

## TENNESSEE'S RESPONSE TO THE MRS PROPOSAL

James E. Word and Ruth H. Neff  
Tennessee Department of Health and Environment

### ABSTRACT

Tennessee responded to DOE's proposal to build an MRS in Tennessee by organizing a comprehensive, multi-agency review of the proposal and an independent technical analysis of the assumptions upon which the MRS proposal is based. The state also performed an impact analysis, researched legal and constitutional issues, and consulted the public. The findings were delivered to Governor Lamar Alexander, who after thoughtful deliberation, concluded that although the MRS may be safe, it is not needed and is a waste of money. He found that Oak Ridge is precisely the wrong place for an MRS. He will issue a Notice of Disapproval. The state has also challenged the site selection process because DOE failed to consult with the state. The state review process, major findings, litigation and "lesson learned" are described.

### INTRODUCTION

Tennessee has now completed a wide-ranging, independent evaluation of the Department of Energy's proposal to construct a monitored retrievable storage facility (MRS) in Tennessee. The intensive and often frustrating study was compressed into six months. The state evaluation was completed in mid-December, and a final report was made to the Governor on January 6, 1986. After a thorough review of the information delivered to him, Governor Lamar Alexander announced his decision to issue a Notice of Disapproval on January 21, 1986.

The state's review was based on the premise that "Good Science makes Good Policy". The state review process was professional, it was objective, it was thorough, it was open. All of our findings were shared with the public. We are proud of our work and we stand behind it.

#### A Bit of Background

On April 26, 1985, the Secretary of Energy announced that an integral MRS was needed as an essential element of the nation's commercial high level radioactive waste disposal system, and that it was feasible. The Secretary proposed to build the MRS at one of three sites in Tennessee. The preferred site was the abandoned Clinch River Breeder Reactor Site, near Oak Ridge. A site on the Oak Ridge reservation and the cancelled TVA nuclear plant site near Hartsville were offered as alternatives.

DOE offered financial support to the state to fund its review. A grant proposal was prepared and submitted to DOE, and a \$1.4 million grant was awarded to the state in early June 1985. The grant was shared with Oak Ridge and Hartsville. Each community received an award of \$100,000 to fund a locally focused impact study.

#### Design of the State Evaluation Program

In spite of its initial surprise and consternation, Tennessee did not react to the DOE proposal precipitously. Instead, Governor Alexander directed his Safe Growth Cabinet Council to undertake a comprehensive review of the DOE proposal. He asked the Council to collect the information he would need to make an informed decision by the end of the year. The Governor did not ask for a recommendation.

The Governor asked the Cabinet Council to focus on five questions. These are:

- 1) Is an MRS needed?
- 2) Is an MRS (and the related transportation of nuclear wastes) safe?
- 3) How will an MRS affect the economy of the state?
- 4) What do people think about an MRS?
- 5) What is--or should be--the state's role?

These questions provided the framework for the Cabinet Council's MRS evaluation. The study consisted of four major components:

- an independent technical evaluation of the need and feasibility of an MRS;
- an impact study to define the probable effects of an MRS on the health, safety and economic well-being of the state and its citizens;
- an extensive outreach and citizen participation program; and
- research on legal and constitutional issues that emerged in the course of the state review.

The Safe Growth Cabinet Council provided overall guidance and oversight. The review team met every month and share information and coordinate their work.

Information was collected from many sources. The staff diligently reviewed all or portions of several hundred DOE documents. They attended briefings and workshops; they framed and submitted specific questions to DOE, and evaluated the responses. They made site visits and examined original data. DOE conducted three western tours for state and local officials. The itinerary included visits to DOE Laboratories in Idaho, Nevada, and New Mexico to observe fuel handling equipment, hot cell operation, monitoring systems, dry storage demonstrations and cask testing.

The Tennessee General Assembly took a parallel approach. By resolution, the legislature created a joint MRS Study Committee to consider the MRS proposal and bring a recommendation to the full legislature early in the 1986 session.

## A Technical Review

The state's technical review was led by the Safe Growth Staff and a Technical Advisory Panel, appointed by the senior author to augment the state's technical expertise. The distinguished panel, consisted of 21 experts recruited from the academic world, from government and the private sector, from the nuclear industry and its critics. The membership of the panel encompassed many disciplines, including physics and nuclear engineering-4; utility managers-4; radiological health and occupational safety-3; earth and environmental sciences-2; transportation planning and modeling-2; economics-1 and systems analysis-1.

The Technical Advisory Panel met early in July. The charge to the Panel was to identify basic assumptions made by DOE, to evaluate the validity of the scientific evidence supporting DOE's conclusions, and to define unresolved issues in need of further investigation. The Panel was asked to critique and refine a draft list of "key questions" prepared by the Safe Growth staff.

The key questions played a unique role in the state's analysis. The list included highly technical questions such as

"To what extent could extended burnup transshipment and at-reactor rod consolidation reduce DOE estimates of supplemental spent fuel storage requirements?"

as well as policy questions like:

"Will the MRS be used for a second repository?"

The adequacy of the DOE proposal was judged, in part, on the degree to which DOE addressed and answered the key questions in its proposal. The list of key questions was provided to DOE in October.

The Technical Advisory Panel advised the state to mobilize the considerable expertise within the state to carry out the ambitious program of work. Major contracts were negotiated with the University of Tennessee-Knoxville and Vanderbilt University, who in turn employed subcontractors with needed special expertise. Before the state evaluation was complete, it involved experts from two major universities, four university based research institutes or centers, an academic consortium, TVA's technical staff and the data management branch of a major nuclear industry. Including the Technical Advisory Panel members themselves, more than 50 senior scientists, engineers and systems analysts participated in the study. They were supported by a small army of junior staff, graduate students and technicians.

The state's consultant team, under the leadership of Dr. E. William Colglazier of the University of Tennessee, developed independent estimates of spent fuel discharges, supplemental storage needs, and the potential of extended burnup, transshipment, and/or at-reactor rod consolidation to reduce on-site storage needs. The team prepared a state-of-the-art review of rod consolidation technology and operating experience and prepared independent estimates of MRS costs and benefits.

The state's transportation study team examined waste system transportation planning assumptions, research and development and logistics. The group defined 12 possible waste system scenarios for in-depth analysis, using DOE computer programs to define

probable routes. Using a spread sheet program, the team calculated shipment-miles, cask-miles and ton-miles for Tennessee and the U.S. for each scenario. The state team determined its own risk and cost factors and calculated the risks and costs related to the transportation of spent nuclear fuel under each scenario.

As a special task, the transportation study team examined the DOE analysis which defined a "preferred region" for an MRS, and evaluated the technical validity for the selection of three MRS sites in Tennessee.

## State Impact Analysis

The second component of the state study was designed to define the impact that an MRS would have on Tennessee if it were authorized and sited in the state, with or without state concurrence. Twelve agencies, from five Executive Departments and two independent commissions participated in the impact study.

The state agencies concentrated on four questions:

- What would be the effect of an MRS on the health and safety of Tennessee citizens?
- What would be the effect of an MRS on the Tennessee economy?
- What additional capital and/or operating costs would be incurred by state government?
- What additional legislative or regulatory authority would be needed to protect the health and welfare of the state?

The state's analysis of the economic impact of an MRS on Tennessee's economy is noteworthy. The study went beyond the examination of conventional planners' parameters (jobs, taxes, costs of services, etc.) to explore the impacts of public perceptions about a nuclear waste facility on industrial location and tourism.

## Involving the Public

Governor Alexander and the Safe Growth Cabinet Council were firmly committed to a policy that the citizens of the state should be partners in the state's ultimate decision. A comprehensive public outreach and participation program was conducted by the Council. Its goal was to provide citizens with the information needed to reach an informed option.

Public reading rooms were established in Nashville, Hartsville and Oak Ridge. Copies of DOE documents and state reports were placed in the reading rooms for public use.

The Cabinet Council conducted four Public Information Meetings across the state in August and September. At each meeting, DOE officials described the MRS proposal in detail, supported by exhibits and publications. State spokesmen described the design and scope of the state review. Citizens were invited to speak to ask questions to comment on the state review process, to provide information, and to express their opinions about the MRS.

By mid-November state agencies and consultants had completed a substantial portion of their work and had drafted preliminary reports. These findings were reported to the public in early December, at a second series of Public Information Meetings. The

public was invited to offer comments at the meetings, or to write or call in their views.

The views and opinions of citizens were received through several channels, including: letters to the Governor or to the Safe Growth office; testimony at the Public Information meetings; returned questionnaires; petition; and calls to a toll-free "MRS Hot-Line". All comments and opinions received before December 31, 1985, were recorded, tabulated and included in the public response report to the Governor and legislative Study Committee.

#### Local Community Reviews

Both the Hartsville and Oak Ridge/Roane County communities organized and conducted effective local impact studies.

The Oak Ridge/Roane County community swiftly organized for action by creating a joint study committee--the Clinch River MRS Task Force. The Task Force consisted of 35 persons--a mix of local government officials and private citizens appointed by the Major and the County Executive. The Task Force was organized into three Subcommittees--Environment and Safety; Transportation; and Socioeconomic impacts. The Subcommittees met weekly. The Subcommittees submitted specific written questions to the DOE; they requested written answers and set a deadline.

Three Subcommittee reports were merged into a single Task Force Report, which was adopted by the City Council in Oak Ridge and the Roane County Commission as official policy. The Task Force Report was submitted to the state and to DOE.

The Oak Ridge/Roane County effort was distinctive in several respects. It took a strictly local perspective; it did not consider national need/feasibility, or state-wide impacts. It was based on information available at the time of the project announcement, plus whatever additional information could be gathered through the committee's work. The Task Force approach was to examine the proposal to determine if it could be operated safely, and if so, to set forth conditions under which the MRS would be acceptable. The Task Force strategy was to influence the final DOE proposal as it was being drafted.

The Hartsville community organized a regional study group called the REview, Evaluation, Analysis and Liaison (R.E.A.L.) Committee; it was made up of local government officials from the five counties in the MRS "primary impact area." The Hartsville community study followed conventional patterns. The committee identified adverse effects which would have to be compensated if an MRS were constructed at the Hartsville site. The study group also commissioned a comprehensive and statistically significant survey of community attitudes and opinions.

#### Legal and Constitutional Issues: Litigation

The Office of the Attorney General was given the responsibility to track DOE's compliance with the provisions of the Nuclear Waste Policy Act and to research legal questions which emerged in the course of the state review.

Early in its investigation, the Attorney General and his staff became convinced that the Department of Energy had violated the Nuclear Waste Policy Act by failing to consult with the state during the site screening and selection process. After attempting unsuccessfully to resolve the controversy through

discussions with DOE attorneys, the Attorney General filed suit in the U.S. District Court on August 20, 1985. The suit challenged the legality of the site selection process and asked DOE not to use studies prepared without state consultation and cooperation to support its proposal to Congress.

#### Results and Conclusions

The state's comprehensive review is summarized in a package of 12 Reports and Appendices--a total of nearly 2000 pages. The reports were delivered to the Governor, members of the Safe Growth Cabinet Council and the Legislative Study Committee on January 2, 1986. Copies were provided to the Department of Energy and placed in the public reading rooms at the same time.

The state's independent technical review concluded that DOE had not demonstrated the need for an MRS. All of the functions to be performed at an MRS can be performed equally well in an improved no-MRS system--and at a lower cost.

The state's analysis found the DOE's waste projections were too high, its projections of supplementary storage capacity at reactor sites were too low, and their expectations about extended burnup, transshipment and in-pool consolidation to be far too pessimistic. The state study suggested that most utilities could store their spent fuel well into the 1990's, or beyond.

The state transportation study found that all of the transportation benefits claimed for an MRS--e.g., fewer shipments, shorter trips, fewer shipment-miles, cask-miles and less radiological risk--could be provided by improving transportation equipment and logistics--with or without an MRS.

The state found that using larger casks, increasing the proportion of shipment by rail, and marshalling shipments into multi-cask dedicated trains, reduced all transportation parameters to levels that were comparable to the reductions that could be achieved with an MRS.

The state found that (with a single exception) adding an MRS to the system increased the shipments, shipment-miles, cask-miles and ton-miles into or through Tennessee. Risks, though low, were proportionally higher for Tennesseans with an MRS.

The state found that an MRS was not cheap. The state concluded that DOE had underestimated costs and overstated benefits. The state calculated that the net cost of adding an MRS to the waste system would be \$2.2 to \$2.8 billion--about \$1 billion higher than DOE estimates. The calculated benefit:cost ratio is 1:4.

The state investigated the effect of an MRS on the Tennessee Valley Authority, Tennessee's electric utility. TVA projects that by the year 2000, it will produce approximately 9% of the nation's nuclear energy, and will bear 9-10% of the total costs of the nation's high level waste system. Adding an MRS to the system would cost TVA ratepayers approximately \$.25 billion.

The State's review of rod consolidation in a dry environment revealed that it is a promising technology, but it is by no means a mature one. It has never been performed at a mass-production scale. Rod consolidation has great potential for accidents, worker exposure, generation of non-fuel high activity wastes, and cost overruns.

The state found no solid technical basis for DOE's screening and site selection process. The Tennessee sites were selected for political and programmatic reasons, not for technical ones.

The conceptual design for an MRS appears safe. The state has some reservations about DOE's commitment and ability to operate the facility as designed (based on past performance), and about DOE's lack of experience as an NRC licensee. The radiological risk due to the transportation of spent fuel was found to be low and acceptable.

The construction and operation of an MRS in the state would increase state capital and operating costs by as much as \$180 million. In addition to road upgrades, additional staff, a communications network, monitoring/inspection equipment, and extensive personnel training would be required.

Benefits to the Tennessee economy from an MRS would be limited to jobs--direct, indirect and induced--and tax revenues (or grants-equivalent-to-tax payments). The amount of benefits is small relative to the existing local economy. The benefits would not be realized for ten years, they would begin with construction and operation.

The costs to the state economy would be immediate and adverse. The negative effects are based in part on the PERCEPTIONS people have about nuclear waste and nuclear waste facilities. A majority (55%) of industrial managers reported that they would not locate in a county where there is an MRS. About 10% held this position, even if their property taxes were decreased by as much as 40%. Tourists expressed a similar reluctance to travel near an MRS facility.

Analysis of testimony, letters, questionnaires, and petitions indicated that 93% of the respondents were opposed to an MRS, 3% supported the proposal, and 4% expressed no opinion. Support for the project was concentrated in the City of Oak Ridge; support diminished rapidly outside city limits.

The Hartsville Community overwhelmingly rejected the DOE proposal. A survey found 96% of the surveyed population opposed an MRS facility in the Hartsville community--or anywhere. This opposition was reflected in formal resolutions adopted unanimously by each of the five County Commissions.

The Clinch River MRS Task Force conditionally accepted an MRS, and worked vigorously to convince DOE that their conditions should be included in the MRS proposal. The conditions were tough and innovative--including compensation to begin upon authorization, and continue through decommissioning; transfer of DOE's MRS and transportation research program management to Oak Ridge; clean up of environmental problems at the Oak Ridge National Laboratory and Y-12 weapons plant sites; a state/local oversight committee with full access to monitoring data and authority to suspend shipments to the MRS under defined conditions; and a massive public information and education effort designed to dispel negative public perceptions about nuclear technology.

#### Anatomy of a Decision

On January 21, Governor Alexander traveled to Washington, D.C., to announce his decision to issue a Notice of Disapproval. He met personally with Secretary of Energy John P. Herrington, and then conferred with members of the Congressional delegation. His decision was made public at a news conference

immediately following his meeting with Tennessee's Senators and Congressmen. The Department of Energy expressed their disappointment at Governor Alexander's decision.

Governor Alexander's decision to oppose the MRS proposal was based on the information provided to him by the state's independent analysis and review. In his statement, Governor Alexander stressed three points:

- An MRS is unnecessary and is, therefore, a waste of money.
- The repackaging plant can be designed and operated safely, provided that the U.S. Government is a competent manager and regulator.
- Oak Ridge is exactly the wrong place for an MRS. It is an integral part of a three county "Knoxville area" which is one of the most important magnets in America for good new jobs. The State has invested millions of dollars in the area, and is anticipating that high technology firms will locate in the area. Negative public perceptions about nuclear waste, and a highly publicized national debate about the MRS could run away many, many more jobs that it could ever attract.

The Governor's decision did not end the state's MRS efforts. It did provide focus. Since the Governor announced his decision, the state has reviewed the draft Proposal and portions of the supporting documents. The state's comments were mailed to DOE on February 5, 1986.

The Governor's decision altered neither the DOE proposal nor timetable. DOE announced that it would submit a three volume, "Monitored Retrievable Storage Submission to Congress" and a multi-volume Conceptual Design document to Congress on February 9, 1986. The submission will be accompanied by formal review comments from the Nuclear Regulatory Commission (NRC), the Environmental Protection Agency, and the State of Tennessee.

#### The Court Steps In

In a dramatic last-minute "cliff-hanger", Judge Thomas A. Wiseman of the U.S. District Court in Nashville ruled on February 5, 1986 that the Secretary of Energy had

"...violated section 117(b) of the ACT, 42 U.S.C., section 10127(b) by failing to consult and cooperate with the State of Tennessee in conducting extensive siting studies...(and that)...the siting portion of the Secretary's final proposal is fatally flawed."

The Court ordered the Secretary not to go forward with the MRS proposal until the DOE had complied with the consultation and cooperation provisions of the NWPA. The Court did not issue an injunction, in the belief DOE would abide by the Court Order without coercion.

In response to a query from the press, spokesmen for DOE in Washington stated that the Department intended to go forward with their proposal to Congress on February 9, unless their General Counsel advised them not to do so. Alarmed by this apparent disregard

for the Court Order, the Tennessee Attorney General sought assurances from the U.S. Department of Justice that DOE would not proceed with its Submission on February 9, and that, if they did proceed, the state would receive prior notice. The Justice Department gave those assurances.

They were premature. Two hours later, the Justice Department Attorney called back, and withdrew these assurances, on the instructions of DOE. In short, as the Tennessee Attorney General observed,

"DOE refused to tell the state what it was going to do, or when it was going to do it."

Fearing that if the flawed proposal went to Congress on February 9, that "...the horse would be out of the barn...", the Attorney General went back to the Court and asked for a temporary restraining order. The Court, obviously irritated at DOE's action, enjoining the Secretary from proceeding.

DOE is expected to appeal Judge Wiseman's ruling to the U.S. Court of Appeals in Cincinnati.

#### Looking Ahead

The MRS proposal has, or soon will, move into a wider arena--the United States Congress. The ultimate decision about MRS may well be more political than scientific, more economic than technical. Tennessee is only one of the stakeholders in the MRS controversy--albeit an important one. Whether Tennessee can develop a strategy, find allies and mobilize power to sustain a Notice of Disapproval remains to be tested.

It is highly probable that the State of Tennessee will present a united position to the Congress. The Tennessee General Assembly now has a resolution before it calling for a legislative Notice of Disapproval. The resolution is expected to pass with a large majority within two weeks. The Clinch River MRS Task Force, the City of Oak Ridge, and Roane County have stated that they will not undercut the state position.

Governor Alexander will actively oppose the MRS proposal. The state review team will continue to provide staff support--to answer questions, prepare testimony, and perform additional analyses as required.

#### Some "Take-Home Lessons"

The Department of Energy spokesmen have widely admonished other states to watch the MRS process in Tennessee. The DOE/state and DOE/Oak Ridge interactions are cited as a model of the "new" DOE approach. The MRS program is described (outside of Tennessee) as open, cooperative and responsive to state concerns. Tennessee was expected to give the MRS proposal a "yes, provided..." or possibly a "not unless"--both negotiable.

And yet the state's decision was a firm, unconditional "no"--rejection of the MRS proposal by the Governor, the legislature, and 93% of the citizens of the state. Only Oak Ridge accepted the MRS--and that acceptance was conditional. Clearly, DOE has an "institutional problem" with Tennessee.

Until DOE learns to accept the states as equal partners in planning a national high level nuclear waste system, it will continue to have "institutional problems." Some of them could be averted by genuine "cooperation and consultation" with the states.

Tennessee's rejection of the MRS proposal was neither a "knee-jerk" reflex--nor a classic example of notorious "not-in-my-backyard!" syndrome. The State decision was based on sound research, extensive consultation, unhurried deliberation and a careful weighing of values.

If the Nashville District Court's decision is upheld on appeal, DOE may have a second chance--an opportunity to learn from its mistakes.