UNITED STATES
NUCLEAR WASTE TECHNICAL REVIEW BOARD

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Rosslyn Westpark Hotel
Arlington, Virginia

Wednesday, January 16, 1991
9:00 a.m.

BOARD MEMBERS PRESENT:

Dr. Don U. Deere, Chairman
Dr. Clarence R. Allen
Dr. Melvin W. Carter
Dr. Patrick A. Domenico
Dr. Donald Langmuir
Dr. D. Warner North
Dr. Dennis L. Price
Dr. Ellis D. Verink

ALSO PRESENT:

Dr. Roy E. Williams, Consultant
William D. Barnard, Acting Executive Director
Dennis G. Condie, Deputy Executive Director
Helen W. Einersen, Executive Assistant
Victoria Reich, Librarian

P R O C E E D I N G S

[9:00 a.m.]

DR. DEERE: Good morning, ladies and gentlemen. I am Don Deere, Chairman. It is a pleasure to welcome you to the Nuclear Waste Technical Review Board's first meeting of 1991. Since it is the first meeting of the year I would like to reintroduce to you the Board members, and I will do it by introducing them as panel chairmen.

Dr. Clarence Allen, who is the Chairman of the Panel on Structural Geology and Geoengineering. Clarence, would you please tell them your affiliation and your particular specialty.

DR. ALLEN: I am Clarence Allen, Professor of Geology and Geophysics Emeritus, Cal Tech in Pasadena, California. My main area of interest has been seismology and related aspects of geology, and allied areas of engineering geology.

DR. DEERE: I would next like to introduce Dr. Melvin Carter, who is Chairman of the Panel on Environment and Public Health.

DR. CARTER: I am Neely Professor Emeritus from the Georgia Institute of Technology. My fields of specialty are environment, public health, and radiation protection.

DR. DEERE: Thank you. Next is Dr. Patrick Domenico, who is Co-Chair of the Panel on Hydrogeology and Geochemistry.

Dr. DOMENICO: I am David B. Harris Professor of Technology at Texas A&M. My specialty is hydrogeology.

DR. DEERE: Thank you. Dr. Donald Langmuir, who is also Co-Chair of the Panel on Hydrogeology and Geochemistry.

DR. LANGMUIR: I am Professor of Geochemistry at the Colorado School of Mines. My focus is on groundwater geochemistry, water rock interactions.

DR. DEERE: Dr. D. Warner North, who is Chairman of the Panel on Risk and Performance Analysis.

DR. NORTH: I am a Principal with the Consulting firm of Decision Focus and Consulting Professor in the Department of Engineering Economic Systems at Stanford University. My areas of specialty are risk assessment and decision analysis.

DR. DEERE: Dr. Dennis Price, who is Chairman of the Panel on Transportation and Systems.

DR. PRICE: I am Professor in the Department of Industrial and Systems Engineering at Virginia Tech. My areas of specialization are transportation, particularly human factors and systems safety analysis related to transportation of hazardous materials.

DR. DEERE: Dr. Ellis Verink is Chairman of the Panel on Engineered Barrier Systems.

DR. VERINK: I am Distinguished Service Professor in the Department of Material Science and Engineering at the University of Florida. My field is metallurgical engineering and specialty in the field of corrosion.

DR. DEERE: Not present today because of a conflict is Dr. John Cantlon. John is Chair of the Panel on Quality Assurance, and he is recently retired as Vice President and Dean of the Graduate College at Michigan State University.

I am Don Deere from Gainesville, Florida. I have been a national consultant in the field of dams, tunnels, underground

power plants and landslides.

As most of you know, the Nuclear Waste Technical Review Board was created in 1987 by an act of Congress to review the technical and scientific validity of the Department of Energy's Program for managing high level radioactive waste disposal. In the same law, Congress directed the DOE to characterize a site at Yucca Mountain, Nevada as the possible location for a geologic repository for the permanent disposal of high level radioactive waste. The Board's charges include the evaluation of site characterization activities at Yucca Mountain, as well as activities involved in packaging and transportation of the high level radioactive waste that could ultimately be stored there.

To date the Board has nine members, who are nominated by the National Academy of Sciences and appointed by the President. Our parent legislation provides for a total of 11 members to serve concurrently.

1990 was a very big year for the Board. We held four full board meetings, submitted two reports to the U.S. Congress and the Secretary of Energy, sponsored ten panel meetings and technical exchanges, and held three public hearings. Members of the Board met with representatives of the State of Nevada, the Western Cherchone National Council, the Sorrel Conservation Service, the National Park Service, the Fish and Wildlife Service, the United States Geological Survey and the utilities.

Board members also met with nuclear waste disposal experts in Sweden and Germany during a week long trip. The Board is currently considering its agenda for 1991. Possible areas of inquiry concerning the DOE's technical and scientific activities are numerous and challenging. The full list of issues before us requires that the Board and its seven panels establish priorities early.

Therefore, we are especially pleased to have with us at this meeting representatives of groups reflecting a broad range of opinion on high level radioactive waste management issues. The speakers who have been invited to make presentations today bring a wealth of experience and expertise to this discussion. We look forward to hearing their perspectives and concerns regarding high level radioactive waste management, and invite them to candidly share their viewpoints with us.

Unquestionably, Board members will gain valuable insight from these presentations which will assist us in planning our technical activities for the coming year. I want to allow plenty of time for their presentations and for Board members to ask questions, so we will progress immediately into the introduction of the first speaker.

We are pleased to welcome our first speaker of the day, Dr. Colin Heath. From 1976 to 1981 Dr. Heath held several positions with the Energy Research and Development Administration and the Department of Energy. As Director of the Office of Waste Isolation, Dr. Heath managed the national program to develop the necessary technology to identify and quality sites for the permanent disposal of high level waste. While at the DOE, he approved the initial exploration of the Yucca Mountain site, and was involved in formally identifying deep geologic disposal as a

preferred method of high level radioactive waste disposal for the United States.

Dr. Heath is currently Vice President for Project Development and Management for Remcor, Incorporated, a full service hazardous waste engineering and remediation company in Pittsburgh, Pennsylvania. It is my pleasure to introduce Dr. Heath.

DR. HEATH: Thank you, Dr. Deere. Distinguished Board members, let me thank you very much for the honor of appearing before you this morning. Let me say that I am not a representative of any group. As Dr. Deere mentioned, the speakers were representing various groups, except perhaps I should say I am a representative of the past. Although I am no longer an active participant in the National Nuclear Waste Program, I have remained a very interested observer because the amount of time that I did spend in the program represented a significant part of my life, if not my chronological aging maybe my mental aging.

The letter of last September that I got from your Executive Director, Bill Barnard, said that the Board was interested in hearing my "historical perspective on the high level radioactive waste program." Perhaps in light of the fact that many members of the Board may not be aware of my prior participation, I could take a few minutes to reminisce about what now can be called the formative years of the present program. I think there are some things that have remained constant, and perhaps we can learn from the past.

I joined what was called the Energy Research and Development Administration in October, 1976, just about two weeks before the election of President Jimmy Carter. Right after that election on December 2, 1976, the ERDA Administrator Bob Seamans, issued a public announcement that ERDA would mount a nationwide campaign of investigation for sites for a geologic repository.

A total of 36 states were specifically identified as being subject to the screening process with various categories of priority identified. I should say as an aside that one of the things I learned in DOE in the five years that I was there was that the time to make public announcements was between the election and the inauguration of the person just elected. Here again, that was exactly the case.

I formally became part of the Waste Management Program in the spring of 1977, and almost immediately had the opportunity to get roasted and vilified by the citizens of Alpena, Michigan in a public meeting concerning our interest at the time in doing some preliminary exploratory work in the Michigan Upper Peninsula. Apparently that uproar that I was exposed to in Michigan was being magnified many times over in the White House, where Jim Schlessinger and John Ahern were hearing from many governors about the problems they were having with the concept of riling up citizens in 36 states about this program, particularly since at the time the staffing level in the government working on the program numbered no more than a total of eight to ten people in headquarters and, if I remember correctly, about three in Oak Ridge, and state officials were just waiting for the other shoe to drop because following the announcement there was no further contact from the Federal government.

As a result of the feedback being received from the states -- and I must also say by comparing the program resources to the goals just announced -- word came back down from the White House at about the time DOE was being formed, October, 1977, to cut the program back; to focus on only those areas that were realistically considered to be the most technically promising.

It is instructive to look back to the policy pronouncements at that time and compare them with where we are today. In fiscal 1977, the total budget for the high level waste repository program was on the order of $40 million. As I previously mentioned, we had eight to ten people at headquarters and I believe three at the Oak Ridge operations office.

Nevertheless, President Ford's policy statement on U.S. Nuclear policy issued on October 28, 1976 had called for efforts "to speed up the program to demonstrate all components of waste management technology by 1978, and to demonstrate a complete repository for commercial high level nuclear waste by 1985."

Needless to say when I finally left DOE in October, 1981, the nature and perspective of the program had fundamentally changed. I believe that we accomplished a great deal in the five years that I was involved in the program, and in many ways the Nuclear Waste Policy Act of 1982 was a necessary and essential step.

We did respond to that White House directive in 1977 and we focused the SALT investigations where there was the most promise. Although we were unable to proceed with investigations in Michigan because of agreements made with the State at that time, investigations of SALT deposits were focused on Gulf Coast Salt Domes, the permian basin Texas and the paradox in Utah.

Additionally, we expanded the program to consider other geologies on those large land masses already controlled by the Department of Energy, which resulted in the investigations of the basalts at Hanford and the volcanic on an agent to the Nevada test site. At the urging of scientists at the USGS and at some of our national laboratories, we also expanded our investigations to include crystalline rock formations, and cooperated extensively with programs in Canada and Sweden where they were also considering rock types.

I believe I can point to four major achievements during those early years which were accomplished in the hopes of building a foundation for what would follow. Those were one, completion of the programmatic environmental impact statement with associated public meetings -- and one of your Board members, Dr. Carter, was a participant with me in those -- to establish geologic disposal as the preferred alternative for management of high level waste.

Two, the expanding of the geologic settings under consideration in the program, and consideration of geologies other than salt deposits for investigation. Three, securing the expanded participation of other government agencies, in particular the United States Geological Survey. Four, preparing the submittal by the Department of Energy to support the Nuclear Regulatory Commission in what was called their waste confidence rulemaking.

Remarkably, completion of this document was the first attempt up to that time by the Department to lay out in detail all of the

steps planned to be taken to establish a license repository to a specific schedule.

As a result of my experience in the program, I would like to make some general observations about the nature of the work involved in trying to make this kind of program work. Then, if I may, I would like to comment on some specific aspects of the work of your Board, the Technical Review Board to date, as reflected in your two reports submitted to the Congress. Also, on a somewhat parallel, activities of the Board on Radioactive Waste Management of the National Research Council.

When I first came to Washington, D.C. and accepted a role in the high level waste program, I was convinced that active, intelligent leadership and the proper allocation of resources would readily allow the program to succeed. After all, the technical problems didn't seem to be that severe. Surely, people could see that permanent disposal and geologically ancient and stable formations was relatively straightforward and would provide a safe, secure haven for byproducts that we wanted to separate from the human environment.

I never really thought that I would be a long term career government employee, so I planned on staying for no more than five or maybe ten years at most that it would take to get approval for a suitable repository site. Obviously, I learned a few harsh lessons which still I think apply here.

I believe that my initial enthusiasm for the task is nearly always reflected by new managers or directors of programs like the Waste Management Program. I am sure that Frank Baranowski, Carl Coolman, Bob Morgan, Sheldon Myers, Ben Rushi and now John Bartlett, have all taken on this program with a strong commitment that is sensible, clear headed, and vigorous management will resolve the problems and the job will be done.

It may very well be that the job will get done, but we must all recognize that neither national program managers nor any single agency that takes on a task such as this are masters of their own destiny. There are just too many forces and too many actors who must combine together for a successful symphony. I guess I should say production, if I am not going to mix my metaphors.

Almost immediately after the formation of DOE in 1977, a task force was put together under John Deutsch to review the entire waste management program as it existed at the time. One can argue with many of the findings of that task force, as many have, but I think the most cogent finding was that success of the program would not be achieved by the DOE alone.

Many other agencies at both the Federal and state level have to cooperate for this program to succeed. Out of this recommendation came the formation of the Interagency Review Group, which included 16 Federal agencies, and also led to the formation of what was called the State Planning Council. I am not coming before you today to endorse the conclusions of that Interagency Review Group. But it does still remain true that John Bartlett and the very best managers and scientists that DOE can find will not be able to succeed with the high level waste program until all the other players that make up our complex society are willing to

assist them in making things happen.

This recognition of the inability to control one's destiny can be a very sobering an disillusioning psychological blow to a proactive manager with a track record of success in either government or industry. But it's a very real factor and must be dealt with. The harsh reality is that there needs to be an overwhelming national will for this program to succeed. Or, as perhaps might happen, the program will have to fade from the immediate public consciousness before it can ever be finished.

Because there is no overwhelming national will for the program to succeed, we have been stuck with some incredibly complex procedural and administrative requirements which may, by contrast, guarantee that the program will not succeed. The various parties that have been brought into this program are still so suspicious of each other that we have built a series of administrative obstacles that may never be overcome.

I suggest that until there is a national will to make this thing happen and thereby the process can be greatly simplified, it is highly likely that the program will never be completed.

Let me use a specific example to illustrate my point. The Nuclear Waste Policy Act of 1982 included a requirement that the Department develop an issue, a draft siting criteria, no later than 180 days after passage of the Act. This would have been July 5, 1983. This requirement was established, not withstanding the fact the siting criteria had been published previously and discussed for many years, because opponents of the site investigations then underway hoped that a new set of criteria would eliminate sites near where they lived.

The EPA wrote document specifications which were sent to the Department, which was finally sent to the NRC on November 22, 1983, revised again in May, 1984 and finally issued as 10 CFR 960 on December 6, 1984, almost two years after the passage of the Nuclear Waste Policy Act. I submit, however, that a closer look at this document provides no technical breakthroughs, no sophisticated mechanisms nor new criteria that materially affected the selection of the three sites that actually got recommended for characterization on May 28, 1986.

The same three sites would most likely have been recommended even if 10 CFR 960 had never been issued. Very little actual field investigation was actually performed while the program was going through this intellectual exercise. I am sure that there were many interesting discussions of the theory of decision analysis. A bunch of interesting papers may have been written and presented, but nothing of real substance and better qualifying potential sites actually got done.

Furthermore, I challenge anybody to defend that the quality of the site selection decisions that were made were improved in the slightest amount by this three and one-half year steeple chase.

How do these reminiscing relate to the current work of your Board? Let me urge you to continue in the direction I see you taking in the two reports that you have submitted to Congress to date. That is, to stretch your mandate as far as you can beyond strictly evaluating the technical and scientific validity of the

activities of the program. I encourage you to carry it further to establish where those activities are leading, whether they have any value, and whether they will achieve anything.

Let me preface my further remarks by saying that the observations that I can make about the current program are basically in support of findings already made by this Board in its reports to the Congress and by the Board on radioactive waste management of the National Research Council. I would like to add my support for you to continue to address two specific areas of concern.

The first of these falls under the category of science policy recommendations, in which you point out the need to recognize uncertainties in setting standards. The second has to do with pressing DOE to evaluate continuously the value of the multiple activities being undertaken under the program. I particularly endorse the Board's concern as to whether the specificity now contained in both EPA and NRC regulations is necessary or even appropriate for the development of a successful waste management program.

On page 11 of your second report, the Board expressed concern about "the application of specific criteria that have little or no impact on public safety and environmental protection, or criteria that effectively impose a much more stringent standard than that envisioned by overall performance goals." I would like to add to that concern by pointing out that many of these rigorous criteria may also have the attribute of never being able to be shown to have been met.

They will, at best, be useless or at worst, result in the disqualification of a waste management system that could otherwise meet the required performance standard.

I recognize the Board's interest in placing more emphasis on longer lived waste packages and other engineered features. But I propose that the package lifetime requirements now in 10 CFR 60 are a prime example of over specification. At the time that the NRC staff first proposed this requirement they were motivated by a desire to simplify the analysis of the performance of the waste disposal system because the integrity of the waste package was supposed to eliminate from consideration any geochemical interactions with the host rock by any isotopes with half lives of 30 years or less.

I am not sure that stipulation of this 300 year minimum waste package life has actually achieved this effect, but in addition the requirement for this minimum life was adopted without any idea on the part of the NRC as to how the satisfaction of this requirement was going to be demonstrated in a licensing process.

On first addressing this issue when package lifetime was being discussed, I was told by distinguished material scientists that they could not define a program of accelerated testing that would reliably demonstrate compliance with this requirement for the waste package. I would be interested in knowing whether the NRC and DOE have by now reached any agreement as to how this requirement is to be demonstrated.

Because of the concern that I have about proscriptive requirements like this in the regulations, I beg to differ with

another Board recommendation contained on page 21 of your report that "NRC should develop policy statements and criteria documents in human factors and system safety engineering that will help ensure that DOE programs address these issues." I don't think that would be a very good idea.

It is very appropriate for a Board such as this to persuade the DOE to integrate human factors considerations into their programs, and to perhaps develop criteria documents similar to the Department of Defense Mill Standards. But these standards have been developed by a programmatic agency. They are not a licensing requirement, nor do I think they ever should be.

I also note that this Board has urged DOE to develop a more robust engineered barrier system than presently contemplated. This might be a good idea as a way of providing more confidence in accepting our limited ability to characterize totally the natural geologic setting. I urge that somebody counsel the NRC not to be tempted to impose this as yet another regulatory requirement. DOE should be given the flexibility to use this approach as may be appropriate in order to meet better the overall performance objectives.

A second area that I would urge the Board to pursue is to help the DOE to better define the program technical objectives. The National Research Council Board addresses this concern in their recent report. At one point they state that "many of the uncertainties will be technically interesting but irrelevant to overall repository performance." It is all too easy when managing a program of the size of the Department's to buy a level of acceptance in the scientific community by funding a lot of Ph.D. students in prestigious universities and institutions around the country.

The National Research Council report brought a smile of recognition to my face when they observed that "different and sometimes competing national laboratories are working on a vast array of projects." I can relate all too well to this experience. When I was at the Department we had a small but well organized program to investigate the possible disposal of high level waste beneath the sea bed.

The degree of acceptance of this concept among the oceanographic community was, to my mind, somewhat exceptional. However, I don't think I should be labeled as overly cynical when I observe that the funds were well distributed to provide support to research at almost all the leading oceanographic institutions in the country.

As long as our studies were in the early conceptual stages, it was not difficult for these institutions to be positive about the eventual use of the sub-sea bed for disposal, particularly since we supplied a steady level of support for continuing research. I suspect that if it ever gets to the point that people get serious about sub-sea bed disposal that the winds will change.

I urge the Board to assist the DOE in being vigilant in supporting necessary technical research to achieve the ends of the program, but not to fall prey to those who seek support for interesting work and who will tend to claim that lack of such

support is a demonstration that DOE is not really interested in finding out about features that could cause a problem to the repository.

There are two topics in the Board's second report which exemplify this issue. I agree with your finding number three, namely that formation of a specific tectonic model acceptable with a high degree of confidence should not be viewed as a prerequisite to site suitability or to ensuring public safety and environmental protection. This strikes me as a prime example of finding out what you need to know without rewriting the textbooks.

On the other hand, I am puzzled by your recommendation number 16 to develop a complete understanding of the entire indigenous echo system around Yucca Mountain before proceeding with site characterization. I wonder if this just doesn't become the basis for another long, drawn out study. Surely, one should be able to proceed with site characterization with environmental constraints no more onerous than those laid upon any other development that the State of Nevada permits in its desert lands. The continuous expansion of Las Vegas, for example, is not awaiting a better understanding the desert echo system.

In conclusion, I would like to congratulate the Board on the insights that you have developed as reported already in your two reports to Congress. DOE needs to have the help that you can give to challenge regulatory positions that may not be well established on a technical basis. Also, to raise questions about the appropriateness of the proposed investigations.

It is often hard for the DOE to do this without being accused of being too aggressive in meeting its scheduled goals or trying to ignore significant problems. The independent technical stature of this Board is an invaluable assistance in assuring the technical effectiveness of the high level waste management program. Your continued work is essential. Thank you very much.

DR. DEERE: Thank you very much. I believe perhaps we will have the first two papers, and then we will ask questions of the two, if that is satisfactory. That will give us a better handle on the time.

Our next speaker is Mr. Dan W. Reicher. Mr. Reicher has served as Assistant Attorney General in the Environmental Protection Division of the Massachusetts Attorney General's Office; a law clerk for a U.S. District Court Judge; a Staff member of the President's Commission on the Accident at Three Mile Island; and, a legal assistant with the U.S. Department of Justice in the Hazardous Waste Section.

He is currently a Senior Attorney with the Natural Resources Defense Council. As Director of that Organization's Defense and Environment project, Mr. Reicher has led NRDC's activities relating to compliance with environmental laws at nuclear facilities. His articles have appeared in the New York Times, the Bulletin of Atomic Scientists, the Stanford Law Review and others.

It is our pleasure to welcome Mr. Dan Reicher.

MR. REICHER: Thank you Chairman Deere and members of the Board. I do appreciate the opportunity to address you today. The Natural Resources Defense Council, by way of information, is a

national environmental organization based in New York with offices in Washington, San Francisco, Los Angeles and Honolulu. We have a staff of about 175 scientists and attorneys and research specialists, and work in a broad array of environmental and energy issues and have long been concerned about the issue of nuclear waste.

In the early and mid-1970's we filed several successful suits against the AEC and the Energy Research and Development Administration regarding high level waste problems at Savannah River and Hanford. In the late 1970's we prepared a detailed report under contract to the DOE regarding high level waste. In the early 1980's we filed a successful suit which established that the Resource Conservation Recovery Act, the Federal Hazardous Waste Management law, applies to the Department of Energy's defense waste including defense high level waste.

In 1987 I had the pleasure, and in many people's minds, the dubious distinction of leading the litigation which overturned EPA's high level waste standards in the First Circuit Court of Appeals in Boston.

Before making some substantive comments, I need to make two clarifying points. First, it often comes as a surprise to many experts in the high level waste area that NRDC and indeed most of the national environmental organizations have long supported the concept of geologic disposal. Our criticisms have been directed at the approach taken towards and not the concept which underlies geologic disposal.

Second, as an organization, NRDC is not necessarily opposed to nuclear power. Instead, we believe it must compete on a level economic playing field with other ways to meet energy demands, including conservation and renewables.

I would now like to discuss several substantive issues, and then take your questions. The first issue involves EPA's high level waste standards. In the case that we brought in the First Circuit, we argued that the levels set in the individual and groundwater protection provisions of those standards were illegal because they did not provide a level of protection as stringent as that mandated under the Safe Drinking Water Act for the protection of underground sources of drinking water.

The First Circuit Court of Appeals, in a unanimous decision, ruled in our favor and directed EPA to either reconcile this inconsistency with the Safe Drinking Water Act or adequately explain it. The Court also found that the 1,000 year duration of the individual and groundwater protection standards were arbitrary and capricious.

I was hopeful in the aftermath of that case that interested parties would take the Court's decision to heart and support a strengthening of the standards consistent with the law. Instead, we see a strong push for many quarters to weaken the standards. The call seems to have gone out that the standards must be adjusted to fit the existing sites.

I feel strongly that this is the wrong approach and sends the wrong signal to the public. The result can only be to further undermine public confidence in the high level waste program. A recent University of Pennsylvania study of the public attitudes

toward siting the Yucca Mountain repository found that the imposition of strict standards is a critical element in convincing residents of a potential host state that a repository will be safe.

I believe EPA will have a difficult time trying to provide a fair and objective basis for diverging from the Safe Drinking Water Act levels. Drinking water supplies are among our most important natural resources, especially in the West. To adopt standards that permit contamination of these precious supplies at levels above what the law provides is not only an affront to future generations but to our own as well.

On a related note, increasingly one hears the EPA high level waste standards criticized for being so much more stringent than EPA's hazardous waste landfill requirements. The high level waste standards apply for 10,000 years while the hazardous waste standards generally focus attention on a site for a 30 year period. This is a specious comparison.

As the First Circuit found, the regulatory analog to deep geologic disposal of radioactive waste is not surface disposal but instead deep well injection of hazardous waste. EPA's deep well injection regulations for restricted hazardous waste, in fact, track the high level waste standards. The regulations require that a petition for a variance from the ban on injection of solvent waste demonstrate, among other things, that "fluid movement conditions are such that the injected fluids will not migrate within 10,000 years."

I think it is an important issue that I hear an awful lot about this variance and, in fact, the variance is a specious one.

The second issue that I would like to discuss relates to the report issued by the National Academy of Sciences Board on Radioactive Waste Management last July. The NAS Board declared the high level waste program to be in big trouble. It pointed the finger at the regulatory process, particularly that established by EPA and the NRC. It said the regulatory and licensing process was too quantitative, too proscriptive, and placed too much reliance on quantitative probabilistic risk analysis.

The NAS Board would jettison much of the present regulatory program in factor of "an institutional approach that is more flexible and experimental." In this way, the Board believes that we could "put to rest the problems that plague the national program today." It appears the NAS Board would adopt an iterative, more qualitative design as you go approach that would use modeling to identify where more information is needed instead of to prove compliance.

The Board's approach would apparently rely heavily on the professional judgment of technical experts as well as natural analogs in assessing the adequacy of a facility. There clearly are virtues in the NAS Board's proposal. However, I believe they are outweighed by the risk inherent in abandoning the current regulatory system developed with much pain over the past two decades in favor of a new and very different one with its own inevitable set of problems.

The fact of the matter is that all too often where rigorous

compliance standards and detailed licensing requirements are not imposed on a massive and costly project, corners are more likely to be cut in the name of program objectives or schedules. From the $150 billion price tag for cleaning up the weapons complex to the $300 billion or more of the S&L scandal will cost our nation, the history of loosely regulated programs is not an encouraging one.

I don't doubt that the NAS Board's approach might be workable if we were starting with a blank slate and supportive public. But the U.S. nuclear waste program has tried and failed on a number of occasions to develop disposal facilities under "flexible approaches." Public confidence has suffered dramatically as a result. As President Reagan used to put it, trust but verify.

I feel strongly that the public would also perceive an effort towards flexibility as an attempt to rescue a set of repository sites, WIPP and Yucca Mountain, from possible failure in the current regulatory process. Essentially, the public would say since the sites can't meet the standards, the Fed's want to jigger the standards to meet the sites. There is one and only one way around this perception, but it is not one that will sit well with many involved in the current program. That is to start over, not only with a new regulatory process but also with a new set of sites. The public simply will not find credible, an approach with jettisons the existing regulatory process but maintains the existing stable of sites.

The NAS Board has correctly determined that the program is in trouble, but has laid the blame at the wrong doorstep. Instead the fault, I believe, lies with Congress and the Department of Energy.

In 1986, as you know, we found ourselves with a program plagued by political considerations and riddled with technical flaws. The response to that situation as embodied in the 1987 amendments to the Nuclear Waste Policy Act, is best illustrated by a joke. I apologize to all of those who have heard it, but I think it does serve its purpose.

It seems there was a group of people out hiking one day in bear country. They came upon some fresh bear tracks, and this caused quite a bit of panic in the group. All of the members of the group except one sat down and took their hiking boots off and put on their running shoes and started on down the trail. As they were walking down the trail the one fellow still in his heavy hiking boots said to another, why did you change into running shoes? You can't outrun a bear. The fellow in the running shoes said to him, listen, we don't have to outrun the bear, we only have to outrun you.

[Laughter.]

In the amendments, Congress responded to the problems in the high level waste program in a heavy handed politically expedient manner, eliminating the key concepts of the 1982 act; multiple sites and regional equity. It left us with a program in the form of Yucca Mountain that was probably doomed from the start, despite Senator Johnston's claim that the nuclear waste problem had been solved.

Politics also did in what might have been a viable

alternative, the moratorium commission approach advocated by Congressman Udall and supported by the National Environmental Organizations. Instead of a six month moratorium by law and the fresh approach that might have resulted, we got what amounts in fact, to a multi-year moratorium. The blame also lies with DOE. As I have noted, political considerations contaminated the program in the last administration. Technical inadequacies have plagued the program to years, leading to Secretary Watkins' decision in November, 1989, to restructure the program.

There has also been a lack of meaningful public participation, and issue that I would like to turn to next. But before I do that, there is the issue of Nevada. Many people point to Nevada as the real reason the program is not working. They say if only we could get on site. But I can't blame Nevada for its obstinate approach. It is a highly understandable reaction to the heavy handed way that Congress went about amending the law. Nevada learned from the 1982 program that the just say no approach can work.

Turning to the issue of public participation. The bottom line is that the public has not been given an effective voice in the high level waste and true programs. The problem has many dimensions. Among other things, the public if often denied access to important information. The public is often consulted only after a decision is made. To the extent opportunities for public participation are extended, they are often formal and perfunctory. The agencies often fail to reach out to experts, the public trust.

Interestingly, in the case of massive controversial projects like a repository, the result is not a public that doesn't participate but rather a public that participates in a frustrated, angry, and sometimes misinformed way. This is a point that is often lost, I think, on many people. The public must be given not only an opportunity to participate in formal review processes but also in informal working relationships with repository program staff.

The public is often represented by independent technical experts whose role could be more constructive if such experts had greater access to program staff, so that concerns could be articulated and ideas exchanged. In the few instances where DOE has allowed this, the resulting dialogue was much more meaningful.

I also believe that the DOE funded state level independent technical review group, similar to the New Mexico Environmental Evaluation Group which focuses on WIPP, should be created for the high level waste program. The New Mexico EEG, under Bob Neal, has distinguished itself as a source of independent technical expertise and evaluation that the public relies on greatly.

I have one more suggestion about public participation. As we all know, there are a plethora of bodies which advise the government on nuclear waste issues. These include the NAS Board on Radioactive Waste Management, its associated Committees, the Nuclear Waste Technical Review Board, the NRC's Advisory Committee on Nuclear Waste, EPA's Science Advisory Board, DOE's Advisory Committee on Nuclear Facility Safety, DOE Science Advisory Board, the Defense Nuclear Facility Safety Board and probably a few more

that I am not aware of.

These Boards and Committees which are extremely influential and helpful on nuclear waste management issues include representatives of industry, the National Laboratories Contractors and academia. But as far as I know, not a single one has a representative from an affected community or a public interest environmental advocacy organization. This is an unfortunate imbalance given broad acceptance of the fact that nuclear waste disposal where societal values are as important as technical criteria. It sends the wrong signal to the public, and is in contrast with the more substantial representation of citizens and environmental organizations on advisory bodies concerned with a variety of other complex issues involving human health and the environment.

In a similar vein, I do not believe that many of the boards and committees involved with radioactive waste management reach out enough to the public in their work. Giving the public a voice in the process means more than DOE public hearings. It also requires that the regulatory agencies, the advisory bodies and industries strive to involve both the lay and expert public in all facets of their work.

The fourth issue that I would like to discuss relates to the proposal for a monitored retrievable storage facility. While we have long supported the concept of a geologic repository, we have long opposed the development of an MRS. Most importantly, we believe that it could produce the impetus to develop a permanent disposal facility, and thereby end up with a de facto disposal site.

This is a very likely scenario under what has become to known as Reilly's law. This is named after the former governor of South Carolina, who has been saddled with nuclear waste in his state for several decades now and many promises have been made to remove it, but those have never been acted upon. Reilly's law says that radioactive waste tends to remain where you put it.

My corollary to that law is that if you move it once, you are never going to move it again. I firmly believe that the transport of waste to a repository will severely diminish the impetus to develop a geologic repository, and we may in fact end up with a permanent disposal facility in the form of an MRS.

With an eye toward this problem, the MRS Review Commission endorsed an MRS of limited size, whose development was linked to the development of the repository. The 1987 amendments to the Nuclear Waste Policy Act also provide for linkage. I am concerned about statements I have heard suggesting that DOE may approach Congress for authorization to develop a delink facility. I simply don't believe any state would accept an MRS under such terms, and we would oppose it.

Two more issues that I would like to touch on briefly before I conclude. The initial issue involves the need for a second repository. The authors of the 1987 amendments to the Nuclear Waste Policy Act claim that the U.S. did not need to develop a second repository, and thus scuttled the original two repository approach and the regional equity and multi-site search concepts which underlay it. Whatever the merits of that argument in 1987,

it is now increasingly looking like a second repository will be necessary.

Current estimates indicate that future waste inventories will be well in excess of 100,000 metric tons. This will include waste from reactors under existing licenses, waste from a potentially large number of reactors with license extensions, a substantial complement of waste from the defense complex, greater than Class C waste, and the possibility of waste from new nuclear power plants.

I am concerned that the need for a second repository is not being acknowledged. A full and fair public debate on the future of the high level waste program must come to grips with this key issue. DOE should address the issue in its revised mission plan, Congress should take it up when it reviews the high level waste program, and this Board should give it consideration.

The second issue I would like to touch on briefly involves human intrusion. I was recently part of an interdisciplinary team that completed a report on inadvertant human intrusion into the WIPP facility under contract to the Sandia National Laboratory. I came away from the study with a sense that over 10,000 years the likelihood of inadvertant human intrusion, at least at WIPP, is substantially greater than I believe going in.

Human intrusion is an important issue in engineering a repository and in demonstrating compliance with the EPA standards. It should be given due consideration in a timely fashion by DOE, this Board, and other technical oversight and regulatory bodies.

In conclusion, the saddest part of the Yucca Mountain situation is ironically all the recent bright spots in the high level waste program. Let me explain that rather odd sounding thought. Under Secretary Watkins there has finally been an acknowledgment of the problems with the program. In light of these, the Secretary has wisely restructured the program and has stretched out program milestones. He has placed at the helm of the Office of Civilian Radioactive Waste Management a capable and open minded director in the person of John Bartlett.

The Department is beginning to reach out to the public in a more meaningful way, technical concerns are getting a fuller and more open airing by DOE and Boards like yours. All of this has meant that from a management perspective the program is in better shape now than it has perhaps been in a long while. Unfortunately, however, the most capable and committed crew cannot fly a plane with irreparable structural defects. Mr. Bartlett has, I believe, inherited a site in the form of Yucca Mountain that, for political and possibly technical reasons, is simply not likely to fly.

Congress constructed a high level waste program in 1982 and DOE did a poor job implementing it, so Congress tore much of it down and replaced it with a fatally flawed one in 1987. Congress made a fundamental error when it decided to put all our eggs in the Nevada basket. Politics or science or a combination of both could easily do in the Nevada site. This could be years from now, at which point we will be without any potential sites. Sooner rather than later, I hope Congress will revisit its decision to tie the entire high level waste repository program to such a thing reed.

Thank you.

DR. DEERE: Thank you very much. Now, I would like to ask for questions from the Board Members to either of the previous speakers.

DR. PRICE: Dr. Heath, you mentioned the human factors consistent safety recommendation from the Board. Did I understand you to also with your comment on that, to be encouraging the Board to persuade DOE rather than go the NRC route?

DR. HEATH: Yes, Dr. Price, that is exactly the point that I was trying to make. I think that in the early days of the program, for example, there was a perception in the NRC that DOE was single mindedly pursuing SALT. So, they actually wrote regulations in 10 CFR 60 requiring that there be consideration of other alternatives. That is a very heavy-handed way to make a point.

The trouble with regulations is that when you finally reach the licensing process, lawyers being what they are, almost any point might be used to derail a process. And, if it's written into regulation it just becomes almost impossible to deal with. My point is that the Board's recommendation about including human factors consideration is very valid, but the Department of Defense has instituted that into their programs by having internal documents that they administer, and that's how as the Board points out has been successful in the Mill standards.

I am just urging that the Board should be working on DOE to persuade them to do these kind of things and not fall into the trap of saying to NRC why don't you write some criteria to make sure that DOE does it.

DR. PRICE: May I comment that we are working on DOE, at least by way of communication with them as to our concerns in this area. The idea that we had, and maybe it's the language we use, was not necessarily that it become -- as a matter of fact, it was not that it be part of the licensing criteria. As our understanding was NRC provide the policy statements, it can provide guideline documents and, in fact, NRC has already done this in the area of reactor power control stations and so forth in for human factors, issuing guideline documents.

When we look at the capability of them at this moment to produce such criteria or guideline documents, they have a distance to go before they are ready to make such a production, whereas NRC might have people on staff having already gone through this exercise as a guideline document, have people on staff and the ability to be more timely in their forthcoming of these things. Could you comment on that?

DR. HEATH: I guess the human thing that happens is that people serve functions, and they are frustrated because they are not in another function. When NRC implemented some of the waste package regulations, the current director of the program at the time was a material specialist. He had very strong feelings about how the development program of DOE should be conducted.

The fact is, if he felt that strongly he should have changed hats and joined DOE and not in his role in NRC try to force me to tailor my R&D program according to what he thinks is the way it should go. People have to separate what their responsibilities

and functions are, and not try and use the position they are in to force somebody else to do something.

If the people in NRC have this capability, then they should change jobs and join the DOE and help the DOE do it. Having a regulatory agency try and impose its will on another agency is just a recipe for disaster.

DR. PRICE: A guidelines document is not necessarily a regulation.

DR. HEATH: Maybe, but let's see how many days of argument is involved in some future hearing as to whether or not the guidelines are recognized. I just think that there needs to be a clear separation. The point that I was trying to make about having a waste management system that complies with an overall performance standard is where the NRC should be coming from.

When they try and micromanage individual details, they just fall into a trap. I think that the observations made by this Board and others about not falling into the micromanagement trap is very well taken, and I would encourage that tendency to continue.

DR. DEERE: Mel?

DR. CARTER: I have a couple of questions and comments for each of the speakers, if I might. Colin, I wanted to ask you about one particular thing. When you were in the ERDA, I guess the philosophy then was within the nuclear industry that we would reprocess nuclear fuel, and it had been that way for a number of decades. That has changed, and I presume that change occurred primarily since you have been out of the Federal system.

Two parts to the question, I guess. One, many people still feel that to dispose of used fuel elements is a waste of resources. These things have inherent energy value. We may not economically can use that energy value at the moment but sometime in the future perhaps we would be able to. The other one, of course, is related to waste confidence hearing. The NRC has indicated that you can store nuclear fuels safely above ground for perhaps 100 years.

Those two things, to me, look like that they completely undermine the high level waste repository, certainly the need for one certainly on any kind of a rush or immediate or rush basis. I just wondered if you would comment on that.

DR. HEATH: One can wax philosophical on that for quite a while. Actually, the initial decision by the government to abandon reprocessing was actually contained in President Ford's statement in 1976. Of course, when Jimmy Carter was elected he really toughened that.

Although a lot of the arguments about reprocessing was centered around nonproliferation, I think that actually speaking it probably wouldn't have happened anyway, even if there hadn't had been that nonproliferation policy. There were studies done by owners of the Barnwell reprocessing plant back around 1975 and 1976 which showed that the actual cost of reprocessing was such that it really wasn't an economic ballgame anymore.

What killed reprocessing was the slumping price of uranium. Basically when President Reagan was elected he reversed the Carter policy and said okay, the government is not going to be

proscriptive in this. If the industry wants to reprocess they are free to do so. There was no rush to do so. One can say that it was regulatorily impossible, but the harsh fact is that also there was no economic incentive to do so.

What we tried to do when I was in the program was to have a program which would leave either option open. There were a lot of analyses done in cooperation with the Europeans because at the time the Europeans were hell bent for reprocessing, and they tried to take the position that it was a necessary step for safe disposal of waste.

It turns out that really isn't the case. You can engineer a system to isolate spent fuel almost as easily as you can to isolate solidified high level waste products. That really wasn't an argument. The program was structured so that the option was left completely open. If the industry wanted to reprocess they could, and we would accept the byproducts of reprocessing. If they chose not to, then we would take spent fuel. I think that's a responsible position for the government agency to take.

The fuel belongs to industry, and if they want to reprocess it they should have the right to do so. If the industry decides to declare the fuel as waste, then you are raising issues as to whether the government, from a national policy standpoint, should undertake to salvage the residual value of what industry has declared waste. That becomes an issue of strategic stockpiling, that material of such value that the government should go ahead and strategically stockpile it because as you say, it has some energy value.

I don't think it does undercut the concept of the waste disposal program, because I agree that technically you can store material in multiple reactors around the country. But, in the long term I am not sure that it's a good idea. I remember at a public hearing in the 1970's where a renounded hydrologist pointed out that in terms of water supplies reactors are sited next to rivers. If you wanted to decide where to store high level waste you would avoid rivers, all things being equal.

From a sensible standpoint, although there is no technical reason not to do so, it really isn't good common sense to just leave this stuff where it is indefinitely. I think from a philosophical standpoint, if you can centralize it in some central location, that makes a lot of good common sense.

It is one thing to develop a repository and it's another thing to close it. If you want to have a centralized storage facility and if you want to retain the option to recover the fuel at some indefinite time in the future, why not build your central storage facility half a mile underground in an ancient geologic formation. And then, at some future time if you decide to abandon the salvage value, you just shut the door and the disposal site is there.

I think that you can bring together Dan's thoughts and your thoughts and say okay, when you open the repository you don't plan on closing it. Because you can get down under the ground. There's a lot of interest in retrievability. If you want to retain the fuel values, go ahead and build a repository. Build it under the design criteria in that it can be an eventual resting place,

but leave the option open to recover the material for as long as you want.

I think you can kill two birds with one stone, if you will.

DR. CARTER: The other thing that I noticed was somewhat of a air of pessimism in you that I didn't see years ago. I was going to make a suggestion of a social nature. You guys that have been ex-program directors at a DOE program may want to set up a camaraderie society and have annual meetings.

[Laughter.]

Seriously, let me ask Dan a couple of questions. Dan, I have heard you comment a couple of times now -- this is the second one -- using the EEG in New Mexico related to the WIPP project as an oversight group attached to the state of New Mexico. I guess my question is, don't you consider the Nevada nuclear project office a similar operation? Don't you single out one and don't discuss the other one, and to me they look to me, at least from a distance, somewhat similar.

MR. REICHER: I think they share some similar elements and I don't know enough about the structure of the Nevada nuclear office project, but I don't have the feeling that it has the same sort of independence from the project, from advocacy of the project that the EEG has somehow been able to create in New Mexico. I think that's the difference, and it's sort of an intangible.

I think we have to look carefully at the Nevada project office and see how it is structured and compare that with the EEG and see how it is structured and how it functions. The question would be whether you create a separate state oversight body or could, in fact, transform the project office. I have a feeling that you probably couldn't, given its track record and all. You may, in fact, want to still go ahead and create a separate oversight body staffed with technical people as the EEG is staffed in New Mexico.

DR. CARTER: Let me mention one thing --

DR. HEATH: Can I comment on that?

DR. CARTER: The Board certainly and the various panels have been involved with the nuclear project office in Nevada. I think our impression is that it is fiercly independent than Bob Neal's department in New Mexico. I certainly think you would find that feeling within the DOE in the program.

DR. HEATH: I would like to make a comment on that because on one of the dusty pages of history I was involved in some of the meetings that established the EEG.

I don't have any personal knowledge of what has been done with regard to the Nevada office. When the EEG idea was proposed in New Mexico, we set out a condition which at the time I think took a few people by surprise, but has turned out to be very effective. DOE at that time said that we would provide the funds to the State of New Mexico for the EEG and that we would provide the funds with no strings attached, that the State was free to hire whatever staff they wanted, and that we would have no approval right on any report that the EEG issued.

However, we also asked and the State agreed, that the state would have no approval right over any report that the Board issued. We made that a formal part of the requirement, and we

said that if we are going to fund this we will do so, but if we keep hands off we want an agreement that the state will keep hands off. The state agreed to that.

I think that Bob Neal has found that protection to be extremely valuable, because the political pressures in the state are extreme and the fact is rightly or wrongly this is a political issue and people use technical information as ammunition. I don't know how the Nevada Board has been set up, but I think that was a very important thing to do in the beginning. If it hasn't been done, I would recommend that something like that be considered.

MR. REICHER: I think that's an example of the sort of differences that we are not aware enough of to point out.

DR. CARTER: I am not too sure that is a difference, by the way. I think that's an assumption.

DR. LANGMUIR: I would like to comment on that, because I worked for EG&G about ten years ago. As far as I know, there was absolutely no pressure brought to bear on the scientists contributing to the information that they wanted for that program. We said what we thought, and we were not asked to say anything other than what we thought. It was quite objective.

MR. REICHER: Did you say EG&G?

DR. LANGMUIR: Bob Neal's group, EEG, excuse me.

DR. DOMENICO: Mr. Reicher, can you comment a little bit more on the problems you have with the current EPA standard and where it is arbitrary and where it is capricious with regard to perhaps other aspects of water analysis, water quality?

MR. REICHER: Just to flush out a bit more of what we objected to was the variance between the high level waste standard, particularly the individual protection provisions, and the groundwater protection provisions, and the standards set for underground injection under the Safe Drinking Water Act.

The Safe Drinking Water Act provides that when you inject hazardous materials into a geologic formation, injection basically being looked at in a very broad term but essentially meaning putting waste down a hole deeper than it is wide. When you do that, the safe drinking water establishes limits on how much contamination can occur of what are called underground sources of drinking water. Those are actual and potential sources of drinking water, and there are more specific definitions of those contained in the regulations.

Those provide for a level of contamination which is substantially less than what the individual in groundwater standards provide for under the High Level Waste Standards. Court basically looked at the situation and agreed with us that in fact deep geologic disposal was a form of underground injection as that term has been defined in the regs and in the legislative history of the Safe Drinking Water Act, and said that in fact there seem to be an inconsistency and basically indicated to EPA that it either had to explain this inconsistency which I think it is going to have a tough time doing, or bring the standards into parody with each other.

DR. DOMENICO: These were the dose standards you had problems with, correct, the individual dose?

MR. REICHER: Yes, the individual dose and the groundwater

protection. The individual dose has -- I would have to go back to the regulations and walk you through how we articulated the argument -- the individual dose and the groundwater protection standards both end up with numbers that actually represent the amount of radioactivity in water.

DR. DOMENICO: Did you have similar problems with the mass release requirements?

MR. REICHER: We did not challenge --

DR. DOMENICO: The 10,000 year release?

MR. REICHER: The 191.13 release standards, the overall release limits. The State of Minnesota in the litigation did, and the Court did not agree with Minnesota's arguments, although it did go ahead and overturn all the standards rather than the particular provisions we challenged. The idea of the court was that when EPA went back to rewrite the two that were particularly a problem it might have to readjust the rest of subpart B overall.

We also objected to the 1,000 year duration of both the individual and groundwater protection standards, arguing that EPA hadn't provided a justification for that relatively limited duration compared to the 10,000 year duration of the overall release limits and the Court agreed, and EPA is in the process of reviewing that as well.

DR. DOMENICO: Thank you.

DR. DEERE: Yes, Clarence.

DR. ALLEN: Maybe either or both of you would comment on a question that we have had some discussion from the Board on. That is the wisdom of this Board reacting more with the public in terms of public meetings and so forth, keeping in mind that we are a technical review board however that word technical is defined, and our obligation is to report to the Congress and Secretary of Energy.

In any event, to what degree do you think it would be advantageous for us or for the public to put more effort in terms of public interaction, also keeping in mind that we are a part time Board?

MR. REICHER: I obviously think that public interaction is important. There are two elements. The first is the type of public interaction, and I am a strong proponent of making it as informal as possible even the way a meeting is set up, the way the podium is arranged and the way the public is asked to speak. Having the Board up on a stage that is ten feet above the public -- there are even small elements like that that really have to be considered.

I think the type of interaction is important. I also think the opportunity in that regard to meet with individual members of the public on a very informal basis is important. The DOE, for example in a couple of hearings that it held on a proposed plutonium plant in Idaho, the hearing officer in those hearings did an interesting thing. He not only held the formal public hearings and took comments, he also allowed interested members of the public to actually meet with the technical staff of the project for a several hour meeting after the hearing. He had what he called a town hall meeting after the formal hearing testimony was given, where there was a real interchange and questions could

be raised and answered.

There was much more of a give and take than you usually see. So, point number one is the form of the public interaction. Make it informal, try to make it as meaningful and as non-threatening as possible to the public.

The second is to recognize that in 20 pieces of testimony from the public you are not going to pick up an awful lot of new technical information and new technical insights from 19 of those people participating. One out of 20 or some number, you are going to get some interesting thoughts and some interesting twists on the problems and views you may not have heard.

That doesn't say that it isn't worth sitting through those kinds of hearings. I think it does sensitize all of us. Even the National Environmental Groups, we are always accused of being an elitist inside the beltway, overly institutional approach to things by local groups. It even helps us to go out and listen to the people who we represent in these matters. I think there is value in that as well, beyond whatever technical information or insights you might glean.

DR. HEATH: I guess I would respond. I think the public participation thing is almost a holy grail that people are chasing. I sat through 26 hours of public hearings in New Mexico related to the WIPP project back in 1977 or 1978, and the criticism that I think a lot of people in the so-called public make is that they are not going to be satisfied with public participation unless you take a vote of the people in the hall and their vote is binding, and that is what the decision is on the project.

That's what some people want when they say public participation. I think you have to have mechanisms for making decisions. Congress just went through a mechanism for making a decision. There are a lot of people in this country who don't think there is enough public participation and that's crazy, but nevertheless you have to have mechanisms for making decisions.

You have your meetings and they are open. People can see that it isn't a smoke-filled room, and I am not sure that you will ever reach this goal of satisfactory public participation that people dangle. I have heard people talk about inadequate public participation for 20 years, and I don't think it is any better now than it was 20 years ago and I don't think people will ever be satisfied.

I suggest that the area that the Board concerns itself with, I think having a legitimate independent review function that is publicly visible to the DOE program has a lot of merit in it. It is true that in the past some contractors at some locations in the program had so-called independent review boards that were just in the project manager's pocket, and this is clearly not that kind of a board and shouldn't be, and is demonstrably not.

It seems to me that this Board needs to help the DOE and the NRC by providing independent technical advice, and should be looking at technical issues. Perhaps when you have a meeting like this you have a certain technical issue that you talk about, and maybe you invite members of the audience to make any additional comments at a 30 minute period at the end of each day. I think if

you are doing that you have a heck of a lot of public involvement.

Basically, the criticisms of people who say there isn't enough public involvement, the underlying frustration is that the person comes to a meeting and he can't change the decision just by coming to the meeting. That seems to be the bottom line criticism of there isn't enough public participation.

What I hear people saying is, if people would just do only what the public wanted then that would be satisfactory public participation, but that is not reality. You are never going to go to a location and take a majority vote and be able to run a program that way. So, I think you have to have public visibility, public accessibility. I would suggest that when you have technical issues that if somebody in the audience wants to make a comment they should be free to make a comment. If they want to pursue it further, they could write a letter to your Executive Director and say I have a specific thing that I would like to address to the Board and the Board could say yes, I would like to hear this guy. That would be a mechanism for that member of the public to come up and express -- the one out of 20 that Dan refers to, I would screen him.

I wouldn't sit through 20 people and then decide which one of those guys was worth looking to, I would make them go through a screening process. If they have a good idea, have them write Bill a letter and say I would really like some time in front of the Board because I would like to discuss this particular point. You guys decide if you want to waste your valuable time listening to the person. I think that's your right. I don't think just because you are on this body that you have an obligation to listen to every Tom, Dick and Harry that walks in the door. Your time is valuable.

DR. DEERE: I think that I can say that the differences that you express on this subject are quite similar to the differences that exist within the Board.

[Laughter.]

MR. REICHER: Let me say one this. That is, there is this issue of dealing with the technical critics of whatever program we are talking about. The professor from the local university, the person with the science background who has 16 feet of documents in his living room and has been studying this problem for 31 years -- those people I think often are the tell tail sign of whether or not -- there is no perfect public participation -- whether there is adequate public participation.

If you go out and deal with it, if you allow their views to be expressed, if you question them, if you probe what they have to say and give them an opportunity, I think you go a lot further towards adequate public participation. That, to me, has been the difference between DOE programs where I would say there has in fact been some basically adequate public participation and those where there hasn't been.

When there are those folks out there, and there are in every situation involving a major controversial Federal program, give them an opportunity to be heard. Ask them hard questions. Sometimes you can poke big holes in what they have to say, but other times there are times when they bring some things to the

floor that can just really change people's way of thinking.

DR. CARTER: Dan, let me ask you. We have run into this certainly when people express their views on a limited basis. One of the criticisms when you question people is that this is threatening and intimidating. You mentioned the size of the podium and how the microphones are set and this kind of thing.

Many look upon just the thing that you are suggesting we do as a matter of intimidation and so forth of the people that come before the Board.

MR. REICHER: I would say that there are ways to handle that as well. You do allow an opportunity for some formal statements from the public. You probably don't want to probe in an overly technical way of non-technical members of the public. When someone gets up there who has some technical information, you either ask those hard questions then or perhaps even better would be to say we would like to hear more about this. We would like you to write us a letter, send us your paper, come and talk to us about the issues that you have raised, this notion of screening.

The level of scrutiny would increase with the level of detail and knowledge of the person talking. I think you can kind of adjust the level of intimidation, depending upon who you are dealing with. I think that's only fair. If people get up and hold themselves out as experts, they ought to expect to be interrogated like experts can be interrogated.

DR. CARTER: You are giving me a legal interpretation which may be a very good one on this process. Even the fact of asking people would you spend a few minutes or a couple of seconds or whatever and tell us a little about your background is perceived by many as intimidation. There are not in a court of law now, keep that in mind.

MR. REICHER: That's right. I think it's a question of approach. I think doing it in a sensitive way, providing different forum depending upon the person you are dealing with and what they have to say, I think that's all it comes down to.

DR. DEERE: Let's continue with the questioning. Dennis.

DR. PRICE: Could I ask a question about the history of the program. The SCP starts with the regulations, and from the regulations develops issues. It appears that the program is basically driven by the regulations as compared with coming up with a mission statement, mission requirements, design requirements from the mission requirements, the system engineering type of approach. Historically, has that been the direction of the program, and any comments that you might want to make Dr. Heath, with respect to the system engineering approach rather than the satisfaction of regulations or vice versa.

DR. HEATH: I think you have pinpointed one of the weaknesses that the program has had. I think that it is really not been either totally. I mean, it hasn't been totally regulation driven and it hasn't been totally systems driven.

Part of the problem with that is historic. In the early 1970's I think it's a fair criticism of the government, if you will, to say that nobody really thought that waste disposal was going to be any big deal. There was a gentleman by the name of Milt Shaw who was the director of reactor research and development

in the AEC days. I think quite honestly the attitude back then is, we haven't done anything about waste management because it is not a pressing issue, and when it is time to dispose of these wastes it will be no big deal. It will be no more complicated than building a dam or a bridge, so we will do it when we need to do it.

To the extent that what was the system back then, there wasn't much. Back in those early days the reason for that very ambitious schedule announced by President Ford came about because there was a group called the Energy Research Council which was an inter-cabinet agency. There was a review of what it was going to take to develop a waste management system, and at the time the NRC said this will be just like a production facility, namely you go ahead and build it and after it's built we will come in and license it to accept materials.

It wasn't until about 1976, after Ford had said we will get this thing into operation by 1985, the NRC said no wait a minute, we don't think we want to do that. We are going to do it like reactors and license it before you can dig a hole in the ground at all.

Very early in the program the desire to make this a regulatory driven process certainly had a lot to do with the design of the program. That's what makes it so difficult. If you look at the history of regulated technology, there aren't many cases where the regulations came before the technology. The ASME pressure vessel code is always a great example to cite. A lot of people were killed by exploding boilers before there was any regulations on boilers.

The regulations on boilers that written were based with a firm technical base. What you have here is regulations being developed on the basis of cartoons. People have this concept in their mind of what a repository is going to be, so they put all these regulations in place. Now some poor guy has to come along and figure out how to build something and obey all these regulations.

In terms of the traditional development of technology, this is bizarre. When you are looking at how am I going to get from here to there, how am I going to develop the facility, the program has been driven to the point where how you are going to comply with the regulations has almost become the overriding driving force. It is a fair criticism that the systems approach hasn't been adequately used. When I was involved in the program and we would talk to contractors about using a systems approach they honestly didn't understand what we were talking about.

The movement to bring in the systems contractor and to bring in some of that kind of thinking is definitely a step in the right direction. They are inheriting this baggage, and that is the regulations. If you can't figure out how to meet the regulations you aren't going to go anyplace. That's the problem.

These EPA rules that Dan challenged, they took a long, long, long time to develop that rule. There were studies, and it took years. What is the first thing that happens, somebody takes it to court and challenges it. So, that's what happens. All that anybody worries about is avoiding lawsuits in the regulations. It

is a stifling environment.

DR. DEERE: Warner, you had a question?

DR. NORTH: I will pick up on that. I interpret from both of you a considerable amount of pessimism with regard to the program in general, and Yucca Mountain in particular. Dr. Heath, I believe you said that it is highly likely that the program will never be complete, and Mr. Reicher closed his comments with I thought some very pessimistic words about the situation at Yucca Mountain.

Most of the discussion we have had with you and many of your remarks have focused not on specific technical issues but more on procedural issues and process issues. As some of my colleagues have noted we are a technical review board, and our charter is rather narrowly limited to site characterization and transportation issues. We don't, for example, have a mandate to consider alternative sites.

I am wondering what advice you might give us specifically as to how in this complex problem we might be of greatest help to the public in carrying out our activities as a technical review board. What are the areas where we might want to focus our energies. Are there specific procedural or technical aspects that you think we ought to emphasize more than what you have seen in our first two reports?

DR. HEATH: I guess the thrust of my presentation was that there are certain directions that you started taking in your first two reports that I think could be extremely helpful. The Department is saddled with a burden, in that the Nuclear Waste Policy Act and succeeding acts have set goals that have to be met. There are also pressures, the utility industry has developed their plans based upon certain assumptions about the government going to do something.

There is, like it or not, there is written into the law certain goals that DOE is going to try to meet. There has been a lot of criticism that DOE is completely goal oriented and ignores serious technical issues, and goes hell bent for leather. Some of that criticism may be merited.

The problem is that that has been carried to the extreme so that in a sense, DOE is not allowed to exercise any reasonable technical judgment. If somebody in the program makes a decision about a technical approach, it is not very long before somebody goes to the state agency and the state agency cites that as evidence as to why DOE is not interested in the technical facts or something.

I ran into that when we were investigating the salt domes in Mississippi a long time ago. There was a gentleman from the USGS who wanted to develop a very complex and sophisticated system of groundwater monitoring wells for the entire region around one salt dome that we weren't even considering, and it wasn't the appropriate program to do that.

We didn't have the resources, there weren't any near term decisions that it was going into effect. So, as a program manager we said we are not going to do that right now. That became an issue. That became evidence, as far as the state was concerned, that we were just going to ignore technical issues.

I think a board like this can help --

DR. NORTH: Let me clarify on that one. Was there any analysis done in your program at that time to note that this information would not affect your decisions, so you could turn him down on the basis of having somebody look at it and decide this particular investigation was not worthwhile because the value of the information to be developed would not affect your program in a significant way.

DR. HEATH: My position is that there was. Whether or not I can produce a detailed document and analysis, I probably can't. In some sense, that kind of technical decision making -- that is what program management is all about.

DR. NORTH: One of the criticisms that we have heard of the DOE program is that the paradigm is decide, announce and defend rather than develop a technical basis for the decision, allow the public and interested parties to have access to it, and once they have had access make a decision where the basis for it is in the open.

DR. HEATH: Yes, but you see, sooner or later you become a technical unix. You can't, every time you have a decision made, call a public meeting and say I have a decision to make today. Am I going to drill 24 wells or 23 at the Nevada test site, and before I make the decision I would like the public's opinion. Pretty soon you wonder what the hell the guy's job is.

If somebody is technically qualified to make some decisions, he should have the right to make those decisions. I hear people saying that before any decision is made you should call a public meeting and say these are the issues that I have to decide, and I am incapable of making any decision without public input. I can't buy that. How can anybody run a program in that kind of environment.

DR. NORTH: Maybe I am picking up Mr. Reicher's term. The technical expert, the one person in 20 who comes in with a stack of papers and analysis. That is sort of what I think you described, one individual who is very interested in the hydrogeology in the area and wanted to see a very complex network of monitoring wells.

DR. HEATH: I think that individual is entitled to have his day in court. You know, I don't know how many technical people are supported by this program today. When there was a hell of a lot less money in it, we had at one time -- I could say there were probably 2,000 people with scientific degrees working in the program. For the 2,001 person to say I am not in the program and I should have a say, sooner or later you have -- people are selected through contracting processes. It's like the people submit papers to the National Science Foundation and some people get funded and some people don't.

You pick people who have the credentials and qualifications to make scientific and technical decisions. It should open, people should see how those decisions were made. I cannot conceive of a process where, before any decision is made, you have to say to the public that gee, we need some help. Even though there are 2,000 people here with Ph.D.'s we still can't decide without your input. That's unreal.

You have to put a position on the table. You have to say look, we have decided that the siting work is going to require more than 24 wells, and this is where we have decided it. We would like input from the state and from other bodies to see whether they have a different point of view. Then people say, you have already decided. You have made the decision to dig 24 wells. You should have come to the public and said we got this water here and how many wells do you think we should drill. You can't operate that way.

You have to have some structure to the program that you propose. Yet, I hear people saying decide and then analyze. I don't see how you can run a program that way. Sooner or later somebody is appointed to do the job, and he either does the job or he gets out and lets somebody else do it. That's a responsibility that you bear.

If you were appointed director of a program tomorrow, you would start making technical decisions, right? I don't see how you can avoid that.

DR. NORTH: My question really was at the level of how can we help. One of the things it seems to me that we can do to help is review the basis for selecting 24 wells rather than 23 or 25, to see if there is a good technical rationale for that.

DR. HEATH: Oh, sure. I think that's perfectly appropriate. If your subcommittee on hydrogeology wants to invite the technical experts in the program to come and explain the next step in the program and you people take pot shots at him, I think that's exactly right. You should do that. If the somebody from the state who wants to come before you and say I think these guys are all full of water, and instead of 24 there should be 36, you are exactly the forum that can help adjudicate that.

You can look at it independently and say we think that this guy has a good point, and DOE would be well advised to consider this other option. I think that's exactly what you can do.

DR. DEERE: I think this is probably exactly what most of our activity has been, because we have been taking pot shots obviously, at different parts of the program.

We do have, however, some debate about the interest we should have and the manner in which we can present some of the information in an open way in addition to our reports and in addition to these meetings. I think I should announce that we will have joining us, hopefully in the next few months, a person who is in public policy to help us do our job in this, the last appointee in the field of nuclear engineering, which these two positions were not filled for various reasons in the appointment process but they will be.

DR. NORTH: I think we ought to perhaps be realistic that some of our earlier appointments have taken a long time, a few months may be optimistic. I am not sure in what order we are going to get these remaining two board members. Could we give Mr. Reicher an opportunity to respond to my question.

DR. DEERE: Sure. I see that he wanted to.

MR. REICHER: I don't think that I disagree with Colin necessarily, but I guess my view is that I don't think the approach is to seek public input on every decision that is made.

I think the issue is a different one. This is a public and not a private project, being paid for by the public funds. That does change the dynamics a bit.

Secondly, I think that we do clearly have a representative government where we do vest authority, both policy making and technical authority in people in that government, and want them to make decisions. We have to recognize that it is an imperfect representative government, and in a program as controversial and as large as politically charged as this we do have to bend over backwards to allow the larger technical decisions to be ventilated before those decisions are made.

I guess that's where I come down to the idea that we not only need a firm technical basis for the decision -- that is obviously the most critical issue and that is what has been, in the past, lacking. We do have to provide some opportunity for that to be debated before the final decision is made. Not every decision, not 23 versus 24 wells necessarily, but there are some big technical questions out there that I think have to go out and have to be explored and debated by the public.

It is only in that way that this issue which is not, I don't believe, primarily a technical problem. That is what it comes down to. I think that we can -- I believe what I read from the National Academy of Science years and years ago, and that is that we can basically accomplish geologic disposal in a way that clearly leaves us with some risks, but risks that no more than anything else we would potentially be able to do with this waste anyway.

I think that from an engineering perspective, this is a problem that we can work out. It is the other side of the problem that compels us to really pull the public in, in a way that we are not used to doing and in a way that we are sometimes uncomfortable with, in a way that representative democracy shouldn't have to work but in fact has to in a sense.

DR. DEERE: Thank you very much. Ellis, do you have a question about the canisters or engineered barrier system at the moment?

DR. VERINK: I was interested in your comment. It certainly seemed to us that the context in which a more robust barrier would be useful is a confidence on the part of the public. To have a barrier that is above and beyond the one at 300 to 1,000 year requirement is kind of like buying an extra insurance policy.

Do you see any different view for that?

DR. HEATH: From the report on putting more emphasis on an engineered system that people can actually design the features, that has some merit. It is interesting hearing this discussion when I think about how many turns in the program did result from public input -- I would like to comment on that in a minute.

The problem is -- I don't know whether yet this has been resolved -- when the NRC decided to write into the regulation that you had to have a barrier that would survive for at least 300 years I said okay, but can we agree today if I could invent this material -- absurdium -- which is going to meet this requirement, what tests am I going to have to put it through to satisfy you the regulators that I have met the test.

I didn't have an answer to that, and I don't know if there's an answer available today. I said to the materials people in the program, is it possible to devise some kind of an accelerated testing program so that in a reasonable period of time, less than ten years, I can conclusively demonstrate that this thing will survive in the geological environment for 300 years. Initially I was told there is no way. You will never be able to demonstrate it. That's my problem.

If it makes sense to use copper canisters or the Swedish approach, that's fine. If that gives people a comfort factor and that will make people feel that there is less reliance on the geologic system, that makes eminent good sense. But don't make it a condition of getting my license from the NRC that I have to conclusively and scientifically prove that. If the material scientists are telling me that they don't know how to do that, then I have just set up an insurmountable obstacle.

Those people who, for whatever reason, don't want that repository in that location will seize upon that obstacle and go to a court of law and prove successfully that I haven't demonstrated it. Now you get back to the old problem that hey, reasonable people can agree that this is a sensible thing to do because the regulation says you haven't proven it. Sorry, you have lost.

If the regulation says 300 years, fine. Let's do our best to solve it. But don't encourage the NRC to rewrite the regulations to say 3,000 years. That will just compound the problem. I am not opposed to more robust packages, but what happens in the licensing process is that you have to go through analysis where somebody says okay, let's assume that the package disappears anyway. Then what? You have to go through that analysis.

What has happened historically in the licensing process is that you will put in these additional things, but then you are forced to do analyses in which you are not allowed to take credit for them. If that's all that is going to happen, then you haven't bought yourself anything. Maybe you buy the increased confidence in engineered systems, but if the regulator in the final hearing says okay I know you have this package, but for the purposes of my analysis I want you to assume the package isn't there. Then what happens? Where are you? You haven't really gained anything.

That's my concern. I am not opposed to more fundamental -- more robust packages. Be careful about encouraging people to make it a mandatory requirement.

DR. DEERE: Yes, Dan.

MR. REICHER: There is something that I would just like to comment on briefly, and that is the role of the courts in all of this. Colin has alluded to it, and many people raised the prospect of all of this process, all of this work getting to the end and a court just throwing it out. We have spent $30 or $40 billion on a facility and the court says no, we are not going to agree to it.

I think that overstates the role of the courts, especially these days. There has been an increasing amount of deference that the courts have shown, especially the courts that would rule on any situation involving this facility, the D.C. Circuit. To defer

to agency decision making, case after case in recent years, the courts have said we are going to defer and have gotten into very specific issues involving not -- for example, second guessing computer modeling that an agency has done in the technical area, not second guessing basic technical decisions that have been made.

I don't think that the court is going to construct insurmountable barriers to set successful demonstration of compliance with rigorous standards. In fact, I think you are, in fact, a more qualitative approach could end up producing that situation more than a rigorous set of standards that are very specific. I think that where the standards are there, where there are specific -- where an agency has gone about proving it to the best degree that it can, where it involves very detailed technical issues, the courts year by year -- actually beyond what I think they should be doing -- have said we are going to defer, we are going to defer.

I think that needs to be added into your calculation of where the courts realistically will be involved in this process.

DR. DEERE: Thank you. Our time is up. Since we are a public meeting, I would like to ask for one question from the audience.

[Laughter.]

[No response.]

MR. REICHER: One follow up, and that is on the issue of reprocessing. I need to say a couple of things, because I know that issue was raised. We have had strong views about this.

First of all, reprocessing obviously doesn't eliminate the existing waste that we have. We are still going to have to go ahead and develop a geologic disposal system for the existing waste. That is number one. We are still going to be producing waste, clearly, through reprocessing. Witness the tanks of waste at Hanford and Savannah River.

Proliferation is a concern, and it is an increasing one these days not a decreasing one. I think that any move towards reprocessing is going to get hit with that in a big way, and you are going to hear it criticized not only from the usual critics but a whole host of new people who come at this from very different political perspectives.

Third, I don't think it's going to happen. Economically I don't think it's there. I don't think the public is going to accept it, and basically I think if you went up to Congress today and asked Congress about it you wouldn't get accepted. I do think that the idea perhaps of leaving ourselves the option in the repository of getting at this waste at some point -- that is, in fact, the basis for the retrievability requirement in the EPA standards -- makes some sense.

I don't think we should be going down this road again towards reprocessing. Thank you.

DR. DEERE: Thank you very much. We will take a break now and reconvene at 11:15.

[Brief recess.]

DR. DEERE: We will reconvene now and open the second half of this morning's presentations. It is my pleasure to introduce our next speaker, Mr. J. Michael Martinez. Mr. Martinez joined the

staff of the Southern States Energy Board in 1988 after practicing law with a South Carolina Civil Litigation firm. He manages the Southern States Energy Board's High Level Radioactive Waste Transportation and Transuranic Projects; oversees the production of state services publications including the annual legislative digest; he edits the bi-monthly newsletter and coordinates the Southern State Energy Board's intern program.

We welcome you, Mr. Martinez.

MR. MARTINEZ: Mr. Chairman and members of the Nuclear Waste Technical Review Board, I appreciate the opportunity to be here today. I appreciate that introduction. Usually, when I go to speak at a place they say here he is, so it's nice to hear some kind words.

It is kind of interesting for me to be here. I don't have a technical background, and I wouldn't purport in this group to have one. I think on the basis of some of the work that the Southern States Energy Board has done in this area I can share some perspectives, particularly the perspectives of state emergency management, radiological health and, in some cases, state police and fire officials.

Our organization has been working with the U.S. Department of Energy now for approximately five years under a cooperative agreement. Under that agreement we bring together a committee of these state officials. We have met nine times. We are going to meet in March in New Orleans for the tenth time. Based on the work that we have done with the Committee, I think there are some observations that I can make about the DOE program, particularly the perceptions of the Department of Energy and the other organizations in the ACARM program that perhaps the Board has not gotten elsewhere.

I guess I should say that the most important thing that we do at the Southern States Energy Board in my opinion is, we battle the misperceptions or the misconceptions that exist out there among members of the public and in the state agencies in the Southern States about the high level radioactive waste transportation program.

I know that the public and in may cases state officials don't distinguish between the various programs. They don't distinguish between WIPP and the ACARM programs in many cases or WIPP and the ACARM program in the low level waste program. To members of the public and some state officials, that is all lumped together. When you see things like the 60 Minutes report that was on Sunday night about the Department of Energy and the alleged stealing of body parts to avoid litigation when workers were contaminated at Rocky Flats and other places, the public responds to that in the way that you would imagine. They get somewhat hysterical. Our office even receives phone calls. I have had people ask me why I was killing our children and other things such as that.

That demonstrates, I think, the level of hysteria that can be generated in some cases when stories like the 60 Minutes story airs or some misperceptions are out there. I even think about misperceptions in my own family. I will share a little anecdote with you. My mother is not here, so she won't be able to stand up and tell you her side of the story.

What happened was, when I first got out of law school and worked in a law firm for a while, we were a small civil litigation firm in South Carolina so we handled the exciting cases such as, for example a gentleman went into a restaurant and was served some food that allegedly had some excrement in it. He sued the restaurant, and our firm was defending the restaurant.

My boss in the law firm figured that I had the intellectual experience and know how to defend this, so I was sent off to handle the case. The night before I went out to meet with the other attorney and the Plaintiff, my mother called and said what are you doing. I told her very confidently that i was just out of law school and all ready, and I was going to appear in court or at least to a settlement conference. I was dealing with this important issue of excrement.

There was this pause on the phone, and my mother said for God's sake, don't touch anything.

[Laughter.]

Shortly after that, after my award winning career as an attorney in those kinds of cases, I came to work at the Southern States Energy Board. Right before I came to work there my mother called again and said what are you doing. I explained to her that I was going to be working in an organization where I was involved in radioactive waste issues and nuclear power generation and electricity policy and some other of what I consider to be very exciting projects.

Again there was this pause on the telephone and she said, for God's sake, don't touch anything.

[Laughter.]

It was the same kind of thing, and I think that's indicative of the misperceptions out there; for God's sake, don't touch anything. I have taken that in my two and one-half years at the Southern States Energy Board to be my real motto. When I look around at people or when we discuss things with members of the public or state officials, there are those misperceptions out there that somehow there is this Department of Energy, and they have this nuclear waste.

We did a report I know on rail abandonment, about what happens when railroad companies abandon lines that, if they were going to ship high level radioactive waste on a particular main line or a branch line, what would that rail abandonment do to the plan for shipment. We worked with a good number of people on this at the state level. When we finished the paper I presented the results to them, and after the meeting someone came up to me and said why are we just leaving the radioactive waste in box cars out on the tracks.

They hadn't gotten the picture that rail abandonment didn't mean you just left it out there in rail cars.

[Laughter.]

I thought I had been very eloquent on that point for 45 minutes. Apparently, there was misperception. I think one of the things that we try to do is to battle this misperception.

We talked earlier about intimidation, and maybe I'm a little intimidated today. I am glad the Board is not up on one of these podiums. Maybe I couldn't speak at that point. One of the things

that I would say is that in the states they are very concerned about a number of issues that I think I should talk about. It all goes down to the Department of Energy's credibility. I am going to mention that in a little bit, about what the states perceive to be credibility problems on DOE's part.

Unfortunately, I am not sure that I can come up with many good measures to talk about how those credibility problems can be overcome. It seems like every time the Department of Energy takes affirmative steps to battle some of those credibility problems they just get into worse trouble. There may be some people in the audience that don't know much about our organization. It is a difficult organization to talk about if you are not familiar with interstate regional compaq groups or agencies.

We are a quasi-public agency, and maybe that doesn't help much either but I will explain a little bit further. Back in about 1955 the Southern Governors Conference -- now the Southern Governors Association which is just what it sounds like -- a group of Southern Governors who get together annually and sometimes more frequently to discuss issues of importance to Governors in the Southern States.

Back in the mid-1950's they got together and they were very concerned about the issue of nuclear power. As you know, at that time, the waive of the future was going to be nuclear power. So, the Southern Governors were concerned that they needed some policy, technical and, in some cases, legal expertise on nuclear power issues. They formed a study committee which recommended that the Southern Governors Association create a wholly separate entity, an agency whose job it would be to provide expertise on nuclear power issues.

In 1961 the Southern Governors Association managed to persuade seven southern states to pass the Southern Interstate Nuclear Compaq. In the following year, 1962, it was granted Congressional approval and a number of other southern states also ratified in their state legislatures, legislation on the Southern Interstate Nuclear Compaq.

This created the Southern Interstate Nuclear Board that did not answer to the Federal government or to a particular state government, but answered to the Southern Governors and legislators in the 17 Southern states. Delaware has since insisted that they are not a southern state and have gone elsewhere, but we do have 16 jurisdictions that are members of us along with Puerto Rico, so we have 17 members.

What we do essentially is, we advise them on issues. We have expanded our purview in the intervening years so that we don't just look at nuclear issues. We look at clean coal technology, we look at acid deposition and so on. It just so happens that I deal in the radioactive waste area. We have changed our name in the 1970's to the Southern States Energy Board to expand our purview, so that we deal not only with the nuclear issues as I said, but also with other energy and now environmental issues.

For example, we might have a governor who might call us or someone on his or her staff will call us and suggest that there ought to be a particular initiative, for example, coastal protection and resources management now is a big issue with the

southern states. We have undertaken some projects in that area.

Like I said before, we have worked with the Department of Energy now for approximately five years on the high level radioactive waste transportation issue. We bring together these state officials twice a year. The meetings are really a way for us to exchange information. States, what are you saying and what are your thoughts on the radioactive waste issue, particularly as it concerns transportation. Then we ask the federal agencies, particularly the Department of Energy, to express their views on what is going on in the program. We try to remain that neutral third party. Even though we represent the Southern states we don't take an advocacy role. We don't beat up DOE except maybe in forums such as this one, when we are asked to be frank.

Generally at our meetings what we try to do is just make sure there is this flow of information. I have spent a good deal of my time trying to work then with the Federal DOE officials and also to work with members of the public and state constituents of ours. I think there are a number of things that I can point to, to tell you what has been going on at the state level and how the states feel about things. I think that's important, because this program has experienced a lot of problems in the past, the ACARM program.

The states have felt that their role was minimum or, when they were given a role they were given the role so late in the process that anything that they might have to contribute to the ACARM program to the planning and development was not given satisfactory attention. I think that's a real problem at the state level. The state people see it, particularly in states like Tennessee where the concern is still high that an MRS facility might be constructed there.

I know that after the 1987 amendments act, the plans to build the facility, the MRS facility at the Clinch River Breeder Reactor were scrapped. There is still a feeling in Tennessee that there is going to be an MRS in the Southern states probably. The feeling is, despite the MRS review Commission report, that there is not a need for an MRS facility for the most part. There are some states and some locals who have a little different perspective on it. For the most part the feeling is that the problem with an MRS facility is that it is going to be used as a de facto repository. I think that has been mentioned a little earlier today as well.

I think Dan Reicher mentioned that when he was discussing the NRDC's position on the MRS. Our organization, the Southern States Energy Board, has not come out in opposition to the building of an MRS. As I said, some of our constituents feel that there may be some benefits. However, we have said that if an MRS is built then assurances must be given to the host state that the state will not -- the facility will not be used in that state as a de facto repository.

What kind of assurances? We have heard that there is a movement underway to either totally abrogate or get rid of the linkages or at least to loosen them. Whether or not that will occur or not, I don't know. There is a concern, and it has to be addressed, about what is going to happen with the MRS and

particularly as it relates to being used as a de facto repository.

As far as the repository itself is concerned, understandably the Southern States have not taken as much interest in that particular part of the program since no one of late has discussed siting the repository itself in a south eastern state. I am sure that if that changed then of course the opinion would change. But the one thing that we do hear from state officials is that since the Department of Energy has committed itself and the Congress, through the nuclear waste policy amendments Act has committed itself to working at Yucca Mountain, that the site characterization studies and all of the other investigatory efforts should be exhausted before another site is considered.

For example, Mr. David Leroy, when he approaches states and tries to try to find a host for an MRS or repository, even if someone came forward with an expression of interest in having that repository in a particular state, that would not then suddenly be the reason that efforts to investigate the nature of the Yucca Mountain site should suddenly be scrapped. That looks too much like a complete withdrawal or complete lack of confidence in the repository program. The states are real concerned that DOE seems to be working in some cases as cross-purposes.

In other words, the states feel like DOE has an agenda in the WIPP program, an agenda in the ACARM program, and they don't always work together on these programs. I think they are doing a better job now of working together with different programs within the National Nuclear Waste Management system, but the states have had a feeling that what happens is DOE says one thing in one program and another thing in another program, and then they change their positions or these are inconsistent positions.

Then what happens is, if you had a program such as the repository program and someone came forward with an expression of interest or someone came forward with a different perspective on another part of DOE, suddenly the position of the Department would change. In other words, I think there is a real mistrust of DOE on the part of the states. That goes back to what I mentioned earlier about DOE's credibility problems.

I think Dan Reicher mentioned earlier that we have to agree that there are certain societal values that are just as important and maybe more important than some of the technical values when the Department of Energy and Groups such as this one, the Nuclear Waste Technical Review Board, will have you begin examining parts of the ACARM program. I think the southern states would support that particular position; that you need to take boards such as this one that looks at technical issues, and you need to bring in non-technical people who have a perspective such as some of the state leaders such as groups like the Southern states Energy Board, who can provide you with a perspective on some of the things that the states are considering even if it may be out of the technical realm that you usually see.

I don't have an opinion on geological standards for Yucca Mountain. I wouldn't know where to begin. But I do have an opinion on some issues that, while they are not specifically technical, they relate together. IT is very hard in my opinion to divorce technical issues from the other political and legal and

what have you issues in this program. Where do you draw that line? I think the societal values are extremely important, and I think the Southern States have indicated that on a number of occasions.

The next issue is, and we talked about it at great length earlier, public participation. I take it a little bit differently. When I think of public participation I am not just thinking of the housewife in hair curlers who is concerned about what she reads in the newspapers. Certainly there is that aspect. We think of public participation as more of public participation through state and local governments or agencies.

There is a feeling again through that state officials that we discuss issues with at our meetings that, DOE and other groups make assurances and promises that the public and state groups will be given adequate consideration at certain meetings. Then what happens is you get a meeting notice about a week before the meeting or you are invited to a public meeting, but it's a public meeting in Washington, D.C., and you are in Atlanta or what have you. DOE tells you your input is very valuable, but if you can't make it to this inconvenient meeting or you didn't get enough meeting notice or what have you, then we are sorry. We gave you everything that we feel we are obligated to do.

The states feel that if you really want their input you will pick up the expense to bring them to the meeting. You will give them meeting notice. You won't just have a meeting an invite whoever wants to come and see how it shakes down. What you will do is, you have a meeting, you give that notice that you need to, you will fund the necessary participants. Words are one thing, but actual funding for small groups such as ours to attend meetings are considered to be integral to the success of the meeting.

That's a point that I don't think anybody has quite mentioned yet. I know you can ask the question, do we have to fund everybody. Where do you draw the line between the people that you fund to come to certain public meetings. That's a good question. Certainly, if you are dealing with an issue that is going to involve an affected state or region you are going to want to invite the groups that represent that particular state or region. You may say something like we will fund one group from the state of "x" and let "x" decide which group or which agency will represent the state.

Nonetheless, you are going to have to back up this call for participation with something other than just words. You are going to have to have some money to back it up. That sounds very crass, I know. A plea for money, please give me money. That's what makes the world go around, and I think the Southern States have been concerned because we have been involved in a number of meetings where DOE has asked us to come at our own expense. We try to come and represent our states when we can, but that's not always possible. I think that's enough about that.

There is also a feeling I think at some of these meetings, at some of the participation sessions that have been held that they are pro forma. You just pull these people in front of a microphone whether they are on a state level or what have you, and

you let them say their peace and let them sit down and you never act on it. I think we touched on this issue as well. There is a question as to how much value you get out of a meeting when you have members of the public or state officials come before you.

I think that prejudges what you are going to hear. It is true, there will probably be some things that you hear that are not of use to you. However, if you are going to involve the public, if you are going to involve the states, you are going to have to make it meaningful. I think again, the states have felt like a lot of times they get invited to meetings or their input is solicited but it doesn't really mean anything. You say we are interested in what you have to say and we will put it in a public record somewhere, but no one really takes heed of what has been said. It's just put in a volume somewhere.

The feeling is that DOE is going to do what they are going to do. I know the Nevada people have said that one of the reasons they are upset with the Department of Energy's activities at Yucca Mountain is, they feel like regardless of what is found DOE is just going to push forward a position and not take into account actually what is being said to the. I think there is some validity in that. The Southern States have felt like in a number of forums they have attended where they have given their input and that it is has not been listened to.

If you are going to have a program that provides for public input, you are going to at least have to give it some consideration or don't have it at all. It seems to be somewhat hypocritical, at least from the state perspective, to be asked to provide input and then not have it considered.

Also, there is going to have to be some more integration of programs. Right now the Southern States Energy Board, as I said, we have been working with the ACARM program for some time. We have had some pretty good results. We are now trying to get underway a program with the transuranic or WIPP program. It is actually somewhat amusing, some of the difficulties that we have had in reconciling the two programs. Sometimes we will have somebody in the ACARM program give us a direction about a particular report or something that we are supposed to produce, and then we will have someone in the WIPP program say that's not the kind of information they think that a regional group such as ours should be involved in.

We have had some inconsistent direction among DOE or between DOE offices. That is going to have to stop. As I said, the public doesn't distinguish very often between programs within the Department of Energy and neither do a lot of state people. I find myself in front of groups sometimes such as this one trying to explain my position in both of the programs that we have been involved with and they are inconsistent positions from the same department. I think that is a problem.

I remember once that I was talking to a group and it was almost the same set up. They had a head table with DOE people and had an audience. There was a DOE person,and I won't mention names, he was our project manager. He controlled the purse strings, so I was naturally wanting to impress him. As I spoke on some of the reports that our organization had done and some of our positions,

he began to shake his head yes. I really started to articulate and pontificate and then he started shaking his head now. I wasn't really sure at what point the yes turned into a no. I went back to a little more conservative position and held the rhetoric down a bit and he started shaking his head yes again.

I got back into a fevered pitch and he started shaking his head no. I could never figure out what he had approved of and disapproved of. Later, after the meeting, I saw him in the hall and said I am just curious, you seemed to like parts of what I said and you didn't like other parts. He said, I wasn't listening to you, I was making out my laundry list. I was saying yes I have pressed those shirts and no, not those.

[Laughter.]

It had nothing to do with me. That was one of the instances when I found myself trying to take inconsistent positions and reconcile them and could not. I think that puts states in a difficult position. So, anything that could be done to help the states have guidance from DOE would be appreciated.

One other thing that I should mention about the difficulty that the states have with DOE is the schedule for the repository. There have been, as you know, numerous delays and the latest one came last year when we were told that it would be 2010 when the repository would be open. Nobody believes that. The Southern States, they have heard so many times about this schedule, it's actually kind of amusing when you look at a schedule that says in 14 and one-half years we will be doing this and the next week DOE says we are going to have a meeting but we are not going to have it now.

They are talking about a meeting within two weeks. The feeling is that you can't plan a meeting within two weeks from now and you are going to tell me what you are doing in 14 and one - half years? DOE seems to have borne that out. Every time that our state people come to me and talk about their feelings about the program the one thing they mention is that DOE can't stick to that schedule, why do they have it anyway.

I know that the National Academy of Science Board on Radioactive Waste Management has said there needs to be more flexible approach -- I haven't reviewed that report in its entirety but insofar as that report says you don't plan things 14 years in advance and that kind of thing, then I think that the Southern States would support that. You are not always sure what you are going to find in a program. If you start drilling holes in Yucca Mountain you might find something that you did not anticipate. Yet, you have this schedule that says at a certain time after we have done this particular thing we are going to do something else, and we think that's a bit myopic.

If you have a schedule you better stick to it, but we are not sure how you could ever stick to a schedule that has so many time lines such as that one does. Those are the feelings in the Southern States that I get from our state people on what DOE is doing. I understand that is one of the things that the Board is interested in finding out is, what is the perception of DOE.

In the trenches, which is really where I am working with the state people, as far as what the Nuclear Waste Technical Review

Board should do -- it is interesting, we had Dr. Price come and speak to the last meeting of our Radioactive Waste Transportation Advisory Group in Virginia last June. Up until that time our Committee knew nothing about the Technical Review Board. In fact, I had been asked by many people if the Board was under DOE's purview. In other words, if you were controlled by the Board.

I think there's a better understanding now, after Dr. Price talked to the Committee and gave them some material. I would just recommend that the Board -- I know that you are visible to members of the community within DOE and other groups that deal with radioactive waste issues -- the Board is not that visible to members of the public. Again, this goes back to public participation and the role of a Board. Should you be more visible? Well, we think that you should.

The Southern States, very often we have officials who have to face members of the press. While nothing specifically has come up about the Technical Review Board, I think if there were a way -- I think one of the ways that you can become more visible, of course, is to have meetings where you bring in people such as you have done today, the non-technical people. I think that's an excellent way to increase visibility.

If the goal of the Board is to address these issues of public participation or to try to get some non-technical viewpoints, then I think the increased visibility would certainly go a long way toward that. Those are my remarks. I think, as I said, that I speak for most or all of the Southern States in expressing the concern that misperceptions are a real problem in this area.

Anything that can be done by DOE or other groups such as the Technical Review Board to battle those misperceptions would be appreciated, so that I don't have to speak at my mother again and she tell me for God's sake, don't touch anything. Thank you.

DR. DEERE: Thank you very much. Our next speaker will be Mr. Louis B. Long, and I wish to welcome you. Mr. Long has more than 20 years experience in the utility industry involving the design, construction and operation of nuclear power plants. Since joining Southern Company Services as a licensing engineering in 1970, Mr. Long has held a number of positions.

He is currently Vice President of nuclear technical services, and is responsible for providing specialized services to Southern Electric systems operating nuclear power plants. Mr. Long is a member of the Edison Electric Institute's UWASTE Executive Steering Committee, and the Electric Power Research Institute's Nuclear Division Advisory Committee.

So, we are looking forward to hearing your presentation Mr. Long. Thank you.

MR. LONG: Mr. Chairman and members of the Board, it is truly an honor to come before you today. I also have the privilege in addition to being a member of the Southern Nuclear Operating Company, which is the newest subsidiary of the Southern Company, to be a member of the EEI/UWASTE Executive Committee. I thank you again for this invitation to appear here.

A little bit about the Southern Company. They are one of America's largest investor owned electric utilities, and it serves one of the highest growth areas in the Country. Today, we provide

electric energy for some 11 million people in the Southeast. In our service territory it is also the home of the Georgia Tech Yellow Jackets who, in the opinion of some of the long suffering alumni, still believe they are number and not number 1.5.

[Laughter.]

We do have six nuclear units which provide approximately 20 percent of our generating capacity. Some of the highlights of our nuclear program in 1990 include a single unit BWR record, run time of some 423 days for Hatch I, and industry record capacity factor of some 94 percent for the first year of operation of our Vogtle II Unit 2 nuclear plant. Also, the INPO award of excellence at our plant in Farley. We believe we have a well run nuclear system.

I also would like to mention that we send some $36 million a year to fund the high level waste program, so I bring that perspective to you also.

Ongoing events in the Middle East have once again demonstrated the urgent need for a national energy strategy that encourages the production of secure domestic sources of energy. Therefore, any national energy strategy must include nuclear energy to meet our growing electrical requirements, provide for energy security, and minimize adverse environmental impacts. Timely implementation of the Federal Civilian High Level Radioactive Waste Program is necessary to provide confidence for future commitments of nuclear generated electricity. In that light, I would like to call to your attention the recently issued strategic plan for building new power plants in our country that was issued by the Nuclear industry. I also happen to serve as a siting chairman.

What we are trying to do in this effort is look at the various institutional issues that must be overcome to see if we can set the table for a new generation of nuclear plants. Certainly, the high level waste program is one of the key ingredients of those 14 blocks that must be addressed. We must show, we feel, some movement in the high level waste program in order that there truly be the capability to have nuclear power plants of the future.

For the past 30 years utilities have safely stored spent fuel at our reactor sites. Nonetheless, there has always been a need to develop a permanent disposal system. Under the Nuclear Waste Policy Act the Federal government reconfirmed its responsibility to ensure the spent fuel from the generation of electricity is disposed of in a safe, environmentally sound, cost effective, and timely manner.

Continued progress to site and operate a high level waste disposal facility is extremely important if we are to maintain nuclear generation as an option to meet future electrical demand if we are to promote the nation's energy security and continued environmental progress.

At the outset, I want to say how much the electric utilities with nuclear energy programs appreciates the efforts of the Nuclear Waste Technical Review Board. The Board is providing valuable guidance to the DOE Civilian High level Radioactive Waste Disposal program. The Nuclear Waste Transportation Review Board

should be commended for focusing on high priority issues that are important for early determination of the suitability of Yucca Mountain.

The industry strongly agrees with many of the points in your second report to the U.S. Congress and the U.S. Secretary of Energy. For example regarding seismicity, as the Board stated, discussions of site suitability should be based on the likelihood of adverse consequences and not on the occurrence of earthquake ground motion or fault displacement alone. Further, the industry agrees with the Board on the role of engineered barrier systems. They are not a substitute for geologic barriers, but can be used to reduce the probability of adverse consequences.

This is consistent with our own industry's concept of defense-in-depth, which is used in design and as a fundamental basis of all our nuclear power plants. It is not only the fuel clad but the reactor coolant pressure boundary and containment, all viewed as a system which ensures the public health and safety. And in that same consequence, we need to look at both the geologic or in that same line of thought we need to look at the high level waste program as a system.

Today I will discuss some of the areas where DOE Civilian High Level Radioactive Waste program has been improved and others where improvement is still needed. My views are based on my role as a Vice President of the Southern Nuclear Operating Company and as a member of the Executive Committee, my substantial involvement in the licensing of all three Southern company nuclear power plants both as an engineer and a manager, an extensive review conducted by the EEI repository information exchange team in October of 1989 in which I was a participant, and on my visit this last July along with some other industry leaders to the Yucca Mountain site.

During my presentation I will convey to the Board the current status of the DOE program from a utility perspective, and the industry's recommendations to the Board.

The State of Nevada has raised technical concerns that it believes disqualifies the Yucca Mountain Site. Yet, Nevada refuses to issue needed environmental permits to allow any scientific investigation of the site to determine indeed whether the concerns are valid. The best way to resolve whether or not the site is qualified is to allow DOE access to the site, to conduct a thorough scientific evaluation.

Nevada's refusal to allow access to the site has, unfortunately, led to litigation. It is our hope that the State of Nevada and DOE can cooperatively resolve that dispute over these permits. Failing that, we believe Congress should act swiftly to provide DOE with all the necessary authority to gain and sustain access to the site for characterization.

DOE needs to continue its effort to develop a useful MRS. We applaud the appointment of David Leroy as the Nuclear Waste Negotiator. Mr. Leroy will serve a critical role in locating an MRS site. He appears to be establishing an effective approach that will open productive and earnest dialogue with possible host states or Indian tribes.

Since the MRS will be based on known, demonstrated

technology, the industry urges that the Nuclear Waste Technical Review Board not expend its valuable time and limited resource on this part of the program, except to provide confidence to potential host sites on the technical aspects of the overall MRS program.

The Board in an objective scientific community has spoken concerning the inappropriateness of the current draft of the EPA's 10 CFR 191 high level waste standards, standards clearly not based on appropriate scientific principles. EPA must be urged to allocate adequate resources to this critical area, and to develop a well defined and scientifically dispensable standard that effectively addresses the impact on the health and safety of the public within a reasonable period of time.

Although this should not be an immediate obstacle to the program, the industry is concerned that the time is fast approaching when it will become an obstacle. Hopefully, the NRC and EPA will successfully develop their necessary release standards and implementing regs on an interagency basis in the near future. The industry appreciates the support of the Board for these EPA and NRC actions.

Dr. John Bartlett's confirmation as DOE Director -- a subsequent reorganization - are very positive steps toward resolving industry concerns in this very key area. The new organizations appears to be logical and streamlined, and the industry is truly hopeful that these changes will be manifested in program progress. Dr. Bartlett is using at least three independent performance assessment methodologies to guide his decision processes on early science suitability considerations, including the EPRI EEI/UWASTE model.

We have expended a lot of resources in the industry to take some of the lessons that we have learned in the resolution of the seismicity issue on the Carleton earthquake and share the methodology with DOE. DOE appears to be on the right track with a focused early science suitability program; however, there do seem to be many opportunities for DOE to become derailed once this obstacle is a potential for diversion of resources to provide information or answers to questions that are not critical to the final objective.

This is where the use of the performance assessment methodologies will be extremely useful to determine the importance of each task. The methodology or a combination them can be used to weigh the relative importance of a particular investigation. The industry hopes the Board will continues its participation in the development and exercising of these models as in the EPRI/UWASTE model. Perhaps these models could even assist the Board, as it decides what areas of its consideration warrant further investigation.

Now some comments on the vital area of quality assurance. Since 1983 the industry has been stressing the importance of sound quality assurance program to DOE. EEI/UWASTE has also employed an extremely knowledgeable quality assurance consultant who has been closely monitoring DOE's program since 1986. Through this consultant and through our annual review process, the industry has been making suggestions to DOE on how to create a sound quality

assurance program.

Unfortunately, only recently DOE has taken the necessary actions in this very critical area. In December of 1989, the industry indicated that DOE may have developed an overly complex quality assurance program. Since that time, DOE has taken great strides toward simplifying and reorganizing its quality assurance program. DOE is clearly on its way toward an acceptable, logical and usable quality assurance program.

DOE is making an effort to work towards a realistic schedule. However, Nevada's dilatory tactics have made it very difficult to maintain a predictable schedule. The new schedule established by DOE 14 months ago calling for the repository operations in 2010 appears achievable, but DOE schedules are subject to many obstacles. DOE should develop a contingency plan in dealing with the many potential obstacles to achieve progress in the program.

EEI/UWASTE reviewed in detail each of the preliminary cask design reports submitted to DOE. The review focused on identifying significant technical and operational concerns raised by each cask design. The final report will identify and provide DOE with specific comments on each preliminary design, including those designs which have been cancelled by DOE in the event that DOE redirects the cask system design program in the future.

Based on these specific concerns, UWASTE identified several other major concerns that are generic to the cask development effort. Our testimony to the Nuclear Waste Transportation Board Transportation System Panel on November 19, 1990 elaborated on these concerns. Our final report of our review will be available later this week.

In the Nuclear Waste Transportation Board's report the Board strongly recommended the minimization of spent fuel handling. While minimization of spent fuel handling is a sound objective, DOE cannot allow this single objective to completely redirect the design and construction of the transportation program. Other factors are important, such as the time required to license a particular cask design, how long a dual purpose cask may remain sealed at either a reactor or MRS site before NRC will require that it be open and fuel removed and the cask inspected before it can be shipped to the repository.

What are the economic considerations, and does the technology possess the necessary compatibility with the current storage systems in use or under development at utility sites. These and many other factors must be carefully weighed before DOE decides on the final transportation system design.

Recently there have been many discussions both in Washington and across the country concerning the use of dual-purpose cask. Because of growing interest and limited experience with dual-purpose cask, UWASTE will be conducting a review of that technology. UWASTE plans to prepare an industry position on dual-purpose cask before the end of the year.

The Board is performing a valued service for the National Civilian High Level Waste Program. In order to maintain its high degree of effectiveness, the industry has some recommendations on areas of focus.

Number one, provide advice to DOE on management of scientific

process that continues to focus the effort toward characterization of Yucca Mountain; identify those areas where DOE is allowing the scientific effort to wander off the direct path to an early answer about Yucca Mountain suitability. We feel that you should advise DOE on the need for and pace of scientific activities. This includes instilling in DOE an appropriate sense of timeliness regarding this program, a sense of urgency.

Provide a forum for differing scientific points of view to be reviewed and resolved outside of the NRC licensing process while remaining above the scientific prey and avoiding being drawn into the arguments over minutia that will come up during the site characterization process. Review the EPA standards in NRC and DOE implementing regulations with the view toward whether they appropriately reflect a scientific basis for the protection of the public health and safety and the environment, and whether existing licensing process is amenable to resolving these technical issues. If not, identify what changes should be made to the standards and regs or the process so the issues can be resolved.

Help DOE maintain a system perspective with regard to the overall high level disposal system, and with regard to waste isolation after repository.

In conclusion, let me just say that I think it is important for society to dispose of its byproducts. It is not appropriate for us to put off this task to future generations. I think we need to get on with it. The Federal government has properly retained the responsibility for such disposal for high level waste and spent fuel. Congress has charged DOE with implementing disposal in a deep geologic repository. DOE has made great progress towards streamlining its management structure, improving its quality assurance program, and pursuing an early site suitability methodology.

However, the industry is eagerly awaiting substantial program progress. Access to Yucca Mountain is still the most pressing concern within the program. DOE must be permitted to begin characterizing the site to determine its suitability. Even the Nuclear Waste Technical Review Board's function could be hampered if DOE does not begin to collect data. Congress may have to act again in this regard.

A timely, properly configured and licensed MRS and operation by 1998 would provide needed evidence of DOE's progress toward an operational disposal system. It would also reduce the need for utilities to build additional on-site storage facilities, thereby saving money for electric rate payers. A timely MRS would add a significant degree of flexibility to the overall waste management system.

However, the industry recommends that the Nuclear Waste Transportation Board not expend its valuable time and resources exploring this technically sound area. For the nation to continue to enjoy the economic environmental benefits of nuclear generated electricity as well as begin to construct the next generation of nuclear power plants, we must have timely and acceptable progress towards nuclear waste disposal. Therefore, this program must not be seen as an opportunity to solve a national problem, not only for ourselves but for future generations. Thank you.

DR. DEERE: Thank you very much, Mr. Long, for those comments and recommendations. They will be considered.

We are proposing a change in the schedule because of the sickness of Mr. Michael Wilson of the Florida Public Service Commission, who will not be able to make a presentation to us at 2:00 o'clock. However, he has recommended a colleague to substitute for him, Mr. Ron Callen who, at present, is in the DOE meeting and will not be available to speak to us until 5:00. So, it was a question of cancelling the speech completely or postponing it until 5:00 o'clock.

In trying rearrange things, we have asked Ms. Susan Wiltshire if she would make her presentation right now and then at the conclusion of her presentation, we will have the questions for the three of you. And then, we will have a very long lunch break. During that luncheon break the Board will be trying to meet for an hour in a separate room to go over a couple of panel reports, et cetera. We would ask that those of you who can and would be interested, return to hear the presentation by Mr. David Leroy, the Nuclear Waste Negotiator which is scheduled for 3:45, with questions going to 5:00, which will be immediately followed by the presentation by Mr. Callen.

I would like to see if Susan is here. Mr. Susan Wiltshire is a Senior Associate at JK Research Associates, a consulting firm specializing in public policy formulation and citizen involvement in technical decisions. She has been particularly involved with developing effective public policy for radioactive waste management.

Ms. Wiltshire is a member of the Board on Radioactive Waste Management and the Committee on Risk Perception and Communication of the National Research Council of the National Academy of Sciences. She wrote a conservation foundation report entitled managing the nation's high level radioactive waste, and co-authored the revision of the League of Women Voters. Thank you very much, and we welcome you.

MS. WILTSHIRE: Thank you very much, Mr. Chairman. I appreciate the opportunity to speak to this Board. You have a very important task to perform, and like everyone else, I am going to tell you just exactly what that task is. I am glad that I am going to get my two cents in on that.

Before I do that, I would like to make a disclaimer. A number of people have discussed the report of the Board on Radioactive Waste Management. I am delighted that it is getting a great deal of attention and that people are taking it seriously, and a lot of issues are surfacing. I am not going to discuss it. That is not in my discussion.

I first became involved with radioactive waste management in 1978 during President Carter's interagency review group process. I knew nothing about the issue at all. I was President of the Massachusetts League of Women Voters, and we were asked to provide a moderator for the hearing on the report which, if you were around in those days, was a four foot stack of documents. In Boston they were going to pay us an honorarium of $100.00. Well, I was President, and I tried to delegate it. Everybody else in June was going to the Beach, so I had to do it.

That was the beginning. As people have pointed out, it's a tar baby issue. Once you get involved you can't get out again. I have learned a great deal in that time. Even in those days it was already a truism. People all said the radioactive waste management is not a technical problem, it's a political one. That was puzzling to me, particularly when I first addressed the National Meeting that was being held by DOE regularly in those days -- this was in Columbus, Ohio. Some of you may have been there.

There were 600 scientists all in one way or another on DOE's payroll in the room. I thought it is not a technical issue, what are they doing. Well, I kept trying to find a paradigm that would help me think about and organize what I was learning about radioactive waste management. At another meeting George Goldstein -- who some of you may know -- provided that for me. He was involved with the agreement between DOE and the State of New Mexico that led to the EEG that was mentioned earlier. He is now with Arthur D. Little in Massachusetts.

At the time I think he was on Governor Lamb's cabinet. He said you get it all wrong when you think of this as a technical scientific program that occasionally gets direction from the political process. It goes away and does its thing and occasionally has to turn back and get a little direction or money or some political process. No. It is a public policy question that needs to be based on sound technical scientific advice. When you look at it that way you don't change the way the money goes, because the technical scientific program takes a lot of resources.

What you change is the way you think about what it is that you are doing. It is a public policy question because for whatever reasons, our Federal government has taken responsibility for disposing of spent fuel and high level waste. That means that it is clearly in the public policy area. But public policy in this area would be disastrous if it is based on bad science or incomplete science. Therefore, it needs the best possible technical underpinnings for those political decisions.

When you look at it that way, I think this Board has two essential tasks. One is to review and report on the quality of DOE's technical scientific program, and through the process of interaction and report advice and review, to enhance its quality, your technical task. The second is to ensure that the right questions are being asked, the correct technical work is being done that will provide an adequate and timely basis for the public policy decisions that will be made.

You are advising DOE and Congress. They will make policy. If your advice helps lead to a program that provides the technical and scientific underpinning that is needed for good public policy then you will have served the national interest, in my view.

To do the first of those tasks, to review the technical scientific program and to try to enhance its quality is a task that you know very well as part of your own expertise in your technical fields. To do the second you need to also be certain that you identify and consciously identify the policy issues that are going to be addressed that need to have technical answers.

We need this really sound program focused on the issues that

are relevant. Otherwise, if the program goes off and does work on interesting questions -- as Dr. Heath was particularly eloquent on this having wrestled with it -- you can learn any number of interesting things. What is it that you need to know. You can help focus our efforts on what we need to know in order to make the policy decision that are required, not having the technical program become irrelevant or overtaken by events when Congress just says this -- out of the blue -- and you wonder why.

It is, in part, because they were faced with the decision and there was not a suite of alternatives that gave them a good, sound basis for making that decision. I think that's part of what happened with the amendments act. A number of us realize that the nuclear waste policy Act of 1982 was broken and needed fixing, clearly. We tried to get someone to help fund a policy dialogue among the multi-parties that are interested in this program so that they could think about ways the program might be fixed. When at an inevitable time when Congress noticed that it was broken, there would be some good suggestions available, some alternatives, some agreed upon alternatives that had the support of the industry, of the environmental community and of others who were interested.

People with the money all said we don't want them to think that we have lost confidence in the program, so we aren't going to discuss any changes that are needed. So, it did not occur. When Congress noticed that they needed to do something and it was brought to their attention, all they had was Luther Carter's book, suggesting that we do sequential characterization and that's what they adopted, absent other alternatives.

That is a case of public policy not having a good enough basis for public policy decisions at the time the decisions were being made. Although that is not a technical example, strictly technical example, I am sure that you could find others where policy is made that turns out not to be as sound as it could have been because it was made without the proper analysis on which to base it.

That's a good organizing principle for DOE's work to try to do its research -- carry on its research focused on the issues that matter, and I think it's a good organizing principle for your own work.

You have already performed the second function that I mentioned. I was going to spend the lunch hour condemning you out of your own mouths looking at chapter and verse in your report. I have it all in margin notes, but I don't have the page numbers so I can't.

Your engineered barriers -- you identified a place where you thought policy needed to be reconsidered, DOE policy and its emphasis on the geologic barriers. You identified I believe, four questions that you thought they ought to consider so that they would be able to rethink their policy. I think that was a very good recommendation, and it's the kind of thing that I have in mind.

Several other sort of random suggestions that I would like to make. One of your important functions I think -- not among your tasks but a function that you can perform -- is helping to build

public trust in the scientific and technical program. You won't be able to perform that function as well as you might unless you are sensitive to the environment in which you are working.

I think you need to be sure that you understand what your words mean to the people who are hearing you when you are talking about an issue that has hidden meanings to the public or to the group with whom you are talking, a sensitivity to the environment in which your advice is being heard, the political environment and social environment, so that you can speak clearly -- I don't mean you have to avoid controversy. The controversy should be about real issues and not about a statement that is made without sensitivity to unintended consequences.

Second, I learned -- I have enjoyed very much serving on the National Academy's Board on Radioactive Waste Management -- I have learned a lot. One of the things that seems consistent working with people who are very well grounded in their own science and in the sociology of science -- that's the way they work -- is this clear recognition of what they know and what they don't know; respect for their own knowledge in their own field and respect for other people's knowledge in their field.

Which brings me to the idea of there being some knowledge that is in the realm of social science. Talking about inadvertant consequences, when I read your report it just took my breath away the statement you made about the public will. This will ensure public confidence, this will enhance the public, this will -- I could have made a counter argument every time that I found that; that the exact opposite was true. I think you need either to be able to back it up or put some caveats that it is likely to, we think that.

The public, as you know, isn't all one entity. Opinions change over time. What will reassure the public in the future may depend on the context in which events occur and so forth. I came across an article in Science of January 4, 1991, research papers -- Who is uncited now. They have done some research to show which fields are least sited, and arts and humanities -- the proportion of papers with no citation by field, Arts and Humanities 98 percent, no citations. Are they writing too much and reading too little, or don't they have the strong tradition of citing.

The next one is social science. Papers uncited, 74.7 percent of the time. I think that's in part because we all think we all know all about it.

I think there's a lack of respect for some of those disciplines that is inadvertant and is uncharacteristic of scientists in their own fields among their colleagues, that they recognize where the boundaries of their disciplines lie and may not recognize the boundaries of their disciplines in respect to social science.

The third, I thought I was going to leave this and wait and get some questions, but I have to say something about public involvement and public participation. It is a field about which one can think rigorously. There is a lot of history, you can go back. I go back and sometimes when I talk I can talk a long time about it, but you can build up an understanding of what the history of public participation is in this country and how to

think about it. What I wanted to suggest is several things.

One, it is not a black box. It should be for a purpose. If you are going to ask for public involvement you need to know why, what do you wish to accomplish. It may be to build public trust, to get information that the public may have which you would like to consider in your deliberations to understand public values, preferences and concerns. There are any number of purposes you can identify and they may be different at different times.

To say let's just involve the public is not to think about it carefully enough. Why and then who, the public is very different. The Congress is your public and DOE is too to some extent, your public, the regulators are. There are the environmental groups. There is the people in Nevada, goodness knows. You can identify many people, and their requirements and their helpfulness to you will be different among different members of the public. Then, once you say who is the public that is concerned about what we are discussing now from whom which we wish to hear to serve our purpose or who should hear from us to serve the purpose, what do they need to know. How do you need to inform them and what do you need to learn from them in order to serve your purpose. Finally, what is the method. That's the last thing. Hearings are the least useful method of all.

You think about it in a rigorous way; purpose, who are the participants, what is the information that needs to be exchanged and how comes last. Finally, just to return to the issue of -- it's not a technical issue but a political one said in a pejorative way like politics are bad.

I went to the Random House Dictionary of English language second edition unabridged, and looked up politics. The first meaning is the science or art of political government. Pretty good stuff. That is how we get along with each other and run our country. We are delighted the political governments in Eastern Europe are changing. That is a very important part of our lives, to practice our profession conducting political affairs and so forth. And then they mention the work by Aristotle by that name.

The eighth meaning is play politics, to engage in political intrigue, take advantage of a political situation or issues, resort to partisan politics, et cetera, exploit a political system or political relationship and to deal with people in an opportunistic and manipulative or devious way as for job advancement.

That eighth definition is the one I think when people say it's not a technical one and it's a political one, is in the back of their minds as a pejorative. Politics should be elevated to the respectable level in which it belongs. That is how we decide how we are going to live together, how we get along, how we run our country, how we spend our money, what kind of people we are going to be. You can contribute to the soundness of political decisions by the way you are able to identify the public policy discussion in the political arena that need your help and advice.

I think you are on that track from several things that I have seen in your reports. I commend you for it, and I look forward to your being an essential part of building the public trust in its

own institutions that we are sorely lacking now. Thank you very much for an opportunity to talk.

DR. DEERE: Thank you, Ms. Wiltshire, particularly for agreeing to give your speech a little ahead of time before you finished all of the comments that you might want to have developed.

MS. WILTSHIRE: I didn't get a chance to get the citations.

[Laughter.]

DR. DEERE: We would now like to open up for comments from the Board, the three presentations that have been made. Warner.

DR. NORTH: I will start with one that I would like to ask Susan Wiltshire to clarify a little bit further, her reference to the January 4, 1991 science piece which on the West Coast we get Science a little later, and usually my colleagues get it before I do. It is often several weeks before I get a chance to read it.

I think the point you were making had to do with social sciences, and perhaps the inclination of many of us, especially those of us trained in the technical sciences, that maybe we are not as careful to use the scientific method when we get into some of these issues as we ought to be; that we tend to shoot from the hip rather than going out to get the data, using the data and carrying out analysis and drawing out conclusions where you can track that all the way back to data and the process.

Is that what you had in mind?

MS. WILTSHIRE: That is exactly -- that is well stated. I think this discussion in science doesn't make that point. There point may be more that the culture in social science is not as rigorous about siting. That may be a subsidiary point. I think others tend to trample into the arena without carrying along that very useful tradition.

DR. NORTH: Are there some points that you would like to commend to us in this general area, where we are still awaiting appointment of a member of this Board with qualifications in public policy and social science that maybe ought to be on our agenda for the future or problems that you see in looking at our first two reports in this general area that we ought to deal with.

MS. WILTSHIRE: I would like to write that letter, and I would be glad to identify some and give you a list to the extent that I can develop one.

DR. NORTH: Good, we look forward to it.

DR. PRICE: I might ask Mr. Long a question. You made comment on the minimization of handling as only one of many issues that we need to be concerned about, and I think we would endorse that comment.

One of the advantages of raising that particular issue at this time is to address the compartmentalization of everything that we seem to be running into. I would appreciate maybe your comment on it. It might be said that the utilities have a somewhat narrow view within their box; that DOE has a group that has a narrow view with respect to transportation; that there are those addressing MRS with a narrow view of the MRS issues. There are those who are looking at the receiving facility. We haven't heard a lot from them yet, and maybe hope to hear more perhaps

with a narrow view of the receiving facility.

There are those who are looking at Yucca Mountain with characterization, and that's the limits of their view. There isn't an overall grasp coming forth and becoming apparent among all of the agencies involved including NRC and EPA that is able apparently to override these boxes and this narrow confinement. That theme maybe is one which might be used to get people to try to address cutting across the boundaries enough to get some kind of total systems view.

Do you have any comment on that?

MR. LONG: I think the comments that we made would support that viewpoint 100 percent. One of the concerns that we had as we read through the report that you put out, we kind of identified individual specific issues. The point that we made would endorse the comments that you made 100 percent.

We need to stand back and look at the whole system from fuel pool to ultimate storage, and not in light of any one factor but as a system as a whole. I would agree with you that that's the approach that needs to be taken.

DR. DEERE: Isn't it true that the increased emphasis that is going to be given though in the systems engineering approach will help with this integration?

MR. LONG: You bet. There are two issues that I think we have. There is a danger on looking at the systems approach that you focus again on the whole world. We do want to focus on the important issues, for instance, the site suitability issue rather than looking at every detail of the whole program to focus on those important from a systems perspective as opposed to some minutia of some scientific detail.

DR. PRICE: I would like to also ask Ms. Wiltshire to expand maybe a little bit on a comment that she made of those methods of obtaining public participation; that public hearings were the least useful method. If you might, expand on that.

MS. WILTSHIRE: Yes. The public hearings are usually formal and require -- it is really a one-way communication. I speak to you, and you listen. You can go down a whole continuum until you get to real interaction. The closer that you get to interaction the more productive the discussion becomes, because I can build on what you are thinking and you can then add to your thinking and bring more out to a closer understanding of what I am thinking when you get interactive.

There are many, many ways to be involved with the public. I was intrigued with the discussion earlier about the amount of time it takes and how your time needs to be used. It is valuable. That is why I emphasize purpose for interaction. Workshops format discussion, the more informal as Dan Reicher said, the better. The last thing is a hearing, where you get formal comments. People are not comfortable. Then, you have no chance to speculate and take your thoughts further. You have to state what you think and leave it there.

There may be a way to build on it if it's more informal.

DR. ALLEN: Susan, although Don didn't mention it in your introduction, you are a mathematician by background. MS. WILTSHIRE: Yes.

DR. ALLEN: Some people would consider that the queen of the sciences or the hardest of the sciences. Does that in any way affect the way that you look at public policy issues?

MS. WILTSHIRE: I have noticed related fields, physics, most of the people I know who work in public policy were physicists as undergraduates. I don't know why. In my particular firm, there are three of us, and we were all mathematicians in the first instance.

I think there is a way of abstracting general meaning through information going to the general picture -- may be a way of organizing information. I also was fascinated one time when we had a League of Women Voters in Massachusetts, how you went from being a volunteer to paid work. Everybody who was at the front of the table were people who had science backgrounds and the audience almost to a woman, were people with the arts background. We weren't working in scientific fields, but all of us had scientific training which helped organize.

I have been fascinated with that, because one was working on restructuring court systems. She was a chemist. One was writing public television and she was trained in something to do with medicine. I think it does teach you better organizing information. Math is supposed to, they have always claimed it -- maybe too much.

Do you think it makes a difference for people -- do you find disorderly thinking in the general public?

[Laughter.]

That is why I like it. I think interaction is better and I might learn something from it.

DR. ALLEN: I think that scientists and engineers perhaps tend to talk to themselves so much that they really don't often communicate with people in other fields. I have certainly been impressed in my work with the Board on Radioactive Waste Management with you and others, that the clarity of thinking and the depth of thinking that comes from some other fields can be very surprising and very impressive, very impressive.

MS. WILTSHIRE: And it helps, I think. You have lot of disciplines. People add to your thinking. This is technical. I was on the panel on Uranium Mill Tailings and we were just finishing up our report. There was somebody who did the engineering and somebody who was some kind of chemist that worked on the molecular level. Anyway, we talked about subsidence and there being a crack in subsidence. They had completely different views about whether that was good or bad. They both agreed that the cap would subside and they disagreed whether that was good or bad.

I have forgotten what the difference was. It subsided and it compacted, and there was a less pore space there where things couldn't escape so that was good. It cracked, therefore, things would get out and that was bad. Then they had to deal with each other. The rest of us just stood back and said that we observed that it will subside and the cap will crack. We didn't preclude anything.

They learned from each other. I think the same thing happens when you branch out into the social sciences as well, there are

things to be learned in a discipline.

DR. CARTER: Louis, let me ask you, do you folks determine your ratepayer views or customer views as far as contributions? I think you mentioned your company contributes or pays $36 year for the nuclear waste fund. Do you have a feel or do you determine on some statistical basis the views of the ratepayer as far as whether or not you are getting your money worth from those funds?

MR. LONG: There is a body between us and the ratepayers, and that's the Public Service Commission. They are the ones that determine what our rates are and do they think the expenditures that we make are reasonable or not. At this point in time the charge for high level waste disposal is part of the fuel adjustment clause, which is automatically made. It is a pass through. At the time for our system it's just not an object for discussion.

That is not the case in other areas. And it's also not the case particularly for people who are having to build additional facilities on their site and to determine who ought to pay for those additional facilities. There are those who are at public service commissions who think they are already paying enough to the nuclear waste fund. Therefore, any additional facilities their stockholders need to pay.

In our system right now it's not a discussion. Come here in 1905 when we are going to have to start making firm decisions in our system, I can well see it would be an issue for debate.

DR. DOMENICO: Are you currently moving waste from perhaps one site to another, are you permitted to do this, or can't you do this?

MR. LONG: You have to get permission to do that from the Nuclear Regulatory Commission. Currently we have sufficient capacity in our fuel pools that we don't have to do that. It turns out within our system we have some plants that are newer than others and there is a possibility that we would transport fuel from one site to another where there is room, such as they are doing in the Carolina's right not into the Sharon Harris facility. Other utilities are doing that and that's an option we may have should there not be a place to send our fuel at the time we need to.

DR. DEERE: A question, Mr. Martinez to you about the MRS. Have you taken a position that you are not in favor of it, or is it still just simply a debatable issue within your group?

MR. MARTINEZ: That's a good question. We did provide testimony before the MRS review commission when they came to Atlanta in January and February of 1989. One of the things we have always tried to do in our projects is not to alienate one constituency over another. I am sure that is within any group, an admirable goal.

The problem is that most of the Southern States are decidedly against an MRS. There are one or two instances when states are either neutral or actually would desire an MRS. I don't know about on the state level but I know several individuals from West Virginia, for example in the local level, have indicated their desire to have an MRS and to have it located in that state.

I don't know of anything that the state has said. I suspect

that politically it would be very difficult for them to maintain the position at least right now that they want that in their state. When it came time for us to provide testimony we didn't want to get up and say yes, we are in favor of it or we are opposed to it. Rather, we wanted to represent the views of the constituency.

When we talked to the members of our Advisory Committee on Radioactive Materials Transportation the way we focused it is we said, if there is an MRS built what kind of considerations would you want us to mention. That's the way we phrased it. Our organization, we feel that we are really not in the position to take a stand but to communicate the views of constituencies. So, what we said was that if there is such a facility constructed you need to consider that it might be a de facto repository and the linkages to the repository itself need to be maintained in some fashion.

That was the position that we maintained then, and it's the position that we maintain now.

DR. DEERE: Colin, would you like to ask a question to any of the three beside you?

DR. HEATH: Thank you. No, I will pass.

DR. DEERE: I believe then that it is time for us to thank this very fine group of speakers, and we feel that it really has served its purpose of introducing us to different points of view and broadening our understanding of the problem. We are all very interested in getting this kind of understanding and hopefully, we will use some of the benefits that we have gained.

Thank you. We will see you for Mr. Leroy's presentation at 3:45.

[Whereupon, at 12:40 p.m., the meeting recessed, to reconvene at 3:45 p.m., this same day.]

AFTERNOON SESSION

[3:50 p.m.]

DR. DEERE: We will reconvene the meeting that was postponed this morning at 12:30, and we are back on schedule. We are very pleased to have with us today, Mr. David Leroy. In August, 1990, Mr. Leroy was appointed by President Bush and confirmed by the Senate to the post of Nuclear Waste Negotiator. Mr. Leroy will work with Governors, Native Americans and others, in an effort to find a host state for a monitored retrievable waste facility for high level radioactive waste and possibly for a repository.

Prior to his appointment as Negotiator, Mr. Leroy served as Attorney General and Lieutenant Governor for the State of Idaho, where he has a private law practice. The Board is extremely pleased to have the opportunity to meet you personally, Mr. Leroy, and we look forward to hearing of your approach to the challenge and work ahead.

MR. LEROY: Mr. Chairman, thank you very much for the opportunity to be with you today. I will make a few informal remarks and respond to any questions that Board Members have and if it would be appropriate in your forum and in your format, to take questions from the audience.

I note that I am scheduled for a significant period of time. You may be assured, despite the fact that I come from the world of politics, I will not use all of that time with prepared remarks.

Let me first tell you an experience that I had a few months ago as I began to reach out to people who may have a great deal of institutional history in the area of negotiation and the nuclear waste program of this country. In meeting with all kinds of experts and all kinds of people with all kinds of backgrounds, I identified one fellow who was an expert in both negotiation and had worked a great deal on the siting of controversial facilities including nuclear facilities. I engaged in an hour and one-half conversation with him which waxed and waned over the possibilities and probabilities and problems associated with the Negotiator's office.

Toward the end of those minutes together I asked him what I thought would be a capstone question. I said, if you had been nominated by the President to be United States Nuclear Waste Negotiator on Friday; if you had been confirmed by the Senate on Saturday; and, if you suddenly showed up for work the first time on Monday morning, what would you do first? He pondered for a short pause and then a longer pause and it became a longer pause, and finally after about a minute's contemplation and atonement was somewhat hushed and all too somber he said, I would pray.

[Laughter.]

Divine intervention and encouragement is appropriate to every task, and I appreciate it in this one. I have tried to deal in the world of realities and hard practical problems that face this mission as I have assessed in the last few months. I think it is appropriate for me to say how pleased I am to see and hear and understand the important work that this Board has been doing since its commencement of operations.

I was particularly encouraged in the second report to the

Congress and the Secretary to find this Board identifying something that you called non-technical siting problems as problems that must necessarily be dealt with in the practical reality, in the world of siting both the permanent repository and the monitored retrievable storage facility for this nation. That recognition, that non-technical siting problem and their existence, indeed being a fact of life in this country, must be addressed is exactly the concept which the Congress had in mind in my opinion when it created the Office of United States Nuclear Waste Negotiator back in 1987.

I am releasing today by virtue of this appearance before you, a year-end report -- even though we didn't have 12 calendar months of operation in 1990 -- which summarizes the kinds of things that we have done in commencing our operations. Each of you should have before you a copy of that report. Roughly speaking, I would like to orally summarize that and make a few concluding remarks, and then take questions from you regarding the achievements we have made, the process which we are pursuing, or any concepts, recommendations or concerns that you would care to express to me.

As you can see from the report we began as vigorously as we possibly could to commence operations, intending by virtue of even things so simple as the siting of our offices, to underscore some of the fundamental features of the Act that I think are important to the accomplishment of our mission. We located the principal offices of the United States Nuclear Waste Negotiator in Boise, Idaho, my home of jurisdiction, in part because we thought it was very important to emphasize as the Act provides that this office is independent of every other Federal entity; the Department of Energy, the Nuclear Regulatory Commission, the Congress of the United States all included.

We situated the principal office in Boise, a liaison office in Washington, D.C., recognizing how important it is to be a presence in this city and to coordinate effectively with the Congress, OMB, with Boards, Commissions and agencies such as yourselves, and we are active and up and operating in both locations. I have been fortunate, as the report details, to identify a talented staff to this mission. We have ten authorized positions and a budget of approximately $2.5 million per year.

Instead of hiring people just to fill those quotas, we have allowed the hiring to be dictated by the tasks that we identify as we create this new Federal agency. We are currently staffed at eight people. We will hire others as necessary as tasks develop, and we will attempt to use outside consultants and cooperation agreements with other agencies of the Federal government and perhaps ultimately state governments, to try to flush out our support staff.

A couple of things are very important here, particularly when I have the opportunity to talk with scientists and technicians, recognized world experts such as you are. Number one, I am not a scientist and not a technician, I am a communicator. In that light it will be necessary for us to work with technicians and scientists on appropriate issues at appropriate times as we go forward in this mission.

We will identify those issues and we will hopefully have the

advice and counsel of groups such as you are on how to approach those problems, who might be useful to approach those problems, so that we can preserve the scientific effectiveness and accuracy of the tests and the studies of which we need to pursue.

In the commencement of operation phase after we began putting those pieces of the new Federal agency in place, it became obvious that we needed to move to a second stage, something that I might call background development. In that phase we tried to reach out to many people, many institutions, consultants, all kinds of groups and entities that had a familiarity with this process, its problems and its possibilities.

I met with approximately 58 different experts of different types, of people like Ben Rushi, formerly associated with the program inside the Department of Energy, groups from public interest and environmental communities, groups from industry, groups from the public utility commissions and others, in an attempt to understand and ascertain their various and respective points of view about the problem, the issues and the possibilities for moving forward.

In addition, it seemed very important for us to create a very clearly delineated relationship with the Department of Energy. For that reason we put into place and signed with Secretary Watkins a couple of months ago, a memorandum of understanding between the Office of the Negotiator and the Department of Energy that makes several very basic promises.

Number one, it identifies that when we wish to have assistance of a particular type we will request it in writing. Secondly, it states that this exchange of information will be open and will be available to public scrutiny. Third, it underscores the independence of the Office of Negotiator from the Department of Energy and the Department of Energy from the Office of Negotiator.

It is our aspiration that by that kind of commitment and beginning to work early on, even in advance of specific issues, to create a well defined relationship with the Department; that,that will be a useful tool and a proper vehicle by which we can get information back and forth between the two of us. We are currently exploring a similar initiative with the Nuclear Regulatory Commission.

In the background development process I have attempted to visit a number of the nuclear facilities and sites in this country that have significant waste-related issues or perhaps have had public controversies associated with them in the past. I visited Hanford, Rocky Flats, Savannah, Three Mile Island, Indian Point, WIPP, and I have deliberately -- parenthetically -- stayed away from Yucca Mountain to underscore symbolically that in the process of searching for willing host states and willing host tribes we will treat the State of Nevada just like any other state.

In that background development process, which is now largely concluded, we tried to pull together all of those basic ideas and pieces of information, to take a good look at the statute and to underscore and design the principles by which we will begin to approach states and tribes. We now move with my remarks to you, with the issuance of this year end report and with the

commencement of a new calendar year, to a third stage which I call the design process.

We are now in the process of designing the process by which we will approach states, territories and tribes that are named in the Act. Over the next several weeks we will be convening a group of workshops with stakeholders to ask them to give us the benefit of information and advice and counsel in a more formal way than my one on one ad hoc meetings previously conducted. We will attempt to take that information and in March of this year prepare a draft of two documents.

Number one, a design of the process itself, namely a document which allows me to tell the Governor or tribal leader what the process of consultation would look like if they are willing to give us an indication of initial interest to start a dialogue. Secondly, a document that conceives in concept at least, the kinds of benefits and controls and shared opportunities that would be available to a state or a tribe should they indicate an interest in negotiating with us and should we be able to conclude a reasonable agreement that we would take back to the Congress.

Those two documents will hopefully be in draft form in March. We will then go out in April in a series of public participation conferences nationwide, perhaps five or more, perhaps convened at various places around the country with the objective of getting an even wider array of public comment including criticism on those designs.

It seems to me that the process of designing the process can be as sensitive as employing the process at a later time. I want to take a good deal of time and make an aggressive effort to reach out to those involved and those who wish to be involved in counseling us about how we go about approaching states and tribes and their respective constituents in determining the kinds of questions that we are commissioned to determine under the statute; namely, willingness to participate, the proper technical qualification of a site for either an MRS or permanent repository, whether or not a reasonable agreement can actually be negotiated, and fourth and finally, whether that reasonable agreement as offered can be enacted in law by the Congress and the President of the United States.

As we conclude those public conferences, we will then take June or so to pull together the final documents and begin the preparation of a written communication which will be issued simultaneously to the 58 named jurisdictions and the Indian tribes who are sovereign nations with appropriate lands in this country. That written communication calling for expressions of interest to come back is still being designed but may take a form similar to that of the superconducting super collider proposal offered by the Department of Energy several years ago, a document about 75 pages in length with appropriate attachments that describe the opportunities to states should they wish to indicate an interest in being considered for that facility.

While a greatly different facility and while our proposal will be inevitably somewhat different, that proposal as you will recall, initiated interest by at least 45 states in its first cut. Our ambition is to attempt to initiate in a favorable response

from states by virtue of the same vehicle, which will be delivered sometime in calendar year 1991 between June and October, to those individuals representing the jurisdictions named in the 1987 Amendments Act.

I am particularly pleased to inform you that I am available at any time to work with you and consult with you, to hopefully ask you questions and to receive the benefit of your advice on the non-technical siting problems that you have identified as appropriate for dialogue between yourselves and the Congress and the citizens of the United States whom you represent as you discharge your mission.

I am absolutely certain that the difficulty of the mission upon which we embark cannot be overstated. But I am also absolutely certain that an aggressive, best effort by our office to design a process which is open, which is fair, which allows broad participation, which hopefully can give a Governor an opportunity to say maybe to initiate the dialogue, can indeed be achieved to bring a whole new process on line for the consideration of the siting of controversial facilities including these two facilities in our country.

We don't want to find a Governor who says yes it is not necessary for a tribal leader to identify a specific site. Instead, we want to create a process by which people can be brought in, border to border in a state, to consult and to consider and to honestly discuss the possibility of assessing the risks, understanding the benefits and determining whether or not a state is willing to participate in solving a significant national need and national problem.

I was speaking a week ago with a gubernatorially appointed cabinet member of a state who had responsibility for environmental matters in that state -- not for the purpose of doing a dialogue focusing on that state as a site -- but for the purpose of understanding of how it might be that a Governor would receive such a written proposal as I have identified to you that we intend to put out, whether it will summarily dismissed or whether it might be handled in one way or another. The Director of the Department said to me, Mr. Negotiator, if you present to the Governors such an invitation for expressions of interest as you have described, regardless of the facilities as you have described them, you may be assured that it would not be summarily dismissed but you may also be assured that it would start with every conceivable political strike against it. That's a fair summary.

It will not be an easy task, but it is a task that I am very pleased to say that we will aggressively pursue. I will not be a salesman for a particular facility, but instead will be a negotiator and facilitator who will work with state and tribal leadership hopefully in a positive and productive, and open fashion.

I view the Office of Negotiator as guarantor of the process rather that guardian of the result. But if we can create an effective process that, for the first time in this country brings people together in the dialogue that I have described, even though we deal with emotionally sensitive, politically difficult topics, then we will indeed have contributed significantly to federalism

and to a new way of dealing with environmental matters in this country.

After all, that's the way a government is supposed to work. Thank you, Mr. Chairman.

DR. DEERE: Thank you very much. I would like to open it up for questions from the Board members and then we will also immediately go for the audience.

MR. LEROY: Thank you very much.

DR. DEERE: Are there questions?

DR. CARTER: I have a couple. Mr. Leroy you mentioned just in general before you started your presentation the native American situation. As I understand it in some cases, the Native American Land ownership I guess is rather straightforward and is still under adjudication or at least dispute.

The ones that are in dispute, do you intend to get involved in those situations?

MR. LEROY: Mr. Chairman and Member, Mr. Carter, it is difficult to guess in the abstract exactly what kinds of land or legal or title or sovereignty issue might affect us without knowing in advance who it is that might indicate a willingness to talk to us about what their own treaty situation is as a Native American tribe and what the relationship of that sovereign nation is in terms of practical politics to the state in which it is found.

Let me simply say that I have crossed a couple of hurdles related to approaching Indian Tribes and how to coordinate with the states. During my confirmation process I had a number of written questions from members of the United States Senate. One of the questions asked to me was, if you find an Indian tribe willing to negotiate with you, how would you relate that offer of negotiation to the state government in which the tribal lands are located.

I indicated in written response to that question that I was committed to consult with the governor of the state as well as the tribal leadership, recognizing that my challenge is to bring a practical solution back to the Congress of the United States, recognizing that the sovereign rights and the sovereign nation of the tribe will also have to address transportation issues and other off-reservation impacts.

It seemed to me that the only practical answer was to bring back to the Congress something that would work, something that has been well consulted with the state leadership, something that involves appropriately and appropriately early the Federal delegation from that state who, in Congress, would be in a position to either block the legislation or recommend its approval and vote on it.

So, the only native American issue that we have addressed is how to coordinate in the case of a tribe working with the state governor in that particular jurisdiction as to subject land issues, as to treaty complications. It would seem that we would have to address those if they arise in the context of negotiation. But if they are outside the indication of willingness, we would appear to have no current jurisdiction to work on those issues.

DR. CARTER: The other question I had was the degree of

openness. You described a process that would be completely open. Of course, a lot of these things I am sure politically and perhaps otherwise, are extremely sensitive. I presume somewhere in the process it is going to change from perhaps being confidential, if you will, to completely open.

Is that the way to characterize it, or do you intend to start right off the crack of the bat? As an example, you hear rumors now to the effect that there are a number of states perhaps that have already indicated an interest for example in having an MRS. I have no idea whether that is true or not, but it least the people that presumably know that -- they are being very circumspect.

MR. LEROY: I don't know all of the circumstances in which we will find ourselves. But I am absolutely committed to the process of openness in working through this challenge for the United States of America. One of the difficulties that is common to unsuccessful sitings, not merely nuclear but all kinds of locally unwanted land uses and controversial facilities in this nation and around the word, is the ability of antagonist to that siting to characterize something as back room politics or secrecy.

It seems to me that the challenge of the 1987 Act is fairly direct and is fairly forceful, and simply tells us that we have to work with politically elected leadership at the highest levels in these states. We have to recognize going in that in state government politics perception is the reality. If the voters are fearful and vote their fear, then that is translated through the state government system.

To the maximum extent possible at every juncture and from the first juncture on, we will attempt to be as open about this process as I believe it deserves, and it deserves to be totally open.

DR. PRICE: You indicated that in the next year or so you are going to be producing or at least at the start of this year, your near term goal as to produce a couple of documents. What is your timeline, as best as you can see it? When are we going to have an MRS?

MR. LEROY: Mr. Chairman and Member Price, thank you for the $64,000.00 question. I don't believe that it is possible for me to make a useful prediction about that, partly because speculators far more technically based than I and far longer grounded in the program can give you a wide range of guesses. My guess would only be one. I am very mindful of the dates and target dates of the Department of Energy and others for the commencement of operation and transfer of title of spent commercial fuel and others.

I would like to assure you and everyone else that we will move with all due dispatch to try to make a positive contribution to the achieving of the national policy dates related to the licensing and opening of a monitored retrievable storage system. That being said, I think it's important for me also to say that we cannot necessarily be subject to anyone else's dates as we try to create a process. If we are successful in that process in getting someone who is willing to talk to us but has their own necessarily cumbersome or deliberate political process within a state to go through to determine whether or not they are willing or to

determine the terms upon which they would negotiate with us.

So much of the ability of the Negotiator to control the scope and dimension and pace of any negotiation is outside our immediate control. That is, it is utterly premature to speculate whether we could get someone interested. If so, how long that interest might last and what terms might be imposed upon us to develop that interest to an agreement that we can take back to Congress.

I would remind you that our office is scheduled to expire in January of 1993, two years from now. We will make, as I have said and as I have characterized it before, an aggressive best effort to move things along with a proposal or proposals going out sometime between June and October of this year to get back indications of interest and show as best we can substantial progress toward negotiations to the Congress. Obviously, we ought to be able to make some of those kinds of movements and make some of those kinds of justifications for a continuation of the office or anything else well before January of 1993.

Beyond that, I am afraid I can't answer your question.

DR. PRICE: You indicated in the documents that you were preparing that part of them would contain some description of benefits which might be available as part of this thing. Are these fairly well defined at this point?

MR. LEROY: Mr. Chairman and Member Price, in concept they will feature safety first and compensation last. In concept they will be as broad, as innovative and as attractive as we can possibly make them, being very mindful of the stern warnings that Senator Johnston, Chairman of the Committee gave me at my confirmation hearing, not to over promise.

We are going to fashion a menu of source that states the basic principles upon which we will negotiate and then begins to paint a picture of possibilities for the Governor to hopefully identify for that governor two or three things that he or she would like to be talking about to his own or her own jurisdiction in their next state of the state message.

Those will include things that are not commonly thought of as compensation, but I believe are absolutely essential to get a governor and get a state or tribe to the table. Things in our compensation package would include things such as shared control, things such as a choice of technologies, things such as the less traditional packages, recreational improvements in a state, the co-location of other Federal projects, the improvement of infrastructure in the common sense of railroads and highways and transportation links and communication systems and bridges, and in the non-traditional sense as broadly as that term can be taken to law enforcement, emergency response units and those sorts of things.

We will pick up pieces that have been offered in other packages elsewhere around the nation such as higher education centers of technical excellence, the centering of a world leading technical administration within a college or university system adjacent to the site. We can talk about improvements in the public school system. We can talk about all kinds of things featuring safety and opportunity for mutual control first, stressing indirect benefits and mitigation and perhaps even the

improvement of pre-existing environmental conditions.

Stressing last, compensation of a monetary nature or monetary benefit. That will be a part of what we are doing. These workshops, the public consultation process by our national hearings will hopefully draw in far more ideas that we currently have now to be a part of our written documents.

DR. ALLEN: Mr. Leroy, your charge as I understand it, is to try to negotiate siting an MRS and possibly a repository. Can you give us any idea of a relationship between those two tasks or would any efforts on a repository have to be almost accidental in the overall process?

MR. LEROY: Mr. Chairman and Member Allen, our statute charges me with soliciting interest for both a repository and the MRS. It does not distinguish by adjectives or any other preference, one or the other. I am committed in that same series of written questions to the Senate to solicit interest for both.

I currently believe, subject to what we learn in the workshops and subject to what we hear at public conferences that we will solicit interest initially on both and in the same document for both. We will use Nuclear Regulatory Commission descriptions of the licensing and site criteria for both and append that as part of our document.

Then, once we get communications back of interest which hopefully we will for one or both, then we will simply let our emphasis be dictated by what the market suggests to us.

DR. DEERE: Negotiator Leroy, isn't it a possibility that if a repository site is offered and the state is quite interested that it might turn out to be an inferior site? How do we have a timely way of making the analysis?

MR. LEROY: Mr. Chairman, as you well appreciate, the word timely means a lot of different things to a lot of different people, particularly in this process. The challenge of the negotiator is first to survey for willing hosts who would like to discuss either of these facilities. Obviously, given existing site selection criteria there will be far more potential favorable respondents who could identify a technically qualified MRS site than there might be respondents who would have, all things considered, a technically qualified site for a permanent repository.

Our first challenge under the Act is to determine willingness. Our second challenge is to determine through an unspecified vehicle, how technically qualified these sites. If we determine they are not technically qualified, then we do not go to the next step of negotiating and taking any agreement back to Congress.

Without having the context of a specific offer, it is impossible for me to say how we could accelerate a judgment of either technical qualification or technical non-qualification. Your question points out, I think, one very important feature of the negotiator's process. That is that while we are charged with working on what you have called the non-technical problems, we cannot allow the politics of what we are doing to get in the way of good science.

I have to be talking safety, we have to be talking

intelligently and in a technically accurate fashion about risk and the other site selection criteria and qualifications that are so important to you, the NRC, the DOE, to the EPA and to everyone in the state in which we will be having these discussions.

There is a great deal left undefined. A great deal of that will remain undefined until we see exactly the context in which a question such as you pose arises.

DR. LANGMUIR: I have a what if question for you, another one of those. Supposing you find a state other than Nevada that would accept a repository; what happens to the existing repository program in Nevada?

MR. LEROY: Mr. Chairman and Member Langmuir, the same statute that identified Nevada as the initial characterization site created this board and created our office. Our office as I interpret the legislative history, was created to conduct inquiries on a parallel track rather than the substitute track for anything in the Yucca Mountain focus portion of the statute.

If we were to find either Nevada willing or desirous of talking to us or another state desirous of talking to us about negotiating on a repository, we would commence those discussions. Whether Congress or the Department of Energy or anybody else involved in a Yucca Mountain characterization would choose to do anything else differently in that progress toward characterization of Yucca Mountain is another one of the undetermined questions that is not resolved by the Act and it can't be guessed about so that you know whether you are talking about who is talking to me, is it Nevada or someone else.

Nor does it know at what stage of litigation or legislation or anything else that the Yucca Mountain controversy finds itself when somebody else raises their hand. I am afraid that is one of those questions to which there is no answer. Our process would remain the same regardless of the answer. We would simply talk with those who are willing to talk to us.

DR. DEERE: I now would like to ask the audience to please participate to the extent that they would like. I will allow you to identify the people when they hold up their hands.

MR. LEROY: Come up to the microphone, please. If you could, we have a Court Reporter for a verbatim record, and we need to identify everyone who is speaking.

MR. BURTON: Ellison Burton, Burton and Associates. You said that you are not going to distinguish between repository and MRS in the invitations that you send out. In other words, they would both be in the same document.

MR. LEROY: That is our tentative decision, Mr. Burton.

MR. BURTON: I understand. Given that the repository requires a more heroic effort and it is permanent disposal and more state of the art predictive requirements and so on, deep underground and so forth whereas the MRS would be near surface, what would be the incentive for a host state or tribe to volunteer for a repository versus an MRS?

In other words, isn't the game rather stacked against the second repository site, given that Yucca Mountain is already in process? In other words, how would you ensure that given that both sites, both repository and MRS are included in the

invitation, how do you ensure that people are going to give as much weight volunteering for a repository as they would for an MRS?

MR. LEROY: Mr. Burton, I like the phrase that you used, heroic effort. On the other hand, I thought that it would require a heroic effort on behalf of both facilities to stimulate interest.

One of the interesting things about the simplicity of the process of the negotiator is that we don't select anybody to do anything that we can't force anyone to have an interest in anything that the political economic market of interest is self-generated within any jurisdiction. The kinds of questions you ask would best be asked of a Governor or tribal leader or that director of the Department of Environment upon whose desk for recommendation our proposal lands, who is telling me that every conceivable political strike is against it as we commence.

There is no guarantee and there is no ability up front to assess, I believe, a different market value for facility "X" versus repository "Y". What I think the market mechanism, if you will, for sorting out a difference in values between the MRS and what Congress is willing to appropriate or permit in a reasonable agreement for and MRS and some greater or lesser number or concept of benefit that they would be willing to identify to a repository would come later in the negotiation than would be the case in the initial agreement that we put out.

In other words, as you know, when you go to a used car lot the advantages theoretically to the one who names the price last, who responds to whoever puts a first price on the table, there is a lot about the way we are charged with negotiating that threatens to make any statement we make instead of becoming a ceiling instead of a floor.

What we have identified as a first cut concept for describing an interesting people in responding to us is a check list or menu, a description of activities, possibilities, benefits, that might be included upon the selection of the state or tribe at the negotiating table when they come back to see us.

One thing we do know about the price for an MRS or a price for a repository, and that is that the existing $5 to $20 million annual benefits specified in the 1987 Amendments Act are not sufficiently attractive to get any state to volunteer for either. In that Act, the ratio linkage between the value of an MRS in dollars and value of a repository was 50 percent of the repository value for the MRS, twice as much for the repository than for an MRS with $10 to $20 being expressed for the repository and $5 to $10 million annually for the MRS.

It is impossible for me to say up front what the market might bear. It is entirely reasonable to speculate that the Congress might be more interested in considering a state's offer with a larger package for a repository. We simply don't know that.

At the front end, another theoretical thing that could address your question might be if a state happened to be interested in both and found the negotiator with a heroic effort had been able to identify 15 states that were interested in talking about an MRS but no one had yet raised their hand for

repository. You tell me, and we will both know.

MR. WIGHT: Thank you, Mr. Negotiator. I am thrilled with what you said and with all of the work you have done. My name is Arnie Wight, President of Principled Negotiations and also a former member of the AMFM panel.

As you know, I believe that what you have said is about the best way to go, and am grateful for it. I sense that you have a great sensitivity to the divine guidance for which you pray.

[Laughter.]

MR. LEROY: Thank you, Mr. Wight.

MS. SMITH: My name is Lois Smith. I feel optimistic in assuming that you do get some expressions of interest from potential hosts. If you were requested by adjacent states or corridor states, would you have conversations with or negotiations with those states on transportation issues?

MR. LEROY: Mr. Chairman and Ms. Smith, I am committed in that same series of questions in writing in my confirmation process to consult vigorously with transportation corridor states and other affected jurisdictions, whether they be co-equal states, co-equal tribes or even subdivisions in units of government.

Consultation with affected jurisdictions is specifically mentioned in the act, and we will comply with that vigorously.

MR. CAMERON: My name is Chip Cameron, with the Nuclear Regulatory Commission. Mr. Leroy, how do you contemplate going about the process of assessing the technical feasibility of an MRS site? For example, it seems like a tribe or a state might be interested in receiving some type of compensation in terms of assessing the technical feasibility of a site that may not turn out to be a good site in terms of proceeding with the license application.

Do you envision having an agreement where you would go about this in stages, and would you have to get authority from Congress to provide any technical assistance compensation to a state?

MR. LEROY: Mr. Chairman and Mr. Cameron, the Act provides that we can make application as a state or interested jurisdiction can make application, and we would intend to help and facilitate that to the Department of Energy for feasibility study and assessment funds.

To the extent there are early interest or early questions revolving around technical issues, it would be my intent to encourage jurisdictions to do that. As your question notes, there are opportunities for abuse of that, there are opportunities for that to be out of synchronization, there are opportunities for that to be unfortunate and lead to wrong results rather than right results.

Once again, it's impossible to say exactly how we would structure that reaction until we know the circumstance we get. The Act fortunately does provide for such assistance funds. The Secretary of Energy has personally assured me that he will expedite any study of the feasibility of a request for those funds, and we will try to deal with the refining of our process and how we screen what the preliminary thresholds are, working part with the Nuclear Regulatory Commission.

I am pleased to say that I have met with each of your

Commissioner's individually. We are working with Bob Bernero. We intend to put in place with the Nuclear Regulatory Commission a memorandum of understanding similar to that which we have achieved with the Department of Energy for the very purpose of allowing us to consult with you on these technical questions in advance without compromising your ability as regulatory or evaluator when the licenses come back to you.

MR. CAMERON: Thank you.

MR. LEROY: Thank you, sir. Are there any further questions?

DR. CARTER: I have one question and then a comment. The question is, which Committee or Committees are you responsible to in the Congress?

MR. LEROY: Mr. Chairman, we have worked most directly, Dr. Carter, with the Senate Energy and Natural Resources Committee. In the House we work most directly, though it has been at a staff level, with the Committee Chaired by Mr. Udall of Arizona.

In the area of nuclear policy, environmental impact and where every member comes from some state where we will be polling, we fully expect to communicate with the Congress on a very broad range of contacts, germane committees, interested members and others who have been active in the field.

DR. CARTER: The comment was I guess what I want to say that every member of the Board would like to welcome you to this challenge and responsibility, and also point out that many wish you success and that certainly includes the Board. We certainly hope that you are not as lonely as the Maytag repair man.

[Laughter.]

MR. LEROY: Thank you, Dr. Carter. Are there any other questions?

[No response.]

MR. LEROY: Mr. Chairman, if there are none let me simply thank you again for the opportunity to be with you. I would like to challenge each of you and each of the auditors in this room to think about how they can contribute to the process in a favorable way. If each of us who have a possible contact within a site, a possible site somewhere within a state or reservation can begin to put the word out that we will be moving forward with this process this year; if there are those who have a preferred site or have a relationship to a contractor or developer or sophisticated planner that has a site, it would not be too early talking with governors and tribal leaders about whether or not when they receive an invitation to us they would favorably react to it.

I appreciate the forum and appreciate the honor of being invited here. Thank you, sir.

DR. DEERE: We thank you very much for giving us a better insight into your work and to your approach. I am sure we will be looking forward to the documents that are going to be forthcoming. Again, I join the other Board members in wishing you well.

MR. LEROY: Thank you, Mr. Chairman.

DR. DEERE: Next we have our speaker at 5:00 you will recall, who was postponed because of other activities at 2:30. However, we would like to take this opportunity to welcome to speak to the Board and to the others who are attending the meeting, Commissioner McCray from Naye County. He is here and would like

to give us a brief presentation on the public participation.

We think this is particularly germane to the meeting that we have been having today, and would like to welcome Commission McCray.

MR. MCCRAY: Thank you very much, Mr. Chairman. Mr. Chairman, members of the Board and audience, we thank you very much for allowing us this time to come before you and speak a little bit about the concerns of Naye County as it relates to this program as it goes on.

The last speaker shows a true instinct in what I think is going to be necessary to come up with a counterpart in this overall venture. It's nice to see that the vision for the future is going to be having the communities and the public involved in the action part of it, in lieu of having to be part of a reaction.

Naye County has a unique role in this program. As you know, obviously, we are the jurisdiction of the current repository for Yucca Mountain, and our role of concerns might be different from that of the states and local governments. The public health and safety is our number one concern. If mistakes are made, regardless of cause, we will pay the price in the end and we will bear the burden whether any mistakes are made or not.

The second difference is being designated the effective local unit of government. It is different from actually being accepted as a participant in the process. Many of the things that were discussed today by the various speakers concerning the local acceptance of a waste repository are all based upon a trust or a perception of a trust or commitment. It seems to me that the true posture would be one of inclusion in the process so that when a conclusion arises, though it is not going to guarantee an acceptance by not being included in the process, I think the changes of getting an acceptance at the end are certainly much more limited and may not even be obtainable.

We in my county are developing a sophisticated objective nuclear waste program through a direct Congressional appropriation. Our goal now is to challenge the DOE in a relationship, even a board like yours, to incorporate us into results in the program and to be incorporated into the DOE decision making process. Our participation and the effects or efforts to get public acceptance would be worthless if DOE does not develop a process for using the work that we are trying to put together on a local level.

In addition to the health and safety concerns, we believe that the Board in its wisdom should continue to take a broad approach and look at DOE's socio-economic program to ensure that any of the impacts that could come of that, that the results of them are effectively assessed and then mitigated.

With that in mind, I would like to invite the Board, in an effort to start where the program is going to hit the most, Naye County, invite the Board to Naye County to present and be present with the rest of the Commissions and other groups that have been put together to look at the program in an effort to show that instilling the trust of the people is where we want to go. Without that, I really feel that the chances of an acceptance in

any jurisdiction for this one or for future, is going to be limited.

Once again, I appreciate the time that you have allowed me to speak. I welcome any questions or any input. Thank you.

DR. DEERE: Thank you very much. Are there any questions?

[No response.]

DR. DEERE: Thank you for your invitation for our participation. We certainly shall consider that.

Our next speaker is Ron Callen, who was able to get here a little bit early, so we will be able to continue right on with his presentation. We appreciate Mr. Callen's willingness to fill in for Mr. Wilson's presentation.

Mr. Callen, I will ask -- you are the Director of the Nuclear Waste Program Assessment Office of the National Association of Regulatory Commissioners.

MR. CALLEN: That's correct.

DR. DEERE: You may add whatever you wish to that, and welcome to our Board meeting.

MR. CALLEN: Thank you very much. I appreciate the opportunity. I am very sorry to say that Commissioner Michael Wilson of the Florida Public Service Commission who is the Chair of the NARUC effort on Nuclear Waste disposal cannot be with you today. He sends is apologies. He has two problems. Number one, he is ill. Number two, he was involved in an auto accident which was damaging to his car but not to himself, but also to his pocketbook.

On short notice, I am sorry to say that I am here to represent the NARUC before you. We consider this a very good opportunity. I believe we had appeared before, but we would like to bring a very specific message to you. I am sure Mr. Wilson would like very much to be here but cannot be.

I have several purposes in mind, but let me first explain that NARUC is a quasi-governmental non-profit organization founded 102 years ago, and it consists of the utility regulators from the 50 states, the District of Columbia, Puerto Rico and the Virgin Islands, and it has contacts and arranged agreements with regulators in Canada and also with Federal regulators including the Federal Energy Regulatory Commission, the Nuclear Regulatory Commission, and the Interstate Commerce Commission.

The chief objective of the NARUC is to serve the public interest and particularly in the regulatory arena, by seeking to improve the quality and effectiveness of regulation, government regulation in America. The specific effort I want to bring to your attention today is the effort that it began approximately seven years ago by the NARUC which focuses on the high level nuclear waste problem.

It is chaired, as I mentioned, by Commissioner Wilson and includes Commissioners assigned to the task who come from the States of Florida, North Carolina, Maryland, Georgia, Ohio, Michigan, Nevada, Washington and the State of California as well as Arkansas. I emphasize that to give you a sense of the broad representation there but not to suggest that strictly the interest of those states are to be served. This is a national review.

Since 1984 we have had in place a single purpose initiative

to follow the progress being made in the disposal system for commercial spent fuel. We have pursued many paths with our intensive review and includes discussions with and reviews of the Department of Energy, with members of your Board and your Executive Director, the Congress and staff of the utilities and their executives, the State of Nevada, and knowledgeable program critics.

We have formally and informally advised the Department of Energy and the Congress as well, including the Secretary of Energy and Congressional Leaders as well as utility executives. We have participated in many workshops and many other arrangements, including the recent Institute for Resource Management program and the Strategic Principles Workshop that is continuing at the present moment. Our Chairman serves on the Advisory Board to the Secretary of Energy on Energy policy.

Recently we opened a Washington office that I direct now, devoted exclusively to the pursuit of a successful disposal program. I am in charge with gathering information and insight in trying to make contributions to a positive program, as well as to provide insights and advice to our policy makers for them as well to make positive contribution to the national program.

While we are not always guaranteed to always be supporters of the current effort until we are convinced that a full impasse has been reached, we will work to make the program succeed as best we can and as best we can help, but also to emphasize very strongly cost control. The reason of course for that being is, it is the ratepayers of the nation who are providing the funds for this program. While the utilities transfer very substantial amounts of money to the program -- and I will identify those amounts to you -- those funds come from ratepayers.

I want to first acquaint you with the considerable interest that the NARUC has in this matter. Second, I want to respond to your request for our views noted in the letter to Commissioner Wilson at reactor storage. Third, with your permission, I would like to discuss with you your role assigned to the Board and how we believe that you may be even more effective in your extremely important role.

First is to our interest, and I pointed out that they are driven by the fact that the ratepayers will receive the products of this program; that is, the transfer of spent nuclear fuel from the electric utility power plants under the financial responsibility of the ratepayers but are also paying for the cost of the program. Because, as you know, the DOE will not begin to provide disposal for at least two decades, ratepayers are paying for a long and expensive program.

Ratepayers are also paying because of that delay for the cost of that reactor storage, as more and more utilities reach pool storage capacity and are forced to expand.

The second responsibility of ratepayers is to respond to the payment for ultimate disposal, the mil per kilowatt hour or dollar per megawatt hour responsibility was assigned to utilities by Congress, but the bottom line is the ratepayers pay. To date these payments have been extremely large, even in terms of amounts of money that seem to make an impression on Washington itself.

As the end of the fiscal year 1990, that is in October, that ratepayer contribution including payment for fuel burned before 1983, the interest that the DOE has returned from the money invested and the monies the utilities are allowed for contract purposes to hold, those sums total slightly over $7 billion. The rate at which money is flowing to the DOE is approximately one-half billion dollars per year. The expenses to the program now total near $3 billion. As you know, estimates range anywhere from -- official estimates range anywhere from $25 to $35 billion for the total cost of the program, and we know we can't rely on that cost estimate.

The program has had much trouble, including the malaise errant direction, inefficiency in a large number of directors and interim directors, and as you know, in the eight years of operation the date for the disposal program has slipped 12 years. My purpose is not to decry the present as an extension of the past. In fact, we are very relieved that Secretary Watkins and Director John Bartlett are now in charge and showing much progress in turning around the program and bringing the initiatives they have to restructuring the program.

We ask for their continued attention of the first order to maintaining improvements in both management and delivery. As I believe you would agree, the prior history of this hard to sell effort is a testament to what less than the most intelligent and vigorous and heads up attention by program leadership produces. I might just mention parenthetically one of the things that got us most into this program was, we began to see some impacts in this program that paralleled those of troubled nuclear power plant construction programs. That includes two things.

Number one, a loss of schedule and number two, an overage in the financial estimates. Those are key indicators to us that a program is in trouble.

Let me turn to reactor fuel storage. You ask about the NARUC's views on spent fuel storage. We share a lot of the same concerns with Many others, but in our view we believe that our view is somewhat unique. First, we are anxious to see a complete and clear nuclear waste disposal system in place from beginning to end. For the time being without one, all fuel stays of course, at utility reactor sites and remains under the licensee's care and thereby remains a long term care both physical and financial for ratepayers.

Utilities own and operate 72 nuclear power stations at which spent fuel is being stored. Under the best of circumstances, no fuel will be moved before the year 2010, and thereafter movement will continue over decades. This is true unless an MRS is built. In the meantime we want you to know that there are 72 local MRS' scattered around the country, and each one is approaching or having reached spent fuel storage capacity in terms of long term safe storage will be available. Of course, the NRC asserts that 30 years of storage after plant shutdown is quite safe.

In reviewing this overall picture we are not quite so sanguine about this turn events, and let me point out several reasons. First of all, reactor storage is being expanded at a cost to the ratepayers. Secondly, long term storage is a backed

into policy and not an affirmatively reviewed one of national decision. Third, spent fuel storage will complicate reactor decommissioning. I point out that it is our belief that as each reactor decommissions it will decommission with an entirely full fuel storage.

Fourth, the utilities who have evidence bearing expertise in construction and operating the power plants may exhibit bearing attention to their assigned responsibilities because a pool is an active measure as compared with cask storage. For these reasons and especially because our ratepayers will be asked to continue to pay for such storage, we think this is not an optimal situation.

Our second concern, of course, is financial. Ratepayers are paying for reactor storage. If there is an MRS they will pay for it, and they will pay for long term disposal. As Commissioner Wilson told the Senate Environment Committee quite simply he stated, the DOE has our money and we hope they are going to take our fuel.

We are aware of proposals to affirmatively delay disposal program for about 30 years, perhaps to let political and technical processes cool off. We and others worry that such a decision could be made by default. For example, if the Nevada DOE Court battle drags on for far too long a time that prospect raises troubles for us because we believe that those who propose that who are prepared to accept it explicitly or implicitly assure that ratepayers money would be available totally throughout that period of time; that all of the programs that are funded out of this by the DOE would continue to be still operated.

Our position is much different. Ratepayers are legitimately being charged for -- I emphasize disposal -- if this is country backs off its current plans either by affirmation or default, then ratepayer funding of the program must cease and all balances in the funds must be returned to the utilities for their control at the direction of the individual Commissions. The simple message being, those monies are for disposal. If the national program is not disposal the monies must be saved. I emphasize that ratepayers who receive the benefits pay for the costs.

If you will, we have had ratepayers paying for approximately 30 years of payments and without any further changes there is another 30 years worth of ratepayers out there to pay for the costs and that's it.

Finally, let me turn to the role of the technical review Board. We would like to raise for your attention a point that I know has been raised before, and that is to encourage you to take the broadest look at the program that you feel you legitimately can. It includes as we see it, the most broad view in the sense of looking not only at the technical decisions but the way in which those technical decisions are made.

I hope you will excuse me for talking about your role. I hope you would understand that this is a multi-billion dollar program on a hard sell, and we are deeply concerned about it. Others may well have brought you this appeal, but let me point out several factors we see in the constituting legislation in the way in which you have conducted your business. We are quite pleased that you are in the program and very satisfied with the kind of

work you are doing.

Several points. The Board is to be fully independent of the DOE. It is composed of experts, it supplies staffing and financial resources, it is required regularly to report to the Congress, and it is to be in business for the long term which is right through initial disposal. Obviously, the Congress was vitally interested in the Board's expert evaluation.

I would like you also to note some things the Act does not say. It does not put any other entity in place for doing the kind of work that you do. There are no specific limits raised as to the board's purview. The point being, we believe the Board has a mandate and the resources to examine the DOE program in great depth and in great detail over a long period of time. That includes the opportunity to visit issues and decisions that are not strictly scientific, but are nevertheless vital to the successful conclusion of the program.

I think we can all agree that this program is certainly scientific and technical, but in a successful conclusion it will go far beyond science and technology.

Let me in the remainder point out a couple of examples that I believe are explanations of the kind of review that makes the most sense for a board of the nature of the Technical Review Board. Let me turn to a very dramatic example, and that is the Challenger tragedy that shook the nation, and I speak to the nature of the Rogers Commission which has some parallels to the kind of responsibility that you are charged with.

Granted, there was a human tragedy there that has not occurred in this area. Nevertheless, let me focus on this. You may remember in the first public meeting that the late Dr. Richard Fineman dipped an O-ring into a glass of ice water which was a dramatic demonstration of the basic cause of the Challenger accident. At that point you could say that the cause of the Challenger accident had been solved.

Quite fortunately, the review didn't stop there. Dr. Fineman and others rapidly discovered that the probability of o-ring failure during cold weather launch was known and had been known. Then unraveled the public awareness of the restrictions placed on information released up and down the management of both the supplier and NASA, Dr. Fineman was led through intra-office politics to the White House and back and even through efforts to resist his own investigations.

Ultimately, as should have been the case, the corrections necessary to prevent this and other, I emphasize other space shuttle problems, were identified. The resulting restructuring of the NASA shook it to its foundations. Clearly the tragedy sited these events, but the message I think is that the Challenger Review Board best served the national interest in pursuing both how and why the accident happened and what was necessary to correct the deep problems in the program. One of the keys was management.

Let me turn to one other experience closer to home, the DOE's Defense Nuclear Production Facilities. You are aware of the extensive difficulty seemingly all DOE such facilities have experienced. As the U.S. general Accounting office has

identified, decades of excessive attention in the nuclear materials production coupled with excessive secrecy has resulted in severe radioactive and toxic contamination of most facilities. Very noteworthy, there are and will be enormous clean up costs.

Ironically, it also shut down the nuclear weapons material production in part because the facilities aged and were not maintained. Lessons learned from this embarrassing, expensive and ultimately self-defeating experience are instructive to us here. Included are management failure, erroneous goals, inadequate planning and poor handling of contractors. Corrections necessary are also instructive. They include a high level and continuing commitment by DOE management to restoration, management restructuring, good communication, assignment of sufficient resources and vigorous oversight.

It was noted the GAO noted, that both internal and external oversight was extremely important. It is obvious that one of the messages I think is that doing it right in the first place is easier, better and cheaper. Needless to describe, the successful pathway to good credibility is exactly the same thing.

Over the years the Nuclear Regulatory Commission has brought forward a very sophisticated development of term root cause. Saying in essence the correction of an immediate error is a necessity, the NRC has increasingly demanded that their inspectors and the nuclear utilities look beyond the initiating error or mistake to see if there is a more fundamental error, a root cause perhaps in the management, perhaps in the staff, that has led or contributed to the immediate problem. If so, it means that other errors are out there lurking, waiting to happen.

Turning to your Board. I believe you have had similar kinds of experience and have seen places where decisions were made -- as I know and others know you have disagreed with -- we encourage you -- I believe you have been doing something to encourage you more to look into those types of errors and those kinds of decisions where you think there is a better decision, to find out -- identify not only the better way to take that particular decision but as to how and why it was made.

In summary, I believe such pursuit of technical and not so technical decisions and their making will have several beneficial results. First, I think it is a responsible conduct of assigned responsibilities. I think there is the freedom to do that using the dedicated resources, and it contributes to public confidence in the program which is something that the Technical Review Board has and continues to have a great authority in.

The second reason is getting to the root cause where we reduce the number and impact of errors of course does benefitting the program, benefitting the DOE's credibility and, of course, benefitting our ratepayers.

Let me close with one final observation. We of the NARUC want you and the DOE -- we have apprised the Congress and the utilities -- to know the growing urgency we feel for this nation to get on and make an assured working program. We are concerned that milestones have not been met, and this may require some larger action. Time is passing. We are into the ninth year of this latest effort. We have repeatedly identified for the

Congress that it must understand that there are only so many funds out there with which to handle this kind of program.

We earnestly encourage you to design your program to the largest extent to do a larger and deeper review of the program. Let me say that we pledge our support to you in any way that we can. We have very good rapport with your Executive Director. As I have said, your efforts are vitally important to making the program successful. I thank you for the opportunity to appear in front of you.

DR. DEERE: We thank you very much, Mr. Callen. As a principal state player, we listen to the words that you have to say. I would like to open it up for questions if I may, to any of the Board members first.

DR. CARTER: I have a couple of questions, Mr. Callen. One, do you have an impression or statistics concerning the attitude or views of ratepayers as far as payment of funds to the nuclear waste fund, either current or that you collected in the past?

MR. CALLEN: That's a hard question to answer. You are talking about in terms of individual ratepayers?

DR. CARTER: That their bill may be somewhat higher than --

MR. CALLEN: We have heard that on isolated occasion, and we have heard some response. Obviously, more positive response in the sense that people are concerned about either the movement or non-movement of spent fuel from the reactor sites. We believe that's a continuing concern.

We have started to see some increased attention because of the fact that utilities are expanding spent fuel storage, thus requiring them to come back to each of their state commissions to have that cost increase reviewed.

DR. CARTER: The other question involves the collection of funds or what that level is, primarily related to what sort of guidance is there that pertains to the amount of funds in the nuclear waste fund versus the expenditure right now in DOE and others.

MR. CALLEN: Well, if I understand your question correctly let me give you this answer, if it meets with your question. The rate at which funds are currently being collected are such to raise something over $20 billion by the end of the current usefulness of nuclear reactors. That presumes there is no second generation and presumes there is no life extension which, for the moment, there is not.

The latest DOE estimates on the program show that that could be sufficient monies with which to do the entire program. But there are several uncertainties, for one thing inflation, for one thing the cost of the program, for one thing the real interest rate. So, it was DOE's decision not to ask the Congress for an increase in the rate for recovery.

There is another problem with the program, and that is that defense wastes of course are to be put into the same repository. Those wastes should be paid for out of funds provided out of general funds from the U.S. Treasury, but the Congress has not seen fit to provide those funds. So, the fund is deficient by those amounts. That has been a great concern to us.

In fact, we took that matter to court and did not receive

either a positive or a negative decision. So, the funds are deficient also by either 15 or 30 percent, 15 percent if you trust the Federal government's number for the defense responsibility and 30 percent if you use our number. DR. CARTER: The other question I had -- I will come back to that in a moment.

DR. DEERE: The figure that you gave a moment ago about you weren't particularly in agreement with additional storage at the reactor sites, was that for the 30 year period or for the total of the 100 years?

MR. CALLEN: I can say that we are not comfortable with the entire idea that we should have an extended period where that fuel does not move. For the moment you can contemplate that the number is roughly 30 years and counting.

DR. DEERE: Thank you.

DR. CARTER: I have just one other question. How may reactors are in the pipeline now that will pay into this fund?

MR. CALLEN: Zero.

DR. CARTER: There are zero. Thank you.

DR. DEERE: Are there any questions from any of the observers?

[No response.]

DR. DEERE: If not, we wish to thank you very much, Mr. Callen. Certainly your speech joined the others that were given in making this a very worthwhile day and educational day for us certainly. It broadens our scope and our horizons, and I am sure that those in the audience also have gained something.

MR. CALLEN: I thank you very much for the opportunity. I am happy to be here in place of Commissioner Wilson.

DR. DEERE: I want to thank you all.

[Whereupon, at 5:13 p.m., the meeting concluded.]