See Docket 5 for encl.

WM DOCKET CONTROL CENTER

'87 MAY 18 A10:52

OCRWM

United States Department of Energy
Office of Civilian Radioactive Waste Management
Washington, DC 20585

POLICY READER

APRIL 1987

87478789 WM Project: WM-1 H WM Record File:
PDR w/encl LPDR w/encl 109
(Return to WM, 623-SS)

WM Record File 109
WM Project 1
Docket No.
PDR ✓
LPDR

8709290254 870430

Distribution:
REB MJB Kennedy Boyle
JOB RDM JLinehan IRB
(Return to WM, 623-SS) RJohnson Coplan Conrado
encl. located in the DCC

encl. to OCRWM Policy Reader
April 1987

TABLE OF CONTENTS

Department of Energy
Washington, DC 20585

APR 2 1 1987

Honorable Richard H. Bryan
Governor of Nevada
Carson City, Nevada 89710

Dear Governor Bryan:

Secretary Herrington asked me to respond to the specific questions and concerns raised in your February 18, 1987, and March 6, 1987, letters regarding Consultation and Cooperation negotiations and the State of Nevada's application for financial assistance for 1987 pursuant to the Nuclear Waste Policy Act of 1982 (the Act).

Having reviewed the record regarding the State's grant request for 1987, together with the Department's prior experience with grants to the State of Nevada, it seems that the extensive interactions between the Department of Energy and the Nevada Nuclear Waste Project Office have been occasioned by a fundamental difference of opinion over the extent to which the Department needs to review activities proposed by the State for a grant. I think you will agree that the other concerns mentioned in your recent letters stem from this primary issue. We are preparing a formal financial assistance rule to address this and related issues and have agreed to meet again with the affected States and Indian Tribes next month to discuss the issues before such a rule is drafted. I am optimistic that a number of concerns can be resolved. Based on these discussions, the Department will draft a financial assistance rule. This rule will be noticed in the Federal Register so that all interested parties are afforded a formal opportunity to participate by commenting on the draft rule. I do, however, want to comment on my statement before the Senate Energy and Environment Committee, elaborate on our recent proposal to streamline our grants review process, and answer the specific questions in your March 6, 1987, letter.

It continues to be my view, as expressed before the Senate Energy and Environment Committee, that the Department has not impeded the State's ability to carryout its functions as provided by the Act. The record clearly shows that:

1) the State has been awarded nearly all the funds requested since the Act was enacted in 1983 through the 1986 grant year;

2) in three of the past four grant years, significant amounts of money awarded remained unexpended by the State at the end of each budget period;

3) the State reprogrammed $630,000 last year from its technical program to the socioeconomic area; and

4) the initial award for 1987 was for more than half the amount requested, which included over half the amount requested for technical studies.

The Department has completed its review of the additional information submitted by the State on the 1987 grant application and forwarded that review to the Nuclear Waste Project Office under separate cover.

Concerning the grants review process, Secretary Herrington asked that I elaborate on two points made in his recent letter to you. First, a number of factors have contributed to the amount of time it has taken to complete our review of the State's 1987 grant application. The Nevada Operations Office staff was prepared to address in detail many aspects of the State's grant request at our meeting with the State on December 16, 1986. Our record of the meeting shows that significant areas of agreement could have been reached for activities totaling more than $5 million. Discussion of other areas related to independent studies were postponed because it became clear during the meeting that the Department needed to articulate in writing for the State a more definitive and readily understandable basis for evaluating the request against certain criteria established by the Ninth Circuit Court of Appeals. Although we regret the delay in finalizing the written review of the grant request, the additional time was necessary, and I believe that our review sent to the State on February 12, 1987, effectively communicated the rationale for our support of some areas and our request for additional information in other areas. Based on that review, the State submitted additional information on March 5, 1987, to the Nevada Operations Office.

In an effort to streamline our grants review process, we proposed to the affected States and Indian Tribes at a recent meeting of the Institutional/Socioeconomic Coordination Group a new procedure that we expect will result in our ability to review grants and make awards within 90 days of our receipt of applications. It is my intention to meet the 90-day turnaround time, and this will require a cooperative effort between the Department and grant applicants both during the review process and in projecting financial resource requirements in connection with the federal budget process.

Your March 6, 1987, letter posed four specific questions regarding the Department's personnel involved in the review of Nevada's 1987 grant request and our own criteria used to evaluate work proposed by our contractors and personnel proposed to conduct that work. The enclosure addresses each of these questions.

I hope this letter has clarified the Department's position concerning its review of the State of Nevada's 1987 grant application. We look forward to meeting with the affected States and Indian Tribes next month in a cooperative effort to address outstanding issues on the financial assistance guidelines.

Sincerely,

Ben C. Rusche

Ben C. Rusche, Director
Office of Civilian Radioactive
Waste Management

Enclosure

Question 1: What criteria are applied to evaluate the scientific justification for work proposed by the Department of Energy's (DOE) contractors before such work is approved and funded?

Answer: The first requirement for approving work is that the effort is relevant to determining the suitability of the repository. With regard to scientific justification, criteria applied to contractors are based on the scientific method and are essentially the same as the clarifying factors identified in our letter of February 12, 1987. They are:

a. Clear identification of the physical phenomena to be studied, that is, the condition or item that is subject to the physical laws of nature.

b. Clear identification of characteristics to be measured and the established or developing method of observation or measurement that is capable of detecting and recording the effects with sufficient accuracy.

c. Clear identification of the methods of analyzing the data obtained from observation and measurement, and deriving the information about the physical phenomena that is to be studied.

d. Identification of the nature of the expected outcome of the study in order to relate it to the fundamental or relevant question that must be answered.

These criteria are comparable to the criteria that DOE and the Nuclear Regulatory Commission agreed, in the May 7-8, 1986, meeting on the Site Characterization Plan (SCP) contract and level of detail, were reasonable for assessing the adequacy of the SCP and Study Plans. The State of Nevada attended that meeting and also agreed that the requirements were appropriate.

Question 2: How are DOE's technical contractors and their principal investigators required to demonstrate their technical competence?

Answer: The competence of the Department's contractors is determined through review of their proposals prior to contract award. Competency is evaluated based on experience and accomplishment of past efforts in the areas of interest by the institution, as well as the personnel proposed.

The philosophy utilized by DOE is to select institutions with proven experience, capability, and staff and delegate to their qualified technical managers the responsibility of evaluating and selecting the principal investigators who will be responsible for executing the day-to-day investigations.

The contractors that support the Nevada Nuclear Waste Storage Investigations (NNWSI) Project in the area of scientific and technical investigations

were specifically selected for their scientific capability. Four of the five principal contractors have had long-standing contracts or agreements with DOE for scientific work at the Nevada Test Site. These include three national laboratories, specifically developed to support DOE's scientific and technical mission. They are the Sandia National Laboratories, managed by Western Electric, Las Alamos National Laboratory (LANL), and Lawrence Livermore National Laboratory, both managed by the University of California. These national laboratories have gained nationwide recognition of their expertise in diverse areas of science, technology, and engineering. Specifically their experience includes nuclear testing and experimentation at the Nevada Test Site, as well as the natural geologic and hydrologic environments affecting their experiments.

The fourth long-standing major participant is the U.S. Geological Survey (USGS), an agency of the U.S. Department of the Interior. The USGS has conducted earth-science research and characterization for the Nation for more than a century and has provided earth-science expertise to DOE and the national laboratories at the Nevada Test Site for more than 30 years. As an agency of the Federal Government, the USGS is required to staff its positions

according to the merit-selection principles under the scrutiny of the Office of Personnel Management.

The fifth principal organization that provides scientific support to the NNWSI Project is Science Applications International Corporation.

Question 3: Identify the person or persons who acted as reviewers of Nevada's 1987 grant request, specifically the technical studies proposed.

Question 4: Indicate for each reviewer the specific work he or she is performing for the NNWSI.

Answer: This answer is in response to questions 3 and 4. It is the Department's position that it would be inappropriate to identify the individuals who participated in the initial review of the grant application. Following that review and analyses by NNWSI and its support contractors, specifically SAIC, USGS, and LANL, the Nevada 1987 grant request, including the technical studies proposed, was reviewed by Dr. Donald Vieth, Project Manager, NNWSI.

THE STATE OF NEVADA
EXECUTIVE CHAMBER
Carson City, Nevada 89710

RICHARD H. BRYAN
Governor

TELEPHONE
(702) 885-5670

February 18, 1987

Secretary John S. Herrington
U.S. Department of Energy
Forrestal Building
1000 Independence Avenue, SW
Washington, DC 20585

Dear Secretary Herrington:

Thank you for your letter regarding Consultation and Cooperation agreements.

Although you acknowledge my previous correspondence you did not specifically state whether the Department of Energy is willing to negotiate issues such as Nevada's concerns with the Siting Guidelines, the Environmental Assessments and other issues previously described.

As long as the department continues to ignore legitimate state concerns and continues to implement illegally the Nuclear Waste Policy Act, Nevada must remain skeptical on any negotiations regarding a Consultation and Cooperation agreement.

An additional matter which has arisen recently has to do with the State of Nevada's 1987 grant application and statements made by Mr. Rusche before the Senate Energy Committee and a statement attributed to you at the recent oversight hearing on the DOE budget request for FY '88 before Congressman Udall.

In the first instance, Mr. Rusche's statement that the DOE has never impeded Nevada's ability to carry out or study any aspect of this program through control or limitation of funding is, as you well know, untrue.

0-3412—CO438

Statements attributed to you, in the second instance, are also of concern. On February 10, 1987, you apparently reported to Congressman Udall's committee that the State of Nevada has its 1987 grant award of $6.7 million in place and the Department is awaiting the receipt of additional requested information from the State in order to process the balance ($3.5 million) of the award. As of last Friday, February 13, 1987, the State of Nevada has neither received an award for 1987 of any kind, nor one piece of correspondence from DOE regarding our application, which was submitted in early October of last year.

It is precisely these types of misstatements and misrepresentations that compound the situation regarding the negotiations of Consultation and Cooperation agreements.

I look forward to your prompt response.

Sincerely,

RICHARD H. BRYAN
Governor

RHB/dkl

Department of Energy
Washington, DC 20585

MAR 3 0 1987

Honorable Ned McWherter
Governor of Tennessee
Nashville, Tennessee 37219-5081

Dear Governor McWherter:

Transmitted herewith is the Department of Energy's mandated proposal for the construction of a monitoreed retrievable storage (MRS) facility, that was delivered today to the Speaker of the U.S. House of Representatives and to the President of the U.S. Senate. This proposal was prepared pursuant to Section 141(b) of the Nuclear Waste Policy Act of 1982. It includes the Department's detailed evaluation of the need for and feasibility of MRS in a fully integrated system for the disposal of high level radioactive waste and spent nuclear fuel.

In the proposal documents, the Department recommends that the Congress: approve the construction and operation of an MRS facility at the site formerly proposed for the Clinch River Breeder Reactor in the Roane County portion of Oak Ridge, Tennessee; limit the storage capacity of the MRS facility to 15,000 metric tons of spent nuclear fuel; preclude waste acceptance by the MRS facility until a construction authorization for the first geologic radioactive waste repository is received from the Nuclear Regulatory Commission (NRC); direct the Department to implement its recommended program for State and local participation; and direct the Department to proceed in the manner prescribed in the included MRS program plan.

Review copies of the proposal were provided to the Environmental Protection Agency (EPA), the Nuclear Regulatory Commission (NRC), and the State of Tennessee in December, 1985. As required by the Act, the comments of EPA and NRC are being provided with the proposal. Formal comments from the State of Tennessee, indicating former Governor Alexander's general opposition to the MRS, were received by the Department and are also enclosed. In addition, your letter of March 25, 1987, to Secretary Herrington indicating your opposition, is being provided with the proposal to Congress.

Included in the State of Tennessee comments are comments from the Clinch River MRS Task Force. The Task Force consisted of local officials and citizens from the City of Oak Ridge and from Roane County, Tennessee. This Task Force endorsed the proposal for location of the MRS at the preferred site provided the proposal met certain conditions which the Department has met. Subsequent to the preparation of the proposal and receipt of the State of Tennessee comments, the Department received a report from officials within Morgan County, Tennessee, who had studied the prospect of locating the MRS in Morgan County and concluded that Morgan County should be the preferred site for the MRS. The Morgan County report and its recommendations and proposal to the Department are also enclosed for consideration by the Congress. Comprehensive environmental and other site-specific studies would be required to evaluate the Morgan County sites.

The Department had intended to submit the proposal in February 1986, but was enjoined from doing so by the issuance of an injunction by the U.S. District Court for the middle district of Tennessee due to a suit filed by the State of Tennessee. The Department subsequently appealed and received a favorable decision from the U.S. Court of Appeals for the Sixth Circuit. That decision, in turn, was appealed to the U.S. Supreme Court by the State of Tennessee. The Supreme Court has now denied certiorari and, as a result, the Department, having overcome all legal impediments, is formally submitting the proposal to Congress.

Since the MRS proposal was prepared over a year ago, the Department has revised its estimate of when the first geologic repository can be operational from 1998 to 2003, as presented in the January 1987 Draft Amendment to the June 1985 Mission Plan. The MRS represents the only waste facility that could allow the Department to begin receiving waste by 1998. Regarding the Draft Amendment, Volume 1 (The Proposal) and Volume 3 (The Program Plan) of the MRS proposal submission have been updated to reflect the impact of proposed programmatic and technical data base changes that have been developed by the Department, since the proposal was originally prepared. In addition, a summary analysis of the effects of the above changes on Volume 2 (The Environmental Assessment) is included with that volume. The revised volumes and the summary analysis have been reviewed with EPA and NRC, as required by the Act.

Some funds to implement the activities proposed herein are available for fiscal year 1987, but current Congressional guidance in this area does not permit those funds to be used for any site-specific MRS activities. The President's budget request for fiscal year 1988 includes funding to support implementation of this MRS proposal.

We would be pleased to furnish any additional information regarding the proposal that may be desired.

Sincerely,

Ben C. Rusche

Ben C. Rusche, Director
Office of Civilian Radioactive
Waste Management

Enclosures

Department of Energy
Washington, DC 20585

MAR 3 0 1987

Honorable Marilyn Lloyd
Chairman, Subcommittee on Energy
Research and Development
Committee on Science and Technology
House of Representatives
Washington, D.C. 20515

Dear Madam Chairman:

Transmitted herewith is the Department of Energy's mandated proposal for the construction of a monitored retrievable storage (MRS) facility. This proposal was prepared pursuant to Section 141(b) of the Nuclear Waste Policy Act of 1982. It includes the Department's detailed evaluation of the need for and feasibility of MRS in a fully integrated system for the disposal of high level radioactive waste and spent nuclear fuel.

In the proposal documents, the Department recommends that the Congress: approve the construction and operation of an MRS facility at the site formerly proposed for the Clinch River Breeder Reactor in the Roane County portion of Oak Ridge, Tennessee; limit the storage capacity of the MRS facility to 15,000 metric tons of spent nuclear fuel; preclude waste acceptance by the MRS facility until a construction authorization for the first geologic radioactive waste repository is received from the Nuclear Regulatory Commission (NRC); direct the Department to implement its recommended program for State and local participation; and direct the Department to proceed in the manner prescribed in the included MRS program plan.

Review copies of the proposal were provided to the Environmental Protection Agency (EPA), the Nuclear Regulatory Commission (NRC), and the State of Tennessee in December, 1985. As required by the Act, the comments of EPA and NRC are being provided with the proposal. Formal comments from the State of Tennessee, indicating former Governor Alexander's general opposition to the MRS, were received by the Department and are also enclosed. In addition, Governor McWherter's position on the Department's proposal, that reaffirms former Governor Alexander's opposition, is enclosed.

Included in the State of Tennessee comments are comments from the Clinch River MRS Task Force. The Task Force consisted of local officials and citizens from the City of Oak Ridge and from Roane County, Tennessee. This Task Force endorsed the proposal for location of the MRS at the preferred site provided the proposal met certain conditions which the Department has met. Subsequent to the preparation of the proposal and receipt of the State of Tennessee comments, the Department received a report from officials within Morgan County, Tennessee who had studied the prospect of locating the MRS in Morgan County and concluded that Morgan County should be the preferred site for the MRS. The Morgan County report and its recommendations and proposal to the Department are also enclosed for consideration by the Congress. Comprehensive environmental and other site-specific studies would be required to evaluate the Morgan County sites.

The Department had intended to submit the proposal in February 1986, but was enjoined from doing so by the issuance of an injunction by the U.S. District Court for the middle district of Tennessee due to a suit filed by the State of Tennessee. The Department subsequently appealed and received a favorable decision from the U.S. Court of Appeals for the Sixth Circuit. That decision, in turn, was appealed to the U.S. Supreme Court by the State of Tennessee. The Supreme Court has now denied certiorari and, as a result, the Department, having overcome all legal impediments, is formally submitting the proposal to Congress.

Since the MRS proposal was prepared over a year ago, the Department has revised its estimate of when the first geologic repository can be operational from 1998 to 2003, as presented in the January 1987 Draft Amendment to the June 1985 Mission Plan. The MRS represents the only waste facility that could allow the Department to begin receiving waste by 1998. Regarding the Draft Amendment, Volume 1 (The Proposal) and Volume 3 (The Program Plan) of the MRS proposal submission have been updated to reflect the impact of proposed programmatic and technical data base changes that have been developed by the Department, since the proposal was originally prepared. In addition, a summary analysis of the effects of the above changes on Volume 2 (The Environmental Assessment) is included with that volume. The revised volumes and the summary analysis have been reviewed with EPA and NRC, as required by the Act.

Some funds to implement the activities proposed herein are available for fiscal year 1987, but current Congressional guidance in this area does not permit those funds to be used for any site-specific MRS activities. The President's budget request for fiscal year 1988 includes funding to support implementation of this MRS proposal.

We would be pleased to furnish any additional information regarding the proposal that may be desired.

Sincerely,

Ben C. Rusche

Ben C. Rusche, Director
Office of Civilian Radioactive
Waste Management

Enclosures

cc: Honorable Sid Morrison
Ranking Minority Member
Subcommittee on Energy
Research and Production
Committee on Science and Technology
House of Representatives
Washington, D.C. 20515

DOE/RW-0035/1-Rev 1
Volume 1 of 3

Monitored Retrievable Storage Submission to Congress

Volume I

The Proposal

March 1987

U.S. Department of Energy
Office of Civilian Radioactive Waste Management

DOE/RW-0035/1
Volume 1 of 3

Monitored Retrievable Storage Submission to Congress

Volume II

Environmental Assessment for a Monitored Retrievable Storage Facility

February 1986

U.S. Department of Energy
Office of Civilian Radioactive Waste Management

This document contains only part of the MRS submission to Congress. There are three volumes, which should be read together. Volumes 1 and 3 have been updated to reflect program changes through March 1987.

DOE/RW-0035/1-Rev 1
Volume 3 of 3

Monitored Retrievable Storage Submission to Congress

Volume III

Monitored Retrievable Storage Program Plan

March 1987

U.S. Department of Energy
Office of Civilian Radioactive Waste Management

COMMENTS

ON THE

U.S. DEPARTMENT OF ENERGY

MONITORED RETRIEVABLE STORAGE

SUBMISSION TO CONGRESS

FROM THE

U.S. ENVIRONMENTAL PROTECTION AGENCY

U.S. NUCLEAR REGULATORY COMMISSION

STATE OF TENNESSEE

FEBRUARY 1986

State of Tennessee

NED McWHERTER
GOVERNOR

March 25, 1987

The Honorable John P. Herrington
Secretary of Energy
1000 Independence Avenue, S.W.
Washington, DC 20585

Dear Secretary Herrington:

Your department is seeking congressional authorization for a monitored retrievable storage (MRS) facility in Tennessee. Currently, a federal court injunction brought about by our litigation has blocked the formal submission of such a proposal to the Congress. However, your recently issued Draft Mission Plan Amendment makes it clear that the MRS has become a primary objective of your department's nuclear waste strategy. In fact, the proposed schedule revision for the first repository program places the MRS in the forefront to receive waste by 1998 to meet your department's agreements with utilities.

We plan to submit full comments on the Mission Plan Amendment later, but I will take this early opportunity to let you know that I oppose the use of an MRS as a solution to the nation's nuclear waste problems. The primary emphasis should be on a permanent solution, isolating the waste from our environment in a deep geologic repository.

Your department should seek to minimize the movements of nuclear waste across the country. The MRS proposal does not do this. There is agreement from many sources that an MRS is not necessary to meet the objective of permanent waste disposal. Tennessee citizens should not be asked to pay the high costs and to suffer the negative impacts of an unnecessary project.

The MRS proposal documents have not yet reached Congress and the time has not arrived for me to issue a formal notice of disapproval, but you should know that it is my intention to vigorously oppose the MRS project.

Sincerely,

Ned McWherter

/dd

MORGAN COUNTY, TENNESSEE

A Sound and Scenic County

OFFICE OF

MORGAN COUNTY MRS STUDY GROUP

WARTBURG, TENNESSEE 37887

June 19, 1986

Mr. Bernard C. Rusche
Director Civilian Radioactive
Waste Management
Department of Energy Room 5-A085
Forrestal Building
1000 Independence Avenue, S. W.
Washington, D. C. 20585

Dear Mr. Rusche:

As co-chairmen of the Morgan County MRS study group, I am pleased to inform you that the Morgan County Executive Commission unanimously endorsed our report recommending the Monitored Retrievable Storage (MRS) facility being built and operated in Morgan County.

This past February, our County Executive, Tony A. Duncan, appointed a group of Morgan County residents to study the capability and desirability of locating the proposed MRS facility in Morgan County. After a comprehensive review of the previous reports and studies dealing with the potential safety, economic, and social impacts of an MRS facility being located in other areas of Tennessee, we reached the conclusion that if certain recommendations and provisions are met, the people of Morgan County would welcome this facility and would provide a congenial, continual stable, and cooperative partner in this vital operation. (The report containing this conclusion and the related recommendations and provisions is attached.) Upon approval by the Morgan County Commission and the two incorporated towns within the County, the report was transmitted to Governor Lamar Alexander for his agreement and support in our attempts to locate this facility in our County.

Mr. Rusche, in furtherance of our efforts, we are requesting your support in locating the MRS in Morgan County. We realize your department has spent significant time and manpower in an attempt to site the MRS. In so doing, your department chose Oak Ridge, Tennessee with first choice being the Clinch River Breeder Reactor site. We respect your efforts and recognize the advantages the site in Oak Ridge presents the Department of Energy. However, for some of the very same reasons, we believe that Morgan County should be the preferrable host for the MRS. We encourage you to review our report to better understand the unique benefits Morgan County offers for this facility.

Finally, Mr. Rusche, we would like to request a meeting in the near future with you and the members of our MRS study group in order for you to have a clean and thorough understanding of our position regarding the MRS. A trip to Washington can be easily arranged and we look forward to our meeting. Should you or your staff have any questions concerning our report or other issues involving the MRS in Morgan County, please feel free to call either of us at (615) (Duncan) 346-6288; (Freytag) 346-3101.

Yours very truly,

Tony A. Duncan
CO-Chairman/Mrs Study Group

Floyd E. Freytag
CO-Chairman/Mrs Study Group

TAD: eed
FEF:
pc: Office File

MORGAN COUNTY

MRS TASK FORCE

Morgan County, Tennessee

MRS STUDY GROUP COMMITTEES

CO-CHAIRMEN:

Tony A. Duncan
Morgan County Executive

Floyd E. Freytag
President/Plateau Utility District

Jeanette Powers
Mayor of Oakdale

Stone Hennessee
Morgan Co. General Sessions Judge

Rodney McPeters
Mayor of Wartburg

Conrad Strand
Chairman, Abner Ross Community Center

Roger B. Long
Morgan Co. Superintendent of Highways

Dudley Freels
Morgan County Assessor of Property

Joe Judkins
Morgan County Attorney

Roy McNeal
Wartburg City Councilman

Dr. Clayton Weaver
Oak Ridge Accociated University

Allan Nance
Morgan Co. Superintendent of Schools

John Galloway
Administrator/Morgan Co. Health Council

Royce Cross
President, Morgan Co. Education Assoc.

Fred Roettger
Engineer, Martin Marietta

Guy Underwood
Local Businessman

SAFETY COMMITTEE:

Dr. Clayton Weaver, Same as above
Guy Underwood "
Lester Heidel, Technician Martin Marietta
Tom White, Emp. TVA Nuclear Plant

SITE COMMITTEE:

Roger B. Long, Same as above
Conrad Strand, "
Mike Hall, Student Roane State C.C.
Ron Lee, TVA Safety Department

PUBLIC ACCEPTANCE:

Jeanette Powers, Mayor of Oakdale
Wanda Smith, Local Businesswoman
Rodney McPeters, Mayor of Wartburg

MORGAN COUNTY MRS STUDY GROUP
FEASIBILITY AND DESIRABILITY
OF
MONITORED RETRIEVABLE STORAGE SYSTEM
LOCATING IN
MORGAN COUNTY. TENNESSEE

On February 19, 1986, Morgan County Executive, Tony Duncan, appointed a group of Morgan County residents to study the capability and desirability of locating the proposed Monitored Retrievable Storage Facility in Morgan County.

It was originally proposed that this facility be located in the Oak Ridge-Roane County area; however, strong oppositions to its placement there surfaced. It was perceived that this facility would do immeasurable harm to the future development of the Oak Ridge-Knoxville area by, causing prospective industry which the Oak Ridge-Knoxville area is imminently qualified to service, to bypass, or to avoid the Oak Ridge-Knoxville area. It was pointed out that the state is investing hundreds of millions of new dollars in the technology corridor from the Knoxville airport to the Oak Ridge National Laboratory, for a new technical institute, a science alliance, an interstate quality highway, and an improved University of Tennessee. It was thought that the placement of the MRS storage facility adjacent to this corridor would seriously erode and damage its image as a technological center.

These concerns are well founded and are supported by industry surveys which indicate the majority of the more desirable industries would avoid or hesitate coming to the Oak Ridge-Knoxville area if the MRS facility was also located there. There is every indication, that in the final analysis, the Oak Ridge-Knoxville area would lose many more jobs, payrolls, and trade advantages than gained from the temporary advantages of the MRS facility.

The objections to placing the MRS facility in the Roane County part of Oak Ridge do not exist or apply to Morgan County, beacuse the Morgan County area is not desirable to the same kind of industry that would possibly locate in the Oak Ridge area. Therefore, it has been suggested that serious consideration be given to placing this facility in adjoining Morgan County. For this reason, the Morgan County study group was implemented.

This group has conducted an investigation and study to ascertain if it would be desirable or provide any economical value to have the MRS facility locate in Morgan County. The study group also wanted to know the impact an installation of this kind would have on the Morgan County area. Could this facility be constructed and operated with reasonable safety, and would it be acceptable to the people of Morgan County, and on what terms? All of these questions have been addressed, and the groups findings and conclusions are explored on the ensuing pages of this report.

The Nuclear Waste Policy Act of 1982 requires the Department of Energy (D.O.E.) to provide for the development of Deep Geological repositories for the disposal of spent nuclear fuel and other high level radioactive waste, and to submit for Congress's consideration, a proposal on the need for one or more Monitored Retrievable Storage facilities. Although initially, the M.R.S. was considered as a backup for a repository, D.O.E. determined that the facility would perform a more effective role as a receiving, packaging, and temporary storage for fuel assemblies enroute to a permanent repository.

In April of 1985, the D.O.E. announced that three (3) Tennessee sites were under consideration for the proposed Monitored Retrievable Storage facility. Shortly afterwards, Governor Lamar Alexander initiated a review of the proposal. This review was to be coordinated by his Safe Growth team, as the primary and secondary sites suggested, and seemingly favored by the Department of Energy when located in Tennessee, with two of them located in the Oak Ridge part of Roane County. These three localities were invited to participate in the state's review of the M.R.S. proposal. To activate their participation in the review, the Clinch River M.R.S. Task force was devised, and was subsequently given a $100,000.00 grant to defray their expenses.

At this time, no one was aware of the potential sites a short distance away in the adjoining Morgan County. Therefore, the desirability of placing this facility in Morgan County was not explored. Later various business and industrial surveys were made that revealed the potential damage the location of this facility in the Oak Ridge-Roane County area could do to the future development of the Oak Ridge-Knoxville area. Morgan County was then considered as a possible site.

The negative views and mis-givings expressed by valuable and important industrial people toward locating a MRS facility in the Oak-Ridge-Knoxville area alarmed Governor Lamar Alexander and members of the business community of the Oak Ridge-Knoxville area. It was during this time that officials and public-minded citizens of Morgan County were invited to study the possibility of locating this facility in Morgan County.

One of the problems addressed by the Morgan County M.R.S. study group was the desire of all participating agencies to get this project underway. We were advised by a D.O.E. official that a change in location to a Morgan County site would require them to make a new site study and evaluation that could delay this project as much as six months.

According to the Department of Energy, construction of this project has not been scheduled to begin until July 1991 and would go into pilot operation on December 1995, and full operation, October 1996.

According to this schedule, a beginning of plant construction is approximately five years away. We assume this interim would be used to complete plans and designs for this facility. We see no reason why the planning and designing of this facility could not be carried on simultaneously with the site and study evaluation which would permit them to maintain their original schedule.

One of the group's most serious concerns throughout this study has been, "Can this facility be operated with reasonable safety?" This group has not, themselves, conducted any test or in-depth study as to the safe construction and operation of the MRS plant. We have, however, made a diligent search for information pertaining to the safety, both during construction and follow-up operations. We have tapped many qualified sources in the state, and have relied heavily on studies and tests conducted by other very reliable groups that have the facilities, competent personnel, and finances to make the extensive tests and studies necessary to evaluate the safety of this operations.

We have carefully reviewed information, studies, and tests assembled by the Clinch River MRS Task Force, the Tennessee Department of Health and Environment, the Department of Energy of the United States, and the Sandia National Laboratories. The Tennessee Department of Health and Environment and the United States Department of Energy have been especially cooperative and generous of their time and facilties.

We were especially interested in the recommendations prepared by the Clinch River MRS task force.

We made an exhaustive review and study of this document and were tremendously impressed by this group's study of every phase of this facility having to do with safety. We were unable to find any areas that had not been covered, explored, analyzed, and evaluated in a very efficient and business like manner. The entire study by the Clinch River MRS task force was made with the assumption that this facility would be located in the Oak Ridge part of Roane County; however, we find that their conclusions pertaining to safety were equally applicable to the proposed sites available in adjoining Morgan County. Their final conclusion was that this facility could be operated with safety.

Based upon all the information we have acquired to date, the Morgan County Study Group concurs with the finding of the Tennessee Department of Health and Environment, the United States Department of Energy, and the Clinch River MRS Task Force that this facility can be constructed and operated safely without serious environmental damage or hazard to health.

Indications are that area residents believe that this facility can be constructed and operated safely in Morgan County. However, at the same time, they exhibit skepticism that this facility will actually be constructed and operated in a safe manner.

The Clinch River M.R.S. Task Force has addressed this concern and has made numerous suggestions regarding safeguards. Rules and regulations, if adopted by the D.O.E. and practiced in the operation of this facility would not only allay the public concern, but would improve the Nuclear industry and Department of Energy's public image.

The Morgan County MRS Study Group endorses and concurs in all the safety rules, conditions, and recommendations made by the Clinch River MRS Task Force and incorporates all of them into our study and makes them part of our report. But with the further stipulation that if the facility comes to Morgan County, all the safety features recommended by the Clinch River Task Force that can be adapted to the Morgan County site, become a part of the terms for acceptance of this facility.

To further allay the public's concern and to improve the public perception of the Nuclear Industry and the Department of Energy as a whole, and to allay any apprehension local citizens may have, we would emphasize the importance of creating a "Citizen's MRS Environment, Safety, and Health Review Board" consisting of 7 members. This board would represent the areas of interest during the construction, operation, a decommissioning of the proposed MRS facility.

We would suggest that the membership of this board be composed of one person from each of the two incorporated towns selected by the city council; three persons from unincorporated areas selected by county commission; and two persons to be appointed by the State of Tennessee.

The membership of this Citizen's MRS Environment, Safety, Health Review Board would operated under normal arrangements with the responsible federal and state agencies. We would not supplant Regulatory Agencies responsible for the activities of the proposed MRS to the greatest extent possible. We would make use of data collected by these agencies; however, the board would have the authority to conduct its own inspection and collect additional data as needed.

The board should also participate in the environment, health, and safety performance standards and criteria by the MRS facility. Also, the board should have access to all information on the condition of shipments arriving at the MRS, effluents released to the outside environment; radiation to the exposed workers and to the surrounding population; and accidents and incidents as classified by the N.R.C.

Also, procedures should be developed whereby the board could suspend operations, if releases at the MRS are above action levels jointly pre-established by the Department of Energy and regulatory agencies.

Further, all information on radiation releases and accidents should be made available immediately to the proposed Citizen's MRS Environment, Health, and Safety Review Board, as well as to the general public.

We would further recommend that transportation safety be enhanced by means of strict inspection performed at the originating point of each spent fuel shipment, and again at the MRS facility. Shipments out of the MRS to the permanent repositories should be subject to identical inspections, and these inspections conducted by personnel independent of the Department of Energy, should guarantee

compliance with rigid standards relating to radiological vehicles and personnel safety. Those conducting such inspections should have authority to detain non-complying outgoing shipments and levy stiff penalties for non-compliance with applicable standards.

As the NRC licensee by the MRS facility, the Department of Energy should assume the lead role in developing emergency response procedures to be followed by local and state personnel in the event of an accident involving spent nuclear fuel. First responders from local and state agencies should be trained and equipped by the federal government with associated costs including full operation funding born by the MRS nuclear waste fund.

We would further insist, to insure prompt planning, site selection, and construction of a permanent storage for nuclear waste that no more than 10,000 metric tons of spent fuel should be received before the outshipment of consolidated fuel rods begins to the permanent repository.

Any proposed extension of the MRS facility beyond the proposed 15,000 metric tons currently envisioned should be subject to the same review and notice of disapproval procedures followed to initially authorize the MRS.

Any spent fuel stored at the MRS longer than 15 years shall be subject to a significant overdue removal penalty levied by the state.

The Morgan County MRS Study Group is aware that this facility in Morgan County, or in any other location would encounter many possible problems; accessability of railroads, interstate route, density of population, would or could create problems.

The Morgan County MRS Study Group has defined and located 5 sites (Exhibit#1) in Morgan County which the group feels the Department of Energy should investigate. The 5 suggested sites are located on State owned property that is available as a site for this facility. The proposed Morgan County sites would probably incur less problems than sites outside the county but would not be entirely problem free.

The suggested Morgan County sites are located in the same general area and have the same general characteristics as the Clinch River Breeder Reactor site which the Department of Energy indicates has many qualities that are desired in the location of this facility.

All five of these sites were presented for evaluation and consideration to the Department of Energy and their selection was based upon criteria established by the D.O.E. Considerations were given to the following:

1. Geology of the area
2. Site relief in relation to topography
3. Access to rail facilities
4. Access to interstate highway system
5. Proximity to populated areas
6. Environmental settings
7. Geotechnical site characteristics

The site we feel is especially adaptable and suitable for the MRS plant location is the site which we list as Number 1, (Exhibit #2). It is located approximately 5.6 miles southwest of Wartburg, 3.88 miles to a Class IV railroad, and 11 miles to the I-40 interchange which has already been approved by the Tennessee Department of Trnasportation, and has been scheduled to be completed in 1989.

Access to the MRS to this site from I-40 and from I-40 to I-75 would require the construction of approximately 11 miles of roadway. This road would be, for the most part, through and over state owned land. It would be located in a very sparsely populated area and few, if any, families would be displaced by its construction and use.

Its use would be almost exclusively for the transportation of the nuclear fuel rods coming to the MRS facility.

Construction of approximately 4 miles of railroad, which should be equivalent to a Class IV railroad, would connect this facility with an existing Class IV railroad. This also would be through a sparsely populated area.

U.S. Highway 27, state route 20, is scheduled for improvement under the Tennessee Highway Improvement Act from Oneida south. The scheduled beginning of this project should be expedited with priorities given to the elimination of curves and the three-laning of hilly sections.

A new section of highway should be constructed linking Highway 27 at Wartburg to the MRS site and to the Rockwood interchange. This can be accomplished with a few miles of new construction linking Hwy 27 to the MRS site, and the access road to the interstate I-40 would be through a very

sparsely populated area of State owned property. Few, if any, families would be displaced on this construction. This would give access from Northern areas to the MRS facility.

We would, also, recommend that Hwy. 62 from Wartburg to the intersection of State Route 289 and the section 289 to the I-40 interchange of Crossville should be upgraded.

Costs for necessary improvements and new construction to state and local routes listed above, or in any other route improved for the purpose of transporting nuclear spent fuel rods to and from the MRS facility, should be born by the Federal government, or should be authorized as an expenditure by the MRS funds.

Morgan County is a rural county with a population of approximately 16,000 people. Morgan County has two incorporated towns, Wartburg and Oakdale. The majority of the population is located in the general vicinity of Wartburg which is the county seat. The county has a tax rate of $6.60 and a bonded indebtedness of approximately $13,000,000.00 with an assessed value of approximately $54,000,000.00. About 24% of our land area is owned by the State of Tennessee and approximately $3.00 of our tax rate is necessary to service the bonded indebtedness.

Unemployment is about 14% and mean income is small. At one time, timber and coal were our main industries. Both of these sources of income and employment no longer exist to any degree. Our sources of employment at the present time are a woven label plant, 2 garment plants, a transformer plant, and Pioneer industries. All of these are low paying industries and do not make as significant an impact on our economy as the MRS would.

Funds for the construction and maintenance of rural roads are inadequate; therefore, they are badly in need of improvements and maintenance. Four utilities are presently operating small water system, the largest being Plateau Utility District and service Wartburg with 1200+ connections. All of the utilities are in need of expansion and improvement.

We have a school population of about 3200. To provide facilities, utilities, structures, maintenance, and other educational material creates a special burden on a county with our limited tax base. The result is that our educational system is under-financed and our young people are trying to obtain an education in a substandard educational system.

We are confident that this MRS facility can be constructed and operated safely and would cause no undue harm or hazard to the health of the people of Morgan County.

We are also confident that any of the Morgan County sites we have suggested to the Department of Energy to examine are equal to, or superior over all, to any sites they have considered elsewhere. Also, we believe that this facility can be operated more economically in Morgan County than any other site, without sacrificing any of the safety rules, regulations, and conditions set out in our study, or by the study of the Clinch River MRS Task Force.

Our investigation indicates that the people of Morgan County would welcome this facility into Morgan County if they perceived that it would be of economic value, or helpful in solving many of our problems.

In our efforts to determine if this MRS facility would be acceptable to the citizen's of Morgan County, we found its acceptance rested on three questions:

1. Could, and would, this facility be constructed and operated with reasonable safety?
2. Would its location in Morgan County be of any economic value to Morgan County?
3. What impact would its location in Morgan County have on our tax funded facilities, such as; schools, law enforcement, rural roads, utilities, including water, sewage, power, etc.?

We have already addressed the first question and our conclusion that this facility could be operated and constructed safely are stated in the forefront of this report. These conclusions are based upon the combined conclusions and reports between all agencies and groups we encountered in making this study, "That this facility could be constructed and operated safely".

The best information available to us indicated that something like 700 employees would be required during the construction phase of this project; and after construction, approximately 400 to 500 employees would be required to operate this facility.

We realize that due to our proximity to Anderson and Roane counties a large share of this employment would go to these two counties. Nevertheless, we are confident that substantial number of these jobs would come to citizens of Morgan County. To a county of a 14% unemployment rate, these jobs would be extremely valuable.

To insure our citizens receive a fair share of jobs generated by this facility, we would recommend that a training program be instituted in the Morgan County Vocational School for the purpose of training local citizens for job placement.

This program would operate under the supervision of the Department of Energy and would involve the following programs:

1. Health and safety monitoring
2. Remote handling system operation, safety, and maintenance
3. Communications operation, safety, and maintenance
4. Storage cask manufacturer
5. Transportation, cask service, and maintenance

The entire cost for this training program would be funded by the Department of Energy from MRS funds.

We are advised that the construction of the MRS facility, itself, would cost approximately one-billion dollars. Cost of on-site storage cask would eventually add another three-hundred-million dollars, and many additional millions from associated activities connected with the operation of this plant.

The release of the above dollars into this area would certainly have an impact, not only our economy, but would boost the economy of Anderson and Roane counties. Oak Ridge, in Anderson County, and Harriman and Rockwood in Roane County are trade centers for people of Morgan County; and naturally, many of these additional new dollars would find their way into Anderson and Roane counties.

After a careful examination of the likely impact a Monitored Retrievable Facility would have on Morgan County, we were able to identify a number of concerns or potential liabilites beyond our present capacity to handle without financial assistance.

Certainly a facility of this kind would increase activities on every level; and the natural increase demand upon our facilities, would strain them beyond their present capacity.

Every phase of public service furnished by local, county, and city government would need to be expanded and upgraded. To finance these projects on our limited tax base would create an impossible burden on local tax payers and this facility, instead of being a blessing, could become a disaster.

To make the location of the M.R.S. facility in Morgan County acceptable to Morgan County people, the following conditions would need to be acted on favorably.

In order to enable the D.O.E. to financially assist local governments, we would recommend that the MRS authorization include a section similar to Nuclear Waste Policy Section (116c) "to permit tax equivalency payment on real and person property, and other financial incentives to units of local government."

We would recommend a schedule of annual impact-assistance-payments to be made to state and local governments from authorization until operation; and from cessation of operation until full decommissioning and decontamination; such payments to be equal to the tax equivalent grants generated by a one-billion-dollar facility.

We would further recommend that during operation, the MRS facility would provide annual grants to local governments in amounts equivalent to all state and local taxes.

Due to Morgan County's limited tax base, the 13 million dollars bonded indebtedness outstanding against Morgan County now requires $3.00 of the total tax rate just to service this indebtedness. We would recommend that the Congress authorize the MRS facility to either liquidate or assume the payment of this indebtedness. This would reduce Morgan County's tax rate to slightly less than $4.00 dollars and would reduce, substantially, the impact assistance to be paid to Morgan County under these recommendations.

We would solicit a pledge to construct, staff, operate, and promote a MRS Visitor's Center in the vicinity of the MRS facility for the purpose of explaining MRS and its role in the integrated nuclear fuel cycle, and to esthetically design and landscape the entire MRS complex.

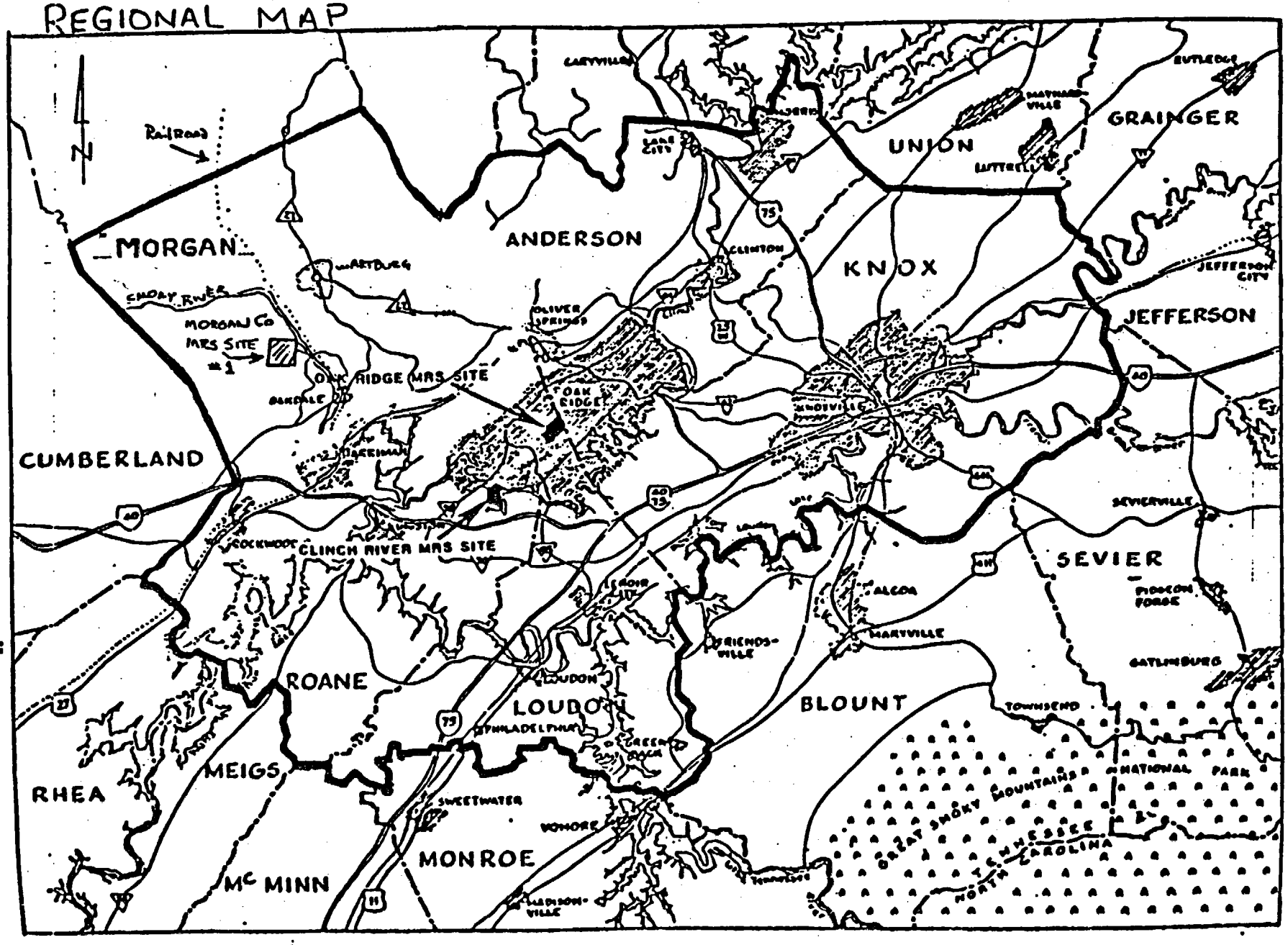
We recommend that MRS provide a decommissioning and decontamination immediately upon completion of MRS's mission in such a manner as to restore the MRS site to unrestricted use.

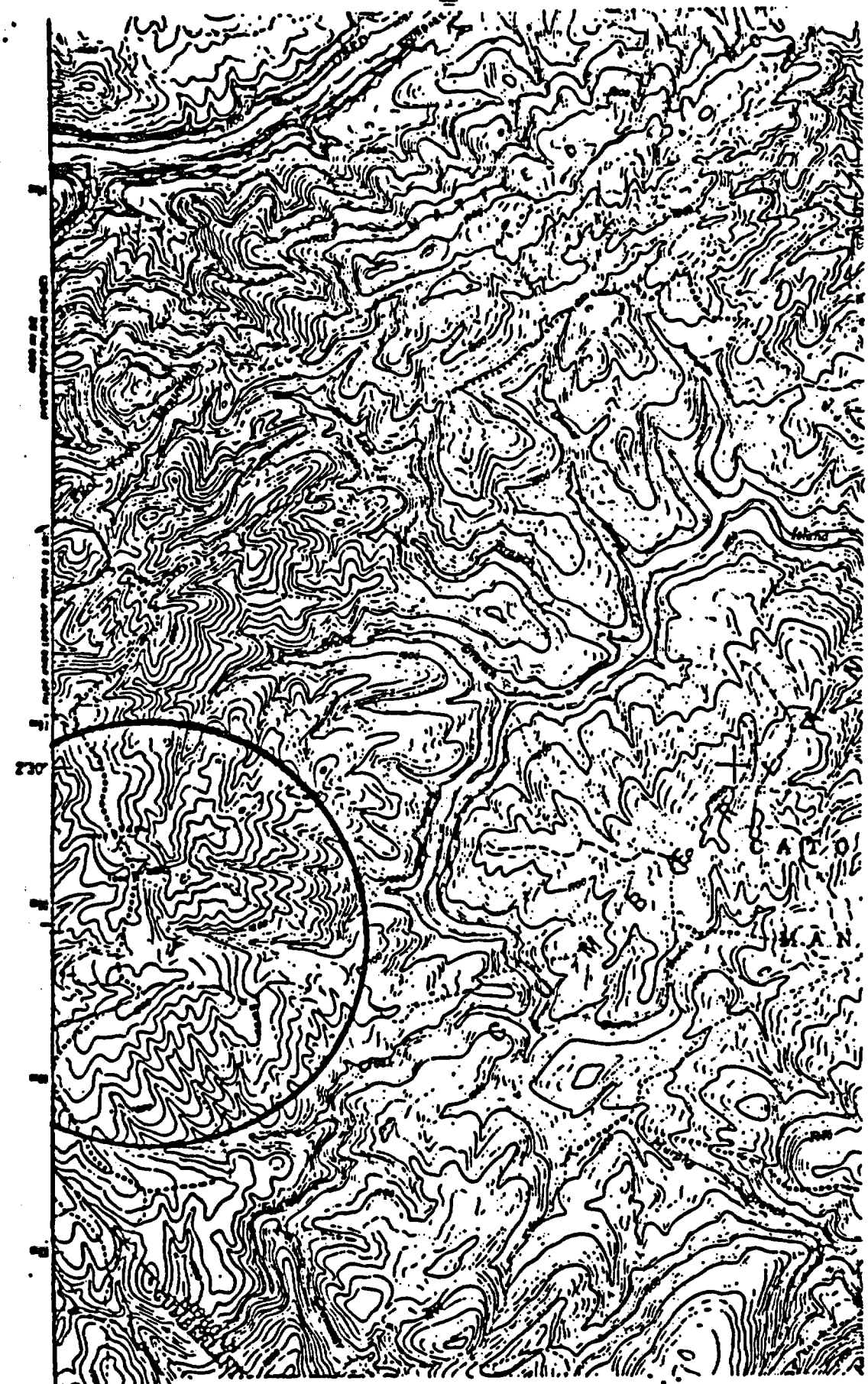
The location of this facility in Morgan County, as in in any other county, would create a strain and special burden financially on local facilities and utilities; such as law enforcement, schools, sewer and water systems, rural roads and feeder roads. We would recommend that the Department of Energy be authorized with Morgan County officials, including Oakdale and Wartburg city officials, and any utility districts that provide any of the above services to make a joint study to determine what financial assistance these facilities would need to enable them to meet present and additional responsibilities. Also, that the

MRS be authorized to provide grants for the purpose of upgrading these facilities.

If these recommendations are met, the people of Morgan County would welcome this facility to Morgan County and would provide a congenial, continual, stable, and cooperative partner in this vital operation.

REGIONAL MAP



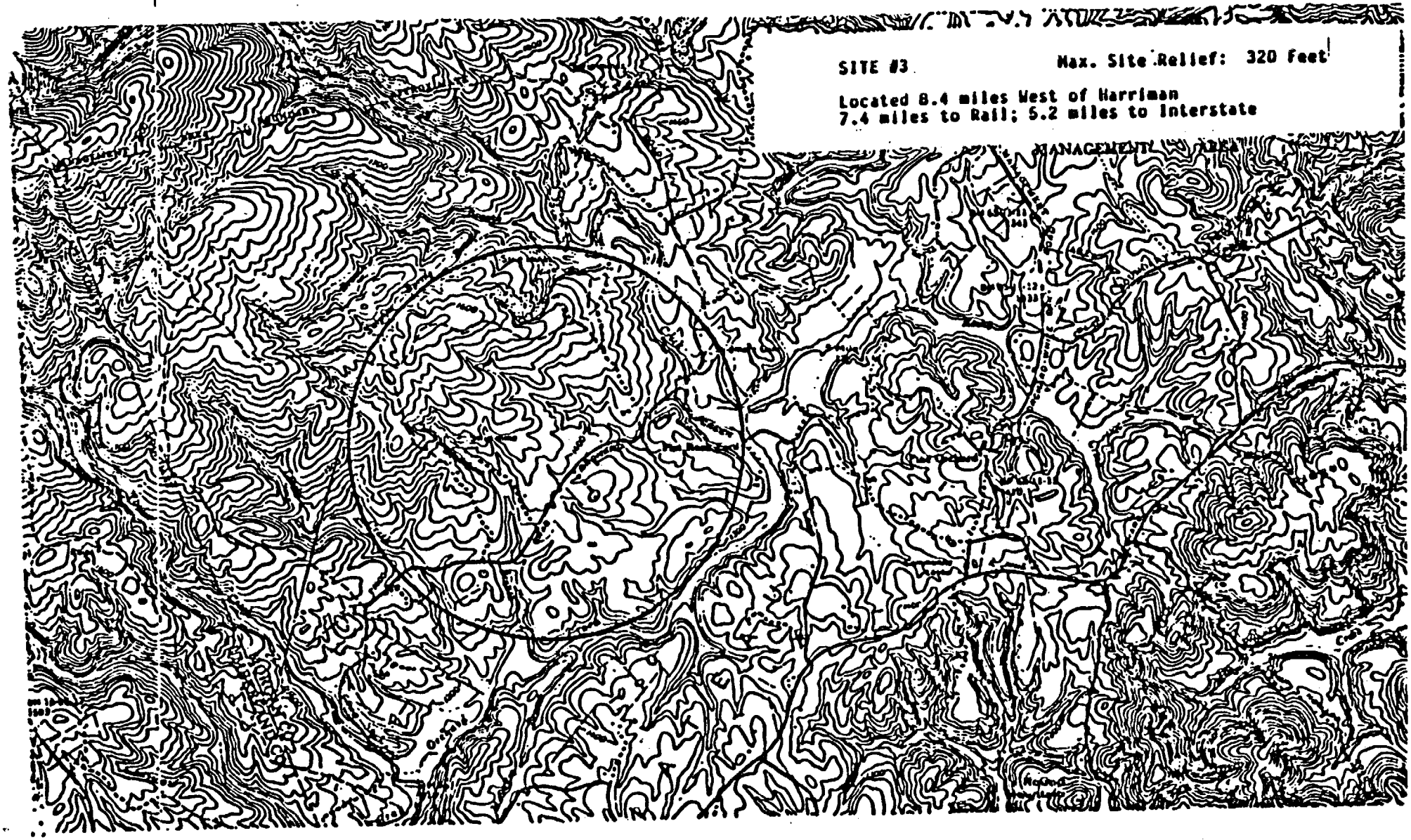


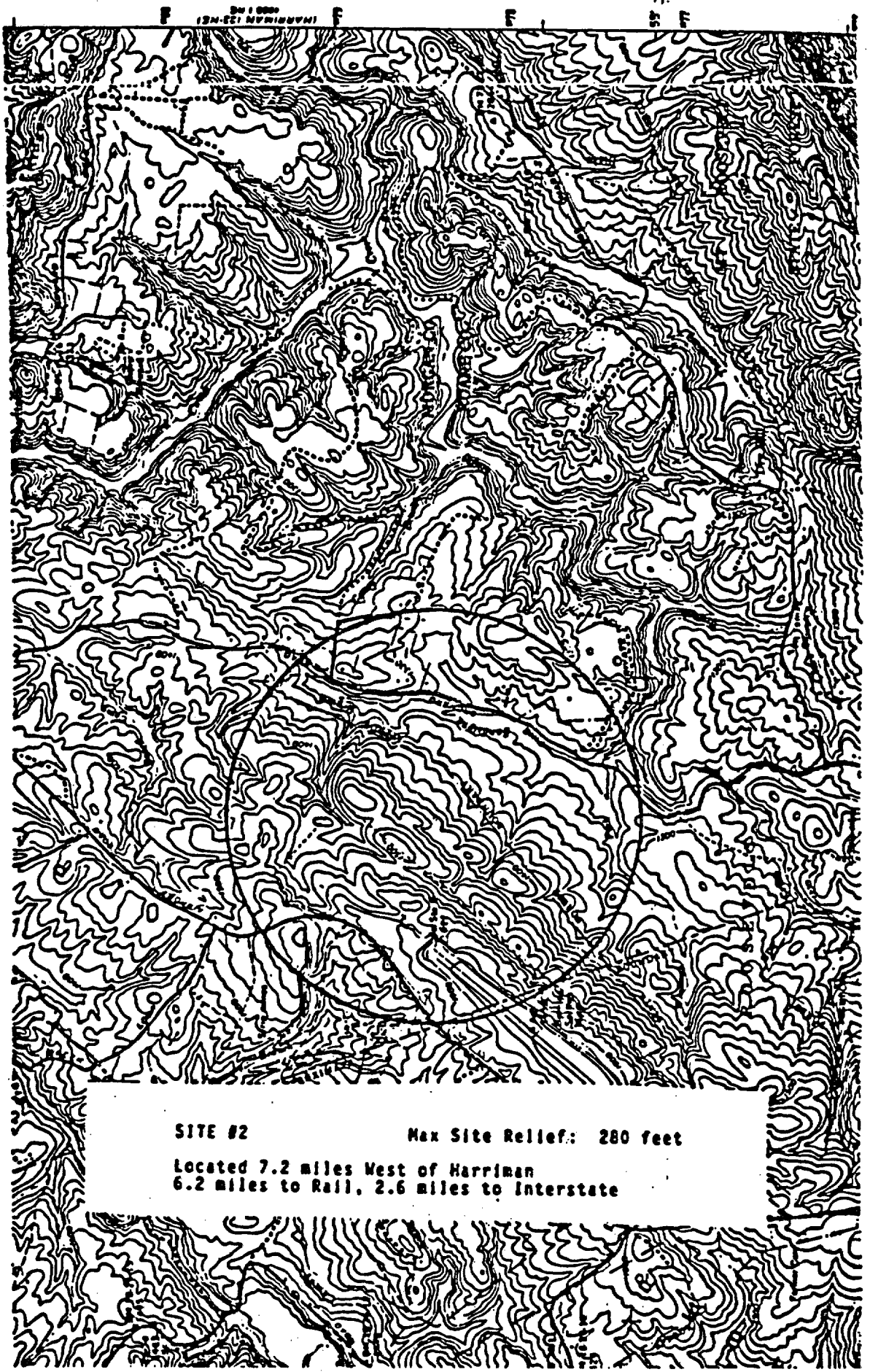
SITE #5 Max. Site Relief: 200 feet

Located 12.4 miles NE of Crab Orchard
Remote Area, Difficult Access.

SITE #4 Max. Site Relief: 440 feet

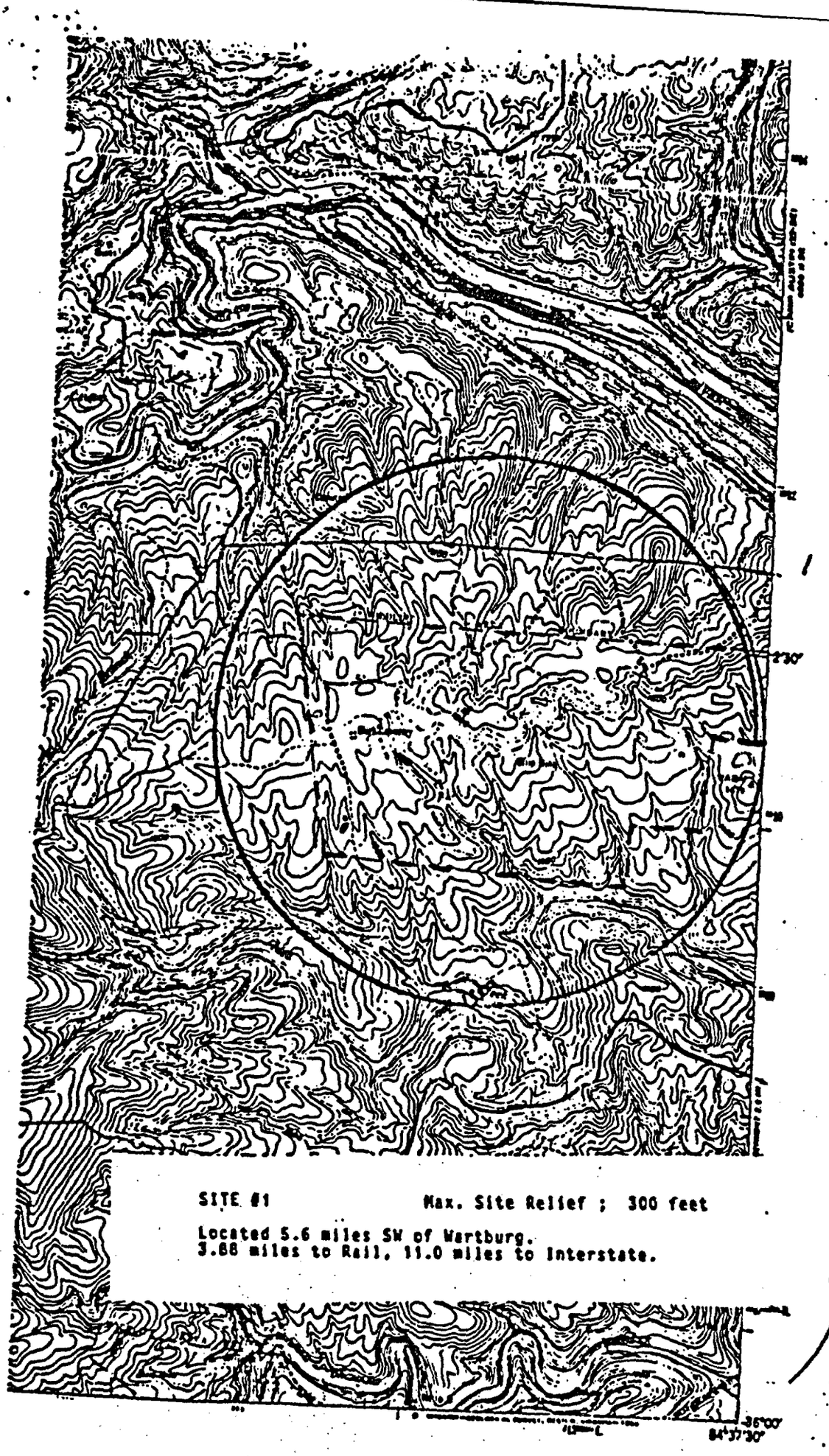
Located 4 miles south of Wartburg


SITE #3
Max. Site Relief: 320 Feet
Located 8.4 miles West of Harriman
7.4 miles to Rail; 5.2 miles to Interstate



SITE #2 Max Site Relief.: 280 feet

Located 7.2 miles West of Harriman
6.2 miles to Rail, 2.6 miles to Interstate



SITE #1 Max. Site Relief ; 300 feet

Located 5.6 miles SW of Wartburg.
3.88 miles to Rail, 11.0 miles to Interstate.

Department of Energy
Washington, DC 20585

MAR 3 0 1987

Honorable Dean Sutherland
Washington House of Representatives
Olympia, Washington 98504

Dear Mr. Sutherland:

Your letter of January 7, 1987, to President Reagan concerning the Department of Energy's (DOE) site-selection process for the Nation's first high-level radioactive waste repository has been referred to me for response.

The President's decision in May 1986 to proceed with site characterization activities at the three sites recommended by Secretary Herrington represented the culmination of extensive evaluations of the three sites, as well as other potential sites. This work included developing Environmental Assessments (EAs) in accordance with the Nuclear Waste Policy Act of 1982 (the Act) to support the nomination of sites. More than 20,000 public comments were received on the draft EAs and were considered in the decision process.

In nominating the sites as suitable for characterization, DOE evaluated all applicable conditions of the Siting Guidelines (10 CFR Part 960) in order to make its decision. This exhaustive evaluation considered both preclosure and postclosure geologic conditions and transportation impacts. DOE concluded that the sites are suitable for site characterization in accordance with the Siting Guidelines.

The data presented in the EAs for the nominated sites was compared in "A Multiattribute Utility Analysis of Sites Nominated For Characterization For The First Radioactive-Waste Repository -- A Decision-Aiding Methodology." The Department had both the methodology used as an aid in site recommendations and its partial application reviewed by the National Academy of Sciences. The methodology document was used as an aid in developing the "Recommendation By The Secretary of Energy of Candidate Sites For Site Characterization For The First Radioactive-Waste Repository," which describes the basis for the recommendation decisions.

Before DOE recommends any one site for repository development, it will conduct detailed site characterization studies at each of the three recommended sites during the next six to seven years. The focus of these studies is to gather data and information for each site at repository depth. The studies will serve as the basis for ultimately determining the suitability of a site for repository development.

The issues you raise in your suggestions concerning the role monitored retrievable storage should play in the nuclear waste management system are those which Congress debated during consideration and passage of the Act. By passage of the Act, Congress selected deep geologic repositories as the method to dispose of the Nation's nuclear waste. The Department continues to have confidence that a deep geologic disposal facility is the correct final disposition and that a disposal facility can be operational shortly after the turn of the century. It is the Department's position that monitored retrievable storage should instead be integrated into the system to facilitate development of a repository and provide operational benefits to a comprehensive disposal system that includes a deep geologic repository.

DOE appreciates your interest in the Civilian Radioactive Waste Management Program. I can assure you that the site that is ultimately recommended for development as the first geologic repository will provide for protection of public health, safety, and the environment.

Sincerely,

Ben C. Rusche

Ben C. Rusche, Director
Office of Civilian Radioactive
Waste Management

27 K. Roirdin

45.481

Representative Dean Sutherland

January 7, 1987

The Hon. Ronald Reagan
President of the U.S.
The White House
Washington, DC 20500

Dear President Reagan:

The problems plaguing the U.S. Department of Energy's efforts to carry out the Nuclear Waste Policy Act are overwhelming, due largely to the selection process they have devised and followed and the arbitrary decisions they have made. As a result, the citizens of Washington state and the nation have lost confidence in the repository program, and I believe the USDOE will not be able to effectively and credibly carry out its assigned mission. Therefore, it is in the best interests of everyone involved that the site selection process be suspended until the NWPA has been reviewed and amended by Congress.

In order to restore credibility to the NWPA and the USDOE, as well as to reassure the public that health and safety are of the utmost concern in the selection of a high-level nuclear waste repository, Congress must:

* establish new, realistic progress and completion dates that would allow for sufficient and detailed public comments, review and involvement;
* strengthen the state's and Indian tribes' ability to conduct thorough independent reviews of USDOE's activities and decisions;
* require that decisions be based on scientific information; and
* require open access to the USDOE methodology and implementation documentation.

In addition, the use of Monitored Retrievable Storage facilities for storing high-level nuclear waste needs to be explored further. I would suggest that Congress amend the NWPA to:

* require the use of Monitored Retrievable Storage facilities for long-term storage of high-level nuclear waste until the debate over the safety of a deep geological repository has been scientifically proven and society has accepted the results;
* require that MRS be reviewed as acceptable storage for at least the next 100 years to give enough time for thorough discussion of deep geologic burial;

* require that the siting of an MRS continue and that construction be completed by 1998, using the due process already established in law; and
* require establishment of regional MRS facilities, so waste is stored in the geographic areas in which it is generated.

The real and nagging question of what to do with the growing volume of high-level nuclear waste affects the economy of our communities and the peace of mind of our citizens. I whole-heartedly believe that re-examining the NWPA and implementing an MRS system is crucial to resolving this serious problem.

We would all feel more secure about the storage or disposal of high-level nuclear waste if the process I've outlined is followed. I would be excited to discuss this issue with you in greater detail if you desire.

Thank you for your attention to, and care for, an issue that is important to us all.

Sincerely,

DEAN SUTHERLAND
State Representative
17th Legislative District

DS:bjs

Department of Energy
Washington, DC 20585

MAR 2 3 1987

Mr. Melvin R. Sampson, Chairman
Yakima Tribal Council
Confederated Tribes and Bands
Yakima Indian Nation
P.O. Box 151
Toppenish, Washington 98948

Dear Mr. Sampson:

Thank you for your letter of February 24, 1987, to Secretary Herrington in which you discuss the Basalt Waste Isolation Project (BWIP) Letter Report on Ongoing and Planned Activities. In your letter you express the desire to have additional information to supplement that letter report.

In agreeing to provide these letter reports during the May 7-8, 1986, meeting, the Department of Energy (DOE) recognized that supplemental meetings and interactions might be necessary to provide States and Indian Tribes with sufficiently detailed information on planned or ongoing activities. To this end, DOE agreed, as stated in item 2b of the DOE-States/Indian Tribes Agreements of the May 7-8, 1986, meeting summary, that "Meetings will be arranged between the DOE Project Office(s) and States and Indian Tribes to discuss the letter report and identify workshops to cover tests in more detail."

As you know, certain BWIP activities have been continued even though a general stop work order was issued by the Department's Richland Operations Office in May 1986. These activities were identified in a December 17, 1986, letter to Governor Booth Gardner. Environmental evaluations for all of these activities were prepared and completed prior to issuance of the stop work order. No environmental evaluations have been conducted for additional work at BWIP since issuance of the stop work order in May 1986, and no activities are ongoing beyond those identified in the December 17 letter.

We believe your request for additional information on activities to be restarted is reasonable, and will provide such information to you when it is available.

We continue to believe that such topic-specific meetings between States and Indian Tribes and Project Office personnel will be the most effective vehicle for providing affected parties with the information they desire, such as statements of work, work authorizations, and environmental checklists. Mr. John Anttonen at the Richland Operations Office/BWIP will contact you to make arrangements for scheduling meetings to provide you with the supplemental information you request. Should you need additional assistance or clarification, please do not hesitate to contact Carol Hanlon of my staff at 202-586-1224 or FTS 896-1224.

Sincerely,

Ben C. Rusche

Ben C. Rusche, Director
Office of Civilian Radioactive
Waste Management

ESTABLISHED BY THE
TREATY OF JUNE 9, 1855
CENTENNIAL JUNE 9, 1955

CONFEDERATED TRIBES AND BANDS
Yakima Indian Nation
POST OFFICE BOX 151
TOPPENISH, WASHINGTON 98948

GENERAL COUNCIL
TRIBAL COUNCIL

February 24, 1987

John Herrington, Secretary
U.S. Department of Energy
1000 Independence Avenue
Washington, D.C. 20585

Dear Secretary Herrington:

This letter is in response to the copy of the December 17, 1986, letter to Governor Gardner and the attached list of ongoing and planned activities sent to me related to the proposed repository at Hanford. As stated in that letter, the information was provided to a request made by Tribal and State representatives at a May 7 - 8, 1986, meeting in Washington, D.C. on the "level of detail" to be in the Site Characterization Plan (SCP). At that meeting, it was agreed that the affected parties should have access to available information relating to the activities underway at the federal sites prior to the issuance of the SCP. Our review of this information is necessary if the Yakima Indian Nation is to participate meaningfully in the site selection process as mandated in the Nuclear Waste Policy Act (NWPA).

While the Yakima Nation appreciates the information provided, we have found the report to be incomplete and too general to aid in identifying those activities deserving further scrutiny. This is a formal request for additional detailed information for those activities referred to in the report. This additional information should include your statement of work, a copy of the work authorizations which allow work to begin, and a copy of any environmental evaluation of the work (including copies of the environmental checklists). We would also need the date work began at the activity site, the costs associated with the work, and the names of the projects and the project managers.

At the recent meeting, it was stated that BWIP personnel have been routinely using environmental checklists for site activity impact evaluations. To date no effort has been made by BWIP personnel to consult with Yakima Tribal representatives on this important matter.

We look forward to your reply within the next thirty days.

Sincerely,

YAKIMA INDIAN NATION

000637

Melvin R. Sampson, Chairman
Yakima Tribal Council

MRS:dll

Department of Energy
Washington, DC 20585

MAR 1 8 1987

Honorable Richard H. Bryan
Governor of Nevada
Carson City, Nevada 89710

Dear Governor Bryan:

Thank you for your letter of February 9, 1987, to Secretary Herrington regarding the current plans of the Department of Energy to collect site-specific environmental data from the Yucca Mountain site to determine the environmental impacts of site characterization activities.

Section 113(a) of the Nuclear Waste Policy Act of 1982 (the Act) requires the Department to conduct site characterization activities in a manner that minimizes any significant adverse environmental impacts. To ensure this, the Department prepared draft Environmental Monitoring and Mitigation Plans (EMMPs) which are currently under review by the States and Indian Tribes. As described in the EMMPs, site-specific environmental data will be collected before and during site characterization activities. This data will be used to monitor those aspects of the site that have the potential for experiencing significant impacts. Measures will be identified to avoid or minimize these impacts before they occur. If the site is found unsuitable, this data, along with that in the Environmental Assessments and information collected to comply with applicable regulatory requirements, will provide a sufficient basis for the Secretary under Section 113(c)(4) to take reasonable and necessary steps to reclaim the site and to mitigate any significant adverse environmental impacts caused by site characterization activities.

In addition, Section 114(f) of the Act requires the Department to prepare an Environmental Impact Statement (EIS) to accompany any recommendation to the President to approve a site for a repository. That EIS must consider as alternatives sites for which site characterization has been completed under Section 113 of the Act. The extensive site-specific environmental data which the Department will be collecting during the site characterization phase will serve as the basis for the development of this EIS.

Sincerely,

Ben C. Rusche, Director
Office of Civilian Radioactive
Waste Mangement

THE STATE OF NEVADA
EXECUTIVE CHAMBER
Carson City, Nevada 89710

RICHARD H. BRYAN
Governor

TELEPHONE
(702) 885-5670

February 9, 1987

The Honorable John Herrington
Secretary of Energy
U.S. Department of Energy
Washington, D.C. 20585

Re: Information Regarding Plans with Respect to Site Characterization at Yucca Mountain

Dear Secretary Herrington:

This letter is sent pursuant to Section 117 (a) of the Nuclear Waste Policy Act (NWPA), 42 U.S.C. 10137 (a). Please send the State of Nevada, Agency for Nuclear Projects, complete information regarding the current plans of the U.S. Department of Energy (DOE) to collect site specific environmental data from the Yucca Mountain proposed repository location in order to establish a baseline from which to determine environmental alteration of the Yucca Mountain site during and after site characterization.

Sections 113 (a) and 114 (f) of the NEPA require the DOE to evaluate the environmental implications of departmental activities at the site, in site characterization and potential development respectively. It is not scientifically responsible to evaluate environmental change without first knowing the environmental status quo. A plan for decontamination and decommissioning of Yucca Mountain, required by Section 113 (b) (1) (A) (iii), would certainly be inadequate if the present environmental conditions are not confirmed and reported.

I am concerned that the DOE does not intend to establish the current environmental condition of Yucca Mountain. The current drafts of the Environmental Program Plan and Environmental Monitoring and Mitigation Plan by the NNWSI indicate that the Department will rely on "existing data" that was used in preparing the Environmental Assessment for Yucca Mountain (DOE/EW 0073). That data is actually "historical data", and is not site specific or current.

In the event the department does not plan to collect and analyze site specific data on the current environmental conditions of Yucca Mountain, the State of Nevada will be seeking funding from the Department to collect that data itself.

As prescribed by Section 117 (a) of the Act, I anticipate your response within thirty days of your receipt of this letter.

Sincerely,

RICHARD H. BRYAN
Governor

RHB/dkl

cc: Grant Sawyer
Don Vieth

Department of Energy
Washington, DC 20585

MAR 16 1987

Mr. Dillard Hammett
State Energy Advisor
Office of the Governor
Austin, Texas 78711

Dear Mr. Hammett:

Thank you for your February 23, 1987, letter concerning the current estimates of inmigration associated with the Salt Repository Project that are beyond those analyzed in the Environmental Assessment prepared for this site. You suggested the need for an immediate analysis of any additional potential socioeconomic impacts.

We agree that the current estimates of inmigration deserve continued review. Accordingly, as part of the process of monitoring activities associated with site characterization, the Department of Energy is reviewing current estimates and plans to assure that inmigration occurs in a manner that avoids or minimizes any adverse impacts. I have asked Mr. Jefferson O. Neff, of our Columbus, Ohio, office, to discuss with you the participation by the Texas Nuclear Waste Programs Office in this review. In addition, the Texas Nuclear Waste Programs Office may be funded to conduct its own review of the current inmigration estimates and potential impacts as proposed in your letter.

On February 23, 1987, Mr. Neff met in Hereford with the Deaf Smith County Waste Deposit Impact Committee and he discussed with the Committee the possibility of an analysis such as the one you have suggested. The Committee expressed its desire to be a participant in a socioeconomic study, should one be conducted. We would therefore intend to invite the Committee to join in the Department's review of potential impacts, as it represents the county most affected by the Department's activities. Should the Texas Nuclear Waste Programs Office choose to conduct its own study, we would encourage you to include the Committee in such a study. The Department is committed to avoiding any adverse impacts associated with our program before they occur and effectively addressing any adverse impacts that may occur.

If there is any further assistance you need, please do not hesitate to call me personally.

Sincerely,

Ben C. Rusche, Director
Office of Civilian Radioactive
Waste Management

cc: Jeff Neff, SRPO

STATE OF TEXAS
OFFICE OF THE GOVERNOR
AUSTIN, TEXAS 78711

WILLIAM P. CLEMENTS, JR.
GOVERNOR

February 23, 1987

Mr. Benard C. Rusche, Director
Office of Civilian Radioactive Waste Management
United States Department of Energy
1000 Independence Avenue, S.W.
Washington, D. C. 20585

Dear Mr. Rusche:

This letter is in reference to plans and activities of the Department of Energy Office of Civilian Radioactive Waste Management (OCRWM) as they relate to the Deaf Smith County, Texas, candidate high-level nuclear waste repository site, named by President Reagan on May 28, 1986, pursuant to your recommendation of May 27, 1986.

It has been brought to my attention by the Texas Nuclear Waste Programs Office that the Salt Repository Project Office (SRPO) of the OCRWM is intending to relocate its administrative and operational offices, with associated contractor staff for site characterization planning and activities to the site area in the near future.

The OCRWM estimates of the number of DOE and contractor employees expected to staff these offices exceeds by more than a factor of two, the number of employees estimated in the Deaf Smith County Site Final Environmental Assessment, issued by OCRWM on June 28, 1986. We have been informed that the approximately 380 person SRPO and associated support contractor office will be established in Hereford, Texas, the county seat of Deaf Smith County. The field services contractor offices, with about 800 staff personnel is expected to be located in Amarillo, Texas, and a 10 person information office is planned for Vega, Texas, about 8 miles from the candidate site location. Our estimates are that this workforce will result in approximately 2,300 inmigrants to the area, although Final Environmental Assessments projects only sightly over 900 inmigrants associated with site characterization activities.

While some economic benefits of the planned relocation are expected to accrue to the communities in which these offices are located, we are concerned that insufficient attention has been applied to the potential impacts to local governmental budgets and public services resulting from population increases in affected rural and urban communities. It is our understanding the OCRWM does not intend to analyse such potential community impacts prior to the scheduled staff relocations, and since the estimated personnel numbers are

considerably larger than any previously announced and evaluated, I feel that an analysis of potential socioeconomic impacts of the planned SRPO relocation is urgently needed, prior to any such impacts actually taking place. This analysis should also serve to support any impact monitoring and mitigation strategies that may become necessary to implement.

I am proposing that the urgently needed analyses be undertaken immediately, and in a manner that will not disrupt the OCRWM's near-term plans in the site area. I am prepared to offer the services of the Texas Nuclear Waste Programs Office, which manages the State's Nuclear Waste Policy Act responsibilities, to carry out this work in an expeditious and rigorous manner that would result in the necessary data, analyses, projections, and monitoring and mitigation strategies being made available to the appropriate parties, including the State of Texas, the affected communities and local governments, and the OCRWM.

Given the fact that much of the relocation of personnel is planned to take place during this calendar year, and that our office has the capability to rapidly mobilize for and carry out this needed work, I look forward to your favorable consideration of my concerns and early acceptance of this offer, in order to assure that these potential impacts of site characterization activities will be understood and appropriate steps undertaken to alleviate them in the affected communities. With your acceptance of my offer, our Nuclear Waste Programs Office staff will coordinate with the OCRWM staff to arrange for this work to be carried out through funds which we have request be granted to the State pursuant to the Nuclear Waste Policy Act.

I look forward to your consideration of this matter. If you or your staff have further questions regarding my concerns and suggested approach to resolution of those concerns, please do not hesitate to contact the Texas Nuclear Waste Programs Office so we may meet this need in a mutually acceptable manner.

Sincerely,

Dillard Hammett

Dillard Hammett
State Energy Advisor

DH/safp

Department of Energy
Washington, DC 20585

MAR 0 9 1987

Honorable Phil Gramm
United States Senate
Washington, D.C. 20510

Dear Senator Gramm:

Thank you for your letter of January 19, 1987, forwarding correspondence (copy enclosed) from Wesley S. Fisher, Mayor of Hereford, expressing the community's desire to be the site of the Headquarters' facilities for the Department of Energy's Salt Repository Project Office and its integrating contractor.

Enclosed is a copy of the Department's earlier response to a January 16 letter from Mayor Fisher. As we have already informed you, Hereford will be the location of the office to house approximately 50 Department and 250 contractor support staff. On February 6, 1987, a news release confirming plans for this office was issued. Enclosed is a copy of the release.

If I can be of further assistance, please let me know.

Sincerely,

Ben C. Rusche, Director
Office of Civilian Radioactive
Waste Management

Enclosures

Department of Energy
Washington, DC 20585

FEB 18 1987

Honorable Wesley S. Fisher
Mayor of Hereford
P.O. Box 512
Hereford, Texas 79045

Dear Mayor Fisher:

Thank you for your letter of January 16, 1987, to Secretary Herrington expressing your community's desire to be the site of the Headquarters' facilities for the Department of Energy's (DOE) Salt Repository Project Office (SRPO) and its integrating contractor. I can appreciate your desire to have the economic benefits such a facility typically brings to a community.

As you know by now, we have decided that Hereford will indeed be the location of the office to house approximately 50 DOE and 250 contractor support staff. On February 6, 1987, we issued a news release confirming plans for this office, as well as locations of offices for the field services contractor and the project's exploratory shaft construction contractor. Enclosed is a copy of the release.

We at DOE agree with you that there will be many positive effects of having representatives of the project visible in Deaf Smith County, responding to people's questions on a routine basis and becoming a part of community activities. Mr. Jeff Neff, Manager of the SRPO, and his staff are looking forward to relocating from offices in Columbus, Ohio, to the Panhandle during the next six months, starting the end of this month. Those transferring initially will be working in temporary office trailers in Vega, while market surveys are conducted to identify the specific facility in Hereford for the permanent offices. Also during this time, the SRPO staff will be conducting a number of public meetings and other outreach activities to provide information about studies to be conducted as a part of site characterization.

I know that you have maintained a keen interest in this project for more than 6 to 7 years and hope that recent decisions, as well as the imminent relocation, will provide a more supportive atmosphere. Please feel free to contact us at any time..

Sincerely,

Ben C. Rusche, Director
Office of Civilian Radioactive
Waste Management

Enclosure

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
9800 SOUTH CASS AVENUE
ARGONNE, ILLINOIS 60439

DOE NEWS

FOR IMMEDIATE RELEASE
February 6, 1987

DOE ANNOUNCES PROJECT OFFICES LOCATIONS

The U.S. Department of Energy (DOE) will locate the offices of its Salt Repository Project and integrating contractor in Hereford and field services personnel and other facilities in Amarillo.

The Hereford offices will house about 50 DOE and 250 contractor support staff assigned to undertake detailed characterization of a 9-square-mile area in bedded salt in Deaf Smith County to determine its suitability for a high-level radioactive waste repository.

The project's field services contractor, which will manage geotechnical and other field studies, as well as the core and other field samples storage facility will be located in Amarillo.

A third office, for the project's exploratory shaft construction contractor, will be established next winter, after completion of the land access and acquisition process, at the 61-acre shaft site, about 10 miles south of Vega.

Specific locations for the offices will be announced within the next several months, following market surveys and compliance with other DOE real estate regulations.

Meanwhile, 10 people from the DOE Salt Repository Project Office and the Office of Nuclear Waste Isolation (ONWI), operated by Battelle Memorial Institute, the integrating contractor, are moving from offices in Columbus, Ohio, to temporary office trailers to be placed on land leased by DOE near Vega. They will be available on a daily basis beginning March 2 to respond to questions about job and contracting opportunities for local people and will assist in locating permanent office facilities for the project. The process of relocating DOE and Battelle technical and management staff from the Columbus office is expected to take about six months.

Site characterization, which encompasses studies to determine the suitability of the bedded salt site approximately 2,500 feet below the surface for a repository, is expected to require more than five years and represent an investment of approximately $1 billion. Similar studies also will be conducted in a geologic formation called tuff at Yucca Mountain in Nevada and in basalt at the Hanford reservation in Washington.

These activities are part of DOE's Office of Civilian Radioactive Waste Management, which is responsible for managing the nation's high-level nuclear waste. The Nuclear Waste Policy Act directs DOE to develop a waste disposal system for the permanent disposal of spent nuclear fuel and high-level radioactive waste.

DOE Media Contact: Brian J. Quirke
(312) 972-2423

PHIL GRAMM
TEXAS

United States Senate

WASHINGTON, D.C. 20510

January 19, 1987

Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585

Attention: Congressional Liaison

The attached communication is sent for your consideration. Please investigate the statements contained therein and forward me the necessary information for reply, returning the enclosed correspondence with your answer.

Yours truly,

PHIL GRAMM
United States Senator

Please attention reply to:

Senator Phil Gramm
Attn: Sean Royall
370 Russell Senate Office Building
Washington, D.C. 20510

~~080174~~

000336

CITY OF HEREFORD
FROM THE OFFICE OF THE MAYOR
BOX 512
Hereford, Texas 79045

Jan. 16, 1987

Senator Phil Gramm
U.S. Senate
Washington, D.C. 20510

Dear Senator:

It was a pleasure to be present at your breakfast at the Plains Co-op Oil Mill in Lubbock yesterday. It was good to see you again and your remarks were very informative. It appeared that the area was well represented.

You will recall that I discussed briefly with you our concern in Hereford relative to the placement of the headquarters office for the D.O.E. and Battelle as the nuclear site characterization commences.

We feel that the headquarters office should be located in Hereford as it is a Deaf Smith County project and Hereford is the only incorporated city in the county. Since we have been the center of the nuclear waste controversy for 5 years and have had to take the heat, so to speak, we feel that it is very important that the D.O.E. people be very visible in our community. It is important to show that the positive impacts resulting from the project will offset any negative impacts that it might produce. I feel that the D.O.E. Project Manager, Mr. Jeff Neff, recognizes this reasoning.

While most of our contacts with D.O.E. have been with the Project Manager on down, I am concerned that Secretary of Energy Herrington and Ben Rusche, Director of the Office of Civilian Radio Active Waste Management, might not be fully aware of our concerns and the need to place the headquarters office in Hereford for the aforementioned reasons. I'm sure that Amarillo is putting pressure on the Secretary to consider placing the headquarters office in their community. I would appreciate your contacting Secretary Herrington and Director Rusche and relaying our concerns for the need to locate in Hereford. We will do all possible to make the D.O.E. and Battelle personell welcome in our community and will go out of our way to help them locate and get settled. It is our hope that the Secretary will agree with us and that the headquarters office will be located in Hereford.

Thank you for your help in this matter and I also thank you for inviting me to your breakfast meeting in Lubbock.

Respectfully yours,

Wesley S. Fisher - Mayor

Department of Energy
Washington, DC 20585

MAR 0 6 1987

Honorable Edwyna G. Anderson
Member, Public Service Commission
of Lansing
Lansing, Michigan 48909

Dear Ms. Anderson:

Thank you for your letter of February 4, 1987, to Secretary Herrington regarding the Department of Energy's (DOE) program for the disposal of high-level nuclear waste in the subseabed. I was asked to respond directly to you.

The Department fully supports compliance with all the provisions of the Nuclear Waste Policy Act of 1982 (NWPA). Since passage of the NWPA, the Department has made significant strides toward developing and licensing a mined geological repository. The NWPA requires the construction of a mined geologic repository, and subseabed disposal is not an alternative legally available to this repository. Furthermore, all the scientifically advanced nations exploring solutions to high-level nuclear waste disposal are pursuing mined geologic disposal as the primary option, including all of our research partners in the Nuclear Energy Agency. The commitment of the large amount of funds that would be required to pursue a subseabed repository is not warranted at the present time.

As desirable as some features of subseabed disposal appear to be, such disposal is not without substantial technical and institutional problems, including the problem of siting a port facility in the United States for handling a large volume of nuclear waste.

I appreciate your concerns regarding the subseabed disposal of nuclear waste. If I or my staff can provide additional information on the program of the Office of Civilian Radioactive Waste Management or on the subseabed disposal program, please let us know.

Sincerely,

Ben C. Rusche

Ben C. Rusche, Director
Office of Civilian Radioactive
Waste Management

STATE OF MICHIGAN

COMMISSIONERS
William E. Long
Edwyna G. Anderson
Matthew E. McLogan

JAMES J. BLANCHARD, Governor

DEPARTMENT OF COMMERCE

DOUG ROSS, Director

PUBLIC SERVICE COMMISSION
6545 Mercantile Way
P.O. Box 30221
Lansing, Michigan 48909

February 4, 1987

John Herrington
Secretary
Department of Energy
1000 Independence Ave., S.W.
Washington, D.C. 20585

Dear Secretary Herrington:

As Chair of the National Association of Regulatory Utility Commissioners Committee on Electricity and its Subcommittee on Nuclear Waste Disposal, I am writing to express our concern regarding the Department of Energy's elimination of funding for subseabed waste disposal research. We are concerned for two reasons:

1. The extent of the continuing controversy surrounding various proposals for nuclear waste storage in the continental United States raises serious questions as to when and at what cost a politically acceptable solution in the country will be found. Under these circumstances, the termination of research into a potentially viable alternative seems premature.

   The total anticipated cost for this research - $6 to 8 million - seems cheap in relationship to other facets of the total project and in light of the integrated, cooperative international program. What does the United States's abandonment of its piece of the program do to the entire international project?

   Since we must regulate the utilities at whose sites the spent fuel is accumulating and since the public expects that the nuclear waste [illegible] will be resolved without due disruption of the p[illegible] operations, [illegible] [illegible] nuclear waste [illegible] [illegible] continue [illegible] ount, [illegible] years [illegible] effort and because [illegible] meeting the currently mandated [illegible] deadlines.

000421

2. The Nuclear Waste Policy Act and the National Environmental Policy Act, as well as good sense, require reasonable evaluation of all potential alternatives. If the Department of Energy's proposals for storage in the U.S. are ultimately rejected because the alternative of subseabed disposal has been inadequately evaluated, costs, safety risks and the embarrassment sustained no doubt will be of major proportions. This issue will inevitably be raised by potential host states, with the possibility that a court review would result in rejection of a license because the alternatives had not been adequately evaluated. It is hard to imagine a scenario in which such a court decision would not set the program back at least 10 more years, with unacceptable consequences in terms of continuing onsite storage of spent fuel and severely escalated costs.

We urge that you reconsider this decision before the potential for joint international action is completely dissipated.

Sincerely,

Edwyn G. Anderson

Edwyn G. Anderson
Commissioner

cc: Commissioner Peter Bradford
Mr. Paul Rodgers

OCRWM Backgrounder

United States Department of Energy
Office of Civilian Radioactive Waste Management
Washington, DC 20585

DOE/RW-0137

April 1987

ACTIVITIES DURING THE SITE CHARACTERIZATION PHASE OF THE GEOLOGIC REPOSITORY PROGRAM

BACKGROUND

The site characterization phase of the geologic repository program includes two kinds of activities: (1) a program of extensive field and laboratory testing and studies to collect and evaluate geologic, hydrologic, and geochemical information (in this backgrounder, the studies are referred to as site characterization); and (2) environmental and socioeconomic studies that assess the potential impacts of repository development and operation. The site characterization phase is expected to last about 5 years and cost as much as $1 billion for each site (in 1985 dollars). As many as 200 to 500 persons will be employed at each site at the peak of site characterization activity.

The Nuclear Waste Policy Act of 1982 (NWPA) became law (P.L. 97-425) in January 1983. The U.S. Department of Energy (DOE) formally identified nine sites as being potentially acceptable sites for the first repository. The nine sites are: Vacherie Dome in Louisiana [salt dome]; Richton Dome and Cypress Creek Dome in Mississippi [both salt domes]; Yucca Mountain in Nevada [tuff (compacted volcanic ash)]; Deaf Smith County and Swisher in Texas [bedded salt]; Davis Canyon and Lavender Canyon in Utah [bedded salt]; and Hanford in Washington [basalt (a very fine-grained rock that is formed by the solidification of lava)].

Using the repository siting guidelines (10 CFR 960) developed by DOE and concurred by the U.S. Nuclear Regulatory Commission (NRC), DOE issued for public comment and review the draft environmental assessments (EAs) on the nine potentially acceptable sites in December 1984. In those draft EAs, DOE identified five of the nine sites for nomination as suitable for site characterization and proposed three of the sites for recommendation to the President for site characterization.

As a result of the public comment period, DOE received over 20,000 comments and has incorporated those comments into the final EAs, as appropriate. Following consideration of the comments and other information, Secretary of Energy John S. Herrington issued a *Federal Register* Notice nominating five sites that he determined suitable for site characterization. Herrington recommended to the President in writing Yucca Mountain, Deaf Smith County, and Hanford for site characterization. The President approved the recommendation on May 28, 1986. Two sites, Richton Dome and Davis Canyon, were nominated but not recommended for site characterization.

SITE CHARACTERIZATION

Overview

The objectives of the site characterization program are to (1) determine the geologic, hydrologic, and geochemical conditions at a candidate site; (2) provide information needed to design a package for the disposal of spent fuel and high-level radioactive waste that will meet the licensing requirements of the NRC; (3) provide information for the design of the repository facility; and (4) evaluate whether the site can meet the requirements of the NRC and the Environmental Protection Agency (EPA).

The program will consist of surface-based investigations (e.g., geologic mapping; geophysical surveys; and seismologic, paleoclimatologic, and hydrologic studies) as well as subsurface investigations conducted by deep and shallow boreholes that will be used for ground water monitoring; core extraction; laboratory testing; and stratigraphic, tectonic, geochemical, and geohydrologic studies. Most importantly, investigations will be conducted in the host rock at repository depth through the construction and use of exploratory shafts and underground test facilities. Geochemical studies of the host rock and surrounding strata will assess the effect

Published by the Office of Policy and Outreach
To provide current background information on program facts, issues, and initiatives. For further information write to: Information Services Division, Office of Civilian Radioactive Waste Management, U.S. Department of Energy, Mail Stop RW-40, Washington, DC 20585, Telephone (202) 586-5722.

of the *insitu* environment on the waste package, the ability of the host rock to contain radionuclides, and the ability of surrounding units to retard radionuclides by chemical interaction.

Hydrologic testing and monitoring of surface and subsurface water flow systems will assess surface flooding potential and help in the construction of computer models to analyze subsurface hydrologic flow systems and their potential for transport of radionuclides.

Although site evaluation studies comparable to the site characterization activities in the repository program are commonly conducted in preparing environmental impact statements for large construction projects such as dams and powerplants, site characterization for a repository departs from those studies in that it requires the sinking of a deep exploratory shaft to conduct preliminary tests in the repository host rock. However, there is considerable experience with deep shaft construction. The mining industry frequently constructs deep shafts to extract minerals. For example, the Stripa Mine in Sweden was excavated to a depth of 1,150 feet in saturated rock. Furthermore, the Climax Stock mine, near the Nevada Test site, was excavated to a depth of 1,400 feet in unsaturated rock.

Exploratory Shafts

DOE is planning to sink two exploratory shafts at each candidate site. Having a second shaft is necessary for the safety of operating personnel.

At the Deaf Smith County site, shafts will be constructed by drill-and-blast techniques. They will be sunk to depths ranging between 2,600 and 3,000 feet, with horizontal workings (subsurface facilities and ventilation tunnels) extending about 5,400 feet from the base of the shafts. The shafts will penetrate the Ogallala and Dockum aquifers as they are sunk to repository depth. To control water migration and to stabilize the ground during this operation, portions of the ground will be frozen to ensure isolation of the aquifers. Ground freezing is a well-documented procedure used in the mining industry. The frozen ground will be maintained until the final concrete lining is emplaced.

At the Hanford site, shafts will be drilled using a large drill rig. Shafts will be sunk to the candidate repository depth, or approximately 3,000 and 4,000 feet. The shafts will be lined with watertight steel casing and sealed in place with a cement grout. Effectiveness of the seal to prevent water intrusion will be verified before beginning horizontal excavations at repository depth.

At the Yucca Mountain site, the planned exploratory shaft will use drill-and-blast techniques. Shaft depths will be approximately 1200 and 1500 feet. The Yucca Mountain site is different from the other sites in that, from the surface to repository depth, the rock is unsaturated. Water will be used sparingly during shaft construction so that tests to characterize the unsaturated zone will not be affected. The liners for the first shaft will be concrete, with steel possibly used for the second shaft. Underground test facility rooms will be excavated at about the 500-foot level and at the shaft bottom.

The exploratory shafts will be incorporated into the repository design after a site is found suitable and is selected for development as the repository. If a site is not selected for further development, then the shafts will be filled and sealed, and the site will be restored as nearly as possible to its original condition.

Site Characterization Plans

Prior to exploratory shaft construction at each candidate site, the Secretary of Energy will submit a Site Characterization Plan (SCP) to the NRC, the Governor and legislature of the State in which such candidate site is located, the governing body of affected Indian Tribes, and the public. The site plans are scheduled to be issued for Hanford and Yucca Mountain in December 1986 and Deaf Smith County in April 1987. A 3-month public comment period, including public hearings, will follow the issuance of each SCP.

The "Annotated Outline" for the SCP, derived from the NRC's Regulatory Guide 4.17 (*Standard Format and Content of Site Characterization Plans for High-Level Waste Geologic Repositories*), was approved by the NRC and distributed to other recipients. The outline is divided into Part A describing the candidate site, the waste package, and the repository; and Part B presenting the site characterization program. Part A will present existing information pertaining to geology, geoengineering, hydrology, geochemistry, climatology, and meteorology. Part B will be the heart of the SCP. It will be composed of (1) the rationale for the planned site characterization program; (2) issues to be resolved and information required during site characterization; (3) planned tests, analyses, and studies; (4) planned site preparation activities; (5) milestones, schedules, and decision points; (6) quality assurance activities; and (7) the decontamination and decommissioning activities related to the repository.

ENVIRONMENTAL AND SOCIOECONOMIC STUDIES

In parallel with the site characterization program, DOE will conduct environmental and socioeconomic studies to assess the potential impacts of repository development and operation. The studies will support the preparation of the environmental impact statement (EIS) for the site that is ultimately selected and the development of plans to mitigate any significant adverse impacts. The environmental studies will also evaluate whether repository development and operation can be conducted in compliance with environmental regulatory requirements.

Environmental data collection and analysis will focus on (1) land use and mineral resources, (2) terrestrial and aquatic ecosystems, and (3) ecology, threatened and endangered animal species, air quality and meteorology, surface waters and water quality, soils, and noise. Aesthetic, archeological, cultural, and historical resources, background radiation, and transportation systems affected by repository development will also be studied. Socioeconomic studies will address potential demographic and economic impacts, as well as changes in community services, social conditions, fiscal conditions, and government organization.

Plans will be developed and implemented to detect significant adverse environmental and socioeconomic impacts resulting from site characterization activities. These plans, developed in consultation with the affected States, Indian Tribes, and local governments, will also identify procedures for developing and implementing programs to mitigate significant adverse impacts.

Following site characterization, DOE plans to send a site selection report to the President in late 1994 and submit the license application to the NRC in early 1995, as soon as the site designation becomes effective. Construction of the geologic repository could begin in 1998, with initial operation commencing in 2003.

— DOE —

* U. S. GOVERNMENT PRINTING OFFICE: 1987-181-180:40314

OCRWM Backgrounder

United States Department of Energy
Office of Civilian Radioactive Waste Management
Washington, DC 20585

DOE/RW-0138

April 1987

COOPERATIVE DEMONSTRATION PROJECTS FOR SPENT NUCLEAR FUEL

INTRODUCTION

The U.S. Department of Energy (DOE) is implementing, in cooperation with the nuclear power industry, several technology demonstration projects designed to assist utilities in enhancing spent fuel storage capacity at primary nuclear reactor sites.[1] Objectives of the cooperative demonstration projects, in accordance with Section 132 and Section 218 of the Nuclear Waste Policy Act of 1982 (NWPA), are to encourage and to expedite the efficient use by the utilities of existing storage facilities and to provide technologies for adding new storage capacity.

Until DOE accepts the spent fuel for disposal at a geologic repository, nuclear utilities have the primary responsibility for the storage of their spent fuel and for the effective use of that storage capacity. By focusing on cooperative demonstration projects with utilities that have expressed a high degree of interest in specific technologies, the storage concepts developed will be those which most appropriately address the needs of the utilities.

STORAGE OF SPENT FUEL

Spent fuel assemblies removed from nuclear reactors are stored temporarily in water pools that cool the spent fuel rods and shield workers and others at the site against radiation. Many of these storage pools were intended originally for short-term storage, and their capacities are generally limited. Some utilities, faced with potential spent fuel storage problems, have developed and subsequently obtained approval from the U.S. Nuclear Regulatory Commission (NRC) for various methods of extending their onsite storage capacity.

One method employed by the utilities is the "reracking" of fuel assemblies in storage pools to obtain greater storage densities. By changing the configuration of the racks that hold the spent fuel in the storage pools, and by adding neutron-absorbing material, it is possible to store more than double the fuel that had been held in the originally designed racks. Another method, called "transshipping," involves transporting spent fuel from reactor sites with storage limitations to other reactor sites of the same utility that have available storage capacity.

CURRENT DEMONSTRATION PROJECTS

DOE's Office of Civilian Radioactive Waste Management (OCRWM) is implementing the provisions of the NWPA that are designed to establish, in cooperation with the utilities, new technologies for onsite dry storage and consolidation of spent fuel. The efficient use of existing storage facilities and the addition of new at-reactor storage capacity will be enhanced through the following activities:

- a cooperative demonstration program with the private sector to
  - — demonstrate spent fuel rod consolidation in existing storage pools and in a dry environment, and
  - — develop dry storage technologies that the NRC may, by rule, approve for use at civilian reactor sites;
- consultative and technical assistance to utilities on a cost-shared basis to assist each utility in obtaining NRC licensing and construction authorization for the application of new technologies; and
- a cost-shared research and development (R&D) program at Federal facilities to collect the necessary data to assist the utilities in the licensing process.

[1] Spent nuclear fuel refers to fuel that has been removed from a nuclear reactor core primarily because it can no longer sustain an efficient chain reaction. High-level radioactive waste, generated from the reprocessing of spent nuclear fuel to extract plutonium and the remaining usable uranium, results largely from defense nuclear activities.

Published by the Office of Policy and Outreach

To provide current background information on program facts, issues, and initiatives. For further information write to: Information Services Division, Office of Civilian Radioactive Waste Management, U.S. Department of Energy, Mail Stop RW-40, Washington, DC 20585, Telephone (202) 586-5722.

OCRWM is currently supporting cooperative demonstrations of rod consolidation and dry storage with several utilities. In addition, OCRWM is conducting spent fuel research and development to provide data to the utilities for obtaining licenses for these new technologies. These cooperative R&D activities are intended to establish one or more technologies that the NRC may approve by rule for use at reactor sites without, to the maximum extent practicable, the need for additional site-specific approvals.

Rod Consolidation Cooperative Demonstration Projects

Rod consolidation differs from reracking in that rod consolidation involves dismantling the fuel assemblies and placing them in canisters, whereas reracking places the intact assemblies in reconfigured storage racks that are designed for higher storage densities. Rod consolidation may be done in a storage pool, or it may be done in a dry environment. Rod consolidation increases the capacity of spent fuel storage pools which have sufficient structural strength to safely support a more compact array of spent fuel rods that have been separated from their associated hardware components.

In 1981, DOE successfully completed a "cold" (nonradioactive) demonstration of prototypical rod consolidation equipment. In May 1983, DOE issued a solicitation for cooperative agreement proposals for in-pool rod consolidation demonstrations that could provide a basis for future licensing by the NRC. A cooperative agreement for a rod consolidation demonstration project has been negotiated with the Northeast Utilities Services Company of Hartford, Connecticut. After the completion of the cooperative demonstration project, DOE expects to assemble a data base that will provide sufficient data to enable the utilities to apply for licensing of rod consolidation.

OCRWM has initiated R&D of equipment and methods for dry rod consolidation of spent fuel at the Idaho National Engineering Laboratory (INEL). The purpose of this demonstration, which is known as the Prototypical Consolidation Demonstration Project (PCDP), is to show that dry rod consolidation is feasible on a production line scale for use at NWPA facilities, including the repository or the monitored retrievable storage (MRS) facility, if authorized by Congress. The PCDP consists of four sequential phases that will lead to a planned demonstration of the process in 1989.

OCRWM has two new rod consolidation projects that are in the planning phase. The first one is known as the Nonfuel-bearing-component Volume Reduction Demonstration. The objective of this project is to design new equipment that will reduce the overall bulk of residual nonfuel hardware and other parts. The second project will be a canister welding project to test various methods of sealing canisters containing spent fuel rods from a rod consolidation process. These two projects are to be initiated in fiscal year 1989 and are expected to be completed several years later.

Dry Storage Cooperative Demonstration Projects

Dry storage systems provide a fuel storage alternative whenever reracking or rod consolidation cannot be undertaken because of economic, seismic, or structural limitations of spent fuel storage pool systems. Systems for dry storage include casks, drywells, silos, and vaults. Casks are large metal containers with radiation shielding that are stored aboveground. Drywells are below-grade wells with steel and concrete linings that are designed to hold one or more spent fuel assemblies; the surrounding earth provides an additional radiation barrier, as well as a medium for conducting heat from the drywell. Silos are concrete cylinders built aboveground that provide sealed secondary containment for spent fuel. Vaults are large concrete structures that use natural air convection for cooling. All of these dry storage systems are designed to have low maintenance requirements and to be modular in order to provide additional capacity as required.

DOE has extensive experience in conducting demonstrations of dry storage systems for spent fuel. Drywell, silo, and vault storage systems have been demonstrated at several DOE facilities in Nevada. However, dry storage systems demonstrated under DOE's auspices have never been licensed by the NRC for commercial use.

A solicitation for cooperative agreement proposals for licensed dry-storage demonstrations was issued by DOE in May 1983, leading to cooperative agreements that were negotiated with the Virginia Electric Power Company and the Carolina Power & Light Company in March 1984. At Virginia Power's Surry Nuclear Plant, construction of an independent spent fuel storage installation has been completed, and NRC issued a license for the system in July 1986.

DOE's agreement with Carolina Power & Light (CP&L) provides for a licensed demonstration of dry storage in horizontal, modular concrete silos at the site of the H.B. Robinson plant in South Carolina. On March 28, 1986, NRC approved the topical report prepared on CP&L's demonstration. Licensing of CP&L's Independent Spent Fuel Storage Installation is upcoming, and construction is expected to begin in the near future.

OCRWM has also initiated dry storage technology R&D activities at DOE's Idaho National Engineering Laboratory (INEL). Spent fuel assemblies from the Surry plant were shipped to INEL for an unlicensed demonstration of dry storage casks and to conduct tests under situations that approach the bounding parameters and limiting conditions of dry storage. Initial testing has been completed at INEL on dry storage casks of three different designs and manufacture; long-term monitoring is now in process.

— DOE —

* U. S. GOVERNMENT PRINTING OFFICE: 1987-181-180:40315

OCRWM Backgrounder

United States Department of Energy
Office of Civilian Radioactive Waste Management
Washington, DC 20585

DOE/RW-0139

April 1987

STUDIES OF ALTERNATIVE METHODS OF RADIOACTIVE WASTE DISPOSAL

INTRODUCTION

The Nuclear Waste Policy Act of 1982 (NWPA), signed into law by the President on January 7, 1983, establishes a national policy for the safe storage and permanent disposal of spent nuclear fuel and high-level radioactive waste (HLW).[1] The NWPA directs the U.S. Department of Energy (DOE) to develop and operate a system of waste disposal that emphasizes the use of deep-mined geologic repositories. Prior to the passage of the NWPA, DOE assessed the use of geologic repositories and other nuclear waste disposal alternatives in an Environmental Impact Statement (EIS) entitled the *Management of Commercially Generated Radioactive Waste* (DOE/EIS-0046F, October 1980). The EIS evaluated the following alternatives to deep-mined geologic repositories: subseabed disposal, emplacement in very deep holes, rock melt, island-based geologic, ice sheet, deep-well injection, and space disposal as well as the transmutation waste-form treatment, and indefinite surface storage. This backgrounder provides an overview of these nuclear waste disposal alternatives.

SUBSEABED DISPOSAL

The subseabed disposal concept involves the burial of solidified waste inside high-integrity canisters beneath the ocean floor. Since disposal would occur in the tectonically stable clay-rich sediments of the mid-plate regions, it is expected that the waste would remain isolated from the biosphere for extremely long periods of time and, therefore, not present a threat to plant and animal life. Movement of any waste isotopes escaping from the ocean sediments to the more biologically active near-surface water is expected to be a slow process, accompanied by dilution and dispersion. In addition, the great depth of the water constitutes a barrier to human intrusion.

Several potential problems remain, however. Most importantly, the feasibility of executing the concept has not been established. For example, it may be difficult to emplace the waste containers beneath the ocean floor to ensure containment until the waste decays to acceptable low levels. Additionally, the radionuclides may be altered by chemical reactions with the sediments. Even if subseabed disposal were to prove technically feasible, it may be difficult to develop an effective international, legal, and administrative structure to regulate and monitor a subseabed repository.

The Subseabed Disposal Program, a joint research effort between DOE, the Environmental Protection Agency, other Federal agencies, and international organizations (e.g., the Nuclear Energy Agency of the Organization for Economic Cooperation and Development) has been an ongoing program since 1974. However, recent and projected budget limitations on research and development expenditures have resulted in a reassessment of this program. As a result of this review, DOE did not request funds for the Subseabed Disposal Program in its fiscal year 1987 budget request to Congress. DOE's Office of Civilian Radioactive Waste Management (OCRWM) plans to conduct an orderly closing of the project while preserving the scientific information for future use.

DEEP HOLE DISPOSAL

The deep hole disposal concept involves the placement of waste canisters as far as 10,000 meters (approximately 6 miles) underground, a considerable distance from the accessible environment and below circulating ground water. At these depths, the nuclear waste may be

[1]Spent nuclear fuel refers to fuel that has been removed from a nuclear reactor core primarily because it can no longer sustain an efficient chain reaction. High-level radioactive waste, generated from the reprocessing of spent nuclear fuel to extract plutonium and the remaining usable uranium, results largely from defense nuclear activities.

Published by the Office of Policy and Outreach
To provide current background information on program facts, issues, and initiatives. For further information write to: Information Services Division, Office of Civilian Radioactive Waste Management, U.S. Department of Energy, Mail Stop RW-40, Washington, DC 20585, Telephone (202) 586-5722.

effectively contained while the waste decays to stable forms or levels that pose little threat to human health. To serve as a waste repository at these depths, the host rock must retain its character and structural stability under the heat and radiation conditions introduced by the waste.

The deep hole disposal concept was not defined as a proposed action in the EIS for the following reasons: (1) an incomplete understanding of the hydrologic characteristics of deep crystalline and sedimentary rock units, (2) the technical uncertainty associated with current drilling technologies that would have to be used to attain the extreme depths required to isolate nuclear waste from the biosphere, and (3) the lack of knowledge of in-situ rock mechanics properties under high pressure and temperature conditions.

ROCK MELT DISPOSAL

The rock melt disposal concept involves the emplacement of liquid or slurry waste into a deep underground hole or cavity. After the water in the waste has evaporated, the surrounding rock would melt from the heat generated by the decay of the radioactive waste. This process, in turn, would slowly dissolve the waste. The waste rock solution would slowly solidify, trapping the radioactive material in a relatively insoluble form deep below the surface of the Earth. The waste-rock-solidified conglomerate that would ultimately result is expected to be extremely leach resistant and, hence, could provide greater long-term containment of waste isotopes than could a mined geologic repository. Because less mining activity would be involved than for a mined geologic repository, the relative cost advantages of this concept could be substantial.

The rock melt disposal concept was not defined as a proposed action in the EIS largely because of the time required to monitor the process prior to full solidification of the nuclear waste. About 1,000 years would elapse before total solidification occurs. A lack of understanding of the heat transfer and phase-change phenomena in rock—information necessary to establish the stability of the molten rock matrix and to develop engineering methods for emplacement—would further complicate the monitoring task.

ISLAND GEOLOGIC DISPOSAL

The island geologic disposal concept involves the siting of deep-mined geologic repositories in islands. Preferred island locations are those in remote areas and devoid of known natural resources. Uninhabited islands that are hydrologically separated from large continental land masses offer potential advantages. Potentially adverse radiological health effects would be minimized. Further, any leakage of radioactivity into the island's ground water could be easily detected. Additionally, in the event of high-level radioactive waste leakage into the environment, the waste would be diluted by the surrounding seawater.

Drawbacks of the island geologic disposal concept include the risks associated with ocean transport of nuclear waste during adverse weather conditions. Additionally, many islands experience frequent and intense seismic and volcanic activity. Such activity could discharge the waste into either lava flows or into the atmosphere. Moreover, islands of volcanic origin have geologic foundations that are permeable and, hence, susceptible to interaction of fresh and marine water. The presence of water could contribute to the corrosion of waste canisters, leaching, and the eventual transport of radionuclides into the biosphere. Potential opposition from countries in the vicinity of a proposed island repository is an additional consideration.

ICE SHEET DISPOSAL

Without significant climatic changes, the Antarctic and Greenland ice caps could provide long-term isolation of nuclear waste from the biosphere. Three ice sheet disposal concepts have been considered: passive slow descent, anchor, and surface storage emplacement. Passive slow descent emplacement would allow for the waste canister to be placed in a shallow hole, eventually melting its way to the bottom of the ice sheet as heat is emitted from the radioactive decay process. Anchor emplacement parallels that of passive emplacement, but an anchor cable attached to the canister would limit the descent depth and enable retrieval of the waste canister. Surface storage emplacement requires the use of large storage units constructed above the snow surface and then filled with waste. The radioactive waste would act as a heat source causing the storage units to slowly melt their way to the bottom of the ice sheet.

An advantage of the ice sheet disposal concept is that the polar regions are uninhabited and desolate areas that would provide for the almost total isolation of the nuclear waste. The ice masses are thousands of meters thick, extend uniformly, and remain stable for long periods of time. At great depths (100 meters or more), ice behaves like a plastic and flows to seal fissures and to close cavities. Isolation of radioactive wastes would be ensured for long periods of time due to the very slow movement of ice.

Disadvantages of the ice sheet disposal concept include

uncertainties surrounding both the disposal technologies and the impact of future climatic changes on the stability and size of the ice sheets. Another disadvantage is the expected high operational costs of ice sheet disposal because of the remoteness of the locations and the adversity of weather conditions. Ice sheet dynamics are not well known. Global climatic effects could accelerate the melting of large portions of ice masses from the heat generated from radioactive waste decay and thus open paths to the dispersion of waste. Finally, the Antarctic Treaty of 1959, of which the United States is a signatory, specifically prohibits the disposal of nuclear waste in the Antarctic.

DEEP-WELL INJECTION

The deep-well injection concept is the emplacement of liquid or slurried nuclear waste in deep geologic formations capped by an impermeable boundary layer. For acidic liquid waste, the method would involve the pressurized pumping of the waste to depths of 1,000 to 5,000 meters (3,300 to 16,000 feet) into a porous or hydrofractured geologic formation suitably isolated from the biosphere by relatively impermeable overlying strata. The waste would progressively disperse throughout the host rock. Deep-well injection is a working technology compared to technologies required to implement the rock melt and deep hole disposal concepts. Shale is considered a suitable geologic medium because of its ability to provide isolation of the waste from ground water and the environment.

The deep-well injection alternative requires either mechanical or chemical processing of spent fuel prior to its disposal, which is a possible drawback. Another possible limitation of the deep-well injection method concerns the mobility of a liquid waste form within a porous host rock formation. The combination of a liquid waste form and a porous rock body increases the chances that the waste could come into contact with the biosphere.

SPACE DISPOSAL

The National Aeronautics and Space Administration (NASA) and DOE have studied several space disposal concepts including the transport to and injection of nuclear waste into the sun or the emplacement of waste on the Earth's moon. These methods were found unsuitable for technical and space exploration reasons. Another concept involved sending reprocessed nuclear waste into a circular solar orbit about midway between Earth and the planet Venus. First, the space shuttle would carry the nuclear waste package to low Earth orbit. A transfer vehicle would then separate from the shuttle to place the waste package and another propulsion stage into an Earth-escape trajectory. The transfer vehicle would return to the shuttle while the remaining rocket stage would move the waste into solar orbit.

Disadvantages of the space disposal concept include the possibility of launch failure and the potential inability of the waste packaging system to contain the waste in the event of such a failure. Additionally, the costs of launching nuclear waste into space would be very high. Therefore, the space disposal concept would be restricted to providing for the extraterrestrial isolation of long-lived radionuclides such as Iodine^{129} and Technetium^{99}. In turn, this method would require the reprocessing of high-level radioactive waste into specially tailored waste forms. Waste remaining on earth would have to be disposed of in a mined geologic repository. The use of extraterrestrial disposal, in conjunction with terrestrial disposal, would require an expected additional cost without achieving a significant reduction in long-term risk over emplacement of waste only in a mined geologic repository. Consequently, in April 1982, NASA and DOE agreed to discontinue further study of the space disposal concept.

TRANSMUTATION

Transmutation is not a disposal method but a treatment method for high-level radioactive waste that would be used in conjunction with specific disposal alternatives, such as the deep-mined geologic disposal option. The transmutation concept involves the reprocessing of spent fuel to recover uranium and plutonium (or processing to obtain a liquid high-level waste stream when uranium and plutonium are not to be recycled). The remaining high-level waste stream is partitioned into an actinide[2] waste stream and a fission product stream. The fission product stream is concentrated, solidified, and sent to a mined geologic repository for disposal. The actinide waste stream is combined with uranium (or uranium and plutonium), fabricated into fuel rods, and reinserted into a reactor. In the reactor, about 5 to 7 percent of the recycled waste actinides are transmuted to stable or short-lived isotopes, which are separated out during the next recycle step for disposal in the repository. Numerous recycles would result in nearly complete transmutation of the waste actinides; however, additional waste streams are generated with every recycle. Transmutation provides no reduction in the quantities of long-lived fission product radionuclides, such as Technetium^{99} and Iodine^{129} in the fission product stream that is sent to geologic disposal.

[2]Actinides are a group of elements that include uranium and all man-made transuranic elements (e.g., Berkelium and Californium). Fission products are nuclei (fission fragments) formed by the fission of heavy elements, plus the nuclides formed by the fission fragments' radioactive decay.

SURFACE STORAGE

The surface storage alternative would allow for existing spent fuel to be left indefinitely where it is being stored. Any additional waste discharges from the operation of commercial nuclear powerplants would be stored indefinitely in water basin facilities at the reactors or at other sites. Reprocessing of wastes is assumed not to be undertaken. This alternative would allow for delays and contingencies that could not have been foreseen in the research, development, and planning stages for deep-mined geologic disposal.

Disadvantages associated with the surface storage alternative include the extensive maintenance and monitoring activities that necessarily accompany surface storage, as well as the potential health and safety and environmental risks attendant to storing nuclear waste in relatively accessible locations.

— DOE —

*U.S. GOVERNMENT PRINTING OFFICE:1987-181-183:40313

STATEMENT OF

JOHN S. HERRINGTON
SECRETARY OF ENERGY

BEFORE THE

SUBCOMMITTEE ON NUCLEAR REGULATION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

APRIL 23, 1987

Mr. Chairman and Members of the Subcommittee:

I appreciate the opportunity to appear before you today to review policy issues of interest to the Subcommittee regarding the program being carried out under the Nuclear Waste Policy Act of 1982 (the NWPA). With me is Ben C. Rusche, my Director of the Office of Civilian Radioactive Waste Management (OCRWM).

We have prepared a Draft Amendment to the Mission Plan for the Civilian Radioactive Waste Management Program. In that document, which we sent to the States, affected Indian Tribes, the Nuclear Regulatory Commission (NRC) and other Federal agencies for comment -- and made available for public inspection -- we discuss significant developments and new information in the waste program.

The Mission Plan is intended to keep Congress fully informed of progress in the program and the amendment will ensure that the Plan reflects current program status and our assessment of needed alterations. After review of the comments received on the draft, DOE will revise the amendment in response to the comments as appropriate and will submit it formally to Congress for information and direction. We would expect this to occur early this summer, and earnestly seek Congressional action on the proposed program revisions. If no action is taken by the Congress, we will continue with the first repository program and return to the search for specific sites for a second repository.

As you requested in your letter of invitation, I would like to give a brief status of the waste program and address the specific points of interest to the Subcommittee. For clarity I have attached several tables and charts to my statement. For

frame of reference, Table 1 contains the FY 1987 major funding levels and the FY 1988 Budget Request.

FY 1987 FUNDING

The funding level provided by Congress for FY 1987 is $499 million, of which $420 million has been made available and $79 million will be made available only by approval of the House and Senate Appropriation Subcommittees on Energy and Water Development, and certification by me that a good faith effort has been made to comply with the requirements of the NWPA relative to consultation and cooperation with States and Indian Tribes.

To this end, we have initiated expanded consultation activities and have under preparation a report which, when completed, I will submit to Congress, requesting the remaining $79 million.

Since enactment of the Continuing Resolution and the provisions regarding the limitations on accessibility of the $79 million, we have increased our efforts to negotiate consultation and cooperation (C&C) agreements. In this regard, we are considering a number of new initiatives to encourage these negotiations. For example, DOE is willing to consider the adoption and implementation of de facto agreements or memoranda of understanding that would be of a smaller scope than a full C&C agreement, should the State or affected Indian Tribe find this advantageous. This would permit the adoption of procedures agreed upon by the parties immediately, even before the C&C agreement is fully developed. Such an approach is attractive because it recognizes the importance and the achievements of the

negotiation process that has been underway since the NWPA was signed into law.

But C&C negotiations and agreements are but one part of the process of working with affected parties. Interactions with affected and interested parties occur every day.

In addition, a number of actions outside formal C&C negotiations have been taken recently as a result of recommendations. For example, as States and Indian Tribes requested:

- States and affected Indian Tribes are now invited to attend all OCRWM coordinating group meetings; and
- Quarterly Meetings with States and affected Indian Tribes have been opened for the public to attend.

There are currently twelve Coordinating Groups and they are listed in Table 2. The Coordinating Groups meet two-to-four times per year and provide a forum for the discussion of common problems and their resolution. It is expected that additional coordinating groups will be established and existing ones abolished as requirements and priorities change.

Since the summer of 1984, Quarterly Meetings have been held with States and affected Indian Tribes to discuss topics mutually agreed upon for the agenda. As a result of recommendations by the States and Indian Tribes, these meetings will now be open to the public. The first meeting open to the public was held on February 12, 1987 in Spokane, Washington. The agenda was coordinated among the States, the Indian Tribes and DOE and a public announcement was made by the DOE Operations Office in Richland, Washington. The Draft Mission Plan amendment

was a major topic of discussion at the meeting. The next one of these meetings is scheduled for May 28 in Las Vegas, Nevada.

I mention these activities because I believe it is important to point out that, while formal consultation and cooperation negotiations are only required to begin after a candidate repository site is approved for site characterization, consultation and cooperation are everyday activities and are the responsibility -- DOE's responsibility, the States' and Indian Tribes' responsibility -- of all the affected parties.

FY 1988 BUDGET REQUEST

The FY 1988 funding level required to carry out the program as described in the draft Mission Plan amendment is estimated to be $725 million. However, the actual funding level requested in DOE's FY 1988 budget was $500 million. This level is based upon the recognition that Congressional direction provided in the FY 1987 Continuing Resolution indicated the need to interact with Congress and to address external issues before moving at the pace we believe is necessary.

Authorization for the higher funding level ($725 million) is appropriate and consistent with the program presented in the draft Mission Plan Amendment and outlined in the FY 1988 funding estimate. Therefore, an amendment to the FY 1988 budget request is planned to be submitted to provide the required funding to carry out the program as described in the funding estimate. We seek your approval of the revised Mission Plan to provide direction concerning submissions of the FY 1988 budget amendment.

The FY 1988 budget request will provide for extensive site characterization activities, including the start of exploratory shaft construction, and intensive engineering tests and analyses to support the waste package and repository designs for the first repository. Actual exploratory shaft construction is planned to commence in FY 1988 at two of the three candidate repository sites approved by the President on May 28, 1986, for site characterization.

Table 3 reflects a possible FY 1988 allocation of $500 million by task, within the Nuclear Waste Fund program. This allocation is currently under review to identify adverse impacts, which would result from a $500 million FY 1988 funding level. Efforts to minimize these impacts could result in a change to this preliminary allocation.

If only $500 million were appropriated in FY 1988, the revised program schedule, and planned accomplishments developed in support of the Draft Mission Plan Amendment would not be achieved. Listed below, by program, are the specific accomplishments which would be delayed.

First Repository

The exploratory shaft construction at the tuff and basalt sites would be delayed; final design of the exploratory shaft at the salt site would be delayed; the intensive surface-based site characterization activities would be reduced by 50 percent at all three sites; and the waste package and repository advanced conceptual design would be delayed. These delays would result in a slip in the schedule contained in the draft Mission Plan

Amendment of a minimum of 6 months. Additionally, financial assistance to affected States and Indian Tribes may be impacted.

Second Repository

The cooperative international activities in support of the second repository program would be slowed.

Monitored Retrievable Storage (MRS)

The operation of the MRS, if authorized as proposed, is linked to the construction authorization for the first repository which would be further delayed by a funding reduction to the $500 million level. The MRS schedule would, therefore, slip past the first quarter of the 1998 deadline to begin acceptance of spent fuel and high-level waste.

Transportation and Systems Integration

Transportation activities and cask procurement would be delayed approximately one year.

FIRST REPOSITORY

Last May, I nominated five sites in Mississippi, Nevada, Texas, Utah and Washington as suitable for characterization and recommended to the President three of those sites for characterization as candidates for the first repository. The three sites are: the Yucca Mountain site in Nevada, the Deaf Smith County site in Texas and the Hanford site in Washington. The President approved my recommendation.

With the President's approval of the three sites to characterize, we have finally passed beyond the crucial decision of where to focus our repository siting efforts. That action formally marked the beginning of site characterization and

represented a major milestone in development of the Nation's nuclear waste disposal system.

Site characterization will take approximately six or seven years, depending on the site.

The experience gained in achieving the important milestone of approval of sites for characterization, and advances in the technical planning of the program, have led us to reassess the program and schedule for the first repository. The new schedule -- as presented in the draft Mission Plan Amendment -- shows a 5-year extension of the date for the acceptance of waste at the first repository, from 1998 to 2003. Table 4 attached to my statement shows the current schedule for the first repository as compared to the schedule contained in the 1985 Mission Plan.

There are several reasons for the near-term extension. Among them are:

- The additional time it took to meet the initial milestones in the NWPA, including optional steps taken to enhance State and Indian Tribe involvement;
- The recognition that more time should be provided in the future for consultation and interaction with the States, affected Indian Tribes, and other parties; and
- The recognition that more technical information is needed than was previously anticipated.

Since the NWPA was passed, and given the controversial nature of the program, many parties have insisted that the schedule specified in the Act was not realistic and not achievable. It has been pointed out on many occasions that the

schedule and the siting process are not reconcilable -- that to achieve one, it would be necessary to sacrifice the other.

DOE has attempted to meet both objectives and has developed an aggressive schedule that would have permitted the first repository to begin accepting waste in January 1998. However, at the same time, Mr. Rusche and I have insisted that the schedule not be allowed to prevail at the expense of technical excellence and public participation.

We now recognize that more information, more consultation and more time are required in the near-term to ensure public confidence in and development of the first repository for long-term (permanent) disposal. We remain optimistic in our planning but realize that, for many early actions, we underestimated the time required. Furthermore, the revised schedule recognizes the potential for contingencies that are yet to appear.

The 5-year extension for startup operations at the first repository, therefore, requires a reevaluation of the waste acceptance strategy. Based on our reevaluation, we believe that the most advantageous course includes the development of a Monitored Retrievable Storage (MRS) facility. And, as presented in the draft amendment, DOE believes it can start accepting waste for disposal in 1998 through the development of an MRS facility, which I will discuss in a moment.

Although we had planned to begin exploratory shaft construction at one or two of the sites this fiscal year, Congress, in the appropriation for the waste program for Fiscal Year 1987, specified that no funds are to be used for drilling any exploratory shaft at any site in FY 1987. However, Congress

did allow for other site-specific work to be conducted at reduced funding levels, and we are proceeding with these allowable characterization activities during this year.

The current activities at or related specifically to each of the candidate sites include the following:

- At the Nevada site, land access is being pursued with other Federal agencies.
- At the Washington site, site plans are proceeding for hydrology tests that will precede exploratory shaft drilling.
- At the site in Texas, DOE is proceeding with its plans for obtaining access to the land. In late February, we met with property owners and held public meetings in Texas near the Deaf Smith County candidate site to describe project activities, studies and land access plans for the site and to answer questions. In addition, about 10 people from the DOE Salt Repository Project offices and the support contractor have moved from offices in Columbus, Ohio, to temporary office trailers placed on land leased by DOE near Vega, Texas. Since March 2, they have been available on a daily basis to respond to questions about job and contracting opportunities for local people and to assist in locating permanent office facilities for the project. Texas, unlike the Nevada and Washington candidate sites, has had no DOE office for this program located near the site or in the State.

Table 5 contains a breakdown of the FY 1987 budget request and appropriations (P.L. 99-591). The chart shows the amounts specifically requested and how they were allocated for each of the three candidate sites for the first repository.

Of the $725 million estimated to be necessary to carry out the program in FY 1988 as described in the draft Mission Plan Amendment, $525 million is estimated for first repository activities as shown previously in Table 1.

SECOND REPOSITORY

On May 28, 1986, following the announcement of the President's approval of three sites for characterization as candidates for the first repository and based on a number of factors, I announced that site-specific work for identifying new candidates for a second repository was postponed indefinitely. The basis for this decision, which is discussed in the draft Mission Plan Amendment, includes declining projections of the rates at which spent fuel will be discharged from commercial nuclear power plants, progress in siting the first repository and confidence in finding suitable sites among the three sites approved by the President for characterization. It also reflects the advantages to be gained from the experience of the first repository, the expectation of Congressional approval for the MRS facility, and responsible fiscal management.

Since that decision and with circulation of the Draft Mission Plan Amendment, many issues have been raised and much discussion, comment and thirteen legislative proposals have resulted.

I want to clarify, with regard to our decision, the following points: I have stated that "indefinite postponement" does not mean "cancellation." DOE has not abandoned a second repository.

When making the announcement I thought, based on the factors I mentioned earlier, that it was appropriate to leave the specific timeline for site-specific work open-ended. It has now become clear to me that leaving it open-ended has in itself led to confusion regarding our intent.

To clarify our intent and for planning purposes, my statement includes a revised timeline for milestones related to siting a second repository. I believe it is important to point out that the schedule has changed many times since passage of the NWPA; and, as we progress through the development of the first repository, I would suspect that additional adjustments may have to be made from time to time. However, through the many opportunities for dialogue -- formal and informal -- with Members of Congress and others, as we progress through the program and as conditions change (such as spent fuel projections), there will continue to be opportunities for Congressional direction and oversight.

Table 6 of my statement provides a schedule for second repository activites based on requirements of the NWPA, 1985 Mission Plan, schedules in the FY 1986 and FY 1987 budget

requests, and estimated schedules based on considerations of the Draft Mission Plan Amendment.

DOE remains fully committed to a two repository system and to carrying out the intent of Congress. The specific requirement related to the second repository is stated in the NWPA in terms of the maximum amount of spent fuel that the Nuclear Regulatory Commission can allow to be emplaced in the first repository until a second repository is in operation. The NWPA sets this figure at 70,000 metric tons.

Under the revised schedule for the first repository, this limit would be reached sometime after the year 2025 if the annual rate of waste emplacement is 3,000 metric tons. The experience of siting the first repository suggests that site-specific screening leading to the identification of potentially acceptable sites should start about 25 years before the start of waste acceptance for disposal at the second repository. Therefore, to have the second repository available by about 2025, site-specific studies need not start until the mid- to late 1990s, as presented in the schedule in Table 6.

For second repository activity, the FY 1987 funding level of $19.8 million and the FY 1988 request for $24 million (Table 1) provide for non-site-specific technical studies in alternative geologic media to determine their suitability for hosting a second geologic repository. This represents essentially level funding between FY 1987 and FY 1988 since postponement of site-specific activities resulted in a FY 1986 savings of $3.2 million which was carried forward into FY 1987.

A significant portion of these studies is expected to involve cooperative efforts with other countries.

Should Congress not approve this fiscal year the program laid out in the draft Mission Plan Amendment for second repository activities, DOE would go back and review the more than 60,000 comments received on the Draft Area Recommendation Report issued in January 1986 and issue a final Area Recommendation Report which would formally identify 12 sites for field work leading to consideration as candidates for a second repository. An additional $60 million would be required in FY 1988 for this work.

MONITORED RETRIEVABLE STORAGE

The NWPA (Section 141) directs DOE to complete a study of the need for and feasibility of a Monitored Retrievable Storage (MRS) facility, and to submit to Congress a proposal for the construction of one or more MRS facilities. After being enjoined from submitting the MRS proposal to Congress for more than a year, a Supreme Court ruling allowed us to submit it on March 31, 1987. Our proposal, as required by the NWPA, includes a program for siting, development, construction and operation of an MRS facility, should Congress approve its construction; a plan for funding the construction and operation of such a facility; and a plan for integrating such a facility into the overall Federal waste management system.

We continue to believe that an MRS facility should be an integral part of the waste management system. As described in our proposal, it would substantially enhance the waste management program and capabilities at an incremental cost of less than five

percent of the total program costs and would provide greater assurance that we could begin receiving waste in 1998.

We believe that an MRS, centrally located to the majority of the spent fuel generated, would enhance the disposal system by receiving and consolidating the spent fuel prior to shipping to the repository.

The proposal submitted to Congress is accompanied by Nuclear Regulatory Commission and Environmental Protection Agency comments, as well as the State and local community group comments.

In our proposal, we recommend that Congress:

- Approve the construction of an MRS facility at Clinch River near Oak Ridge, Tennessee;
- Limit the storage capacity at the MRS facility to 15,000 metric tons of spent fuel;
- Preclude waste acceptance by the MRS facility until a construction authorization for the first repository is received from the NRC;
- Direct DOE to implement measures responsive to the concerns and recommendations of the State and local governments; and
- Direct DOE to implement the program plan accompanying the proposal.

The expenditures for the MRS program from the time of Congressional approval until the facility becomes operational are estimated at approximately $907 million, of which approximately $710 million would be used for construction. The annual operating costs for the facility, which would employ about

600 workers, would be approximately $73 million, not including financial assistance and tax-equivalence payments. The estimates are higher for the initial years of operation, when up to 1600 sealed storage casks must be fabricated, and lower in the later years, when the MRS facility stops receiving spent fuel and is only shipping spent fuel in cannisters to the repository. Decommissioning would cost approximately $83 million. These add up to a total construction, operation, and decommissioning cost of about $3 billion.

The net cost to the total system is about $1.5 billion because of savings at the repository and in the transportation system. The costs borne by the utility rate payers would be offset by savings in at-reactor storage costs; these costs would be avoided because an MRS facility would allow DOE to accept spent fuel at an earlier time and, under certain scenarios, it is possible that the addition of an MRS facility would result in net cost savings to the overall system. For example, it has been estimated that the deployment of an MRS facility consistent with the Draft Mission Plan Amendment would preclude the need for additional storage capability at more than 15 reactor sites and could offset more than 10,000 MTU of at-reactor storage. This incremental at-reactor storage is estimated to cost $100,000 per metric ton, which would result in a savings of at least $1 billion at the reactor sites. The financial costs of adding an MRS facility are considered small in comparison with the benefits.

From the time of Congressional approval to completion of construction of the MRS, it is estimated that 10 years are

required. Table 7 provides a timeline of the major milestones and program elements involved in the MRS deployment schedule.

Should Congress approve proceeding with an MRS facility, we are committed to seeking immediately to enter into a formal Consultation and Cooperation Agreement with the host State.

The FY 1987 allocation of $20 million had assumed Congressional authorization to proceed; however, only $352,000 has been expended through the first half of FY 1987.

The FY 1988 funding estimate of $58 million for the MRS program assumes Congressional approval to proceed with activities that are critical to the deployment of an MRS facility.

PROPOSED LEGISLATION

As you requested in your letter of invitation, the following is a brief statement of our initial position on Senate Bills S.621, S.642, S.833, and S.839.

With respect to both S.621 and S.642, which would essentially amend the NWPA by removing the requirement to site, construct and operate a second repository, the Department does not at this time either support or oppose the Bills. We are in the process of reviewing the potential implications of them on the waste program.

S.833, regarding the prohibition of transporting waste through urbanized areas, the Department opposes, since the transportation safety record developed over the past years has demonstrated conclusively that spent fuel and high-level waste can be shipped safely even through ultra-urban areas.

Regarding S.839, which essentially provides financial incentives, the Department believes that its approach may have merit, since it appears to have well thought out funding advantages and addresses some valid issues in implementing the NWPA. However, because it is currently under policy review within the Department, we do not yet have a formal position.

NUCLEAR WASTE FUND

In April 1983, DOE adopted a fee of one mill (one-tenth of a cent) per kilowatt hour charged to utilities for all nuclear-generated electricity beginning April 7, 1983, as specified in the NWPA. This fee is referred to as an "on-going fee." In addition, spent fuel or high-level waste generated prior to that date is subject to a fee equivalent to an average charge of one mill per kilowatt hour. This fee is referred to as a "one-time fee." For the "one-time fee," utilities had until June 1985 to decide on one of three payment options. Those who chose to pay in one lump sum by June 1985, to save interest charges, made payments totalling more than $1.4 billion. This represents more than half of the one-time fee liability of approximately $2.3 billion for civilian nuclear waste in existence prior to April 7, 1983. Additionally, quarterly one-time fee receipts have totalled approximately $9 million between July 1985 and March 1987.

The status of the revenues, including interest earned on investments and expenditures to date, is shown in Table 8.

With regard to the status of the defense waste fee, on April 30, 1985, the President determined that there was no basis for the establishment of a separate repository for disposal of

defense high-level waste and that the Secretary should proceed promptly with arrangements for the use of one or more of the repositories to be developed under the Act.

On December 2, 1986, DOE published a Notice of Inquiry (NOI) in the Federal Register that described the proposed method for calculating the fee for defense high-level waste. Following the 60-day comment period, comments were received from 26 sources.

The comments are now being evaluated by DOE's Offices of Civilian Radioactive Waste Management (OCRWM) and Defense Programs, and a final Federal Register Notice is planned for early this summer.

The primary concerns expressed by the commentors were:

(1) that full cost would be recovered for the disposal of defense high-level waste considering the time value of money;

(2) a concern that a rulemaking procedure should be used for determination of fee calculation methodology and payment schedule;

(3) the lack of a payment schedule in the NOI;

(4) the equitability of the relative quantities of civilian and defense waste; and,

(5) the method proposed for sharing common fixed costs, such as development and engineering.

All comments are being carefully considered. After the fee calculation methodology has been finalized, OCRWM and Defense Programs will develop a Memorandum of Understanding that will include plans for requesting the appropriation of funds to pay the cost of disposal of defense high-level waste.

CONCLUSION

Mr. Chairman, this concludes my remarks. I would be happy to respond to any questions you may have and, with your permission, I may call on Mr. Rusche for more details.

#######

TABLE 1

FY 1988 CONGRESSIONAL BUDGET
NUCLEAR WASTE FUND
($in Thousands)

	FY 1987 Approp.	FY 1988 Request
NUCLEAR WASTE FUND		
Repository Development		
o First Repository	$307,446	$525,044
o Second Repository	19,800	24,000
Monitored Retrievable Storage	20,000	58,000
Transportation and Systems Integration	26,000	63,043
Program Management and Technical Support	46,754	54,913
	79,000 a/	
TOTAL	$499,000	$725,000
Less		225,000 b/
FY 1988 CONGRESSIONAL BUDGET REQUEST		$500,000

a/ Not currently available. Availability is subject to satisfactory completion of the terms contained in the Continuing Resolution, P.L. 99-500 and P.L. 99-591.

b/ The funding level required to carry out the program as described in the Department of Energy's budget and in this statement and shown in the draft amendment to the Mission Plan is estimated to be $725 million. The President's request is based upon the recognition that Congressional direction provided in the FY 1987 Continuing Resolution indicated the need to interact with Congress and to resolve external issues before moving forward as planned. A request for a higher funding level would be appropriate presuming satisfactory resolution of these issues. Therefore, upon satisfactory resolution, an amendment to the FY 1988 budget will be submitted to provide the required funding to carry out the program described herein.

TABLE 2

U.S. DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
EXISTING COORDINATING GROUPS

The following coordinating groups are currently in existence and supported by their own charters:

- Site Characterization Plan Coordinating Committee
- Geoscience Coordinating Group
- Repository Coordinating Group
- Waste Package Coordinating Group
- Performance Assessment Coordinating Group
- Licensing Coordinating Group
- Quality Assurance Coordinating Group
- Transportation Coordinating Group
- Institutional Affairs Coordinating Group
- Project Management Coordinating Group
- OCRWM Information Resources Management Coordinating Group
- Environmental Coordinating Group

TABLE 3

NUCLEAR WASTE FUND
FY 1988 ALLOCATION BASED ON $500 MILLION
($ in Millions)

First Repository	$357.09
Second Repository	16.55
Monitored Retrievable Storage	39.50
Transportation and Systems Integration	42.95
Program Management and Technical Support	43.91
TOTAL	$500.00

TABLE 4

NUCLEAR WASTE POLICY ACT MILESTONES

COMPARISONS WITH NWPA, JUNE 1985 MISSION PLAN, AND DRAFT AMENDMENT TO THE MISSION PLAN

ACTIVITY	NWPA REQUIREMENT	1985 MISSION PLAN	1987 DRAFT AMENDMENT
1. Identify States w/ potentially acceptable sites	4/7/83	--	--
2. State/Tribal notification as to being potentially acceptable sites	7/7/83	--	--
3. Issue Siting Guidelines	7/7/83	12/84	--
4. Issue Mission Plan	5/84	--	--
5. Issue Environmental Assessments	--	11/85	--
6. 1st Repository Nomination/Recommendation of sites suitable for characterization	1/1/85	11/85	--
7. Presidential Approval of sites	--	1/86	--
8. Seek to enter into C&C agreements	7/86	--	--
9. Issue SCP*s	--	3/86 tuff 3/86 basalt 10/86 salt	mid-87 tuff mid-87 basalt 1st Qt.88 salt
10. Initiate Construction of Exploratory Shafts	--	3rd Qt. 86 tuff 3rd Qt. 86 basalt 3rd Qt. 87 salt	2nd Qt. 88 tuff 3rd Qt. 88 basal 4th Qt. 89 salt

* Informal C&C negotiations were initiated with the State of Washington and Umatilla Indian Tribes in mid 1983

(TABLE 4, cont'd)

ACTIVITY	NWPA REQUIREMENT	1985 MISSION PLAN	1987 DRAFT AMENDMENT
11. Testing to support DEIS complete	--	12/89	1st Qt. 92 tuff 1st Qt. 93 basalt 1st Qt. 93 salt
12. Issue FEIS	--	12/90	4th Qt. 1994
13. President recommends site to Congress	3/31/87	3/91	4th Qt. 1994
14. Site designation effective	5/91	5/91	1st Qt. 1995
15. Submit License Application to NRC	--	5/91	1st Qt. 1995
16. NRC issues Construction Authorization	--	8/93	1st Qt. 1998
17. Initiate Repository Construction	--	8/93	1st Qt. 1998
18. NRC issues License for Phase 1 Operations	--	12/97	1st Qt. 2003
19. Phase 1 Repository Operations begins	--	1/98	1st Qt. 2003
20. Phase 2 Repository Operations begins	--	2/01	2nd Qt. 2006

TABLE 5

FY 1987 BUDGET
NUCLEAR WASTE FUND
($ in Millions)

	FY 1987 Congressional Request	FY 1987 Appropriation	Percent Change
First Repository			
Basalt	$179.8	$110.2	-39
Tuff	176.5	105.4	-40
Salt	185.5	66.3	-64
Technical Support	-----	25.3	--
Subtotal	541.8	307.4	-43
Second Repository	19.8	19.8	--
Monitored Retrievable Storage	46.0	20.0	-57
Transportation and Systems Integration	33.4	26.0	-21
Program Management and Technical Support	69.5	46.8	-33
TOTAL	$710.5	$420.0	-41

NOTE: If the $79 million becomes available, $73 million will be allocated to the First Repository and $6 million to Transportation and Systems Integration.

TABLE 6

NUCLEAR WASTE POLICY ACT MILESTONES
SECOND REPOSITORY
COMPARISONS WITH NWPA, FY 1986 BUDGET REQUEST,
JUNE 1985 MISSION PLAN, FY 1987 BUDGET REQUEST,
IF MISSION PLAN AMENDMENT APPROVED,
IF MISSION PLAN AMENDMENT NOT APPROVED

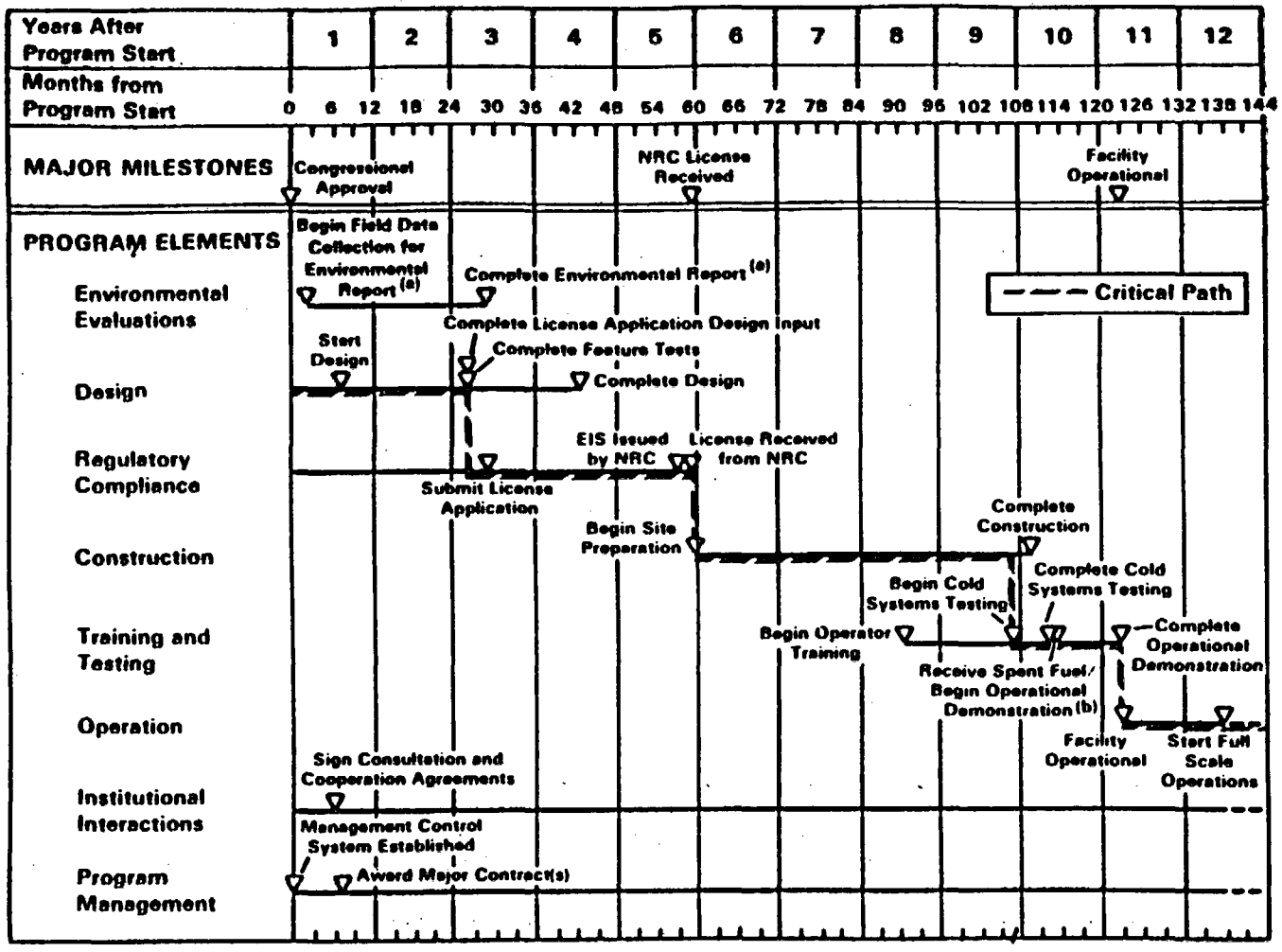
	NWPA Requirement	FY 86 Bud.Req.	1985 MISSION PLAN	FY 87 Bud.Req.	If MISSION PLAN AMENDMENT Approved	If MISSION PLAN AMENDMENT Not Approved
Begin National Survey	---	---	1981	---	1995	
Complete National Survey	---	---	4/83	---	1997	
Issue Draft Regional Geologic/ Environmental Characterization Reports	---	---	5/83	---	1999	
Issue Draft Region-to-Area Screening Methodology	---	---	9/84	---	2000	
Issue Revised Draft Geologic/ Environmental Characterization Reports	---	12/84	12/84	---	---	
Issue Final Region-to-Area Screening Methodology	---	4/85	4/85	4/85	2001	
Issue Final Geologic/ Environmental Characteriza-tion Reports	---	7/85	7/85	9/85	2001	

(TABLE 6, cont'd.)

	NWPA Requirement	FY 86 Bud.Req.	1985 MISSION PLAN	FY 87 Bud.Req.	If MISSION PLAN AMENDMENT Approved	If MISSION PLAN AMENDMENT Not Approved
Issue Draft Area Recommendation Report	---	11/85	1/86	1/86	2002	
Begin review of more than 60,000 comments received	---	---	---	---	---	10/87
Complete review of comments	---	---	---	---	2002	10/88
Issue Final Area Recommendation Report	---	5/85	5/86	11/86	2003	12/89
Issue Final Area Characterization Plan	---	9/86	12/86	11/87	2003	12/89
Begin area field investigations	---	9/86	12/86	11/87	2003	1990
Identify potentially acceptable sites	---	---	TBD	11/86	2003	1990
Complete area field investigations	---	---	1/90	---	2007	1994
Issue final environmental assessments	---	---	9/91	---	2007	1994
Nominate and recommend sites for characterization	7/1/89	7/91	10/91	1993	2007	1994
President approves recommended sites for characterization	---	---	12/91	---	2007	1994

(TABLE 6, cont'd.)

	NWPA Requirement	FY 86 Bud.Req.	1985 MISSION PLAN	FY 87 Bud.Req.	If MISSION PLAN AMENDMENT Approved	If MISSION PLAN AMENDMENT Not Approved
Issue initial site characterization plans	---	---	1/93	---	2008	1995
Request Congressional approval for construction	---	---	6/93	---	2008	1995
Initiate Construction of Exploratory Shafts	---	---	6/93	---	2008	1995
Issue Final EIS	---	---	12/93	---	2016	2001
President recommends site to Congress	3/31/90	1997	3/98	1999	2016	2001
Site designation effective	---	---	5/98	---	2017	2002
Submit license application to NRC	---	1997	5/98	---	2017	2002
NRC issues Construction Authorization	---	1999	8/2000	---	2020	2005
Initiate 2nd repository construction	---	---	8/2000	---	2020	2005
NRC issues License for Operations	---	---	5/2006	---	2023	2010
Begin operations	---	---	6/2006	---	2023	2010



(a) The precise nature of this document will be dependent on the provisions of any authorizing legislation.

(b) The shipment of spent fuel to the MRS facility is contingent upon receipt of a construction authorization for the first repository. The revised schedule for the first repository in the Draft Mission Plan Amendment contemplates receipt of such authorization by the first quarter of 1998.

TABLE 7 - MRS Deployment Schedule

TABLE 8

NUCLEAR WASTE FUND

REVENUES AND EXPENDITURES
(Through March 31, 1987)

(Dollars in billions)

o	Revenues		
	- On-Going Fee	$1.35	
	- One-Time Fee	1.44	
	- Interest Earned	.25	
	TOTAL Revenues	3.04	
o	Expended	1.38	
o	Amount Paid for Purchase of Investment Portfolio 1/		1.66
o	Equipment Assets		0.03
	BALANCE		1.69

1/ The market value of a portfolio represents the proceeds that would be expected if the portfolio were to be liquidated at a point in time. As of March 31, 1987, the market value of the Nuclear Waste Fund portfolio was $1.72 billion.

STATEMENT OF

BEN C. RUSCHE
DIRECTOR
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

U. S. DEPARTMENT OF ENERGY

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

APRIL 28, 1987

Mr. Chairman and Members of the Subcommittee:

I appreciate the opportunity to appear before you today to discuss activities related to site characterization of candidate sites for the Nation's first geologic repository for spent nuclear fuel and high-level radioactive waste.

As you requested in your letter of invitation, I will focus my testimony on site characterization plans, the strategy for resolving technical issues raised by the Nuclear Regulatory Commission (NRC) during site characterization, plans for interacting with the National Academy of Sciences during site characterization and our strategy for assuring technical excellence through each step.

On May 28, 1986, the President approved the Secretary of Energy's recommendation of three sites for characterization as candidates for the Nation's first geologic repository for spent fuel and high-level waste. The three sites are: the Yucca Mountain site in Nevada, the Deaf Smith County site in Texas and the Hanford site in the State of Washington.

This was a major milestone in implementation of the Nuclear Waste Policy Act of 1982 (NWPA) and marked the beginning of the site characterization phase. Reaching this stage of determination permits us to proceed to investigate thoroughly, evaluate and compare geologic, environmental, transportation and safety factors at each of the three sites.

Prior to the nomination and recommendation of sites for characterization and through extensive field studies and analysis

of tens of thousands of pages of documentation, DOE determined that all of the 9 potentially acceptable sites formally identified in February 1983 were qualified for further study based on the siting guidelines developed and concurred in by the Nuclear Regulatory Commission (NRC).

The selection of sites for nomination and recommendation was borne out of an extensive technical effort through which draft environmental assessments were prepared on each of the 9 potentially acceptable sites to analyze and evaluate available data relevant to the suitability of sites. A subsequent analysis entitled, Multiattribute Utility Analysis of Sites Nominated for Characterization for the First Radioactive Waste Repository -- A Decision-Aiding Methodology (DOE/RW-0074), was developed and finalized by DOE to aid in gaining insight into the attributes of the five nominated sites. The suitability and application of this methodology was reviewed and commented on by the National Academy of Sciences.

The decision-aiding methodology was a refinement of one of several methods proposed in the draft environmental assessments in 1984. It utilized the data and analyses in the environmental assessments in a decision process that allowed disaggregation of a complex set of objectives into component parts for evaluation and then reaggregation to determine both a composite ranking of the nominated sites and additional significant information relevant to determining an initial order of preference.

In addition, DOE considered the provisions in the siting guidelines for diversity of geohydrologic settings and diversity of rock types in arriving at a final order of preference. Based

on these considerations, the Secretary determined the set of three sites for recommendation as candidate sites for characterization, which he recommended to the President. In addition, pursuant to the requirements of Section 114(f) of the NWPA, the Secretary made a preliminary determination that those three sites are suitable for development as geologic repositories consistent with the siting guidelines.

NRC has subsequently provided comments on the site selections, but while numerous concerns have been identified by NRC staff relative to each site, their concerns are of the nature anticipated at any site for which the existing database is limited. Such concerns we believe can only be addressed through the characterization process which was wisely established by the NWPA.

The purpose of site characterization is to collect the extensive geologic and environmental data that are necessary to evaluate the suitability of a site for development as a repository; to develop site-specific designs both for a repository and for the waste package to be emplaced in the repository; to prepare an environmental impact statement; and to develop the information necessary for a construction authorization for a repository from NRC.

Site characterization will take five-to-seven years, depending on the site. It consists of surface-based field studies, construction of an exploratory shaft facility and the detailed tests conducted below surface in that facility.

Surface-based field studies will involve data collection activities, such as geologic mapping, seismic surveys and

hydrologic studies, as well as subsurface investigations conducted by deep and shallow boreholes that will be used for groundwater monitoring, core extraction, laboratory testing, and stratigraphic, tectonic, geochemical and geohydrologic studies.

Site characterization will also involve studies conducted in the candidate host rock in exploratory-shaft facilities. Exploratory shaft facilities provide access to detailed study of the potential host rock and will consist of:

(1) two exploratory shafts that will provide for access to the host rock, for the transport of people and equipment and for ventilation;

(2) underground testing areas; and,

(3) surface facilities needed to support construction and testing.

Exploratory shafts will be sunk to approximately the level where the underground facilities of a repository would be built -- 1,000 to 4,000 feet below surface depending on the site. At this level, the shafts will be connected to one another and to underground testing areas. The shafts and the underground testing areas will be used to conduct tests and make observations and measurements of site conditions. The surface-based tests will continue during the construction of exploratory shafts and will be continued in the exploratory shaft facility.

Although we had planned to begin exploratory shaft construction at one or two of the sites this fiscal year, Congress, in the appropriation for the waste program for Fiscal Year 1987, specified that no funds are to be used for drilling any exploratory shaft at any site in FY 1987. However, Congress

did allow for site-specific work, other than exploratory shaft drilling, to be conducted at reduced funding levels.

The current activities at or related specifically to each of the candidate sites, include the following:

o At the Nevada site, land access is being pursued with other Federal agencies.

o At Washington, site plans are proceeding for hydrology tests that will precede exploratory shaft drilling.

o At the site in Texas, DOE is proceeding with its plans for obtaining access to the land, and has established an office of about 10 DOE and contractor personnel from our DOE Columbus, Ohio, Salt Office. Unlike the Nevada and Washington candidate sites, there has been no DOE office for this program located near the site or in the State.

Site Characterization Plans

Another major effort associated with site characterization is the preparation of a plan for characterizing each site. This plan--called a site characterization plan (SCP) is a major and intensive effort. The scope and magnitude of this effort can be gauged from the site-characterization plans now being prepared for publication: in each plan, the description of the characterization program alone covers several thousand pages.

Copies of each draft chapter are being shared with NRC, the States, and Indian Tribes as they become available.
The NWPA requires that such a plan for any candidate site be prepared, made available to the public, and that a public hearing be held by DOE in the vicinity of a candidate site before proceeding to sink the exploratory shafts at the site.

The SCPs are key documents and of major importance to States, Indian Tribes and the public -- as well as to NRC and to us.

The SCPs will provide a thorough status of what is known about the sites, describe the conceptual designs for the repository and waste package, identify necessary additional information requirements and present plans for obtaining all such information that is needed to support siting, licensing and design. The DOE is currently engaged in has an intensive effort of development and review of the SCPs for all three repository sites. This development is proceeding extremely well and is leading to extensive and high quality documents which carefully detail the logic for the data collection and evaluation procedures that will be needed to assure careful site characterization. The SCPs follow the Issues Hierarchy and issue resolution strategy approach briefly outlined in the Draft Mission Plan Amendment, (DOE/RW-0128), January, 1987, and covered in greater detail in the Issues Hierarchy, For A Mined Geologic Disposal System, (OGR/B-10), September 1986. The intensive effort underway will lead to issuance of the SCPs for the Nevada and Washington sites late this summer or early fall and for the Texas site early next year.

There is intense interest in the SCPs, because they will guide DOE during the site characterization phase until a license application is submitted to the Nuclear Regulatory Commission. The SCPs and periodic progress reports that DOE will be making, will have a crucial role in interactions with the NRC, and as vehicles for presenting information to the States, Indian Tribes, Congress, utilities and the public.

With regard to resolution of technical issues, the SCPs have been written using the SCP Annotated Outline (Annotated Outline for Site Characterization, Revision 1, OGR/B-5, March 1987) and the Issues Hierarchy in a manner to identify the issues and provide a rationale for their resolution. These issues are addressed in detail in the SCPs. While preparing the SCPs, DOE has met with NRC, States and Indian Tribes and reached agreement on the scope, content and approach being used for the SCP. In addition, a meeting was held with the NRC in May 1986, in which agreement was reached on the level of detail to provide in the SCPs.

To assure that critical issues are being addressed, a number of technical meetings with the NRC on selected topics have been held or are being planned for the near future. Meetings have been held with NRC, States and Indian Tribes to discuss the DOE Issues Hierarchy and performance allocation process, the geohydrology testing program for the Hanford site before construction of the exploratory shaft and proposed changes to the exploratory shaft facility at the Yucca Mountain site.

The technical issues raised by the NRC staff through their comments on the Environmental Assessments are being carefully and systematically considered by DOE in developing the issue resolution strategies contained in the SCPs.

Technical Issues raised by NRC

Resolution of specific technical issues raised by the NRC staff is expected to occur through a wide range of frequent interactions with NRC, the States and Indian Tribes. These will include review of Topical Study Plans, topical reports containing

site data and results of design and performance analyses, meetings on topical issues, on site observation of testing and technical coordinating group meetings. Semiannual progress reports will be used to keep the NRC staff and others informed as to the status of DOE plans and progress being made during site characterization, including progress toward resolution of technical issues, and will act as a directory to all the various technical reports which will be issued during site characterization.

After issuance, the SCPs, will be reviewed by the NRC staff, affected parties, and public hearings will be heldand comments requested. The NRC has also agreed informally to provide early comments of any exploratory-shaft related concerns and, finally, NRC will provide detailed analysis and comment in their Site Characterization Analysis report which will represent a comprehensive statement of the technical issues of concern to NRC. The DOE is committed to consider all comments received and issue a comment response document. DOE will report on its site characterization program through the semiannual progress reports. It is anticipated that meetings on difficult topical issues will be held frequently with NRC, States and Indian Tribes as data collection proceeds, and DOE expects that NRC will review and provide comments on topical reports and other material provided by DOE for technical meetings. DOE will consider all comments and will attempt to reach closure on technical issues throughout the period of site characterization. DOE will document closure on technical issues in the semiannual progress reports. DOE will assure that all interactions are of the highest technical quality

and that input from all technical experts is carefully evaluatedand that the public is kept informed of progress.

Interactions with Panels of the National Academy of Sciences

With regard to interactions with panels of the National Academy of Sciences (NAS) Board, the NAS Executive Commission recently approved a draft proposal to establish three site-specific panels to overview site characterization activities. DOE welcomes the opportunity to continue to receive the recommendations of the NAS. The DOE currently interacts with the NAS on topical issues, for example, The National Committee for Rock Mechanics, and will continue to encourage this interaction. We will be working closely with the NAS to assure that they have the information required to develop and implement their scope of work for their independent technical review. We will develop procedures in conjunction with the NAS that will assure that their appointed site-specific panels have timely and complete access to all plans and data available. We will also provide for routine meetings and briefings as requested by NAS on individual site-specific topical issues. NAS panel comments will be fully addressed as site characterization activities proceed.

Technical Excellence

Assuring technical excellence during all aspects of the site characterization process is the central focus of DOE's efforts. DOE is preparing the SCPs using state-of-the art procedures, such as the Issues Hierarchy and performance allocation process, and issues resolution strategy. The SCPs are being prepared by technical experts who are being required to think through the

complete rationale for the process leading to the need for specific data. These project offices plans are being reviewed by a major DOE headquarters task force and by independent peer reviewers under a formal quality assurance process to assure the technical integrity of the test program. As discussed, these plans will undergo very external review by NRC, affected parties and others, and their comments will be evaluated and incorporated as appropriate.

The DOE plans to maintain this high level of review throughout the completion of study plans, test procedures, semiannual progress reports and laboratory, field and design activities. The procedures, summarized earlier, that we are putting in place, which include independent peer reviews within DOE, external peer reviews by NAS and frequent and extensive interaction with NRC, the States and Indian Tribes through meetings, technical coordinating groups and hearings, assure the technical excellence of the program through each step of the process. We are confident that the process we have in place will lead to the highest quality site characterization effort possible.

Mr. Chairman, this concludes my remarks. I would be happy to try to answer any specific questions you or members of the Subcommittee may have at this time.

##########