

# MONITORED RETRIEVABLE STORAGE FACILITY

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# Preface and Background

The adoption of the Nuclear Waste Policy Act Amendments, (NWPAA), by Congress in December of 1987 provided several features important to the subject of this report. It authorized the Department of Energy, (DOE) to proceed with the design and development of a Monitored Retrievable Storage facility for spent nuclear reactor fuel; it instructed DOE to undertake the characterization studies of a final repository site for this fuel at Yucca Mountain, Nevada; and it created the Office of the United States Nuclear Waste Negotiator, (ONWN). The ONWN was to be independent of DOE, and the Negotiator was to be appointed by the President, and confirmed by the Senate.

The position of Negotiator was not filled until President Bush appointed the Honorable David H. Leroy, former Lt. Governor and Attorney General in Idaho, in August of 1990. The role of the Negotiator, aside from being generally defined in the authorizing legislation was further discussed in Mr. Leroy's confirmation hearings. Since his confirmation, Mr. Leroy has painstakingly adhered to a non-promotional neutral position and has further developed a process where by States and Indian Tribes may consider whether and under what circumstances, they may be interested in being considered as a host or site for an MRS. The process that was carefully developed provides interested States or Tribes the opportunity to study the feasibility of hosting and siting an MRS without in any way committing them to proceed. Any interested governmental entity is afforded the protection of congressional legislation, and the commitment of Mr. Leroy, and the ONWN, with respect to its rights to terminate any further consideration unilaterally if it decides to do so.

In addition, the Office of Civilian Radioactive Waste Management, (OCRWM) has established a financial grant program whereby interested parties may apply for funding to help them offset the costs of their own local or regional public information programs, feasibility considerations, public involvement programs, and ultimately, if the program progresses far enough, technical siting studies and environmental impact assessments.

In developing and implementing this process, Mr. Leroy is firmly committed to assuring that the public is involved in the decision making at each stage of the project. Toward that end, the ONWN is dedicated to helping interested parties foster a strong public involvement program. This document, constitutes a report of the brief history and presents much of the information developed by such a public group in the first stages of its investigation. The report consists of, in large part, the working papers of the <u>Independent Citizens Investigative Committee</u>,(ICIC) of Grant County, North Dakota. This neutral committee has not taken a position on the issue of siting an MRS in their county. Conclusions are generally avoided in their work, and attempts have been made to include both sides of controversial issues.

It is hoped that this report of the ICIC together with the many public presentations they have made, will serve to document their efforts, and present to the public at large, much of the information relevant to the Grant County MRS feasibility study through the duration of the Phase I DOE study grant.

# INTRODUCTION

A Monitored Retrievable Storage Facility: There are several reports 1,2 or brochures available to the public that provide general descriptions of MRS technology and conceptualized facilities. There are of course, many more highly technical reports that are available from DOE.<sup>3</sup> It is not the intent of this report to provide a detailed description of the facility. The purpose of the facility is clearly to provide a storage area for spent nuclear reactor fuel until such time as a permanent repository is available. That purpose can be achieved through the use of several similar technologies all of which are designed to provide shielding around the fuel to protect the public and workers from radiation being emitted by the spent fuel. The differences in these technologies will be subject to the ICIC review at a later time provided the project moves forward.

The ICIC, early in its formation asked why an MRS was needed. The DOE response was:

### "WHY AN MRS?

• It is the best way, not the only way, but the best way to begin operating the nuclear Waste Management System.

• A central, Federally-managed facility will reduce the need to provide additional storage (essentially mini MRSs) at more than 60 reactor sites in numerous states around the country.

• It is the approach chosen by nearly all advanced nuclear generating nations in the world.

• With an MRS, spent fuel acceptance by the Federal Government leading to an orderly process toward final disposal can begin as early as 1998. Without ':, 2010 or later.

• With an MRS, significant quantities of spent fuel can be removed from reactor sites early. Without it, smaller quantities much later.

What the MRS will do:

- Accept spent fuel from many reactor sites

- Store spent fuel for a limited time

- Prepare/stage spent fuel for shipment to the repository
- Provide the option to perform various operations to prepare the waste for disposal at a facility other than the repository (i.e., aging, consolidation, selective loading, waste disposal packaging, etc.)

System advantages:

- Leads to a "standard" process for preparing the waste for disposal rather than forcing the system to accommodate multiple storage concepts at the reactor sites
- Will be based on proven, licensed technologies
- Frees utilities from managing expansion of their storage facilities to concentrate on electricity generation
- Will allow spent fuei removal and earlier, complete decommissioning of shut down reactors
- Will act as a buffer between differences in reactor and repository operations
- Will provide licensing experience in advance of the repository effort

These advantages provide reliability and flexibility to the waste management system increasing the confidence and likelihood of successful and timely development."

History of MRS in North Dakota: History is important in setting the stage for present day activities. Before documenting the history of the involvement of Grant County, North Dakota, perhaps it is worthwhile sketching the chronology of activities of the ONWN, (the Nuclear Negotiator).

## Chronology of Activities of the ONWN

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December, 1987

Adoption of the nuclear Waste Policy Act Amendments, which includes the creation of the Office of the nuclear waste Negotiator for a term of 5 years

August, 1990	The Honorable David H. Leroy, former Idaho Lt. Governor and Attorney General is confirmed as the nation's first Nuclear Waste Negotiator.
May, 1991	Letter of introduction sent to all Governors, tribal leaders of all federally recognized Indian tribes, and governors of U.S. Territories.
June, 1991	Notice of availability of Feasibility Study grant funds for MRS published in the Federal Register by DOE. ONWN publishes Intent to Coordinate on grant funds and Intent to Negotiate Agreements.
October, 1991	Invitation for Dialogue and Participation sent by Negotiator to all Governors and Tribal Leaders. Mescalero Apache Tribe o New Mexico applies for and receives first \$100,000 feasibility study grant.
November, 1991	Grant County, North Dakota applies for and receives \$100,000 feasibility study grant.
December, 1991	Phase I feasibility grant application received from the Chickasaw Indian Nation of Oklahoma. Deadline for phase I grant is extended from December 31, 1991 until March 31, 1992.
January, 1992	Phase I feasibility grant applications are received from Fremont County, Wyoming; Prairie Island Indian Community of Minnesota; Sac and Fox Nation of Oklahoma; and the Yakima Indian Nation of Washington. Fremont County and Yakima Tribe receive study grant.

There have been several more applications, and several more grants approved since the status reported above. More are expected in both categories.

In North Dakota, the question of hosting an MRS was first discussed during the summer of 1990. Nuclear Assurance Corporation, (NAC) of Atlanta, who had been particularly attentive to potential opportunities for siting an MRS opened discussions with the State of North Dakota. These first, exploratory conversations were the result of a brother and sister relationship between a senior executive of NAC, Ms Carol Thorup, and her brother, Rep. William Starke of New Rockford, ND. These first discussion resulted from a common concern about the ND budget deficit and alternatives to increasing revenues.

During the summer and fall of 1990, Rep. and Mrs. William Starke continued to have ongoing discussions of Vision 2000 goals, North Dakota's declining population and economic woes. (This chronology is detailed in a letter from Ms Thorup to Ms Kallis, Chairperson of the ICIC, a copy of which is included as the first item in Appendix A, item A-1.) However, these initial discussions resulted in a near consensus that to continue the study, financed by a federal grant, would be warranted, and would not have anything to lose. Never-the-less, on July 10, 1991, the ND Legislative Council voted not to proceed with the grant request by a vote of 9-5.

In Mid-September, 1991, there was an indication of interest in sponsoring such a grant request by the Grant County Commissioner, through Rep. Ray Meyer. In October of 1991, town meetings were held in Grant County to announce the intention of the Commissioners to file for a feasibility study grant request. In November of 1991, Grant County Commissioner Ray Miller submitted such a grant request to DOE.

Within two or three days after the submittal, citizens opposed to the study within the county had obtained sufficient signatures on a petition for recall of the Commissioners, that the recall was validated. A recall vote is scheduled for March 10, 1992.

The involvement of the Nuclear Negotiator's Office in the ND consideration regarding MRS during this same time frame, is documented in a letter from the Office of the Nuclear Negotiator to Ms Kallis, Chairperson of the ICIC and included here as Appendix item A-2. In summary, the Office of the Negotiator was not involved in the early Legislative Council considerations. Mr. Leroy's office was first involved during November of 1991 in response to the request of Commissioner Ray Miller for information. During that contact, the Negotiator's office "...stressed that the application for a feasibility grant did not commit anyone to pursue the matter any further. Simply put, there is no penalty for saying no." (See letter, A-2) In addition, the letter pointed out that the controversy occurring in Nebraska regarding the siting of a Low Level Radioactive Waste Disposal Facility was quite different than the procedures put in place by Congress for the siting of a Monitored Retrievable Storage Facility.

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Upon the receipt of the Phase I feasibility grant, the Grant County Commissioners published their resolution on which they unanimously voted to apply for the feasibility study grant (see A-3). That resolution, published in the Grant County weekly newspaper clearly identifies the beginnings of strong opposition. In addition, the resolution makes several commitments to the County. The first of these is that if a determination is made:

"that the benefits (of the project) outweigh the adverse effects, the question of whether or not the County should proceed further would have to be made after a vote of the Grant County voters; and...

...that an impartial committee of residents shall be formed to keep the public informed, study the issues and to offer advice to the Commissioners; and..."

And so this last commitment in the Commission's resolution was the genesis of the ICIC.

Additionally, Chairman Ray Miller of the Grant County Commissioners requested the support of the Governor's office and on October 16, 1991 received a response. At best, one could characterize this response as being a conditional one; however, in a later correspondence, (see Appendix items, A-4 and A-5, Governor Sinner commended the commissioners on their actions with statements such as, "...support the county commissioners who showed the openness and courage to proceed with a difficult issue and undertake a study of the nuclear waste site." Governor Sinner also mentions that Governor Sullivan of Wyoming has recently authorized a similar study.

# THE INDEPENDENT CITIZENS INVESTIGATIVE COMMITTEE, (ICIC)

Formation and Membership: In the early public meeting conducted by the Grant County Commissioners reference and commitments were made to the desire to have an independent citizens review committee. When their Phase I grant was received, Ms Judi Kallis, an interested and concerned citizen volunteered to Chair such a committee (see Appendix A-6). In her letter to Chairman Miller of the Grant County Commissioners, Ms Kallis stated several conditions under which she would agree to take on the task of an independent citizen review group;

- "...I would want the authority to designate the members of that committee, with input from the County Commission and from the opposition."
- "...have the freedom to determine the direction and scope of the committee's investigation."
- "...to truly study the matter to see what is in the best interest of the citizens of Grant County."

In his reply, Chairman Miller thanked Ms Kallis, and accepted her terms (as stated above) for the conduct of the study. Chairman Miller seemed to recognize the necessity of 'independence' of the committee. (See Appendix A-7)

Ms Kallis set about to form a committee of volunteers, regionally representative of the county and the issue. She soon found, that the vocal opposition would not agree to serve on the committee, and many, probably neal citizens were reluctant to serve, and intimidated by the vocal hostility calcommittee of eight, counting the persistence, volunteers were found to form a committee of eight, counting the Chairperson, representing limited regional diversity, but definite disparate views. (See letters of appreciation to Ms Kallis from Governor Sinner, and North Dakota's congressional delegation, Appendix A-8, 9, 10, & 11). The membership and summary biographical statements are provided below:

JUDI KALLIS - Chairperson: Resident of Grant County for eight years, active in politics, youth work in the community, and a member of the New Leipzig Fire Department.

MARK STELTER - Lifelong resident of New Leipzig, graduated from New Leipzig High School and NDSU with a degree in Mechanical Engineering. Currently active in the New Leipzig Ambulance Service, New Leipzig Fire Department, New Leipzig Town and Country Boosters and is on the New Leipzig School Board. Employed at Stelters Repair.

MARCIE BAESLER - Wife and Mother who farms north of New Leipzig, a resident in Grant County for fourteen years, active in church and community and holds a degree in Speech Pathology.

LLOYD KLEIN - Resident of Elgin who has farmed and ranched in Grant County for twenty years. Holds an office on the ASCS (Agricultural Stabilization & Conservation Service) County committee and has a BS degree in Mathematics.

JACQUELINE SEIBEL - A resident of Elgin who is presently the Administrator of the Jacobson Memorial Hospital Care Center. Graduate of Elgin High School, NDSU (BS) and the University of Oregon Medical School - Dietetic Internship.

LYLE ZIMMERMAN - Lifelong resident of Grant County. Farmed for seventeen years, active member of the Lions Club.

VIRGIL STERN - Lifelong County resident. Holds office on the ASCS county committee, active in church and the community and has been a farmer for over twenty years.

DON BACHMEIER - Resident of Raleigh

Charter of the ICIC: In their formative meeting the Citizens Committee developed the groups 'charter'.

"Each member on this committee has their own personal views and beliefs on whether or not Grant County should be studying the issue of a MRS site. While these views range from strong opposition to support of the study, as a committee they are dedicated to only one concept, to help serve their communities. They feel this can be done in several ways:

1.) By being a totally independent group, answerable only to the public.

2.) By listening to the concerns and questions of the community.

3.) By research and investigation, try to gather facts to answer some of these questions.

4.) By printing information and facts, without alteration, and by maintaining the highest integrity.

5.) By helping the public stay informed of past, present, and continuing developments of the whole process.

6.) By focusing attention back on the issue instead of people."

Early meetings of the ICIC were devoted to establishing certain policies and procedures. The decision was made early on to publish the reports and findings of the committee in the local weekly newspaper, to advertise future meeting dates, and in all ways keep the committee's work entirely open to public scrutiny, input, and participation. The public is welcome to each meeting of the group, and opportunities are provided for public comment. Additionally, public presentations are held at intervals, when the committee has a significant volume of material to present.

Defined Issues for Review: The first meetings were devoted to a determination of the most critical concerns being expressed by the public. These items were deemed to be of high priority for the ICIC study, and individual members of the committee undertook to provide information bearing on these issues. A preliminary assessment of the ICIC effort yielded the following items:

#### The Process:

a.) What assurances are there that the feasibility study is truly voluntary? Can the county maintain control of the project?

b.) What will the \$100,000 study grant be used for? What is the budget?

c.) What role has Nuclear Assurance Corporation had in bringing the MRS project to North Dakota?

### Safety and Environmental Concerns:

(The group recognized that this is a complex area of study and anticipated that it would not be completed during Phase I of the study.)

### Economics:

a.) What are the positive economic effects of hosting and MRS?

b.) What are the negative economic effects? Tourism? Land value? Farming?

c.) What are the liability implications to the residents and tax payers of Grant County.

The remainder of this report provides a summary discussion of the committee's work, with source documents listed in the list of references, and verbatim or summarized reports of interviews by committee members. As a part of their review, the committee members traveled to the East coast to visit facilities similar to the MRS, and to interview workers, security people, farmers/ranchers, neighbors, local business men, and economic development personnel. The itinerary of this trip is provided in the section of this report ICIC FACT FINDING TOUR (Page 31); detailed reports of interviews and observations are included.

# THE MRS FEASIBILITY STUDY PROCESS

The primary conc. In about the process of studying the feasibility of siting an MRS is that many people feel that by merely indicating an interest, the facility may ultimately be forced into the community. This concern likely and reasonably stems from a skepticism and distrust of the federal government. In Grant county, members of the citizens opposed to the study have been citing an ongoing controversy in Nebraska as an example of why the process will not work. The ICIC undertook an investigation consisting of three parts. This, like most of the studies, is ongoing, but preliminary results are reported herein.

The Legislation: The following is a report prepared by one of the members of the ICIC. (Note: numbers shown as superscripts refer to references listed at the end of this report.)

Three different Publications are referenced in regard to this question. The attachments referred to in each paragraph have not been printed along with this article but can be obtained from I.C.I.C.

1. "Monitored Retrievable Storage of Nuclear Power Plant Fuel"<sup>1</sup> which is put out by the U.S. Council for Energy Awareness (USCEA) The USCEA is a non-profit association of about 400 members including: scientific organizations, financial institutions and others; and is not part of the U.S. government. Referring to Page 13 of the booklet: "There are no conditions attached to these grants. Applying for a grant does not mean that a State is a candidate site. And if a state receives a grant, performs studies, then decides it does not want an MRS facility, the state's decision is final. The Nuclear Waste Negotiator cannot--and will not--pressure states or Indian tribes to accept an MRS facility." (See Attachment 1)

2. The Federal Register / Vol. 56. No 108 / Wednesday, June 5, 1991 / Notices, Page 25704 4(5) Negotiation of Terms, Conditions and Equities. The Federal Register is a Publication of the U.S. Government. Referring to that section of the Publication: "Any discussion or negotiation undertaken with the Negotiator shall be entirely voluntary and may be terminated at will by the potential host jurisdiction." (See Attachment 2).

3. "An Invitation for Dialogue and Participation" 5 from the office of the U.S. Nuclear Waste Negotiator. Referring to the letter from David H.

Leroy, the U.S. Nuclear Waste Negotiator and siting statements from several different paragraphs: " The opportunities presented by this initiative represent the federal government's genuine commitment to seek a truly voluntary host.." Applications for the federal feasibility grants will not be interpreted as an indication that a State or Indian tribe is a candidate for a site." "I will always recognize that any such dialogue, once commenced, is immediately terminable by the State or Indian tribe for any reason." (See Attachment 3). Referring to Pages I and 2 of the Invitation and siting parts of several different paragraphs: "The Office (Referring to the Negotiator's Office) is not affiliated with the Dept. tment of Energy or any other federal agency or department. The Nuclear Waste Negotiator serves at the pleasure of the President and is answerable to Congress." " The Process must and will be truly voluntary," "Any dialogue is terminable at the will of the prospective host;" " Any negotiation will involve only willing participants, will be terminable at the request of the prospective host," (See Attachment 4). (note: Material referred to in Attachments, is included in Appendix as A-12.)

Research is still continuing to find any actions which are in conflict with this information or any law changes which have changed the voluntary nature of the process. If you have any information in regard to this question, or any other question about this MRS study, or you would like to review the publications sited in this article in their entirety, feel free to contact any of the members of the I.C.I.C. (Judi Kallis, Lyle Zimmerman, Lloyd Klein, Virgil Stern, Jacqueline Seibel, Marcie Baesler, or Mark Stelter).

Additional reports by other members cited the following as further definition of the process:

# THE NEGOTIATION PROCESS

The Office of the nuclear Waste Negotiator, is an independent and autonomous federal entity. The office is not affiliated with the DOE or any other federal agency. The Nuclear Waste Negotiator serves at the pleasure of the President and is answerable to Congress.

This office represents the effort of the federal government to seek voluntary participation in problem solving by providing resources to States and Tribes so they may determine for themselves the feasibility and compatibility of assisting the federal government in facility siting.

The negotiator is strongly committed to the following principles:

- 1. The process must and will be truly voluntary.
- 2. Requests for information and preliminary dialogues will not be viewed as a commitment to proceed any further.
- 3. Any dialogue is terminable at the will of the prospective host.
- 4. States and Tribes will be provided with resources to obtain
- independent and credible information upon which they may make their own decisions.
- 5. All discussions should begin with the thoughtful evaluation of issues concerning health, safety, and the protection of our environment.
- 6. A prospective host is entitled to achieve an equity for helping to solve a national problem. The nature and means of achieving that equity should represent the individual needs, concerns and desires of the host.

### INFORMATION SOURCEBOOK

The Information Sourcebook was compiled on July 1, 1991 by the Office of the nuclear Waste Negotiator. Copies are provided upon request to anyone who wants a listing of the different organizations that have material on the management of nuclear waste, pro and con.

If you would like a sourcebook contact member of the ICIC. (Note: Copies of the Sourcebook are also available at the Information Office in Carson, ND)

To investigate the controversial Nebraska situation, Ms Kallis contacted a company that was under contract to the <u>Central States Low Level</u> <u>Radioactive Waste Interstate Compact</u> to develop a low level radioactive waste disposal facility. It was determined early, that the development of a low level cadioactive waste facility is subject to quite a different process than the MRS project. The Low Level Radioactive Waste Policy Act and Amendments gave States the responsibility to dispose of this waste, and hence it is not covered by the same legislation nor does it fall under the scope of the Nuclear Waste Negotiator. In short, the process is entirely different. For a description of the controversy, see the copy of a letter from the developer of the Low Level Waste facility to Ms Kallis dated December 9, 1991; (Appendix A-13).

Oak Ridge, TN, MRS Siting Experience: The Department of Energy, DOE, announced in April 1985 that three sites in Tennessee were to be considered as potential sites for an MRS facility. The Clinch River Task Force, a 31-

member committee composed of appointees from the area was formed to provide the opportunity for a local evaluation of the proposed sites. Their main objective was "to determine whether the MRS should be accepted by the local governments, and if so, under what conditions."

The efforts of the task force led to some conclusions and concerns. 1) without diligent adherence to safety procedures, the MRS could adversely impact the local environment and surrounding population; 2) the proposed MRS facilit could delay construction of the repository and become a *de facto* repositor; 3) the MRS could hinder the communities' efforts to diversify their industrial base; and 4) public trust in DOE was seriously eroded. The conclusions; 1) spent fuel and high-level waste can be safely stored; 2) both Oak Ridge sites could accommodate the facility from an environmental viewpoint: 3) the MRS facility can be safely constructed and operated; and 4) the MRS could benefit the economies of the local communities.

The report made it clear that these conclusions were contingent on numerous underlying constraints and conditions and were only valid if Congress and the State adopted stated conditions spelled out in detail in the report.

The Task Force urged the local governments to adopt the recommendations us their official position. The City of Oak Ridge and the County Commission for Roane County adopted resolutions supporting recommendations in October, 1985.

This did not carry through to the State of Tennessee. After announcing the proposed sites in April, 1985, the state was granted \$1.4 million by DOE to assist them in their study. However, in August, 1985, Tennessee filed a lawsuit against DOE on the grounds that DOE failed to consult with the state as required by the NWPA. The State formally rejected DOE's proposal in January, 1986 and the governor said he would disapprove any proposal and urged Congress not to override his disapproval. The state's objections to the site were:

- · the facility is unnecessary and a waste of money,
- the negative impacts on planned economic diversification for the area (the area is dependent on a number of nuclear facilities).

A lengthy legal battle that went to the Supreme Court ensued. The end of which was on March 31, 1987, when the Supreme Court let stand the U.S. Court of Appeals decision that the NWPA did not require DOE to consult with any state before DOE submits the proposal to Congress.

However, the passing of the nuclear Waste Policy Amendments Act of 1987 (NWPAA) among other things made the proposal of an MRS in Tennessee "annulled and revoked." It also established the Office of the Nuclear Waste Negotiator and states that "the negotiator shall attempt to find a willing host."

# (This is part of a much larger report. If you are interested in the full report, please contact a member of ICIC.)

Control of the Process: Important citizen concerns have been raised and continue to be raised as to what the process is for discontinuing or proceeding with the MRS STUDY. Who has the authority to stop the study and how is that done. ICIC called the Governor's office and talked to Carol Siegert, Administrative Assistant; the Negotiators office and talked to Brad Hoaglun, Staff Assistant to the Negotiator; and the County Commissioners. The following are the responses of those three departments taken directly from the ICIC report:

<u>Governor Sinner's Office</u>: "The Governor's position is: One phone call from the Governor, acting independently or jointly with county commissioners, would stop the study immediately. His office also pointed out that the study could not proceed further (Phase II, \$3 Million) without his approval, even if the county wanted to continue on."

Negotiator's Office: (David Leroy - U.S. Nuclear Waste Negotiator) "His position is: One phone call from the Governor telling them to leave the state is all that is needed for them to leave. If the Governor made that call the Negotiator would then refuse to talk to any county, anywhere in the state. Brad Hoaglun, Staff Assistant, said "It is the Governor who holds the key." Like the Governor's office, he went on to say that the Governor has to be actively involved, early on, if the study continued into Phase II. The county could receive another \$200,000 for further study, but before being awarded the main grant of \$3 Million dollars, the Governor needs to, in writing, show a willingness to enter into serious negotiations which MAY lead to an agreement, but still the state is under no obligation. The Governor also has to state that one or more possible sites have been identified in the area. The negotiator wants to know a state is serious before awarding a grant of that size, however, negotiations can still be broken off during phase II. The Negotiator's office concluded with the statement, "We have to have a willing Governor, there is no way around it."

Grant County Commissioners: "Their position is: If they indicated unwillingness to proceed the government would leave immediately. Therefore they feel it is safe for the county to study, learn, consider, and then vote on the project without fear of being forced with an MRS."

Phase I Feasibility Grant When the Grant county Commissioners applied for and received a Phase I grant to study the feasibility of hosting the site for a MRS, immediate questions were raised as to how the money would be spent. The ICIC examined and reported on the proposed budget. Their report was published in the local newspaper, and is included in the Appendix as (A-14). The Commissioners have funded an Information Center, were the public can ask questions, and see reports of expenditures.

The role of Nuclear Assurance Corp.: One of the concerns being expressed in the county was with regard to the role the private developer, Nuclear Assurance Corporation, (NAC) had, and was playing. The ICIC obtained a letter from NAC documenting their involvement, and further noted that in the establishment of the MRS program in DOE, and in the confirmation of David Leroy, private companies were expected to be a significant part of the process. Both Dr. John Bartlett, Director of DOE's OCRWM, and the Negotiator take the view, "if the DOE program were to have a chance to succeed, private companies would have to take the initiative in finding sites." (See A-1 and A-15)

# SAFETY AND ENVIRONMENTAL

The ICIC has gathered considerable information regarding both the safety aspects of siting and operating an MRS, and the environmental concerns. The ICIC has not completed its review of this information, nor sought experts in many of these fields for reviews and presentations. These important studies will continue if the county elects to proceed to a Phase II feasibility study. The information available is briefly described below

Material: Both the Dacotah Chapter of the Sierra Club, and the Dakota Resource Council (Appendix A-16 & A-117) have provided their comments and concerns regarding the MRS feasibility study in Grant county. Each of these documents contain concerns in all areas, i.e. environmental, economic, safety, etc. Many of these areas are addressed in the trip reports of the ICIC members. Specific interviews were scheduled to learn the facts behind some of these concerns. The interviews are described in a later chapter. However, this material is included under the current heading, since much of it pertains to environmental concerns.

A further submission of statements of concerns was made by Mr. Jim Garrett, Director of Environmental Protection for the Cheyenne River Sioux Tribe in South Dakota. (Appendix, A-18) Mr. Garrett's concerns are health and safety related, but primarily as a result of environmental concerns. Mr. Garrett is very concerned about surface water flow, and wind patterns that he maintains are from the direction of Grant County, to the Cheyenne River Sioux Tribal lands in South Dakota. His comments are included herewith.

There have been some concerns in the area of MRS facility security. These are discussed in each of two submittals to the committee from individuals who are specialists in station security systems. While a security system design needs to be developed after the MRS design, the information submitted is welcome in the record. (A-19)

Radiation Health Effects: Recognizing a general public fear of radiation, the ICIC has spent some time understanding the terminology, regulatory limits, and natural everyday exposure people have to radiation. In addition, the committee has collected additional literature that is included here for others to study. Appendix (A-20) contains a collection of this information, including a report by the National Cancer Institute<sup>6</sup> Additional material contained in (A-21) describe methods of assessing the radiation people receive in everyday life in a variety of differing circumstances. Also included in this category, is a question and answer paper, "MRS: The Charges and the Facts". This paper was produced by the U. S. Council for Energy Awareness. USCEA..

{The following information has been complied by an ICIC member to help the general public better understand RADIATION and its effects on humans.}

This information is furnished by the INDEPENDENT CITIZENS INVESTIGATIVE COMMITTEE of GRANT COUNTY, NORTH DAKOTA. I.C.I.C. members cannot be held liable for inaccurate statistics. Any questions pertaining to the validity of the contents of the following information, should be directed to the sources made available above.<sup>7,8,9</sup>

For a better understanding of the relevancy of numbers being applied, you will need to become acquainted with certain numbers of reference:

- #1. The Nuclear Regulatory Commission restricts the exposure of radiation beyond the boundary of an MRS facility, to 25 mrem per year.
- #2. 1 rem is equal to 1000 mrem. 1 mSv is equal to 100 mrem.
- #3. Exposure Standards per Calendar Quarter (3 months). 1250 mrem to the WHOLE BODY (including internal organs). 18750 MREM to the HANDS, FEET, ANKLES and ARMS. 7500 mrem to the skin of the WHOLE BODY.
- #4. Persons under the age of 18 are 10 times more affected by radiation exposures.
- #5. NATURAL BACKGROUND RADIATION consists of: RADON...(from the earth's crust), Solar and Cosmic... (from the sun and stars), and from FOOD & WATER we consume...(Uranium contaminates).

- #6. An Absorber is a material of circumstance which shields the molecules of radiation, or changes the molecular structure to a nonradioactive molecule.
- #7. Ionizing radiation, better known ad NEUTRON RADIATION, is effected by the INVERSE PROPORTIONAL LAWS...(If you double the distance from the source, you cut the effects by 4 times).

### FACTS, STATISTICS and LAWS OF AVERAGES

### AVERAGE EXPOSURE OF NATURAL OCCURRING RADON

- A. Volcanic rock or soil area
- 125 mrem per year 50 mrem per year 25 mrem per year.

B. Sandstone area C. Limestone area

These are averages and may vary considerably (generally higher). RADON EXPOSURE around the world may vary from 20 to 2000 mrem/yr. 10,000 DEATHS annually are attributed to RADON EXPOSURE.

The average U.S. Citizen is exposed to 40 mrem per year from external GAMMA RADIATION from the earth's crust (this is not radon). GAMMA radiation is of the same type as the X-Ray, as we know it.

BIOLOGICAL REPAIR of radiation over a year's time may have the same effect as a .4 acute dose; i.e., an acute X-RAY dose of 40 mrem would have the same effect to the body as an accumulated/year exposure of 400 mrem.

COSMIC & SOLAR EXPOSURES in comparison to ALTITUDES:

- A. Sea Level = 31 mrem/yr.
- B. 5000' (Denver) = 55 mrem/yr.
- C. 30,000' (Commercial Flight) = 1900 mrem/yr.

SOLAR FLARES at 30,000' are capable of producing 100 mrem/hour

A 1000 megawatt coal fired electric generating plant contributes 30 urem/year average, measured 500 meters from the stack.

1.5 packs of cigarettes per day per year contribute 8000 mrem. In addition, the tar in the lungs which has accumulated will absorb other radiation such as GAMMA, NEUTRON, RADON, etc. which would normally pass through the body unaffected.

EXAMPLE: A NON-SMOKER'S X-RAY DOSE to the chest might be 20 mrem. A SMOKER'S chest X-RAY may actually contribute 40 mrem.

# OCCUPATIONAL COMPARISONS of AVERAGE LOSS OF LIFE IN

DAYS:

ADIATION WORKER	40 days
ANUFACTURING	43
PUBLIC UTILITIES	164
ARMING	277
MINING	328
FEMALE SMOKER	800
MALESMOKER	2250
BEING UNMARRIED	3500

The following information has been derived from the OFFICE OF ENVIRONMENTAL ENGINEERING of the STATE HEALTH DEPARTMENT of NORTH DAKOTA.

REFER TO: BASIC RADIATION PROTECTION TECHNOLOGY, 2nd EDITION, by DANIEL A. GOLLNICK, COPYRIGHT, 1988 PACIFIC RADIATION CORP.9

# PAGE 45 - 50 <u>ABSORBER</u>: A material or circumstance which shields molecules of radiation.

RANGE of ALPHA & BETA PARTICLES: If a thickness of absorber greater than their range is placed in their path, 100% of the particles will be stopped.

 PAGE 40-51 TY PES OF RADIATION WITHIN SPENT FUEL CASKS:

 (A) ALPHA: CAN be stopped by a sheet of paper.
 (B) BETA: Absorbed by air within 4 meters per MeV of energy...EXAMPLE: 70 KeV are stopped in the dead layer of normal skin.
 (C) PHOTON: Gamma radiation or X-ray.

- PAGE 81 DOSES: A dose of 270 rem (270,000) mrem of low energy X-Ray is equal to 1000 rem (1,000,000) mrem high energy COBALT 60 radiation.
- PAGE 85 EXPOSURE: Nuclear power plant workers and exposed to 2/3 rem/yr., or 666 mrem/yr.

PAGE 533	EXAMPLE: The body repairs itself continuously. Biological repair has been demonstrated in virtually all living tissue after small amounts of exposure to radiation		
PAGE 126 127	NATURAL BACKGROUND RAD from the earth's crust) AVERAGE EXPOSURE A. VOLCANIC ROCK OR SOIL B. SANDSTONE C. LIMESTONE	LATION: (RADON 125 mrem/yr. 50 mrem/yr. 25 mrer./yr.	
	Radon exposure around the world m than 20 to 2000.	ay vary from less	
	Other sources of natural background SOLAR & COSMIC, and from FOC	radiation are	
PAGE 127	The average U.S. citizen is exposed to 40 mrem/yr. from external GAMMA radiation rays originating from the earth's crust.		
PAGE 130	ALTITUDE DOSE RATE COMPA Sea Level 5000' (Denver) 30,000' (Commercial jetliner)	RISONS: 31 mrem/yr. 55 mrem/yr. 1900 mrem/yr.	
	SOLAR FLARES at 30,000' are cap 100 mrem <u>per hour.</u>	bable of	
PAGE 136	PRODUCT COMPARISONS: 8000 mrem/ yr. Smoking i.5 packs of cigarettes daily per year.		
	36 mrem/yr.: contained in the FLY ASH of a 1000 M/watt coal powered generating plant 500 meters from the stack.		
	1000-4000 mrem/yr.: Direct exposure to the eye from ROSE TINTED GLASSES depending on the amount of tint.		

	60,000 mrem/yr.: Average do porcelain FALSE TEETH, din	ose from U.S. made rect to the tissues of
	Deivise as a MASONRY PO	AD (CONCRETE)
	exposes an individual to 3 tim radiation.	hes the natural background
PACE 351	10,000 deaths annually are attributed to RADON EXPOSURE.	
PAGE 536	EXPOSURE STANDARDS: By CALENDAR QUARTER (3 months)	
	<ul><li>1.25 rem to the whole body, head, organs, lens of eyes, and gonads.</li><li>18.75 rem to the hands, feet, ankles, and arms.</li><li>7.50 rem to the skin of the whole body.</li></ul>	
	Limit exposure to persons under 18 years of age to 10% of adult dose.	
PAGE 91	Occupational comparisons: (	Average loss of life in days)
	Radiation worker Trade industry Manufacturing Service industry Public utilities	40 days 30 43 47 164
	Farming Mining Reing unmarried Male Smoker	277 328 3500 2250 800
	Coal miner	1100
PAGE 377	When time, distance and shie adequate protection can alwa	elding are used properly, ys be provided.

Transportation Safety. The committee has had the opportunity to listen to experts from the Nuclear Regulatory Commission explain the testing and licensing procedures required for the certification of spent fuel shipment or

storage casks. However, this was a very recent review, and the material generated will be included in a subsequent phase of this report. Some material on casks was submitted, that was taken from a book, The Next Nuclear Gamble by Dr. Marvin Resnikoff, also the author of the book Living Without Landfills. Dr. Resnikoff has long been an opponent of nuclear power, and has often been a paid consultant for opposition groups. His material is included as Appendix (A-21)

Heat Generation in Spent Nuclear Fuel: Nuclear reactor fuel produces considerable heat. This heat production is extreme when the fuel is freshly removed from the reactor, but decays very rapidly to a much lower level. Nevertheless during the storage and/or transportation of large numbers of fuel rods, cask design must provide for heat removal. However, it is stated that the fuel to be shipped to an MRS would have been out of the reactor for at least five years so that heat production is not a difficult problem. Casks are designed and certified, that provide for the passive cooling of the fuel they ship, so that overheating accidents can not occur from a cooling system failure. Some further discussion of this subject is provided in a 1 aper included in Appendix (A-22).

# ECONOMICS

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There are provisions in the NWPAA for incentives to be brought to the host community that helps the federal government solve its waste management problem. These incentives are negotiable, and a state and county could agree on achieving specific incentives and protections as a condition of acceptance of the facility. This has not been done before, so there are no examples to provide. The Negotiator's office would deal with the state and community, and then take the package to congress. Until this is done, only the other economic benefits that accrue to the local community through jobs, payroll, taxes, new business etc. are possible to approximately forecast. An economic impact analysis will be performed under Phase II, probably by a state university.

Prior to doing the above discussed analysis, it is possible to gain some appreciation for the benefits by considering the interviews done by the ICIC of people in business and in nearby communities to other nuclear facilities. Since there are no MRS facilities of the type being studied in existence, a direct comparison can not be done. Some of these interviews and observations are provided below, and others in a following section dealing with the ICIC fact finding trip.

*Positive Impacts:* Concerns over the image Grant County would have if an MRS site is located in the area and if any new industries would be willing to locate in the county, are difficult to address since there is no facility exactly like the proposed MRS in the country. Members of the ICIC visited several communities that host nuclear facilities. One of which was Barnwell County which is the host to a large Low Level Waste Disposal Facility. The ICIC has many reports, interviews, and pictures of their visit to Barnwell. The following chart, provided by Dr. Brunette, Barnwell County Economic Developer, shows Industrial Development Projects, funded in part by the nuclear Surcharge Fund: (Jobs indicated are either "new" or "saved".)

#### COMPANY YEAR JOBS K & M Manufacturing Co. (Cut & Sew) 1989 Colormarks, Inc. (Carpet Yard dye & twist) 96 1989-1991 Transregional Mfg. Co. (Cut & Sew) 105 1990 Precision Metal Fab., Inc. (Metal Fabricators) 65 1990 NRS, Inc. (Decals for Beverage Industry) 19 1991 75 Blackville Farmers Mkt. (Melon grading line) 1990 25 Williston Industrial Park (see note after table) 1990 n/a

# PROJECTS PENDING WITH FUNDS :

COMPANY	YEAR	JOBS
AM South Beverage Mfg. (Bottled water/Juice)	1991	112
House of Perfection, Inc. (Cut & Sew)	1991	165
C.J. Patrick Co. (Chemical & Dyes)	1992	30+

Note: Industrial Park development is to meet needs of industries anticipated to support Dixie Narco. Barnwell County is 553 sq. miles; population 19,868; it is considered rural, with agriculture and forestry.

Following is an interview done by an iCIC member:

Subject: Dr. Richard J. Burnette, Ph.D. Executive Director Barnwell County Economic Dev. Commission

Dr. Burnette as director of the Barnwell Economic Development Commission for many years has gained a very clear view of how the nuclear industry effects the economy of this particular region.

His first and foremost statement regarding the nuclear waste storage facility located in Barnwell County is; "this is the best thing to ever happen to Barnwell County, nothing has done more for the economic well-being of this area."

Dr. Burnette is quick to point out that the salaries and direct payments to the county because of this facility are responsible for better schools, hospital care and a growing industrial expansion, while other communities are experiencing an economic disaster.

As far as safety concerns, he is confident that the area is completely safe and points out proudly that farms bordering the Chem-Nuclear waste storage facility and the Savannah River Site are prospering and have had no problems with crops or livestock. He goes on to say that one of the latest new industries to come to Barnwell County is a Bottled Water plant which chose the area because of the abundance of pure water in the county

A second interview follows:

Subject: Dr. C. P. Penn

### Supt. of Schools Surry, VA

Dr. Penn stated "We're pleased to have a funding source like Virginia Power for our Schools, we have no problems, we're more concerned with Ag. (agricultrual) pesticides contaminating our water, or pesticide spiils."

Since the beginning of operations at the power plant, and the increased revenue with which to operate schools, Surry Co. has been able to improve its educational system. High school graduation levels have increased from 20% of the population 20 years ago to 95-96% today. Also 65-70% of the graduates continue on to higher education. Dr. Penn indicated student test scores increased from 17-27% to 40-75% in the elementary school and from 10-17% to 35-50% in the high school. The population of Surry County is about 6200, with the student population being about 1200.

Virginia Power Co. provides about 75% of the tax load in the county. Surry county provides for 80% of its educational funds locally. A neighboring county provides only 68% locally and another provides only 58% locally. They spend about \$6000/year/student for education, & \$7200/year/student with building costs. Virginia spends about \$5200/year/student.

Dr. Penn views Virginia Power Co., not as a necessary evil in the community, but as an integral part of the community. The school shares its facilities with Virginia Power Co., as an Emergency center for the area. The school presently wants to set up an emergency generator at the school and he feels Virginia Power may donate the generator to them.

Virginia Power Co. and public utilities pay \$5,667,219 in taxes. The private citizenry pays \$1,399,688 in taxes in Surry County.

*Economic Liabilities:* Opponents to the process of studying the feasibility of hosting an MRS filed an article in the local paper noting that local insurance companies will not cover nuclear related hazards. Congress nas specifically provided for nuclear facilities to be covered under provisions of the Price-Anderson Amendments Act of 1988. For accidents resulting from activities conducted under the Nuclear Waste Policy Act of 1982, coverage would come from the Nuclear Waste Fund. This latter fund is maintained by nuclear utilities paying a fee based on their generation of electricity through the use of nuclear fuel. The fund is currently a multi-billion dollar fund. A description of the Price Anderson Amendments Act of 1988 is included in the Appendix (A-23).

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The "Citizens Against the Nuclear Waste Dump" denied the ICIC's request for a complete copy of an economic impact study concerned with the liabilities of hosting an MRS. The study was done by a student majoring in communications. In a public meeting, the student gave his report orally. He stated that from the research he had compiled, it was clear that there would be very few jobs and benefits for the county, and that having a high level waste site in the county would reduce the chances of attracting new industries to zero.

Other Grant Applicants and MRS Studies: The first grant applicant and recipient was the Mescalero Apache tribe in New Mexico. The ICIC has had conversations with the Apaches and compare observations and the results of studies.

While there are currently six separate grants to various governmental entities, one of interest to North Dakota because of its proximity is Fremont County, Wyoming. Ms Kallis asked Mr. Tom Satterfield, Vice-Chairman of the Fremont County Commission for a brief history of there project to date. The Wyoming project was carefully designed from the beginning, and stresses public involvement and openness. The response, and notes from phone calls to the Mescalero Apaches are included in the Appendix, (A-24)

These programs were mentioned by the ICIC because of questions raised to the committee by Grant County residents. These questions related to which other communities are considering an MRS, and what their reasons are. New Mexico and Fremont County, Wyoming indicated to the ICIC that they were comfortable with the process.

# ICIC FACT FINDING TOUR

The immediate following is a description of the tour taken by the ICIC to get information first hand from the technical experts, the farmers, neighbors, schools, hospitals, and local businessmen. After the description of the tour, individual interviews will be presented in their original form.

## Trip Itinerary: February 1 - 7, 1992

This is an overview of the appointments that LO.I.C. had an their recent research trip. For detailed reports of each appointment or interview contact a member of LO.I.C.

February 1-7, 1992

Sat, Feb. 1 - 3:00 P.M. The eight member team from the LC.I.C. met al the Bismarck airport for a 4:10 flight to Minneapolis and Washington, DC. Members included Judi Kallis, Mark Steller, Marcie Batsler, Jackie Seibel, Lloyd Kleitt, Lyle Zithmerman, Virgil Stern and Don Bachmeier. We arrived in DC Inter that evening and checked in at the Courtyard Marriot Hotel in Crystal City.

Sun., Feb. 2 . A.M. Most of the committee spent the day sight see-

3:30 A.M. - We met in the lobby of the hotel to review our itinerary and get may last minute defails of the trip straighted but. After the meeting most of the group went back into the DC men.

Mott., Feb 3 - 8:00 Å.M. We checked out of out motel and were on our way to out first meeting with the Nuclear Regulatory Commission (NRC).

9.20 A.M. - We were met by our contact person at NRC and were checked in by security personnel.

9:30 A.M. - Our meeting with NRC officials began Robert M. Bernerd, director of the Office of Nuclear Material Safety and Safeguards, began the meeting with approximately seven other staff members of NRC. The meeting was very informative and dealt with the regulation of the nuclear industry, the storage casks and the MRS specifically. However, we had to leave for our next meeting with DOE and didn't get to cover some of the material they had prepared for us. Each member did receive copies of these reports before we left at 11:15.

12:30 - We therked in at the Department of Energy and went through their security measures.

12:40 - Out meeting with DOE officials began. They covered a vaticty of topics which were contained in a folder that each member received. These topics were: the tole of the MRS in waste management, ensuing safety, traisportation of fuel, and the tole of the MRS host. We were shown a model of what the MRS might look like. The meeting ended at 2:10.

2:35 - Our meeting began in Rep. Hyton Dorgan's office with Rep. Dorgan, Sell. Council and several members of their staff. Neither of the Congressmen are in favor of storing spent nuclear fuel in North Dakota. However, they did indicate support for the County Commisstoners. They could not provide us with any specific negative data but did assure us that they would share any information that they had. The meeting ended at 3:35. 4:50 - We arrived at the airjort and met by Julie M. Jordan, the Program Manager for the Utility Nucleat Waste and Transportation Program for Edison Electric Institute; Cathy Steele Roche, Director for Media Relations and Felix M. Killar, Jr., Director for Nuclear Programs. Both Cathy and Felix were from the U.S. Council for Energy Awateness. We boarded out small chartered airplane for Greenville, South Carolina. When we arrived we divided into two groups. Group 1: Mark, Virgil and Jackle and Marcle drove into Greenville and spent the hight. Group 2: Lloyd, Lyle and Don drove to Clemson about one hour away.

Tues., Feb. 4 - 8:00. Group 1 flew to Columbia, South Carolina to tour the Westinghouse Fuel Fabrication Plant in the morning. After lunch they flew to Barnwell, South Catolina. They rist with county officials and local citizens of Barnwell County, Including Danny Black, the County Commissioner. Barnwell County has a nuclear facility with five reactors as well as a low level waste burial site. After the meeting the group toured the low-level waste burial site. After Nuclear) near Shelling and then talked to local citizens on the street who were willing to talk with them about living near muclear facilities. They then flew back to Greenville.

Tues., Feb. 4 - Group 2. The members of this group visited varibus establishments and local differs in and Brownd the Clemson area. They visited a local hospital, the ERA Realty Company, Clemson Agriculture School and spoke with the chairman of the County Planning and Development Committee.

Wed, Feb. 5. Both groups met at the visitor center at Oconee Power Station which is a nuclear reactor site operated by Duke Power. We toured the facility, and hatch and then went to view the spent fuel dry storage facility that is located at the plant. This facility uses the bunker type storage where fuel is contained in large metal casks, which are then stored borizontally in contrate bunkers. After the tour we drove back to fireserville built fire to New part New yA

tour we drove back to Greenville Bild flew to Newport News, VA. Thurs., Feb. 6. We drove to the Surry Nuclear Power Station which is operated by Virginia Power. We toured the facility and then went out to view the spent fuel dry storage facility at the plant. Surry's storage consists of intre metal heavily shielded casks which are set on concrete pads. We then had lunch with 12 local officials and spent several hours talking with them mid learning from them, what affects the nuclear industry had on their county. We then drove back to the sitport and on the way stopped at a farm for an interview with a retired farm wife and then stopped in Colonial Williamsburg for 30 minutes of sightseeing or shopping. We flew into Washington, DC early that evening.

Fri., Feb. 7 - 7:00 A.M. Left Washington, DC for Bismarck.

#### Interviews: (continued)

Robert Bernero: Director Office of Nuclear Safety & Safeguards Nuclear Regulatory Commission

NRC FOLICYI

MRS Siting License will not exceed 25 mrem/yr at the boundary. NRC will regulate all HLRW, ( MRS ) disposal & storage. NRC sets it self at asms length from DOE, and admits to having had some major dissagreements with DOE. They also made do worg dived otear that NRC was 100% on the publics side. License review will be very open and up front to the public. Workers would be limited to 500mrem/yr exposure. This does not necessarily indicate actual expected radiation exposure, but in fact, the maximum permitted by NRC at an MRS facility.

TYFES OF STORAGE AVAILABLE: Above ground shielded containers...... Concrete Vault Bunker Storage....... MVDS Vault Module Gas Cooled Chimney.....

SFERT FUEL ASSEMBLY HEAT RETENTION: ( POST REACTOR )

100% for several days.

10% within one year.

1% within eleven years. These are general numbers.

Every Fuel Rod assembly is coded with a scrial number for safety to allow maximum use within the reactor, and to insure that only the oldest fuel is removed from the reactor and placed into storage.

### CONCERNS REGUARDING TRAMSFORTATION

All transportation cask designs must meet proven tests to withstand every possible crash scenario. The casks must be capable of providing adequate protection to the public, as most emergency response teams are often unequiped to handle radioactive spills.

### General Comments:

Licensing of dual purpose casks for trasport and storage are not expected till late 1992.

NRC believes that most reactor sites have the ability to store spent fuel in pools for approximately one year. Several sites have present need for above ground storage and are presently doing so.

NRC's considerations for the MRS Facility are in respect to the overall environment, general safety, and Natioal Security. NRC believes that the handling of Spent Fuel should be minimized to avoid the process of transferring Fuel assemblies from one cask to another.

NRC recommends tough negotiations with DOE for the operation, regulation, and decommissioning of an MRS site.

NRC believes that the technology is available to store Spent Fuel at an MRS Site.

Private Industry, rather than DOE, may be the best choice for the safe operation of an MRS Site.

### Annual Payroll average: \$12 - \$15 Million

Basic facilities at this type of MRS would be a shipping cask receiving facility, cask unloading and transferring the contained spent fuel to a storage module, storage area, facilities for maintenance, and various support facilities. The spent fuel would not be processed at an MRS.

If a dual purpose transportation/storage cask system were used the construction cost would be approximately 1/3 to 1/2 the previous estimates. Significant changes would also be necessary in other areas of the estimates.

Economic benefits the OCRWM envisions for the MRS:

Preference for local purchases Increased tax revenues Preference for local hiring Job training programs Payments from the Federal Government Road and Bridge improvements Assistance to schools, hospitals, police and fire services.

Features which bring safety to the MRS: storage containers, formal procedures, NRC regulation, site selection, spent fuel in ceramic pellets, sealed inside fuel rods, and massive concrete and metal shielding and barriers.

Transportation safety factors would be: cask design and testing, route designation, and preparations for emergency response.

The OCRWM feels that the voluntary host would and could participate in all phases and procedures in regard to the MRS including decommissioning.

### Interview:

Subject: Public attitudes towards the nuclear industry

Interviewed by: Mark Stelter

Interviewed: The desk clerk and a janitorial person at the Holiday Inn, Greenville, SC

Greenville, SC is less than a one hour drive from the Oconee Nuclear Power Station of Duke Power Company in Oconee County, South Carolina. Neither of the two people interviewed were concerned about the nuclear poser station. They both know it is there but neither one has ever taken the time to tour or even go to the information center at the Oconee Station. They really don't think about it.

Neither person could remember any major problems that they had heard about the operation of the Oconec Station.

Both of the people interviewed had lived there longer than the plant was in operation. (The plant went to commercial operation in 1973)

### Interview:

Subject: Public attitudes toward the Nuclear Industry

Location: Barnwell County, South Carolina

Date: February 4, 1992

Interviewed: Citizens of Barnwell County

Tuesday afternoon February 4, 1992 the group of Marcie Baesler, Jackie Seibel, Virgil Stern, and Mark Stelter spent the afternoon meeting with local government officials and local citizens (randomly met on the streets and highways of the County). The county has a 5 reactor nuclear power facility (it is a government owned munitions facility) and a low level waste site which has operated for 20 years.

We met with the following citizens at the Barnwell Chamber of Commerce building: Dan Black, County Council Chairman; Anna Loadholt, Vice Chairman of County Council; Robert Harris, Executive Director of the Barnwell County Chamber of Commerce: and E. T. Moore, Mayor of Snelling and a farmer.

All four of the residents were eager to share with us their feeling about having the nuclear facilities in their county. They all felt the facilities were good for the county. Dan Black felt that in 1971 when the low level waste facility came into the county that most of the resistance to it came from outside of the county area. The facility employs 150 people and has brought money and jobs to the county. Mr. Black went on to say you will receive a lot of pressure because of the facilities. However, if you view whatever problems or risks that there are in a perspective that is taking into account the facts and true magnitude of the problem or risk you can comfortably accept these problems or risks. Mr. Black went on to say that they are currently trying to keep the low level waste facility for an additional three years, because their 20 year compact agreement is expiring and they want to retain the low level facility. (The new compact host is to be North Carolina which is not currently ready or does not really want the facility as Barnwell does.)

Mr. Moore said that he has farmed for 40 years in the Snelling area and has raised cattle, peanuts, and grains. He stated there has never been a time when he could not get market price for his products or has never had any trouble selling his project. As a matter of fact his cattle graze within 2 miles of the low level waste facility and he had not had any types of unusual health problems or deaths with his animals.

Our group then proceeded to drive around the are to talk to citizens randomly as we found them on the streets (these were not arranged interviews buy impromptu). The first stop was at a grocery store in Snelling, where there were 4 men standing in front. As it turned out the men all worked at the low level waste facility and had just gotten off work. They all spoke of their work with pride and felt it was an industry and not a dump. The men were indignant about any reference to the facility as a dump. They all felt the area and the nuclear industry was getting a bad rap, and that safety to health and environment was not an issue. The men wondered why small problems in the nuclear industry receive big press coverage while major environmental problems in the chemical industries are overlooked in their opinion.

We then talked to a police officer of the street in Barnwell (city). The officer said that when the Savannah River Site was developed in the 1950's his family had to move from the town they lived in to an area off of site premises (the whole town was moved and relocated). He said that he doesn't worry about the facilities and in fact had a brother that worked at Savannah River Site for 20 years and he had no health problems.

A teenage girl working at a local video store said she has lived there her whole life and knows the nuclear facilities are there but hasn't really paid any attention to them. When asked if the trucks carrying low level waste through town bothers her, she said that she doesn't really notice.

When leaving a local gas station after talking to one employee who had lived there for about a year only, a man volunteered to talk with us. The gentleman said that he has worked for 8 years at the Savannah River Site in the railroad yard. He felt that the Site was very strict about safety standards,
especially since Westinghouse had taken over. The railroad cars are thoroughly inspected before he is allowed to get near them. He also said he had an uncle that worked there for 40 years and has no health problems.

In the process of returning the rental van the owner of the Ford dealership stated that the nuclear facilities in Barnwell County provides a stable economy and good jobs for the people. He went on to say people quit good jobs to work at the low level waste facility.

When speaking of economics in this county you must remember that the two nuclear facilities employ approximately 18,000 people which is substantially more than an MRS would employ. You must also remember that the Savannah River Site is a government munitions facility and not a public utility facility. Spent fuel to an MRS would only come from the public utility owned and operated facilities and not from the government facilities. Low level waste is also a completely different area of waste management than that of high level waste management. The methods of handling, shipping, and disposal of the waste are different.

Interviews:

NAME: Mr. Howard Ghann

OCCUPATION: DOE/Westinghouse Supervisor, Waste reprocess area SRS

### ADDRESS: Alken SC

Mr. Gnamm has been employed at SRS for over 6 years and is currently working in the area that reprocesses spent fuel and other high level waste. The process that is used at SRS takes the waste material and breaks it down using chemicals and heat in order to concentrate the waste and then encase it into a "glassified" form for permanent storage. This same process is used by other countries to reprocess their spent fuel rods from commercial reactors and turn it into a safer material for permanent storage.

When asked what his opinion was on the program initiated by DOE, the MRS program, he indicated that it could probably be done quite safely. He is of course partial to the SRS method of waste disposal, but said that because this process produces plutonium as a bye-product, it is not safe from a terrorist standpoint. The US government does not allow commercial reprocessing because of the danger of plutonium slipping into hands of terrorist factions.

Mr. Gnann reflected the opinion of many in the industry that the continued storage of spant fuel rods at the over 120 reactors in the US is not only costly, but hard to monitor and thus not as safe as a consolidated storage facility could be.

### Mr. Gnann stated that "the future of the Nuclear industry is going to be concentrated on cleaning up facilities and finding more efficient and safe means of handling and storing nuclear waste."

Interview with Michael Benjamin and tour of Chem-Nuclear Systems, Inc.

Rarnwell, S.C.

Chem-Nuclear operates a commercial low level radioactive waste disposal facility.

(5) employees work at the Barnwell Site, and has operated since 1971

It is the only low level radioactive waste management facility in the county that has operated continuously without shut down.

Chem-Nuclear operates the largest trucking fleet in the country for hauling low level radioactive waste.

737 acres have deeded to the State for Chem-Nuclear approximately 74.4 have been used for disposal.

### WAME: MICHAEL J. BENJAMIN

SCOUPATION: Manager, Health Physics, CHEM-NUCLEAR SYSTEMS, INC.

ADDRESS: CHEM-NUCLEAR SYSTEMS, INC. F.O. BOX 726 BARNWELL SC 29812

Mr. Benjamin is employed by Chem-Nuclear Systems, Inc. at heir low-level waste storage facility in Barnwell County SC. His ob includes training new employees in safety procedures along with aintaining and upgrading all employees safety practices and egulations. He is responsible for ensuring the safe operation and dherence to all safety rules required for the operation of this ite.

Mr. Benjamin conducted a guided tour of their waste storage acility for this Committee member. Freceding the tour Mr. enjamin gave a slide presentation outlining the complete process or accepting, storing, transporting and preparation of the storage ite for the low-level waste material that is permanently stored at heir site. The slide presentation was followed by a short course

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1.14

on nuclear material, and included familiarization with a dosemeter which is a device to measure the amount of radiation which may be present in the area. All employees and visitors are required to wear these devises to monitor any possible exposure to radiation while on the waste site.

Mr. Benjamin is convinced that nuclear materials can be handled safely and efficiently if the guidelines put forth by State and Federal agencies are followed and adhered to. He pointed out that this Chem-Nuclear operation has a perfect record for over 20 years which shows that it can be done safely.

Mr. Benjamin has a very positive attitude towards the MRS project and stated that "the only way to have really safe, and efficient storage of commercial spent fuel rods will be at consolidated sites. The cost and logistic problems associated with monitoring over 120 commercial reactor storage sites for safe storage of their spent fuel rods would be enormous."

Mr. Benjamin pointed out that they use the same class of transportation casks that would be used for the MRS project, and that he has no doubts about the integrity and safety of those devises for carrying nuclear material.

Mr. Benjamin did point out that he thought the helium storage system would be less dangerous than the water system, because he felt in the "highly unlikely event of a breach of a storage cask" the release of contaminated helium would be dissipated quickly and away from any bystanders, while contaminated water would be on the surface of the pad of where ever the leak occurred. He said any natural phenomena which could rupture a storage cask would do more damage to the area than the subsequent release of contaminated material would.

NOTE: Mr. Benjamin felt that the jobs created by a waste storage facility would not have an adverse affect on the local economy, but rather help by increasing the variety of jobs and services which the local population could benefit from by providing the labor force. His experience in Barnwell County has been that from the time they began operation this industry has been responsible for improving the local economy on a continuing basis.

NAME: J. W. CLAYTON

OCCUPATION: Manager - The Creek Flantation - Quarter horse farm

AUDRESS: Creek Flantation

Mr. Clayton has worked as manager of the Creek Plantation quarter horse faim for over eleven years. He is responsible for the maintenance and everyday operation of a commercial quarter horse farm which has over 300 registered horses.

The Creek Flantation is located immediately adjacent to and down stream of the Savannah River Site, and is in fact less than 5 miles from the K-Reactor.

Mr. Clayton expressed his opinions about the plant freely and feit there are many points to consider when talking about the nuclear operations that could affect their lives and work.

He feels that the management of the plant and information passed down to the public in the area of the plant is not timely and far from adequate in the amount of information that is released. He feels comfortable in working nearby the site because of his long association with the plant, in that they have never experienced any problems with their livestock or known of health problems of an unusual nature occurring in their community.

The recent report of a tritium spill caused him concern, especially since he learned of the spill after it was reported to have passed by their property and was going out to sea by the time they read of the incident.

His other concern is over the apparent overspending and waste of tax money spent on these sites. He has seen and read of the many projects on SRS such as cooling ponds and cooling towers being built which are now said to be inadequate to do the jobs they were meant to accomplish. He wondered if the cooling ponds were just built as "recreation areas for the plant officials".

He did note that in the past year the new emphasis by the DOE to pass on more information and ed. ational material to those residents in the immediate area. We showed me some of the safety material and instructions that had just been mailed out to all residents living within the immediate boundary and safety zone of the SRS outer perimeter.

He stated that he had no real fears of living and working within the immediate vicinity of several nuclear reactors and the man, other related nuclear facilities at SRS, but mentioned that "it is always something to "link about and should be taken seriously."

PAME: DAVID HORNE

OCCUPATION: Caretaker - Groundskeeper, THE CREEK PLANTATION

Hr. Horne has lived and worked at the Creek Plantation for over two years. He previously had lived in Pennsylvania and has close relatives who actually lived near the Three Mile Island site when they had the famous accident.

Hr. Horne stated that he was "extremely concerned and apprehensive" when he first considered taking the job at Creek Flantation because he discovered that it was not only within several miles of 5 DOE nuclear reactors, several nuclear material processing plants, but that there is also a commercial Nuclear Fower Station, Flant Vogtle, located about six miles up the Savannah Flyer on the Georgia side.

Mr. Norme said that this recent tritium release is the only problem that he has experienced since moving here, and that although this has happened, his views are that the country here is so beautiful and the animals are so healthy, he would never consider leaving or living in any other place.

Hr. Horne and Mr. Clayton both remarked that in the history of the Greek Plantation there is no record of any unusual livestock deaths or aliments that could be linked to any environmental hazards.

NOTE: 1 must comment that this property was one of the most beautiful farms that I have had the pleasure of visiting. The Creek Flantation in addition to maintaining a herd of over 300 top guarter horses, also has one of the largest longhorn cattle herds in the Southeast.

Creek Flantation is known throughout the horse industry for providing top quality champion cutting borses. Their annual spring sales have drawn some of the highest prices recorded for yearing colt sales.

> Dr. Don Ezell : Clemaon University Agricultural Dept. Dr. Bill Yates : Extention Ag Natural Resourses Dept.

Located near Duke Fower Station ( 3 Nuclear Reactors ). Seneca 5.C.

Dr. Ezell worked at Clemson U. since 1968, and has worked with Emergency Freparedness... Has never heard of Ag related complaints within the state.

Dr. Bill Yates works as a plant pathologist in Allendale County S5 for Clemson U. working with local farmers, and has heard no complaints and has never found a concern duto Radiation effects on plant environment.

Local Farming includes : Cow Calf... Chickens...Corn & Beans... Apples and Peaches... and Tobarco. Much of the crop area near Savannah Goergia site is Irrigated.

Dr. Ezell lives within 10 miles of the Nuclear Facility and has no concern reguarding radiation effects, and is comfortable with its' regulation.

Dr. Ezell stated that the Nuclear Industry has been a good outlet for College Graduates from Deke U. Duke Power has donated funds to Clemson U. Foundation.

Dr. Ezell ( Quote )... The Duke plants hire so many young farmers that they now have the money to expand into large chicken ranches. Many original employees are now ratiring. It's been a Boom for employment and there is no concern as to the environment that I'm aware of! Frior to Dukes Construction, they came into the area and really provided a good understanding to the local citizens. It helped a lot, but there are always a few who still aren't sure.

He also stated that most skeptic concern was over a Toxic Chemical site ( GSX ) where some problems have occured with leaks and spills but he couldn't verify specifics.

He was aware of a Steam line break in the Reactor room at Duke Fower Station. Contaminated water was spilled onto the floor in the Reactor its if. The Unit was rout down, the water was filtered clean of contaminates and was released. No injuries occurred.

He stated that locals who worked at the Plant were impressed with the constant training of their workers.

Dr. E:ell made mention of a Retirement Community located above the Duke Nuclear Fower Station within & mile where wealthy PETIS's come to retire... lots selling for 50-180 thousand dollars. Quote " If they were concerned about Duke, they wouldn't be there."

Frank Kuhn | ERA Agent and Developer Location | 8 miles from Duke Power Station.

Quote " Duke Fower is a blessing to the County..a Dynamio-Growth response."

Leading\_ag\_industry\_is.chickens.

Before Duke Power came to Oconee County, farm land sold for\$10.00 an acre... It wasn't fit to grow anything, Quote" the only thing this land was good for was to hold the earth together." At the present time, local land sells for \$850 an acre up to\$4000.00 for prime bottom land.

Highway Frontages sell for \$1000.00 to \$1600.00 a foct.

Oconee Station has become a large tourist attraction. In reference to the Duke Power Station Tour ... Quote " It's the cleanest place I've ever walked through."

All surrounding communities get their water from Keowee Lake, home of the Duke Fower Nuclear Stating.

Froperty values continue to increase, from 3-10 % annually In the area because of Duke Power. Quote " Frame hers because of Duke Fower, and we are able to attract new business because of the business environment associated by Buke Powers you may not Bee this type of growth, mause we we got these lakes and the climate here that people-14 Ke.

The only complaints he was aware of were from existing businesses. who had to compete with the workforce and wages.

The Nuclear Industry alone was responsible for 4.5 million in tax dollars to Oconee County anually. 2.2 million to nieghbor comm. Oconee County has attracted many million dellar Industries.

nartwell Lako located just below Duke Power Static is the #1 user lake in the nation.

Local population and businesses are moving toward the north to the Duke Nuclear Power Station.

Ending comments: Quote," No problems ... Absolutely None ... All of the E.D. in Oconee County is due to Duke Power Stations and the lakes they built here.

Bob Gillard : Chairman of County Flanning add Developement Mayor for 10 years during Duke Plant startup. County Native.

Quote, " The changes have been nothing but good."

Quote, " Since 63 when Duke came into the area we've seen E.D. in every facit.

Quote, " Duke came in here and bought up the entire watershed area and paid 2 - 3 thousand \$ for land so poor it wouldn't raise cotton."

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What Duke Fower has done for Oconee County: Quote, "They have made this County...contributions to schools, upgrading and additional roads, 1000's of new homes, and new businesses, and have a close relationship with Clemson U. Quote," I don't know anything bad about Duke! We've got 55-60 major industrial firms since the Nuclear Station was brought in." " Contracts breed Contracts!" Duke Fower gives the County \$200,000 - \$300,000 a year to attract

E.D. to Oconee County.

"The only E.D. we've turned down was a chicken processing plant, because of the tremendous amounts of waste water produced."

# Fersonal reguards to Duka Fower Nuclear Station:

Quote, "They've been a train the bank. "You can take eM to the bank. They've been a tremendous boost to the entire region.

" They train, train, train.... they never stop training!

Reguarding the MRS issue under study in Grant County ... Quote." It sounds like a good project to help your county." "You got to overcome your peoples fear!"

Companies like .... a moderate climate, a ready and willing work force good work ethics, and no labor unions .... our local industries pay - 10 dollars an hour, but thats not counting Duke!

### SFENT FUEL STURAGE HANPLING

### LOCATION & VIRGINIA NUCLEAR FOWER STATION SURRY COUNTY VIRGINEA ABOVE GROUND STORAGE

Virginia Power presently uses three types of storage casks, the GNST Metal Cast design .... Wstinghouse Stainless Steel Caski ... and the NAC Stainless Steel Cask.

These containers are heavily shielded with Lead, Metal and a special Boric Liner.

These Casks are lowered into the Spent Fuel Pool , completely submerged where they are them loaded with the Fuel Assemblies. A double seal lid is them bolted to the cask. As the loaded cask is then removed, it is rinsed simultaniously and lowered into a decontamination service area where the liqud from the pool is removed by vaccum till it is completely free from moisture. The container them goes under additional decontamination to remove all radioactivity. The Cask is then injected with an inert gas ( Helium ), and remains under vaccum. The Cask is them loaded for transport to the storage pad area and placed. A monitoring system is them attached to the sealed lid, which monitors the vaccum within the Cask. In the ovent of a Seal

failure, the system would detect a loss of vaccum which triggers an elarm. In this event, the Cask would be removed and the contents transferred to a new Cosk.

There has never been a Cask failure at the Virginia Site.

Only a small emount of Gamma & Neutron Radiation is present right next to the Casks, and this is absorbed by the atmosphere very rapidly, which at this site "Would be undetectable at an approximate distance of One Hundred ( 100 ) Feet from the actual

The temperature variation between the outside air and the sidewall of these containers average approximately Ten ( 10 ) Degrees higher. The difference in temperature of the top surface may be Fourty to Fifty ( 40-50 ) Degrees above the outside mir due to natural heat rise."

### SFENT FUEL STORAGE HANDLING

LOCATION . DUKE FOWER NUCLEAR REACTOR STATION OCONEE COUNTY SOUTH CAROLINA ABOVE GROUND CONCRETE BUNKER STORAGE

Duke Fower has on Site, within several hundred yards of their Reactors, a Concrete Bunker type Spent Fuel Storage Fecility. The process of handling is as follows :

The actual storage container is not properly shielded, so

the use of a shielded transport module is incorporated. The storage cask is inserted into the transport module and lowered to the bottom of the Spent Fuel Pool where the Fuel assemblies are loaded below the surface of the Borio Water. Once loaded, two lids are welded under the water to the top of the inner storage container, and a heavy shielded lid is bolted to the shielded transport module. The module is thoroughly rinsed as it is removed from the pool, and is lowered to a decontaminatic servicing area where the liquid from the pool is totally removed from both containers. A final decontamination process is the done to the Containers. A stong vaccum is then applied to the inne storage cask and He tum is injected to reduce activity of the Fuel Rod Assemblis

It is then moved to the storage area and backed up to the Concrete Bunker Vault hole. Once close to the vault, the lid of the transfer module is removed and the unit is quickly backed against the Vault to raduce exposure to workers. A large hydraulio ram is coupled to the transport module and the inner storage cask is pushed into the storage vault. The transport module vehicle is pulled forward allowing workers to attach the shielded door over the vault.

The shielding of these containers is supplied by three ( 3 ) feet of high density concrete which absorbs virtually all the radiation. Some neutron radiation is present directly in frontof each vault, but if "Absorbed by the atmosphere within a short distance... in this case approximatly thirty ( 30 ) feet.

Air flow vents are designed into the concrete to cool the sir within the vaults. This is accomplished by the natural flow of air.

No problems have occured at this site.

Twenty new vaults have been constructed adjacent to the ex-

Feb. 5th 1097 A.H. Interview at Oconee Hemorial Hospital Seneca, S. Carolina

Hr. Henry Stubba Hd. of mursing

Hr. Stubbs responded to a question regarding any increases in cancer rates over the past 20 years since the power plant began operations. by stating "I don't have any statistics readily available, but i don't feel that the number of instances of Cancer diagnosed, and treated have increased any. nost of our Cancer cases are a result of a solf-induced life style is. Lung Cancer, a result of smoking. The major cause of death in our community is still Heart disease and Strokes."

Now does the Moeritel plan to deal with emergencies/with nuclear

Hr. Stubbs responded that cases coming to the inexpital need to go to desontamination room, where decontamination is accompliabed by pathing or washing the contaminated area. Most cases involve only a small area on a part of the body. After a victim has been decontaminated, he is given other first and or further treatment, if needed. Then the room is cleaned up and the water used in the decontamination process in contained in a holding that. The water is then collected and sent to the power plant where they filter and clean the water in their systems. He also stated that if a patient were seriously injured, and meeded stablized, before the decontamination would be preformed.

The decontamination room was an approximately 8 X JU foot room finished of with a smooth ceramic tile material containing a floor drain, a overhead shower, a hand held shower head, and a cabinet containing first aid supplies.

fir. Wayne Gailand Emergency Services Hedioal Sechs

N. Jarland indicated that a jot of cross traing is done between the Hospital, Emergency Service Personnel, and the lower Flant.

He indicated that the Fower Flant (Duke Fower Co) has a very good reputation in regards to the health and safety of its workers, and in regards to cooperation with the community it serves.

Inspection and drills are required by both Duke Power, and Gos. Regulators to show that they are prepared to handle and respond to nuclear emergencies. Also County plans to deal with large scale emergencies are also integrated with the Hospital.

Mr. Garland stated that the Power Co appears to be very concerned with the environment because of the measures it takes to moniter continually the area in and eround Oconne County. The Fower Co also sets very strict controls on the use of land around the lake which the they own and sell to private interests. They have very strict erosion controls which must be met.

Initial concerss of residents of Oconer Co, when the publear plant was built, arpeared to be much the same as those which We, residents of Grant Co. have. Is it safe to residents and to the ravironment?

Both Hr. Stubbs, and Mr Gerland indicated the Duke Power Co. event a lot of time and effort to educate the populace about nuclear energy. The result of which appears to be an acceptance of the Co. with a good reputation in the community.

Several comments from "r. Uarland and Mr. Stubbs:

"A coleman lantern gives off more emissions: than most cases the hospital has dealt with."

"Feople have faith and confidence with the system at Duke Fower Co." "Fower Co had a water release from a valve which malfunctioned, and the Company made the incident known. Didn't try to hide it." "They feel that the private Companies are far more careful than they are required to be by the DOE and the Regulators."

Oconee Hemorial Hospital is a 160 had hospital, with approximately 120 bed presently being used. The population of Oconee Co. Grew from 40,000 to 56,000 in the last 20 to 25 years.

Virginia Fower Company, Surry Station Nuclear Reactors. ( 3 Units) Farming community. First above ground Spent Fuel Storage Facility.

Uses 3 types of storage casks ... GNST Cast

NAC Stainless Steel Westinghouse Stainless Steel Epoxy

No radiation on storage site beyond 60 ft. from actual cask . Light neutron radiation is absorbed by the air within this distance.

Closest living resident to Virginia power Generating plant recieves 1 mrem per year ave. Less than a color T.V.

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### Interviews with local citizens

Walter Hardy ; County Board of Supervisors," Happy to have Virginia Power here. He lives 3 miles from the plant and owns a farm there. Quote, "It's a Godsend to us, "no other county wanted the nuc plant, so we took it ... now they want their share of the tax money and we abnt gonna give it up. They didn't want it, They aint gettin it. Quote," We used to be known as SORRY COUNTY. We had no businesses and our schools were so bad some people went to other county schools."

One of the largest farms in the county is 2 miles away. Bush Gardens and Smithfield Meats are right on the plant perimeter. No one ever denied us because of the Nuclear Power Station:

Thomas Hardy | Former Navy Man, Worked on Nuclear subs for 35 yrs. as quality assurance under NRC safety testing. On Plant Safety Rev Ed. Q." We have one of the lowest tax rates in the state. Q." Virginia Power has been a good neighbor to us. Q." The people living around this plant hever complain...we get

2-3 envi-onmentalists from Williamsburg at our meetings trying to raise trouble.

Wallace Mavin; Building Council : We have one of the lowest tax rates in the state, I'm not aware of anyone who wouldn't Bring their business here because of the Nuc. plant!

Terry Lewis, Nuclear Industry Watchgroup! We haven't had any Major complaints. We've had some accidents with the secondary steam lines leaking and scaulding some workers, but it was clean steam .. not Radioactive. NRC has a lot of influence over Virginia Fower to inform the public of any changes or accidents etc. We really haven't had any dealings with DOE.

Cayle Clayden, Emergency Coordinator; We gave them really complimentar remarks to their inspections.

CP Fenn. Superintendant of schools; Q" We're pleased to have a funding source like this for our schools; we have no problems, we're more concerned with Ag. pesticides contaminating our water or spiils.

Jones Frank Gistems, Local farmer; Before Virginia Power came here our land was worth about \$200 ... Now our farmland averages over \$1000.00 . We haven't gotten many new business people, but thats because they all go closer in to the metro-area. Our County population is only about 6500 . We really have no need for that kind of E.D. We find that the big companies want to go south to the milder climates.

We have a BEDROOM COMMUNITY, hotels and resorts ... real quiet out here.. thats what they like, and so do we. The big companies want the night life, and we don't have it! Q." I certainly don't lose any sleep over this planti!

Q," To be honest, we just started looking into new E.D.

# Engela Heptime. By Martin in Finning Planning

She is active right now with the Chesapeake Bay Rill which Involves protecting the land around the Bay and streams flowing into the Bay. The Surry Nuclear Power Station is situated next to a wild-life refuge near the Bay. The refuge is monitered closely. To her knowledge no negative effect has been observed in the environment from the Power Plant. This does not mean that the environmental community intends to relax its scrutiny of the Surry Plant. She mentioned also that this is the sort of industry which needs to be regulated so that the environment does not suffer and that they intend "to stay on their toes,"

On tuesday Feb. 14 Mark, Marci, Jackie and I(Virgil) toured the Vestinghouse Fuel Assembly Plant at Columbia, South Carolina On arrival at the Plant, we had to complete several security documents. No cameras were allowed in the Plant. We weren't required to wear monitoring devices, because exposure to was very low, basicly backgrouund ratistion.

We met Douglas Trevitt our tour guide. He has worked in the Huclear Industry for 27 years: his total exposure is 500 millirems, the equivalent of 2 cleat excess.

Mr. Trevitt gave us an explanation of nuclear fuel and showed us a scale model of a fuel assembly. Mr. Trevitt said that Uranium used as nuclear fuel is unriched to somewher between 3% to 4.8% of U235 Natural Uranium ore contains .77% U235. After his discussion on fuel, the fuel assembly, and answering some of our questions: Mr. Trevitt took us on a tour of the plant.

The tour began at the Uranium Polleting Fart of the Plant The customer owned Uranium is ground into a fine powder. It is then pressed into pellets(3/8 in. by 7/16 in.) The pellets are then put into sintering ovens and baked giviing them a hard ceramic appearance very much like the cersals dinnerware that most in their home. The pellets are inspected for everyone has rejected Fellets are sent back to be reprocessed defects. the again. While handling the rellets the worker, are required to Ployes, because the oils on the skin contaminate the vesr pellets. The alpha emmitting particles of Uranium are blocked by the outer laver of dead skin or a sheat of paper. Inhaling Parioles is dangerous to the soft tissues of the lungs. To prevent inhaling particals a ventilating hood is placed in front of the worker. Air flows past the worker from the back passing by the hands and Pellets, sucking any dust that is emmitted into the hood and through a filtering process.

The employees that work in the pelleting and rod loading partof the plant wear Westinghouse supplied clothing and shoes during their shift. After the shift they shower and change into their street clothes. This is done to make sure that if any dust particule are picked up on the clothing while working they stay at the plant. The uniforms are sent to a laundry that specialies in laundering this type of clothing. The supervisors walking in and out of the plant only wear lab coats.

We then loured the essenbly Portion of the Plant. More efficient opperations of pressure ester reactors(FWR) with higher fuel burnurs, fextended cycles with increased Lithium levels, and higher coolant temperatures demanded an edvanced fuel cladding alloy At the Westinghouse Flant this cladding is ralled Zirlo. It is a sevulat alloy made of Zirconium, Hiobium, Tin, and Iron(2n. -1.8Nb. -1.8Sn. -. IFe? The rods are given a bar code; a customer no. and the percent of fuel enrichment contained within the rod. This is done to insure its identification for the life of the rod. The bottom tif is welded on and the fuel is then luaded between two spriings keeping keeping the fuel from shifting in the rod during shipping and in the reactor. Then the tur use is welded on and the rod is inspected for defects and straightness. A loaded rod contains 200 Pellets: the energy released from one pellet of Uranium is equivalent to one ton of coal.

We then went to the rod contanment part of the Plant. We saw how the guides were assembled, welded and inspected. The intricate welding processes that are tedious and time consuming are done with robots to insure a higher degree of quality. The welds are inspected with electronic scanners. The drilling of the buttom nozzle is drilled by an enclosed computer operated drill.

Metal debris contamination is a major concern. Metal trapped between the rods and the grids, where hydraulicity induced vibration can cause damage to the fuel rod. To prevent this debris is trapped by a Debris Filter Bottom Nozzle.

The fuel rods are assembled into an array of 17 rods by 17 and is 13 ft long. The entire assembly contains approximately 177 fuel and control rods. Upon assembly the fuel Assembly is inspected for alignment, thoroughly cleaned and prepared for shipment to the customer.

The final fully assembled fuel assembly has a cost to the customer utility of about \$750.000.00. There were roughly 350 essemblys completed and ready for shipment at the Westinghouse plant.

Westinghouse Corporation's Commercial Nuclear Fuel Division's quest for excellance in quality was recognized by being awarded The Malcom Balridge National Quality Award in 1988.

Tuesday Afternoon February 4th. Mark, Marole, Jeckie, and I met with local officials at Barnwell. The officials Pointed out that Barnwell County was trying to negotiate an extension of this Low Level Waste Facility. This facility is received by the general Public Quite well since it is something they gree up with all their lives. They felt that it hasn's had any adverse effect on their health. The facility Provides many jobs and has a definite econoic impact to the community. These local officials also indicated to us that they were dericusly interested in applyin, for a grant to study the fastibility of locating an MRS in Barnwell County.

Thew discussed a Tritium escape that happened at the Savannah River Site. Savannah River Site has 5 Nuclear Reactors, three of which are currently operating. Two are down for renovation. The Savannah River Site also has a low level storage facility and contains Defense Department Waste Storage. The socident has dispersed into the water to the Point that it is virtually negligable at this time. Several wells in Georgia were found to contain some traces of tritium and have since been cleared up. The county officials noted that since the nuclear industry has come to Barnwell, the county has been monitored and studied for every kind of exposure to enviormental health, these tests included cancer research; radiation exposure; ground, water, and air contamination.

When asked how they felt about nuclear industry, local people said they gree up with it and hadn't noticed any health effects. One local resident felt that some of the chemicals used put into landfills was far more dangerous to the enviornment on peoples health than the nuclear industry. When asked if he feit South Carolina was a dumplie. The resident reiterated. He didn't think of it as a dumpsite but as an industry that brought Jobs to the area. It was as if the suppliction of reference to the area as a dumpsite annoyed him.

On summarizing my tour of the area I found the residents don't consider this area a dumpsite, neither did they feel that they were at a health risk. Most People Grew upwith the nuclear industry and feel that it provides Jobs to the community I found that the area around nuclear facilities are monitored quite extensively. Tests are routinely done on water, air and soil for contamination studies relating to the health risks have been preformed in the community.

After our visit with Barnwell officials we toured the area and decided to tour Chem-Nuclear's waste facility. The reason we stopped was because so much discussion in the county refers to the way low level waste is handled and stored. Some horror stories of accidents have taken place at some of the nation low level sites most of which have occurred in the 50's and 60's. George Hurst (asst. Gen. Manager) showed us a film of the facilities operated and answered questions. Mike Benjamin, the plant heath physist, took us on a drive around two of the facilities and their three different burial pits. He told us how the three different levels of saste are buried!

A level waste, the least radioactiveis buried in metal containers and barrels in trenchs 1880 ft. long, 188 ft. wide and 22 ft. deep.

8 level waste is encapulated cent that Pachs.

f. level waste is the most radius i ve low level waste. It is buried in a carbon stee, '. d container.

The trenches have a 1 degree slope to one side for drainage. Often the containers are put in the trench, they are covered with sand 3 feet above the container after the trench is full, 2 feet of ground is added and compacted, about 1 yes. later a layer of plastic is put on top of the ground and this is covered with topsoil and planted to grass to minimize erosion.

Chem Nuclear has soil cores from the surface of the site to the depth of 450 ft. The air, surface, ground, water, uggetation and soil samples are regularly monitored to document that the waste is not effecting the enviornment. Employees working directly with the waste receive less than 10% of the limit for workers exposure set by the NRC.

75% of the los level waste buried at Barnwell site will have decayed away with 25 years after the site closes.

After 100 years more than 90% of the waste will have decayed.

After it is closed the site could be used to grow wheat or other grains. Shallow rooted Virginia Pines are now being grown on the site.

The site employs more than 200 people and encomposes 300 acres.

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# AIKEN COUNTY

WILLIAM M. CHEPHERD COUNTY ADMINISTRATOR Alken, Routh Carolina 20801 (803) 642-2012

February 28, 1992

TO THE RESIDENTS OF GRANT COUNTY, NORTH DAKOTA

You are being asked to consider continuation of the MRS Feasibility Study on March 10, 1992 through the re-election of your Grant County Commissioners. As the Administrator of a county encompassing over 1090 equare miles and over 120,000 residents that plays host to the Department of Energy's Savannah River Site, I consider myself in a position to comment on the hosting of nuclear facilities and would like to share some thoughts for your consideration.

We, in Aiken County, along with neighboring Barnwell County, host the nation's largest plutonium manufacturing facility for the United States Government. The facility has been in existence since 1952 and currently employs over 24,000 people. Additionally, Barnwell County hosts one of the nation's four low level nuclear waste disposal facilities and has hosted that operation since 1972.

Prior to commenting on the economic and sociological aspects of hosting nuclear facilities, I would like to offer some comments about myself to qualify my observations. I have only been a resident here and a county administrator for the past 16 months. Prior to that time, I served as an officer in the U.S. Army for 30 years, retiring as a Colonel. In my duties, I was assigned throughout our great nation and in many overseas locations. Bo I am not "homegrown" or owe any special allegiance to this great.

The presence of the nuclear facilities and many associated industries in this immediate area have brought with them significant safeguards and regulatory measures to ensure the safety and well-being of our citizens and the environment we hold dear. I am sure that the residents of Aiken County are just as concerned about our health and safety and our environment and ensuring that this eafety extends to our descendents. The Department of Energy, state regulatory agencies, and the industries themselves have consistently ensured that all safety measures are complied with. Environmental groups, including the Audubon Society, Sierre Club, Ducks Unlimited, and BASS all contribute to ensuring the health and safety of our environment. Clamson University , responsible for our state agricultural axtension services, has rajor research facilities in the area and monitors both animal as well as plant science matters. Our drinking water is a combination of surface and well water and is constantly monitored by state agencies and testad by independent laboratories. The bottom line is that we consider the nuclear industry to be a serious undertaking, and the record of the .uclear industry over the past 40 years has sarned our trust and respect as a responsible neighbor.

REBIDENTS OF GRANT COUNTY, NORTH DAKOTA February 28, 1992 Page Two

Economically, we derive considerable revenue from the activities of the nuclear-related industries in the way of taxes and amployees salaries. They also contribute their time and efforts in support of many community cultural, educational, and social programs. Serving on citizen committees, conducting adult education programs, serving as leaders in our youth activities, and actively participating in religious activities; these folks strive to be positive contributors to our community.

I strongly endorse the consideration of adding a nuclear-related industry to any community. Nuclear-related industries have proven to be responsible partners in a growing America. You should question misleading accusations of nuclear accidents, negative biological implications, or ruthless industrial practices that many would have you believe. We have found these accusations to be WRONG and unfounded.

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I would be happy to respond to any questions you may have which regard to any statements I have made in this letter.

Sincerely,

William M. Shadhard County Administrator WX8/Y

ADM0228/WP. ADMIN



Volume 73 Number 7

Wednesday, February 12, 1992

Smithfield, Va. 23430

# N. Dakota group visits plant

#### By Beth Spencer Staft Writer

SURRY - A clitzen investigation committee from Grant County. North Dakota visited the Surry Nuclear Power Plant last week. and on Thursday the group had a luncheon and discussion with Surry County government officials about the advantages and disadvantages of having the plant located in Surry County.

cated in Surry County. The Orani County committee members are specifically investigating the costs and benefits of localing a temporary storage facility for epent nuclear fuel in their county. They visited the Curry plant so they could get feedback from local officials concerning the facility seffects on the community.

Crant County does not have any kind of nuclear facility at this time. It is considering building a

temporary above-ground storage facility until a permanent repository for high-level radioactive waste can be established somewhere in the country. The permanent repository will be the first of its kind in the United Stries.

The committee, made up mostly of farmers and ranchers from Grant County, heard all good news from the Surry County officials. Walter Hardy of the Surry Board of Supervisors said. "Twe never had a sleepless night worrying about something happening at the plant." The power plant is located in Hardy's district, the Bacon's Castle area.

The committee's main concern seemed to be public safety, but they also had questions about employment for county residents and revenues generated; by the pizht for county programs.

"Education is one of the pro-



grams that benefit gready from Virginis Power." said Gall A. Clayton. Surry's assistant county administrator.

Orani County has a populalon of about 3.600 people, said Virgil Stern, a member of the committee who is a farmer in Grant County. "We are looking at the pros and cons, and at the general feasibility of the proposed project." said Stern. The committee visited Surry because "we want to let the folks back home know how other small communities have faired with a nuclear facility." said Lloyd Klein. another committee member.

Orant County is considering building a facility to temporarily store spent nuclear fuel using drycask storage, a new method develang hat they at few years for sloe Temporary storage siles are beginning to be needed because plane for a permanent storage facility scheduled to be open by 1998 "are not moving along as expected." sald assistant plant menager D. A Christian. A permanent sile was chosen in Nevada, but plans are now on hold. "It's a real political football," he added. The Surry plant has been using dry-cask storage since 1988.

Dry-cast storage is used in addition to wet storage at the Surry plant. According to plant manager M. R. Kansler, spent fuel from the reactors must stay in wet storage at least five years before it can be moved to dry storage. "Dry storage helps free up space in our wet storage area, so that we always have the capacity in our wet storage to fully refuel a reactor if we need to," he added.

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## SUMMARY

This report constitutes a presentation of material pertinent to the first phase of the Grant county MRS feasibility study. The ICIC does not offer its individual members' conclusions, but rather presents the material it has studied and received. Perhaps, the most valuable contribution this report makes is the presentations of documented findings and the contribution of the trip observations and interviews. The reader is urged to spend some time reading what the people say who live, farm, and do business around similar facilities. The committee has continually avoided giving opinions or conclusions. Committee members feel that they have maintained their goal of focusing attention and questions on issues rather than people.

If the county continues to do a Phase II study, it is expected that several more reports of this type will be generated. The committee is dedicated to providing balanced and supportable information for the citizens of Grant county.

## REFERENCES

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- Basic Radiation Protection Technology, 2nd Edition, State Health Department of North Dakota.
- 8.) Radiation, A Fact of Life, American Nuclear Society Publication.
- 9.) Biological Effects of Radiation from Dental Radiography, Vanderbilt University, School of Medicine.
- Basic Radiation Protection Technology, 2nd Edition by Daniel A. Gollnick, Copyright 1988 Pacific Radiation.

# APPENDIX

.

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Weinbergstresse 9 8001 Zurich, Switzerland 1-470844 Teles: 57275

January 7, 1992 CST/185/CD

Ms. Judi Kallis Chair, Citizens Study Group HCR1, Box 6A New Leipzig, ND 58562

Dear Ms. Kaliis:

This letter is in response to your request for a brief history of Nuclear Assurance Corporation (NAC) involvement in the MRS project in North Dakota. Up until the May/June, 1991 time frame, I was the only individual employed by NAC active in North Dakota. Following is a listing of contacts and activities in chronological order.

In 1982, Congress passed the Nuclear Waste Policy Act (NWPA) authorizing the Department of Energy (DOE) to dispose of the nation's nuclear waste. In 1987, Congress amended the NWPA to include the Office of the Nuclear Waste Negotiator (ONWN).

During the 1980's, NAC developed a dual-purpose (licensed for both storage and transportation) cask (DPC) design and concept for use in the Spanish nuclear fuel storage program.

Since 1987, the DOE program has made little progress because of political and institutional problems. In early 1990, Dr. John Bartlett was appointed to head up the DOE program, and Mr. David Leroy was appointed by the President to serve as the "Negotiator." Both Dr. Bartlett and Mr. Leroy took the view that if the DOE program were to have a chance to succeed, private companies would have to take the initiative in finding sites.

NAC had started discussions with COE about the advantages of DPC's to the federal program, especially for public acceptance reasons, reduced transportation requirements, and reduced fuel-handling sequences, which NAC felt would reduce the chance of accidents.

During 1990 and into early 1991, NAC met a number of times with the ONWN and DOE and was encouraged to seek a site for an MRS to develop a consensus that the DPC concept would be more acceptable to the public. Specific actions were as follows: Ms. Judi Kallis January 7, 1992 Page 2

Summer, 1990 - Rep. William Starke (brother of Carol Thorup), New Rockford - Routine discussions of North Dakota budget deficit and alternatives to increasing revenues.

Summer and fall, 1990 - Rep. and Mrs. William Starke - Ongoing discussions of Vision 2000 goals, North Dakota's declining population and economic woes.

Fall, 1990 - Initial telephone discussions with Economic Development Commission; some interest expressed in MRS project.

Fall, 1990 - Informal meeting with state officials and water conservancy groups in Washington, DC; interest expressed.

November, 1990 - Meetings in Bismarck with highly placed state officials; was told "not going to tell you not to proceed" and "discuss/work with Energy & Environmental Research Center" of the University of North Dakota.

January, 1991 - Informational meetings with Congressional delegation/ staff, DOE and ONWN in Washington, DC.

February, 1991 - Meetings in Bismarck with Governor's office, Senate and House leadership, State Health Officer and staff, Economic Development Commission, Chamber of Commerce, Legislators from both parties, Energy & Environmental Research Center of the University of North Dakota. Initial interest was expressed in the study. Meetings with Congressional delegation, DOE and ONWN in Washington, DC.

March, 1991 - Informational discussions with State Legislators in Bismarck, DOE and ONWN in Washington, DC.

April, 1991 - Meetings with Energy & Environmental Research Center of the University of North Dakota, State officials, business leaders, Governor's office in Bismarck, and DOE and ONWN in Washington, DC.

May, 1991 - Meetings in Washington, DC, with Rural Electrification Cooperative at national headquarters; support indicated. Further interaction with Congressional delegation, DOE and ONWN.

June, 1991 - Meetings with Energy & Environmental Research Center of the University of North Dakota, Legislative Council, Bismarck Tribune, Grand Forks Herald, Minot Daily News, Fargo Forum.

June 20, 1991 - Legislative Subcommittee on Waste Management -Presentations were made by Dr. Wenz. State Health Officer; Ron Milner, DOE (telecon); National Council of State Legislators (NCSL); Sierra Club; Dakota Resource Council; and NAC. The Health Department, DOE and the NCSL stated there did not appear to be any environmental reasons not to proceed with the

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Ms. Judi Kallis January 7, 1992 Page 3

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study. Subcommittee voted to recommend the Legislative Council proceed with the grant request by a vote of 15-6.

July 10, 1991 - The Legislative Council voted not to proceed with the grant request by a vote of 9-5. There were no hearings and no briefings given to the Council.

Mid-September, 1991 - Contact made by Rep. Ray Meyer with Harold Anderson of Anderson & Anderson, Bismarck, expressing interest in the MRS project.

October 14-16, 1991 - Town meetings held at the request of the Grant County Commissioners. NAC's first meeting with the Commissioners and NAC's only visit to Grant County.

November 18, 1991 - Grant request submitted by Commissioner Miller to DOE, accompanied by NAC.

Hope this brief history of NAC involvement will be useful to you.

Sincerely yours,

NUCLEAR ASSURANCE CORPORATION

Carol S. Horas

Carol S. Thorup Senior Vice President

CST:sm

OFFICE OF THE UNITED STATES NUCLEAR WASTE NEGOTIATOR



NEGOTIATOR

January 6, 1992

Judi Kallis Independent Citizen Committee H.C.R. #1, Box 6A New Leipzig, ND 58562

Dear Ms Kallis:

Thank you for your letter of December 30, 1991. We are pleased to have the opportunity to respond to the guestions presented on behalf of the Citizens Committee. Negotiator Leroy has consistently stated that there are simply no irrelevant questions or issues in examining the matter of temporarily storing spent nuclear fuel. Our process is one that relies upon the voluntary decision of the host, and seeks to provide credible information upon which the persons affected may exercise their own independent judgement.

The involvement of this Office with Grant County, North Dakota commenced in early November, 1991 in response to the request of Commissioner Ray Miller for information regarding the voluntary process and the availability of feasibility grants to provide resources to jurisdictions to independently assess their interest in exploring the temporary storage of spent nuclear fuel. In response to that inquiry information was personally provided by our Chief of Staff, including a brief discussion of the essential principles of the Negotiator process. These discussions largely focused on the importance of making objective decisions utilizing broad public participation and relying upon independent credible information deemed important by the parties affected. We also stressed that the application for a feasibility grant did not commit anyone to pursue the matter any further. Simply put, there is no penalty for saying no.

On that same occasion, a courtesy visit was made to the Governor's Office. As you are probably aware, the Governor is the only person who can enter into negotiations on behalf of the people of North Dakota. The Governor, as required to obtain feasibility grant funds, had by letter indicated that he did not oppose a preliminary study but also expressed concerns and reservations. A very brief and general discussion of the study was held in the lobby of the Governor's Office. The only matter specifically addressed on behalf of this Office was that the Governor's decision to allow a study of the issue did not in any way indicate any commitment to host a facility or to proceed any further.

P.O. BOX 777 . BOISE, IDAHO 83777 . 208/334-9876 . FAX 208/334-9880 LIAISON: 1823 JEFFERSON PLACE, N.W. . WASHINGTON, D.C. 20036 . 202/634-6244 . FAX 202/634-6251 Subsequent to that visit an application for Seasibility grant funds was made to the Department of Energy by the Grant County Commissioners. One additional visit to the Commissioners was made by the Chief of Staff and myself in December to provide assistance in developing a process for citizen involvement. In addition to those two contacts involving staff visits to North Dakote, we have also provided the resources of Mr. Jerry Scoville, who is employed as a consultant to the Office for the purpose of providing assistance in creating broad-based citizens participation groups. The degree of Mr. Scoville's participation rests solely upon the needs and desires of the group itself.

To date I am not aware of any involvement by the Department of Energy other than their statutory responsibility to serve as the administrator in processing grant applications and awarding funds. The Office of the Negotiator is not part of the DOE, and is an independent agency with the sole mission of seeking a truly voluntary host.

In response to your question regarding Boyd County, Nebraska, this Office has never had any contact with any official or citizen from that area. In response to phone calls made to obtain an answer to your question, we have learned that Boyd County is the site of a low-level repository as part of the Central Interstate Compact. This is a completely different siting issue which involves a different aspect of waste disposal, and is not in any way associated with the Office of the Negotiator.

I hope this information fully answers your questions. If you have additional or follow-up questions please let us know. We would also be pleased to receive any other inquiries that you may have, and we will do our best to quickly provide accurate information.

Sincerely,

19. . D Handin

Brad Hoaglun Assistant to the Negotiator

# County Commissioners Vote Unanimously for Feasibility Study

#### by Sandi Ketterling

Despite strong apposition as to how the Monitored Retrieva-1.4. Stmage Incility international meetings were held at Carson, New Leipzig and Elgin, the Commissioners voted manimously at a meeting held at the Grant County Courthouse at 7.00 a.m. Tuesday, October 22, 100), to approve the nuclear torage site fensibility study Miller commented that this was not case on the Commissioners. test the people clerted them and post their trust into them. He aid over and over. "We are losing people in the county. This is such a travitulity study, that s all After the study the Grant Coun-" people can vote." Representthe Ray Meyer said at the Elsin meeting that the hinge henehts of an MHS would have an mamous commic impact, not sulv in Grant County, but in the · bole surrounding mes

Many intelligent questions true pre-could to the pearl of and an A manue Corporation opprovations, respects in the soulem field at all three fown sectings; and much cathering in heard as to how the count of here for and against the "study" as handled Sam Hanson of yes, Leipzig said be felt the peade wrate bring railroaded beau a there was a petition of inquorters and not a publication for have also opposed the study te encouraged a vote. Bach ivne of funal Elgin felt that if a time was taken to go up and as a the street and in the collermises with the publicat, they a mild mixer Bi allock the demor complant the county to get minims and signatures on both des - Gary Meyer, must Elgin anna, said, "There is some ing missing from the pir," and It that we should dig a little \* per rather than take the word the good valesmen (the NRA) the group

The full house meeting at Eln however, resulted in an ap-'mse when Gary Hertz of Carn-speize. He said, "Don't sham e down in their faces because every lots of time to say "no", e said we should commond the must should commond the must should commond the must should commond the showing the comage to move ward.

Early Tuesday maining, the ommissioners met is the Cara Courthouse to make their lid decision on the feasibility



Commissioners Marley Sprecher and Ray Miller visit with Floyd Rochl during the New Leipzig public meeting on the Nuclear Storage facility in Grant County.

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AFIV JUSARAS' Commissioners me with Courthburg to b NE Plechine ANTH Albay Marin Terrette Who were offic ers Hreseni, Tati Mong Halbhar 16m stan still and tild mot listemethe , brick the pros and conserves igen Lind Eislan Debold the by the beams. He BOL e Vole this de Kellerling over and Hiust Have heard the boths on this, "" Ray N that "Lots ABT -tHHERP chance in be politicians and not Patalermen," and its enimers and

Marren Arman Gran Gounts inmiorner and Hismarch basis characterization of the public characterization of the public this still cist important to milcounts. Unit Lies and have a white still cist important to milcounts. Unit Lies and the still counts of the counts it things are white still cist in white a wide of the the Counts it things are its public the counts it things are its public of the still be still be the Counts it this we are the still be still be of the the counts it the still of the the counts it is and that the still be the still be still be of the the still be still be of the the still be still be of the the still be the felt if the the still be the counts. After have be not the counts which the still of the counts is the still be the still of the still in the still be the still be of the still be still be the felt if the the still of the still in the still be the still be of the still be the still of the still is the still be the still of the still is the still be the still of the still is the still be the still of the still is the still be the still of the still is the still the still be the still be the still is the still the still be the still be the still is the still the still be the still be the still be the still is the still be the stil

# Commissioners Adopt Resolution for Study

(The following is the New Re-) lease and the Resolution piresented for publication by the Grant County Commissioners at the meeting held on Tuesday morning concerning the nuclear feasibility study.)

The U.S Department of Energy (DOE) is seeking a volunteer site to host an above-ground monitored retrievable storage (MRS) facility to store spent nuclear fuel. The Grant County Commissioners have passed a resolution to apply for a federal grant to study the technical feasibility and the environmental and economic impact of placing an MRS site in Grant County.

Application for the study grant does not obligate the County to agree to host the MRS site <u>Final determination regard</u>ing an <u>MRS site would involve</u> contractual <u>negotiations</u> and legislative action at both the state and federal level

The DOE has the responsibility tor disposing of the spent imclear tool, and the disposal progcam is being totally funded by the US nuclear utilities. The MRS site being considered by the Commissioners would be an integral part of the Federal Waste Minagement System and can best be described as a marshalling area for spent fuel. A MRS site will utilize approximately a pection of land and has a planned life span of over 40 years.

The DOE plans to have an MRS site operational within the U.S. by 1998. A permanent geologic repsoitory is being evaluated at Yucca Moinitain. Nevada, and is scheduled to begin accepting fuel in 2010.

By applying for the study grant, Grant County would begin a thorough study of the issues concerning hosting a MRS site. The grant money would be available to hire experts to evaluate the safety and feasibility of the MIRS site and for the dissemination of information to the public, public officials and the legislature. If the study indicates that ' it would be feasible to volunteer to host an MRS, the grant money could also be used to define the terms and conditions under which the County and the State would accept such a facility and to determine a local and statewich her office mackage

Completing the study is only the first step in the process. After the study is complete the County Commissioners could determine that a MRS site would not be in the best interest of the County and they could decide not to proceed to the next step.

If, however, they believed to be in the best interests of the County a vote would be held in Grant County to see if the residents approve proceeding with the project. The issues will be examined at the state government level because the North Dakom Century Code requires a vote by the Legislature before a nuclear waste site can be established. It is expected that other legislation would be needed to implement regulations and safeguards on a state-wide basis.

Furthermore, if the County decided to apply to host a MRS site, the County Commissioners and the Governor would negotiate with the Federal Government to define the terms and conditions of the heating contract and the hosting contract would need the approval of the United States Congress.

It is estimated by the DCE that it will take two to three years to construct a MRS site. This would provide approximately 250-5(\*) construction jobs. It is also estimated that 150-300 permanent employees would be hired to operate the MRS site and 225.450 indirect jobs would be cenerated. Besides increased employment, there will be approximately \$450,000,000 in cash payments available to the local and state governments over the operating hie of the MIRS These payments will be made from a fund administered by the DOE and funded by the nuclear power facilities. At least one-third of t' se monies will go to the County.

Congress has determined that there will be an additional benefit package negotiated for the host site tincluding local and state governments). The benefit package will be custom-designed to meet the requirements of the local community and the state. Possible benefits could include funding for increased educational & health programs, improved transportation system & other infrastructure; expanded community services; co-location of other federal projects; & local employment or products purchasing agreements.

Public meetings, arranged by Representative Ray Meyer, were held in Carson, New Leipzig and Elgin to present to the residents information to hell, them understand the purpose of the proposed study. Attendees were provided with an opportunity to ask questions regarding all asports of a MRS site, and representatives of the county and of

the nuclear industry were on hand to answer the technical questions raised. The meetings were well attended by interested residents.

#### Resolution

WHEREAS, Grant County has suffered four years of drought and low grain prices which has severely depressed the economy of the County; and

WHEREAS, Grant County has lost more than 20% of its population in the last ten years; and

WHEREAS, Grant County needs to seek ways to broaden and strengthen its economy by providing more local jobs; and

providing more local jobs; and WHEREAS, Grant County residents have had presented to them information about 6 potential economic development projcct where the County would study the question of whether or not the County should consider offering to become a site for 8 Monitored Retrievable Storage (MRS) Facility for nuclear spent fuel rods, and

WHEREAS, the Grant County Commissioners are not aware of any other economic development project of this size and magnitude available or under consideration that would be of benefit to the County, and

WHEREAS, if requested to do so by a local unit of state government such as Grant County, the U.S. Department of Energy may fund a feasibility study for its an MRS project without any local tax money having to be used for such study and the application for and acceptance of such

study funds in no way comm to the County to accept an MIRS In the cility in the future: and

WHEREAS, after the study is completed, if the County Commissioners determine that the benefits butweigh the adverse effects, the question of whether or not the County should proreed further would have to be made after a vote of the Grant County voters; and

WHEREAS, after meeting with individuals in Grant County and after public meetings in Carson, New Leipzig and Elgin, the county Commissioners are satisfied that a substantial number of the residents support Grant County seeking funds to study the issues involved; and

WHEREAS, the Commissioners are equally personded that there is a well intentioned group of residents of the County that are either apposed to a study or have not made up their minds about it and those views and concerns would have to be addressed in any study; and

WHEREAS, in the interests of proceeding in an open manner and to give fair representation to the diverse interests and views of all residents of the County, it is the intention of the Commissioners that an impartial committee of residents shall be formed to keep the public informed, study the issues and to offer advice to the Commissioners; and

WHEREAS, it is the express intention of the County Commissioners that any study should employ Grant County and/or North Dakota residents and companies to perform the study. if persons and companies with sufficient knowledge and training are available to do so; and

WHEREAS, it is the intention of the County Commissioners that public meetings of the residents of Grant county will be held during the study period (1) to seek input from all residents as to their concerns and issues that should be a part of the study, (2) to keep the residents informed of the progress of the study from time to time and (3). to inform the public of the results of the study so that residents are aware of the results; and

WHEREAS, the County Commissioners are advised that there are only a lunited number of study grants that will be awarded by the Department of Energy, and, therefore, our early application for the study grant is

very important to the interests of

Grant County; WHEREAS, the vesults of a study may be useful to Grant County for attracting other economic development projects, whether or not Grant County ultimately decides to volunteer for an MRS site after the ""dy it completed; and

NOW, THEREFORE, BE IT RESOLVED, by the Grant County Commissioners that the proper and necessary county officers are hereby authorized to submit in proper form an application for a study grant to the U.S. Department of Energy for its consideration, and

BE IT FURTHER RE-SOLVED, that in the event the U.S. Department of Energy consents to fund the project, the Grant County Commissioners hereby agree to forthwith expedite the study procedures necesstry to comply with the purpose of the grant funding.

Introduced by Commissioner Marley Sprecher, seconded by Commissioner L'oyd Ulmer, and passed unanimously this 22nd day of October, 1991.

Those voting in favor were Commissioners Ray Miller, Marley Sprecher and Lloyr Ulmer.

Attest: Ervin Scheiz, Auditor Approved: Ray Miller Chairman of the Board



State of North Dakota

OFFICE OF THE GOVERNOR 600 E BOULEVARD - GROUND FLOOR BISMARCK, NORTH DAKOTA 58505 0001 (701) 224 2200

GEORGE & SINNER GOVERNOR

October 16, 1991

Mr. Ray Hiller Chairman Grant County Commissioners Box 227 Carson, North Dakota 58529

Dear Ray,

I apologize for not getting this letter out to you yesterday. Carol Siegert wanted as in get it done and l intended to, but I got swamped and didn't.

The simple study on nuclear spent fuel storage is not a , "blem. Just be sure there aren't any misunderstandings along the way.

First of all, it needs to be clearly understood that there are no "temporary" storage sites in place. Everything I know of in this area of waste handling has become permanent. There is no one I know who has found any real hope of having "temporary sites" cleaned up and ended. The French, I am told, have found some system for recycling some of this fuel, but the costs are so exorbitant that there is no foreseeable hope of implementing it. The reference to "temporary sites" needs to be understood with a "permanent" interpretation.

Secondly, you need to be clear that you have checked the law as it deals with district waste management authority. Your district will have to approve any waste site before it could ever go into place, and you must be sure to involve all of the people in the district. through their representatives, in this process. It is something that has to be clearly dealt with for the long term as well as the near term.

The third point I would make to you is that I fear the predictions, by a lot of knowledgcable people, of a nuclear plant related disaster in Bulgaria is a very warranted fear. A lot of people are literally holding their breath over this because if it happens it will set back the whole nuclear industry for a long time. Even though there is more interest in the nuclear industry and they have lobbied against some of the advancement of the clean coal industry, there is this heavy, dark shadow still residing over the nuclear industry.

A-4-1

Mr. Ray Miller October 16, 1991 Page two

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Fourth, and finally, 1 know there is some economic development and jobs that go with this whole proposal, but you must bear in mind that we are essentially a coal and gas and oil energy producing state. It certainly is not up to the state of North Dakota to facilitate a competitive industry in terms of any kind of financial support or encouragement. Also, the overall nature of waste management will force the state to pay attention to the long term health and welfare of it's people. That is, in fact, the mission of the new structure of district waste management boards. So be sure there is clear understanding of all these issues before you proceed with your study.

Again, I apologize for not getting this letter to you yesterday. I just didn't get to it and it wasn't Carol's fault, it was mine.

Insin.

Sincerely Georga Sinnie

George A. Sinner Governor

GAS:dms



## State of North Dakota

OFFICE OF THE GOVERNOR 600 L BOULEVARD - GROUND FLOT 4 BISMARCK, NORTH DAKOTA 585 5 0001 (701) 224 2200

GEORGE & SINNER GOVERNOR

December 19, 1991

Ray Miller, Chair Grant County Commissioners P.O. Box 227 Carson, North Dakota 58529

Dear Ray.

I am writing to support county commissioners who showed the openness and courage to proceed with a difficult issue and undertake a study of the nuclear waste site.

As I pointed out in my original letter, there are lots of problems, not the least of which is the entire federal policy question which I am deeply immersed in, and which I am in disagreement with.

Governor Sullivan of Wyoming has recently authorized a similar study with recognition of all the problems I have addressed here. He feels, as I feel, that study, knowledge, and open discussion of the issues will help us all.

The counties need people who are willing to investigate new things to strengthen our economy.

Certainly the county commissioners in Grant County deserve support for their efforts to move in this regard.

Sincgrely,

Dearge a. Sum

George A. Sinner Governor

GAS: CMS: wmh

Judi Kallis HCR #1, Box 6A New Leipzig, ND 58562 (701) 584-3149

December 4, 1991

Ray Miller Chairman Grant County Commissioners Courthouse Carson, ND 58529

Dear Mr. Miller:

I am writing this letter because of concerns that I have about the issue of studying whether or not Grant County should volunteer to host an MRS facility.

Initially, I was skeptical about this whole project when I first heard of it. In addition to that I have serious reservations about the manner in which the project was presented to the public in the hearing phase that you had before you passed your resolution. I do recognize that perhaps you were not aware that your manner of approaching the public information aspect of this program would cause such divisiveness in the County as is now apparent. However, it has become such a divisive issue that I am greatly concerned and want to do whatever I can to try to become a bridge between the opposing viewpoints in Grant County.

All of that being said, and in view of one of the statements in your resolution that you wish to have an independent citizens committee review this whole program and make recommendations, I would like to offer to you that I would be willing to serve on that committee. I would point out to you that at this time I am not committed to the viewpoint that Grant County should have a MRS site in the County. By the same token I recognize that there is going to be a study and that an independent citizens group participating in the study would be helpful to bring the message to the citizens of Grant County in an unbiased and neutral informational process.

Therefore, I am offering to become a member of that committee and would hope that I would be considered for it. I would also offer, at this time, if it is your desire, to organize and head the effort to establish the committee.

A-6-1

Ray Miller December 4, 1991 Page 2

If accepted, I would want the authority to designate the members of that committee with input from the County Commission and from the opposition. My intention, if possible, would be to appoint a committee that would represent all viewpoints in the County and have the freedom to determine the direction and scope of the committee's investigation. It should not in any manner be tilted one way or the other for or against the siting of the facility, but to truly study the matter to see what is in the best interest of the citizens of Grant County.

If those thoughts meet with your approval and you wish me to participate either as a member or as chairperson of the committee I would appreciate hearing from you in this regard.

Sincerely, alli Judi Kallis

# GRANT COUNTY

CARSON, NORTH DAKOTA 58529 Box 227 PHONE: (701) 622-3275

COMMISSIONERS Lloyd Ulmer First District Elgin, ND

Ray Miller Second District Flasher, ND Marley Sprecher Third District New Leipzig, ND

Ervin H Schatz County Auditor Ruth Paulson Director of Tax Equalization Darwin Roth County Sheriff Andy Klein Register of Deeds Roger Ruscheinsky County Treasurer Phyllis A Ratcliffe States Attorney



Devid Sokolofsky County Service Officer Karen Witkowski Supt of Schools Clarence Werner Road Sup Grani County News Official Newspaper Karlyle Erickson County Agent Vanessa Tronson Home Economist

December 9, 1991

Judi Kallis HCR #1, Box 6A New Leipzig, ND 58562

Dear Ms. Kallis:

I am in receipt of your letter of December 4, 1991, wherein you write to us about your willingness to serve on the citizens study committee and perhaps help form the committee and perhaps become the chair of that committee.

We commissioners thank you for your interest in helping the people of Grant County to better understand the proposal that we now have under study. We too share your concern about the result of this study becoming such a divisive issue among the people of Grant County. It makes us sad to see this issue being turned into such a deep felt issue that it turns neighbor aginst neighbor and friend against friend. We hope that at the end of the study period many of these deep feelings can be softened. We are convinced that an independent study group such as you have outlined in your letter to us is an important vehicle in accomplishing that result.

Your volunteering to help set up this committee is most welcome by the other two commissioners and myself. The farther we have gone in this matter we realize that whatever we did in trying to establish a committee through our efforts would be looked upon with suspicion by the opponents. Your volunteering, as an uncommitted person in Grant County regarding the proposal, certainly should tispel any thoughts that we commissioners or our consultants are in any way intending to organize or manipulate the independent study group. We welcome your efforts in that regard.
Judi Kallis December 9, 1991 Page 2

For the record we want to advise you that the Grant County Commissioners accept your offer to not only become a member of the committee but to organize and head the effort to establish the committee and wish you well in doing so.

We accept your terms that the study committee would have the freedom to determine the direction and scope of your committee's investigation. We too share your concern and hope that the committee would not be tilted one way or the other for or against the siting of the facility but would be interested in making sure that the study that is now ongoing would be done to determine what is in the best interest of the citizens of Grant County. We pledge to you that we will not in any manner attempt to direct or influence your committee in your study expectations or in the direction that your committee would feel your efforts should take. We simply want you and your committee to be an autonomous group that is answerable to no one except to the people of Grant County to do what is in the best interest of Grant County, which is all that we commissioners ever wanted.

Again, I wish to acknowledge to you that the county commission welcome your willingness to organize and head up a committee of interested citizens, we pledge to you that we will support you in any way that we can and we also pledge that we will honor your wish that the committee be totally independent from any control or direction by ourselves as the county commissioners.

Thank you for your interest.

Sincerely, Say Miller

Ray Miller Chairman



## State of North Dakota

DEFICE OF THE GOVERNOR 600 E Bouleverd Ground Floor BISMARCK, NORTH DAKOTA 58505-0001 (701) 224-2200

GEORGE & SINNER GOVERNOR

January 17, 1992

Judi Kallis HCR ∉1, Box 6A New Leipzig, North Dakota 58562

Dear Judi,

Thank you for your letter and information regarding the Independent Citizens Investigation Committee and the proposed MRS site.

It is my understanding that Grant County Commissioners applied for a grant to study the feasibility of a storage site in North Dakota and that there are several measures that must be cleared, including North Dakota Legislative approval, before final consideration for the nuclear waste site can be given. As I pointed out in my previous letters, there are lots of problems, including the federal policy, which need to be dealt with.

I am sending you copies of letters I sent to Ray Miller, Chair of the Grant County Commissioners, giving my thoughts on the feasibility study, "temporary" storage sites and federal policy. If you have any questions, please contact Carol Siegert, Administrative Assistant, in my office.

Thank you.

Sincer Deary a Serin

George A. Siche Governor

GAS: CMS: wmh

Enclosures

OUENTIN N. BURDICK

11 HART SENALE OFFICE BUILDING PHONE 202-224-2551

## United States Senate

WASHINGTON, DC 20510-3401

COMMITTEE ASSIGNMENTS APPROPRIATIONS ENVIRONMENT AND PUBLIC WORKS SPECIAL COMMITTEE ON AGING SELECT COMMITTEE ON INDIAN AFFAIRS SENATE RURAL HEALTH CAUCUS

January 16, 1992

Ms. Judi Kallis Chairperson HCR 1, Box 6A New Leipzig, North Dakota 58562

Dear Ms. Kallis:

Thank you for your recent letter regarding the establishment of the Independent Citizens Investigation Committee.

I would be happy to assist your group's efforts in any way I can. You should direct any inquiries to my office to either Dan Berkovitz at (202-224-4039) or Bruce McKay (202-224-2551).

Again, I appreciate hearing from you. Please let my know whenever I can be of assistance.

With warm regards, I am

Sincerely,

Quentin N. Burdick

QNB:bmv

KENT CONRAD NORTH DAKOTA 202-224-2043

## Anited States Senate

WASHINGTON. DC 20510-3403

COMMETTERS ADARCULTURE INCIDENTION AND FORESTRY BREDOT AND NATURAL BESOURCY BUDGET BELECT COMMETTER OF ROLAN AFFARS

January 17, 1992

Judy Kallis Hcr 1 Box 6A New Leipzig, ND 58562

Dear Judy:

Thank you for taking the time to let me know of your appointment as Chairperson of the Independent Citizen Investigation Committee in Grant County.

I am following the events concerning the Monitored Retrievable Storage site in Grant County closely, and am glad to know of your efforts to educate the public on this matter. Informing the people of Grant County is essential and will make the MRS debate all the more effective. Please feel free to contact me or Liz Magill of my staff here in Ashington at (202) 224-2043 with any questions or information that you may have.

Again, thank you for your letter. I look forward to working with you.

Sincerely

KENT CONRAD United States Senator

KC:wcrm

BYRON L DORGAN

203 CANNON BUR, DHO WARHINGTON, DC 208 18-3401 \$203 228-2411

WATE AND MEARS COMMITTER

BURCOMMITTEES BELECT REVENUE MEASURES TRADE

SELECT COMMITTEE DH HURIGER

## Congress of the United States Nouse of Representatives Washington, DC 20515-3401

84278027 0494023 818 940694, 204,0000 716800 446 905 901 44240,0 9.0,002 810 9 89534,4024, 80 88502 (701) 280-4618

> 112 ROBENTS STREET 7.0 BOX 1861 BARGO. ND 56107 (701) 235-6388

January 13, 1992

Judi Kallis HCR≢1, Box 6A New Leipzig, North Dakota 58562

Dear Judi:

Thank you for your letter about the citizens committee in Grant County. I appreciate your interest in providing accurate information about public policies.

I am presently reorganizing my staff assignments for the next year. However, you or others may contact me directly or my legislative director, Douglas Norell, if you wish either to obtain information or to convey the views of local citizens. Please let me know if I may help in any way.

Since-bly, Byron L. Dorgan Member of Congress

lung

BLD:dn

PAPER MADE OF RECYCLED FIBERS

OFFICE OF THE UNITED STATES NUCLEAR WASTE NEGOTIATOR



October 7, 1991

Hon. Jane Doe State of Lincoln Abraham, Lincoln 01865

Dear Governor (Tribal Leader):

I invite your expression of interest in one of the most innovative and visionary federal initiatives ever created: to determine whether States and Indian tribes are willing to explore a voluntary and agreed solution to a tough issue which affects all of us now and well into the future. This letter follows up my earlier correspondence to you dated May 3, 1991, in which I introduced this Office and its mission to find a voluntary host for a temporary or permanent nuclear waste management facility. Whether you have any potential interest in hosting a facility, your State (Indian tribe) is directly and indirectly affected by this initiative and its resolution. Whether or not you elect to pursue the opportunities as a host, by participating, you will be better informed, and may have participated solely because it was the right thing to do.

As a former Lt. Governor and Attorney General of my home State of Idaho, I clearly understand the compelling urgency of resolving controversial environmental issues confronting our nation. I also share a deep and abiding belief that these issues can best be addressed by an open, honest, and credible dialogue that recognizes our mutual concerns and interests. The opportunities presented by this initiative represent the federal government's genuine commitment to seek a truly voluntary host.

The documents enclosed explain the need, challenge, procedure, and the opportunity for the voluntary siting of permanent and temporary facilities for spent nuclear fuel in the United States. This spent fuel is safely stored in thirty-three States today. Yet this very dispersal emphasizes the reasc. to move toward an integrated waste management system with a Monitored Retrievable Storage facility (MRS) for temporary flexibility and a repository for permanent dispusal.

To enable you and your staff to properly and independently evaluate this process and learn more about the issue and how it affects your jurisdiction, federal feasibility grants are available now for the broadest possible purposes. Whether you choose to hire experts answerable only to you, wish to visit existing facilities employing various technologies, or seek to survey the specific needs and concerns of your constituents, you can decide how best to evaluate the issues and opportunities. Applications for the federal feasibility grants will not be interpreted as an indication that a State or Indian tribe is a candidate for a site.

P.O. BOX 777 . BOISE, IDAHO 83777 . 208/334-9876 . FAX 208/334-9880 LIAISON 1823 JEFFERSON PLACE, N.W. . WASHINGTON, D.C. 20036 . 202/634-6244 . FAX 202/634-6251 I am seeking a responsible and open dialogue with every State and every Indian tribe. Within that discussion, I am not seeking any preliminary commitment that you are willing to accept waste. Rather, I ask only for an informal exchange of information that enables all of us to fully explore this important initiative and the opportunities it presents. I will always recognize that any such dialogue, once commenced, is immediately terminable by the State or Indian tribe for any reason.

This is the way America should do business with States and Indian tribes. The question has now become whether States and Indian tribes are willing to participate. Your review of the enclosed materials will give you background to understand just how this opportunity can benefit you and your people.

To give this process the best possibility for success, I need to hear from you. I need your vocal support of this methodology, your expression of willingness to continue to receive information, and most of all, your commitment to evaluate your own jurisdiction's participation in this initiative.

As a former State official knowing what I know tor , and applying my experience similar to yours, I would seek to open a dialogue with you to enhance understanding and permit evaluation of this opportunity for developing a new and innovative relationship with the federal government.

This truly voluntary process can work. It can work for our States, our Indian tribes and our nation. Most importantly, it can work to protect our health, environment and future. It cannot, however, work without your help.

I look forward to your thoughtful and considered response.

Very truly yours,

DAVID H. LEROY U. S. Nuclear Waste Negotiator

Enclosures

## WHAT IS THE OFFICE OF THE NEGOTIATOR?

The Office of the Nuclear Waste Negotiator, created by the 1987 Amendments of the 1982 Nuclear Waste Policy Ant, is an independent and autonomous federal entity. The Office is not affiliated with the Department of Energy or any other federal agency or department. The Nuclear Waste Negotiator serves at the pleasure of the President and is answerable to Congress.

The exclusive and unique mission of the Negotiator is to seek a dialogue with the Governor of every State and the leaders of all federally recognized Indian tribes to explore upon what terms and conductor of all federally recognized Indian tribes to the permanent or test portry trouge of high-level nuclear taste. This initiative represents the effort of the nederal povernment to seek volume) rearticipation in problem solving by providing resources to State1 and tribes so are may determine for themselves the featibility and compatibility of assisting the federal povernment in facility siting.

In order to credibly empower all station. Indian tapes and the public to openly discuss and independently evaluate the prospects for their own countary parts mation in controversial und environmentally sensing rations the Negot for is strongly committed to be fullowing principles.

- · The process bust and will be truly store
- Requests for holomative and preliminants dialogues will not the viewed as a commitment to proceed any further
- . Any dialogue is terminable pube will of the prospective bos
- States and Indian tribes will be provided with resources to obtain independent and credible information upon which they may make their own decisions;
- All discussions should begin with the shoughtful evaluation of issues concerning health, safety, and the protection of our environment;
- Choices of technology and participation in oversight controls should be utilized to assure compliancy with safety and operating standards;
- There are no irrelevant issues;
- A prospective host is entitled to achieve an equity for helping to solve a national problem. The nature and means of achieving that equity should represent the individual needs, concerns and desires of the host;
- The process should encourage broad public participation, and seek and credibly consider the views of all affected stakeholders;
- This process can work only with participation.

## THE PROCESS

The Negotiator is authorized to negotiate with the Governor or tribal leader of the interested potential host jurisdictions to determine the terms and conditions under which they would agree to host either a Monitored Retrievable Storage facility or a repository. The negotiation is to result in a written agreement that will be submitted to Congress and enacted into law before it becomes effective. The only test in the law which the overall agreement must meet is that it be deemed "reasonable" by Congress and the President. Any negotiation will involve only willing participants, will be terminable at the request of the prospective host, and will arrive at terms and conditions that ensure long-lasting cooperation. A negotiated site must be "hechnically qualified." The negotiation will be defined the process that must be able to accommodate the needs and could be diverse interests.

- Beginning in early October, 1991, after the issuance of the impal request for expressions of interest to States and Impan tribes, the Negenator will continue to receive various requests for further information or indication, of willingness to open dialogue;
- Preliminary tark should define the level of interest the process of will meet the special needs and concertis of the host; and the method of evaluation to be employed;
- Interested states or include these, but a tail hinded feasibility assessments or other information, may decide to enurse of separation, some the suggitator to develop a mutually acceptable while a new ment torone construction and operation of a formation including financial and instruments will contain terms and conditions (including financial and instrumental arrangements) that the Negotiator and the mential host determine to be trasonable and appropriate:
- The potential host is encouraged to prepare for negotiation by the use of representative public participation and informational programs;
- As negotiations commence, the preparation of an environmental assessment will begin and public hearings to address issues that need to be analyzed in the environmental assessment will be held;
- The Negotiator will consult with Federal agencies concerning the technical suitability of any site under negotiation;
- As the Negotiator and the interested State or Indian inbe complete a negotiated agreement, the environmental assessment will also be completed;
- The Negotiator will formally submit the negotiated agreement and the environmental assessment to Congress;
- The agreement will become effective when acted upon by Congress and signed by the President into law.

Nebraska Office US Ecology, Inc. 1033 "O" Street, Suite 416 Lincoln, Nebraska 58506 402 476-8049 Main Office US Ecology, Inc 8200 Shekuyville Road, Suite 300 P.O. Box 7246 Louisville, Kentucky 40207 502 425-7160

December 9, 1991



en American Ecology company

Ms. Judy Kallis H.C.R. #1 Box 6A New Leipzig, ND 58562

Dear Ms. Kallis:

This letter is in response to a request you made to Rich Paton for information regarding local support for the Central Interstate Low-Level Radioactive Waste Disposal Project to be constructed 2.5 miles west of Butte, Nebraska.

The community of Butte has had a resolution of support for the project on file since 1988. The County Board Supervisors who represent the Butte area also support the project. I am enclosing a copy of Butte's resolution of support.

Because the Butte voting precinct boundaries are quite similar to the project's 10 kilometer study area radius, the 1990 general election provided additional evidence of the sentiment of the registered voters who live in Butte and on nearby farms. More than ten statewide and local elections involved candidates with strong public views regarding the project. In Butte precinct, every candidate viewed as opposing the project lost by a wide margin. I am enclosing a copy of the precinct results.

Site neighbors who support the project are seldom vocal about their position. They have found that expressing their views has resulted in harassment. Their families have been threatened, and in some cases rocks have been thrown at them. According to one Butte resident, emotions are so high that a county supervisor opposed to the project paraded at a public meeting with "whipping stick" in his back pocket and erected a mock hanging noose in the back of the room. I am enclosing recent letters to the editor from the Mayor of Butte and his constituents that further explain the pressure being placed on people who live in the host community.

There are two primary arguments used by opponents of this project. The first is to assert that a local (county) vote on the project was promised by Nebraska Governor Orr. At no time did Governor Orr ever suggest that a local vote was advisable. Further, in 1988 Nebraska voters rejected a statewide initiative that called for a local vote. The initiative failed in Boyd County as well.

The second argument used is that US Ecology vice-president Rich Paton assured the Boyd County Board of Supervisors that they could withdraw their support at any time. Mr. Paton did agree that government entities were free to withdraw support, but that given the constraints placed on the company by contract, which were intended to see that the facility became operational in time to meet federal milestones, US Ecology would not necessarily be in a position to cease siting efforts.

A - 13 - 1

Kallis Page Two

The Boyd County Board of Supervisors was on record in support of the project throughout the county screening phase. After US Ecology had signed an option to purchase the Butte site, the company was notified that the board's position had changed. By that time, however, the emphasis on support had shifted from the county level to the affected communities - those closest to the three candidate sites. As I mentioned earler, Butte has been on record in support of the project since 1988, and the County Supervisors who represent the Butte area continue to support the project.

As US Ecology has become better acquainted with the history of Boyd County, we have discovered that much of the controversy regarding this project has very little to do with issues of public health and safety. For reasons that are not clear, animosity has existed for decades between the people who live and shop in the communities of Butte and Lynch and those who live and shop in Spencer and Naper.

The project brings with it substantial benefits, specifically a Community Improvements Cash Fund that distributes \$300 thousand annually until the facility becomes operational and \$2 million annually thereafter. Because distribution of these benefits favors incorporated communities and school districts nearest the site, Butte and its school district will receive the greatest benefit. Because of this, benefits from this project have served to inflame old rivalries between the leaders of these communities. This is evident in the fact that support and opposition to the Central Interstate Project follows the same lines drawn in past county controversies.

I hope this information proves helpful to you.

Sincerely, US Ecology, Inc. Nebraska Office

for mal

James W. Neal Director, Public Assistance

Enclosures

pc: David Leroy

### Independent M.R.S. Feasibility Study Information

### What will the Grant Application Funds be used for?

Major use of the grant funds are:

- Familiarize County Commissioners with the MRS Issues.
  Inform the public about the MRS Program and Issues.
  - 3. Develop the applicaton for Phase II funding of the study.

The budget allocation for Phase 1 of the study is \$99,968.00. Task 1. \$2,748.00

Preparation of an information brochure by NAC, to explain the scope of the study, and Commissioners position as to "Why" the Study was undertaken This brochure should be made available to the public within the next week or two.

Task 2. \$12,000.00

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Independent Study Committee. To pay for the costs incurred by this committee to investigate, research, and report to Grant County Citizens, via local newspaper and possibly meetings, on questions concerning the MRS Issue.

\$6.000.00

Universities. To prepare proposals showing the scope and type: of services they may provide to do parts of Phase II of the study.

\$8,726.00

Travel expense for personnel to come to Grant County to present necessary information under Phase 1.

\$17,436 00

To NAC to provide training meetings, provide information to private individuals requesting information with answers to their questions, and to coordinate work with the DOE and the Grant County Commissioners.

\$10,808.00

Grant County for miscellaneous expenses incurre. from Phase I of the study.

Task 3. \$2,300.00

Grant County Information Office. To pay for salaries. NAC does the paper work for the application along with cost estimates for the project.

Task 4. \$30,900.00

To NAC to prepare Phase II epplication of the Study. NAC does the paper work for the application, along with cost estimates for the project.

Task 5. \$9,000.00

To Grant County for legal expenses associated with the Study.

If you have any information in regard to this question, or any other question about the MRS study, or you would like to review any publications, feel free to contact any of the members of the I C.I.C. (Judy Kallis, Lyle Zimmerman, Lloyd Klein, Virgil Stern, Jacqueline Seibel, Marcie Baesler or Mark Stelter.

### Independent Citizens Investigation Committee

If you have any information in regard to this question, or any other question about the MRS study, or you would like to review any publications, please feel free to contact any of the members of the I.C.I.C. (Judy Kallis, Lyle Zimmerman, Lloyd Klein, Virgil Stern, Jacqueline Seibel, Marcie Baesler or Mark Stelter).

One of the questions the Independent Citizens Investigation Committee has been asked is, "What role has the Nuclear Assurance Corporation had in bringing the MRS project to North Dakota." The following is information presented to I.C.I.C. by N.A.C.

in early 1990, Dr. John Bartlett was appointed to head up the DOE program, and Mr. David Leroy was appointed by the President to serve as the "Negotiator". Both Dr. Bartlett and Mr. Leroy took the view that if the DOE program were to have a chance to succeed, private companies would have to take the initiative in finding sites.

N.A C.'s specific actions were as follows:

Summer, 1990 - Rep. William Starke (brother of Carol Thorup), New Rockford - Routine discussion of North Dakota budget deficit and alternatives to increasing revenues.

Fall, 1990 - Initial telephone discussions with Economic Development Commission; some interest expressed in MRS project.

Fall, 1990 - Informal meeting with State officials and water conservancy groups in Washington, DC; interest expressed.

November, 1990 - Meetings in Bismarck with highly placed state officials; was told "not going to tell you not to proceed" and "discuss/work with Energy and Environmental Research Center" of the University of North Dakota.

January, 1991 - Informational meetings with Congressional delegation/staff, DOE and ONWM in Washington, DC.

February, 1991 - Meetings in Bismarck with Governor's office, Senate and House leadership. State Health Officer and staff. Economic Development Commission, Chamber of Commerce, Legislators for both parties, Energy and Environmental Research Center of the University of North Dakota Initial interest was expressed in the study Meetings with Congressional delegation, DOE and ONWM in Washington, DC.

March, 1991 - Informational discussions with State Legislators in Bismarck, DOE and ONWM in Washington, DC.

April, 1991 - Meetings with Energy and Environmental Research Center of UND, State officials, business leaders, Governor's office, in Bismarck, DOE and ONWM in Washington, DC.

May, 1991 - Meetings in Washington, DC with Rural Electrification Cooperative at National headquarters; support indicated. Further interaction with Congressional delegation, DOE and ONWM.

June, 1991 - Meetings with Energy and Environmental Research Center of UND, Legislative Council, Bismarck Tribune, Grand Forks Herald, Minot Daily News, Fargo Forum.

June 20, 1991 - Legislative Subcommittee on Waste Management presentation were made by Dr. Wenz, State Health Officer; Ron Milner, DOE (telecon); National Council of State Legislators (NCSL) Sierra Club; Dakota Resource Council; and NAC. The Health Department, DOE and the NCSL stated there did not appear to be any environmental reasons not to proceed with the study. Subcommittee voted to recommend the Legislative Council proceed with the grant request by a vote of 15-6.

July 10, 1991 - The Legislative Council voted not to proceed with the grant request by a vote of 9-5. There were no hearings and no briefings given to the Council.

Mid September, 1991 - Contact made by Rep. Ray Meyer with Harold Anderson of Anderson & Anderson, Bismarck, expressing interest in the MRS project.

October 14-16, 1991 - Town meetings held at the request of the Grant County Commissioners. NAC's first meeting with the Commissioners and NAC's only visit to Grant County.

November 18, 1991 - Grant request submitted by Commissioner Miller to DOE, accompanied by NAC.

Provided by Nuclear Assurance Corporation to ICIC



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### DACOTAH CHAPTER SIERRA CLUB

Commente on a Monitored Retrievable Storage (MRS) Facility for Spent Nuclear Fuel in North Dakota

before the

North Dakota Legislative Council Waste Management Committee

June 20, 1991

Dexter Perkine Chair Dacotah Chapter Sierra Club

I appreciate the opportunity to speak to you today. I am a geologist and geochemist by training, and have consulted for companies involved in radioactive waste disposal in the past. My comments today are on bohalf of the Dacotah Chapter of the Sierra Club.

The Dacotah Chapter has not had sufficient time to do a complete study of all the issues involved in constructing an MRS facility in North Dakota. It is anticipated that we will take an official position at our fall meeting. We have, however, discussed the issue at a number of meetings, and recently agreed on some basic conclusions during a telephone conference. The comments I present today are a summary of those conversations and, I believe, represent the views of nearly every member of our organization.

In considering an issue such as MRS, I believe there are two important considerations: (1) public perception of the value, safety and viability of the project; and (2) the actual value, safety and viability of the project. While we would hope, in an ideal world, that these two consideration would be the same, experience has shown us that they frequently are not. A project may pass the public test, but may in fact be rejected because of technical/engineering problems. Similarly, no matter how sound a proposed project, it is doomed to failure if the public perceive that it represents a threat of some sort. I'd like to briefly discuss these two aspects one-by-one.

#### Perceived Probleme

In discussions among Sierra Club members, it soon became apparent that the membership as a whole was in agreement that radioactive waste disposal, no matter how temporary, was not wanted in North Dakota. It is my conclusion that this view is probably shared by most North Dakotans--even those who are not members of any conservation organization. I believe that there will be strong public opposition if this project moves forward without first gailing the confidence and backing of the citizens of our state.

There are Sierra Club members who believe that nuclear energy is bad, period. Some of them equate it with nuclear weapons in some way. Others remember Chernobyl or Three Mile Island. For whatever reason, many people feel strongly that accepting nuclear waste would be the same as approving of nuclear power, and are therefore against it in principal.

There are also a large number of Sierra Club members who believe that the environmental costs of disposing of nuclear waste should be the responsibility of the operators and states in which nuclear power plants are located. If the

Perkins

orks ND

state of Minnesota wants to continue to meet its power needs by nuclear reactors, let them provide a disposal scheme for the toxic leftovers. The implication is that by exporting the waste, states such as Minnesota would not be paying the full cost, while enjoying the profits.

Safety is a concern of many people. Are these MRS sites really as safe as claimed? Is there a chance of leakage at the site, or during transportation? What about the threats of terrorism? These and other questions have been asked many times.

A final major concern is whether what starts out as a "temporary" site might not become a permanent headache. Distrust of the government, the nuclear industry, and big corporations has led many to worry that once the material is shipped here, we will never get rid of it.

I believe there is a great deal of validity to many of the above concerns. They need to be answered in detail, and the public needs to accept those answers, if the MRS project is to take place in North Dakota.

#### Actual Problems

Attached is a copy of paper prepared by the Tennessee Chapter of the Sierra Club. It was prepared at a time when an MRS facility was proposed for construction in Oak Ridge. That project was finally stopped after a great deal of public outcry. Most of the comments in the document apply to the present situation. Most of the perceived problems, addressed above, are supported by some facts in the Tennessee document.

You can read the entire document on your own time, but I would call your attention to several points. Froblem number 7, as summarized on the first page and better explained on

Froblem number 7, as summarized on the first page and better explained on page 5 should be of particular concern. Although the MRS projected is touted as a money maker for North Dakota, and a good source of jobs for our citizens, perhaps it will have the opposite effect. Folls show that businesses and individuals both would not want to locate or pass by areas where the MRS is located. North Dakota is already known as a nuclear missile state. Do we also want to become a nuclear dump state? Is it possible to develop the MRS without some negative effect on our image as well? If this project is indeed a good business venture, why aren't any of the states that generate the waste taking advantage of the opportunity?

Problem number 9 is of particular concern to me. The official plan for nuclear waste disposal is to employ temporary storage sites until permanent ones become operational. At that time, the temporary sites may be closed or may continue to serve as transit points. At present, Yucca Htn., NV, is the leading candidate for becoming the nation's first permanent disposal site. There are, however, major political problems, not the least of which is that some of Nevada's Congressional delegation have sworn to oppose the plan. "The intractibility of the nuclear waste disposal problem, and the political realities of Congress might make the MRS site the *de* facto permanent repository site for the nation's spent nuclear fuel." At present, even temporary sites, such as that at Hanford WA, are refusing to take more waste. What would become of the MRS sites and their contents in 30 or 40 or 100 years if a permanent repository is not developed elsewhere? Would North Dakota be left holding the radioactive bag?

In summary, it is my conclusion, and that of most Sierra Club members, that MRS should not be pursued in North Dakota unless many important concerns can be adequately addressed. We are not sanguine that this is possible, and suggest that the state should not invest large amounts of time or effort in pursuing this project. Nonetheless, as more information and some answers become available, we will be glad to revisit the issue and reconsider our conclusions.

JUH-19-1991	13:00	FROM	FIRST NATIONAL BANK	TO	17774838 P.83	

On 26 March 1987 Senators Bennett Johnston, D-La, and James McClure, R-ld, introduced a bill which would amend the NWTA so that any state willing to bost a MRS or permanent repository would receive an annual bonus. The bill would authorize the building of a MRS thus bypassing the process written into the NWPA. The bill would also eliminate judicial review of all sluing and licensing docisions once the waste depot was accepted by the state. This would make DOE unaccountable to a host state. On the same day the Johnston-McClure bill was introduced. Senator Gore, D-TN, announced he planned to introduce a MRS bill. It is reported that the Gore bill will prohibit the construction of a MRS anywhere in the country, require spent nuclear fuel to be strine at the reactor site until a geological repository is ready, and mandate DOS to committee a search and characterization of two repository sites. Other MRS, or MRS-related bills, are expected to be introduced to be introduced to Congress.

#### PROBLEMS ASSOCIATED WITH THE MRS

In the NWPA, Coogress asked DOE's OCR4 M to perform the following tasks related to MRS: determine if needed, decide if feasible, find three suitable sites, develop preliminary designs, and prepare an environmental assessment of its proposed operation. Following OCRWM's announcement in April 1985 these bords was needed, feasible, and three sites had been selected (22, 23) problems began to surface rapidly and were particularly obvious at the State level. Included were problems of cost, transportation, radiological risk, security, liability, future role of the MRS, impacts on the host state, DOE's credibility, alternate waste disposal options, and DOE's arrogant interpretation of the NWPA. Also, it became clear quickly that the MRS was of national concern because it was part of the national HLRW disposal system. Therefore, it was necessary for MRS problems to be considered also in the context of the problems of the national HLRW system. These complexities indicate why the following presentation of problems is notifier simple or brief.

### 1. A MRS IS NOT NEEDED FOR A FUNCTIONAL HLRW MANAGEMENT SYSTEM.

A study by the Office of Technology Assessment (9) and studies commissioned by the State of Tennessee (4, 10, 16), to analyse DOE's MRS proposal concluded that a MRS is not needed for a completely functional national HLRW management system. In public meetings in Tennessee, even representatives of DOE ultimately admined the MRS was not absolutely necessary. Some of the DOE's main reasons given for needing a MRS (22, and information from public meetings) were to:

- a. reduce transportation impacts;
- b. improve significantly the acceptance schedule of spent fuel at the repository;
- c. improve the likelihood of successful implementation of the entire national waste system;
- d meet projections of spent fuel produced by an expanding industry;
- e. provide consolidation a step not available at reactors; and

f. provide relief for utilities who want a MRS to provide a place for spent fuel because their storage pools are full.

The Tennessee studies, in particular, refuted the claims by finding the following:

a. construction of a MRS will bring no significant reduction in transportation impacts or risks, when compared with a no-MRS system which makes use of scallable transportation improvements (4, p. B);

b DOF's proposal to link the operation of a MRS to the construction authorization of a first repository by NRC, eliminates the ability of MRS to improve tignificantly the acceptance schedule for spent fuel, as compared to a system that does not use a MRS (4, p. 18);

c. improvement of the overall waste system by a MRS is a subjective conclusion by DOE. It can be reasonably argued that a welldesigned no-MRS system is preferable for that purpose. "...overall, the MRS will be little help is resolving the major technical issues in repository siting." (4, p. 17);

d. DOE's projections of the rate at which spent fuel will be discharged from reactors in coming decades is inflated. They are 39.1% too high by the year 2010 (a good estimate of the carliest possible time of repository operation) and \$1.1% too high by the year 2020 (16, p. 10). DOE revised its rates, Fall 1986. They were then close to those flund by the State.

e. the technology for in-pool rod consolidation at reactors is within reach, and competitive suppliers appear to be available. A number of utilities (43%) appear willing to try it. At reactor consolidation minimizes subsequent transportation and storage costs and impacts (00, p. 5). "The desirability of rod consolidation at certain reactor pools that have limited capacity may be much stronger than the desirability of rod consolidation at a MRS. If many utilities voluntarily elect to consolidate, the incentives to consolidate... at the MRS are weakened" (10, p. 11); and

1. "...most utilities (76%) are planning or have completed reracking their spent fuel storage pools to expand their capacity. The other two storage methods mentioned most frequently as at least under consideration to keep plants operating were rod consolidation (43%) and on site storage (31%). ... Almost all companies believe they can provide for their two speni-fuel storage needs until 1998 (when DOE expects a repository to be available), although D companies believe this would require great effort on their part." (26).

Finally, a confidential draft report by the U.S. General Accounting Office, to be released in late May or have 1987, is quoted in the *Tennessean* and the *Chattanooga Times*. "DOE has not demonstrated that the MRS is needed to safely manage spent fuel, or that benefits attributed to the MRS could be achieved through other means. Congress does not have adequate information to make a decision. The alternatives must be studied." (7). "GAO recommends that DOE develop and evaluate an optimized waste management system that does not include an MKS into the system....GAO also recommends that DOE establish the cost of all elements associated with the MRS." (5).

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## 2. DOE HAS NOT DEMONSTRATED CONCLUSIVELY THE FEASIBILITY OF THE MRS AS PROPOSED.

There is, at best, limited experience in the dry disassembly and consolidation of feel assemblies, the use of lasers to cut fuel assemblies apart, canistering, etc., as proposed by DOE for their MRS. "DOE has only recently initiated the technology development program that would be required for a MRS-based or repository-based rod consolidation program....DOE analyses and studies do not at this time support the position that rod consolidation should take place at a MRS....The consolidation operation has the greatest potential to generate accidents, unforescen personnel exposure, by-product indicactive low level wastes, and cost overruns." (10, p. 12) Inherently, dry consolidation is less safe than the underwater type of consolidation that is being considered by utilities at reactor pools.

3 DOE'S CHOICE OF TENNESSEE AS THE SITE FOR THE MRS WAS AN ARBITHARY DECISION MADE IN THE ABSENCE OF APPROPRIATE SCIENTIFIC DATA.

"Our conclusion is that the technical basis for selection of Oak Ridge to host a MPS facility is very weak indeed. There is no convincing argument that the site offers advantages in the way of transportation risk or cost. Selection of a preferred siting region was based on some outlated information and a 'system' for spent fuel processing and disposal which is still poorly designed.... The subjective judgment of the Director (of OCRWM) formed the acknowledged basis for final selection." (15) The environmental data used in assessing alternative sizes was old, secondary in nature, or missing entirely. Data on geologic conditions at the preferred site on the Clinch River have not been developed. In addition, the Clinch River site contains sink holes and may be susceptible to flooding in the event the upstream dam fails. (17)

### 4. A FUNCTIONAL HLRW MANAGEMENT SYSTEM, WITHOUT A MRS, CAN BE DEVELOPED AT A COST WHICH IS \$2 TO \$3 BILLION CHEAPER THAN A SYSTEM WITH A MRS.

DOE's first cost estimates (23) indicated that a MRS would add \$500 to \$700 million to the cost of the overall system. DOE's cost estimates in late 1985 indicated the life system cost may rise to as much as \$2 billion. The Tenneasee studies showed the cost would fall between \$2.2 and \$2.7 billion and concluded... "The MRS option is not cheep." (1, p. 7). DOE's estimate, Fall 1986, was up to \$2.9 billion. (24) The cost of the MRS in the proposal submitted to Congress on 30 March 1987 was down to \$1.6 billion. (21) The magic of how DOE made a billion dollars disappear in six months is a mystery that remains to be clarified during Congressional hearings.

### S. FLRW IS VERY DANGEROUS UNLESS SHIELDED.

Spent fuel rods taken from commercial nuclear reactors contain the greatest concentration of radioactivity, per unit weight, of any unreprocessed HLRW. Short exposure to unshielded rod assemblies, even after five or ten years aging, may be lethal (B). Smaller doses of ionizing radiation may induce cancers and mutations or shorten life. Even if handled as carefully as possible, these wastes resy pose a serious threat to bealth and safety both now and in future generations. It is possible to shield living things from ionizing radiation by putting sufficient matter, or distance, between the living organism and the source of radiation. Problems of safety arise, however, when shielding is broken by accident or intention. Breeched shielding, with subsequent release of radioactivity to the environment, may occur during transportation, handling, or storage. Therein lies the danger.

# 6 DOE'S ANALYSIS OF THE RADIOLOGICAL RISKS OF A HLRW MANAGEMENT SYSTEM, WITH A MRS, IS INCOMPLETE, INACCURATE, AND MISLEADING.

From risk calculations presented by DOE (20), it has concluded that the radiological risks to workers, the public and the environment are extremely small. Their calculations have been confirmed and endorsed by two of the groups performing the States studies (3, 18) bits not by all (17). Unfortunately, the groups confirming and endors ig the calculations failed to check the probabilities selected or assumed by DOE.

The public has found it difficult to resolve in their minds how DOE, with a long history of polluting all of its own facilities with sometimes massive amounts of both conventional and radioactive materials (11, 13), could transport, handle, and store huge amounts of lethal spent nuclear fuel without releasing damaging amounts of radioactivity. Greater radiological risks, than the minuscule ones calculated by DOE, would be expected.

The reason for DOE's low risk predictions becomes obvicus when one examines the events chosen for inclusion in their risk calculations. The event selected are of low radiological consequence. Interestingly, some of the events have known probabilities while others have unbrown, and therefore guessed at probabilities. The latter are events associated with consolidation and handling technologies. The probabilities are unknown since these technologies are just developing and there is much too little experience as the product of the probability that an event will occur tires the cost of that event. Examples of events of known probabilities. Risk is calculated by DOE are: irradiation of individuals by emissions from transportation casks moving through their commenities; and routine irof a scaled storage cask, containing foel assemblies, in a railyard; the shearing of a canister during drywell storage; and the routine exposure of workers consolidating fuel assemblies (20).

Events completely excluded from consideration by DOE are accidents or incidents of the for swing types: a transporation accident in which cask ruptore, due to impaul or heat, releases radioactivity to the environment; a criticality accident, due to consolidation

of fuel rods, with possible volatilization of spent fuel, repture of canister and/or cask, with release of radioactivity to the environment; rupture of storage or transportation casks by the malicious activity of saboteurs or terrorists, using either conventional or atomic demolition municions, resulting in the release of radioactivity. The public has great concern about these events. They have the potential for being much greater is consequence than any event which DOE included is its risk calculations. To date note of these events have occured and thus the probability of one occurring is unknown. The probability is apt to be low but the consequences could be enormous.

In the absence of probabilities, the only way left to gain confidence in a piece of equipment, such as a transportation cask, is to expose it to destructive testing to the limit. By such testing, the margin of safery, during extremes of operation, may be approximated. Unfortunately, DOE has not been disposed to perform adequate destructive testing to the limit in the past. The new generation of casks to be constructed are to be tested by conputer modeling only. Prenumably the data used in their calculations will be from past tests which were never to the limit (13). Destructive testing is the only same absentive to what is perceived as DOE's present plan, of on-the-job production of accident probabilities. Forty years into the nuclear age we still have little or no knowledge of the margin of safety of much of the key equipovent and procedures used by the nuclear industry, including transportation casks, transportation strategies, emergency core cooling systems, reactor containments, etc.

At best, the DOE has done an inaccurate and misleading analysis of the radiological risks involved in the disposal of sperk nuclear fuel. Yet it has called the system safe. In the absence of a credible risk assessment or destructive testing to the limit, it must be concluded that the extent of the radiological risks of the MRS or of the overall nuclear waste system remain largely unknown.

 A PARIAH STATUS, WITH REGARD TO RECRUITING NEW INDUSTRY OR TOURIST DEVELOPMENT, WOULD BE THE FATE OF ANY COUNTY OR REGION WILLING TO BOST THE MRS.

The U.T. Knowville Center for Business and Economic Research conducted a poll of 130 Tennessee business executives. According to findings of the poll:

"The MRS would reduce the willingness of 55% of the 130 respondents to locate their business in the MRS county. . . Only 7 percent felt that it would be a positive factor in their location decisions. A greater percentage, nearly two-thirds, felt that the MRS would generally harm business attractiveness in the county in which it was located, and four-sevenths indicated that it would increase the desire of existing business firms to move. . . . Thirty nine percent feel that the MRS would reduce their willingness to locate even KO miles away." While the report suggests that compensation is the form of property taxes could mitigate impacts up the bost county, other counties would have no relief. In fact, property tax differentials might cause firms to shift location across county lines, increasing impacts on neighboring counties (1, p. 33).

The National Travel Data Conter was employed to include a number of questions in its monthly Lourism survey. The survey was given to 306 interviewees considered most likely to travel in Tennessee. Among the findings:

- "... over 47 percent said they would alter their previously set vacation plans if they later learned that their vacation site was located near an MRS. Over one-half of the individuals who would alter their travel plans indicated that their plans would be altered oven if the MRS were 600 miles from their destination.... The MRS itself was not viewed as an attractive nourist stop.... Only 15 percent said they would definitely take the tour. In sum, the MRS is seen as a negative factor by a significant mumber of people in their clecision's about where to vacation, and this is true for distances that would include Nashville if a Hartsville site were chosen and Sevier County if an Oak Ridge site were chosen." (1, pp. 36, 38)
- 8. DOE HAS PAID LITTLE ATTENTION TO SECURITY, AND HAS NOT CONSIDERED TERRORIST ATTACKS ON A MRS. The DOE proposes to store a hoge inventory of radioactive materials at the MRS, at ground level (or just below), which would make an attractive and unique target for a determined terrorist — er occlaily one armed with a back-pack nuclear device. Nuclear explosives could volatilize waste stored at a MRS and the radioactivity would be delivered down wind as very concentrated, very long-lived, and very lethal failout. Any attempt to calculate the probability of such a catantrophic release would be meaningless. It appears that security of HLRW, either that stored at a MRS or that being transported to and from a MRS, has yet to be developed.

### 9. THE MRS COULD BECOME A PERMANENT REPOSITORY FOR CIVILIAN REACTOR WASTES.

DOE is under strong pressure from the Congress to have a functional permanent repository by B98. The repository selection process is under fire by the repository states. Some have challenged the selection methodology. Others will pursue legal remedies to prevent construction of a repository, in their state. Although DOE has stated repeatedly that its primary goal is to site and build a permanent geological repository, it is nearly certain that the program will experience significant delays. Site-specific geologic studies are just beginning; these in estigations might reveal that some of the formations are not suitable for long term storage. Some believe that growing political pressures will copyince Congress to abandon geologic repositories, and to turn to engineered surface storage to long term monitored retrievable storage. Even though the MRS proposed for Tennessee will not be designed for long term storage, it would be the peth of least resistance for Congress to extend the life and/or size of a "temporary" storage facility indefinitely. The intractibility of the nucleor waste disposal problem, and the political realities of Congress might make the MRS site the *de facto* permanent repository for the nucleor waste disposal problem, and the political realities of Congress might make the MRS site the *de facto* permanent repository for the nation's spent nuclear foel.

12 CTTIZENS OF THE MRS STATE AND THOSE OF THE TRANSPORTATION-CORRIDOR STATES ARE NOT ADE-QUATELY PROTECTED BY PROVISIONS OF THE PRICE-ANDERSON ACT FOR LIABILITY COVERAGE OF NUCLEAR ACCIDENTS IN THE ABSENCE OF FEDERAL LEGISLATION WHICH SPECIFICALLY EXTENDS PRICE-ANDERSON COVERAGE TO COMPONENTS OF THE FEDERALLY-OWNED AND OPERATED NUCLEAR WASTE SYSTEM.

The svallability and amount of compensation to the state, local communities, and/or private citizens in the event of a major nuclear accident at a MRS or during the transportation of nuclear wastes are not discussed in the DOE MRS proposal.

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Accidents at commercial reactors and during transportation of utility-owned fuel are currently insured under the Price Anderson Act. The insurance is provided through an insurance pool, funded by the utilities. The current limit of liability is \$635 million for a single accident. Some DOE facilities designated by the Secretary of Energy are also covered at a lower level -- \$500 million.

DOE takes the position that a MRS and DOE-owned fuel would be covered by Price-Anderson. Some parties - including the first repository states - have challenged this interpretation of the Price-Anderson provisions, and have asked DOE to provide unlimited liability assurance for waste storage facilities and transportation within their borders.

The Price-Anderson Act expires in 1987 and must be reauthorized. Bills have been izoroduced into Congress explicitly stating that the nuclear waste system facilities will be covered and raising the statutory liability ceilings. Some groups lobbled for colimited liability. Efforts failed in 1986. This issue must be resolved if a MRS is authorized by Congress or a repository is constructed.

11. IT IS IMPOSSIBLE TO GUARANTEE THAT THE ROLE OF THE MRS AND THAT OF OAK RIDGE ITSELF, AS COMPONENTS OF THE NUCLEAR FUEL CYCLE, WILL NOT CHANGE SIGNIFICANTLY OVER TIME. As a component of the assessment of economic impacts of the MRS on Tempersee, the Oak Ridge Institute for Energy Analysis studied potential future uses and impacts of the MRS. (2) Thus:

"Assuming that the plant functions as planned, however, we can anticipate a life for the MRS extending well beyond the nominal 40-year period. ... P"rther into the future could be the establishment of a reprocessing plant in Oak Ridge. ... The more distant future might even see the integration of the MRS into a global system for waste disposal. ... Officials should be sware, however, that the MRS could spark considerable growth that would present difficult tradeoffs in the future." (2, p. 23)

"If conversial reprocessing were once again to gain favor in this country, it almost certainly would be collocated with the MRS. ... These developments, while sustaining and expanding the local economy, would differentiate Oak Raige further from the bormal U.S. community. ... Through chemically separating the constituents of spent fuel the risks of radiation exposure to both the workers and the surrounding population would increase. Security would also be extremely pervasive to prevent unauthorized access to plutonium." (2, p. 12)

The long-range projection, then, is for On't Ridge (or any other community accepting an MRS) to become massively dependent on federal and related private nuclear factors, to accept additional major nuclear and non-nuclear wasts activities, to increase its separation from the mainstream economy of a nuclear, and to become a community living within a context of pervasive and overwhelming security controls.

## 12. DOE HAS NOT DEMONSTRATED THE WILL OR ABILITY TO HANDLE ITS NUCLEAR AND CONVENTIONAL WASTES SAFELY.

DOE has, over its 40 years of operation at Oak Ridge, released large quantities of radioactive and conventional pollutants into the environment. Some of the releases are massive (ID. One very disturbing feature is that DOE did not provide the public with information about these releases until it was compelled to do so as a result of state inspections and/or a Freedom of Information request from the press. Although the agency has begun to take remedial action, the sites near all of the Oak Ridge Operations (both in and out of Tennessee) remain contaminated. Since DOE officials must have known of these releases, it is difficult not to conclude that DOE has been indifferent to the health and safety of its workers and area residents. It raises the question of DOE's credibility as future manager of a complex waste disposal facility such as the MRS and the deep geological repositories.

### 13. THERE ARE ALTERNATE HLRW DISPOSAL PLANS WHICH ARE SAFER AND CHEAPER THAN THE ONE WITH A MRS.

There seems to be general agreement on two points about disposal of spent nuclear fuel. First, it is essential, for the sake of safety, to get the spent nuclear fuel out of reach of run and out of the biosphere. Secondly, permanent disposal in a deep geologic repository seems to be the best option we have at present, provided a secore site can be found, accepted and developed. There is, however, disagreement as to the safest way to get spent fuel from the reactor to the repository. There are alternam options to MRS which DOE could have considered. Yet DOE gave there little or no attention (4, 6). Below, two such plans, that are considered superior to MRS by groups other than DOE, are outlined and compared with MRS.

In the first plan, spent fuel will be stored at the reactor site until a geologic repository becomes available. Then the waste will be transported directly to the repository. The fuel assemblies will not be consolidated but will be stored, transported, and buried in the form in which they came from the reactor.

In the second plan, the spent fuel assemblies will be consolidated and stored at the reactor site until the repository is available, and then will be transported directly to the repository. Disassenably of fuel rods will be under water.

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In the third plan (MRS), the sport fuel rods will be stored at the reactor, and shipped, as they are, to a central site. There they will be consolidated and stored until a permanent repository becomes svallable. Then they will be shipped to the repository. Disassembly of fuel rods will be in air in a bot cell.

The first plan seems to be the safest of the three. This is because the risks due to the handling steps, e.g. consolidation and repackaging, are avoided. It is also the simplest of the plans. The second plan is loss safe than the first due to consolidation but safer than the third, or MRS, because it would use underwater disessembly. The MRS seems to be the least safe of all due to air disessembly, and the burge inventory of high level was a stored at the surface, or just subsurface, and at a single site. The transportation risks would seem to be the same for the first and record plans since the carle-miles' traveled by the spent fuel would be the same in both. The curie-miles of the same is aste going through the MRS would be greater, of course, due to backtracking and the added risks thereby increased. Core of the second and third plans have been calculated in the Tennessee State studies. The second plan, po-MRS with consolidation, is cheaper than the third, or MRS plan, by at least \$2 billion. The first plan must also be cheaper than the MRS plan.

The increased safety and simplicity of the first plan has considerable appeal. Safety of people and the environment is of primary importance. Cost must be less important.

14. DOE HAS DISREGARDED THE INTENT OF CONGRESS, AS EXPRESSED IN THE NWPA, BY PRECLUDING ANY MEANINGFUL PARTICIPATION OF THE STATE OF TENNESSEE IN THE PROCESS OF MRS SITE SELECTION OR FLANNING.

When it adopted, the NWPA, Congress intended for a MRS state to have the same right to participate in key decisions as candidate repository states. Congress incorporated the public participation provision of Sections 115-118 into the MRS Section by reference. The process for stiling and building a MRS and a repository are not the same, creating ambiguity in the hww. DOE chose to interpret the NWTM narrowly, so as to limit or totally exclude Tennessee from key decisions. Tennessee was not consulted about siting criteria or decisions; the criteria were not reviewed by the National Academy of Science; the Environmental Academy and instruction of sections are reviewed in congress without providing Tennessee with an opportunity to evaluate and comment on the charging justifications for the MRS.

It is clear that Tennessee has received shabby treatment at the hands of DOE. The arrogant attitude demonstrated in DOE's MRS activities appear to be pervasive and characteristic of this federal agency in its attitude in developing a nuclear warte depository. Potential first round repository states have reported equally aggressive and non-cooperative behavior by DOE. By such action, and the lack of trust it has generated in the MRS and repository states, DOE has succeeded in reducing its nuclear waste program to a shamble.

. It is high time that Congress recognize this condition and take remedial action. We submit that when is needed is not more legislation of schedules. Rather, we believe a high-level and independent review of DOE's failed program is required. The review would analyse the institutional and technical reasons for the disarray and then recommend how DOE would proceed. During such a review Congress should place a more torium on considering the MRS proposal and on site specific activities at any repository site.

### PROPOSED ACTION TO BE TAKEN ON THE MRS ISSUE

The policy on MRS, recently adopted by the Board of Directors of the National Sierra Club and presented below, provides a plan of action that would provide a wise solution to the MRS issue and could lead to a same and safe resolution of the overall nuclear waste disposal problem.

"The Sierrs Club recommends that the provisions and implementation of the NWPA be investigated by a special commission and recommendations be made at the conclusion of that investigation to amend the NWPA including the following:

- 1 Is the short term, the Sierra Club opposes authorization and appropriations for DOE's MRS proposal.
- 2. In the long term, the Sierra Club would like to see the NWPA amonded to:
- a. delete the MRS from the nation's HLRW management system;
- b. instruct the DOE's OCRWM, more explicitly than in the NWPA, that its mission of priority is to develop and operate a permanent HLRW repository which will be safe for humans and the environment, and that its decisions must be based on scientific and technical grounds, not on political expediency;
- E require safe storage of commercial FILRW at the site of origin until a permanent repository becomes operational, dry cast

"The term "curie-cuite" has been used. A curie-culle is the transport of our curie one sulk. The curie measures the gesnity of sadioactivity. The number of curie-miles is the product of the number of curies and the number of sulles they are transported. The curie curie curie curie curies is useful in that the risk to humans and environment is directly proportional to the curie curies and the number of sulles they are transported. The term curk-culle, is useful only is calculating transportation costs but not in culturating radiological risks. For example, a cust, after consolidation, might councils the equivalent number of faal rods and caries as three custs of successful rods. It sould cost less to transport the consolidated cust a piveo distance that the custo of measurement induced rods. It would cost less to transport the consolidated cust a piveo distance that the custo of measurement leader of successful rods. However, the risk powed would be the many advective the same radius of using the consolidated cust a piveo distance that the custo of measurement leader of successful and only is approximated rods. However, the risk powed would be the many advective the same radius of using the consolidated custo as the spire distance that the custo of measurement leaders, the risk powed would be the many advective the same radius of using the consolidated custor custo storage for spent fuel or safer method of spent fuel storage;

d. mandate the DOE, in the absence of adequate experience, to demonstrate by destructive testing to the limit, that components for transper and storage of HLRW are reliable and safe." (12, b.)

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0286-262 (519) VASBUILS, TN 37212 2116 Westwood Ave. Tennessee Chapter, Sierra Club MRS Study Convertice UNLINED? 'NON HOPE

## Dakota Resource Council

RR 2 Box 19C Dickinson, ND 58601 (701) 227-1851

The Nuclear Assurance Corporation's proposal for North Daucta to eventually request an NRS site raises concerns which trouble our members deeply.

First, our members are concerned about the safety of the project. NAC is asking North Dakota to house high level nuclear arete which will continue to be radioactive for hundreds and thousands of years. In 1969, Dr. Judith Johnsrud, a specialist in the Geography on Nuclear Energy testified before a the NES Esview Commission "...no method of waste "disposal" that we fumans are capable of contriving will in fact prove adequate to assure the actual isolation of all radioactive wastes for the full period of their toxic hazard to the complex systems if if ing Leings." In 1997, Gregon Governor Neil Goldschmidt stated that he believes the Department of Energy is iving when it argues that a high-level waste dump is safe.

In addition to the dengers at the site, there is the problem of transmittation of waste from the reactor to the site. First, if the waste is transported by truch, there is slower the chance of an accident and an accompanying fire. The Nuclear Regulatory Cremission requires eachs to be able to withstand a fire of 1,075 degrees Fahrenheit for crement hour. However, the average temperature of a highway arbident fire is 1,050 degrees. The much longer than that for a number fire department to arrive and full content that for a number fire department to arrive and full content that for a number fire department to arrive and full content the network equipment to used with nuclear caster. If the cashs are chipped by rail, and we understand that relifies have traditionally exposed sail transport of hubber waste, the same problems apply.

In addition, cruch intrar of up to 550 tons can be placed on a cash pioned between initrard cars. In her aforementioned "estimant, Dr. Johnsrud states, "transportation of spent fuel by "ishes truch, ..., is far to dangerous to be acceptable..., the failtead system infrastructure is in top severe a condition of disrepair for train chirment to be considered safe. Both are volverable to sabotage, accidents, and acts of God..., Emergency planning for serious transportation accidents is, if you will permit me, a bad isie."

Our transportation concerns are exacerbated by the fact that nuclear waste could conceivably come from California to Porth Dalota and then be sent to Nevada for permanent disposal. Furth a trip seems circuitous at Lest, ludicrous at worst.

in addition to safet, we are concerned about the claims that an "PS will spur economic development. A study by the University of Tennessee found that over half of the businessmen

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"WATCHDOGS OF THE PRAIRIE"

surveyed would not locate their tusinesses in any county that housed an NRS. Additionally over half stated that they would consider moving their business out of any county that housed an NRS site.

Ve are also concerned that MAC's claims are not as wonderful as they may seem on superficial review. In its statement of tenofite to North Dabets, NAC claims that DO-4000 people may be employed in cash manufacturing. However, its promotional video states, "Because the use of cashs began in Europe and Japan, opeks are currently manufactured there. It would be too expensive to considenture ossis in the United States," in its plated proposal, NAC quotes DOE figures that BEG jobs may be closted at the MRS site. However, in its video NAC states "Cash states includes low personnel commitment," Each sets of states of contradictory.

The federal funds referenced in NAC's proposal have vet to be allocated. Congress may choose not to spend the "guaranteed filt" million" because of fiscal restraints such as the deficit. One need only look at the treaties made with the Native Americansto see a record of broken promises.

The fact that North Dalots is being chosen for this type of economic "evelopment" worries our membership. We should not be the ratio is garbage disposal, but the importation of waste of one type of another seems to be the only economic development response that North Dalots receives. Our students recently placed first in the nation on standardized math tests. These intelligent young new and worsen should not have their future tinge on the importation of waste.

We are also concerned that North Eshots may become the permanent waste depository if it chooses to become an MRE site. Because of conflicts over geological data, the proposed Yucca fountain site in Nevala is controversial and no one can guarantee that it will be the first repository for high level waste. Once a site accepts waste from all over the country, it will become the de facto repository. The easiest political course would be to turn the MRS into a permanent represitory. The President's propried National Energy Strategy Pill is an attempt to destroy. the links between the establishment of an MRS and the "'art of a permanent repository. If these links are destroyed, moching will prevent any MRS site from becoming permanent. In addition, this proposed legislation would limit Neveda's right to participate in environmental studies at Yussa Mountain. If Congress succeeds in lighting one state's right to protect its self-interest, nothing will stop them from limiting North Debote's right to ship out any waste it receives.

North Carolina, South Carolina, Tennessee, Ohio, Alabama, and West Virginia have all vehemently opposed the siting of an MRS within their borders. In 1985, the Tennessee State House of Representatives voted 98 to 1 against the MRS proposed for that A = 17 - 7

1 4 4

State. The Tennessee State Senate voted 28 to 3 against the proposal. It should be noted that Dak Ridge, the site in Tennessee proposed for an MRS, houses a facility engaged in the manufacture of nuclear bombs. Further, the Alabama site is an atandoned Army base, the type of site that NAC contends would make a perfect MRS. In addition, Alabama is the home of the nation's largest hazardous waste dump, but the State still wants nothing to do with an MRS. If an MRS were such a wonderful thing, these states would have jumped at the chance to store spent nuclear waste.

Finally, our concern is that applying for the grant to study the feasibility of siting an NRS in North Dakota will send the message that North Dakota is willing to take all other types of vaste as well. We should not send out that message, especially when our lone representative in Washington has introduced legislation to give states the right to turn away hazardous vaste. North Dakota should not appear to vacillate on issues as important as these.

Thank you for this time to voice the concerns of our nentership and, I telieve, all North Exhotans. I hope that you will take the issues raised by our members to heart as you make your decision.

### PROPOSED NUCLEAR WASTE STORAGE FACILITY GRANT COUNTY, NORTH DAKOTA

To the Honorable Members of the Independent Citizens Investigation Committee.

.

I am here to discuss environmental concerns associated with the possible locating of a Nuclear Waste Storage Facility here in Grant County, North Dakota. My name is Jim Garrett and I'm employed as the Director of Environmental Protection for the Cheyenne River Sioux Tribe in South Dakota. My oral and written testimony will be submitted to your committee on the behalf of the Cheyenne River Sioux Tribe.

Our reservation is geographically located straight south of Grant County and our northern border is only about 30 miles from the southern boundary of Grant County. We are indirectly downslope from the geographical location of the proposed storage site. Being downslope, we would be directly affected in several ways if there ever was an accidental spill of any kind. My testimony will outline exactly how our population and natural resources would be affected if such a spill or accident occurred.

At the present time, very few of Grant County's neighbors are aware of the feasibility study that is being conducted. I myself happened to read an unrelated article in The Lakota Times that made a very minor reference to the fact that Grant County had received a grant to determine the feasibility of placing a nuclear waste storage facility within their jurisdictional boundaries. It is my hope to acquire more information as to what exact type of facility is being proposed. My very basic understanding is that a temporary surface storage center is being proposed. If that is correct, then this type of installation would have an entirely different path of impacting the environment than say an permanent underground storage facility would present. Until I learn exactly what type of facility is being proposed for Grant county, and have time to study the method of construction and associated possible impacts, I am limited to speaking of general type environmental impacts. These general type of impacts would be associated with any type of transportation and storage of highly toxic materials. If I am correct in assuming the proposed storage facility would be of a temporary and transitory nature, then the risk factor of an accidental spill would be greatly increased because of an increased amount of handling of said waste materials. There would also be increased amounts of risk associated with routes of egress to and from the storage site due to an increased amount of

necessary transporting of said waste. If a facility is of \* transitory nature, one that is essentially a transfer station, then risk of an accident could be estimated at being twice that of one that stores waste on a permanent basis. This is only common sense because the transporting of waste would be not only entering the site but exiting as well. Thus, the amount of trips actually being made would create an increased amount of opportunities for an accidental spill to occur. The environment and communities along transportation routes would be subjected to an increased risk factor because of the increased amount of traffic associated with a transitory storage facility.

There are a number of concerns that deserve to be considered in any assessment of project feasibility such as this. Please consider them very carefully in your deliberations. Although the probability of a serious accident is very small at any site, the consequences of one accident may be catastrophic to all life in the surrounding ecosystem and adjoining areas as well. The risk is low, however the magnitude of even one accident will be extremely high. Considering the length of time that high level wastes are dangerous and the many variables in the disposal process, it is likely that an accident will eventually occur (Botkin and Keller, 1987).

A major problem with the disposal of high level wastes is exactly how credible are the scientists assurances that we do now have the technology to prevent an accident from occurring. Might I remind this committee that the technology and planning that surrounds this proposed project is so new that none of it is proven by fact. What is being advanced here is a laboratory experiment to test storage methods, computer predictions and hypothetical scenarios. This situation demands more factual analysis as opposed to computer simulations (Monastersky, 1988). We dererve to know whether it is 100% safe, or caly 99.9% safe. That one-tenth of a point could prove to be fatal to all involved. The verdict is still out on how much exposure to radiation human beings can experience before damage will occur. However, it is a fact that throughout the entire nuclear cyclefrom mining to final disposal of wastes, various amounts of radiation enters and affects the environment. It seems prudent to take a conservative view that there is a direct relationship between any increased amounts of radiation and the likelihood of accompanying increase in adverse health effects. This situation is further confused by a delay of 10-25 years between time of exposure and the onset of a related disease (Botkin and Keller, 1987).

The Cheyenne River Sioux Reservation is a fairly close neighbor of Grant County, North Dakota. In this modern day and age, environmental scientists have been governed by the principle that political boundaries are useless in assessing environmental problems. They are constrained by having to work within the artificial boundaries set by political entities for political purposes. The earth's environment is guided by watershed areas that are its real boundaries. Both of the political bodies involved in this discussion, the Cheyenne River Sioux Tribe and Grant County, reside in the Missouri River Basin Watershed Area. This watershed is huge and encompasses all of Montana, South Dakota, Nebraska and major portions of North Dakota and Wyoming. It also takes in smaller portions of 4 other states and even stretches north into Canada (USGS, 1966). This huge watershed is at the same time, a portion of a much larger watershed area called the Mississippi Valley, which in turn drains approximately one-third to one-half of the North American subcontinent. I bring this much larger scope of geography into the picture because I want to remind the Grant County citizens and political representatives of the fact that we, as individuals and collective printical entities, are very small in the grand scheme of the earth's physical processes.

The general rule applied to watershed areas is that whatever happens in the upper reaches will affect the lower reaches. Grant County, North Dakota lies up-slope from our landbase in the Missouri River Watershed. Our Tribe is very concerned with any event or proposed project that may happen up-slope from us. The reason is that we could be affected by events above us if some type of environmental abuse were to occur.

If Grant County were to build a high level nuclear waste storage facility within their political jurisdiction, and an accidental spill of this highly toxic and radiated waste were to occur, our environmental resources would be placed in jeopardy. There are three distinct ways that our resources and citizens would be affected by an accidental spill. These pathways are the air flow patterns, surface water flow patterns, and ground water aquifer flow patterns associated with the local geography. The Cheyenne River Reservation being down slope and down wind would be directly affected immediately by the wind flow, intermediately by the surface water flow, and over an extended time period by the flow of ground water.

The most immediate and harmful effect would be radiation dispersed into the wind. The prevailing wind flow patterns of this area are to the south and east. This would place the Cheyenne River Reservation directly in the path of the wind. This pathway proved to be very harmful when the Chernobyl Nuclear Power Plant exploded in 1986. Many neighboring countries experienced contaminating effects. In that instance the wind swept across the land surface carrying with it the contaminating radiation. The intermediate affects would be experienced by anyone receiving their water supplies from the surface waters of the Cannonball and Missouri Rivers. According to the U.S. Geological Survey, consumptive use figures for Cedar Creek, Cannonball River and the Missouri River down to the South Dakota border indicate that major portions of the surrounding populace draw their domestic water supplies from these three stream flows (USGS, 1982). The results of an accidental spill could be potentially catastrophic to domestic water users in the local area.

The third pathway of pollution would be the contamination of ground water aquifers that underlie the entire geographical and political areas known as Grant County, North Dakota, the Standing Rock Sioux Reservation and the Cheyenne River Sioux Reservation. The entire area has six (6) major aquifer formations underneath it. These aquifers could become contaminated and render the local area uninhabitable for centuries. It takes very small amounts of toxic contaminants to destroy entire aquifers. These aquifers generally flow at very slow rates, however all areas down flow would be subjected to its contaminating effects. The aquifers underneath us flow to the south and east, thus Cheyenne River Reservation would be in a direct path of flow. These aquifers are the very source of all freshwater springs and these springs could be ruined, as well as the valuable wetland habitat areas they create (USGS, 1982).

All life that stood in the path of these three avenues of contaminating radiation would suffer great effects in both the short run and long run. Radiation consists of a chemical element called radioisotopes. Uranium isotopes emit gamma rays which are very dangerous even from long distances, and must be heavily shielded. Radioisotopes affect the environment in two ways: by emitting radiation that affects other materials and by entering the normal pathways of mineral cycling and ecological food chains.

Fallout of radiation carried by the wind can enter the food chain at all trophic levels, but will generally be ingested by the lower trophic levels first and work it's way up to the top of the food chain. Man and other large carnivorous beasts are at the upper end of the food chain or trophic levels. It has been documented that after contaminating radioisotopes entered specific ecosystems through vegetation, it underwent biomagnification, or ecological food chain concentration. That is, at each trophic level the concentration of the toxic material increased. Some radioisotopes concentrations have been known to double with each trophic level (Botkin and Keller, 1987; Goldstick, 1988). The radioisotopes entering the food chain will directly and significantly impact the reproductive processes and offspring of all trophic levels by altering chromosomal structure. An increase in the frequency of dead embryos and abnormalities may occur because of an increase in frequency of recessive lethal and deleterious genes in the gene pool. Thus, negative changes in the gene pool are a long-term hazard of chronic radiation exposure (Goldstick, 1988).

In conclusion, I would like to remark that I have commented on the worst case scenario here. However, it behooves us to understand what the worst possible results of our actions could be. Understandably, the proponents of modern technology urges us to put the safety of our communities into their hands. The advances that technocrats have given us have been tremendously positive in most cases, yet there have been more than a few foisted upon us that have been miserable failures. I believe that the nuclear industry is one of those miserable failures simply because none of the technocrats had the guts to tackle the hardest issue involved in the nuclear industry and that is what do we do with radioactive and highly toxic nuclear waste. This was not done until burdensome amounts of deadly wastes were created. Now, they are asking us common folks to decide the fate of an excessive amount of waste. I am of the firm belief that if Washington D.C. wants it stored somewhere, then store it there. The past history indicates that these types of follies are to often thrust upon those of us who choose to live in remote and underpopulated regions of the country simply because some bureaucrat believes that there isn't much here to hurt if there is an accident. Well, this is our home and we need to be protective of what we allow to be brought in here.

I urge the citizens of Grant County to consider very seriously what they may be subjecting their neighbors to if they were to build a storage facility. Environmentally speaking, the days when a land owner has the exclusive god-given right to do with his/her land whatever he/she choose to do must come to an end. What we do on our land will ultimately affect our neighbors, that is a natural environmental law.

Neighboring communities that adjoin or are near Grant County will have to live with as much risk as the residents of Grant County, yet will not share at all in any of the economic benefits. The Cheyenne River Sicux Tribe believes that no amount of financial gain is worth the risk associated with the presence of high-level nuclear waste. Our community is very economically oppressed, and the financial boom would have made us very rich in comparison, however we said no to the very same proposal that you are considering. We do not believe any amount of risk is worth the the waste will still have to be handled and transported by humans and the human error factor will always be present.

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1/15/92

- TO: JUDI KALLIS INDEPENDENT CONSULTANT
- FROM: JESSE D. HAILE CENTRAL ALARM STATION SPECIALIST WSI/SRS
- SUBJECT: EVALUATION OF DOE STORAGE FACILITY PROJECT FOR NEW LIEPZIG, NORTH DAKOTA

Dear Judi,

In response to our conversation on 1/13/92 concerning the proposed storage facility for New Liepzig, North Dakota, I wish to give you my professional observation of the project from a security point of view. I will identify some of the considerations for the protection of the facility in the areas of security hardware and threat probilities.

I have been employed by Wackenhut Services Inc./Savannah River Site for eight years. I have been highly trained in paramilitary tactics in relation to the physical protection of Special Nonlear Material. My training includes gualifing on a variety of Central Training Academy approved firearms, intermediate weapons, hand to hand combat, access control, security and operational emergency response toctics and procedures, legal training and jurisdiction, 4 years in the US Air Force in the Security Police Field with an assignment to a millile site in North DAkota, and formal college studies majoring in Communication with a focus focus in Computer Science.

A site such as the M.S.R. would have a weighty ranking as a possible or probable target of any group desiring to cause friction, attention, or damage within the nuclear community. Threat considerations are great, because of the potential health, safety and environmental risks to the local populace. Compounding the risk of protecting the material contained at the project, is the accessability and open terrain present in the state of North Dakota. The above mentioned observations are all meant to direct attention to the seriousness of the threat possibilities that are included with a project such as this.

A good security force combined with an equally effective security hardware system would offset any of the above mentioned threats.

In closing, I would like to comment on the feasibility of the M.S.R. site. The threat to the M.S.R. site would be present and constant, however a good security force would greatly diminish any threat to the facilities of theral population. If any doubt exists check the records of present 32 es (such as Savannah River, Oak Ridge, Knolls Atomic, Nevada Test Site, etc.) who have all deterred such threats without incident for decades. My professional opinion overwhelmingly supports approval of the M.S.R. Site. This project would offer a huge opportunity for the local community with the contractor being tasked with very acheivable standards in relations to security risks.

- TO: JUDI KALLIS INDEPENDENT CONSULTANT
- FROM: LAMONT R. SMITH CENTRAL ALARM STATION SPECIALIST WSI/SRS
- SUBJECT: EVALUATION OF DOE STORAGE FACILITY PROJECT FOR NEW LIEPZIG, NORTH DAKOTA

Dear Judi,

From our meeting on 1/13/92 concerning the proposed storage facility for New Lipzig, ND, I wish to give my professional observations of the project from a security position. I will address several considerations for the protection of the proposed facility with respect to the areas of manning lévels and qualifications and training.

I have been employed by wackenhut Services Inc/Savannah River Site for more than eight years. I am highly trained in paramilitary tactics in relation to the physical protection of Special Nuclear Material. My training consist of gualifing semi annually on a variety of Central Training Academy approved firearms and course, intermediate weapons, hand to hand combat, access control, security and operations emergency response tactics and procedures, legal training and jurisdiction, 4 year B.A. major in Political Science, and a 4 year B.A. major in Crimminal Justice.

In respect to the manning of the project the first consideration would be to the mission of the project. In my professional opinion this mission would consist of the protection of highly radioactive material, government property, government employees, and public and environmental safety. If this is the identified mission then one can conclude that 24 hour protection will be required because of the seriousness of the material protected and the concern of human life and safety. Personnel will be needed for access control into and out of the facility and the product protected.

Consideration will have to be given to the shift configuration in relation to 4 shifts working wither 8 or 12 hour. Depending on the configuration of the facility a day relief may be needed.

It appears that the site will be considered a Defensive Combutant Status site meaning the hired employees will be required to run one half mile in 4 minutes and 40 seconds and run a 40 yard dash in 8.1 seconds annually. They will be required to qualify with Central Training Academy approved weapons on a semi annual basis.

Their may even be some consideration given to a small Offensive Combatant Status force in the event of an adversary or insider threat attack. These personnal will have to run 1 mile in 8 minutes and 30 seconds and a 40 yard dash in 8.1 seconds.

Annual training will also have to entail dynamic sessions on the active denial of outside penetration to the facility.

In closing, I conclude that the personnel hired will have to be highly trained with consideration given to your specific site. Their will have to be sufficiant personnal to cover manning requirements 24 hours a day.

If I can be of further assistance to you and the project please fill free to contact me.

Items of interest for individuals, institutions and corporations Published by Educational Services, Duke Power Company







Bomharded 2: we are by almost daily reports of another commonly used substance that causes cancer and a multitude of other life threatening dangers, how are we to know what they mean? How do we gain a perspective of what is really dangerous? The experts can tell us what is risky, but we decide for ourselves the risks that we are willing to take.

We have read the statistics that show us that over 55,000 people die every year in the United States as a result of car accidents. And we are informed that the number of deaths would be cut in half if we wore scat belts. Yet, only one out of every seven drivers buckles up before driving away. An artificial sweetener was predicted to have a one-in-a million chance of causing cancer. We demanded that it be banned.

How can the same public that inspects to wear seat belts strive to ban an artificial sweetener? Does this mean that we are irrational? Perhaps non-rational would be a better term We tend to approach our assessment of risk from an emotional perspective rather than from the technical analysis of mortality statistics

Not long ago the fear of flying became so great (after terrorist attacks) that many overseas flights were cancelled. Yet the risk of drowning in our bathtub is greater than the risk of becoming the victim of a terrorist attack.

Why is there a gap between the things we fear and the things that risk assessment experts tell us are most dangerous?

"The public decides risk on the basis of feelings," explains Robert DuPont, a Georgetown University psychiatrist who runs the Center for Behavioral Medicine in Rockville, Maryland "The problem is that what scares people is often not the same thing that is really threatening to them."

A - 20 - 1

Living Dangerously

Living is a risky business.

We know that we are confronted with a liferisking action each time we cross a street, change traffic lanes, go for a bike ride or drink a diet soda.

How do we decide what risks we are willing to take?

FC-it factors seem to overshadow logic in our assessment of risk: whether the risk is voluntary or involuntary; if it is familiar or unfamiliar; if the results are controllable or uncontrollable; and, whether the effects are catartrophic or are spread over time and space.

We are less fearful of something if we believe ourselves to be in control and if we choose to take the risk. Furthermore, if the risky business is familiar, we are much more apt to accept it. Instant, catastrophic events lead us to conclude that something is extremely dangerous. The fear of terrorist attacks, for example, is much greater than the fear of drowning in our bathtubs.

We are accustomed to daily bathing but not to attacks by terminists (and we feel that we have no control over such attacks). The number of people who die in their bathtub each year may be more than the number stilled by terrorists; but, the maths are spread over space and time and don make headlines throughout the country.

Ri-1 sis

Psychiatrists, psychologists, statisticians and scientists of diverse disciplines provide technical analysis of risks.

Whenever numbers are available, the assessments are based on hard data. The numbers are usually translated into terms such as "number of days subtracted from average life expectancy," "deaths per billion passenger miles" and "chance of death."

The terms are then compared in charts, graphs and tables that help us put risk into perspective. Occasionally, we find ourselves comparing apples to oranges; we must remember the event pard data can have soft spots.

in the distance available, we have to make extrapolations, or calculated predictions. The techniques that use mice to study possible discongens or toxic chemicals are examples of such extrapolations.

Pegulatory agencies use the animal tests to predict what the impact might be on humans. The agencies then define an acceptable level of risk, extrapolate to determine the worst possible case and set exposure limits at a level that would not be greater than the acceptable risk. In other words, they set standards for safe human exposure.

It is at this point that our logic becomes distorted. We know that there is no such thing as zero risk, yet we sometimes demand it. We expect our physicians to perform perfectly; we would like the procedures they use to be risk free. We also want assurance that there is absolutely no risk posed to our children by attending school with a classmate who has AIDS. We have a desire for absolute certainty even though we know that's not possible.

Unfortunately, risk assessment experts who employ statistics and cost-accounting methods for policy making are often considered inhumane and cold-hearted. And decision makers who rely on their feelings and intuitive procedures to form policies are often considered short-sighted and inresponsible.

We are faced with a noncept gap - a division between what is real and what is perceived.

### Bridging the Gap

No amount of education will mitigate the fear we feel when we read the headline: "Radiation Is Silent Killer." And we find it difficult to believe experts who say that nuclear power plants are less to a threat to our daily lives than bicycles. This is, after all, the same society that worries about airline flights while driving across town in rush-hour traffic. It's also the same society that estimated in a recent study that both tornadoes and asthma were responsible for 500 deaths last year. In reality, asthma killed 20 times more people.

How can we put risk into proper perspective? Perhaps the easiest Lay is for us to put the narrow precise terms used in risk analysis into terms that most of us understand such as good risk or bad risk. After all, the experts can tell us what is risky, but we take our own chances.

Let's do all we can to make sure that our choices are informed ones. Otherwise, we may be making sweeping decisions that are unsound: and our fears may become more dangerous to us than the thing that we fear.

## **Compute Your Own Radiation Dose**

We live in a radioactive world. Radiation is all about us and is part of our natural environment. By filling out this form, you will get an idea of the amount you are exposed to every year. The average American is exposed to about 300 units, or millirem (mrem) each year.

Factors	Common Sources of Radiation	Your Anadai Dose (mrem	
Where You Live	Cosmic radiation at sea level	1 1 1 1 1 1 1	56
	Elevation - mrem 1000-2 4000-15 7000-40	* * * * *	
	Elevation of some U.S. cities (in feet): Charlotte 700, Atlanta Chicago 600, Denver 5300. (Coastal cities are assumed to b or at sea level.)		
	Ground: U.S. average	26	
	House construction: for stone, concrete or masonry building		
	Radon gas: U.S. average	$\hat{x} \in \{x,y\}$	200
What You Eat, Drink,	Food		An other states of the second states and second states of
and Breathe	Water U.S. average		24
	Air		
	Weapons test fallout	$c_{i} \in (0, \frac{1}{2})$	4
How You Live	Medical		
	Number of chest X-rays	x 10	
	Number of lower gastrointestinal tract X-rays	x 500	
	(brain scans, thyroid uptakes)	x 300	
	Number of extremity (arms, legs) X-rays (Average dose to total U.S. population = 92 mrem)	x 20	
	Dental		
	Number of bilewing series	- X 4U	
	Number of panorex A rays	_ X 500	
	Jet plane travel: for each 2500 miles	. aoo 1	Reduced States with the local states are an ended
	Luminous clocks	- X9	and a second
	Luminous wristwatch	_ aod 2	And an
	TV viewing: for each hour per day	x 0.15	ana any cross-ana and a collection and a
	Smoke detectors	- x .002	workle cherry of contrasts of the other strategy of
	Sleep with spouse	. add 0.1	
How Close You Live To	At site boundary: average number of hours per day	×02	a characteristic and the second states of the second
A MUCIEAR FIANT	One mile away: average number of hours per day	_ x 0.02	
	Five miles away: average number of hours per day	: 0.002	
	More than 5 miles away	_ None	
	NOTE: Maximum allowable dose determined by "s: low as reasonably s: lie (ALARA) criteria established by the U.S. Nudea: "legulatory Commission. E shows that your actual dose is substantially less than these limits.	vable* xperience	
	Primary 5 urce: Revised from earlier editions based on the *BEIR Report-III - National Academy of Sciences, Committee on Biological Effects of Ionizing Radiation, *The Effects on Population of Exposure to Low-Level Radiation,* National Academy of Sciences, Washington, DC, 1980. Radon information from the National Council on Radiation Protection and Measurements	TOTAL	


1. 110

Car



Table 1 . Radiation doses to US population from environ-

Table 2		User doses	from	selected	consu	mer	pro	uucus		-
	-		p	lody portio	m	Aver	age	dose e	equival	es

Gonads

Goneds

Lungs

Lungs

Lungs

Lungs

Whole body

Product

Coal

Oil

Luminous wristwatch

Television receiver Combustion of fossil fuels

Natural gas

Airline travelt

Tobacco products

\*Data from BEIR III.\* tAverage trip.

\*For conversion. 10 µSv e tel 1 mrem.

Body portion

considered

mental sources.*	
Source	Average abse equivalent ratet (پSv/yr)
Natural Cosmic Terrestrial Internal Artificial Atmospheric weapons test Nuclear power industry Building materials Total (rounded)	280 250 240 (marrow), 280 (gonads) 40-50 1 30-40 800

"Date from BEIR III": excludes occupational exposure.

tWhole body unless otherwise indicated; prorated over total population. For conversion, 10 µSv equal 1 mrem.

enducte \*

to user ("Sv/yr)\*

10-30

3 (females), 10 (males)

2-40

0.02-0.4

60-220

80,000

5

lisk situation	Cause of fatality
seing a man, age 60, for 20 minutes	Cardiovascular disaasa rancer
iving in New York for two days	Air pollution
iving in Denver for two months	Cosmic radiation
Living in a stone building for two months	Natural radioectivity
iving near a polyvinyl chloride plant	Cal LIMY SOLIS
for ten years	Carcinogens
Iding in a canoe for six minutes	Accident
licing a bicycle for ten miles	Accident
iding in a car for 300 miles	Accident
raveling by sirplane for 1,000 miles	Accident
revelling by airplane for 6,000 miles	Cosmic radiation
Vorking in a coal mine for one hour	Black lung
Vorking in a coal mine for three hours	Accident
Vorking in a typical factory for ten days	Accident
moking cigarettee, 1.4	Cardiovascular
rinking wine. 500 cc	Cirrhosis, Cancar Cirrhosis
rinking diet sode. 30 cans	Carcinogens

4

Examination	No. of films	Beam shape	Bengtsson <sup>35</sup>	Danforth and Gibbs <sup>10</sup>	Gregg <sup>26</sup>
Full-mouth, periapical					
and bitewing films	14-22	Round	12	8-17	
Full-mouth, periapical					
and bitewing films	21-22	Roctangular		1-2	
Bitewing	2	Round		3-7	
Dental, not further					
specified	4		•		3
Panoramic tomography	1		4	2.7	
Panoramic, intreoral					
source	1-2		2		
Skull	2-5			12-37	4
Chest	2			1-5	1.5

Table 7 Estimated cancer risk from dental radiology (cases per million examinations).



HILERIEAN MASSEN SOULETY

Vample of a previous letter.

Information from you via Dr. Nathaniel Kennedy pertaining to alpha radiation from porcelain teeth was referred to me for reply. Alpha radiation is characterized by extremely low penetrabilities. For example, alpha radiation can be effectively blocked by substances such as pelicle, saliva, and air. NCDP Report No. 56 estimates a dose of 60 rems per year to the basal cell layer of mucosa, however, this estimate expressly (p 41) disregards the blocking effects of factors such as pelicle, saliva, and air gaps. A study by the Bureau of Radiological Health\* quoted measurements of 98% "alpha attenuation" by saliva. Furthermore, the study postulated that the combined effect of factors such as pelicle, saliva, and air gaps could "prevent any alpha from ever reaching the soft tissue".

On general principles, it would be desirable to find substitutes for uranium fluorescing agents to put everyone's mind at ease, however, it does not realistically appear that there is a health hazard from dental porcelains. Incidentally, American Dental Association Specification No. 52\*\* limits the concentration of uranium to 0.03%. This is a lower concentration than the porcelain referred to in NCRP Report No. 56.

I hope that this response is helpful to you, and my apologies for the length of time required to obtain information for the response.

Best regards,

Charles M. Schoenfeld, DDS, Phd Assistant Sectetary Council on Dental Materials, Onstruments and Equipment A - 20 - 9 Dr. Allan

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\*\*Uranium in Dental Porcelain, Bureau of Radiological Health 1975, United States Public Realth Service.

\*\*American National Standards/American Dental Association Specification No. 52 for Uranium Content in Dental Porcelain and Porcelain Teeth, Council on Dental Materials, Instruments and Equipment, American Pental Association.

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# CANCER IN POPULATIONS LIVING NEAR NUCLEAR FACILITIES

#### VOLUME 1 - REPORT AND SUMMARY

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#### U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES FUBLIC HEALTH SERVICE NATIONAL INSTITUTES OF HEALTH

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## CANCER IN POPULATIONS LIVING NEAR NUCLEAR FACILITIES

Recent studies from the United Kingdom have reported increases in mortality from leukemia among young persons, especially under age 10, living near certain nuclear installations. The reasons for this pattern are not clear and there were no corresponding increases in total cancer mortality. Because of concerns raised by these data, a survey of cancer rates was conducted in populations living near nuclear facilities in the United States. The study encompassed all 62 nuclear facilities that went into service prior to 1982, including commercial electricity-generating plants and major Department of Energy facilities engaged in nuclear fuel reprocessing, isotope separation or other activities involving radioactive materials.

addresses only one specific question: Is there evidence, at the level of available data, that residents of counties near nuclear facilities are at increased risk of death from cancers known to be related to exposure to ionizing radiation?

A survey of mortality from leukemia and other forms of cancer in the environs of 62 nuclear facilities in the United States has been made. More than 2,700,000 certificates of death due to some form of cancer during the period 1950-1984 were analyzed. Included in the survey were 52 commercial electricity-generating nuclear facilities that had gone into service by the year 1981 and ten other facilities that reprocessed nuclear fuel, produced radioactive isotopes, segmented isotopes, or carried out other activities involving radioactive materials. Counties in which nuclear facilities were located and certain adjacent counties were designated "study counties". Three "control counties" were matched to each study county for comparisor. Over 900,000 cancer deaths occurred in the study counties and over 1,800,000 in the control areas. Cancer incidence data were also obtained for t' e counties around four facilities in two states.

Although data are shown only for certain age groups (under 10, 10-19, 20-39, 40-59, 60+, and all ages combined), calculations of expected numbers of deaths were based not only upon sex and race but upon individual calendar years and specific five year age groups.

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Of the nearly 900,000 cancer deaths that were evaluated around U.S. nuclear installations, 350,000 occurred before the plants became operational and 530,000 after startup. These numbers include 37,500 deaths attributed to leukemia. Overall, and for specific groups of nuclear installations, there was no evidence to suggest that cancer mortality in counties with nuclear facilities was higher than, or was increasing in time faster than, the mortality experience of similar counties in the United States. Data on all 1,394 deaths due to leukemia in children below age 10 also did not suggest an overall increased risk in areas with nuclear installations.

Radiation releases from nuclear power stations are reported to be quite low, delivering to any person, at a maximum, less than 5% of the radiation exposure that is normally received from natural background sources, such as radionuclides in the earth and cosmic rays. Such low levels would not be expected to result in detectable increases in childhood leukemia or other cancers. On the other hand, certain facilities, such as Hanford, are known to have released more than average amounts of radiation into the environment.

Over 900,000 cancer deaths occurring between 1950 through 1984 in 107 counties with nuclear installations and certain adjacent counties in the United States were evaluated. For counties in two states, cancer incidence data were also available and evaluated. Each study county was matched for comparison to three similar "control counties" in the same region. Over 1,800,000 cancer deaths occurred in these control areas. There was no evidence to suggest that the occurrence of leukemia or any other form of cancer was generally higher in the study counties than in the control counties. For childhood leukemia, the relative risk comparing the study counties with their controls before plant station was 1.08, while after startup it was 1.03. For leukemia at all ages, the relative risks were 1.02 before startup and 0.98 after startup.

The survey results showed that some of the study counties had higher rates of certain cancers, and some had lower rates, either before or after the facilities came into service: The observed comparisons provided no evidence of any cause-effect relationship between particular facilities and cancer occurrence in nearby populations? The study is limited by the correlational approach and the large size of the geographic areas (counties) used, and of course it cannot prove the absence of any effect. However, if any excess cancer risk was present in U.S. coupties with nuclear facilities, it was too small to be detected by the methods employed in this survey.

#### CONSENSUS STATEMENT OF THE AD HOC ADVISORY COMMITTEE FOR THE STUDY OF CANCER IN POPULATIONS LIVING NEAR NUCLEAR FACILITIES

The Committee har reviewed the data assembled by the authors of this report, the methods employed to obtain the data, the form of the analyses and the inferences that have been made based on those analyses. Three formal meetings were held in 1989 and 1990, at which the progress of the survey was critically reviewed. The Committee was also asked to provide suggestions for additional research, if any seemed warranted.

The NCI survey utilized existing sources of data so that it could be completed in a time frame that was relatively short for a survey of such magnitude. However, this resulted in certain limitations, "" ich are discussed below.

The survey examined deaths attributed to leukemia or other cancers in the study counties, that is, counties that encompass or are near nuclear facilities. All commercial nuclear electric plants that were in operation by 1981 were included, as were ten facilities that engaged in nuclear fuel fabrication or reprocessing, isotope separation or other activities that use radionuclides.

Although all forms of cancer were studied, the survey appropriately emphasized leukemia since, of all fatal forms of cancer, leukemia shows the greatest relative increase following exposure to ionizing radiation, and increases in leukemia had previously been reported among children who lived near certain British nuclear facilities.

The Committee believes that the statistical treatment and interpretation of these data are quite satisfactory. Comparisons of study and control counties exhibit substantial variation as should be expected, because the matching cannot remove all variation due to demographic factors. Properly taking this into account, there is no evidence of systematically higher cancer risks in the study counties. Moreover, even the highest relative risks for individual facilities were compatible with the general level of variation seen.

In this regard, the comparison of cancer rates both before and after nuclear facilities began operation was especially informative. 'Overall, the relative risks of leukemia and other cancers appeared to be slightly higher before reactor startup than after, providing no evidence that environmental pollution attributable to the facilities might be causing a substantial increase in cancer risk in the study counties.

The Committee concludes that the survey has produced no evidence that an excess occurrence of cancer has resulted from living near nuclear facilities. Further, measurements of radioactive releases from nuclear facilities indicate that the dose from routine operations is generally much below natural background radiation, and hence may be unlikely to produce observable effects on the health of surrounding populations.

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#### MRS: The Charges and the Facts

CHARGE: Nobody wants nuclear waste. They're preying on us because of hard economic times.

FACT: No community has decided yet whether they want to volunteer to store used nuclear fuel, but Grant County was at the beginning of what is becoming a bandwagon of counties and Indian tribes that want to study the possibility. Grant County was the second group to apply for a study grant from the Department of Energy. Now seven groups have applied, and at least three more are expected -- including the state of Arizona.

It's also important to remember that no one will force Grant County to host an MRS. The issue will be decided by a vote of the citizens.

CHARGE: Western states are being asked to take nuclear waste, but it's the East that produces it. They don't want to keep it.

FACT: Nuclear plants are located in 33 states, East, West, North and South.

It's important to realize that ALL Americans benefit from our nation's 111 nuclear power plants. They provide 20 percent of our electricity, and that makes us less vulnerable to foreign oil suppliers. The North Dakotans who fought in the Persian Gulf last year will tell you how important that is. Because the electric grid is so inter-connected, virtually every American gets some electricity from nuclear power.

CHARGE: Because Grant County took a Department of Energy Study grant, the county may be forced by the government to host an MRS.

FACT: The federal Nuclear Waste Negotiator has committed that an MRS will not be forced on any of the grant applicants. They can opt out at any time.

CHARGE: An MRS will use up all the water and take much of the land in Grant County.

FACT: In an MRS, used fuel from nuclear power plants is stored in dry vaults or canisters. Very little water will be needed at the site. An MRS would occupy only about 450 acres, much of it open natural area. Some of that area could be developed for recreation.

CHARGE: An MRS could contaminate the groundwater with rudioactivity.

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FACT: An MRS stores fuel ABOVE ground in sealed steel containers. Those containers keep the radioactivity inside -- where it can't get to the water.

CHARGE: Fuel containers could leak, contaminating our air and water.

FACT: Used nuclear fuel is a solid. It consists of ceramic pellets inside steel rods, bundled together in "fuel assemblies." They in turn are inside strong, thick steel containers. They have layers of material such as iron, lead and concrete that keep the radioactivity from the fuel inside. The MRS is constantly monitored to make sure there's no leak. Existing above ground fuel storage facilities in the East have had no problems with leaks.

CHARGE: Nuclear waste has leaked at Hanford and other government facilities. That proves they aren't safe.

FACT: The waste at Hanford and other federal weapons facilities is in different form from spent nuclear fuel from power plants. Much of the weapons waste is a liquid, and some of it is mixed with other toxic chemicals. Spent fuel from nuclear power plants is in solid form -- no liquid waste would be stored at an MRS.

It's sad but true that our nation's weapons productions facilities have not put a priority on protecting the environment. Our government was so concerned about building up the national defense that weapons production took a priority over proper handling of waste. If they had followed the rules and procedures of the civilian nuclear industry they wouldn't have had the problem.

CHARGE: An MRS would expose Grant County residents to dangerous levels of radiation.

FACT: An MRS is designed to keep radia' in inside -- away from the public and the environment. It would be strictly monitored by the federal Nuclear Regulatory Commission, and local health and environmental agencies would have oversight too.

To put radiation in perspective: the average chest X-ray exposes a person to 6 millirem -- the measurement for radiation. Fertilizing the average lawn twice a year mounts to 17 millirem. A person living three-tenths of a mile from the MRS facility would receive less than one half of one millirem in a whole year.

It's true that large doses of radiation can increase the risk of cancer and be harmful in other ways. But health study after health study have shown no harm from the small doses that we are all exposed to in everyday life. That includes a major study by the National Institutes of Health that showed no higher cancer rates around the nation's nuclear plants.

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CHARGE: The nuclear fuel stored in an MRS could explode and spew radioactivity over a large area.

IACT: It's physically impossible for used nuclear fuel to explode. The uranium used in fuel to make electricity is not concentrated enough. It's very different: from the material in nuclear warheads, because a small, controlled nuclear reaction is needed to make electricity.

CHARGE: Nuclear waste is highly dangerous and stays that way for thousands of years.

FACT: Because nuclear waste is dangerous if you come in direct physical contact with it, we have a responsibility to handle it carefully to protect people and the environment. Scientists have developed the technology for handling waste safely by shielding it in containers that keep radiation inside. Scientists worldwide agree that nuclear waste can be safely isolated from the environment for the long term by burying it in deep underground repositories. That is the permanent solution the U.S. and other nations are committed to.

CHARGE: An MRS won't be temporary. The state that takes it will be stuck with it forever.

FACT: An MRS would be licensed by the Nuclear Regulatory Commission to accept fuel for 40 years. By then all of it would be removed and taken to a permanent underground repository. The federal government is committed to developing an underground repository for permanent storage of spent nuclear fuel. Right now scientists are studying a site at Yucca Mountain in Nevada. It looks promising, but if further studies determine it's not appropriate, other sites will be examined. A permanent repository is scheduled for operation by 20:0.

CHARGE: Nuclear waste should be left where it is at power plant sites.

FACT: Spent nuclear fuel has been safely stored at power plant sites for more than 30 years. However Congress decided early in the peaceful nuclear program that the federal government should have responsibility for permanent storage of spent fuel, to maintain control of all the material. Storage facilities at some power plant sites are filling up, so interim storage will be needed before a permanent repository is ready.

An MRS is an important first step toward fulfilling our national responsibility to handle nuclear waste responsibly, rather than a leave it as a problem for our children to solve.

CHARGE: Taxpayers shouldn't have to foot the bill for storing nuclear waste that private companies generate.

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FACT: Taxpayers DON'T pay for the government's civilian nuclear waste program -- utility customers do. It's included up front in the cost of electricity generated with nuclear power. If all industries had this kind of responsible psy-as-you-go approach to dealing with the waste they produce, we wouldn't have fouled our rivers and air had to have a Superfund to clean up abandoned chemical wastes.

\* \* \*

CHARGE: An MPD isn't needed. Utilities car build more storage at plant sites.

FACT: If utilities are forced to build more storage at plant sites their customers will end up paying twice -- once into the waste fund for the federal government to build a facility, then again to build on-site storage. That's an inefficient use of resources for a country already short on cash to invest in improving our economy. It's also more sensible environmentally to consolidate event fuel in one or two locations for continuous security and monitor g.

CHARGE: Transporting spent fuel is dangerous. Accidents DO happen, and there's real danger that radiation would escape if one did.

FACT: We all know accidents happen. That's why the containers used to transport spent fuel are made to withstand more than the most severe traffic or railroad accident imaginable. Actual tests include crashing trucks and trains carrying the specially designed containers at high speed into concrete walls. They came through intact. They are also dropped onto a steel spike, burned in jet fuel for two hours and submerged in water. They haven't leaked. When they've proved they can pass the tests, shipping containers are licensed by the Nuclear Regulatory Commission.

CHARGE: Transporting spent fuel into the county will create traffic problems.

FACT: Having an MRS will IMPROVE the transportation system for the county and state that get it. That's because the utilities' Nuclear Waste Fund will provide money to upgrade roads and bridges to facilitate transportation of spent fuel by road. It will also pay to add or upgrade rail lines, because some fuel will be shipped by rail.

CHARGE: Offering benefits is nothing but a bribe. It's not worth it to a community to take a facility that isn't safe.

FACT: No community should accept a facility it believed would endanger the people or their land. But once all the facts are on the table, it becomes clear that an MRS would be a safe facility

#### A - 20 - 18

and not harmful to the community. A community that provides an important facility for the nation, how ver deserves to be compensated for providing that service.

Benefits for the community that volunteers and is selected to host the MRS will be determined in negotiations with the federal Nuclear Waste Negotiator. They could include things such as improved roads, help for education, improved health care facilities, economic development, tax subsidies, additional federal facilities and direct payments of several million dollars each year. Construction of an MRS could provide 100 or more construction jobs, and operation could create between 100 and 707 permanent jobs in security, administration, science and engineering.

CHARGE: Having an MRS will destroy local land values.

FACT: Where nuclear power plants have been built in the L.'ted States, land values have tended to go up, not down. The boost the plants give the local economy and the added tax base have actually made property values go up!

CHARGE: Having a nuclear facility will hurt farming and ranching.

TACT: Many nuclear power plants have been built in the United States in farming and ranching country with no harm to farm products or land values. Because surrounding Tegetation, water, air and even milk from local herds are regularly sampled, farmers and consumers of farm products can be easily reassured that there's no harm from the facility.

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## Box 5-8.

The NAC-1 Cask-A Troubled Record

"As for the care taken in past shipments of spent nuclear fuel, the record speaks for itself," says one industry spokesperson (Mills, 1982). While it is true that no major accidents have taken place, in the case of one model of truck shipping cask, the NAC-1, the record is troubled.

On March 28, 1979, two irradiated fuel casks (type NAC-1) were being loaded at the Dairyland Power Cooperative reactor at La Crosse, Wis for transfer to the fuel storage pool at Morris, IIL (NRC, 1979b). The reactor had been shut down for refueling and an NRC inspector was present. Simultaneously, another cask of the same type was being checked out by technicuans at Duke Power Company in South Carolina. Duke informed Nuclear Assurance Corporation (NAC), owner of the NAC casks, that the internal shell of thru cask was bowed out of shape. Copper plates had been welded on the outside shell due to a lack of sufficient radiation stuckling on the inside of the cask. This was in violation of NAC's license. NAC, however, made no effort to locate the other casks of the same type or to stop any impending shipments. The NRC inspector on duty at La Crosse, unaware of the problem at Duke, observed the filling of the NAC-1 casks and cleared the shipments for transportation to the Morris pool.

During the next nine days at least eight shipments were made be reven La Grosse and Morris (NRC, 1979b). The NRC was unable to say whether other casks of the same type were simultaneously in use elsewhere. The route for the shipments probably took them on Illinois Route 47, a two-lane to the south highway to the west of Chicago.
 However, the NRC has no record of the route actually taken (NRC, 1979c) because at the ture it had no regulations restricting shipments to approved routes.

After the shipments were completed, the NRC issued a suspension order blocking further use of the casks. When the  $c_{32}$ 's in use at La Crosse were finally inspected, one of them was  $a_{12}^{12}$ , sowed (NRC, 1979d). Of greater significance was the fact that two other models of the same cask were also found to be bowed out of shape, although they were manufactured by a different company (NRC, 1979d). Of the six in use, a total of four were taken out of service due to the bowing problem.

The source of the bowing problem remains officially "undeter-

mined." It is reasonable to conclude, however, that there is a generic fault with either the det gn or the manufacturing process as it is unlikely that two different companies (Stearns-Roger, Denver, Col., and Excleo Co., Silver Creek, N.Y.), separated by thousands of miles and several years, could make exactly the same mistake. The NRC has indicated that crashworthiness cannot be assured in a cask with this defect.

Further research revealed that the attachment of the copper plates was done at the beliest of NAC, without approval from NRC. Welding copper to stainless steel can result in embrittlement of the steel during a subsequent fire, as well as reducing the strength of the shell in other ways (Sandla, 1980c).

These problems are not surprising in the overall context of quality control on these casks. Only one month before the La Crosse incident, an internal NAC audit of its own procedures "identified the need for a complete revision of all NAC-1 operating and meantenance procedures" (NAC, 1979a). Some documentation of welding procedures during manufacture had been "lost in a fire" with no copies maintained by NAC (NAC, 1979b). Although the quality assurance program appeared to be a good plan in 1974, "problems existed with effectively realizations came after more than five years' use of faulty casks, involving over 300,000 miles of shipments (NAC, 1979c).

Of the two casks still in service, one (NAC-1D) was checked on August 22, 1980 to assure that the same bowing problems had not befallen it since an inspection six months earlier. It was then used to ship irradiated fuel from the San Onofre reactor in California to the Morris, III pool on September 4, 1980. After the shipment was completed, however, NAC told the NRC that "reevaluation of the cask measurements" indicated that this cask had the same problem. It too was withdrawn--after the fact (NRC, 1980d).

The latest model NAC 1 cask (NAC-IE) was iso pressed into service and delivered to San Onoåre on August 20, 1980. Unbeknownst to the in Onofre technicians, this cask had been used four months previously to ship a leaking fiel assembly from the Oyster Creek, NJ, plant to a research facility near Columbus, Ohio. The cask had become so severely contaminated in the process that external lead shickling had to be added (NRC, 1981d). When the empty cask arrived at San Onofre, the radiation level in the truck driver's cab was over twice the maximum legal limit (NRC, 1981d). Two Nuclear Assurance Corporation technicians were flown in to decontaminate their cask which, at several points, emitted 11 t 40 times the legal limit of radiation. Several health physics technicians working at San Onofre helped with the task. At muclear power plants, the health physics technician is responsible

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for safeguarding the worker's health during such operations. However, documents indicate that the technician in this case was not qualified for we job. "He had no familiarity with irradiated (spent) fuel casks"; and he received no briefing or instruction with regard to the potential hazard" associated with the cask in question or even "what procedure or actions were going to be performed" (NRC, 1981d).

A capped pipe, where a valve used to be, was opened, forming a port into the cash illighty contaminated water began pouring out. One of the NAC technicians caught it in a plastic bag and surveyed it for radiation. It emitted up to 100 rems/hr of radiation (\* five hour, wholebody exposul c to that amount of radiation could be fatal). An absorbent naplein was used to wipe up some residual moisture in the port. It gave off 300 rems/hr. The technician's glove was also contaminated.

The NAC representatives then obtained mother technician, also instance of the lattards associated with the job and with the radiation detector he was using, according to NRC Inspection Reports. One of the NAC technicians picked up the previously filled bags of waste and attempted to dispose of them in a shielded waste container. "Because the bags would not fit into the shielded cavity, be stated that he held his breath, named his head, pushed the bags into the cavity while previouring them with a screwdeiver" (NRC, 1981d). At no time were air samples taken, as is standard procedure, or the grope – espiratory equipment and "when action was performed resulting in the dispusal" of the concaminants. So Cal Edison, operator of San Onofre, was fined \$150,000, later reduced to \$125,000, for lax health physics supervision (NRC, 1981e ).

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Numerous other incidents have occurred with this particular cask:

 Exceeding by 40 percent the decay heat limit placed on it as a result of the problems scenning back to the La Crosse incident (again, the error was found of er completion of the shipment)

-A leaking valve

-The inexplicable movement of a radioactive "hot spot" from one end of the cask to the other after h lad been decontaminated several times.

It was even suggested that the unong fuel assembly may have been placed in the cash at the Haddam Neck reactor (NRC, 1981d). The problems were so severe that Nuclear Assurance Corporation did not try to move the NAC-IE cash until six months later, and then asked NRC for permission to move it, again empty, to a nearby site for deconcamination (NRC, 1981f).

The problems created by this cask occurred primarily when it was

cmpty, when it was in transit without guards or route restrictions, mulwhen drivers did not need to call in every two bours. How would an accident involving such an empty cask be treated by radiological treating personnel unaware of its contamination? While the total radioactive contents of the cask in question were not reported at this time, samples taken at San Onofre show that the concentration of contaminants in the water was so high that a release of several gallons of it could have caused a contamination incident similar to that postulated by Sanita Labs in its TRUE study" in which a two-billion-dollar cleanup bill could result.

The other cask (the NAC-ID), which left San Onofre in September. 1980, was found not to be bowed out of shape after further menurement and was released for use later that year. However, upon arety at (still empty) at the Oyster Creek, NJ, plant in February 1981, it was found to have surface contamination even though it had not been man to ship fuel for five months (NRC, 1981g). An NRC inspector on data at the time observed decontamination of the cask and the addition a layer of heavy paint designed to hold any contamination in plan during the cask's next fourney (in this case, to Battelle Laboratories in Onio). However, the wrong type of paint was used. It began to dissolve off the cask during a rain storm in Pennsylvania. The delvers noticed the peeling paint but contlaued on to Ohio (NAC, 1981) apparently oblivious of the fact that surface contamination was paid. ably being spread on the highway. Most of the paint remained on the truck, but only because of the wire cage surrounding it (not a required item on all shipments). How much radiation was released will the sebe known, NAC notified NRC of the event five days after it occurred but NRC took no action.

The problem of high surface contamination continued. In Jun- of 1981, shipments arrived at La Crosse, Wis, with radiation levels 'n times higher than the legal limit (Aspin, 1981). Rather than stop the shipments, NRC allowed them to continue, merely containing the cask in a large plastic bag. When the shipments were considered however, the NRC directed the La Crosse officials to hold the cask until it could be cleaned up to NRC specifications (NRC, 1981h) Unfortunately, the La Crosse officials did not warn their techniciana about the cask and several were contaminated when they handled in without gloves (NRC, 1981i).

The problem was now so servere that the NRC issued an order my July 22, 1981 pulling the cask off the road until further notice (NRe-

"Calculations based as (NBC, 1981d) and comparison as Columb40 concerns in secular similar to (NBC, 1980c).

1981)), just as Coog essman Les Aspin of Wisconsin was about to demand supersion of all irradiated fuel shipments. The NRC order noted that between August 1980 and July 1981 the case had exhibited excess surface contamination seven times and released some of it in translt (NRC, 1981j).

Four of the original seven NAC-1 casks have now been put out of action. One (NA -1D) remains, limited to the transportation of older, cooler fuel, while only two, the NAC-1E and NAC-1B, are in full service. The NAC-1 cask had been the "workhorse" of irradiated fuel transport by truck. The loss of these casks reduced the available capacity for moving conunercially generated irradiated fuel by truck in the U.S. by over 50 percent.

Box 5-9.

Sandia National Laboratorics Crash Tests

In 1977 and 1978, Sandiz National Laboratories In Albiquerque, N.M., under contract to the U.S. Department of Energy, made films of crash and fire tests on three irradiated fiel casks. The tests were originally performed to assess the applicability of scale and computer modeling techniques to actual accidents and were useful in impact anal, sis.

Unfortunately, the films were quickly put into service as "proof" to the public of cask safety. They were given nationwide TV (WNED, 1981) and magazine (Mesdag, 1978) coverage. They were used by many speakers representing the electric utilizies. Still photos from the film were made into a brochure used for setting casks (NLI, 1980) and for thwarting efforts to pass local legislation regulating irradiated fuel transportation (MAC, 1979d).

According to one industry study of nuclear transport, the films "did more to help the nuclear shipment safety image than anything else in recent years" (Sandia, 1979). One thousand copies of the film, plus a shortened version, have now been distributed world-wide (Chitwood, 1980). In the debate on the safety of fuel transport, the films have become the manustay for the nuclear industry.

The basic concept of the film is baudable. The public should be apprised of government efforts to ensure safety in nucleas materials transportation. However, while initially produced as a semi-technical presentation, the original 14-minute film, called "Accident Safe," was shortened to a 4-minute examination of "Five Full Scale Tests." It eliminated most of the qualifying statements contained in the longer version. Although the script of the film was reviewed by DOE officials before the documentary was produced, the film contains numerous misleading concepts and images, and omits significant facts. Specific observations on the film and on the tests themselves that cast doubt on the veracity of the film include the following:

- The casks in the film were not designed to the existing standards. They were "obsolete" (in quote Sandia) and taken out of service in 1967, icn years before the tests (NRC, 1979c). At least one of them was designed to a higher standard than today's casks (Sandia, 1978c).
- The casks did not contain isradiated fuel, which would produce heat and pressure. They held a fresh, clean, cold, unirradiated fuel

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## Heat Generation in Spent Nuclear Fuel

Commercial nuclear power plants in the United States use uranium fuel to produce electricity. When uranium splits, or fissions, it gives off heat. This heat is used to change water into steam, which is then used to generate electricity like at any other power plant. During the fission process, heat-emitting radioactive materials build up within the fuel. This is the reason that nuclear fuel is both hot and radioactive when it reaches the end of its useful life.

The handling of spent (used) nuclear fuel is carefully regulated to protect people and the environment from exposure because of its very high rad bactivity and heat, especially right after being removed from a nuclear reactor. The primary concern in maintaining safety is to provide protection from this radiation. To do this, the fuel is initially stored under about 25 feet of water, in large pools that absorb (shield) essentially all of the fuel's radiation.

The radioactivity of spent nucleas fuel decreases with time, and it decreases most rapidly in the first months following removal from a reactor. However, spent fuel will contain some amounts of radioactive material for thousands of years. The main goal of safely storing fuel is to provide for the long-term protection from this radiation.

The heat given off by spent fuel is also safely controlled by storage. This heat also decreases over time, even more rapidly than the radioactivity of spent fuel. When removed from a reactor, a single rod of spent fuel can generate about 8000 watts of heat. The rapid drop off of this heat over time is shown below:

#### Heat Released by 1 Nuclear Fuel Rod

Cooling Time	Reduction Factor	Heat Generated	Everyday Equivalent
<b>e = = =</b> () <sup>(1)</sup>	an an an an m I	8000 watts	(Five Small Space Heaters)
1 Day	200	40 watts	(A Fluorescent Light Bulb)
1 Year	1300	6 watts	(A Portable Radio)
5 Years	2000	4 watts	(An Automobile Light Bulb)

<sup>(1)</sup> Time at which fuel is removed from the reactor.

To safely control and reduce its heat and radiation, spent fuel remains in the nuclear plant storage pools for at least five years, and usually longer. By this time the fuel has give a up enough of its initial heat and radiation that it can be safely stored in dry storage casks. Dry storage casks are being used today for spent fuel storage, both in the U.S. and abroad. These casks are designed and extensively tested to control both the heat and radiation of the spent fuel in accordance with federal safety regulations. The detailed design of the cask and internal basket ensure that the heat and radiation of the cask are within acceptable limits and that the long term integrity of the fuel and cask are maintained.

The walls of the dry storage casks shield the radioactive materials to meet federal regulations for personnel and environmental exposure to radiation. The heat is transmitted from the spent fuel by the internal basket to the cask walls and then carried through the cask walls by radiator-like fins. This allows heat to naturally flow from the inner cavity without any forced cooling. Since the cask dissipates the heat to its outer surface, a stable internal and external temperature is maintained. The Nuclear Regulatory Commission (NRC) limits the amount of heat that can be given off by spent fuel when stored in a cask. For a cask designed to hold 26 fuel assemblies (6000 fuel rods), the limit is 26,000 watts (equivalent to 260 100-watt light bolbs). The NRC maximum fuel temperature limit inside this cask is 716°F. This limit, in conjunction with the heat dissipation capabilities of the cask, ensure that 1) the average internal temperatures will be less than 500°F 2) that the outer surface temperature of the cask will pose no harm to people or the environment and 3) that all cask temperatures meet NRC limits.

The exterior cask temperature depends somewhat on the particular climate. In the heat of the summer, the surface temperature of a cask could be as high as about 300°F, but in the winter it could be as low as about 160°F. The exterior temperature of a cask would not be noticed from any appreciable distance. Even the surface heat from an array of 1500 casks (which might be present at an MRS facility) would be no more than that generated by a small industrial factory and would be imperceptible to a person standing away from them. The casks would have no thermal impact on the Grant County environment, weather, or climate.

## Facts about Storing Nuclear Fuel Underwater

Commercial nuclear reactors in the United States temporarily store their used, or "spent", nuclear fuel underwater, in large steel lined concrete pools. These "spent fuel pools" help keep the nuclear fuel cool and shield the environment from radioactivity. The pools generally measure 30 feet wide by 40 feet long, and they are about 40 feet deep. The total volume of water in a spent fuel pool is, using 7.8 gallons/ft<sup>2</sup>, about 375,000 gallons. This is roughly equivalent to the amount of water in two olympic-sized swimming pools.

The water in a spent fuel pool is continually purified and cooled in a closed-loop system. There is essentially no loss of water from the pool other than from evaporation or from the addition of chemicals. Therefore, while the amount of water in a spent fuel pool may seem large, only a few hundred gallons of water a week would be required to maintain the system. This is less water than the average household uses in one day.

#### The Price-Anderson Amendments Act of 1988

Major Provisions Relating to NWPA Activities

#### Coverage

The Price-Anderson Amendments Act (PAAA) renews, until August 1, 2002, and makes <u>mandatory</u>, the Department of Energy's authority to provide liability protection to its nuclear contractors and the public for damages that could arise during DOE-contractor nuclear activities. Therefore, all DOE nuclear waste activities carried out by contract must be covered by the Price-Anderson system through August 1, 2002. Transportation activities continue to be povered under the system.

#### Limitation of Liability

The PAAA raises the statutory limitation of liability for a nuclear incident to approximately \$7 billion. (Under prior law, the limitation was 1/20 million for NRC licensees and \$500 million for DOE contractors.) For DOE contractors, payment would be made from Government funds. For accidents resulting from activities conducted under the Nuclear Waste Policy Act of 1982 (NWFA), the funds would come from the Nuclear Waste Fund.

In all cases, if the aggregate liability of persons indemnified were to exceed the statutory limit of approximately \$7 billion, the Congress would thoroughly review the particular incident and take whatever action is determined necessary to provide full and prompt compensation to the public. The President would be required to submit a compensation plan to Congress not later than 90days after a determination by a court that the liability limit may be execteded. This plan must "provide for full and prompt compensation for all valid claims".

## Presidential Commission on Catastrophic Nuclear Accidents

The PAAA requires that the President establish, within 90 days of enactment, a commission to study appropriate means of fully compensating victims of a catastrophic nuclear accident that exceeds the limitation on liability.

#### Precautionary ? acuations

The AAA provides indemnity coverage for all reasonable additional costs incurred by a State or local government in the course of responding to a nuclear incident or a precautionary evacuation. Coverage of a precautionary evacuation is new under the PAAA, and applies to an evacuation resulting from an event that is not a nuclear incident but poses an imminent danger of injury or damage from the radiological properties of high-level radioactive waste or spent nuclear fuel as defined in the NWTA and 's initiated by an authorized State or local official to protect the public health and safety.

#### Waiver of Defenses

In the event DOE or NRC, as appropriate, determines that a nuclear incident is an extraordinary nuclear occurrence (ENO) (a substantial off-site dispersal of radioactive material causing substantial damage or injury), the claimant may take advantage of several procedural shortcuts and a substantially reduced burden of proving liability under the waiver of defenses provision. Under prior law, the waiver did not apply to an accident at a waste facility. The PAAA broadens the scope of this provision so that it applies to any ENO, including an ENO at a waste facility.

## Statute of Limitations

Under prior law, a suit for an ENO had to be brought within 20 years of the nuclear incident (unless State law provided a Statute of limitations more favorable to the claimant). The PAAA deletes the 20-year requirement and provides only that suit for an ENO must be brought within three years of discovering the injury (unless State law provides a statute of limitations more favorable to the claimant).

#### Liability Coverage for Transportation Accidents

Liability coverage is currently available to reimburse the public for damages suffered as the result of accidents occurring during the transportation of radioactive materials. A review of the sources of such liability coverage is provided below.

## Coverage for Accidents under the Price-Anderson Act

The federal Price-Anderson Act of 1957 (42 U.S.C. 2014 and 2210. as smended in 1988) provides an extensive system of financial protection -- in the form of private insurance and government indemnification -- to compensate the public for damages associated with serious nuclear accidents. Nuclear accidents covered under the system are those that result in injury or damage caused by the hazardous property of highly radioactive material, and involve the following facilities:

- commercial nuclear power plants;
- other nuclear reactors, such as those operated by non-profit educational institutions;
- nuclear facilities operated by contractors of the U.S.
  Department of Energy (DOE); and
- plutonium processing plants and nuclear-fuel fabrication plants.

In addition, coverage under the Act extends to accidents occurring during the transportation of radioactive materials to or from such facilities. Financial protection under the Act also extends to activities -- including transportation -- conducted by the DOE to support the management and disposal of spent nuclear fuel, high-level radioactive waste, and transuranic waste. The U.S. Nuclear Regulatory Commission (NRC) has been directed to initiate a negotiated rulemaking to determine whether radiopharmaceutical materials should also be covered under the Price-Anderson system.

Financia' protection provided under the Act extends to (1) persons that may be injured by a nuclear accident and (2) persons who may be liable for a nuclear accident. The Act establishes a limitation of liability for damages suffered by the public as the result of nuclear accidents at a level of approximately \$7 billion. In the event that the liability for an accident were to exceed the limit, the Congress would be required to thoroughly review the incident and take whatever action is determined necessary to provide full and prompt compansation to the public.

While the Price-Anderson Act establishes a system for the payment of damages suffered by the public, the law of the State in which the accident occurred is generally used to determine liability

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and the extent of damages. An exception to the use of State law is applied in the event of certain large accidents (defined as "extraordinary nuclear occurrences" in the Act); in the event of such accidents, the Act provides for a finding of liability regardless of fault and requires use of a specified statute of limitations (the time in which an injured party must file a laim) unless State law is more favorable to the injured parties.

Under recent amendments to the Act, liability coverage extends to reasonable costs incurred by a State or local government in the course of responding to a nuclear accident and to precautionary evacuations. Coverage of precautionary evacuations applies to evacuations resulting from an event that is not a nuclear accident but poses an imminent danger of injury or damage and is initiated by an authorized State or local official to protect public health and safety.

## Coverage for Accidents Not Covered by the Price-Anderson Act

Liability coverage for personal and property damages suffered by the public as the result of transportation accidents involving radioactive materials that are not covered under the Price-Anderson Act is the responsibility of the purties found liable for the accident.

For motor carriers of radioactive materials, minimum limits of financial protection are required by the Motor Carrier Act of 1980. The Motor Carrier Act currently requires \$1-\$5 million for each motor vehicle operated by carriers of certain hazardous and radioactive materials.

While Federal law does not require similar financial protection for shipments of radioactive materials by other modes of transportation, substantial levels of financial protection are typically maintained. For example, rail companies maintain financial protection at levels of up to \$5 to \$10 million through self insurance and/or commercial insurance.

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#### Overview

The Price-Anderson Act, first enacted in 1957 as an amendment to the Atomic Energy Act of 1956, as amended, provides a system of financial protection for (1) persons who may be injured by and (2) persons who may be liable for a nuclear accident. The Price-Anderson Amendments Act of 1988 (PAAA) renews, until August 1, 2002, the authority of the Nuclear Regulatory Commission (NPC) to indemnify its licensees operating large nuclear power plants and the Department of Energy (DOE) to indemnify its contractors engaging in nuclear activities, for public liability arising from a nuclear incident. Once the indemnity is granted it applies not only to the named indemnitee but to any person who may be liable for a nuclear incident (except DOE or NRC). The liability of all persons indemnified under the Act for any one incident is limited to the amount of the indemnity.

## Limitation of Liability

The PAAA raises the statutory limitation of liability for a nuclear incident to approximately \$7 billion. (Under prior lew, the limitation was \$720 million for NRC licensees and \$500 million for DOE contractors.) For NRC-licensed nuclear power plants, the funds would come from a primary layer of commercial insurance of \$160 million and from a retrospective premium system whereby the operator of each nuclear reactor would be obligated to pay up to \$63 million per nuclear teactor, but no more than \$10 million in any one year. To assure prompt payment of claims, the PAAA would give NRC borrowing authority against future receipts of retrospective premiums. In addition, the retrospective premiums would be subject to inflation adjustments.

For DOE contractors, payment would be made from Government funds. For accidents resulting from activities conducted under the Nuclear Waste Policy Act of 1982 (NWPA), the funds would come from the Nuclear Waste Fund.

In all cases, if the aggregate liability of persons indemnified were to exceed the statutory limit of approximately \$7 billion, the Congress would thoroughly review the particular incident and take whatever action is determined necessary to provide full and prompt compensation to the public. The President would be required to submit a compensation plan to Congress not later than 90 days after a determination by a court that the liability limit may be exceeded. This plan must "provide for full and prompt compensation for all valid claims".

#### Presidential Commission on Catastrophic Nuclear Accidents

The PAAA requires that the President establish, within 90 days of enactment, a commission to study appropriate means of fully compensating victims of a catastrophic nuclear accident that exceeds the limitation on liability.

#### Precautionary Evacuations

The PAAA provides indemnity coverage for all reasonable additional costs incurred by a State or local government in the course of responding to a nuclear incident or a precautionary evacuation. The definition of nuclear inc. at remains unchanged, meaning essentially any event resulting in injury or damage caused by the hazardous properties of source, special nuclear, or byproduct material. Coverage of a precautionary evacuation is new under the PAAA, and applies to an evacuation resulting from an event that is not a nuclear incident but poses an imminent danger of injury or damage from radiological properties of source, special nuclear, or byproduct material, or high-level radioactive waste or spent nuclear fuel as defined in the WWPA, or transuranic waste (10 sanocuries per gram of transuranic contamination or as NRC prescribes), and is initiated by an authorized State or local official to protect the public health and safety.

#### Malver of Defenses

In the event DOE or NRC, as appropriate, determines that a nuclear incident is an extraordinary nuclear occurrence (2NO) (a substantial off-site dispersal of radioactive material causing substantial damage or injury), the person indemnified must waive certain defenses normally available under tort law: any defense based on (1) conduct of the claimant or fault of the person indemnified, (2) charitable or governmental immunity, or (3) a statute of limitations if suit is brought within three years of discovering the injury. The FAAA broadens the scope of this provision so that it applies to any ENO, including an ENO at a waste facility. The FAAA also amends the statute of limitations provision by deleting the requirement that a suit be brought within 20 years of the incident.

#### Punitive Damages

No court may award punitive damages under the PAAA against a person, such as a DOE contractor, on behalf of whom the Government is obligated to make indemnity payments.

## Judicial Review of Claims

The PAAA provides that all claims for a nuclear incident shall be filed in U.S. District Court. (Under prior law, Price-Anderson had provided for Federal jurisdiction only for an ENO, so that claims for a nuclear incident could be filed in several different State courts.) This provision was made retroactive so that claims arising out of the Three Mile Island Unit 2 Nuclear Plant accident could be concolidated in one Federal district court.

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PARA also authorizes the chief judge of the district court to appoint a special caseload management panel if the court determines that the limitation on liability is likely to be exceeded or the cases will have an unusual impact on the court's work. These provisions build on and improve the streamlined legal procedures established by Price-Anderson.

#### Legal Costs

The PAAA establishes a new means for paying legal costs incurred under the Price-Anderson system. First, the court may authorize payment of legal costs only if such costs are demonstrated to be reasonable and equitable, and if the requestor has litigated in good faith, avoided unnecessary duplication, frivolous claims, and unreasonable delay. Furthermore, the PAAA clarifies that the limitation on liability includes authorized legal costs and the indemnity provided by DOE includes payment of authorized legal costs approved by the Secretary. For NRC licensees, if the limitation on liability is exceeded, the

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licensee must pay up to an additional St of the retrospective premium (\$63 million) to cover legal costs.

#### International Aspects

PAAA does not change the territorial scope of Price-Anderson coverage. PAAA coverage applies to incidents occurring within the United States, causing dawage or injury within or outside the United States. It only covers incidents outside the United States resulting from DOE contractor activities if the incident involves source, special nuclear or byproduct material owned by and used by or under contract with the United States. In such cases indemnity and limitity are both limited to \$100 million and the indemnity applies only to persons acting under a DOE contract or a subcontract, purchase order or other tier under the DOE contract.

#### Mandatory Coverage of DOE Nuclear Contractors

DOE authority to provide Price-Anderson coverage is made mandatory by the PAAA for any contractor conducting activities for DOE that involve the risk of liability for a nuclear incident, without regard to how substantial that risk may be. Therefore, DOE will be required to extend coverage for many activities not currently covered. The Price-Anderson indemnity shall be the exclusive means of indemnification for all such activities.

#### Civil and Criminal Penalties

#### for DOE

The PAAA would subject DOE contractors and their subcontractors and suppliers to civil and criminal penalties for violation of applicable nuclear safety rules. The Secretary could compromise, modify, or remit these civil penalties. Certain current contractors operating specified facilities would be exempt from the civil penalty provision and the Secretary would be required to determine by rule whether nonprofit educational institutions should receive automatic remission of civil penalties.

## Radiopharmaceutical Licensees

NRC would be required to conduct a negrtiated rulemaking to determine whether to indemnify radiopharmacies under existing authority.

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MRS PROCESS RIETORY IN FREMONT COUNTY WYOMING To: Judy Kallis, chair N. Dak. MRS Study

In September of 1991 Sen. Bob Peck brought the idea of looking at a grant application from DOE for Phase T of the Monitored Retreivable Storage, to the Fremont County Commission. Our first response was one of skepticism but we agree to think about it. Later that week the subject was brought up at the Association of Governments which is made of of the mayors of the six towns in Fremont County and the County Commissioners. Fremont County is just recovering from severe resession where we lost 5,000 people in the last five years due to the closing of 4 uranium mines and an iron mine (over 3,000 jobs were lost). So with this background in mind the Association of Governments unanimously voted to persue the issue.

It was agreed by the Fremont County Assoication of Governments and the Fremont County Commissioners that the Assolcation staff would help with the application rather than hire "outside" help and that if the grant were received that the staff would be paid out of the grant. The staff then put together a letter to Gov. Mike Sullivan asking for his support of the project. On October 15th. Tom Satterfield vice chair or the county commission then tock the letter to Cheyenne and delivered it to the governor. His reaction was much the same as the commissioners but he said he would study the issue and get back to us. Finally on December 11th the governor did send an no objection letter to the commissioners. The assoication staff then finished up the application and sent it to DOE on December 21st. (During November the Commissioners set up a speakers pool of four people to speak to the public about the MRS process) On December 16th and 19th Sen. Bob Peck and Tom Satterfield and staff members Mike Morgan and Pat Neary met with staff members of the Nuclear Waste Negotiators Office for information exchange. The latter meeting also included other county elected A - 24 - 1

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officials from the state house of representatives and senate also the chamber president and economic development people. News articles began in November.

The decision to use local people in the process was a good one We learned during the Bridger-Teton Plan meetings that the people of Fremont County do not look kindly on "outside" experts that come int and tell the people of Fremont County what is best for them (this may be the ultimate downfall of the opposition in that most of them are eastern environmentalist who are out to save the people of Fremont County) On January 6 DOE finally recieved our application (it has been lost in the Christmas Mail) On Janvary the governor announced at the Parm Loan Board meeting that Fremont County had recieved the \$100,000 grant. One other surprises was the enthusiasm that came from Sec. of State Kathy Karpon (2nd highest office in Wyoming) She was estatic about the possibility of new industy and new jobs.

On the 21st the County Commissioners put out ads asking the people of Fremont County to turn in letters of request to be on a Citizens Advisory Group to study the issue of wheter Fremont County should be considered as a possible site for the storage of nuclear spent fuel rods MRS. (the process of adertisemente has been a policay of the commission for the last five years) The deadline for applications was the 31 of January. By the selection date of February 4 (which is the regular meeting of the commissioners) they had received 99 applications. The four commissioners who attended this meeting each voted for 25 of the applicants because it had been decided from past experience that personal interviews are a must in making appointments. This vote resulted in 26 receiving two or more votes. These 26 were selected for personal interviews to be held on Monday Feburary 10th. Each interview was to take no more than 10 min. (they actually took 6 min.) and each person was ask the same four questions. 1) could they be open to the process 2) did they have time to devote to the project 3) could they just represent themselves and 4) did they have any questions?

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Previously on the 10th two members were selected from the list of 99 from the application from the Arapaho and Shoshone Indian Tribes. This was one of the things we put in the application. It is important to not leave them out of any process. From the interviews 15 persons were chosen for the Citizens Advisory Group and they had their first meeting on Thursday the 13th of February. The only instructions the commissioners gave them was that all meetings must be open and all minutes must be published in the paper. We also assigned a temporary chairperson to the group. ( former county commissioner Butch Eudson, the group chose to wait till the third meeting to choose a perm. chairperson) The first meeting was very well attended by the public and it was decided to have publis imput both at the Leginning of the meetings and the end also. A not about opposition: Early in the game we went to the Wyoming Outdoor Council and told them what we were doing and ask them to be part of the process. Only one of them applied for the

group, unfortuately she was not chosen because she could not attend the first 5 or 6 meetings because she would be in Cheyenne lobbing. But she was in the 26 that were interviewed. Former Sen. Dusel has formed a group WAND Wyoming Against Nuclear Dumps. They are off to a shaky start and are being attacked in the press because they came out so soon attacking a process of education. We shall see how it goes. The main thing that the County Commissioners have been concerned with is that every thing is out in the open. There are no closed door meetings and no bashing of the opposition. We we please at the first meeting when the Group chose not to answer the Anti-MRS things in the paper but to talk openly in the meetings about these things. The press being there could do what they wanted with the information. But every thing was to be right out on the table from the very start.
CONTACT: Phone Conversation. Keith Miller - Vice Pre ident of Apache Tribe, New Mexico. (505) 671-4495

We are at the end of the first phase - all of the money is spent.

The tour we took to view different storage sites was good, we feel there is no danger in putting a MRS site here.

The community, county, and state are opposing it so leaders are putting it on hold until they (the leaders) go talk to State legislatures to see how they want the tribe to proceed.

He is pretty sure the government will pull out if asked to, now or even into the second phase.

The biggest concern of the tribe leaders is that Yacca mountain will not be completed, or that the whole project is in limbo. The government will have to get into gear or the tribe will not proceed with MRS. They DO NOT want to get stuck with it forever.

If the government is going to PUT it there (New Mexico) they are going to have to TAKE it from there. The tribe wants State to enact policy to make sure it will not be forever

The Chair of the tribe descides if the people get to vote on the whole project.

There are five to six people working strong against the MRS site.

\*\*It was never planned to be put on the Reservation, they have always planned that it be put somewhere else,outside their land.