UNITED STATES
NUCLEAR WASTE TECHNICAL REVIEW BOARD

ENVIRONMENT & PUBLIC HEALTH
PUBLIC MEETING

October 15, 1990
Peppermill Hotel - Convention Center
Reno, Nevada

NWTRB BOARD MEMBERS PRESENT:

Dr. Melvin W. Carter, Chairman
Dr. John Cantlon
Dr. D. Warner North
Dr. William D. Barnard, Executive Director
Dr. Sidney J.S. Parry, Senior Professional Staff

P R O C E E D I N G S

DR. CARTER: Welcome to the hearing in Reno, Nevada of the Environment and Public Health Panel of the Nuclear Waste Technical Review Board.

The Board now has been in existence some year and a half, and of course, we're chartered by Congress to review from the scientific and technical standpoint the DOE's High Level Waste Repository Program, and also to advise Congress twice a year on that program, and also to advise the Secretary of Energy.

So this particular Panel is having its third meeting, the second one in Nevada. We had one in Washington, D.C. a little over a year ago. We had one in April in Las Vegas, and so this is the third meeting of the panel, and we're certainly pleased to have each one of you here today.

Now, joining me in this Panel meeting, to my immediate left is Dr. John Cantlon. He's a member of the Panel, a member of the Board, and also chairs the Quality Assurance Panel of the Board.

And to his left is Dr. Warner North. He's a member, also, of the Panel, a member of the Board, and he chairs the Performance and--

DR. NORTH: Risk and Performance Analysis.

DR. CARTER: --Risk Analysis. We'll get it right in a moment.

So I'm pleased to have these two gentlemen with me, and that's--the three of us constitute this particular panel. To my far right is Dr. Bill Barnard. He's Executive Director of the Nuclear Waste Technical Review Board, and between Dr. Barnard and myself, is Dr. Jack Parry. He's a member of the Senior Professional Staff of the Board. Now, we also have some other folks assisting us and we'll introduce them, perhaps, a little bit later.

Today we have a meeting which is open to the public and we have an agenda, but it'll be an informal meeting. So anyone that has anything to say in the area of environment and public health matters, we would be pleased to hear from. We have several people that we already have on the agenda and, of course, we will add others as appropriate.

I'd also like to mention before we begin with today's session on a formal basis, that tomorrow we will meet at eight-thirty in the same room, and we will have a program which will run through one p.m., and this will focus on socioeconomic issues related to the Repository Program.

So with that, I would like to call on our first witness, and this is Mr. Steven Bradhurst, Director of Nye County Planning, Nye County, Nevada, and I understand that Mr. Bradhurst might not be here, but that he would have a representative.

Is that individual in the room?

(No audible response.)

DR. CARTER: All right. If they show up, we will adjust the program accordingly.

So the next individual is Ms. Geri Ann Stanton. She's with the Nuclear Waste Planning in Lincoln County, and from Pioche.

Please. We're very glad to have you with us this afternoon, Ms. Stanton.

MS. STANTON: Mr. Chairman and members of the Panel, my name is Geri Ann Stanton, and I'm here today representing Lincoln County, the City of Caliente, and their Joint City/County Impact Alleviation Committee, and we appreciate the opportunity to address the panel concerning environmental and public health aspects regarding the proposed repository at Yucca Mountain.

As one of three units of local government designated by the Secretary of Energy as potentially affected by the proposed repository, Lincoln County has sought to understand the negative and positive implications of the project upon local area residents. Although Lincoln County is geographically dislocated from the repository site, the county is characterized by a long history of interrelationships with the federal nuclear activities at the Nevada test site.

Many of the existing residents of the county have personally witnessed the above-ground weapons tests conducted

at Yucca Flats. Because area residents do not feel they were properly warned of the exposure risks associated with such tests, distrust of the federal government in the county runs very high. Recent surveys of the City of Caliente residents, which was sponsored by the Nevada Nuclear Waste Project Office, showed that 30 per cent of those surveyed were not at all confident that the federal agencies would provide honest and accurate information concerning the Yucca Mountain Project. Thirty-six per cent of the surveyed respondents were extremely concerned that the repository might have harmful effects on health and safety.

It is with this measure of skepticism about the federal government that area residents and decision-makers tend to view the repository program. The Department of Energy and other federal agencies involved with the repository program must go to extreme ends in order to establish an element of trust by local residents in the proposed repository program. Such trust is a prerequisite to local acceptability of the need for and purported safety of such a facility.

The Department of Energy is presently considering the use of the Union Pacific mainline through Lincoln County as a mode of transporting radioactive waste to Yucca Mountain. In addition to the mainline, a meandering rail spur through the county, which would bypass the metropolitan Las Vegas area is also being considered. Beyond technical and economic

feasibility, Lincoln County believes that the Department of Energy should consider both the environmental and public health aspects of such a routing. There would seem to be obvious real and perceived risk management benefits to keeping radioactive wastes out of the heavily populated Las Vegas area. While costs of such a route may be high, so, too, may be the institutional benefits.

Lincoln County then encourages the Nuclear Waste Technical Review Board to help ensure that the repository and related systems, such as transportation, are as safe as reasonably possible. The county recognizes the value of and encourages the full use of engineered barriers to achieve maximum measures of safety and protection of the environment.

We have recently learned that the Department of Energy recently exempted, or has apparently exempted weapons testing from self-imposed radiological exposure limits for Department facilities. The county is concerned that such specific exemptions unnecessarily place area residents at excessive risk. Further, such exemptions cast doubt regarding the Department of Energy's stated intent to protect the health and welfare of residents of Nevada. The issue of agency credibility may very much be related to actions by the Department of Energy such as the noted exemptions to exposure limits.

It is important to obtain the needed scientific

information so as to allow a broad consensus of the suitability of Yucca Mountain as a repository. Timely completion of such studies would serve to reduce much of the uncertainty and speculation about the site.

Further, the repository has resulted in a political divisiveness which might be reduced if decisions about the suitability of the site were announced. In striving to obtain necessary site characterization data, DOE should not attempt to sidestep or reduce any regulatory requirements governing protection of public health and environment. An obvious exception are those requirements around which a broad scientific consensus for change develops.

Finally, Lincoln County would request that off-site meteorological studies and monitoring be established by DOE in order to establish the basis for predicting exposure pathways and exposure characteristics which might result from a transportation or repository accident. Such information would be helpful to emergency planning activities concerning low probability-high consequence events such as a volcanic eruption or rail car fire involving a breached shipping container. A good historical record may be needed to accurately predict plume travel under alternate climatological conditions.

I would like to comment that I am not a technical person, and I'll be happy to answer any questions that you

might have, but it may be necessary for me to wait until someone can take a look at those questions further.

DR. CARTER: Okay. We appreciate that very much, and I suspect that there might be a couple of questions.

I wonder if you would--you indicate that you're not a technical person. I wonder if you'd give us a minute or two of your background. What sort of person are you?

MS. STANTON: A college dropout.

DR. CARTER: Well, there are a lot of those. You need to be a little bit more specific.

MS. STANTON: I have three years of psychology background, and decided that's not what I want to do, so I moved to Lincoln County where my parents reside, and got a job as a planning assistant in the Nuclear Waste Project Office.

DR. CARTER: John, do you have any questions?

DR. CANTLON: Yes.

You alluded in your remarks to economic repercussions that were related to the delay in coming to a conclusion on the site. Do you have some sort of feeling of what those economic repercussions are? What sorts of things do you visualize this delay in coming to a decision are imposing on the county?

MS. STANTON: I don't know. I can take your question down and see to it that it is responded to at a later time.

DR. CARTER: Warner?

DR. NORTH: I'd be interested in learning still a bit more about your background. Have you lived in this area all your life?

MS. STANTON: No. I'm from Arkansas, and--

DR. NORTH: How long have you lived in the area?

MS. STANTON: Next week, it'll be a year.

DR. NORTH: I'd be interested in what more you can tell us with regard to the issue of trust, in particular, the history with regard to the weapons test experience. Are there some anecdotes you could share with us in terms of how the local residents feel about past history that's perhaps influenced the attitude that's reflected in the survey that you quote?

MS. STANTON: From what I know from listening to some of the area residents, it seems that they were able to stand on their front or back porches and watch the beautiful colors and the cloud in the air, and they would question--there were some people that questioned the safety of this and they were told that there were no problems and that everything was okay, just trust the government. We'll take care of you. And evidently they didn't, because we do have a high number of people in the area that have died from cancer as a result of this.

DR. NORTH: Have there been some studies to indicate that the number is higher than other areas of Nevada that were not exposed to radiation?

MS. STANTON: I don't know. I'm sure that there has been. If there hasn't, that would be a good study to do.

DR. CARTER: I wonder if I might ask you a couple of things. You indicated that there seems to be a lack of information and data, and I just wanted to ask you if your organization or the people in Caliente requested information from DOE from time to time and if that kind of information and data were available. You know, they have several offices, and I guess they also have meetings periodically in various towns and cities in the State of Nevada and other places, too, I suspect, in an attempt to pass out information and make it readily available to the public. And I just wondered if you're tied into that system or whether, indeed, it's true that you ask for information and don't receive it.

MS. STANTON: Now, I don't know about my superiors, but I know that personally, when I have called the Department of Energy and asked for specific information, I have gotten it. It's been a little slow, but it's come.

DR. CARTER: Okay. I know there is that process, so it works at least. It may be slow, but it does work if you make requests. Is that a fair assessment?

MS. STANTON: For what I have needed, like I said, I'm not a technical person so the information I have requested hasn't been anything of major proportions. Other people involved have been Mike Bothman and the county commissioners,

and I don't know if they might have requested information and were not able to receive it.

DR. CARTER: Okay. But I understand that they do have a public information program, and I'm sure they not only pass out, you know, sort of general or generic information, but I suspect, also, answers to technical questions as well.

Okay. The other thing, you mentioned possible harmful effects on health and safety from the repository. Do you have anything in particular in mind? That seems to be a concern that you expressed.

MS. STANTON: That's a concern with all of our residents. Because of the above-grounds weapon test and the distrust, when they do--there is monitoring. They have radiological monitoring right now in each of the communities in Lincoln County, but the people in the community don't trust the information that they're receiving. They're saying, "Well, they're going to twist it and make it say anything they want it to," and they are--there are people that are afraid that they're going to tell us it is safe when, indeed, it isn't.

DR. CARTER: Okay. Well, the monitoring program is operated by the U.S. Environmental Protection Agency, and that agency and its predecessors have done that since 1954. So it's not done directly by DOE.

MS. STANTON: Right.

DR. CARTER: It's done on behalf of DOE, actually, by an

independent, another independent federal agency. They also, I believe, encourage counties to make their own measurements of radiation so, you know, they certainly encourage that and I guess in the past there have been instruments made available for that, and certainly, there are a number of universities in the area or individual research organizations, and so forth, that make measurements. So, you know, I think the data is available, not just from the federal establishment, if you will, but also available from other sources, and hopefully, if they're measuring fallout or what small amounts occur these days, hopefully they'd be measuring the same thing so the numbers should be the same.

But like I say, I think there are a number of independent ways you can obtain such information and at least compare it with what information's coming directly from the EPA program, just as a suggestion.

I had one other question. I notice Lincoln County is aware of the fact that there's a new DOE order out, and the order is out just within the last few months, as I recall, and the DOE order is No. 5400.5, and that relates to radiation protection for members of the public and the environment. I think that's almost the exact title of it, and I notice that you folks are already aware of that, and it comes up in the fact that you indicated that in that regulation or in those regulations, the DOE will not count, if you will, fallout or

exposures from fallout, past fallout in terms of the exposure around sites.

But I might point out, I would suspect that people in Nevada would be covered as well by the NTS criteria which relate to fallout, and certainly, fallout would be--that's essentially what they're concerned with, so their regulations cover that. So it's not something that would fall through the cracks, in other words. If these regulations didn't pick it up for the repository, it would be covered by other means. So I don't think it's something that's going to be neglected, if you will, just as a point of clarification.

DR. BARNARD: I had a couple questions. In the survey that you cite, you mentioned that 36 per cent of the respondents were extremely concerned about the repository. Does that mean that 64 per cent weren't, or that they were less concerned, or do you know?

MS. STANTON: From what I understand, the survey was broken down into parts, so 64 per cent are disbursed through maybe moderately concerned to--

DR. BARNARD: Okay.

MS. STANTON: --not concerned at all.

DR. BARNARD: Okay. I can understand, and I think folks in Nevada have good reasons for not trusting the federal government. I guess the real question is, what does the federal government do about that? Do you have any suggestions

for enhancing the credibility of the federal government, in particular, the Department of Energy?

MS. STANTON: I'm not sure, but in July, when we visited with--I can't remember his name--Dr. Bartlett, okay, we mentioned this with him and the problem and asked him if he would be willing to work with us on this level of trust, you know, with the federal government, and his comment to us was that he had no control over that; that the Nevada test site came under a totally different jurisdiction from his, and that may be so, but my suggestion in that case is, then maybe the two departments need to get together and work something out, because right now, like I said, with regards to the Nevada test site, there is very much a high level of distrust.

Even now, with the below-ground weapons tests that take place, before the test even takes place, they make sure that the wind is away from Las Vegas, and usually that means that the wind is in our direction. So that if anything does go wrong, we're the ones that are going to get it.

DR. PARRY: You mentioned about the survey. I don't believe that we've seen the survey that Dr. Barnard mentioned to you. Could you kindly provide a copy of that survey to the Board, please?

MS. STANTON: Yes, sir.

DR. PARRY: Thank you.

DR. CARTER: In your concern about the underground

weapons program, the common denominator, of course, in that is the Secretary of Energy. Both of the programs, the High Level Waste Repository Program, as well as the Nuclear Testing Program, are under the Secretary of Energy, so that's where these two programs come together.

DR. CANTLON: You mentioned that there's a high level of mistrust with the Department of Energy and that you need an independent source of data. The State of Nevada has an agency for nuclear projects and a Nuclear Waste Project Office. To what extent does the county look to that office to provide independent assessments?

MS. STANTON: I'm not quite sure what you're asking, but I know that we rely heavily on their studies. We receive copies of all of the studies that they do and the information that comes from those studies.

DR. CANTLON: And do you feel that the citizens in your jurisdiction trust the State of Nevada's data?

MS. STANTON: I don't know. I don't think that question's been asked.

DR. CANTLON: What would be your guess?

MS. STANTON: I would--my guess would be yes.

DR. CANTLON: Thank you.

DR. CARTER: Well, very good.

Do you have any other things you'd like to enlighten us with?

MS. STANTON: No.

DR. CARTER: All right. Very good, Ms. Stanton. We certainly appreciate very much you taking the time to be with us today and giving this presentation. Thank you, ma'am.

MS. STANTON: Thank you.

DR. CARTER: Do we have a representative from Nye County?

(No audible response.)

DR. CARTER: All right. Is Mr. J.R. Wilkinson here?

(No audible response.)

DR. CARTER: How about Mr. Gerald Prindiville?

Well, Dr. Prindiville, we're glad to see you here today. If you'd tell us about who you are and what organization you represent, we'd appreciate it.

DR. PRINDIVILLE: Well, may I start by saying I feel very humble in front of this august body, and deeply appreciate of the opportunity to speak to you all.

My background has to do with being a University professor. I have an EDD degree and a Ph.D. degree, and I studied geology and stratigraphy and topography, volcanology at three different educational institutions, but that's not my major. So I have to say that, apologetically, that I'm not a technical person, either. At present, I'm talking on behalf of the retired teachers and professors of this state.

In the last 150 years, there have been 15 earthquakes in western Nevada of a magnitude of 6.0 or above.

There was one in California, too, incidentally, of 8.0, close to Death Valley, which is very close to the site. In terms of earthquake hazards, Nevada is one of the most active regions in the United States. An earthquake of similar magnitude could occur at any time.

The proposed location of the plutonium burial spot at Yucca Mountain is only six straight-line miles from U.S. Highway 95, which is the major north-south highway in the area. To permanently store tons of plutonium, the most toxic substance known to man, in relatively close proximity to humans in Yucca Mountain is scientifically indefensible and hazardous.

The proposition placing 1400 shipments of deadly man-made radioactive element, plutonium--I think it's No. 94 on the Atomic Scale and it goes by Pu--in the proposed Yucca Mountain depository would transform this earthquake-prone region into a vast booby trap, awaiting the slightest slippage of uncontrollable tectonic plates in the earth's crust; thus, triggering a situation analogous to a super Chernobyl.

If implemented, the Yucca plan would do irreparable harm to the health and safety of Americans living in Nevada, irreparable harm to the environment and the ecology of the region, and prove disastrous to business, commerce and industry forever after. I think Dr. North asked a question previously about how this would affect. I can think of an

example. A wonderful thing may be going to happen in Nevada. The American Telephone and Telegraph Company is considering, "considering", putting their credit card center in Nevada. If that happens, it will employ 2,000 people, a wonderful thing for a state like this. We're deeply afraid that such corporations wouldn't come here if we were to be the atomic waste repository.

However, there are alternative locations which need to be considered by this important Environmental and Public Health Panel as a matter of equity and justice. I think there are a number of other states; three or four, in particular. For example, just east of the Nevada-Utah border on Highway 50--called the loneliest highway in the world--there is a two-foot by three-foot Utah State Department of Transportation warning sign which reads: "No habitation for 80 miles," and it is necessary to drive 79 miles across this desolate, uninhabitable part of the United States before seeing any signs of life. I think perhaps I should tell you that my hobby, long before I retired, since after I got out of the service in World War II, it was geology and mineralogy, and it looks like there's no evidence of seismic upheavals in that country. But again, I don't pretend to be a seismologist.

In view of the above-mentioned data, it is respectfully urged that this federal Advisory Board take a position against locating the permanent nuclear repository at

Yucca Mountain; and, secondly, recommend the investigation and exploration of other alternative sites for said repository, and I thank you very much for giving us the time.

DR. CARTER: Thank you, sir. Glad to have you here.

DR. PRINDIVILLE: Thank you.

DR. CARTER: Perhaps we might have a couple of questions or comments.

Warner?

DR. NORTH: I'd like to learn a little bit more about your background; in particular, your interests in geology. Have you explored a great deal of the state, looking for interesting minerals and the like?

DR. PRINDIVILLE: I spend my time and my wife's time out in the hinterlands or the back country. Some of it is exploring; some of it is prospecting; some of it is sitting on a rock enjoying a cup of coffee and enjoying the country. We have a wonderful country from east to west, and we appreciate what we have.

DR. NORTH: Have you lived in Nevada all your life, or most of your life?

DR. PRINDIVILLE: No, sir. I was a professor at California State University, Los Angeles, but like many college professors, I was broke more than I had, you know--a week or two after paycheck, we were all right, but after that, it was thin. So we used to take our children camping and

hiking and fishing in this country every summer.

DR. CARTER: You can get a lot of sympathy from the Board since most of us on the Board are either associated presently with universities or have been associated with universities.

DR. PRINDIVILLE: You know.

DR. NORTH: How long have you been living in Nevada?

DR. PRINDIVILLE: Since 1976, I retired; yes, sir. We came to know the country closely beginning about 1948.

DR. NORTH: While you were--before your retirement, what subjects did you teach?

DR. PRINDIVILLE: I taught people who wanted to become teachers, and then I moved into educational administration for those who wanted to be administrators, and it's a tough job today.

DR. NORTH: Indeed, it is. As Dr. Carter just said, we're all very sympathetic.

DR. PRINDIVILLE: Yeah.

DR. NORTH: Could you explain to me a little bit more why you feel that the location of the repository six straight-line miles from Highway 95 is an unacceptable situation? What specifically are you concerned about?

DR. PRINDIVILLE: We have two large centers of retired teachers; one in the Reno/Sparks/Carson City area, and one in the Las Vegas/Anderson/Pioche area, and these people tend to be readers. They read very much on subjects of particular

interest to Nevada. They are deeply concerned, and I'm only expressing their sincere concerns.

DR. NORTH: Are these concerns related to traveling this highway and, therefore, being near the repository?

DR. PRINDIVILLE: That's part of it, but they're really concerned about the extreme danger, the earthquake-prone region, and there's nothing we can do about the slippage of tectonic plates, and if that happens--let me see, 1400 shipments of plutonium or atomic waste could be turned loose in that area. Then it would be highly hazardous.

DR. NORTH: Supposing that analysis is carried out and picking up the theme of the previous speaker, carefully reviewed by people outside of the Department of Energy's program that indicates that both the repository and the facilities for handling the material before it goes into the repository are set up in such a way that they would withstand about a potential rupture, the most severe earthquakes that have ever occurred in this part of the world, as far as we know, not just 8.0, but presumably much higher on the Richter scale. The highest one I can think of is the one that occurred in Anchorage, Alaska in the 1960's.

Would that go some distance toward alleviating these concerns, or do you feel that there are many other issues as well?

DR. PRINDIVILLE: No, sir, I don't think it would satisfy

the concerns of these educated Nevadans, because they are of the opinion that those are suppositious findings; that they haven't been proved yet to stand the shock that could be forthcoming. They think it is the wrong location on account of the fact that it's an earthquake-prone region, and once it is triggered, you know, then it's like Pandora's box. It opens up more and more problems.

DR. CANTLON: Let me follow it up. With that perspective in mind, does that argue, then, that any region that has earthquakes would be ruled out?

DR. PRINDIVILLE: It's conceivable, yes, sir. Yes. That's why I mentioned the, for example, the 80-mile stretch with no sign of human or animal life, and as far north or south as one could see--and I didn't measure it--there was nothing, and that that type of thing, if it were earthquake-proof, would be much preferable. Some areas of our country, you know, are earthquake-prone, and others aren't.

DR. CANTLON: We build many structures in this country that have fairly high risk; very large dams. Hoover Dam is in that area, isn't it?

DR. PRINDIVILLE: Yes, sir.

DR. CANTLON: And it's constructed, theoretically engineered to withstand earthquakes.

DR. PRINDIVILLE: Hopefully.

DR. CANTLON: We have nuclear powerplants that are

located near, not necessarily on, but near fault lines. I take it that the group you represent expressed no confidence in the capacity of the engineering profession to design safe structures if there are earthquakes. Is that pretty much your reading of the clientele you represent?

DR. PRINDIVILLE: I would suggest that it might preferably be termed healthy scientific caution and skepticism.

DR. CANTLON: Have you looked at the plan for the repository? Do you have a feeling for what it would look like?

DR. PRINDIVILLE: Yes, I've looked at it and studied it, but I must confess that I am not knowledgeable about engineering and it's a profound science in itself.

DR. CANTLON: You are, though, an amateur student of geology?

DR. PRINDIVILLE: Oh, yes, sir.

DR. CANTLON: And as you look at the way faults behave in displacement, what's your vision of the worst conceivable fault displacement, based on your studies of geology? Are we talking square miles of devastation? Are we talking--what does--what, in your mind--

DR. PRINDIVILLE: Oh, I see. You're talking about in case of a real seismic shock, what would happen.

DR. CANTLON: Sure.

DR. PRINDIVILLE: I would preface this by saying it's purely speculative on my part, and then I have to be honest and say I don't know.

DR. CANTLON: Well, you used the word Chernobyl-like as a sort of image of devastation following a seismic rupture of something.

DR. PRINDIVILLE: Oh, yes.

DR. CANTLON: You have a picture in your mind of what a nuclear plant is and what it does, and how it works and how the Russians screwed up in managing theirs.

DR. PRINDIVILLE: Oh, yes, thank you. You have to be an excellent professor.

Yes. So there is a region in that section of Russia where there's about 50 square miles that is a death trap today, yes. So its' conceivable that that type of thing, a 50-square mile area or--could happen again, yes.

DR. CANTLON: And the analysis of the Chernobyl disaster really represents a failure of containment of the reactor itself. We don't build them that way here.

DR. PRINDIVILLE: That's true, yes.

DR. CANTLON: And in a geologic repository located a substantial distance below the ground would be, perhaps, a little better containment than a reinforced concrete dome that we put around our reactors, wouldn't you think?

DR. PRINDIVILLE: Yes, sir. Yes, yes.

DR. CANTLON: So it's probably not very realistic to visualize a Chernobyl-like event, even with a worst conceivable seismic fracturing through a repository, wouldn't you think?

DR. PRINDIVILLE: Except for the fact that there would be probably thousands of more deaths than occurred--ostensibly occurred at Chernobyl. I don't know that we have the final figures on the death rate at Chernobyl.

DR. CANTLON: How do you visualize the radioactivity being propelled out of the repository? What, in your mind, is the dynamic there?

DR. PRINDIVILLE: Well, the first break--I don't know whether the break would be, for example, one shipment of radioactive waste or 1300 shipments of radioactive waste. So I think we're working--I'm working, at least, on an imponderable, but the danger is profound.

DR. CANTLON: But the Chernobyl-type of disaster is radioactivity uncontained. You'd grant me that, wouldn't you?

DR. PRINDIVILLE: Yes.

DR. CANTLON: The repository system with the shipping casks and the implantation casks, the radioactivity is contained. That is the intent, is to contain the radioactivity.

DR. PRINDIVILLE: That would be wonderful if it were, but it's my understanding that shipments of waste that have come

through Las Vegas have leaked. Now, that's purely from the newspapers, so there's--I suspect there's always that same potential.

DR. CANTLON: Well, I would--let me just close by saying that there are many reasons to look at whether or not Yucca Mountain is a suitable site. That, I think, the Board has a totally open mind on at this point. It may prove that it is not a safe place to put it, but I think in arriving at that decision, we need to arrive at it based on solid understanding of the facts of the situation, and I think it is not in the public interest to visualize a Chernobyl-type of an event as having very much to do with the way a radioactive repository and the handling of spent fuels moving to that site expose the public to risk. Risk can never be taken to zero, because zero risk is infinitely expensive.

Nevertheless, we work all of the time with risks of varying magnitude, as this floor down below us here tells us almost on an instant basis, and driving here, you incurred certain risks in your automobile. And what we're looking at is, what's the allowable risk? What is the reasonable risk that we want? And I think the Chernobyl-type of an example in representing your members is probably not in your interests or your members' interests or the public interest. I think it would be better for you to examine in a little bit more detail the degree of containment that the waste handling streams are

designed to achieve, and then to look at the kind of risks that are generated from that type of a process, as opposed to the Chernobyl example.

Thank you.

DR. PRINDIVILLE: Thank you very much. May I ask you a question?

DR. CANTLON: Surely.

DR. PRINDIVILLE: Could I please and respectfully ask you if it would also be in the public interest to--for this very august body and other similar groups--to investigate and explore all other possible sites? Would that be in the public interest, too?

DR. CANTLON: It might be in the public interest, but it's not in the Congressional mandate that this Board enjoys. We're commissioned by Congress to look at DOE's handling of the Yucca Mountain site.

DR. CARTER: Let me add one other point, and that is that the Congress made the decision to investigate or to characterize only Yucca Mountain. This Board has no control over that.

Let me ask you a couple of things. I think Dr. Cantlon covered one area that I wanted to cover, if someone else didn't; namely, we think it's not a good example to compare the dynamics of a nuclear power plant and all that goes there, the potential for releases if things aren't

properly done, and so forth, with a repository. These are two entirely different things. One has got tremendous amounts of energy inherently in the system, and the repository is just the opposite. It's almost defunct in ready-made energy.

The other thing, are you aware of the fact that, of course, the DOE has a sizable program, not only in vulcanism, but also in seismicity? In other words, there are a lot of presumably very bright people that are studying those issues on a very comprehensive basis.

DR. PRINDIVILLE: Yes. It's a gigantic branch of the government, yes, sir.

DR. CARTER: The other thing is that the Board also happens to have some people in those areas, so we--even though this Panel does not deal with those issues directly, we do have several of the Technical Review Board Panels that do address those particular subjects, so we, indeed, are looking at that as a Board.

DR. PRINDIVILLE: Yes. I've read some of the articles by these people. They're very knowledgeable and very sincere, and we--they are doing a fine job as best they can.

DR. CARTER: All right. Let me ask you one other question. If you're concerned about the repository and the high-level wastes that would go there--because this now is not scheduled to begin for some 20 years or so, so the transportation, none of those things would be particularly

pertinent at the moment, but will be, presumably, some day--does your organization have any concern about the fact that we're storing this spent fuel, the stuff that would become high-level waste and it would be disposed of in a repository at some hundred or more reactor sites around the country--not in the State of Nevada, by the way, in terms of reactors, but in many, many other states.

DR. PRINDIVILLE: You mean like the Carlsbad Caverns, in the caves?

DR. CARTER: No, that's a little bit different thing, but all of our active commercial nuclear powerplants now are storing spent fuel, and that's the material that's earmarked to go to the high-level waste repository. So we're presently storing a lot of this material at not just one site, but something over a hundred sites.

DR. PRINDIVILLE: Well, Dr. Carter, this is becoming for me truly an intellectual banquet. It's beautiful, and the question I would ask you is, how much progress is being made by the Nuclear Energy Board and its branches in making progress toward the use of spent energy or reconstituting atomic waste?

I am advised that the French government has made great progress in reconstituting their waste. Now--oh, we have somebody--have we made any progress this way? Now, I do know one man who is also a Ph.D.--and my recollection is it's

physics--who is with the Atomic Energy Commission in New Mexico, and he has spent the last ten years working in this way. Can you tell us about that?

DR. CARTER: Well, I can give you an opinion, yes. I've been involved in this for a sizable number of years myself. As far as I know, now, the French intend to do exactly with their high-level waste what we do. They may reprocess it and make what we call high-level waste rather than spent fuel, but at this time they will make borasilicate glass out of that and, in fact, they're already in that process. They're somewhat ahead of us in that area. They're storing that material, but the intent is to put it in an engineered repository underground in a geological formation. So their major plans in France are really no different, in a major sense, than they are in the United States, and this is also true of a number of other countries. Basically, their plans are very similar to the plans of the United States.

Now, I think perhaps when you say reconstitution of waste, you might mean something like transmutation and this sort of thing, where you can make it into something that's more innocuous than the waste itself. Now, these things have been--that sort of thing has been discussed in the U.S. and other places, but as far as I know, it's far from reality. It's still a discussion item or a research item, and certainly not anything of a practical nature at this time.

Bill, did you have something?

DR. BARNARD: Yes. In your comments, you mentioned the fact that some shipments of reactive waste had come into the State of Nevada and had leaked.

DR. PRINDIVILLE: Yes.

DR. BARNARD: Are you referring to the spent fuel that was used for experimental purposes on the Nevada test site, or low-level waste that was shipped for disposal at the Beatty site?

DR. PRINDIVILLE: It was low-level waste at the Beatty site, sir.

DR. BARNARD: Disposal experts in Sweden have developed disposal containers that they claim will last 10,000 years. If we use similar types of containers in disposing of our waste, would that allay some of your concerns about a repository development here in Nevada?

DR. PRINDIVILLE: It might allay some of mine, but it wouldn't allay the teachers'.

DR. BARNARD: Okay. How do you feel about the activities that are--the testing activities at the Nevada test site?

DR. PRINDIVILLE: I think a lot of it is superfluous.

DR. BARNARD: Are you concerned about the hazards?

DR. PRINDIVILLE: Of course. We all are. Yes, sir. To conduct one experiment after another after another frequently is unnecessary, and the people of this area are concerned

about that, especially Las Vegas. When you get in a tall building and it starts moving, you know, a foot this way and a foot that way.

DR. BARNARD: If you wanted to compare that ground motion to an earthquake that registered 6 on the Richter scale, how much motion is associated with the underground testing?

DR. PRINDIVILLE: I wish I knew.

DR. PARRY: You mentioned that you had been around the state and in local areas in your hobby of geology and studying the country.

DR. PRINDIVILLE: Mineralogy, too, yeah.

DR. PARRY: Have you been up to the Oregon-Nevada border area where there is a caldera which--whose name slips my mind. Are you familiar with that area?

DR. PRINDIVILLE: I've been up to the Nevada border about six weeks ago, and incidentally, I got skunked on the side of a volcano. I thought I was going to get gold sheen obsidian and I wound up settling for red.

DR. PARRY: So you're familiar with the uranium deposits up there?

DR. PRINDIVILLE: Not really, no, sir.

DR. PARRY: Have you considered the possibility of studying the movement of uranium over millennia, and comparing that to how a repository might behave over millennia?

DR. PRINDIVILLE: No, but it's a swell idea and I don't

mind starting.

DR. PARRY: Well, perhaps some of the DOE people in the audience will take you on.

Dr. Cantlon mentioned about the Chernobyl site and your reference to it. I might mention that when I worked for the Nuclear Regulatory Commission, I had the responsibility of reviewing the accident, in part, because I worked for a number of years for a graphite company, and the Chernobyl reactor was built principally from graphite, and I'm only telling you--giving you some information to provide it for background, not disputing what your concerns are.

The Chernobyl accident was caused by a steam water reaction with the graphite at high temperatures. It ignited the graphite, basically, and as the water and steam was converted to oxygen and hydrogen at the elevated temperatures, a hydrogen explosion occurred, ripping open the floor or the containment--and it isn't really containment, and Dr. Cantlon's comment on that, I think, is very pertinent for your information. This was a violent explosion and it literally tore the floor of the base of the structure apart, and then a major fire ensued. Temperature--I'm not sure, but I would assume--would be over 3,000 degrees Fahrenheit. It would be equivalent to the burning of coal in an open, full access of air, and with a resultant large plume and discharge of particulate matter, and so forth. And I only mention those

points to give you a basis of comparison.

I'm glad that Dr. Barnard raised the question about --or maybe it was Mel--raised the point about an engineered barrier package, and you indicated that it might make you feel somewhat better; is that correct?

DR. PRINDIVILLE: I said it might.

DR. PARRY: Might. And I should also mention for a point of information that there has been no leakage whatsoever of any high-level waste in transportation. There has, to my recollection, only been one accident involving waste in transit, and no leakage occurred.

DR. CARTER: Let me mention a couple of other things. One, of course, our business is not involved with the U.S. testing program as far as underground weapons tests are concerned, but I do know that the sizes of the devices that are tested now in Nevada and other places in the world, most of these are limited by international agreement--and certainly the ones in the U.S. are--and they're limited to 150 kilotons. So there is a limit and that limit, by the way--partly, at least--was developed on the basis of what would not cause unacceptable ground motion in places like Las Vegas, and also in the Reno area where you, indeed, have high-rise hotels and other buildings. And of course, those tests that will affect those as far as movement is concerned, or appreciable movement, are announced in advance so that people that might

be window washers or whatever, rather than being startled when one of those things happen, they're announced in advance so that precautions can be taken and people won't end up falling off ladders or hoists or wherever they may be.

The other thing, the--I'm glad some of my colleagues pointed out the Chernobyl difference. I had the opportunity some few years ago to visit Chernobyl and that area, and, indeed, talked to some of the people that had been at the reactor and, indeed, had survived the accident. These people were still undergoing medical treatment.

Like you say, that area has certainly been devastated and there's large parts of it now that are, indeed, closed or precluded from the use of agriculture and other things. So that's why we're trying to make a distinction now between that and the high-level waste repository, because I believe most people agree that they're completely different sorts of things. One, as far as our reactors are concerned, they're so different in terms of engineering, operation, and so forth, that most people feel that you could not have that sort of calamity in the United States.

The other thing I just noticed in the paper recently, and I think it's since I've been here in Reno--which is very recent--that there's going to be a program developed now or started between several countries in the world following up medical evaluation of the people in the area of

Chernobyl and downwind when the accident occurred, and the countries, I believe, that are going to be involved in this, these medical studies, will, of course, be Russia itself, the United States, Belgium, and Spain, and I suspect that over a period of time additional countries will be involved in those sorts of things.

Any other comments or questions?

(No audible response.)

DR. CARTER: All right, sir. We certainly appreciate, Dr. Prindiville, your coming and sharing with us your views and that of your organization. We appreciate it very much.

DR. PRINDIVILLE: Thank you very much, Dr. Barnard, Parry, Dr. Carter, Cantlon and North. It's been a wonderful experience for me. I'm grateful for the opportunity to speak to you all.

DR. CARTER: Thank you.

Our next speaker is Mr. William Rosse. He's the Chairman of the Environmental Protection Committee from the Western Shoshone National Council.

Mr. Rosse, we are certainly very pleased to have you with us.

MR. ROSSE: Well, I'm honored to be here to say what I can about Yucca Mountain and the reason we're objecting to it.

The main reason we're in such opposition to Yucca Mountain is the fact that we feel that we're still the

caretakers of the land. We are the landowners under the Ruby Valley Treaty of 1863, which most people seem to think the treaty gave us the land, but it did not.

The treaty, all it did was give the Anglo people the right to pass over our land and use some of it, but we did not give the land to the government. We did not fight a war over it, and we did not get paid for it. Although they say we have been paid, in 1946, the Indian Commission was developed. There was a deal there where it says you could come back and sue us for damages, sue the United States government, and they says, "We cannot deal in land issues, only in monetary damages." So they worked with us and became kind of a judge committee instead of a commission that they were supposed to be, and trying to show the ways that we lost our land, and we feel we have never lost anything through the Indian Commission's act or through the Supreme Court's actions, or even through Judge Thompson's acts.

Actually, up until 1986, Judge Thompson stated we did have possessory rights to the land, and for some reason he has changed that, but we don't feel there is a reason for it. He took a couple cases that was kind of outside of our jurisdiction. People was paid for land in some places that they used that one case. I think it was an Oregon case, and we feel we have not given up our land because we did not accept no money for the land, although being as we're native people

and we weren't so smart, we had to have the government be caretakers of us, custodians over us, tell us what we needed to do. So we had the Secretary of Interior accept this money on our behalf because we refused to accept it when we found it would mean the sale of the land. We have no land to sell. The Creator owns this land.

See, when the Anglo people first came here, they came here and they finally developed a method to get a little piece of paper, and says, "You own this and you own that," but that really hasn't changed things any. The Creator has put everything here, put us here, and he's the owner of it. We're just, all of us, just caretakers, and we share with one another. This is why the treaty was developed, was a treaty of friendship, and we feel that we've lived up to our part of the treaty, but the federal government has never lived up to its part yet, never did develop a reservation for us inside of our territory or anything, and there were supposed to have been some money issues given to the native people when the treaty was signed, which never came about, and to this day, it still hasn't come about, although they still say we have sold our land because there was $26 million appropriated for damages done to the native people.

So we feel we still have possessory rights to the land where Yucca Mountain is supposed to be put in, and we don't feel it's a very nice place because there's a lot of

sacred sites, a lot of burial sites. See, we were nomadic people. We traveled all over the State of Nevada, California, Idaho and into Utah, and we feel that we've got people that are buried in a lot of these places, a lot of sacred sites in here that people can't recognize.

Native people are a little different than Anglo people. We have different methods of medicine and stuff, and a lot of these sacred sites, that's where we get our power to do our medicinal work.

I guess when this here world was created, the Creator put all kinds of medicines out there for all sicknesses, known and unknown. If we knew what it was, there probably is medicine for AIDS. Another story we hear, that AIDS was some kind of a deal that was developed by the governments here to use in some kind of a warfare issue and it got away from them, but that's neither here nor there.

We feel Yucca Mountain is not an appropriate site because the land belongs to us yet, and we're the caretakers of it, and we feel that we've got too many sacred sites in the area. The other thing, I had the privilege--this may not be the right time for this, but the transportation of this nuclear waste. We understand there's about 86, maybe 87 per cent of it's coming from the east coast. This will come all the way across the United States. They've got routes developed that they need to travel.

I had the privilege of traveling over a few of those routes in a few of the southwestern states here, and people we talked to preferred the nuclear energy field to stop right where it's at until we do find a method to do away with the waste safely, or neutralize it in some form; or stop it at the mining site. It's preferable. Most people I have spoke with, this is their preference. Most native people I had a chance to speak with in our tour, this was their preference, is to stop it at the mining site. There's too many sacred sites in there and it doesn't mean anything to Anglo people, but it does to the natives. It's a very important issue for the native people.

And so this is one of the real reasons we feel that we don't need Yucca Mountain as a dump site to transport all that stuff from the east coast back this way.

I had this privilege to travel with J.R. Wilkinson. He wasn't able to get out of school, I guess, to get here, but he was one of the speakers. But anyway, he can tell you a lot more on that.

I understand there's supposed to be a meeting Friday about the transportation issue. I will not be able to be here myself at that time, but hopefully, J.R. Wilkinson will be able to put in a statement there for me on the issues of it, because we have talked with a lot of people about it and there's so many dangers of accidents, which DOE doesn't look

at, you know, and we've brought up some things there that says just like that Exxon deal there in Alaska. Twenty thousand shipments went through there without an accident, and yet they had the one, and look at all the damage it done out in there.

Well, then there's the other issue. The government seems to think it's got these here powerful scientists that send people to the moon and everything, these rockets are infallible. What happens to the Challenger? It blows up.

The other thing, we spent a lot of money sending a telescope into space, which was very useless to us, and I don't know whether they're going to be able to fix that or not, but that's a lot of money spent on those issues there and there's very little of it, seems like, being spent to control the nuclear problem, to find a way to neutralize it, or to make it harmless, because that plutonium stuff has got a very long life. Some of it there, the half-life of it is 240,000 years, and Plutonium-235 has got a life of 710 million years, so it's a very potent stuff.

As long as things haven't been touched in the ground where it was mined, it was fine. We never had problems with it until someone was able to develop a method to create a monster with it, and these people that did this, they had second thoughts. See, we are all here--we have two paths to choose; the right one and the wrong one. A lot of times we make the mistake of choosing the wrong path.

We feel uranium was fine if it was used for medicinal purposes and stuff to help people, not to develop something here that would destroy people. And the big part of it is, right now they're still testing down there at the test site, which is on our land, also, and we don't feel that needs to continue, especially since the Cold War with Russia is kind of over with there and the danger is, right now, that there is terrorists that could get those things--especially down here in Nevada, you know. Down in Las Vegas, that's one of the areas they're talking about coming through. That's a very dangerous site for these trucks to come through there, because terrorists could get one of those trucks and hold it as ransom. People's going to have to pay up a lot of big money or else lose completely Las Vegas.

We know the testing is not real good because of the fact that they do not test as long as wind is blowing towards Las Vegas or Los Angeles. As long as it's not blowing that way, they'll test. They'll let it go. We're downwind of it. Most of us native people, we're in the northern part of it, just north of it. People in the eastern part are really hampered with it. We know there's a lot of people that have died from it. I met with native people there in St. George, Utah, that the oldest ones are about 45-years-old. The rest of them are passed on because they've got diabetes, hypertension and a lot of other things caused from this

fallout that's been in there.

We feel DOE hasn't been able to come up with a very good idea with this nuclear dump. I understand they've spent quite a bit of money already and did drill one hole down in the ground there, but they didn't keep track of their core samples and stuff, so they didn't know where it came from, and is it wise to keep putting more money into it to do something when they are not able to control it?

DOE has told us all along that every one of these nuclear issues are safe, told us testing was safe. The government told us that. AEC said it was safe above ground. So all the people got contaminated from that. Then they finally went underground, and that wasn't any better because there's a lot of those there deals that's vented, those tests. They say controlled venting. I don't believe too much in that controlled venting. Who's going to be standing right there to control it?

The other thing, the test site is not the only place they've tested. They have tested 65 miles from our headquarters in Hot Creek Valley. It's a test there in 1968 called Faultless. It was 3200 feet underground and was one megaton bomb. Three months after it was set off, the land fell in for a mile around it; sunk about six or eight feet. And on the plaque, it says it was done to see what the effects would be if an atomic bomb had hit that area.

We also found, through the Freedom of Information, that there was some tests done about 30 miles east, southeast of Fallon, and two of them vented. There were three tests done there we know of, and two of them vented. The Rawhide area in--and Gabbs area in there has got quite a bit of that there plutonium stuff in there. It's a very dangerous thing that they're fooling with. Man can't do anything perfectly. The only one can do it perfectly is the Creator, so this is why the native people have so much doubts about what mankind can do. You can be so smart, send a man to the moon, and yet, not smart enough to develop a way to neutralize this here monster they created.

And it's not only us now, other people are able to pick up this here same stuff, and this is a constant threat to hold over people's lives. This is why you find a lot of drug issues and all of this other stuff because of that. People, the youngsters, they say, "Well, what's life going to be here? There's nothing to look to the future for because we could be dead any day. Somebody might accidentally touch a button there and set those bombs off," and it don't take too many of them to create a nuclear winter, which is a very delicate thing when you set those bombs off.

And, like the ones we set off in Japan, those were very small ones, but yet, look at the damage they've done. So the stuff we've got now, they're maybe a hundred times more

stronger than what we set off there.

So we feel that Yucca Mountain would not be a very good place, especially because of the transportation of the waste from back east this way, because there's always a potential of an accident. We find their casks are not that well developed.

When I went on this tour, we had a mountain cask with us. It's one of the J-9 casks. That's supposed to be the latest models coming out and it's got a potential of carrying two tons of material although the cask, fully loaded, will be 27 ton, so they'll have to have special vehicles to transport that, and I don't know whether these roads will hold up to it, but there's a lot of the traveling areas that's going to be icy when they're traveling, and there's a lot of loads to be moved, especially when you're only carrying two tons of material at a time, and the two tons of material is enough to wipe out any place that has an accident completely.

The other thing, I've got two videotapes here of the Plight of the Western Shoshone, and I will leave these with you. Also, let you know that the tribe has hunting rights here in the State of Nevada yet, and this is one of the things that we've been having to fight for, and we feel that this is a right that we should continually have, without any interruption in it. This is the way we survive.

So I will leave these with you, and I thank you all

very much for allowing me to speak.

DR. CARTER: Oh, that's all right. We appreciate it.

We've got a few questions, I'm sure, so we'd like to ask you those if you have the time.

MR. ROSSE: You bet.

DR. CARTER: And we appreciate very much the videotapes and the other information.

DR. CANTLON: I'd be interested--your expression of concern about the Yucca Mountain site itself as the location of the sacred sites in the area, to what extent have the mining activities in the mountain regions of the tribe's lands created similar concerns in tribal--

MR. ROSSE: Yes, most of it there--see, previously most of it was just where they dug tunnels into the mountains and holes into the ground, which wasn't such a big area. Now they're working open-pit mines, and there's a lot of concern about that because they'll find areas that there will be sacred sites that we don't want. We are opposed to all of that, exploration like that.

The other thing about it, when they do this kind of work in these areas, even if it's not on a sacred site or that, they need to replace everything back as close to the way it was, because you're just stirring up, and Mother Earth has got feelings just like us, and we ought to look at this, and then the animal life and everything else. They have these

same feelings about it. It takes away their habitat. They don't have a place to go, so the stuff needs--when these mines do this operation, they need to repair it as closely back to the way it was when they got through, and that should be a law, the mining law that goes on. Hopefully, we can keep that going like that.

DR. CANTLON: If Nevada were so unlucky as to be like southern California, and to be as heavily populated as southern California, almost all of the lands that are within the tribal confines today would be highly developed with roads and residences and--

MR. ROSSE: Well, actually, not so much so, because there's only two places that are developing real strongly, and this is Reno and Las Vegas. Now they're trying to make Las Vegas something like New York, I guess, because they just don't know where to stop. See, the Creator put enough water there for them to expand so much, but now they've filed on water all over Nye County, White Pine County, Lincoln County. They want to get these water rights. But we feel we still have the water rights on a lot of that they filed on, even though the state doesn't say anything about it. We do have the prior rights to any of that water, and this is things that we're going to have to be looking into.

It's difficult for the Western Shoshone nation to do any of these things because you might say we're land rich, and

money hungry. We don't have the money to really work at this stuff, but we still feel that the land is ours and we do have a right to say it. So we take people like myself and have to go out and inform the other people what we feel, and this hasn't been happening for a long time until just recently. We really got together and started pushing it here since they decided if we accepted the money in 1979, which we didn't, and so we feel that we still have rights to this land and we need protective rights.

DR. CANTLON: What I'm trying to sort out is the tribal concern about the land in terms of protection of sacred sites, from just ordinary development as opposed to the uniqueness of the repository; different things. Development itself, the tribe would object to as disruption of your sacred sites, I take it; just any development?

MR. ROSSE: Yes. We have to fight for the sacred sites.

DR. CANTLON: I understand.

MR. ROSSE: Those that we have pinpointed. See, we don't know exactly where all of them are, but we do know there is some down there at the Yucca Mountain area. We know at the test site there is sites there. There's burial sites and stuff and other like that. We were told at one time that they had a child they found there at one of the sites where they was going to set off a bomb, and they held off and finally notified us, but we got the message through a roundabout way

before then and got onto them about it, and they was going to take us in to, you know, do a prayer and a burial ceremony for the remains and stuff and other, and we asked them not to set that bomb off at that site. As far as I know, they had moved the bomb that they was going to set off there to a different site. Whether they have set one off there or not, we don't know, because we believe just very little of what we hear through DOE. I'm sorry to say that, but they've built up a pretty poor track record, and we feel very concerned about this.

DR. CANTLON: Understood.

So that if I'm reading you correctly, then, the key tribal concern would be disturbance of any type, and the fact that it is a repository--while you think there are a lot of other reasons to object to a repository--that's not your primary concern?

MR. ROSSE: Well, we feel like it would be a desecration to Mother Earth, because something could happen right there in that area, and see, we're not doing our job to try to protect Mother Earth. This is where we come from. We live with Mother Earth. We try to protect the environment, everything there, not only for ourselves, but for you folk, for the animal life and everything else around. This is the way we've been taught all through the years. This is all we know, and this is the way we are.

DR. CANTLON: Have you exchanged information with your tribal counterparts in areas of the country where development has proceeded substantially more than has been the case in your own tribal areas?

MR. ROSSE: Well, there is one area right now that we're fighting over is a site there that's called Rock Creek Dam. They're trying to build a dam there in Lander County just for the boating enthusiasts and stuff and other like that, to create a recreational area for them, and it's a very sacred site to us, so we are very opposed to this. So we've let them know about it, and whether they're going to continue with it or not, we hope not.

We're having the same issue up in Idaho right now. We've got one of our Shoshone elders up there speaking with them about Castle Rock, a place up there that is a very sacred site, that they're trying to do something with up there. I'm not sure what the issue is up there. I haven't been up there.

The other thing I might say about this here repository, we're only thinking about setting it in there for 10,000 years, get it off our hand, let the future worry about it. Between now and the 10,000 years, somebody's going to get into that site, regardless of how it's protected and everything else, because of minerals and everything else. They'll get into it one way or another.

Right now, I think they're trying to get a

withdrawal for what, twelve years, to keep the mining out of it and everything else, but there's a lot of minerals in that, but they haven't been able to develop it. So we feel like it just needs to be stopped, and not move it in somebody else's backyard. Stop it and use the monies that they're putting into develop a repository to find a method to neutralize it or reverse the action of that atomic energy. We don't feel we need the atomic energy for electric sources.

You go down to Las Vegas and you look at that place. Man, that is lit up worse than a Christmas tree. You get in there and you get dizzy because of all those lights going. Gee, just think if they was to turn off one of those out of every hundred of them, man, the difference it'd make in the power. But no, they can't do that, see. This is where mankind now has gone its limit and they decide to, because the stuff is there, let's go ahead and abuse it, go ahead and use it. Same way with the oil. Same way with the gas; everything. We abuse what's there instead of conserving. We get these high-powered cars that you get about two or three miles to the gallon. They got cars that'll go 30-40 miles, but that isn't big enough for most people, you know. You've got to have this big high-class limousine comfort, really go, and then a lot of the stuff is in these RV's. You get out in one of them things and you don't go very far on a gallon of gas, or you've got to tow along a little bitty in back there

so you can park that and drive it, see. That's making sense.

DR. BARNARD: Don't talk too loudly. The Range Rovers are next door.

MR. ROSSE: This is the way the native people feel about it and I'm glad I was able to speak here before you all, and I'm hoping that you'll consider what we've said. We have a young fellow who'll be here speaking tomorrow that represents us, too. So, if there is no more questions?

DR. NORTH: Well, I'd like to ask if you could give us some more examples with respect to sacred sites or burial sites in Nevada. Are there other examples where such sites have been identified and set aside in a proposed development--

MR. ROSSE: There is a lot of sites that has been developed. See, back in '81, I started fighting the MX missiles. That was an issue here in the State of Nevada because it was less populated, this was a good place to put the MX missile. They was going to dig big trenches along through there, disturb all this soil and get that there radiation back up on top again and everything else, but the thing is, we fought them because of the sacred sites and the burial sites that was all up and down the valley. We fought them to a standstill.

Finally, when Reagan came in, they finally decided, well, let's just lay that aside. At the time they was talking

about putting this here MX in and doing all this excavation and everything else, I asked them did they have an MX that was ready to be used. They says no. Well, since then I understand they tested one here, I think, a year or so ago at --back out in the ocean, and the thing was right on target, except the target wasn't in the right place. So that's the scientific knowledge that gets away from us sometime and we don't stop to look at it, because, you know, we have the potential to be real brilliant and everything, but we don't have the potential to look at some of the things that could happen and we don't stop, slow down to look at these things.

This is where native people are--seem like they're so retarded or so far back, because they're always slow-going, not in a big rush.

DR. NORTH: How about situations like highway development or mining properties, have there been any examples of that where you've identified a sacred site?

MR. ROSSE: Well, see, we haven't been able to start doing anything on that until about 1980, really, to find areas where there was sites. And still, we're trying to find other areas in here and develop this land into sections where Anglo people know what we're talking about, where this is and where that is, and we've been doing some studies on it, and we've got some done, but we need some more funding to get the rest of it done and we're in hopes to getting some funding through

the government to finish those studies up if we can.

We really need it, because we need those studies so we can come back and tell you a little more about what's here and what's there and different sections and townships and ranges of the State of Nevada, and then we'll probably wind up going off into California and Idaho, too, because we've got land there.

DR. CARTER: Let me ask you a couple of things. One, I presume, to make sure everyone understands, that the land ownership basically is between the Shoshones and the Department of Interior; is that correct?

MR. ROSSE: Well, it's between the Shoshones and Congress. Congress is the one that ratified the treaty, and they're the ones that we have to really deal with. Through the court system, we have never been able to get any answers because they always go around it different ways.

DR. CARTER: The other thing is the Shoshones made objections over the years to the use of the land for other things; for example, the Nevada test site now has been in business since 1951, I believe, and that was carved out of the Air Force bombing and gunnery range, which I guess was--

MR. ROSSE: Right. That was in the forties. That was when we--well, at that time they was able to get in some parts of it to use it for hunting. That was good hunting area in there, and that was areas that we used, because, see, we have

to travel from the northern part of the country here back down south when it got too cold up in this area. We'd go down into the southern area, and then on our way back--and this is the way they followed the game, because they had to survive; followed the plants, wherever the plants were that they could eat, different things. That's before they became people that kind of started to be herders or people that could run livestock or different things like that. We had to survive off Mother Earth herself, and it was there. But we never abused the issue on it, see.

This is why there were so many game, so much game there, until the Anglo came in. The buffalo. Right now, they're kind of an endangered species. I think they've got a few herds there in Wyoming and different places, but not much. But they came in and wiped them out. That was a lot of food for people. They used it for other purposes.

DR. CARTER: Let me ask you another question. You mentioned the things, of course, about nuclear power and I guess radiation, radioactivity in general, but if members of the Shoshones, for example, happen to have cancer--and I'm sure there are some that do--do you object to the use of things like Cobalt 60, which is produced by nuclear power indirectly and used for cancer treatment, and so forth?

MR. ROSSE: I don't know what it would be used for. See, I wouldn't know what it's used for. I don't have any

technical knowledge like that. I'm just a poor Indian person trying to get by and trying to do their job.

DR. CARTER: Well, my point is there are a lot of things nuclear that are doing very useful things, like producing 20 per cent of our power and things of this sort.

MR. ROSSE: Well, like I said again--well, the power issue, I don't feel we need that. There's a lot of other sources of power, but the--for medicinal purpose, absolutely, I feel that this is what the Creator put it there for, not for the purpose of making something for destruction, or now they're using it for energy, but they have no method to get rid of the waste, and I feel that United States should concentrate some of its efforts on that, and I believe the other countries that's got it, just like Russia, they're--they'll start concentrating.

See, we were very fortunate. We got--we had Pauline Esteves is one of our ladies that does a lot of the tours for us and travels, and she had a chance to go over to Kazakhstan, or whatever in Russia, in the Soviet Union, and we got pretty familiar with those people out there, and they're in the same boat we are. They're being tested on out there by their own government and they felt that they didn't want any more of these tests. They don't need it.

DR. NORTH: I'd like to learn a little bit more about medicinals, as you were describing those. Are those mainly

plants, or is there other material you use?

MR. ROSSE: There is plants, just like that uranium. They use it there, and maybe probably to make the x-ray machines, some of that material out of that, and then like he's saying, that cobalt that they use for radiation treatment possibly, I guess, and stuff and other like that. That's for medicinal purposes. That's to help mankind, yes, but the rest of it is more to destroy mankind, the bombs and stuff; especially the bombs. I'm opposed to the bombing. We are the most bombed nation in the world. We've been bombed over a thousand times now, and there's no end to it. Actually, it looks like they've speeded their process up a little bit here this year. They've done quite a few tests already.

And they have never come to the native people, Shoshone people, asked permission for that, even when they withdraw the land for the Nellis Air Force Base. And there again, the United States government is not doing the job they're supposed to be doing. Most of these Air Force bases, military bases, they've got a lot of contamination around them. So these are things that we're opposed to, all this contamination. We eventually won't have no water, no land that we could be able to travel on, be unexposed to it, different hazards, including pesticides. That's some of the worst stuff, too, and there's a lot of that.

DR. BARNARD: I gather from your comment that you're in

the process now of mapping these sacred sites; is that correct?

MR. ROSSE: Well, some of the sacred sites, but mainly to mapping the area that we're talking to the government about in townships and ranges, different things like that, so they'll understand what we're talking about. This piece is our land. This is the land we want. These are the spaces we don't want you people to be in, those spaces like that. We need that information to be able to talk intelligently to people about it.

DR. BARNARD: So you don't know how many--or maybe you do know how many sacred sites there are on Yucca Mountain?

MR. ROSSE: Not right now, not offhand. I would say we might have some of them marked already, know them, and there again is a bad thing because the native people don't want to show where them sacred sites is before you have people come in. There's burial sites. They come in, they want to get some of these artifacts and different things and other like that, and this is why we're very bad about telling people where they're at.

DR. BARNARD: How big is a sacred site? Is it an acre or two, or does it range from--

MR. ROSSE: Well, it could be a whole big range.

DR. BARNARD: Okay.

MR. ROSSE: Maybe a thousand acres, ten thousand acres.

DR. BARNARD: Do you consider Yucca Mountain as being sacred itself?

MR. ROSSE: There is sacred sites. There have been some investigations down in that area. There is sacred sites. There is burial sites. A lot of our medicinal plants are down in that area, stuff that we need to use for our own doctoring.

DR. BARNARD: Do you consider the whole mountain to be sacred?

MR. ROSSE: I just imagine it would be, because I can't see otherwise. See, they've had people go in and look at the different places there, and they've seen things that they--a lot of them, they can see these things that we can't see, like myself, see, because I don't know this much about my own culture and my own history. But they do, and they can see these things, what turns up there.

They did a study on it, which was to satisfy the government that they done a study on it. They had this here fellow from back east. I can't remember what his name was, but he did this study and he picked up a couple of people from my reservation that didn't know nothing about anything down in the area, really, and then they picked up Payute people from, I think, over at Moappa (phonetic) and some other there from the colony and different ones to satisfy this issue, and then he went back and said that, "Well, we did a study on this here and it looks like it's all right. There's nothing there that,

you know, would be hindering."

But it's not so. He didn't come to the Western Shoshone National Council to meet with them and get some of the people that understand the area there, some of our elders. The only one we had to go in there was Pauline Esteves to go at Yucca Mountain, and she has been at the test site so she understands it a lot better than I do. I haven't been into it. I have been down to the test site constantly. I've seen Yucca Mountain. I've been on Yucca Mountain. Matter of fact, they held kind of a circle there, and then we had a few people walk off from there and walk into the test site off of Yucca Mountain, which they didn't do anything to them. They finally went in there and picked him up, took him over to Lathrop Wells and dumped him out. That was it.

DR. CARTER: All right, Mr. Rosse. We certainly appreciate very much you coming over from Austin to be with us today.

MR. ROSSE: Thank you very kindly.

DR. CARTER: Appreciate it. Thank you, sir.

Okay. Is Mr. J.R. Wilkinson here?

(Pause.)

DR. CARTER: I wonder, Mr. Wilkinson, if you'd tell us a little bit about your background and then make your presentation, we'd appreciate it.

MR. WILKINSON: Yes. My name is James R. Wilkinson and I

go by the initials J.R., and I've been living in Reno for about two and a half years. Previous to that, I was living in northern Idaho. I'm a Montana boy by birth and grew up there. I became involved with the high-level program six and a half years ago when Hanford was chosen as one of the top three candidates for the first round repository, so I've been involved with this program for quite a long time and have watched it mature, shall we say, into this program that we now have today.

I am a land surveyor by trade. I've been in the surveying business for 12 years. I've currently made a career shift and am now on staff with Citizen Alert here in Reno.

Did that give you a pretty good idea?

DR. CARTER: Yeah. That's fine.

MR. WILKINSON: I'll go ahead with my prepared remarks, then.

DR. CARTER: All right, sir.

MR. WILKINSON: Good afternoon. My name is J.R. Wilkinson and I'm the Administrative Assistant for Citizen Alert. Our 1750 dues-paying members are represented through two offices; one here in Reno and one in Las Vegas. Founded in 1975, Citizen Alert's staff has grown to six people dedicated to ensure full public and democratic participation on issues that affect our Nevadan way of life.

Often the issues that we face here in Nevada have

national ramifications. Issues such as military land withdrawals and the military's toxins, the Nevada Test Site and DOE's various warhead testing programs, valid Western Shoshone claims to Yucca Mountain lands, and yes, even our current statewide battle over water importation schemes all point to debates where public opinion and concerns are often given a back seat to bureaucratic drivers.

We say no to these intrusions, and we view Yucca Mountain, which is slated to house the nation's most long-lived and dangerous radioactive garbage as the pinnacle of public exclusion and abuse by our federal government and it's assigned henchmen.

In your flyer announcing this hearing, you asked: "Do you have an opinion about the U.S. Department of Energy's plan to characterize and possibly site a repository for high-level waste at Yucca Mountain?" You bet I do, and so do the 12,000 people on our mailing list. To quote a familiar name, Nancy Reagan taught us to "just say no." And no we have said. In fact, A.B. 222 was passed by the Nevada State Legislature and signed by Governor Miller, which specifically outlawed the storage of high-level nuclear garbage in our state. What part of no don't you and DOE understand?

To get a grasp of why we are here today, let's take a look at the historical issues paving the way to this hearing. The Nuclear Waste Policy Act of 1982 was a

politically delicate piece of legislation. To some, it was one of the more artfully crafted works to have ever been generated by Congress. With a two-tiered program, one in the west and the second in the east, it was thought that the answer to America's most dangerous garbage had ended. Not so.

In fact, the Nuclear Waste Policy Act Amendments of 1987, in what we affectionately refer to as the "Screw Nevada Bill," amplified a program not based on scientific validity, but on political expediency. Let me reword this: Assuming that deep geological entombment is the best way to remove this radioactive garbage from our biosphere, why not set out the criteria and then go find that spot and dig a hole there. If the criteria is met at a particular location and it just happens to be under Bush's favorite vacation spot in Kennebunkport, then the hole goes there, period. At least with a criteria-generated site rather than a politically-generated site as we have in Nevada, a defensible nuclear dump can be identified and we can begin the debate there.

Citizen Alert believes that the nuclear garbage solution should be so safe that the utilities and the users of nuclear power could live safely and comfortably around any disposal site. Public confidence in nuclear waste disposal is essential. It all hinges on whether the public believes the government is making decisions that are equitable and technically sound.

Today you will be hearing from Nevada's Nuclear Waste Project Office. This office is Nevada's only shield against the abuses of propagandistic data put out by DOE. Presented documentation points to a site froth with technical problems which are certified by a battery of qualified people.

Such independent oversight is essential to the high-level waste program. For example, if it had been left up to the Atomic Energy Commission, DOE's predecessor, the world's first high-level radioactive waste dump would have been constructed in the salt domes of Lyons, Kansas.

During this escapade, even the National Academy of Sciences gave glowing reports on this facility, a fact almost lost on those currently looking to the Academy for an objective assessment of Yucca Mountain. However, the Kansas Geological Survey, through a Congressionally-funded study, finally killed the project in 1973 with startling revelations of unknown shafts throughout the area, rendering it about as solid as a piece of Swiss cheese. In spite of this, DOE has proclaimed that independent technical studies at Yucca Mountain are duplicative.

The only way that we can really project what's going to happen down the road and how DOE may handle Yucca Mountain, is by extrapolating what DOE has done at other sites. The best equitable example is the Waste Isolation Pilot Plant near Carlsbad, New Mexico. At this facility, DOE assumed the site

was dry, and as we now know, that is contrary to what has been discovered.

Just recently, the National Research Council's panel on Radioactive Waste Management issued a paper that calls for drastically overhauling the process for opening the repositories at WIPP and Yucca Mountain. The panel stated that planners must be given more flexibility in predicting the geological future of these sites. In addition, they charged that the current rigid, inflexible requirements of the Nuclear Waste Policy Act caused the numerous opening delays of these facilities. They likened the current process to a scientific trap for encouraging the public to believe that safety can be guaranteed for thousands of years.

In continuation, they want the Environmental Protection Agency to loosen their rigid performance standards for waste dumps, and instead, rely on a reasonable level of assurance.

Citizen Alert would concur with Robert Neill, Chief of New Mexico's Environmental Evaluation Group which monitors WIPP, that changing the rules now will clearly have the appearance to the public of watering down the standards. No doubt.

In other quarters, DOE's credibility is under fire in light of chilling evidence that it has contaminated 126 out of 127 facilities where it uses radioactive materials.

Economic and emotional costs relating to people's health and long-term environmental contamination often cannot be quantified at these facilities, much less rectified and somehow recovered and compensated.

In a recent General Accounting Office report dated March, 1990, on Nuclear Health and Safety, entitled: "Need for Improved Responsiveness to Problems at DOE Sites," it stated that, "because of past mistakes, overemphasis on production, inattention in the environmental area, and complacency with regard to safety, DOE faces the immense task of cleaning up."

In fact, DOE's computer data as of January, 1990, illuminated 1731 safety and health problems identified in technical safety appraisals, and 1277 environmental problems identified through environmental surveys. Of these, "DOE and its contractors have resolved only 591, or 34 per cent of these problems. Further, only 46, or 41 per cent of the 113 highest priority problems have been resolved. Some of the unresolved problems were identified as early as 1986 as needing immediate corrective action."

The report continues to state that, "In regard to environmental problems identified in DOE's environmental surveys, none are considered resolved by DOE. Many of these problems are complex and costly, requiring further analysis to fully define and long-term efforts to resolve."

It continues on by saying that, "DOE and its contractors have been slow in developing and completing some of these plans and have, in some cases, not met established DOE milestones. Some uncompleted plans have been in the process for over two years."

As an afterglow, the report stated that 24 per cent of the sites have groundwater and surface water contamination, 15 per cent waste management problems, 18 per cent management problems of inactive waste sites, 5 per cent have quality assurance problems, 17 per cent have toxic contamination, 13 per cent have air contamination problems, 4 per cent soil contamination, and 3 per cent have radioactive contamination.

These types of figures, especially from the respected GAO, only serve in hardening our resolve against DOE and its alleged ability to protect our environment from radioactive releases. In regards to the high-level waste repository program, Nevadans are now asked to accept DOE as the guiding force in bringing the nation's civilian nuclear garbage to our state. With problems correlating and paralleling history at its other facilities, we in Nevada say, "Not a chance."

In addition, DOE, in varying degrees, is in non-compliance with various federal environmental and public health and safety laws. These laws, such as the Resource Conservation and Recovery Act, the Clean Water Act and the

Clean Air Act are under attack at DOE facilities and place nearby communities at risk.

What assurances can DOE give to the State of Nevada that major problems won't crop up in regards to these laws as they proceed to expedite their interpretation of the Nuclear Waste Policy Act? With regards to federal weapons facilities, do I need to give a detailed list of contaminated communities and their associated problems to get the point across? In plain English, DOE has a fatal credibility problem, and continuing with Yucca Mountain will only make a bad proposition lethal.

Citizen Alert's bottom line position on nuclear waste disposal in Nevada or anywhere is that nuclear waste by-products, whether generated from nuclear weapons production or commercial powerplants, must stop. It is fundamentally irresponsible to go on producing the world's most lethal garbage in the absence of any known, safe, long-term method for isolating the wastes from our biosphere.

Thus, our specific recommendations are as follows: First, before any further steps are taken in the nuclear waste program, save a Congressional revisiting of the Nuclear Waste Policy Act, high-level nuclear waste production must cease. If we have no disposal method, why create more to deal with?

Secondly, DOE must be removed from managing the nation's nuclear waste disposal program because of its

conflict of interest and its lack of credibility with the public. DOE's conflict of interest is wrapped up in its dual roles as it tries to simultaneously promote commercial nuclear power and then attempt to manage a fundamentally flawed high-level nuclear waste disposal program. Also, its federally mandated charge to produce and test nuclear weapons contradicts its charge to clean up its environmentally-contaminated and community-based production facilities.

As long as DOE remains at the helm of these highly controversial and, in some cases, diametrically opposite programs, citizens will continue to view the high-level civilian dump program with suspicion and will doubt even the most well-meaning of DOE's decisions.

Calls to remove DOE from the nuclear waste program have not only come from governors, members of Congress and citizens' groups, but from DOE's own blue ribbon commission. In fact, an Alternatives to Financing and Managing Panel was established in 1985 by the Secretary of Energy, which recommended that DOE be removed from the program.

For specific recommendations as it relates to waste, we support Nevada's Senator Bryan and his recent legislation to enable nuclear utilities to develop and use on-site dry-cask storage faculties for high-level commercial wastes. Advantages of this approach would include the identification and mitigation of transportation risks, and the allowance of

more time to develop sufficient understanding of differing long-term methods of approach in the isolation as outlined under what we call a comprehensive Manhattan II project.

Manhattan II would begin with the same level of commitment to and ideal that characterized the original Manhattan Project. This time, however, the ideal would be to develop a publicly acceptable and technically defensible process for the long-term isolation of by-products created in the wake of the original Manhattan Project. This would necessitate that individual senators, congressmen and citizens from states that host nuclear power plants, acknowledge that they have a responsibility to deal with site-specific waste generation. No longer can they just truck it to some state they have identified as a wasteland because of a less population base and, hence, political base. Producers have no right to dump on a rural state or its native people. There are real people who call Nevada home, and the clear majority here are mad as hell.

In conclusion, the United States and its nuclear programs have a problem. No longer can we pursue a political fix for a technological mess that reflects an out of sight and out of mind attitude. For Nevadans, we will continue to fight this deadly scheme. Unfortunately, DOE and its propaganda machine will continue to pump nutrients into the high-level repository's corpse so that the rest of the nation can forge

ahead with their deadly game irregardless of the facts.

Thank you for this opportunity to speak.

Questions; comments?

DR. NORTH: I'd like you to expand a little bit more on your background. Could you tell us a little bit more what you were doing on the basalt high-level waste site in eastern Washington?

MR. WILKINSON: I was heading a committee for the Hanford Education Action League. Myself and eight other people joined together to create that organization to specifically review some of the issues that Hanford was looking at at that time, the repository being just one of many, actually, because of the defense activities that take place at that facility.

So one of the big things that we were looking at at that point in time at the Hanford Reservation, was that they were saying that it was completely basalt all the way down, and we were--we had some technological information that stated that there was actually--I'm really not too sure of the exact wording, but that there was, in essence, river rock in between the basalt flows, and that there was some aquifer issues that hadn't been adequately addressed on the basalt studies, or the site characterization.

DR. NORTH: Was that an area of expertise of yours, geology, or were you playing a different role within this organization?

MR. WILKINSON: I was playing more of a directorship. In essence, there was five of us on the committee that reviewed the environmental assessment for Hanford, and we each chose particular areas, and I actually sat down and read the whole document, which was quite a phenomenal feat in and of itself, but it's just an interest. It's gathering the information from alternative sources of information, comparing it to what DOE had presented in the EA, and calling for additional studies.

DR. NORTH: You said you've been living in Reno for two and a half years. Have you been working for Citizen Alert for that whole time?

MR. WILKINSON: No. I quit land surveying in February, when I went on staff with Citizen Alert, and I've known Bob Fulcherson (phonetic) and many members of Citizen Alert ever since the high-level repository began. In fact, we have annual meetings here in Nevada where we bring activists that are concerned about the high-level program to the State of Nevada, and we strategize about issues that surround each of the sites, and our last meeting here in August was our sixth meeting.

DR. NORTH: Thank you.

DR. CANTLON: I take it from your remarks that you're focusing primarily on the, what one might call the political course by which the Yucca Mountain site was chosen. Has the

organization looked at any of the technical studies that have gone on in Yucca Mountain, and do they have any kind of an assessment and, if so, I'd like to know what the assessment is based on?

MR. WILKINSON: Yes. We have reviewed many of the scientific papers that have been put out by DOE and others. One of the primary ones that we support and use is Jerry Syzmanski's report that says that there is current, you know, that there is some volcanic issues that haven't been addressed; that the site is still quite active and has that potential.

Thank you.

DR. CARTER: Well, thank you very much. We appreciate your coming and making a presentation today.

I think what I'd like to do now is take a 20-minute break, and we will recess, then, for 20 minutes and we will resume at 3:20 p.m.

(Whereupon, a brief recess was taken.)

DR. CARTER: First thing let me do, I mentioned earlier that the meeting tomorrow, beginning at eight-thirty and running through one p.m., would be here in the Oak Room. Actually, that's incorrect and I now understand that we will be meeting not directly across the hall, but in the hall but on the other side in the Manzinita Room in the morning, so you might make a note of that.

Let me go back now and find out if we have a representative of Nye County this afternoon.

(No audible response.)

DR. CARTER: All right. The next presentation will be by Dick Belsey. He's from Portland, Oregon. He's an M.D. He represents Physicians for Social Responsibility.

Dr. Belsey?

DR. BELSEY: Thank you for the opportunity to talk to you.

I've been working on the issue of containing the high-level wastes going back to February of 1984, when I led a study group in Portland, learning about all of the activities going on at the Hanford Nuclear Reservation. That was, as J.R. said, one of the sites that was being considered at that time and finished the job of the study group in November of 1984 and shortly thereafter, in December, started testifying in the hearings on the EIS on that, and subsequently have been involved in a number of Congressional hearings and Department of Energy hearings on various aspects of the nuclear waste management program.

As a result of that, I was appointed first to an Oregon Department of Energy Citizens' Advisory Committee on Hanford, and then, subsequently, the legislature formalized that and set up in Oregon a Nuclear Waste Board, and I'm on the Advisory Committee to the Oregon Nuclear Waste Board. At

the same time, Physicians for Social Responsibility became interested in concerns about the impact of nuclear weapons production on public health, and I was appointed to physicians' task force looking into this as part of National PSR.

DR. CARTER: I wonder if you'd--what's your specialty, Dr. Belsey?

DR. BELSEY: I'm an internist, endocrinologist, and clinical pathologist, and I've used radioactive materials as part of my professional life going back 25 and 30 years, and I have a great deal of respect for them. I've used radio iodine to treat patients, to scan patients, used radioisotopes in a variety of in vitro assays for diagnostic purposes, wrestled with the disposal of our radioactive wastes in the laboratory and, in fact, found out about the Hanford Nuclear Reservation through that activity long before I came west, because every year I had to sign a certificate to Dixie Lee Ray, who was then in charge of nuclear safety in the State of Washington, saying that the stuff that I was sending was really what I was sending, that it was packaged adequately.

In fact, when I came west I looked for Hanford on the map of Washington, and on my AAA map I couldn't find it. Now, 570 square miles of terrain is hard to lose, and it wasn't until January of '84 that I read an article in Northwest magazine about the atomic city, Richland,

Washington, which is how come I then started on--looking into it with this PSR task force.

DR. CARTER: So you take advantage of not only nuclear medicine, but, I presume, also, radiology as far as x-rays and all that in your practice?

DR. BELSEY: Yes.

Anyhow, I was thinking back how I should deal with the issue of the repository that's being considered for Yucca Mountain, and thinking back to my testimony in December of 1984 when I was absolutely overwhelmed, because I felt as though it was up to us to convince the DOE that they shouldn't do what they wanted to do, rather than feeling as though we were telling them the issues and they had to go and prove that they could actually do it, and do it effectively.

And I remember the EIS. I mean, it was this thick (indicating) and contrary to most books, it had two pages on each--printed on each side of each page so that you open a book and you're looking at four pages, and at my age, I have to go and use my glasses, take off my glasses to magnify it so I could read it, no less understand it. And it was absolutely overwhelming and intimidating, and then the Defense Waste EIS came, and every one of them, I've really felt on the defensive.

Well, the events of the past two years have really changed that for me, and I'm coming here to bring a very

different message, and it's a plain and simple message. It's got to do with the technology, the containment, the National Research Council's statement that there's nobody alive today, really, who can certify a technology that will remain intact for 10,000 years. Their answer is to change the rules. My answer is that that's a perfectly reasonable standard to aim for, and that what we want to do is we want to figure out a way that we can manage the high-level nuclear waste in the interim while we develop a technology and prove a technology which will, in fact, meet those guidelines, and we can do that and we can meet the goals of the nuclear industry, and we can meet the goals of the people handling the nuclear weapons waste with what I want to propose.

The other thing that I want to get to is talking about being on the defensive and figuring that we have to convince you all that DOE shouldn't do this, and raising questions about the DOE management's ability to do anything in other than a slipshod way, and that to answer their culture, which is that there's a technologic solution to every problem.

Let me first deal with the issue of containment and other options. In preparation for the original BWIPP EIS, I went back to this 1967 symposium, the Blue Book, looking at a variety of technologies, and agreed that there was no reason that we could consider shooting this stuff into space or burying it in the sea beds. But one of the things that was

proposed there and was beginning to be evaluated, or they were proposing, was building some arcades in the Rattlesnake Ridge, up above the water, up above sea level, and setting up a monitored, retrievable storage facility.

One of the problems that we're facing here is a politically driven schedule that's part of the Nuclear Waste Policy Act; not only safe storage for 10,000 years, but you've got to meet the schedule. You have to do it yesterday, but you can't do it yesterday, so you've got to do it tomorrow, and one of the things that I think needs to be done is to pick up on NRC's idea and say, "We need to buy time." It's expensive. It will cost ratepayers. It will cost the government on the defense waste management, but if there's no way to do it safely to meet the standard, then we have to take a step back and say, the schedule's unrealistic. The concept is unrealistic, and we need time in order to develop the engineering and to test the systems to get at least some confidence that they will be able to isolate these and contain these terribly hazardous wastes over that period of time.

The other part is really something that I find very sad. I know that during a hot war and the cold war, there were a lot of corners cut in order to stay ahead, to gain parity, to do a bunch of things. We are now 45 years into the nuclear weapons and nuclear power age, and they're still doing things--at least on the DOE side--as though they're fighting

that war. And it seems to me that we need to begin to look at that and say, do they really have the confidence and the ability to do the job in a way which will be effective? What kind of things am I worrying about?

We've had some issues with some tanks in the Hanford waste forum, and I'm only using these as examples, but I have with me the Savannah River Health Physics Study, which says substantially the same thing; the Ahearne Report, which says substantially the same thing; and the TIGER teams going around the DOE facilities, which are saying essentially the same thing.

Here we have a tank which has been generating hydrogen which could lead to a potentially dangerous explosion. The Blush Report says that there was no contingency plan if the tank heated up. Why should the tank heat up? Well, they pump air through this in order to keep it cool, but there was no redundant power supply, so that if the power went out, the ventilation stopped. There were no relief tanks tied up, and even if there were relief tanks, looking at the sludge-like material that's in this particular tank, it's unlikely that they would have really been able to move it in real time.

And what did the Blush Report say? It said that the design of this tank did not take into consideration what was actually done. It considered a homogeneous sort of liquid

material and a homogeneous sludge after concentration, but what happened was that the operational side went and pumped in things and pumped it out and concentrated it, put it back, pumped other wastes in of unknown mixture and went through the same kind of process. Thirteen years ago, it started burping hydrogen, presumably from some organic material that got put into the tank. This was not covered in any of the safety analyses until 1988. It never got into the operating safety policies and limitations. They essentially were operating that tank on the wishful thinking school of engineering, and reassuring us all the time that nothing was wrong, there were no problems, and everything was okay.

The Ahearne Report talked about the bird cages, the birds' nests on the ventilator intake side of that ventilation system, and noticed that the tank had settled and the effluent piping going to the HEPA filter had dropped down and had separated, and what did the advanced technology of the Department of Energy do to deal with that? They wrapped it in polyethylene baggies and held it on each end with duct tape. Now, is that the kind of thing that we can put up with in terms of considering the design, the management, operation and building of a high-level repository anywhere?

And so, I think in terms of considering the high-level repository, we also have to think not only of the technology, but of the people that are currently responsible

for carrying this out.

After the Savannah River Health Physics Report, I was really impressed that Admiral Watkins came out and made the most important statement that I've heard from the Department of Energy since I've been involved in this. What he said was that the hardware and plumbing of the Savannah River reactors is now okay. He said, "But the people in Savannah River cannot run that facility safely, and we will take the burden of not producing anymore tritium until we are confident that that plant can be operated safely."

It is now two years after that, and that plant is still not open for exactly the same reason. He has tried to change the culture, but it's awfully hard to change because, you know, people have their way of doing things.

So my plea to you is to change the rules of consideration to the extent that you not only look at the technical feasibility, but expand it and say, "Who's the best person to do it, and how should it be done?" The other part of that, of course, is that the DOE has been its own policeman, judge and jury, even though they've been out-manned. They haven't had the people, really, to put out on the street to police the contractors, but they set their own standards and they looked over it, and it's all secret in the name of national security. And after 45 years, I have to say I think it's enough. I think that it's time, as Admiral

Watkins said and the Health Physics Study at Savannah River said, that the DOE learned from the nuclear industry and meet those kinds of standards, and subject themselves to the oversight of organizations that have been put in to maintain the health and safety of the public and workers for every other nuclear industry and much of the rest of the manufacturing and service industry in the country.

That's perhaps the Nuclear Regulatory Commission for the reactor safety. People will say their rules are not strict enough, but compared to the DOE's operating things, they're much better; NIOSH for the occupational health and safety, and the Environmental Protection Agency for the environmental contamination.

Thank you.

DR. CARTER: Okay. We appreciate that.

John?

DR. CANTLON: Well, I would only comment that the Board, of course, is brought into being by Congress with a specific charge, which is to look at the technical aspects of DOE. So it's probably not narrowly, at least, in the charter of the Board to find another agency to do it, but your comments on DOE's performance are certainly well taken.

DR. NORTH: I might add that at our first meeting as a Board in Washington, we met with Admiral Watkins, and he encouraged us to go out and listen to everybody, and he also

told stories of his own perception of the AEC, which became ERDA and then DOE, and how he and his colleagues in the nuclear submarine service had some considerable questions about the culture at that time.

DR. BELSEY: Yes. Nuclear cowboys.

DR. NORTH: So there's clearly a problem and, you know, we've heard a lot of people today talk about trust and credibility, and I don't think there's any question but what DOE has some severe liabilities from its past history. But our job is technical oversight of the site characterization program, and we're looking for specific areas where we can provide useful advice, according to our statutory charter, to the Secretary of Energy and to the Congress as to what are the problems that need to be dealt with.

DR. BELSEY: Yes, and from my perspective, the independent oversight is critical to that, and the establishing of standards and the auditing of those standards. I think that that's key. One of the problems, of course, is that there are stresses and strains in the DOE itself. As you know, there's been pressure in Congress to move the health studies out of DOE, both the worker health studies and the downwinder and downstreamer studies out of DOE.

Well, his SPIRA Commission suggested that, in fact, they should be moved to Health and Human Services, but the way he chose to do that was through a memorandum of understanding,

which means that the health studies go into the Department of Energy budget on a year-by-year basis, and that the Secretary, whoever they may be after Admiral Watkins or the Admiral himself, are then free to Pare or cut or use those things and that money any way that they want.

So I'm not wholly enamored of the way the Admiral is choosing to do that, and I would suggest that--and our organization is working to try and promote the legislative and statutory approach to move them out of DOE and into Health and Human Services by statute. So I know that that's not your job, that's our job, and we're working on it.

DR. CARTER: Let me mention a couple of things; that, in particular. I'm generally familiar with this. I'm on the National Academy of Sciences Epidemiology Committee that's looking at the biomedical data. We have a draft report at the moment, and I would suspect that it should be out in the next several months, would be my expectation, and just what you say is true, in fact, that the biomedical data now, as far as that's concerned for all of the sites, will be taken over, I think, through this memorandum of understanding by Health and Human Services.

Now, we're recommending--and I suspect that it will fall on fertile ground within DOE--that all of that data be freely available basically to anyone, not only people inside the DOE system and their contractors, but to anyone else that

has an interest and a use for it.

They also are putting together, as you probably know, a rather large computer-based system that will help assure that that is the case; that it will be available, and I think readily available, and that's certainly been a bone of contention for a number of people over a number of years, so I think the system is moving in that direction. It may not be moving as quickly as some people like.

The other thing, of course, as Dr. North said, we don't have a charter to look at the high-level waste storage system at the moment, and certainly, there's enough interest, and so forth, in the--I believe it's the 101-SY tank at Hanford. The interesting thing to me, that all of this sort of thing now is public information. There's a lot of people in. It's been illuminated, if you will, ventilated, as the lawyers say, so in years past, I daresay that you or I or a lot of other people would even know what was going on, and yet, these days, it's certainly out for public scrutiny, almost.

DR. BELSEY: I have lived long enough with the Department of Energy, and the winds have changed. There was a time that Mike Lawrence, in 1984 and '85, did the same thing. He opened up and every week, every week there was things coming out and then, all of a sudden, that got uncomfortable so they closed it off. And what I'm saying is that I agree, the winds of

change are wonderful and the Department is making those things more readily available, but I think that it needs to be institutionalized because secretaries change, and the people need the information in order for the democracy to work effectively.

DR. CARTER: Yeah. Another thing with the 101, before we leave it, of course, you know, we can talk about it and we can talk about the seriousness or lack of seriousness of the problem, but actually, thus far, at least, nothing untoward has happened as far as that particular tank is concerned.

My personal opinion is, what they really need is a sample of material out of that tank, or several samples, to tell them exactly what they have in it. But that's an issue for another day.

DR. BELSEY: They are in the process of doing that. They were waiting for the October burp, so that the mass of accumulated hydrogen would move down, to start taking a core of that tank. The problem, of course, is that the tank is not homogeneous at all, and one sample may or may not give them a picture of what's going on there.

DR. CARTER: Well, some people feel as a matter of technical information, that if they can sample the crust in the tank, that will give them adequate information. That point may be debatable. I certainly agree that the contents of the tank are not homogeneous, and the burp we're talking

about, by the way, is gas is built up underneath the crust on the tank, which has liquid underneath and a crust on top, and then periodically this gas is released and it essentially burps, so you've got a very small version, I guess, of Old Faithful. They can predict this thing rather adequately, or accurately as to when it's going to occur.

DR. BELSEY: Every six weeks.

DR. CARTER: Another thing I wanted to mention to you, as far as the standards are concerned, the National Academy of Sciences, as well as others, have asked that these be looked at. Now, there are a number of other reasons, other than some of them that you've mentioned. For example, there are incompatibilities now between 40 CFR 191 of the EPA and between 10 CFR 60 of the NRC, and these actually have to be conformed before this process is over. So there's a number of issues here that the Academy and others are concerned with.

Another thing I wanted to ask you, for a matter of record, you mentioned the Savannah River Site Health Physics Report. Now, they put out thousands reports over a period of time. Which one are you talking about?

DR. BELSEY: September, 1988.

DR. CARTER: Now, is this their environmental monitoring report for the previous year?

DR. BELSEY: No. This is a special report where--

DR. CARTER: Do you happen to have the reference to that?

DR. BELSEY: I have it up in the room. I have the actual report up in the room. It was put out by the one health physicist from Central Office, who actually went down there, and that's who I received the copy from. It was a Central Office Health Physics Study, Special Study of Savannah River.

DR. CARTER: Okay. If it's not any problem, if you'd give us that information just for the record, we'd certainly appreciate it.

DR. BELSEY: I'd be pleased to. Certainly.

DR. BARNARD: Doctor, do you believe that geologic disposal at a suitable site is a reasonable way of dealing with spent fuel?

DR. BELSEY: I'm not really sure at this point. The real issue is whether the geologic repository can actually contain the dangerous parts of the spent fuel. When they were considering the basalt waste isolation project, they were talking about packing these arcades with the ground up basalt, and that would retard the movement of water into and out of the repository. Well, it turned out that the heated basalt powder actually--not only did not retard the movement of water around the repository, it actually facilitated the movement of water, and I've been down in the Gable Mountain shafts and looked at the experiments and reviewed some of those studies, and they left real questions as far as the technical issues. And, as I say, the idea that there's a technical solution to

everything, I guess, really begs the question of whether the DOE, as it's currently constituted in this sort of transition, is really competent to do a reasonably safe job.

But I'm not confident that deep geologic repository is the way to go. If the study, engineering studies could be done and suitable things developed, I think that it might be. It's one thing that certainly should be considered. I don't rule out anything except, now, sending it off into space or putting it into the sea beds, although people are reopening the issue of sea beds with, you know, putting it into the ooze where it's sort of like back in the womb, and the cans won't break open. I'm not real sure about that.

DR. BARNARD: Would developing long-lived canisters increase your confidence that the waste would be isolated for several thousand years?

DR. BELSEY: I really--it's a matter of--my bag in laboratory medicine is quality assurance, and you make up a plan and you go and then you test the plan. In other words, it's fine to do computer modeling and things like that, but there is nothing like, for example, aging of reagents, aging of instruments, seeing how they work when they're actually in use, wear and tear. You come up with things, as we know with the automobiles and other appliances we've bought, they've been engineered, and yet there are recalls all the time because the engineering people work to the 99.9 confidence

limits. But when you put out a million cars, there's the low frequency, but high value things like throttles getting stuck and not being able to stop the vehicle, which is a fatal flaw. And that's my concern about the engineering of this technology; low frequency events which have potentially catastrophic effects on the environment and on the people. It's mostly on the people that I'm concerned about.

DR. NORTH: I'd like to ask you about low-level waste. What are Oregon's plans to dispose of low-level wastes, such as the radioisotopes you've used in your medical practice?

DR. BELSEY: I'm not really sure. There is the, I guess, the legislation or statute now that regional burial grounds are necessary. U.S. Ecology runs a low-level waste disposal site on the Hanford Reservation. I haven't--I've been more concerned with high-level wastes. I have not looked critically at that, not because it's not of interest to me, but the other things that I've had to be concerned with are so much more pressing.

So I think that, in fact, North Carolina and Massachusetts and people like that need to find regional areas to put their low-level waste. I think that we, in Oregon, can come to an agreement with Washington to do that. We've worked very closely with the Department of Ecology on all of the Hanford things. In fact, we have an interchange of some technical specialists looking at special problems there.

One of the Oregon Department of Energy people is the vice-chair of the Technical Steering Panel. We have a former head of the Oregon League of Women Voters who's a citizen representative on the Technical Steering Panel. We have worked very, very closely on all of these issues, and very cooperatively and productively with the State of Washington, and I think that we will be able, either in a site in Oregon out in Arlington, or one of the places where Washington dumps its solid waste, or at the Hanford Nuclear Reservation. We will come up with a satisfactory solution for Oregon.

DR. NORTH: But you have not as yet; is that correct?

DR. BELSEY: I don't know. As I say, it's not been an issue of interest or import compared to the other.

DR. NORTH: To what my understanding is, there are only a few states in the country that can claim any prospect of meeting the Congressionally-mandated deadline for siting low-level waste.

DR. BELSEY: Right. I don't know whether Washington--

DR. NORTH: And do you think this is a problem having to do with the risk of that waste inherently?

DR. BELSEY: No, I don't think that--knowing the kind of things that get buried there, I am much less concerned with that than, for example, the transuranic waste which, in many ways, looks exactly alike, but has some things which hang around for 100-125,000 years. Radiologically, they are

different kettles of fish.

DR. CARTER: Let me mention for the record, I believe that Oregon is in the same compact, the Northwest Compact, with the State of Washington, and I suspect maybe a couple of other states, and I think the intent or the plan is to continue to use the Hanford site into the future by that compact. Now, they may change the engineering, the way that they handle the waste or a few other things, but I think the intent of that compact is, indeed, to use the site there at Hanford for that.

DR. BELSEY: Thank you very much.

DR. CARTER: Very good. We appreciate very much your time. Thank you, sir.

Our next speaker is Dr. Vladimir Popov, and I hope I've pronounced the name correctly, and he's in the International Physicians for the Prevention of Nuclear War, and he's visiting in this particular area, comes to us from Moscow, and we're pleased to have him.

Let me add one other thing while we're doing this. This is a personal note. I mentioned a little bit earlier that I had had the opportunity to visit your country one time, went to a medical symposium in Kiev that dealt with the medical aspects of the Chernobyl accident, and what I wanted to mention, in particular, we not only visited in Kiev, but also the Chernobyl site, Tritiac, and some of the other nearby

towns and villages to Chernobyl, but our hosts and guest--we were guests of the hosts, and they pressed the medical community in Kiev into serving as guides, interpreters, and a number of other things, so I'm personally indebted to the medical community in the Kiev area for the hospitality, and so forth, that they showed us during that visit.

Thank you.

DR. POPOV: If you come to our country again, to any part of USSR, you'll get the same type of treatment, that's for sure.

First of all, I would like to thank the people who invited us to your country. This is the PSR, the Nevada chapter of Physicians for Social Responsibility, based here in Reno.

As it was mentioned above, I represent International Physicians for the Prevention of Nuclear War, so my message is not just about nuclear waste dumping. It'll be a little bit different, but anyway, I think it can create some kind of interest.

Two years ago, International Physicians for the Prevention of Nuclear War decided to create an international commission to investigate the health and environmental consequences of nuclear weapons production and testing. This commission is supposed to get all possible information on these effects, not only production and testing, but also

includes nuclear waste dumping in all countries of the world.

In the USSR, we have a lot of problems to deal with. You have just mentioned Chernobyl accident, but in 1957, we had explosion of nuclear waste in Kushtim Region, and for all these years it was kept undercover. It was highly classified information, just recently published information, with technical data of what really happened in this region. We can call it ecological disaster; what can result if people are not paying appropriate attention to this problem.

Now, as far as I know, a new technology was created which theoretically guarantees about 10,000 years of this nuclear waste, so it can be kept safely. But I'm absolutely sure that in late fifties, people who created our nuclear waste dumping center in Kushtim were absolutely sure that what they did was right and it will be safe forever.

So my main message is that we make a lot of mistakes in our country, at Chernobyl, at Kushtim, and we have real sorry situation with our nuclear test site in Semipalatinsk Region. Now, just from one side, it looks like nuclear tests have nothing to do with nuclear waste dumping, but I think it's almost the same. What is nuclear explosion? When a huge amount of radioactive nuclides, they went out everywhere. A lot of them, they stay underground if there's an underground test, and it is real radioactive symmetry. But if in a nuclear waste dumping center, it is concrete, it is stainless

steel, it is glass they use to protect it, but after nuclear explosion, there is nothing to protect this waste from getting outside. It can get into water, underground water, into biological chains, into animals, everywhere. That's what we have in Semipalatinsk Region.

So I think it is not necessary to repeat the same mistakes again. You can learn a lot from our sad lessons, so for many years our country was--our government lied to us, lied to our people. I think it's high time to tell the truth, what really happened in our country, and we want people of America to get to know what really happened in our country.

This morning it was announced that our President Gorbachev got Nobel Peace Prize. We're really proud of our President. He did a lot for the national community, but anyway, I still think right now he must do everything in his power trying to stop nuclear tests, both in the Soviet Union and in the U.S. We have a unique opportunity nowadays. On October 19th, it will be exactly 12 months since the last Soviet nuclear test. It is some kind of peaceful moratorium, but it was not proclaimed officially by our government. It was proclaimed by people of the Soviet Union, because pressure was applied to our government that was so strong. They are not just afraid, but they do not want to explode right now. It can result in some kind of social turmoil in this region, so it's an example how people can influence their government.

And from what Dr.--the previous speaker told you, you can understand that just a lot of what's called "bad things" happen in the States, also, and you have a lot of problems. So it's high time to stop what we're doing right now and we must think before just taking any other steps.

And just the last message is that we came here not as representatives of our government, but to represent people of the Soviet Union, so this message goes from the bottom of our hearts, and if this information was of an interest to you, I'm really grateful.

Thank you.

DR. CARTER: Very good. We certainly appreciate it very much and I think on not only behalf of our Panel, but also on behalf of the Nuclear Waste Technical Review Board, we'd like to extend our warmest congratulations to President Gorbachev for the acceptance or receipt of the Nobel Peace Prize. I think most people in the United States are very pleased with that, so I'd like to offer that to you and I hope, if you have the opportunity to communicate with him when you return home, you will pass that along on a personal basis.

DR. POPOV: I'll try to do that.

DR. CARTER: I wonder, could we ask you a couple of questions or make some comments, please?

DR. NORTH: You were mentioning the problems of the weapons test site in your country, that this was a nuclear

cemetery, that you had problems with contamination of groundwater and biological food chains. Could you be a little bit more specific about what's been done to examine those problems? I think that's probably a question of great interest to a lot of people here in Nevada, as to what that situation is.

DR. POPOV: I brought two reports with me. This report, it is in English and we can make a copy, was produced by a governmental commission which worked in this region May and June, 1989. In the middle of July, 1989, the first open--I mean, just not secret--conference took place in Semipalatinsk. The main issue which was discussed, what's really going on in this region.

I think there were some secret meetings about these nuclear test site problems, but it--for the first time, it was made open to the public. So this commission consisted of people from Ministry of Defense and other defense-related ministries. It's pretty controversial. It is people who belong to Ministry of Defense, and the main idea given by them is that there is not any danger at all for people living in this region, but Kazakh physicians and specialists in physics of health from Kazakhstan, they say different things, that it is sort of dangerous and a lot of technical data.

But just before I left Moscow, I got another report. This one comes from Kazakh Parliament. One of our activists

was elected member of Kazakh Parliament recently, and right now he's the head of special commission of Kazakh Parliament. This commission works on what we call health protection or health care. So this report was based on the same information, and I would like to read a few figures from this report. So the main idea of this report is the following, that for all these 40 years, the Soviet government lied to local people, to people of Kazakhstan. It was really dangerous.

So in this report you can get all necessary information; when they exploded, what happened, what about gamma exposure, alpha beta, and all this stuff. I would now just read a few passages from summary--from resume.

For example, just due to this report, about 50 per cent of local population suffer from different forms of immuno-deficit, 50 per cent. In Kazakhstan, children with mental disorders or mentally retarded children appear three times more than in other parts of the Soviet Union. They have growth of oncological diseases; first of all, stomach cancer, lung cancer, leukemia all over this region. About 41 per cent of local adult population suffer from different forms of neurological diseases. Physicians think a lot of such problems were caused by radiophobia and seismophobia.

During the first explosions, which were made above the ground, in all just near areas like Semipalatinsk, all

glasses were just shattered, but it's not the most impressive part of this report. I was three times in Kazakhstan. Once I was at the Soviet Nuclear Test Site. I met our general--I mean, head of our nuclear test site twice, and I talked to local people many times, many of them, and I was told a really sad story, that during the first explosions which took place in 1949, 1953, at that time, Lavrenty Beria was the head of our nuclear project from the KGB chief, and at that time they used Kazakh population like guinea pigs.

United States has got some experience of--in Hiroshima and Nagasaki, and they need some data, some experiments to get some information in this field, also, so they removed 90 per cent of population, but they always left one or two village, and it's like 13 miles, 25 miles from the ground zero, so it's pretty close. And then they will return these people, like one group in a week, ten days later, two weeks later, just to expose them to different levels of radiation.

And for this almost 40 years they had special clinic. Officially, it was clinic like to some infectious disease, infectious disease status in this region, but in fact, they collected data about people who lived in this place during this underground atmospheric and other tests, so it was like a huge lab the size of the whole region of Kazakhstan. And when I talked to these people, you could not stop the--

it's so impressive and you really believe them. It's not just some kind of story.

I met a lot of old gentlemen decorated by high honors from the Soviet government, just medals and all this stuff, and they told me that we were betrayed by our government. We fought for this government during the Second World War, and then we were betrayed. So it's a sad message, but anyway, it's the way it is. And I can also leave you a copy of this message. It's in Russian, but you can--if it is any use, you can always find someone to translate. You can get it from local PSR chapter.

DR. CARTER: Let me ask you a follow-up question on the accident that occurred in the waste area in 1957. Of course, there's been some information in the American scientific literature in the last few years, but I want to ask you two questions in particular.

One, what was the nature of the waste disposal site? In other words, what types of waste were disposed of and how. That's the first question. And then, what initiated the accident? Was this a criticality accident or something of that sort? Those are the two questions.

DR. POPOV: Okay. So, first of all, the nature of this nuclear waste, it was mainly strontium, am I right, pronouncing?

DR. CARTER: Yes, that's correct.

DR. POPOV: Strontium, etrium and uranium isotopes, different types, and also some others like ribidium and some others. They think that the main problem was when they used huge steel tanks. These huge steel tanks, about 70 or 80 tons each, I mean, they contained 70 tons of this nuclear waste.

DR. CARTER: Now, these were at the surface of the ground? They were on the surface, or they varied?

DR. POPOV: No. It was a huge, like a swimming pool of enormous size made from concrete, and they put huge steel tanks into the swimming pool, and they used water from the closest river, so they used this water to cool it down, so it was like a swimming pool with a current, you know.

DR. CARTER: Cool the outside of the tanks?

DR. POPOV: Yeah, yeah, cool the outside of the tanks, so water went between walls of this huge pool and tanks, and with the broad chemical processes still going on within these tanks, they became lighter, so they started to move up. At the same time, they had, in 1957, serious problems with ventilation, with ventilation system and with control system, and finally, because of chemical reaction, potassium nitrate and potassium acetate, so because of chemical reaction between these two substances, finally it exploded. So it was not a nuclear explosion, it was just chemical reaction which resulted in explosion.

And about 70 or 80 tons went outside, so about 10

per cent--it means seven tons--were lifted to the height of about one kilometer, and these seven tons, they formed radioactive cloud, a huge radioactive cloud in this region. Other 60 or 70 tons were disbursed just around this area.

So this radioactive cloud went north/northeast and it covered territory of Chelyabinsk, Sverdlovsk and Tomsk Regions, so if we take radioactive waste like 0.1 curie per--no, no, it's not curie, it's--do you use curie, also? So it's 100,000 curie per square kilometer, so the territory of the radioactive fallout, I'm sorry, just it's difficult. I'm a physician, but I'm not specialist in chemist, so that's the problem. So the longitude of this trace was 300 kilometers and width was about 30 to 40 kilometers, so it was a huge, quite a huge territory was covered by this explosion.

DR. CARTER: All right. We certainly would like those. I'd particularly like the one on the accident in 1957 if you have it, or we could make a copy of it. I'd appreciate that very much.

All right. Let me ask one other--what is your particular medical specialty?

DR. POPOV: I was trained as an eye surgeon. First I went to the University, so I was trained as a general practitioner. Then I specialized in eye surgery for almost two years.

DR. CARTER: Okay. Very good. Well, thank you very

much. We certainly appreciate you being here. We hope you enjoy your visit to the United States very much.

DR. POPOV: Thank you.

DR. CARTER: Our next presentation will also be made by a visitor from the USSR, and it's Dr. Keshileva. I hope I'm saying that reasonably correctly, Dr. Keshileva.

DR. ZURA KESHILEVA: Thank you for the chance to talk here.

MS. ALLA GOLDMAN: (Interpreter) We was brought here by Nevada chapter of Committee of Physicians for Social Responsibility, which is part of the Committee of Physicians Against Nuclear War.

We appreciate people of America and what are you doing here on this earth. We are here because we are worried about our kids and the health of our people, people all over the world. It's kind of expression in Kazakhstan, "From the beginning of Stone Age, everything on earth because of people." She thinks that nuclear energy is the top of science right now and it is a very great advantage of science right now, nuclear energy.

We should remember the words from Winston Churchill, and he said that on the wings of science, we'll go back to the Stone Age. And the first sign of this is--the first sign of environmental explosion and the big problem in public health right now is Chernobyl and Semipalatinsk as a test site.

We don't know what is going on in Nevada right now, but we want to tell you what is going on last 40 years in Kazakhstan and Soviet Union on the test site. We know that there are three points on the earth where is radiations more that it can be. First is Hiroshima and Nagasaki, the second is Chernobyl, and third is Semipalatinsk. And it is especially unique in Semipalatinsk because tests are going on permanently and in peace time. Second, that this is government program to test by.

It was very convenient to make these tests in Kazakhstan because it's a lot of transportation and it's near the mining, and so it was very convenient. It was right after World War II. It was in 1945 when they decided to make this territory for testing. At this time, half of the Kazakh people died from starvation. It is a very unique place and people of Kazakhstan appreciate their mountains and they love their mountains, and it's, you know, each nation has their own place for love, and this mountains for the Kazakh people is very, very dear.

It was a place where was born very famous people of Kazakh's population, and that is why it is so important for Kazakh people. First test was in 1949. The first test was in August, 29th, when it was kind of Thanksgiving. It was absolutely unexpected for all people in Kazakhstan, and they weren't prepared for this, and it was absolutely

catastrophical for them.

In 1953 was the first test for hydrogen bomb, which was developed by Soviet. From 1949 until 1963, all tests were in the air and on the ground, on the surface. 128 were in the air and 138 were on the surface of the earth. After 1963, all testing was underground. It was less dangerous for radiation, but it still was there.

People, and especially physicians, didn't have any chance, any access to all this information because it wasn't perestroika and glasnost yet in Russia. Only last two years was--last two years ago was developed this movement in Semipalatinsk, and the head of this is very famous Kazakh poet. And it was spread throughout this republic in a few days, and they start talking about this test site.

In a few days, on 19th of October will be a great celebration in Kazakhstan. And it will be because people of Kazakhstan now proclaim moratorium for this tests, and it is absolutely unusual for Soviet Union because it wasn't done by government, and it was done by people of Kazakhstan. Very few people knows about this moratorium, even in Soviet Union, and especially abroad. And because they have this victory, they hope that they can find understanding among the American people, and American people can support Russian people to stop testing.

And the main goal is to come into Year 2000 without

any nuclear weapon.

Thank you.

DR. CARTER: Well, we appreciate that very much.

Let's see, we may have a few questions or comments from the Board.

Well, we want to thank you again very much for sharing your views with us. We certainly appreciate and, like I say, certainly on behalf of our panel and the Board, we would like to congratulate your President on just today being notified that he has won the Nobel Peace Price.

DR. KESHILEVA: Thank you.

DR. NORTH: We thank you very much for talking with us.

DR. CARTER: And another thing, I want you, as a lovely interpreter, to identify yourself and where you're from for the record, please, ma'am.

MS. GOLDMAN: I am from Russia and I am here--I am Russian refugee and I was a physician in Russia, and now I am trying to prove my degree here.

DR. CARTER: Thank you very much. We appreciate it.

Do we have anyone that's shown up from Nye County?

(No audible response.)

DR. CARTER: All right. I believe we do not have at the moment any further speakers, so what I'm going to do is have the meeting in recess, and we will come back at six-thirty in case there are other people that would like to appear before

the Panel. So we will recess until six-thirty, here in this room.

Thank you very much for your patience.

(Whereupon, the meeting was recessed, to reconvene at six-thirty p.m.)

DR. CARTER: I'd like to call the meeting to order, and we have an additional presentation, and it's Mr. Bill Tobin.

Is Mr. Tobin in the room?

MR. TOBIN: Yes, I am.

DR. CARTER: All right, sir. How are you tonight?

MR. TOBIN: Oh, pretty nervous. I came here very unexpectedly and didn't really come down here with a plan, except this morning I seen a cartoon in the Wall Street Journal, and it said, a little boy came in with a perplexed look on his face, and he said, "They made me think today and I hate it." And this problem is something I've thought about for a long time and I wanted to express my views on it in hoping one of you learned gentlemen might be able to convey my idea where it might do the most good.

In this state, we have two gentlemen that are running in the Senate, are Senators today, that ran their campaign on only one thing, "We don't want that waste in our state." Well, it got them a lot of votes because I went out to both their rallies, and when I talked to the people out there they were just scared to death of one thing, the word

"atomic" frightened them, just frightened them because it said "atomic."

This was uncomprehensible to me because I didn't think that anything that came from the mind of man should be something that we should be afraid of. We're a very pragmatic people in this country. We solved most of the problems that have been harmful to people and my correlation is we're probably the first country in the world that had a commode in every house, and that surely was waste and certainly more destructive than any waste that we will ever know.

Everybody knows about AIDS, but they don't know the disease that's coming after AIDS, and I think it's--the disease that is coming after it is our incapacity to face our problems and do something about them.

The people who brought atomic energy and atomic waste into our lives were not stupid people. They were very learned men. They may not have seen the consequences of what they did, but they had to think an awful lot about what they did. The problem is not going to go away. Somebody has to solve it, and nobody seems to be willing to solve the problem.

We have two universities in this state and their big claim to fame is one moved up in the football ratings this month and the other one has got a marvelous basketball team that won everything, but I never heard of anybody saying, "Gee, they could solve a problem."

I was just thinking that the State of Nevada, if they use the resources they have in the intellectual fields, that they could solve that problem, but instead, we turned it over to people who have no, absolutely no knowledge of the problem as a whole, only as a part, and I think, I really think that the way the problem was brought together, it didn't go through the law courts, it didn't go through the committees. You took a group of men together and they went out to Alamogordo and they built a bomb. That was the start of it. Don't you think you could do the same thing to solve the problem and get rid of the waste?

The most logical place in the world is Nevada. You just have to solve the problem. You say, "Well, there's all kinds of reasons why you can't," but we rape this land every day. We take the gold out, the silver out. We're the biggest mining state and we take everything out. How do we know putting the waste back in ain't going to balance this nature? Everybody looks at it a different way, but I'm just expressing the ideas that whatever level you want to take them on, there is a solution to the problem, and I think Nevada could be the state that solves it, but I think they have--people have to be indoctrinated just the way they were indoctrinated to fear atomic waste. I think they have to be indoctrinated to make it your friend, and there's no reason why it can't be.

I said my piece and I could elaborate, but I can't go into detail because I'm sure there's many learned minds here that can break holes in my presentation, but the thought behind it is sound because that's what I do, I think.

DR. CARTER: Well, could we ask you a couple of questions, perhaps?

MR. TOBIN: Surely.

DR. CARTER: And I certainly hope that you're now relaxed. You look relaxed to me.

MR. TOBIN: Well--

DR. CARTER: If you're less nervous than I am, you're in good shape.

One thing, Mr. Tobin, I wonder if you'd tell us a little bit about your background? What do you do, and so forth?

MR. TOBIN: I just told you, I think.

DR. CARTER: Okay. That's a full-time job?

MR. TOBIN: It's a full-time job.

DR. CARTER: All right. Let me mention a couple of things. One, of course, I think both University of Nevada in Reno and the University of Nevada, Las Vegas, are both involved in the project one way or the other. They've got contracts or grants or something of this sort, so both of the universities, to some extent--I suspect, perhaps, some other schools in the State of Nevada are involved in the activities.

And, of course, the state itself has a nuclear project office located in Carson City, and they're heavily involved in sort of an oversight role, also, from the state viewpoint in the high-level waste repository program.

DR. CANTLON: Have you been on the site or know the area in which they are proposing the repository?

MR. TOBIN: I bet you there isn't 20 people in the State of Nevada who knows where Yucca Mountain is or where, if they visited it, what is there, but everybody's afraid of it, but they never visited it. This isn't a tourist attraction, you know?

DR. CANTLON: That's true.

MR. TOBIN: And in all reality, the real definition of waste is if it's something you don't use, it's wasteful. If you use it and utilize it, it has a purpose. If Nevada has a purpose, let it solve it. You can change the words. Instead of calling it nuclear waste, call it the new perfumed industry.

I know the governor of this state had to go to Japan to find new industry for this state. Well, in Japan they still have their honey pot in their home and they have to take it out to the--that's their sewage treatment plant, but what are we going to learn from them? I don't think we're going to learn anything from them. I think the brains have to stay in America. I think a good place to start is right here in our

university.

Even though you say they're all on the project, well, everybody's on every project. You've got a computer network that's unbelievable, but you still haven't trained the minds and solved the problems. You've got--you have lawyers solving the problem instead of the committee that goes in and says, "Hey, we've got a problem; let's solve it. Let's get it done." That's how we built the atomic bomb, isn't it? We got it done. I mean, it's so simple, but everybody wants their hand in the pot and you have to conduct polls to see what the people want.

Are we really--are, really, the people, as you say, involved in atomic physics? Are they? What could they really know about it? Have they been educated in all fields like this?

DR. CANTLON: You suggested that you thought Nevada was the perfect place for it. What aspects of the State of Nevada make you think it's the best place?

MR. TOBIN: Because it's got the most wide open spaces.

DR. CANTLON: Low population density?

MR. TOBIN: You can drive for hundreds of miles and not see anything. Where better to put it? You can put it in New York City. That wouldn't hurt a thing, would it? I ain't trying to be funny, gentlemen. I'm serious, you know? You wonder, you say, you think it's a joke that I think. Well,

I'll tell you things I think about.

DR. CARTER: No, no. No, I didn't imply that at all. In fact, sparse population, by the way, is certainly one of the factors that I'm sure led them to Yucca Mountain.

MR. TOBIN: And especially since 99 per cent of the people doesn't even know where Yucca Mountain is. I happen to know because I drive down near there. I go to Beatty and I go near there, but I'd have to see it from the air to say, "This is Yucca Mountain." And if it wasn't Yucca Mountain, it could be another mountain. It's still a problem to solve, whether it's Yucca Mountain or Timbuctoo Mountain, as long as it's-- it's still the same problem, and you still solve problems and say, "Well, how do we make this waste compatible with the land or whatever it is?"

But the project has got to be immense, gentlemen, because it isn't going to go away. In fact, you know, let's face it, if we explored it more, we wouldn't have to go out and play Arabs and Jews. They've been playing that game for 2,000 years and nothing has been done, and it seems that's what we want to do now, is play this game with...

DR. NORTH: What do you think could be done in addition to what's being done now to get the word out, to allow people to learn more about atomic energy and things nuclear so that, perhaps, they could deal with this issue in a more enlightened fashion?

MR. TOBIN: I'm not an educator, sir, but I know one thing. There is one basic thing behind it, and it's called fear. And our politicians in this state are exploiting that fear to the utmost, and when I talk to either one of them, all they do is say, "There's wisdom in Washington." If somebody can tell me where the wisdom is in Washington...

DR. CARTER: Anybody on the Board want to speak to that?

(Laughter.)

DR. NORTH: I think it might be worth saying that none of us, the members of the Board, are full-time residents in Washington, and for us, this is a part-time job.

MR. TOBIN: Well, I'm just--like I say, you know, public opinion is the thing that's stopping this, because you see the commercials today. The only thing the guy's running on is, "I ain't going to have that shit here." That's, you know, anybody can say that. Well, who does want shit in their own backyard? Nobody. But it doesn't solve the problem. You still have to get rid of it. When everybody had an outhouse in their backyard, they still had to solve the problem, and I think this state has got a unique opportunity if they get the president of the university, who makes $150,000 a year, and turned it into something constructive and say, "Hey, let's turn our energies to solving this problem that will not go away. We can't wish it away. Time will not pass it away. It's got to be solved." Roll up your sleeves and solve it.

That's what you've got the university for, or else you can build another motel and get 50 million people to sit there and play the machines and say, "We created jobs."

You could create more jobs with this one project that are worthwhile, that will use people's minds, than all the casinos in the state.

DR. CARTER: Dr. Parry?

DR. PARRY: Mr. Tobin, thank you.

MR. TOBIN: Thank you.

DR. PARRY: Thank you very much.

DR. CARTER: We appreciate it.

The next presentation will be given by Mr. Wilson of Sparks.

Mr. Wilson, pleased to have you.

MR. WILSON: The fact that this is being conducted in the capitalist enterprise of the Peppermill Hotel means that I could not, as I would like to do, say that what ought to be going on here is that we are the oracle and you are the supplicants.

Congress is the supplicant. The people are the oracle. The way you cats have it is exactly opposite of the way it should be, but the way it's going to be once the revolution is successful. I'm talking about total, thorough, overgoing revolution which will take you people and take you out of your suits and put you in striped uniforms, and you

will be reclaiming the earth that you've raped throughout this world.

I'm not long-winded. That's all I have to say to you.

DR. CARTER: Any questions or comments for Mr. Wilson?

(No audible response.)

DR. CARTER: Thank you, sir. We appreciate you coming and giving us your views.

The next presentation will be given by Marjorie Sill. She's with the Sierra Club in Reno.

Ms. Sill, we're glad to see you tonight.

MS. SILL: Thank you, Mr. Chairman. I apologize for having no written remarks. I just came in from California, and I found this and--that I had tacked to my bulletin board and I thought I'd better get down here and at least make the Sierra--reiterate the Sierra Club position on this.

And, first of all, thank you for coming. We welcome a scholarly investigation of what is going on as far as the nuclear waste is concerned. I don't know you gentlemen's qualifications, but I understand you're with some kind of commission that is investigating this and probably one of you is a physicist and one is a geologist, and so forth.

Okay. The Sierra Club has had a consistent position since Nevada was selected in the process for being the only state to be investigated as far as a permanent high-level

nuclear waste repository is concerned. After it was narrowed down to three, and then suddenly it--Nevada was selected, we had extreme objections to that process.

First of all, we felt that it was strictly political, that they picked Nevada because Nevada is a very small state and, in spite of the protestations from our senators and, particularly, from Senator Reed and then Senator Bryan after he was elected, it continues to be the only state where they are doing this kind of investigation.

Now, I say the process is faulted. You, as scientists, know that you make a hypothesis when you do an experiment, and this is an experiment and the hypothesis then--you might say it's a null hypothesis, but because only one site was chosen, why, that means that you're going to investigate this one site, and it prejudices the results. This is in my opinion, but I have worked as--with groups like NASA and in a capacity as a math analyst, and I notice that when the mind set was in a certain direction, it was a lot easier to justify that mind set. That's why I say I think the process is flawed and I think we're all concerned about that.

And I made this point a couple of years ago at a hearing, and I don't think my point was understood, but I'm hoping that you gentlemen do understand the point that we're trying to make here.

The second point that I want to make is I have a

clipping here from the Nevada--the Reno Gazette Journal, dated October 11th, and it said: "Reacting to repeated delays, the Nuclear Regulatory Commission has decided it will be 35 years before the nation's first high-level nuclear waste dump will be in operation." And it also established a time limit for how long utility companies can temporarily store the waste.

I think the dry cask storage, they say that there is reasonably certainty it can be stored for 30 years. I'm not sure on what evidence this is based. I have read articles claiming that dry cask storage could be effective up to 100 years, and it depends on which experts you read. I don't know where the limit of 30 years was set, but certainly, that buys us some time. Even the 30 years and the 100 years, if that, indeed, is the more logical figure, buys us even more time to decide what to do with the stuff.

I am disappointed that in the beginning we didn't realize that we had this problem, and I think some people did and I think it was simply ignored, that the problem existed, that we were going to have to get rid of the nuclear waste in some way, but we didn't approach it that way. What we did was go ahead and build the powerplants. I know we gave lip service to research on fusion. I know--in fact, more than lip service; money was spent on fusion but--where you would not have that particular problem, but at the same time, the plants were built and they continued to be built and they continued

to be pushed to the exclusion--and I'm talking about financial exclusion--of such clean sources of energy as solar power.

I find this a very, very disappointing thing. I admit that because of the environmental effects, both oil and coal have tremendous problems, but I think 20 years ago--and I realize hindsight is easier than foresight--but 20 years ago we should have looked at what the pluses and minuses were for each kind of energy development, and chosen to put emphasis on the kind that we felt had the least environmental effects. And I'm just picking solar out of the air. You could use geothermal, you could use wind power, you could use some other--or you could use a combination of these things, and that really was not considered.

Up in Washington, where they had all of the sources of hydroelectric power, they started to build nuclear plants and, finally, the system went under financially and that had nothing to do with disposal of nuclear waste, but at the same time, I think it shows how short-sighted we were.

What I personally--and I think I probably am speaking for the Sierra Club here, too, because we're very concerned about the future of the whole earth--what I would like to see is your panel, plus an enlargement of your panel which includes some other kinds of people. I notice that you're all male, whites, between probably a certain age--

DR. CARTER: Be careful now.

MS. SILL: I'm not--young, male whites, I should say; right? Anyway, I think that we need a citizen panel to address the whole thing about energy, not only a nuclear waste disposal, but the whole energy picture. Where are we going to put our resources? What resources do we have? What will buy us the most time?

And I see a nuclear waste disposal as just being part of this whole picture. Specifically, I am concerned about what I have read about the geological formations at Yucca Mountain, and I do know where Yucca Mountain. I know where it's location is with respect to the aquifers which are, in fact, sort of go into Death Valley, underneath Death Valley. I know--I'm concerned about the geology. I'm concerned about the earthquake potential. I saw a program on earthquakes, which had nothing to do with this particular topic, but showed the distribution of earthquakes through Nevada, and some of the big earthquakes on the eastern side of the Sierra, and I don't see how we can say that this is a very safe place, or maybe it is, but I'm very dubious about that given the history of earthquakes in this particular region.

I'm also concerned about transportation. If any of you gentlemen have driven the highway across the dam from Arizona into Las Vegas, and you know what that highway is like, and I have gone--because I happen to drive very early--and I have seen a lot of unmarked trucks on that highway, and

right now they are not carrying nuclear waste, but I'm not sure what they're carrying. I'm fairly suspicious of what they're carrying, and I'm very, very cautious about what they're carrying, I'll tell you. I give them a lot of distance.

Now, there is the possibility of accidents. There is also the possibility of, unfortunately, sabotage. When you have a transportation problem as enormous as moving--and most of the nuclear plants are in the east, so I understand--moving this waste from the east, the southeast, the northeast, different parts of the country, into the area which is Yucca Mountain, you have many, many problems in assuring safe transportation of waste. And I do not think--I have not seen, at least, that these problems have been addressed.

And I would say that these are the principal concerns that we have with this whole picture. I would hope that there is this kind of delay, that good minds are examining the whole thing again, and that some decisions are going to be made that are not just--not made just because they're politically palatable to all but two or three or four senators, but that they are decisions made that address the real, real problems of energy, of waste disposal, and of the various possibilities for getting rid of what we have now in such a way that it's safest for everyone.

Thank you.

DR. CARTER: Okay. Let me, if I might, ask you a couple of things, please, ma'am.

One, I believe that the Nuclear Waste Technical Review Board, of which we're a part, this particular Panel, and three of us here, of course, are members of that Board, I believe, if I listen carefully to what you said, that we, indeed, are looking at all of the areas that you mentioned. In fact, there's a transportation panel meeting in Washington on Monday dealing with transportation, and a little bit later on there will be a meeting here in Reno--in fact, in this facility--dealing with transportation. So keep your eyes peeled.

MS. SILL: I certainly will, and I'm really happy that we're dealing with some of these problems, but I'm saying that evidently you had a question as the gentleman was speaking when I first came in, and I gathered he was a proponent of the nuclear repository at Yucca Mountain, but you have a problem in communication, because, you know, a lot of people are--they're very dubious about this whole thing, but outside of politicians, they're afraid to get up here and ask questions and to--you know, if communication could reach us about what is going on and what kinds of problems are being addressed, and the fact that--I hate to say this, but we're not always sure--and I'm speaking as a citizen now--that the experts have open minds on this problem, and I think this is what worries

us more than anything else.

We're all in this together. I mean, you know, it's silly to say there's you and me and we're separate, because we're not. We're all together on this. We all have--we're all going to face these same problems, and it behooves us to look at these problems, get the best minds going on these problems.

DR. CARTER: Well, hopefully, that process is going on, and I certainly can assure you that the Nuclear Waste Technical Review Board is open-minded and has not made up its mind, if you will, as far as a repository is concerned.

Let me clarify one thing in the way of communication. The clipping you had from the local paper, let me explain what that date is. I think that I know.

MS. SILL: Surely.

DR. CARTER: Now, if you look at the Department of Energy, which is, of course, eventually supposed to design and construct and operate the repository, their target date at the moment is 2010. That's the official date that they have. As you probably know, that date has slipped. It used to be earlier than that, and now it's 2010, and that date, I guess, was changed to that within the last year.

The date that you saw is, indeed, a date from the Nuclear Regulatory Commission, but it is not an anticipated date. All they're saying is that a repository will be in

operation by that date. Now, it might be in operation earlier than that, and they--

MS. SILL: Or later?

DR. CARTER: --said, essentially, the first quarter of the century. Well, it could be later, but they, indeed, instead of picking a specific date, you know, like 2007 or 2010 or whatever, they said in the first quarter of the 20th century, so that's where that date comes from.

MS. SILL: I see.

DR. CARTER: So it's their estimate, and that was from what they called a Waste Confidence Hearing that they had. So that's their date and, like I say, it was just to put it in the framework of a quarter of a century, rather than picking a specific date.

MS. SILL: I see.

DR. CARTER: Let me ask you a couple of personal things. One, are you an officer in the--

MS. SILL: I am the--I serve with the Regional Conservation Committee. That covers northern California and Nevada.

DR. CARTER: For the Sierra Club?

MS. SILL: Of the Sierra Club, and we're--I am the fifth officer of the executive committee, and I cover public federal lands. That's my chief assignment.

DR. CARTER: All right. The other two things I wanted to

ask you, how many members of the Sierra Club reside, say, in the Reno/Sparks/Carson City area? I don't know if you're divided up that way or not.

MS. SILL: Well, actually, we have a chapter, the Toyabe Chapter covers all of Nevada and eastern California, so they--this is the chapter that would be most directly affected, and we have in the Toyabe Chapter now, I understand, over 3500 members.

DR. CARTER: Okay.

MS. SILL: Which is quite an increase from what we had before. Every time we have a--some environmental crisis, the membership seems to increase.

DR. CARTER: Okay. Are there other questions or comments? Dr. North?

DR. NORTH: I'd like to ask a few more along the same vein. We've been asking all the people who've appeared before us to tell us something about their backgrounds.

MS. SILL: Yes. I am a Californian, grew up in southern California, went to school at University of California at Berkeley. I have a double major and a double masters degree in mathematics and English literature, which is a curious combination, I'm sure. I, as I said, worked for NASA. I worked for Jet Propulsion Laboratory when I was going to college, during the summer, to earn money to go back to college. I then worked for--at Moffet Field, for Ames

Aeronautical Laboratories.

Then I moved to New Mexico. There was no such work. This was because my husband decided to move to New Mexico, and I started to teach school half time. I taught the advanced math classes. When I came here to Reno, I started teaching mathematics and I taught mathematics for 27 years, then retired so that I could work full-time as a volunteer on conservation issues for the Sierra Club.

DR. NORTH: And how long have you been working as a full-time volunteer?

MS. SILL: Four years.

DR. NORTH: Four years. And so you've been living in Reno for long time?

MS. SILL: I've lived in Reno since 1959.

DR. NORTH: What are some of the other issues that the Sierra Club is concerned about in this area?

MS. SILL: We're concerned about water, wetlands. We're concerned--we had a major victory last year. You probably wouldn't know about this, but this is one of the most positive things. We got the Nevada Wilderness Bill passed and it was signed by President Bush on December 5th, and this was--I personally worked on this for 25 years, since the passage of the Wilderness Act, so I was very close to this particular issue.

We work on all kinds of wildlife habitat issues,

practically--clean air, certainly; many, many issues. I'd put the issues into two categories. One of the things that we're concerned about because they're polluting our environment or have the potential for doing it, the other are all the positive things that--where we can, you know, save something.

DR. NORTH: Have you or have very many others in your chapter taken the time to read the technical reports that have come out on the nuclear waste site?

MS. SILL: I've read the 1,000-page--and the small print--reports that I was sent, and I must admit, I found some of it rather difficult reading, partly because of the print, because most of the--when you have to do most of your reading at night and you have to put on glasses for reading, it's difficult to read that small print. But I certainly--I couldn't say I have digested it, but I certainly have read it, yes.

Many people in our chapter who are concerned, for some reason or other, are--some of the leaders--are unable to comment on the nuclear repository because they are involved in it in some oblique way, and this is one reason that--I mean, I have no constraints. I can say exactly what I want to about something, and--which I think any citizen should be able to do, but, you know, as I said before, there are many citizens, members of our--the Sierra Club--who would feel intimidated by getting up here and commenting on something, even if they had made a study of it.

DR. CARTER: Well, we certainly hope you will encourage them not to be bashful about it. This is one of the purposes, of course, of a forum like this, is for people to speak their mind, and so forth, so they certainly shouldn't feel constrained. So we certainly encourage a full dialogue and discourse on this subject, as well as many others.

DR. CANTLON: You've been a teacher for a number of years in a subject that is difficult to impart to young minds, mathematics, and you mentioned in your comments that there's a serious communications problem.

MS. SILL: Right.

DR. CANTLON: As a teacher, what kind of things do you think need to be done, and what might this Board do to advance those things to elevate public understanding about this exceedingly complex issue? So many of the young people today really don't take science majors, and we're already harvesting part of the difficulty of the absence of adequate science education.

MS. SILL: I would agree with you about science education. That concerns me, also, but let me say that what I would do if I were you, I would get a cross-section--and this is why I'm concerned about how this comes about. You're obviously wonderful listeners, because I feel I can talk to you and you're paying attention to what I'm saying, but you are five people sitting there. Five people can be, you know,

who know a lot--and they all wear suits and ties--can be very intimidating, and the--

DR. CARTER: Should we strip off, or--

MS. SILL: No, no, I'm not suggesting that.

(Laughter.)

MS. SILL: But what I am suggesting is that--I mean, if you really want to have a kind of communication, then I would suggest, in the first place, that you don't sit straight like that, you have a round table, all right? And that you have a group of people who may have very different ideas from you, and that you actually have a dialogue, and that you go to communities and have this kind of dialogue.

Because I think much of the problem--although I'm not down-playing the scientific points--I'm saying that much of the problem is not strictly science. What you're talking about, a vision of the future, and five people don't make a vision of the future, and--but I'm not saying that a circular group would necessarily make a vision of the future, but I think it might be a lot more acceptable. People only learn, or only come up with ideas when they are part of the process, and I think this is the problem with the citizens. They do not feel part of the process.

DR. CARTER: Let me comment on that. We certainly appreciate your thoughts and insights into that sort of thing. I might mention to you the Board, and the composition of the

Board is set in a very particular way.

The National Academy of Sciences recommends to the White House a number of people, usually the two or three for each of these slots, and the charter that we have from Congress, which established the Board, established the fact that it would have no more than 11 members, and we're actually appointed, then, by the President. And it turned out that we were appointed, most of us, by Reagan before he left office, and then several have been reappointed by President Bush, but we still do not have our full complement of 11 people.

MS. SILL: How many do you have?

DR. CARTER: And I'm not too sure 11's a lot different than five, but there are nine of us that are on the Board at the present time.

DR. NORTH: Three of us here are Board members. There's three Board members.

MS. SILL: Three of--which ones are the Board members?

DR. CARTER: From here, that way.

MS. SILL: From there, that way, and these two gentlemen are--

DR. PARRY: Staff, we're on staff.

MS. SILL: You're on the staff, so that you do the work and then--

DR. PARRY: Let me explain. I'm lower staff than he is.

DR. CARTER: These three do the oracle work, and these do

the real work.

MS. SILL: I understand, okay. Could I ask you a question, then?

DR. CARTER: By all means.

MS. SILL: I'd like to know what your background is, then, the three Board members.

DR. CARTER: Well, I've been in the business for about 40 years, I guess, and primarily in environmental activities and in public health. I worked for twenty-plus years for the U.S. Public Health Service, primarily running radiation laboratories where we made measurements, did training, research and development, and so forth, and a lot of states assistance. Also, the last several years that I was in the federal government, I was detailed to the Environmental Protection Agency, so I worked for them the first couple of years after they were formed, which was around Earth Day, worked for Bill Ruckleshouse (phonetic) for several of those years, and then went to the Georgia Institute of Technology.

I was on the faculty there for 16 years as the Neely Professor of Health Physics, in essence. So I've been involved in radiation, radioactivity and environmental issues for all of those years, and got involved in a variety of programs. Just about everything that the government did, one way or the other, we were involved in as far as health and safety was concerned. That's essentially my major area.

So, Dr. Cantlon?

DR. CANTLON: Well, I'm the token native Nevadan on the Board. I was born and raised about ten miles from here and went to the University of Nevada, got my degree in biology and chemistry--

DR. CARTER: And flunked math, by the way.

MS. SILL: No, he didn't get a degree in chemistry and flunk math. Don't tell me that.

(Laughter.)

DR. CANTLON: And I have done my training in ecology. My field is ecology, and I've been on the staff at George Washington University, Boston University, and have spent the last 35 years at Michigan State University. I've been President of the Ecological Society of America. I've chaired EPA's Science Advisory Board. I've chaired the National Research Council's Environmental Study Board. I really was an environmental activist that helped get Earth Day started, and if you go back and look at some of the early testimony, you'll see that we were very active environmentally on the issues, so I guess, in a sense, I'm the token environmentalist on the Board, too.

DR. NORTH: Well, I'm not sure you're the only token. I mean, I will claim a membership in the Sierra Club that goes back decades, although that's not in the biography that was handed out in the folder that you have.

MS. SILL: I don't have a folder. That's why I was asking.

DR. CARTER: We'll give you one, though.

MS. SILL: Good.

DR. NORTH: I'm the numbers person on the Board. My background is originally in physics. I have a masters degree, also, in mathematics from Stanford. My Ph.D.'s in operations research. My career has been largely in the area of decision analysis and risk analysis, applied to a great many issues. I've done very little work on problems of radioactive waste or other aspects of nuclear energy.

I've worked on problems like the risk of contaminating Mars as a result of the Viking mission with which I worked with JPL and people NASA-Ames, and a good many others, an eventually worked out a probability calculation of what the risk of contaminating Mars with biological organisms might be, to compare with the agreement that the United States had made with the Soviet Union that both countries would conduct their space programs so as to keep that risk at an acceptable level, which was judged to be one chance in a thousand.

I've also worked on wildland fires. I've attended meetings in Carson City with the U.S. Forest Service and other fire agencies on how to deal with the risks from wildland fires. I've been involved in energy policy, helping energy

research and development administration, now DOE, to set priorities among geothermal, solar, and a variety of other energy technologies. That was back in the Carter Administration.

I've been involved recently in chairing for the EPA Science Advisory Board, the review of two reports to Congress on the greenhouse issue, and on this Board, I chair the panel on risk and performance assessment, looking at the way we use mathematics to try to put it all together so that we can assess all these different complex issues, and try to come to terms with the overall question of, is it acceptably safe?

MS. SILL: Well, I would say that none of you are what I would call "token" environmentalists.

MR. CANTLON: I was teasing, really.

DR. CARTER: By the way, the other Board members are much more distinguished than this group here.

MS. SILL: Are there any women?

DR. CARTER: No.

MS. SILL: Are there any minority members? Does that worry you?

DR. NORTH: That really wasn't on the list of the qualifications. I'm sure the National Academy, in their nominations, submitted a few people who were in those categories, but we don't happen to have any.

DR. CANTLON: We go through a political screening.

MS. SILL: I understand political screenings, and I'm always a little bit upset about it because it seems to me that, you know, you're asking a question--you're not asking a scientific question, really, here. You're asking a question about communications. You're asking a question about psychology. You're asking a question about trust. You're asking this kind of question, really.

DR. CARTER: Well, we're asking other questions as well. We do ask--

MS. SILL: I know, but when you're talking about this particular thing, this is what you're talking about, and can you see why groups, even in Nevada, would feel rather disenfranchised? And I think that this is a really big problem, and I think that--I mean, I notice on boards that are not nearly as important as this, the BLM National Advisory Board, I think, has two women, no minorities. It's just that the--and nobody thinks much about it because this is the way things are, but nobody has to trust that board, and you have to be trusted, you really do, because otherwise, if you are not trusted, why, there is going to be no communication whatsoever.

DR. CARTER: Well, let me make a comment. Of course, as you've heard, you know, we're trying to summarize, most of us, a 40 or 35-year career. We've been involved in lots of boards, lots of committees and this sort of thing. Some of

these things have cropped up during the time here, and quite--I know in my own case, I'm on, you know, numerous boards, commissions and whatnot, and a lot of these have the sorts of folks that you mentioned. They have minorities, they have females, and lots of other things. It just so happens, this particular Board does not have those constituents at the moment.

Let me let our Executive Director, Dr. Bill Barnard, make a comment or two.

DR. BARNARD: The Board itself has no control over the composition of its membership.

MS. SILL: Yes, I understand that.

DR. BARNARD: It's the White House that makes those appointments. However, the Board does have some control over the staff that they hire, and if you don't trust the Board, you can trust the staff, because out of the 15 staff members, 60 per cent are female and four out of the 15 are minorities. So we do think that that's--those sorts of things are important.

MS. SILL: Yes, right; right. I understand. I shouldn't harp on this particular thing, but it is a sore point and it's something that you really--

DR. CANTLON: It's very real.

MS. SILL: It's a very real thing, and I think that, you know, really, there is a huge amount of resentment among

Nevadans that this was thrust down Nevada's throat.

DR. CANTLON: I just got off the telephone with my brother, who lives locally, and he gave me an earful, I'll tell you.

MS. SILL: Yes, right; exactly. So I don't think that you, you know, and it's the rank and file people who may not understand science, but they sort of understand the political process.

I didn't mean to monopolize so much time. I really apologize, and I apologize for not being better prepared as to the specific issues, but I certainly thank you for your attitude, and I think--I'm pretty sure that you're listening and that, you know--

DR. CARTER: We better be or--the staff we can fire. All I can do is complain about the other ones.

MS. SILL: Right.

DR. CARTER: Dr. Parry, I believe, had a question or comment.

DR. PARRY: Just a comment. Your thoughts about speaking one on one and communicating is very apropos. The Chairman of the Board, Dr. Deere, met recently with Senator Graham, and--who's chairman of a subcommittee in the Senate, and also attending were both senators from Nevada, and Senator Simpson from Wyoming. And instead of the normal procedure of the senators sitting in a elevated tier, Senator Graham chose to

sit around a table, with the senators on one side and, as it happened, eight witnesses.

There was not what I would call a free dialogue, necessarily, except perhaps on the part of the Nevadan senators, but in all seriousness, I think your point is very well taken and, personally, I'd be glad not to wear and suit and tie at any time.

Thank you.

DR. CARTER: Let me comment a little bit and follow up on that. Of course, the meeting that we're having now and the one tomorrow, these are a little bit different. This is an open forum. Anyone is welcome to come, and if you've sat here during the day, or most of it, you've heard a variety of people that have come. Some have been in favor of the repository. They've been in the minority. The--we've had people from Russia speak. We've had one from the State of Oregon, so it's certainly been an open forum as far as we're concerned and, you know, anyone is welcome to come and to make comments.

But on the other hand, this is just one of the forums that we, I guess, are active in. We recently--several of us--participated in a meeting of the National Academy of Sciences that dealt with one of the issues involved; namely, the environmental standards. Dr. Parry mentioned the Congressional testimony. We've also appeared before other

federal agencies. We would, for example, I'm sure each individual member--depending on their schedule--but, you know, if we had an invitation for someone to speak to the Sierra Club, for example, your chapter, perhaps, it would be an opportune sort of thing to do.

So we do try to interact in various ways and, like I say, this just happens to be one of the formats in which we do that. Now, you know, we can't rearrange the furniture at this particular meeting, but we certainly have heard what you said and we appreciate very much you coming and talking to us.

MS. SILL: The furniture is simply symbolic of the kind of circular dialogue.

DR. BARNARD: I just want to also point out that the entire Board has met with all of the Congressional delegation from Nevada, and Dr. Deere, the Chairman, has met with Governor Miller, if that makes a difference.

MS. SILL: Well, of course, I would expect that you would--and I'm sure that you heard what the Governor and the two Senators felt about things, because they're quite emphatic on this particular issue, as well they might be, because we've--and this has nothing to do with you gentlemen, but the perception of citizens of Nevada is that it was a back door deal.

DR. CARTER: Yeah, we heard those gentlemen loud and clear on several occasions.

MS. SILL: Right, and it actually has nothing to do, I presume, with what you are studying, but this is where much of the resentment and the antagonism--I don't know whether you've had this, but I haven't been at the meetings, so--comes from, is that it's just like the budget. People feel that they're not being heard, and, you know, it--this is the--this is very different than the other group that I testified before--I think it was two years ago--because that was a much more formal thing, and it was like everybody was sort of sitting in judgment, almost. I mean, that's not a good analogy, but that is the impression that you got from the hearing.

But, you know, it's on many levels. It's on scientific level, it's on a government procedure level, it's on a future of the world level, which is where the Sierra--I mean, probably none of us are going to be here to see what happens when this repository is built.

DR. CANTLON: The young people back there may.

MS. SILL: There are probably a few, and they--but they may not see what happens, because what really happens may affect only our great-great-grandchildren, and this is what--the kind of thing that I think that the best scientific minds, the best minds at predicting the future have to be paying close attention to.

DR. CANTLON: You haven't lost your teaching touch. I lament the fact you've left high school, because we certainly

need people like you there.

MS. SILL: I loved teaching high school. It was wonderful. All 27 years were wonderful, and I hope that some of my students are going to be making this kind of decision in the next few years.

DR. CARTER: Well, very good. Keep in mind, now, that this panel, as well as others, is part of the Nuclear Technical Review Board, and while the full Board itself periodically will be meeting at various sites in the State of Nevada, so certainly encourage people, that if they have comments or questions or whatever, that they come forth and present it. We encourage you to do that.

MS. SILL: Okay, thank you.

DR. CARTER: It's been a pleasure having you. Thank you very much.

MS. SILL: Thank you.

DR. CARTER: Do we have any other individuals that would like to make a presentation?

MR. TURESON: I don't have a--

DR. CARTER: Doesn't make a bit of difference. You're welcome, and if you'll identify yourself for the record, tell us a little bit about yourself, and have at it.

MR. TURESON: My name is Shane Tureson and I am a student up at the Community College and fairly active in the Democratic Party here in Washoe County.

And one of the impressions that we have as people who are living in the state, both in the north and the south, is that we are not being given much of a choice on input as far as what's going on. We have Secretary Watkins sending secret memos to Bennett Johnson, who is, as you know, the Chairman of the Senate Energy Committee. Well, rather than sending those memos to Bennett Johnson, Secretary Watkins should be directing those to the State of Nevada.

A lot of people are annoyed that decisions such as this, when my generation will have to sit back and look at what happens because people did not think these things clearly and thoroughly. That's one of the biggest problems that I see at this point.

DR. CARTER: Well, we appreciate very much you coming and giving us that insight. Thank you.

Do we have anyone else?

(No audible response.)

DR. CARTER: Well, we will remain here ourselves for at least a little while. We'll probably adjourn in 15 minutes or so, in case someone else shows up, but we appreciate everyone coming that has been here today. The numbers varied. We appreciate your interest in this particular issue. I'm sure you're, hopefully, better informed the more of these sorts of things that you participate in, so we appreciate very much you coming and we certainly thank everyone for the hospitality,

and by the way, our meeting or our panel will reconvene in the morning at eight-thirty across the hall, and we will have a more or less formal program compared to today. We've got a schedule or an agenda for that, and we will meet from eight-thirty to one, and you're certainly cordially welcome to participate in that meeting.

DR. BARNARD: I'd also like to point out that we will be having a public hearing November 19th on transportation issues here at this hotel, and we're also going to have a full Board meeting--if you're interested in meeting all nine of the Board members--April 16th through the 18th, next year, also in this hotel.

DR. CARTER: Thank you very much.

(Whereupon, a brief recess was taken.)

DR. CARTER: Do we have anyone else that would like to make a presentation to the Environment and Public Health Panel?

(No audible response.)

DR. CARTER: Seeing no response, then, we will formally decline this session. It is now over and the Panel will meet tomorrow morning at eight-thirty.

(Whereupon, the meeting was concluded.)

I N D E X