public review"
(January 12, 1993 Secretary letter)**
- **We call for an intensive process of interaction with . . . stakeholders to ensure that any strategy eventually adopted comes as close as possible to embodying a stakeholder consensus."
(Foreword to Task Force Report)**
- **"We believe that the alternative strategy could serve as the basis for a broad public review and discussion of key aspects of the program."
(March 31, 1993 transmittal letter)**
- **"Secretary O'Leary has made clear that any alternative strategy that the program may eventually adopt will be the result of a thorough, formal and public discussion with the program's stakeholders."
(July 15, 1993 DOE public comment letter)**

Old Assumptions

1. Reactor fuel goes straight to repositories

- Two repositories (1998 and 2006)
 - Loading rates: 3000 MTU per year each
- No MRS
 - Repository basis for acceptance and disposal
- No funding constraints

2. Rapid, full-scale and complete disposal of spent fuel

New Realities

1. Repository cannot be the basis for acceptance

- One repository around 2010
 - Long surface storage

2. Funding constraints

3. Costs rise and repository schedules slip

- Little visible progress to a license

4. No urgent safety need for rapid, full-scale disposal

5. Rise of dry storage technologies

The Problem

Large investments before major progress milestones

- At least \$6.3 billion and 2001 for final suitability
- Several billion more and 2010 before first licensed disposal

Result: huge investment risk or fear of irreversible momentum

- Utilities, Congress, ratepayers see
 - High and rising cost
 - No results in hand or in sight
- Nevada, environmentalists, public interest groups see
 - So much invested
 - Automatic favorable conclusion

Why the Problem?

Current program strategy

- **Single large step licensing**
 - **"Optimized" full-scale system design for license application**
- **Full-scale disposal quickly after licensing**
 - **Construct full-scale facilities as soon as possible**
- **Assumption: Urgent need to dispose of spent fuel rapidly**

Key Concepts of Alternative Strategy

- **Redefine "success"**
- **Define a robust safety concept**
 - **Broad external validation (e.g., Sweden)**
- **Incremental approach that**
 - **Features clear, interim milestones**
 - **Has periodic suitability and preliminary formal pre-licensing findings**
 - **Allows us to learn as we go and "optimize" on the basis of experience**
 - **Reflects a first-of-a-kind endeavor**

"Success" = Early Licensed Disposal Capability

- **Licensed disposal capability means**
 - **A suitable repository site**
 - **A license for disposal**
 - **Some waste emplaced**
 - **The option to emplace more waste**
 - **A place to store waste in the meantime**
- **Meets obligation to future generations**
 - **Gives them a clear, safe option for disposal**
 - **We bear the political, institutional, financial costs**
- **Does not preclude full-scale disposal**
 - **But does not mandate it**
- **Even if everything went right with the current program**
 - **Our great-grandchildren, not we, would close a repository**

Define a Robust Safety Concept

- **Define the case for safe disposal at Yucca Mountain**
 - **Clear, concise, easily understood**
 - **Testable site features**
 - **Conservative engineered barriers**
- **Submit safety concept to broad external review by**
 - **U.S. and international scientific and technical communities**
 - **Key U.S. stakeholder groups**
- **Use revised concept**
 - **As hypothesis to be tested: confirmed, refuted, revised**
 - **To focus site characterization on features most demonstrable and important to safety**

A Robust Case for Safety

- **Meet direct and stringent safety goals**
 - **Meet or exceed any likely new standards and regulations**
- **Multiple features**
 - **Redundant**
 - **Conservative**
 - **Diverse**
 - **Natural and engineered**
- **Uncertainty increases slowly with time**
- **Performance degrades gracefully with error**

A Robust Case for Safety (Continued)

- **Transparent, demonstrable**
- **Natural analogues**
- **Retrievability, surveillance, reparability**
- **International consensus**
- **Closure decision**
- **Markers**

Incremental Approach

1. Set clear, interim goals towards suitability, license

- To lay out definite decision points
- To mark progress, or lack of progress
- To guide investment decisions: dollars follow clear decision points

2. Develop licensed repository in phases

- Start small and "scale up": standard practice for large, complex projects, especially first-of-a-kind
- "Optimize" on the basis of incremental development and experience

Early Preliminary Regulatory Findings

- **Early DOE suitability findings against Part 960**
 - **Externally reviewed to ensure credibility**
- **Early NRC Preliminary Safety Evaluation Reports**
- **Purpose**
 - **Early indicator of site suitability or unsuitability**
 - **Give externally-reviewed measures of progress**
 - **Force issues out early**
 - **Build broad and growing understanding of what "reasonable assurance" means**
- **We – all of us – need to know**
 - **If site looking suitable or not**
 - **If site looking licenseable or not**

Phased Repository Development

- **Seek initial license for full-scale disposal using conservative design and incremental development plan**
 - **Seek earlier operating license for small amounts of waste packaged at packaging facility**
off-site - similar to Swedish waste encapsulation facility
 - **Build pilot on-site packaging facility in parallel, operate when ready**
- **"Optimize" design on the basis of experience during site study, licensing and small-scale operation**
- **Seek license amendment later, if desirable**
- **Design for extended open operating and monitoring**

Result

A strategy that offers:

- **Less time and cost of characterization**
- **Licensed disposal sooner and with smaller investment than current strategy**
- **Reduced investment risk**
- **Clear interim milestones to mark steady progress**

Management and Institutional Initiatives

- **No disposal strategy can work unless**
 - **Executed efficiently and effectively**
 - **Conducted openly and inclusively**
- **Task Force recommends**
 - **Independent review of organization and management**
 - **An ongoing and systematic process for interacting with the external scientific and technical community**
 - **A standing Stakeholder Advisory Committee**

In Conclusion

- **Alternative strategy**
 - **Integrates recommendations for change, including TRB's**
 - **Reflects new realities**
 - **Starting point for broad dialogues**