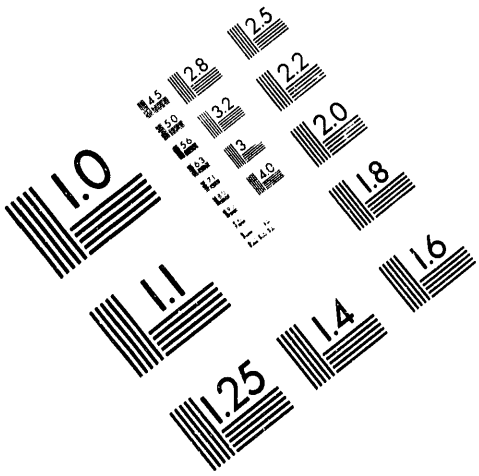

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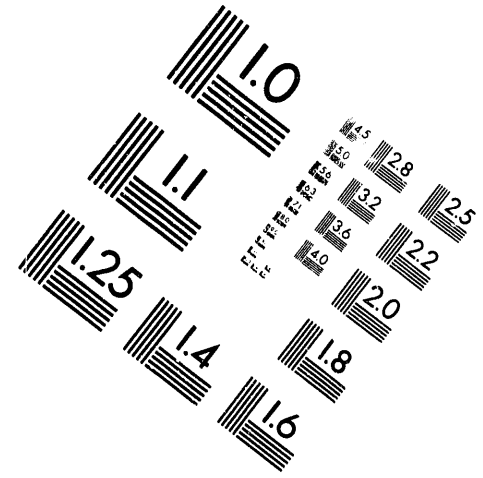

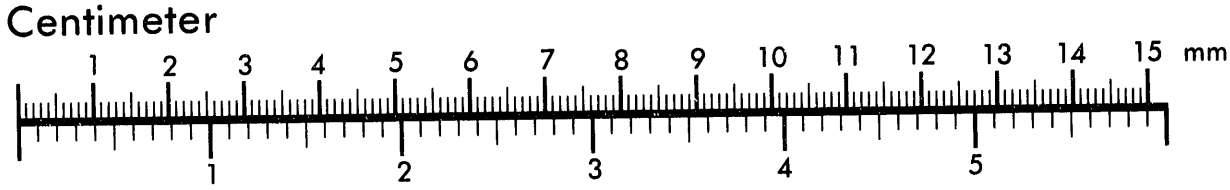

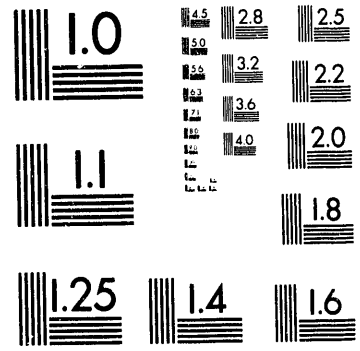

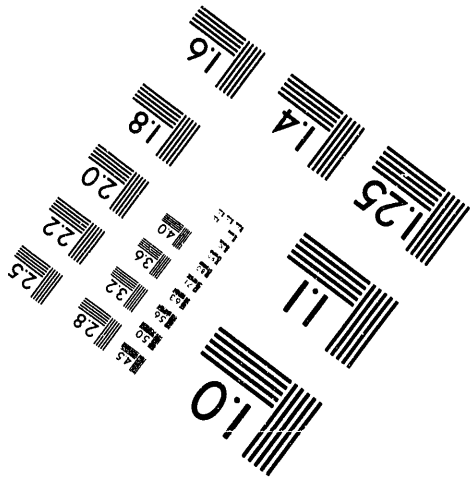

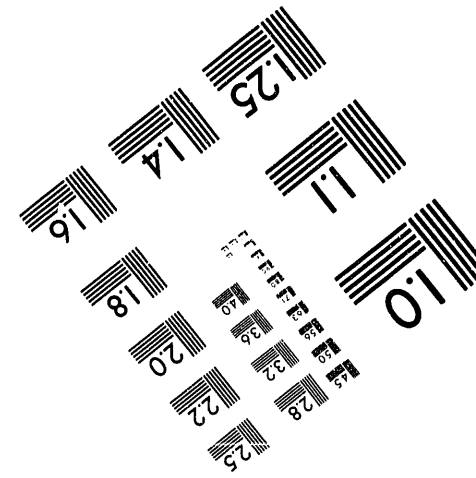

1 of 1

DOE/CH/10324--T1

Lessons Learned by Southern States in Transportation of Radioactive Materials

March 1992

Prepared for the U.S. Department of Energy
under Cooperative Agreement
DE-FC01-87CH10324

by the

Southern States Energy Board
3091 Governors Lake Drive, Suite 400
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The Nuclear Waste Policy Amendments Act of 1987 gave the U.S. Department of Energy (DOE) responsibility for the management of the nation's high-level radioactive waste (HLRW) and spent nuclear fuel (SNF). When DOE accepts these materials and sends them to interim storage at a monitored retrievable storage (MRS) facility or permanent disposal at a geological repository, states must have the capability to protect the public health and safety of their citizens in the event of a transportation incident. As safety analyses and data from past accidents have demonstrated, the potential risk of injury resulting from the radioactive nature of such materials is relatively small compared to that associated with other hazardous materials transport. However, the potential adverse consequences of a release of radioactive materials into the environment demand that a future fuel shipment campaign use all appropriate mechanisms to plan for safe transport. The commitment of DOE and the states to such planning efforts will demonstrate to the affected public that the shipment campaign involves an acceptable level of risk.

This report has been prepared under a cooperative agreement with DOE's Office of Civilian Radioactive Waste Management (OCRWM) and is a summary of the lessons learned by southern states regarding the transportation of radioactive materials, including HLRW and SNF. Sources used in this publication include interviews of state radiological health and public safety officials that are members of the Southern States Energy Board (SSEB) Advisory Committee on Radioactive Materials Transportation, as well as the Board's Transuranic (TRU) Waste Transportation Working Group. Other sources include letters written by the abovementioned committees concerning various aspects of DOE shipment campaigns.

Although this report contains information about the transportation of radioactive materials that are neither HLRW nor SNF, the lessons learned from the shipment of these materials can be readily applied in preparing for the upcoming OCRWM campaign. While the physical characteristics of HLRW and SNF are quite different from that of other radioactive materials, other aspects of radioactive materials shipments, such as public confidence and perceptions of relative risk, are analogous.

Many state officials are pleased with the Department's new spirit of openness. In a letter to the Institutional Specialist in the Office of Civilian Radioactive Waste Management

(OCRWM) Transportation Program, members of the Advisory Committee on Radioactive Materials Transportation stated that they are "encouraged by DOE's recent emphasis on protection of public safety and health ... [and recognition of] the importance of protecting the environment." Many state officials believe DOE has substantially improved their public outreach and information dissemination policies and practices. In their comments, the officials recommended that DOE continue along this path of openness. DOE, state officials and the general public will all benefit from increased communication and cooperation with respect to DOE's waste management activities. Increased cooperation between the states and DOE will help provide safe and efficient transportation of radioactive waste materials.

Officials also appreciated DOE's efforts to integrate planning activities within its own structure. For instance, the Waste Isolation Pilot Plant (WIPP) project, conducted under the auspices of the Office of Environmental Restoration and Waste Management (EM), has provided valuable lessons for the OCRWM campaign. With respect to the WIPP program, many state officials expressed appreciation for DOE's increasing responsiveness to their concerns. They recognized DOE's efforts to renounce the decide-announce-defend policy that some critics charged has been endemic throughout the decisionmaking process.

While most of those contacted agreed that the overall handling of the WIPP program has been commendable, some officials expressed concern about aspects of the WIPP campaign they would prefer to avoid in the future during the OCRWM transport phase. Most notably, one official commented that DOE should not spend an excessive amount of time getting involved in planning for radioactive materials shipments in states where the actual shipments would not occur for several years. Employee turnover is especially high for local responders, and training and equipment programs five or more years before the start of a shipping campaign are of little value.

Several officials expressed dissatisfaction with the alternative route selection process and suggested ways to improve route designations. States continue to emphasize the need for DOE to identify the proper routing agency, or agencies, in each state. When more than one agency is involved in the decisionmaking process, DOE should designate a lead agency. States also have requested that DOE establish guidelines for the alternative route selection process. In addition,

once the alternative route selection process is complete, DOE should periodically review these routes to account for changing road conditions and population density shifts. Finally, when the time comes for actual shipments to take place, DOE should plan to notify more than one agency in each state, although such notification is not expressly required.

In order to communicate effectively with the states, DOE should consider maintaining contact with governors' offices in addition to emergency response contacts. This added contact is necessary, said respondents, because there often is a discrepancy between what is written in the law and what is implemented in practice with respect to transportation and emergency response procedures. State officials also requested that DOE provide the appropriate agencies with timely and accurate information updates of changes in Title 49.

Regarding emergency preparedness issues, state officials asked that DOE work with each state on a individual basis regarding emergency response training and equipment assistance. Each state has specific, unique needs that need to be addressed. For example, some states are more heavily populated or more frequently traveled than their counterparts. These states would need additional assistance for training and equipment. In addition, rural areas may need additional financial assistance simply to meet a minimum emergency preparedness standard. Taking into account the various differences in state needs, certain planning and training issues will have to be addressed on a local, not regional, level.

States have recognized that DOE has had difficulty in securing public confidence in its waste management transportation programs. The governors of both Missouri and Oklahoma, for example, have called for the use of full-scale cask design testing for DOE's OCRWM transportation program. Missouri Governor John Ashcroft and Oklahoma Governor David Walters both recommended that DOE test full-scale cask designs instead of scale models so as to increase DOE's credibility with the general public. In a letter to Secretary of Energy James D. Watkins, Governor Ashcroft wrote: "I must convey to you my disappointment that the draft Mission Plan Amendment still indicates a refusal on the part of the DOE to perform full-scale cask design verification tests. Engineering principles and laws of similitude notwithstanding, the general public is very skeptical that these scale-model tests prove that radioactive waste shipments in full size casks will perform satisfactorily under severe accident conditions."

Likewise, Governor Walters wrote "continuing to insist that scale-model verification testing is adequate may be good science, but it is poor public relations." These two governors, along with many other state officials, believe that investing in full-scale testing is a politically necessary expenditure that will save the Department time and money in the future.

States also recommended that DOE expedite the transfer of their extensive, sophisticated technologies relating to the handling of radioactive waste from the laboratory to the commercial sector. By fostering market development for these technologies, DOE will facilitate safer and more efficient transportation of radioactive materials. In addition, some suggested that DOE take the lead on formulating standards for waste packaging, processing, and handling. Increased uniformity in waste handling procedures can improve safety and efficiency throughout the waste management system.

One final recommendation made by state officials cites the need for a extensive public awareness campaign to communicate the "relative risks" involved with radioactive waste transportation. While no one has ever been injured or killed in a transportation accident because of the radioactive nature of the cargo, DOE's radioactive waste transportation program has encountered considerable political opposition from the general public. Based on results of a national survey conducted by Slovic, Flynn, and Layman, "the general public strongly distrusts DOE to provide prompt and full disclosure of any accidents or serious problems with their nuclear waste management programs." (Slovic et al, p. 1604) Over seventy-five percent of the survey respondents believe that rail accidents will occur in transporting the wastes to the repository site. (Slovic et al, p. 1604) State officials have suggested that DOE needs to make tremendous strides in attempting to educate people about the actual risks involved in radioactive waste transportation. DOE should portray the real risks of an accident from a perspective that includes other forms of hazardous wastes, such as gasoline or explosives hauling. The prevailing view in the scientific and technical community seems to be that radioactive wastes can be transported and disposed of safely, but a large segment of the general public clearly does not share this confidence.

States have recognized that OCRWM, EM and other branches of DOE have done much to improve their public outreach and communications efforts. DOE's new culture of openness

and the coordinating effect of DOE programs such as the Transportation Emergency Preparedness Program (TEPP) have helped restore needed credibility to the department. At the same time, public education efforts could be expanded. Transportation issues such as routing and emergency response capability also need to be addressed in a comprehensive fashion.

When assisting states in preparing for shipments of HLRW and SNF, the federal government should recognize the unique nature and needs of different states. While a regionwide approach is helpful in ensuring uniformity of treatment and the dissemination of needed information, DOE will have to work directly with states when shipments to an MRS facility or repository begin. Officials from southern states have also noted that certain institutional and political aspects of the federal waste management system are as important as the scientific and technical questions that are being asked. Without the willingness of an informed public to assume the risks of radioactive waste management as they perceive them, OCRWM may well find it impossible to accomplish its mission. The fact that such perceptions may come from political origins rather than technical questions makes them no less real.

References

Missouri Governor John Ashcroft, letter to James D. Watkins, Secretary, U.S. Department of Energy, November 1, 1991.

Slovic, Paul, James H. Flynn, and Mark Layman, "Perceived Risk, Trust, and the Politics a Nuclear Waste." (American Association for the Advancement of Science: 13 December 1991) Vol. 254, pp. 1603-1607.

Southern States Energy Board, Advisory Committee on Radioactive Materials Transportation, letter to Susan Smith, Institutional Specialist, OCRWM Transportation Program, U.S. Department of Energy, October 9, 1991.

Southern States Energy Board, Oklahoma Governor David Walters, 1991-1992 SSEB Chairman, letter to James D. Watkins, Secretary, U.S. Department of Energy, December 6, 1991.

Telephone interviews and other comments were obtained from:

Ms. Greta Dicus, Director, Division of Radiation Control and Emergency Management, Arkansas Department of Health.

Mr. Rick Hand, Nuclear Safety Supervisor, Illinois Department of Nuclear Safety.

Mr. James C. Hardeman, Manager, Environmental Radiation Program, Georgia Department of Natural Resources.

Mr. Rick Jacobi, Manager, Texas Low-Level Radioactive Waste Disposal Authority.

Mr. James E. Maher, Director, Mississippi Emergency Management Agency.

Ms. Sandra Threatt, Emergency Planning Coordinator, South Carolina Bureau of Radiological Health.

Mr. Elgan Usrey, Radiological Protection Officer, Tennessee Emergency Management Agency.

Mr. James E. Williams, Chief of Staff, Ohio Emergency Management Agency.

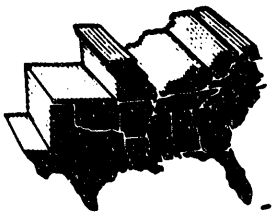
Appendix

1) letter from SSEB Advisory Committee on Radioactive Materials Transportation to Ms. Susan Smith, Institutional Specialist, OCRWM Transportation Program, October 9, 1992.

2) letter from Missouri Governor John Ashcroft to Secretary James D. Watkins, U.S. Department of Energy, November 1, 1991.

3) letter from SSEB Transuranic Waste Transportation Working Group to Mr. Michael Daughterty, Chief of Staff, WIPP Project Office, November 11, 1991.

4) letter from Oklahoma Governor David Walters to Secretary James D. Watkins, U.S. Department of Energy, December 6, 1991.



SOUTHERN STATES ENERGY BOARD

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October 9, 1991

Ms. Susan Smith
Institutional Specialist
OCRWM Transportation Program
RW-431
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585

Re: The Southern States Energy Board (SSEB)
Advisory Committee on Radioactive Materials Transportation
Committee Comments on Section 180(c) Draft Strategy

Dear Ms. Smith:

The Southern States Energy Board (SSEB), a non-profit interstate compact agency that serves as the regional energy and environmental representative for sixteen southern states and the commonwealth of Puerto Rico, maintains a cooperative agreement (DE-FC02-87CH10324) with the U.S. Department of Energy (DOE), Office of Civilian Radioactive Waste Management, to study institutional issues surrounding the transportation of commercial spent fuel and high-level radioactive waste through the southern region. To assist the Board in this work, SSEB has established a committee comprised of representatives from state agencies with responsibility for health and radiological issues. That committee, the SSEB Advisory Committee on Radioactive Materials Transportation, is pleased to provide comments on DOE's draft strategy for implementing Section 180(c) of the Nuclear Waste Policy Amendments Act of 1987.

SSEB is encouraged by DOE's recent emphasis on protection of public safety and health while recognizing the importance of protecting the environment. Therefore any program implemented under Section 180(c) should emphasize the important fundamental components of public education and prevention. For example, a well-engineered and tested cask design is essential for assuring the safe transportation of radioactive waste.

As SSEB commented in its letter of January 18, 1991 (copy attached), the committee continues to have an overriding concern about DOE's emphasis on tying Section 180(c) to an unrealistic, tiered schedule and timeline. This could have the effect of providing training prematurely or in an inappropriate jurisdiction.

Some specific concerns expressed by the committee are:

- In implementing Section 180(c), DOE should provide the states with adequate resources for the management of the overall program, to include planning, personnel and equipment.
- The use of third party contractors to provide training direction is inappropriate without DOE remaining involved in policy issues.
- Section 180(c) should enhance each individual state's unique existing training and response capabilities.
- In the proposed list of Section 180(c) working group members, DOE should include an appropriate emergency response organization under state technical organizations.

The Advisory Committee on Radioactive Materials Transportation appreciates the opportunity to provide comments and will comment formally on the draft strategy on Section 180(c) during the promulgation process. We found your presentation to be informative and useful, and look forward to working with you on Section 180(c) and other issues in the future.

With kindest regards, I am

Yours Very Truly,

J. Michael Martinez
for
Southern States Energy Board
Advisory Committee on Radioactive
Materials Transportation

JMM:eam

Enclosure: As Stated

EXECUTIVE OFFICE
STATE OF MISSOURI

JOHN ASHCROFT
GOVERNOR

P.O. BOX 720
JEFFERSON CITY, MO 65102

November 1, 1991

James D. Watkins, Secretary
U.S. Department of Energy
Forrestal Building
1000 Independence Avenue, SW
Washington, DC 20585

Dear Secretary Watkins:

We have reviewed the draft Mission Plan Amendment prepared by the Office of Civilian Radioactive Waste Management.

Congress apparently expects the Department of Energy (DOE) to provide for waste acceptance at a monitoring retrievable storage facility by 1998 and waste disposal in a deep geologic repository by 2010. As I am sure you are keenly aware, further delays in this schedule will only lead to higher costs that are passed on to this nation's tax payers and electric utility rate payers.

I must convey to you my disappointment that the draft Mission Plan Amendment still indicates a refusal on the part of the DOE to perform full-scale cask design verification tests. Engineering principles and laws of similitude notwithstanding, the general public is very skeptical that these scale-model tests prove that radioactive waste shipments in full size casks will perform satisfactorily under severe accident conditions. Considering the high costs of even a short delay in this shipping program, full-scale testing of cask-design and integrity now would be a good investment for the future.

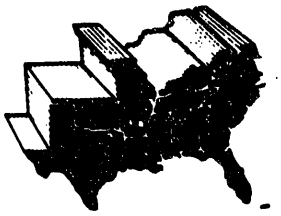
Regarding the identification of transportation modes and transportation routes, the DOE should use population risk as a significant criterion. Minimizing the risk to the public should be of prime consideration as routes are evaluated.

I look forward to seeing your department's reply to comments on the draft Mission Plan Amendment.

Sincerely,

GOVERNOR

c: Missouri Congressional Delegation
John W. Bartlett, Director, Office of Civilian Radioactive Waste Management
Thomas H. Isaacs, Director, Office of Strategic Planning and International Programs, OCRWM



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November 11, 1991

Mr. Michael Daugherty
Chief
Administrative Staff
Waste Isolation Pilot Plant Project Office
U.S. Department of Energy
P.O. Box 3090
Carlsbad, New Mexico 88221

Re: The Southern States Energy Board (SSEB)
Transuranic (TRU) Waste Transportation Working Group
Comments on The ***Waste Isolation Pilot Plant Five-Year Site Specific Plan***

Dear Mr. Daugherty:

The Southern States Energy Board (SSEB), an interstate compact agency that serves as the regional energy and environmental representative for sixteen southern states and the commonwealth of Puerto Rico, is currently working with the U.S. Department of Energy's (DOE's) Office of Environmental Restoration and Waste Management under a cooperative agreement to resolve issues associated with the proposed transportation of transuranic (TRU) waste through ten southern states--Alabama, Arkansas, Georgia, Louisiana, Mississippi, Missouri, Oklahoma, South Carolina, Tennessee and Texas--and the three midwestern states of Illinois, Indiana and Ohio. As part of that effort, SSEB has convened a committee, the Transuranic (TRU) Waste Transportation Working Group, comprised of representatives from each of the aforementioned states. The Working Group

meets periodically to discuss issues of significance regarding potential TRU waste shipments through the region. Accordingly, the TRU Waste Transportation Working Group is pleased to provide comments on the ***Waste Isolation Pilot Plant Five-Year Site Specific Plan.***

The individual members of the group appreciate the role that SSEB has played in facilitating the operation of the Working Group and anticipate that the Board will continue to assist states in this area with the financial support of the Department of Energy. The continuation of this effort is necessary if the southern and midwestern states are to be properly informed of DOE's shipping campaign. The members of the Working Group applaud DOE's commitment to work with SSEB. The strong pro-active approach taken by DOE in increasing its public openness and accountability is appreciated.

While this Working Group appreciates DOE's improved outreach and information dissemination, the newly revised ***Waste Isolation Pilot Plant Five-Year Site Specific Plan*** raises several issues of concern to the southern and midwestern states. In general, the details, goals, objectives and scientific protocols as outlined in the ***Site Specific Plan*** are insufficient. It is not possible to determine from the ***Site Specific Plan*** how future judgments will be made about the success or failure of the Test Phase.

Some specific concerns of this group include:

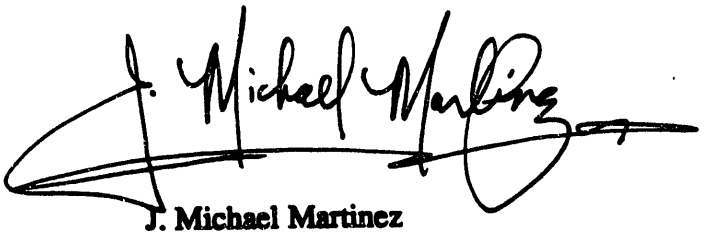
- In section 6.3.1, page 13 of the ***Site Specific Plan***, the first paragraph seems to indicate that both contact handled (CH) and remote handled (RH) TRU waste from *ten* locations will be received at the WIPP facility during the Test Phase. In the third paragraph on page 14, the ***Site Specific Plan*** states that "shipments of RH TRU waste for operational demonstrations are planned to start near the end of the Test Phase period." In section 6.3.3 on page 25, the ***Site Specific Plan*** states that "currently, no RH waste is scheduled to be emplaced during the Test Phase." These statements are contradictory. We request clarification of DOE's intentions for RH TRU waste testing during the Test Phase. If, during the Test Phase, experiments on RH TRU waste are not performed, the tests will not address both forms of TRU waste that will be emplaced during the operational phase. Can DOE certify that the handling and disposal procedures regarding RH TRU waste are valid without including RH TRU waste in the test phase?

- In section 6.3.1, page 15, the last paragraph indicates that RH TRU waste will be stored in 26-inch diameter steel canisters with a length of 10 feet. In section 6.3.1, page 14, the third paragraph states that "RH TRU waste will be shipped in NRC-certified shielded casks." Does DOE plan to use an existing NRC-certified cask to transport RH TRU waste or will a new cask have to be developed and tested prior to use in shipping RH TRU waste?
- Reference is made to the WIPP RH Waste Flow Diagram (Figure 6.3.2-4) Step 5: "Cask Unloaded from Trailer or Rail Car." Insofar as this group has been able to determine, the rail shipment option has not been included in recent planning. If rail is still a modal option, additional corridor states may be brought into the transportation routes. For example, rail shipments from Oak Ridge, Tennessee could be shipped through Kentucky, which is not currently a designated corridor state. Additional inspection procedures also will be needed in the event that rail transport is used.
- Reference is made to the WIPP RH Waste Flow Diagram (Figure 6.3.2-4) Step 12: "Canister Loaded into Facility Cask." Has the facility cask been developed and tested? If not, what is the schedule?
- The listing of WIPP interfaces in Appendix C needs to be updated now and at regular intervals in the future. DOE's failure to update the listing may result in an inability to consult appropriate parties.
- Under section 6.3.1, page 15, if waste must be retrieved and disposed of in another manner, how will this be accomplished and where will waste be taken?
- How much time does DOE anticipate will elapse between the end of the Test Phase and the beginning of the operational phase at WIPP? It is unclear from the ***Site Specific Plan*** whether the evaluation of test results will occur during the Test Phase or at some time thereafter.
- Additional activities at WIPP increase demands on state officials' time. The southern and midwestern states would appreciate a commitment from DOE to negotiate regarding funding the time and effort of Working Group participants.

The SSEB TRU Waste Transportation Working Group appreciates the opportunity to comment on the ***Waste Isolation Pilot Plant Five-Year Site Specific Plan*** and looks forward to receiving a timely reply to this letter.

With kindest regards, I am,

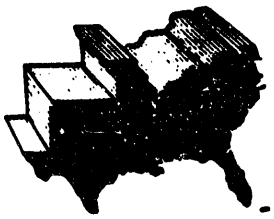
Yours very truly,



J. Michael Martinez
for
The Southern States Energy Board
TRU Waste Transportation Working Group

JMM:eam

cc: The Honorable David Walters, Governor of Oklahoma, SSEB Chairman



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December 6, 1991

James D. Watkins, Secretary
U.S. Department of Energy
Forrestal Building
1000 Independence Avenue, S.W.
Washington, D.C. 20585

Dear Secretary Watkins:

The Southern States Energy Board (SSEB), a non-profit interstate compact agency that serves as the regional energy and environmental representative for sixteen southern states and the commonwealth of Puerto Rico, maintains a cooperative agreement (DE-FC02-87CH10324) with the U.S. Department of Energy's (DOE's) Office of Civilian Radioactive Waste Management (OCRWM). Under this agreement, representatives of state agencies having responsibility for health and radiological issues convene to study institutional issues surrounding the transportation of commercial spent fuel and high-level radioactive waste through the southern region. As chairman of SSEB for the 1991-1992 year and the lead governor on energy and environmental issues, I have followed the work of this regional committee with interest, and I appreciate DOE's efforts in obtaining the input of potentially impacted states.

There are, however, certain aspects of OCRWM's strategy for handing the nation's spent nuclear fuel that are of continuing concern to the SSEB committee and the southern states. One particular matter pertains to OCRWM's continuing refusal to perform shipping cask design verification tests using full-scale models. The recently released ***Draft Mission Plan Amendment*** reiterates the Department's commitment to using scale models to demonstrate compliance with 10 CFR Part 71 to the Nuclear Regulatory Commission (NRC).

From a purely technical standpoint, scale modeling of cask designs may be sufficient to guarantee cask integrity; however, the problem presented by the use of scale models is not a technical

one. The general public is justifiably concerned about the safety of high-level radioactive waste transport, and they deserve to have their concerns addressed. Continuing to insist that scale-model verification testing is adequate may be good science, but it is poor public relations.

Given the delays that have been associated with the OCRWM program from the outset due to adverse public opinion, it would seem that the added costs of full-scale cask verification testing would be money well spent by DOE. As you know, further delays in the shipping program will result in added costs for the nation's taxpayers and utility ratepayers; more delays also will cost DOE no small measure of credibility.

I wholeheartedly encourage DOE to reexamine its position regarding scale-model cask design verification testing and take into account the value of increased public goodwill when evaluating the added costs. I am sure you will find it to be well worth the investment.

Sincerely,

David Walters
Governor of Oklahoma
Chairman, SSEB

cc: Oklahoma Congressional Delegation
John W. Bartlett, Director, Office of Civilian Radioactive Waste Management

Thomas H. Issacs, Director, Office of Strategic Planning and International Programs, OCRWM

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8/4/93
END