

UNITED STATES
NUCLEAR WASTE TECHNICAL REVIEW BOARD

TRANSPORTATION & SYSTEMS PANEL
PUBLIC HEARING

Multipurpose Building
Amargosa Valley
Nye County, Nevada

August 17, 1990

BOARD MEMBERS PRESENT

Dennis L. Price, Chairman
Ellis D. Verink, Jr.
Melvin W. Carter

William W. Barnard, Executive Director
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I N D E X

<u>SPEAKERS:</u>	<u>PAGE NO.</u>
Opening Remarks, Introduction Dr. Dennis Price	3
Senator Virgil Getto	7
Stephen Bradhurst, Director, Nye County Planning, Commissioners, Nye County, Nevada	15
Dennis Bechtel, Coordinator, Clark County Nuclear Waste Repository Program, Las Vegas, Nevada	47
Jerry Duke, Principal Planner, Clark County Repository Program, Las Vegas, Nevada	80
Lee Gibson, Planning Coordinator, Regional Transportation Commission, Las Vegas, Nevada	86
Allan Fisher, Chairman, Transportation of Spent Nuclear Fuels Committee, Association of American Railroads and Director, Operating Rules, Consolidated Rail Corporation, Philadelphia, Pennsylvania	101
Robert Halstead, Transportation Advisor, Nuclear Waste Project Office, State of Nevada, Carson City, Nevada	120
Ernest Travis	167
Rick Dale	170
Bill Greis	173
Judy Treichel	175
Charles Hilfenhaus	182
Mike Gilgan	186
Doris Jackson	194
Charles Holtz	198
Ken Garey	199

A F T E R N O O N S E S S I O N

12:08 p.m.

DR. DENNIS PRICE: Good afternoon and welcome. This is the first public hearing of the Transportation & Systems Panel of the Nuclear Waste Technical Review Board. The Board is an independent organization established by the Nuclear Waste Policy Amendments Act of 1987 to evaluate the scientific and technical validity of activities undertaken by the Department of Energy or DOE in its nuclear waste disposal program.

The charge to the Board is broad; however, the Act specifically directs the Board to evaluate those activities relating to the packaging and transportation of high level radioactive waste and spent nuclear fuel. To facilitate the Board's work, the Board has organized itself into a number of panels to which specific technical subjects are assigned. Transportation belongs to the Transportation & Systems Panel.

I am Dennis Price. I am chairman of the panel. I'm a professor of industrial and systems engineering at the Virginia Polytechnic Institute and State University. I am also the director of the Safety Projects Office and the university's graduate industrial safety engineering program.

With me today are the other two members of the panel; Dr. Melvin Carter on my left and on his left Dr. Ellis Verink. Dr. Carter is a Neely Professor Emeritus in Nuclear

Engineering and Health Physics at the Georgia Institute of Technology. Dr. Carter is an international consultant in radiation protection and an expert on a broad range of issues related to radioactive waste management. Dr. Verink is a Distinguished Service Professor of Metallurgy and former chairman of the Materials Science and Engineering Department at the University of Florida. Dr. Verink brings to the Board extensive experience in material selection and corrosion. All of us serve on the Board on a part time basis.

In carrying out its work, the panel has been reviewing work done in the transportation field. We have had discussions with the Department of Energy and the Nuclear Regulatory Commission. To date, we have identified several issues that we intend to pursue for the next few years. We presented these issues, along with recommendations, to the Board in late 1989. The Board adopted the panel's recommendations and incorporated them into the Board's first report to the Congress and the Secretary of Energy which was published in March.

Two of the recommendations pertain to incorporating the technical disciplines of system safety and human factors engineering into DOE's safety management processes. These are useful tools to predict and anticipate hazards and to minimize human error as a contributor to accidents. Other recommendations pertain to issues in risk assessment and risk

management. The issues were selected in part because of the opportunity that exists to incorporate these disciplines into the DOE transportation system planning and management processes while they are still in their early stages. The panel also intends to assess other issues that are important to the safety of transportation operations, such as routing, emergency preparedness, and inspection and enforcement.

In addition to reviewing ongoing work, the panel now wants to solicit information from the public. Beginning today, public hearings will be held in selected parts of the country over the next six months to obtain the views of those who might be affected by the waste transport activities when they eventually occur. We know that many people are concerned about the safety of spent fuel transportation and we want to hear from you. Later this year, on November 19, we will hold a second hearing in Reno.

Also, another of the Board's panels, the Environment & Public Health Panel, plans to hold a public hearing on October 15 and 16 in Reno. The panel will be soliciting comments on public health and safety and environmental issues related to the nuclear waste disposal program. I'd like to point out that Dr. Carter is the chairman of that panel and will be chairing the hearing.

Today's hearing is divided into two parts. First, we will hear from witnesses who have prepared and submitted

testimony to us in advance. Copies of their prepared testimony are available here for you to take. A time limit has been placed on the prepared remarks, so that all who have requested may present their views, and so that time will be available for questions by the members of the panel at the end of the presentations.

We are also providing an opportunity for those who were unable to schedule presentations in advance to testify here at the conclusion of the formal presentations. You may sign up for a five minute presentation. The time slots are given out on a first-come, first-served basis.

A verbatim transcript is being made of the hearings. It will include submitted text, delivered remarks, and dialogue with the panel members. The transcript will be available as of August 31, 1990, for review by any member of the public. It will be in our library in Arlington, Virginia, or on a library-loan basis.

Finally, we also have made provisions for written submissions. If you wish to testify to us by this mechanism, please send your material to us by November 30, 1990. Address it to Dr. Dennis L. Price, Chairman, Transportation & Systems Panel, Nuclear Waste Technical Review Board, 1100 Wilson Boulevard, Suite 910, Arlington, Virginia, 22209.

On behalf of the panel, I would like to welcome you and thank you for coming. We're looking forward to hearing

the presentations.

Before we begin with the presentations which have been prepared and submitted in advance, we're honored to have Senator Virgil Getto here and we'd like to give you this opportunity at this time to make any remarks you'd like to make.

SENATOR VIRGIL GETTO: Thank you, panel members. I, first of all, would like to welcome you to my district which is in central Nevada. We are certainly pleased that you have taken the time to come out and -- gather information -- very important. As I said, I am State Senator Virgil Getto. I'm a member of the Nevada legislature's committee on high level radioactive wastes and I'm one of the new members and so this is sort of a learning process for me, too. I am very interested because transportation certainly would impact my area.

DR. PRICE: Excuse me, Senator, some people in the back are indicating they can't hear. So, maybe we have to speak directly into the microphone.

SENATOR GETTO: Okay. My Senatorial District is the second largest legislative district in the United States and therefore is basically rural in character. Many of my constituents live in the area through which either rail or truck shipments of high level radioactive waste would pass if Yucca Mountain is ultimately selected as a waste repository.

Therefore, I am very interested in the subject of transportation of high level waste because I believe that the citizens of the state are more concerned about the transportation of this nuclear waste than they are about the storage. I was pleased to learn that the Technical Review Board appointed a panel to address issues relative to waste transportation and I am aware that the United States Department of Energy has been working on a comprehensive transportation plan for several years.

If the repository is built at Yucca Mountain, my constituents and I are concerned that the transportation plan include the following key elements. Number one, that early identification for modes of transportation and routing to be utilized for waste shipments. Number two, specific recognition of potential dangers to citizens of rural areas, in addition to the current emphasis on rerouting to avoid urban centers. Number three, provisions for sufficient financial and manpower resources at the Federal and State level to insure adequate inspection and enforcement of laws relating to the high level radioactive waste transportation.

And, four, provisions for the development of comprehensive and coordinated state and local training programs for emergency planning and response, including adequate and predictable funding. And, I'd like to re-emphasize predictable funding to implement the programs especially in

the rural areas.

I would like to conclude my remarks by thanking the panel for the opportunity to express my views and to emphasize that, regardless of where the repository is finally located, radioactive waste transportation is a matter which requires the greatest of attention to detail because it has a potential to adversely impact the health and safety of so many of our citizens. I would also like to add that this kind of forum is critical to ensure the successful formulation of a transportation plan because the public can be directly involved in the process. Thank you.

DR. PRICE: Senator, I wonder if you would do us a favor of repeating your four points that you had there, the early identification of modes of transportation and routing and the recognition of the dangers to rural populations and so forth? Could you run through those one more time for us?

SENATOR GETTO: The four points that I made?

DR. PRICE: Yes, please?

SENATOR GETTO: Yes. The first one would be early identifications of the modes of transportation and the routing to be utilized for waste shipments. And, the second is the specific recognition of potential dangers to citizens of rural areas, in addition to the current emphasis on rerouting to avoid urban centers. The reason for that is that the emphasis has been, of course, strongly emphasized as

far as the urban centers and the impact of populations, but it's my feeling that there hasn't been -- that maybe we haven't emphasized, you know, how critical it could be to the rural areas, too. So, we want to make sure that you will consider that factor. And then, the third one is the provisions for sufficient financial and manpower resources at the Federal and State level to ensure adequate inspection and enforcement of laws related to the high level radioactive transportation. And then, the fourth one is the provisions for the development of comprehensive and coordinated state and local training programs for emergency planning and response, including adequate and predictable funding to implement the program especially in the rural areas. And, that's a question that comes up many times, especially in the rural areas, are there going to be adequate people trained to handle an emergency and who is going to train them and where is the funding going to come from?

DR. MELVIN CARTER: Senator Getto, we certainly are very pleased to have you with us coming down from Fallon to be here at this particular hearing and we're certainly pleased to be in the state of Nevada in the course of this particular part of it. Let me ask you a couple of things, if I might.

One, in your travels around your district, which you indicted is a very large one, is there much concern as far as the transportation aspects? Now, you mentioned

certainly some of these, but, of course, the transportation would not occur under normal circumstances assuming that Yucca Mountain is selected for the repository for a number of years. So, you know, we've certainly got a lot of time, if you will, to make whatever preparations are needed certainly in regard to training and a number of other things. So, that was one thing I wanted to ask you, about the depth, I guess, or whatever feeling regarding transportation issues within the state of the --

SENATOR GETTO: Yes, there is and I find there is more concern the further away we get from the proposed repository.

People, for instance, as far north as Reno and where I live in Fallon, partially because of a lack of knowledge, they don't know what -- some of these people are afraid that the trucks are going to come down right in front of their homes hauling high level nuclear waste. They do not know. And, so that's why these hearings are so important. I think that you'll find that when you hold the hearing in Reno that you'll find it well attended. I find the people that work at the test sites and so forth are not as concerned, but they are concerned as far as transportation. And, I think if you would poll probably the people that live right around this area as far as Yucca Mountain, you wouldn't find too many people opposed to it if it's a safe area and the testing is concluded that site is safe, I don't think you'd find the

fear. But, as you go out and even in Las Vegas, you'd find a lot of fear in both instances, the site and the transportation, but I think more of the transportation.

DR. CARTER: All right, sir. Thank you very much for those comments.

The other question I had, has there been over a period of the last few years any other training supported by other people, for example, related or which could be related to transportation of high level waste? I'm thinking of training that might have been put on or sponsored, for example, or supported by civil defense groups or perhaps the Nevada Test Site and the activities that are conducted there on a continuing basis?

SENATOR GETTO: There has been some training, but I don't think as far as the training to be adequate for high level nuclear waste. I think there's -- the state has started a program. We raised the license fees, as I recall.

I can't give you the specifics, but as I recall, they raised some of the fees for the low level, the hazardous waste site that we have in Nevada and then put that into a fund to provide training for the people around the rural areas and the urban areas, but that's mostly for hazardous waste and not the nuclear -- you know, not for any nuclear waste that I know of. In other words, there's a big void there in that respect, you know.

DR. CARTER: The other question I had was related to the low level waste site which, I guess, has been in operation for the better of 20 years there near Beatty. I presume that transportation associated with that has been largely accepted by the population in Nevada. Is that a fair assessment?

SENATOR GETTO: I think that's an accurate statement. I think a majority of the people in Nevada have accepted it. There hasn't been any great crisis or accident and -- but, you do find a small nucleus of people that are concerned about where they park their trucks and, you know, what's in the trucks and so forth. But, I think it's pretty well been accepted.

DR. CARTER: Has there ever been an accident in the transportation related with the activities of the low level site? There's none that I've heard of, but I just --

SENATOR GETTO: Well, we've had a -- yes, we've had a couple. I remember there was one in my county, a truck that was hauling some hazardous materials involved in a wreck up on Interstate 80 and it actually closed the highway down and rerouted 80 for two days and I think that was a fiasco. And, that really proved that we were not prepared.

DR. CARTER: But, that wasn't low level waste, was it? It was hazardous materials?

SENATOR GETTO: It was hazardous waste.

DR. CARTER: All right.

SENATOR GETTO: I don't know of any low level waste that we've had any accidents that -- there might have been, you know, in the past some, but it's nothing that -- none of them that would have been of magnitude that I can remember.

DR. CARTER: All right. Well, we certainly appreciate as far as I'm concerned your coming down and being with us and sharing your views. Thank you, sir.

SENATOR GETTO: Thank you.

DR. PRICE: The incident you refer to in which the Interstate shut down, was the inadequate -- how would you characterize the inadequacy of the response?

SENATOR GETTO: Well, there weren't any responders in the state that were adequately trained and everybody was in chaos. And, so I think they had to wait for about 15 or 16 hours to get somebody in that knew what they were doing and there were barrels of some hazardous waste that were chemicals that were quite serious. And, fortunately enough, there was not a fire, and if there had been a fire and they had have put water on it, it would have been a disaster. And, see, they just -- there wasn't any quick response to it.

In fact, there wasn't anybody in the state. They had to bring in somebody from out of state.

DR. PRICE: Um-hum. Thank you very much.

SENATOR GETTO: Thank you.

DR. PRICE: Okay. Our first appearance for testimony

will be Stephen Bradhurst from Nye County. He lists himself as a Nye County Planning Consultant and speaking on behalf of the Commissioners of Nye County, Nevada.

MR. STEPHEN BRADHURST: Thank you, Mr. Chairman, members of the panel. For the record, my name is Steve Bradhurst and I am here on behalf of the Nye County Board of County Commissioners and the Board would like to welcome you, as Senator Getto, to Nevada, as well as to Nye County and also to the town of Amargosa Valley.

The purpose of my presentation this afternoon will be to give you an overview of Nye County's repository activities and I think you might find that of interest given the fact that Nye County is the situs local government, the only local government in the country, that is the subject of this investigation for high level radioactive waste repository. Also, I'd like to talk a little bit about Nye County's observations regarding the role of your board, the Technical Review Board, and finally talk a little bit about repository related transportation issues of concern to Nye County.

By way of orientation, and I'm departing somewhat from the presentation that you have before you, but I put a map up on the wall behind you to your left and you can see Nye County outlined in blue and Nye County is the largest county in the state of Nevada, as well as it is the third

largest county in the United States, contiguous United States, and Yucca Mountain is in south central Nye County approximately six miles from the town of Amargosa Valley and 15 miles as the crow flies from the town of Beatty which is to the north of here and about 100 miles from the town of Las Vegas to give you some sense of the communities nearby.

Nye County has been involved in this program, that is the repository program, since summer of 1983. As you know, the Nuclear Waste Policy Act was adopted in January of 1983, passed Congress in 1982 in December, and signed by President Reagan the following year in January of '83. Nye County's involvement up until recently has been primarily an oversight role to monitor the activities of not only the Department of Energy, but the other Federal agencies, as well as to monitor the activities of the state and, of course, the U.S. Congress.

I'll go back to my presentation, Mr. Chairman, and as far as the -- I'm on the third page which is the history of Nye County's program. And, as you can see there, as I mentioned, we started about 1983 with some involvement, but primarily just in monitoring an inter-governmental coordination role. I can tell you of late the county has shifted gears certainly since 1987 when the Amendments Act was approved because, as you know, the program early-on went from nine sites to five sites to three sites, and then with the

Amendments Act in December of 1987, it went to one site to be studied for the nation's first high level radioactive waste repository and that site is, of course, Yucca Mountain, just out the back door here a piece.

As a footnote to Nye County's involvement, I might add that the county has probably been impacted, I'd say, to date, more than any other local government by the mere fact that we had to struggle in 1987 with Bullfrog County that, I think, some of you heard and that definitely was a product of this repository program. There would not have been a Bullfrog County without a Nuclear Waste Policy Act, and with the creation of Bullfrog County by the 1987 Nevada legislature -- not by Senator Virgil Getto, I might add -- Nye County had to take what it considers extraordinary steps, number one, to try to stop that and, number two, to quiet that in the Courts and we were successful in eliminating that, what we considered to be a major embarrassment to the state of Nevada. But, the process in fighting that caused us to consume a lot of tums for the tummy, as well as to burn up a lot of money in Court.

Nye County is the situs local government. In the 1987 Nuclear Waste Policy Act, the Amendments Act, fortunately what that Act did is it identified for the first time the existence of local government. The Nuclear Waste Policy Act of 1982 was silent on local government participa-

tion in the repository program. There was state government, Indian tribes, and of course, the Federal Government, but no mention for the most part of local government. So, when it was apparent to us that there was going to be amendment to the Nuclear Waste Policy Act of '82, the three situs local governments at that time -- Deaf Smith County, Texas; Nye County, Nevada; and Benton County, Washington -- came together and developed a list of amendments that we submitted to Congress. Of the 18 amendments we submitted to Congress, 14 were adopted and put into the Amendments Act that we are now living with. And, the primary amendment, I should say, that we were pushing was that whenever there was any reference, at all, of involvement of governments that they should add, automatically add, the affected unit of local government so that we would have a place at the table.

We also added at that point in time the definition of affected unit of local government and this was in July of 1987. And, I mentioned earlier Bullfrog County, Bullfrog County by that time had become law because legislature had convened for the year and the law went into effect. So, we asked the folks on Capital Hill to change the definition of affected unit of local government from the situs jurisdiction local government to the situs and possibly the local governments that are adjacent to the situs jurisdiction if the Secretary of Energy decides that the adjacent local

government should also be designated as affected. We did that to make sure that if this infamous Bullfrog County remained on the books that Nye County would still be an affected unit of local government because we would surround it, so to speak, and most definitely would be impacted since our people -- there were no people living on Yucca Mountain and that's Bullfrog County or was Bullfrog County and so our people would be impacted particularly as relates to transportation and also labor force and we would be expected to be first responders to any problems in the general vicinity that might occur out there, as well as off site. And, I might add that since then two other counties have received that designation. Nye County was automatically designated as a result of that Act as the result of the Bullfrog County's demise as the situs jurisdiction, as the affected unit of local government without having to go to the Secretary to get that designation. Clark County to the south and Lincoln County to the east asked the Secretary of Energy for that designation and they received that designation. At this point in time, over in San Francisco in the 9th Circuit Court of Appeals, Esmeralda County just to our west, as well as Inyo County over in California to our west, only 35 miles from here or less, they asked for that designation and were denied by the Secretary of Energy and they are appealing in the 9th Circuit Court of Appeals that decision.

As far as the county's program, if you'll look at the next page, the Nye County program is to ensure that -- and there is six goals, you might say, of the Nye County nuclear waste repository program. I don't have the page numbers. It's the fourth page back. And, you might look at these as motherhood and apple pie, but I can tell you that the Board of County Commissioners in Nye County take these very seriously. One is that the public health and safety are fully protected. Two, the valued natural resources in Nye County are not degraded. Three is the adverse impacts on Nye County and residents are minimized. Four, unavoidable impacts are mitigated. Five, positive program impacts are maximized. And, finally, residents are kept fully informed and involved.

As far as the county's program itself, I direct your attention to the next page which is a table of the organization. You can see that Board of County Commissioners are at the top of that table and they provide policy direction to the program manager and that is me. And, I have -- to the right of that box is the management and support box. We have contract administrator. We have a technical advisor. In fact, of late, our contract administrator, Phil Lagelski (phonetic) out here and technical advisor, L.G. Holstein (phonetic), I believe, have had some contact with your staff, Mr. Chairman. We will bringing on board a legal

advisor. We will also be working on a data base development and management system, as well as audits of the various programs that we have ongoing by a CPA.

And, finally, under management support, you see GETT, that's Grants Equal To Taxes. And, Grants Equal To Taxes is, as I mentioned, the -- it's probably the primary reason in the Nuclear Waste Policy Act for Bullfrog County. Grants Equal To Taxes is a provision in that Act that says that the situs local government can, in essence, send a tax bill every year to the Department of Energy for activities at the site, whether it be -- and, of course, if the site is owned by the government, you wouldn't normally do that, but in this instance, the land that would be associated with the repository would be treated as if it was in the private sector and could be taxed, as well as the facilities at the site and the activities at the site. There will not be a tax bill, per se, but there will be an entitlement claim sent by the county because the Federal Government does not have a tax liability here, but by law, we can determine what the tax would be and then we would send to Department of Energy payments equal to taxes or grants equal to taxes entitlement claim and we have done that and at this point in time for your information our appraisal doesn't match with the Department of Energy's appraisal. So, we're at loggerheads and Department of Energy is trying to resolve that through a

Federal program or Federal process which is called notice of interpretation where they're wrestling with what they think would be the right way to appraise determinative value of the activities, as well as the property out there. But, as I mentioned, that provision of the Nuclear Waste Policy Act set off a feeding frenzy, I think, in 1987 and when people saw the possibility of big bucks coming from that provision and therefore what ensued was Bullfrog County.

As far as the actual programs of the county, you can see that we have a public involvement/education program, a socioeconomic program. We have noticed here a geotechnical and a procurement outreach program. Our focus has been on the socioeconomic program. We expect with this new fiscal year funding to get into the geotechnical side to some extent. The state has been doing an awful lot of work in that area and we expect to get involved to some degree starting in October. We also have -- the Board of County Commissioners approved a procurement outreach program. Essentially, what we're saying there is that if this program is going to come, we think there ought to be some benefits flowing to the situs jurisdiction. And, therefore, if there are business opportunities, material, equipment, and services, et cetera, that are required to investigate the site, to build the site, or to build the facility and operate it, we think that the folks that have to live with the

repository forever should be given top priority in the procurement process. And, so we are developing a procurement outreach program. Hopefully, the Department of Energy will work with us aggressively on this program. Like I say, one has been adopted by the Board of County Commissioners and will be implemented fairly soon.

As far as the socioeconomic work, 1979 -- or I should say, 1989 to the present, the county has, as I mentioned, focused in on socioeconomic activities and we have developed economic demographic projections. We have taken stock in terms of collecting base data for our communities, the facilities, the services, and we've done fiscal studies.

So, essentially what we're trying to do is determine where are we today? We need that base line data on the socioeconomic side so that if this program goes forward, site characterization first and then construction and operation, we need to see the change from what is projected on the base line to what actually might occur with respect to the actual operation or construction of a repository at Yucca Mountain.

So, it's important for us to collect this base line data and that's what we have been doing. That includes things that probably a lot of you take for granted and that is having decent base maps. We don't have good base maps and just rudimentary tools like that. So, we have had a very aggressive program to develop decent base maps and we have

sort of brought ourselves into the 20th century with computerized base maps and we're doing that work now in the area to the south of here and will be moving into this area very soon with an arc info type of system. We're also doing some growth management studies and we'll be looking at economic development potentials for this community, Amargosa Valley, Beatty, and Pahrump to the south.

I might add one project that we've been involved in that we're quite proud of in terms of base line data is our Nye County town history program. We wanted to find out how these towns evolved over time. That is the town of Amargosa Valley, the town of Pahrump, the town of Beatty, and the county seat to the north, the town of Tonopah. Not an awful lot of information existed and we needed to know how they evolved, what's the social/cultural aspects of these communities and how may they change over time, particularly with respect to this project. So, what Nye County embarked on a couple of years ago is the town history project and we are now at the point where we have four town histories, a town history for these four towns that I mentioned, that are about to go to press. In developing these town histories, we realized that there wasn't much written about this town. So, we had to go out and do oral histories of the old-timers, those people that used to live in these communities or have moved on to some other areas. So, in the process, we have

developed 75 oral histories that are quite exciting and unfortunately we've already lost about, I think, five of these people. So, they're priceless, these oral histories. They will be given to the university system and also in the various libraries. So, there is a positive in my mind, a positive aspect of the program, as far as the repository program.

Finally, Mr. Chairman, regarding the nuclear waste -- or Technical Review Board, we look at the Technical Review Board somewhat having a parallel responsibility to what Nye County is doing and that is I see the Technical Review Board, your board, as being an honest broker monitoring the program, that is the DOE program, and reporting to Congress. And, I gather that you do that on an annual basis. Nye County is doing the same thing in reporting to its people, trying to stay on top of the program, and looking at various aspects of the program, and reporting to the people. And, if we see some problems, we try to focus in on those problems and identify them for the people of Nye County.

On the transportation side, issues of concern to Nye County, Senator Virgil Getto interpreted a number of them, and I'll just go through some of the others that I have listed on my presentation which is the last page. Number one, the quality of the transportation casks must be demonstrable to county. And, we've had a number of meetings

of late with the Department of Energy on rail routing and we've talked about the transportation or the casks and what we've heard is that the casks are super safe. There haven't been any accidents and what have you. Our response to that is that may be the case, but you've got to get that message to the people. It's easy to come up with mathematical models and statistics and what have you, but what we've told the -- I think Senator Getto just said that -- is that this information somehow has to go from statistics to the man in the street. And, I don't think we're close to that yet, Mr. Chairman and members of the panel, and that has to be done -- in particular has to be done through the situs jurisdiction, the residents of this jurisdiction, because no matter how you look at it, the material has to come through Nye County to get to Yucca Mountain.

There's a lot of talk about probabilistic risk assessment and again I look at that as something that deals with computer base mathematical models and not understood by the general public. You know, what are the risks of transporting wastes and I think that has to be broken down and it has to be addressed in terms that can be understood by the general public.

As far as the rail lines, we have indicated to the Department of Energy that we would like to have them go out and talk to our residents and tell them what the risks

are with respect to a rail line nearby, near their communities, and what are the benefits? Because Department of Energy is essentially saying to the Nye County Board of County Commissioners and to the residents of Tonopah, this town here, Amargosa County, and probably to Pahrump when they look at another option, a rail line, is that if you want the rail line near your community, tell us and we'll investigate that and we'll see if that's, at all, possible. We're saying, well, maybe we want it near the community and maybe we don't. We just don't know what the risks are at this point in time. Also, if there are minimum risks, we'd like to know what are the benefits of the rail line coming by the community? Is it a co-use line or is the line going to be dedicated to the repository? If it's dedicated to the repository, then we're not interested in having the rail line coming right through the community because no one else will be able to use it. We've asked the Department of Energy back in '84 to respond to that request that will it be a co-use line. It's my understanding that a letter will be coming out in the near future telling us, yes, it will be a co-use line and that it can be used for other purposes, particularly in light of the projections that there would be three trains a week on this line. And, so certainly the line could be used for other purposes. We would hope that would be the case.

On routing of trucks, the state of Nevada is about

to -- the State Department of Transportation is about to designate routes for truck traffic for trucks carrying high level radioactive wastes and it appears from the study that's been done that the routes will not involve Park County to the south. They are trying to avoid the populated area to the south and so that all high level radioactive wastes coming into this state from the west on trucks will come right up this road here that you came in on and that's Highway 373 coming in from California by Death Valley will be diverted to go that route. All trucks coming in from the east will be coming in from the very northeastern part of the state around Wendover and then working their way down south to Ely and then coming across the northeastern part of Nye County, central Nye County, and then right on down through Nye County to the site.

In our statement to the Highway Department, to Department of Transportation when they developed this plan was that we sure hope you understand that again we need to understand what the risks are because what you're essentially going to do is be taking these trucks off the interstate and putting them on these local roads going right through towns maybe 50 feet from schools and hospitals and what have you and we need to know if there are any risks associated with that kind of activity. And, of course, these roads are not in good shape, no shoulders on many of them, out in the rural

parts of the state. So, there has to be some acknowledgement by the state of Nevada that by taking the truck traffic off the interstate, Interstate 15 to the south, with a significant setback, as you know, the right of way of the interstate and bring in on these local roads with a small right of way, there has to be some consideration of risk and what is perceived by the general population as far as risk. What happens if you have to stop a truck? There's a snowstorm and it sits in your community for a day or two, what will be the risk to the people in that community?

I've gone too far, Mr. Chairman, and I'm going to stop right there and I'll be more than happy to respond to any questions that you or the members of the panel have.

DR. PRICE: Thank you very much. I'm going to take this little break and opportunity to introduce two people on my right and then we will proceed with whatever questions that the panel members have and also the two persons on my right.

Dr. Sherwood Chu, or we call him Woody Chu, is Senior Professional Staff on the Nuclear Waste Technical Review Board with special interests in the area of transportation. And, our Executive Director is Dr. Bill Barnard. And, they will be participating in questions and offering comments as our session goes on.

Now, does anyone have any questions? Okay, Dr. Carter?

DR. CARTER: Yeah, we certainly appreciate your being here. Let me ask you a couple of things for clarification, if you would. First off, let me suggest, you mentioned the role of the Board and you were right about everything except one item and let me correct that for the record. And, this is our charter from Congress is to evaluate from a scientific and technical standpoint the high level repository program including transportation and several other things. We advise the Secretary of Energy in that capacity and we also report to Congress not once per year, but twice per year. So, that's the distinction.

The questions were you mentioned the histories and the fact that you had put together now and are getting ready to publish four of these and I wonder about their availability? Certainly, I would be interested in seeing a copy of those. Let me ask you that. What's their availability going to be?

MR. BRADHURST: They will be available to the general public. We've been getting the same question from the citizens of Nye County because it seems like we've been at this forever. But, where we are, Dr. Carter, is that we are about to go to press. So that the histories that have been completed, the layout and design, all the work that has to be done to print the book, and so they will be available to the general public and we hope to have them rolling off.

The first history will be probably to McNaughtin & Gunn probably in the next four weeks and then after that we expect to have the other histories. We actually have eight histories. We have four short histories on the towns and four long histories. So, we have a condensed history with a lot of photos and then we have what we call a full text history with not so many photos, but more of an academic document. So, I'd say by the end of the year we will have those histories available to the general public, as well as probably within the next two months we will have the oral histories, 50 oral histories, on the street.

DR. CARTER: Okay. Well, we'd appreciate if you'd keep in mind that when they are available, we'd like to have a notice.

The other thing, let me ask you, what's the current population of Nye County and sort of in general what's its distribution? Is it mostly rural, mostly cities, or just what?

MR. BRADHURST: Our estimate is the population is approximately 20,000 to 22,000. Of course, we'll find out fairly soon and that's a county of 18,000 square miles. So, a little over one per square mile. But, the population is not spread out like that. It's concentrated into -- the largest community is to the south of here in the town of Pahrump. The estimate is anywhere from 9,000 to 10,000 and

that could be low. There's been an awful lot of growth in Pahrump and that's, as I say, a community due south of here.

The town of Amargosa Valley, this town is a very large town geographically speaking. It's about 500 square miles, but population-wise it's probably somewhere in the neighborhood of about 1,000 people. I could be wrong and there are town people here that can certainly correct me. To the north is the town of Beatty. That town has grown significantly because of bond gold mining activity and the estimates are probably anywhere from the neighborhood of, oh, 20 -- I should say 2,000 to 3,000, somewhere in that neighborhood. It might even be more. Significant growth there, although it has cut back after the construction phase of that project. And then, further north is the county seat, Tonopah, estimate is about 4500 people. And then, the other two populated areas would be Round Mountain, Big Smokey Valley area to the north and east of Tonopah about 50 miles. There's probably a good 2,000 or 2500 people there. And then, further on up to the town or city of Gabbs. There's only one city in Nye County and that's Gabbs, an old mining community that probably has about 800 people. So that the population for the most part is concentrated in these towns.

DR. CARTER: Another question, do you have any idea or any handle on how many people in Nye County may be gainfully employed either at the Nevada Test Site or in activities

related to test site programs and what not?

MR. BRADHURST: I don't have the figures. I know that the people in Nye County have complained for many years that the opportunities did not -- were not there for them. That if you were with the Union, you had to go down to the Union Halls in Las Vegas. So, it was very difficult for youngsters, number one, to get training and, two, to be able to get the Union jobs at the test site. There are a number of people that live in this town here that have worked at the test site over the years at one time or another, but my guess is that the numbers are rather small. When I say numbers are small, I'm thinking of the total work force at the test site and the estimate is around 5,000 individuals that are out there with only about 200 to 300 of them DOE employees, the rest of them contractors. That there probably wouldn't be more than, I'd say, maybe 300, 400, 500 people in Nye County that work out there and I don't have that pinned down. But, as I say, I know that the complaint has been lodged for many years is that here we are, the test site is in Nye County, but the job opportunities are not there.

DR. CARTER: All right, sir. Another question, does Nye County get any special dispensations or are there any advantages of being the county for which Yucca Mountain Repository may be located?

MR. BRADHURST: Well, I had to hit that a little bit,

Dr. Carter, earlier. There has been on significant disadvantage and, of course, as I said, that was the Bullfrog County situation, but the advantages I see with respect to the legislation would be this Grants Equal To Taxes provision if that provision is ever implemented by the Department of Energy. We'd like to think there would be advantages and we'd work very hard with the Department of Energy, as I mentioned, to see if we can get some procurement opportunities to our businesses and our people. But, to this point in time, I can tell you it has met with success. So, I don't see any striking advantage at this point.

DR. CARTER: Okay. The other thing you mentioned, transportation, truck routes, and the fact that they will probably enter the state up in the northeast corner up around Wendover in Utah and you mentioned the routes would come down through Ely. Now, when they get to Ely, would they come on down through Pioche and Caliente to get here or would they go through Tonopah and down the western side?

MR. BRADHURST: I'm impressed with your knowledge of the geography. They would go on Highway 6 on over to Tonopah and then come on down. That's the preferred route that the Department of Transportation ran by us. They have an alternative route that would go south, but it would go south of the Sunny Side turnoff and not go through Pioche or Caliente and Alamo and Panaca, but would go on the road just

over to the west of it. But, the preferred route -- and they say this decision will be made by the director of the State Department of Transportation fairly soon -- is when you get to Ely, go due southwest, get on Highway 6, and then come right across Railroad Valley and over to Tonopah and then south.

DR. CARTER: So, there would be no reason for them to be on State Highway 25, at all, north of the repository and test site?

MR. BRADHURST: They would be coming down Highway 95. To get to Tonopah, they would be coming down Highway 95.

DR. CARTER: Okay. The other thing that I wanted to mention just as a comment, Dr. Price mentioned in the opening remarks that there will be a public hearing, as well as sort of a formal hearing for one day or a panel proceeding, of the Environment & Public Health Panel which I chair. And, that will be Reno October 14 and 15. One of the subjects that we will be addressing there will be socioeconomics. So, I'd like to announce that to whoever is here that we will be addressing that essentially for the first time.

And, my other is just a question or a comment and that is will we ever have another Bullfrog County in Nevada?

MR. BRADHURST: I'd hate to -- I'd like to say no, but a number of people indicated when this was in the works that it would never happen and my response to them is you don't know

how things operate in the state and it did happen. It was as raw as it could get and I don't know what's going to happen in the next session or in sessions to come, but I can tell you we're watching it closely and Nye County, as it did in 1987, will stand up and speak out against it. I think, Governor Bryan at that time, who is now a senator, and other state leaders realized when they worked on that bill and approved the bill that it was a significant embarrassment to the state of Nevada.

DR. CARTER: Thank you, sir.

DR. ELLIS VERINK: I have kind of a trivial question. Looking at your organization chart, I wanted to be sure I didn't overlook any nuances that may have been introduced by the artistic endeavor here. I notice there's a much larger space between the box for public involvement and the other three. Is there anything I've missed there?

MR. BRADHURST: No, it's just a matter of a typing problem there. I asked that same question or a question similar to that with John Bartlett. The Nye County Commissioners had a meeting with Dr. Bartlett a couple of weeks ago and he gave us his organization chart and he had four directors including himself and then he had these associate directors. And, I said, well, I didn't know this program had four directors. And, he said, well, it doesn't have four directors. I just couldn't get these boxes up here

on the left hand side down on the bottom. I didn't have enough room. I was dying to ask him if he had a copier that reduced things and maybe he could do that. But, this is not as glaring as his particular problem.

DR. VERINK: Yeah, I remember that chart.

DR. PRICE: Can I ask for a clarification on a point? You mentioned that the cask safety should be demonstrable to the county. Now, what does that mean?

MR. BRADHURST: I think it has to be demonstrated to the people in this county that definitely that the casks are safe. We talked to the folks that have worked with those casks that live in this community, for example. There's no doubt in their mind. But, there aren't that many -- that's just a small percentage of the total population of Nye County. And, when you think about the fact that there may be three trucks a day rolling through these communities, I think it has to be demonstrated by way of bringing maybe a cask into the communities with radiological health specialists talking and putting it in layman's terms in terms of x-ray exposures or whatever so that they can see if you're standing next to this cask, it's stuck here on this hill and you live 50 feet away, here's what you can expect by way of exposure over the course of that snowstorm or whatever it may be. I think that kind of information has to be provided to the people not only in this county, but throughout the United

States.

DR. PRICE: So, it's a reference to the ability to reach out or provide information to the people in the county that you have here?

MR. BRADHURST: Right.

DR. PRICE: Another question, what would the benefit, as you see it, to the county be if the railroad line were a co-use line?

MR. BRADHURST: Well, we've asked that question of Department of Energy to essentially give us some ideas to how this line would be built and what type of facilities would be associated with it, as well as we've talked to some of the people in Nye County about how they might use a rail line. And, for example, there's significant discussion about a large limestone deposit not too far from here that is a world class, supposedly, limestone deposit and that some foreign company is looking at in terms of using it for concrete and marble deposit and whatever. Well, it's difficult to move that, particularly the marble, out of there without a rail line. So, we see that some of the areas, we think, in Nye County probably some economic development could occur if we had a rail line nearby.

Also, as you know, in Nevada we have freeport warehousing and so the warehousing could be any place in Nevada. You can bring your material in, you can store it

without it being taxed, you can assemble it, and send it on out without the product being taxed. So, we think there may be some opportunities there. So, we haven't put our thinking cap on, but we do think that it could be used certainly for other purposes, such as I mentioned. And, of course, gold mining and what have you, it's very active in the central part of the state and it could be that they could ship their material out by rail. But, as I say, we haven't really given it serious discussion or thought, but we do have in our work program for this coming year and actually in last year's work program to bring on a specialist to take a look at the economic opportunities.

DR. PRICE: Another question, you also speak of risk analysis including judgments of local public officials in your material you provided to us and the general public, not just the technical experts. How would you or have you come up with a way in which you would carry out that kind of a recommendation?

MR. BRADHURST: Dr. Price, I think on the surface it would be similar to the answer that I gave you before and that is my feeling is that the Department of Energy has to do a major education job in this state and they need to get out and talk about the risks in real terms associated with the transportation of high level radioactive waste, whether it be by truck or rail. And, again, instead of giving them a 1⁻¹⁰

power equation or a formula, say this is what this really means. That if we have a truck sitting here and even if there's a break, a rupture of the cask, here's what's going to happen if you're 10 feet away, 50 feet away, 100 feet away for X amount of time. Or, if the cask just sitting here, as I mentioned, next to your house, what will be the impact over time? And, I think that could be done, but it just takes a coordinated and, I think, a serious effort on the Department of Energy. Maybe they don't think it's timely to do that, but I think it's important right now for Nye County residents to have that information because they're being asked by the Department of Energy to help them locate the rail lines.

DR. CARTER: Let me clarify, ask you a little bit more concerning this. When you say you're interested in, I presume you're primarily interested in radiation levels or rates at particular places for particular times and then obviously any kind of integrated exposure that a person might receive. Is that --

MR. BRADHURST: Right, correct.

DR. PRICE: And, it's not particularly that in the risk analysis itself that perceived risk be somehow incorporated in the calculation, somehow be quantified? That isn't really the gist of what you're saying, but rather to deliver to the public what these risks are so that their perception of risk can be close to the calculated and perhaps actual risks?

MR. BRADHURST: Yes, and even on the perceived risks, I'm not sure -- I would suspect that the end product, again the formulas and the numbers and so forth probably have some subjective components in them and I think that that needs to be looked at closely in terms of what are the -- instead of having a technician weight it, I think in the subjective side maybe there ought to be more involvement with people that may be impacted, you know, the man in the street. And, I'm not that familiar with the process, but it seems to me that a lot of these things are just formulas and maybe some weighting done by someone who is not familiar with what the situation is out in the area of impact.

DR. PRICE: The weighting aspect of this, you touched on a very controversial side effect, sir, how do you weight these things.

MR. BRADHURST: Yeah.

DR. VERINK: I wonder what your reaction -- I've seen several movies or videotapes of some of the test programs that some of these casks have been put to. Has this sort of information been available to the public and do you feel it's persuasive?

MR. BRADHURST: It has been available. I've seen films also. In fact, was on a tour with the Technical Review Board in Albuquerque last summer and I found that tour to be very helpful. We didn't, of course, see the casks in the hot

flames or dropped on the spike or whatever, but still we could see where the tests were taken. But, it seems to me that that film is useful, but it's got to go beyond that. I'm not sure exactly how you do that, but beyond just coming in and saying, okay, let's sit down and turn the lights off and watch this railroad train, this locomotive run into a cask. I don't know if that's the end of it.

DR. CARTER: It sort of seems detached from the real world.

MR. BRADHURST: Right.

DR. PRICE: And, perhaps relating an unyielding surface to the realities of transportation as we understand it.

MR. BRADHURST: Yes, exactly.

DR. WILLIAM BARNARD: Well, what do you anticipate to be your funding level for your program next year?

MR. BRADHURST: The Senate FY-91 Energy and Water Appropriation Bill cleared the Senate recently and it has in it, I believe, \$5.2 million for the effected units of local government. They've earmarked money for Nye County, for Clark County, and for Lincoln County, the three affected units of local government, aside from that. There was \$200,000 earmarked for Nye County to conduct a radiological health investigation study, \$200,000 for Clark County to look for new sources of water for Clark County which is a bit of a problem for us in Nye County, and \$100,000 for Lincoln County

to do some educational work. And then, there's the \$5.2 million to be distributed amongst the three affected units of local government. Our request to Department of Energy will be \$3 million and that \$3 million and then on top of that would be the \$200,000 for the radiological health investigation that's earmarked in the bill itself. And, essentially, what we're doing, as I mentioned, is we're starting to gear up socioeconomic side, particularly as well as on the geotechnical side and getting serious about the procurement outreach and also public information interaction.

Another project that we have, Bill, for your information and I didn't mention it, but it's in my presentation, is a science center feasibility study. Nye County residents have felt for some time that if this project were to come -- we get back to what we were talking about earlier -- there's got to be a good education program. And so the people, the youngsters particularly in Nye County and for that matter the region, need to understand what the nuclear world is about and so we have pushed very hard over the years to try to get a science center built at the intersection here at Lathrop Wells close to the test site. But it would not be a science center for the nuclear world or atomic science center, it would be an interactive hands-on science center that would cover a number of topics, not only the nuclear world but mining, the environment, the solar, and

things of that nature. So, we have that in our work program this year to go from the feasibility study to the actual development of the plans, construction drawings, and things of that nature.

DR. BARNARD: You mentioned the \$3 million for your total program. How do you envision that being broken down on the four areas that you have at the bottom of your organizational chart?

MR. BRADHURST: We're probably -- if you look at it, I would say that, you know, the socioeconomics would be at the top somewhere in the neighborhood of, I'd say, 1.2; geotechnical would be about 400,000; procurement outreach program would be a couple hundred thousand; and, the public involvement/education, we're probably looking at probably 500,000. I don't know if that adds up to the number, but anyway that's -- we're focusing in on and have been for some time on socioeconomic because we see that as our responsibility. And then, on top of that, Bill, would be the Grants Equal To Taxes and the computerized information system and what have you that you see in that other chart.

DR. CHU: Yeah, I have a question of clarification. You expressed concern about how rerouting and how the overall safety, that is the safety of the rural population, may be traded off with the safety of the urbanized population by avoiding populated areas. Are the localities, all the

counties being consulted by the state routing agency in the decision process?

MR. BRADHURST: They have been consulted to the extent that the Department of Transportation has gone out and met with the local elected officials and told them what they were going to do. The plan itself is developed by the University of Nevada/Reno contract to the State Department of Transportation and then they took the plan and went out and visited with the Nye County Board of County Commissioners and then had public meetings in the various communities along the way to get their input. But, it's my understanding that now they're at the stage where they're going to finalize the plan and the director of the State Department of Transportation will be making a decision fairly soon.

DR. CHU: And, there are some sort of risk analysis being performed in the sense that there are so many people involved if we did it this way, the accident rate is such and such or has been such and such?

MR. BRADHURST: Yes. Yes.

DR. CHU: Thank you.

DR. CARTER: Steve, one last question I had just for my own edification, but if you take a look at, say, Governor Miller and Senator Bryan and Senator Reid and the representatives, are there any of those folks other than Harry Reid that are from either southern Nevada or central

Nevada, I'm thinking within reasonably close proximity to the proposed Yucca Mountain site?

MR. BRADHURST: You mean as far as their origins?

DR. CARTER: Their home turf, yeah?

MR. BRADHURST: Their home turf is Las Vegas. In fact, there's a State Commission on Nuclear Projects that's comprised of seven individuals appointed by the Governor and not one of those members comes from Nye County; one from Fallon, one from Reno, and I think the rest from Las Vegas.

DR. CARTER: Thanks.

MR. BRADHURST: You can see what we're wrestling with.

DR. CARTER: Thank you, sir.

DR. PRICE: All right. Mr. Bradhurst, we appreciate very much your coming and thank you.

MR. BRADHURST: Thank you.

DR. PRICE: And, if you don't mind, we'll take a little break at this point because being chairman, I can declare when the breaks ought to be and I received a note I have a phone call I have to make. So, I'll take a break at this time.

(Whereupon, a brief recess was taken.)

DR. PRICE: All right. We'll begin again. I understand it's a little difficult for some to hear and remind ourselves and me included to speak directly into the microphone to assist in this.

Our second witness is Mr. Dennis Bechtel, Coordinator, Clark County Nuclear Waste Repository Program in Las Vegas.

MR. DENNIS BECHTEL: Thank you very much, Mr. Chairman and members of the Board. I'd like to welcome you to Nevada.

For the record, my name is Dennis Bechtel. I'm a planning coordinator in the Department of Comprehensive Planning and my current responsibilities are coordinator for the nuclear waste program for Clark County, Nevada.

Before I begin, I'd like to share Commissioner Thalia Dondero's regrets for not being able to speak here today. Mr. Dondero is a member of Governor Miller's Commission on Nuclear Projects and is greatly concerned with nuclear waste issues, especially as they relate to transportation. She, unfortunately, had a prior commitment that precluded her presence today, but she does send her regards.

I'm here today to describe the Clark County Nuclear Waste Repository Program to the committee and to identify some of Clark County's concerns relating to the transfer of nuclear wastes to the proposed high level nuclear waste repository at Yucca Mountain. I also need to relate to you that several years ago the Clark County Commission went on record as opposing the siting of a repository in southern Nevada.

In its attempt to adequately address the problem of permanent, safe storage for high level nuclear waste, Congress enacted the Nuclear Waste Policy Act of 1982, as you're aware. In 1987, Congress enacted Public Law 100-203, the Nuclear Waste Policy Amendments. At that time, the Texas and Washington sites were eliminated from consideration and the Department of Energy was authorized to only study the site in Nye County, known as Yucca Mountain.

Until 1987, Clark County was a part of the state of Nevada's Yucca Mountain program. There were, however, only finite resources to perform the needed technical and socioeconomic studies, of which we feel transportation is an important component. This issue was addressed late in 1987 when Congress approved the Nuclear Waste Policy Amendments Act and at that time provided the opportunity for affected local governments to get more deeply involved in the program.

When I speak of affected local governments from the perspective of Clark County, this would also include, of course, the cities of Las Vegas, North Las Vegas, Henderson, Boulder City. About half of Clark County's population is located in the incorporated cities and half in unincorporated towns surrounding Las Vegas. On April 21, 1988, to further clarify our position, the Department of Energy designated Clark County as an affected unit of local government. At times just after that, Lincoln and Nye County were also named

as affected governments. We have subsequently received independent funding from DOE and are developing a work program to compliment the state's work that has been going on for the last several years. It is from this perspective as an affected unit of local government that I would like to address you today.

We believe that this public hearing provides the appropriate forum to convey Clark County's concerns specific to the Department of Energy, its high level nuclear waste program, and the role of the county in considering issues such as the transport of nuclear wastes as it relates to Yucca Mountain. I hope today to broaden your understanding of Clark County, its concerns, and how the Yucca Mountain program affects the community. I would also like to provide some background about our program. The following comments I have reflect these points and offer some possible solutions or recommendations to you.

As background, Clark County is currently experiencing a major period of growth. Approximately, 760,000 people reside in Clark County which is approximately 65% of Nevada's population. Ninety-six percent of Clark County's population resides in the Las Vegas metropolitan area, the Las Vegas Valley. Currently, some 4,000 people monthly are moving into the county. This represents, at present, the highest growth rate in the United States. Even

when gauged by conservative estimates, population growth is expected to continue throughout the 1990's. Growth has outstripped the government's capacity to provide basic services such as schools, water, sanitation, police and fire protection. Conditions of rapid growth make for a unique planning environment, a certain understatement there. Planning by chaos, I guess, is the way it works. So, since the county has marginal supplies of resources, any external variable, such as the introduction of a high level waste repository with the potential addition of thousands of employees and their families, may impact Clark County's ability to continue to provide basic services.

One thing that I would like to note is that you'll notice on the back of the testimony, there's several maps and Clark County is approximately 100 miles from the proposed repository site. As you're aware, since the mid-50's, the Nevada Test Site has been conducting weapons testing. The majority of people who work at the test site right now reside in Clark County. It's a tremendous inconvenience to commute that distance, but some 90% of the people affiliated with the test site actually live in Clark County. And, I think the feeling is that if a long-life project, such as the repository is constructed, that there would be a similar trend. With much in the way of amenities in the Las Vegas Valley and Clark County, that people would be coming for

longer term employment, would bring their families, and would probably wish to reside in Clark County.

How we resolve these issues is of vital importance to the welfare of Clark County. Health and safety issues are, of course, our primary concern in the program. We want to make sure that if, in fact, the repository is constructed that the population in our area is not affected. Actually, the population anywhere is not affected. Also, however, one of the foremost goals of our elected officials, in addition to the health and safety issues, is to ensure that our current high standards of life are maintained. The important component of this is the continued health and vitality of our economy which is tourist based. We must, therefore, ensure that a program such as Yucca Mountain does not affect our basic economy.

Further, each community has its own individual characteristics. Las Vegas and Nevada have unique circumstances that local planners and engineers must wrestle with daily. We are consequently best equipped to develop a program to determine where potential impacts will occur. This is particularly the case with transportation. Fortunately, as we interpret the Nuclear Waste Act Amendments, there's sufficient flexibility to enable all parties to define their own study requirements.

I might want to add Clark County is currently

working on their third grant application through the Department of Energy for study and we've got a grant that we've submitted to the Department of Energy for \$4 million for 1991. In that, we're attempting to look at -- be able to develop a baseline information and to develop a methodology by which we can determine future impacts. Information is definitely scarce in Nevada and partially because we're growing so fast, we're not able to keep up with, as I indicated before, needs, but we really don't have a lot of basic information to be able to plan from. So, our primary emphasis at least in the first year is to develop data, something by which we can test impacts from.

One other thing I might want to add because of the fact that Clark County is growing so fast, that this particular impact may be minimal compared to the growth that's going on right now. I think you have to understand that this growth should be placed in the context of some things that are inherent in our area. A lot of our infrastructure is wearing out. A lot of it was built in the early 60's. We're going to have to replace a lot of infrastructure in the 90's. So, in addition to considering added growth, we're also going to have to replace things. And, that's a great cost. I think when we were doing some of our planning in the early 80's, of course, we weren't concerned about something like Yucca Mountain, we were

concerned about conventional growth. And, this is -- evidently, this is obviously one of the things that we didn't factor into our equation. So now, we're having to think about this. You've probably read about the water issues, that's another concern. We've implemented a water conservation program in Clark County right now and we have to consider that we're running out of that resource, as well.

As a recommendation, in light of these facts and due to our unique circumstances, our recommendation is that Clark County and other affected units of local government must be allowed independence when defining the studies related to the examination of repository impacts. The issue defined through independent study reflect the County government's awareness where emphasis in research would best be placed in order to determine accurate baseline scenarios, information needs, and ultimately determine impacts.

The law is fairly generic, I think, in allowing us to do certain things and we feel that we should be allowed the flexibility to define the studies that we feel we need to do and to determine the impacts. I think we're uncertain at this point because our program is targeting where the impacts would take place. We're kind of looking at a broad brush of potential impacts, some which may drop out later on. I don't know, but I think we feel a strong need to be able to define what those impacts are.

Now, my second point is with respect to transportation issues in Clark County. Examination of the map that I provided in the back there illustrates some of the inherent problems facing Clark County with respect to the shipment of spent nuclear fuel to the Yucca Mountain site.

First, there is a limited roadway network. This is, in part, due to geography. U.S. Highways 93 and 95 are the only routes linking southern Nevada to Utah, California, and Arizona, and these traverse the most densely populated areas of Las Vegas. Even assuming an MRS is constructed which would potentially reduce the overall shipping quantities, a large number of shipments will likely traverse Clark County. Further because, unlike many communities, we do not have a system of roads bypassing the metropolitan area, we are concerned about waste shipments and potential risk to the public going through our most densely populated areas.

Second, the mode of transportation of the high level nuclear waste to the proposed site is currently unknown. The use of rail is an option which the Department of Energy is currently exploring. However, the use of rail would also pose risks to the citizens of Clark County because the only main line railroad goes through downtown Las Vegas.

Due to the existing alignment of main line track currently servicing southern Nevada, a dedicated spur would have to be

built in some location from the main line to the repository.

Several routes are being considered by DOE that would pass through Clark County. This raises another series of issues that have to be addressed including emergency response, impact on the environment, and a host of other potential questions if, in fact, we were looking at a new spur.

We recommend the Department of Energy acknowledge that Clark County has a limited roadway network and could consequently experience serious impact from the movement of high level nuclear waste to the repository. Department of Energy and Department of Transportation, therefore, should permit flexibility in routing in order to take into consideration unique circumstances that may affect citizens.

Further, we agree that it's too early in the repository planning process to identify specific routes for both the county and the Department of Energy. It would, however, be prudent to assume that based on the existence of the current highway network and the current Department of Transportation regulations -- I'm referring to HM-164 -- there is sufficient justification for continuing system-wide analysis. Also, because of the long lead times needed to plan, construct, or maintain transportation networks, planning should be conducted as early as possible in the program. Also, because each community has sufficiently unique transportation characteristics, we also request that we be afforded a

substantial degree of freedom when developing issues for transportation studies. Although the Regional Transportation Commission of Clark County is a designated metropolitan planning area -- and there is an individual who will be testifying after me from the RTC -- the development of transportation studies emanates from the Clark County Nuclear Waste Repository Program. This system ensures that from the nuclear waste program perspective, our evaluatory efforts will have continuity when addressing nuclear waste issues.

My third point has to do with the MRS facility. Potential construction of a Monitored Retrievable Storage facility may, however, be an essential component of the proposed high level nuclear waste repository. Without an MRS which would provide the potential for consolidating waste, the frequency of nuclear waste shipments represents a quantum increase in risk to the residents of Clark County. If an MRS were in place using dedicated rail, there could be DOE's current estimates be a total of 1388 rail shipments to the repository and, in addition, 7200 truck shipments. Without an MRS, again using DOE estimates, there could be 7800 rail casks to be shipped and 26,600 truck shipments. The worst case, no MRS and no rail shipments, could dramatically increase truck shipments to 76,000. Under this scenario, the absolute risk to Clark County would dramatically increase without an MRS site in place prior to the operation of the

proposed repository.

We would want to strongly emphasize that the high level nuclear waste program must include the MRS as a prerequisite to any planning efforts associated with Yucca Mountain. The MRS should include facilities to consolidate waste and thus reduce the total number of shipments to be transported. Because of the importance of an MRS, we would like to be kept apprised of all issues relevant to MRS siting and continue to be involved in the planning process on an MRS.

My last point has to do with consistency in the Department of Energy's transportation policy. An issue which is important to Clark County is the Department of Energy's transportation policy related to nuclear waste. In the foreseeable future, shipments will begin to be transported to the Waste Isolation Pilot Project near Carlsbad, New Mexico.

The defense waste cleanup will also result in large volumes of waste being transported throughout the nation somewhere. Many of the issues which relate to the WIPP and other shipments, such as the tracking system of the waste, driver training, safe havens, emergency response, emergency stops, adverse weather alternative routing scenarios also relate to Yucca Mountain.

We believe, therefore, that standardization of all Department of Energy transportation policies and procedures

would be beneficial to all governments involved with transportation issues. Standardization will improve the total transfer of nuclear waste throughout the United States and minimize duplicative efforts that might occur relevant to Yucca Mountain.

That is my testimony. I might also want to note that Jerry Duke was to be a followup and we've combined our testimony. So, I'd be happy to answer any questions.

DR. PRICE: All right. Panel? Dr. Carter?

DR. CARTER: Dennis, could I ask you a couple of things? One, just from our perspective and information gathering and I'm sure it's a matter of record, but when did Clark County take the political position that they were opposed to the Yucca Mountain Repository?

MR. BECHTEL: That position was taken in January 1985. I might also note that in approving your resolution -- or opposing the repository, they also recognized the need to study, for us to study, you know, potential impacts. So, that's the second part of the resolution, that we should continue to study. You know, however the repository program goes, that we should still continue to study and determine potential impacts.

DR. CARTER: Okay. Another question related to that, how often, if any, does the county look at that resolution or re-evaluate it to see if it's what you want to say or the

position you want to take now versus five years ago?

MR. BECHTEL: Well, I think it's plain --

DR. CARTER: Is that a routine process or --

MR. BECHTEL: Well, we've enacted several other resolutions since that time and the last, I think, being in 1987 which also included a statement opposing the repository.

So, it's not something that we, you know, look at regularly, but it has come up on several other occasions. It's been affirmed.

DR. CARTER: Okay. And, it may come up in the future?

MR. BECHTEL: Probably.

DR. CARTER: The other thing, I wonder if you could summarize briefly for us, you certainly mentioned some concerns related to transportation, but how would you characterize the major opposition of the county to the repository? Are there four or five particular reasons or two or anything of that sort?

MR. BECHTEL: Well, I think the concerns are related to the fact that we don't -- we're not like a lot of eastern cities and we don't have beltways. We're kind of a unique town. We're a 24 hour town and the concerns that if you have large volumes of nuclear waste coming through the community, would that affect our standard of life, would that affect tourism, and obviously, you know, if there's an accident, you know, there's a potential great impact in a highly urbanized

area that we're concerned about.

DR. CARTER: How does Clark County -- you mentioned the phenomenal growth that they're going through and I presume in the past they've undergone at least similar growth. It's certainly been a growth city for many, many years. But, how indeed does the county control or regulate the growth or do you?

MR. BECHTEL: Well, that's a good question. Of course, you know, working in the planning department, we attempt to -- we don't make judgments on growth, but we attempt to insure that it occurs in a way that we're able to provide services to the public and minimize any disruption. With the fact that Clark County has become a desirable place to live, I think 17% of our population is retirement or it's military personnel enjoying the nice climate. We welcome growth and we attempt to make sure that we're able to plan for it adequately. And, actually, we've had some problems over the last 10 or 15 years in doing that.

DR. CARTER: Well, that certainly can impact water and this sort of thing and, of course, obviously just to deal with that kind of growth in terms of school services, water, sewage, electrical service, and what not is quite a thing.

MR. BECHTEL: Right.

DR. CARTER: But, I was sort of interested in whether or not you did control it because obviously you can do that, you

know, either through permits or through prices or costs of doing businesses for new people. In other words, you could make those slightly prohibitive for that many people to move in really quick. I'm not suggesting that you should do it, but it's certainly a possibility.

MR. BECHTEL: Yeah.

DR. CARTER: The other thing, of course, you've had the Nevada Test Site here since, I guess, the early 50's, 1951, I believe, although it might not have been called that same name. I think it was originally the Nevada Proving Ground.

MR. BECHTEL: Um-hum, right.

DR. CARTER: And then, it changed to the Nevada Test Site. And, the repository was proposed to be essentially fairly nearby.

MR. BECHTEL: Um-hum.

DR. CARTER: And, I presume the county is at least neutral or what not as far as the test site activities are concerned, but obviously not so as far as the proposed repository program. I wonder if you could contrast those two things for me?

MR. BECHTEL: I think one of the contrasts is just in transportation.

DR. PRICE: Dennis, could you speak a little louder? It's a little hard for people to hear with the noise over here.

MR. BECHTEL: Yeah, is that better? Oh, okay. All right, sorry.

I think about 15% of our population actually works at the test site right now, but I think maybe the major distinction would be the transportation issues. If you look at the repository and the location of the test site, they are a similar distance apart. So, I think probably our major concern is with regard to the transportation issues.

DR. CARTER: A couple of questions about water consumption and so forth in Las Vegas and perhaps, you know, you may not be the correct individual to respond to those. But, I just wondered if you are familiar with the distribution now of the water supply in Las Vegas in terms of water that comes from Lake Mead versus the water that comes from well fields?

MR. BECHTEL: Yes, I am. The mix right now is approximately 70% coming from Lake Mead and about 30% from groundwater sources. We've got an allocation of 300,000 acre feet from the Colorado River. We're currently using about, I think, 210,000 acre feet. Our pumpage community rights like groundwater are 70,000 acre feet in the Las Vegas Valley and we are essentially mining. We are using more groundwater that is being recharged from the Spring Mountains. So, we're experiencing subsidence problems on the side, but 70/30 is the mix.

DR. CARTER: Okay. Now, is there any control or regulation in Clark County as far as water use by private businesses such as large hotels, motels, and so forth? Because I presume the Excalibur and Ceasar's Palace all have their own wells that they use their own water from or --

MR. BECHTEL: Yeah. Several do. I don't think -- not the Excalibur, but the --

DR. CARTER: A number of the old ones certainly do.

MR. BECHTEL: A number of the old ones have. Most are tied into the water district, but have the capability for peaking purposes. I don't say most, some have their own wells. Candidly, it's a problem. We need to -- as I indicated before, Clark County has instituted a conservation program and what we're trying to do is to, you know -- water is a very precious resource and we're trying to insure that it's used properly and there has been, you know -- in the past, water has been fairly expensive and if you've got a large amount, sometimes you don't worry about it and we're attempting to correct that problem.

DR. CARTER: Well, certainly, you know, the facilities in Las Vegas in terms of tourism and so forth are certainly very attractive and that obviously affects the growth of Las Vegas, in addition to the tourists that come in there in large numbers on an annual basis. But, I guess, I'm still interested, for example, if you took the Desert Inn, which I

presume has its own wells and can use that water and they obviously have many, many acres of golf courses and palm trees and what have you that would require, I would imagine, rather large amounts of water, assuming that they have their own well, is there any kind of regulatory control that Clark County has over that?

MR. BECHTEL: I'm afraid I'm going to have to plead ignorance. I've been away from that area and I --

DR. CARTER: The other thing, do you have any idea what the average cost of water is, you know, per acre foot or whatever, in Las Vegas either contrasted to some of the other states or a national average and the same way with the water consumption in gallons per day? Do you have any flavor for how that differs?

MR. BECHTEL: I think the consumption is skewed somewhat by the fact that we've got a large tourist population. As far as the exact figures, I really couldn't give you that nor cost per acre feet.

DR. CARTER: And then, the other thing I was sort of curious about, why is Clark County so interested in the MRS?

Because I presume if you're concerned with transportation or the form in which either the used fuel elements or the high level waste has, if they're in casks that, you know, hopefully will be completely safe and so forth even under adverse circumstances such as severe accidents, I presume it

could be put into that kind of conformity in terms of casks and the applicable rules and regulations of the Department of Transportation and what not, whether it left reactor sites or whether it left, for example, an MRS.

MR. BECHTEL: I think the concern right now relates to the fact that from everything we've seen DOT regulations are going to be used in transport and we have no reason not to assume that the shipments are not going to be coming through Las Vegas. I think the hope is that with an MRS there would be an opportunity to reduce the number of shipments. I don't think we're quite as certain about maybe the safety of the shipments. I think that yet has to be proven. But, the MRS, our interest is primarily in the reduction of the number of shipments.

DR. CARTER: Okay. The fact that it might happen, I guess that's not a known fact necessarily.

MR. BECHTEL: Um-hum.

DR. PRICE: Do you see any downside to that reduction in shipments?

MR. BECHTEL: Downside?

DR. PRICE: Yeah?

MR. BECHTEL: No. I think there should be -- I think the lesser the number of shipments, I think there's a lesser opportunity for accident. And, that's the primary interest, I guess.

DR. CARTER: The other thing related to the transportation side of it, you mentioned, you know, you'd like to be involved in the routing decisions that are made because sort of from a logical standpoint there may certainly be exceptions to that, but normally the highway systems are much better in and near the cities than they are in rural areas. So, this means the transportation of casks and many other things, lots of other commodities that move in the transportation system on a daily basis. You can make an argument that if those things go by the better roads and so forth, the better constructed roads, better signs, larger shoulders, and lots of other things, that you would have less likelihood of increased frequency of accidents on those kinds of systems as opposed or contrasted to some of the transportation systems in rural communities. The other things, presumably they could travel at higher rates of speed over better highways and therefore they would be in the community for shorter periods of time.

MR. BECHTEL: I think probably about maybe 90 or 95% of the distance from a reactor to a site, I think you're probably right. I think limited access highways are probably the way to go. I think, though, the law should be flexible enough to consider individual circumstances. And, I keep referring back to the fact of what we call the spaghetti bowl in downtown Las Vegas, I-15 and U.S. 95. You know, you may

have a -- well, it's conjecture, I guess, whether that road is proper for the traffic. Most people seem to think it isn't. It's a limited access road. However, you're going through a densely populated area. So, I think in some areas there will be trade-offs. And, I think at some areas it's probably more appropriate -- I think you may have to improve rural areas. And, in some areas right now you don't have shoulders on the roads. I think you have to look at those items, as well. But, I think I would like -- I would hope that the law would be more flexible to allow for -- I mean, not assume a blanket type of routing, but consider things like Las Vegas's circumstances or possibly the Eisenhower Tunnel in Colorado and things like that.

DR. CARTER: And, another thing, you mentioned the term dedicated train, I believe, when you were talking about rail transport. Let me just make sure I understand now. I presume by that that you mean that it should be devoted entirely to either used fuel elements or high level waste and not have other commodities on it. Is that your definition of dedicated train?

MR. BECHTEL: Yes. Yes, sir.

DR. CARTER: All right.

MR. BECHTEL: Yes, sir.

DR. CARTER: And, the other thing then, I presume that from what you said that you indeed or Clark County has looked

extensively or implicitly into the transportation system that's been proposed for WIPP and that you find some things in it or maybe all things in it that you sort of like. Is that a fair assessment of what you said?

MR. BECHTEL: No. No, I think the concern is that we don't have a lot of shipments that would be related to WIPP coming out of the test site. But, I think the issues involved with, say, the WIPP shipments are obviously common to Yucca Mountain, but also maybe other nuclear waste shipments. I think we feel that there should be some need to coordinate the transportation efforts. I think there's some -- because WIPP is an earlier program, I think there's some things that might be learned that could be applied to the Yucca Mountain program. So, I'm just saying that there's a number of different things out there and I think they should be coordinated.

DR. CARTER: All right, sir. I understand -- let me ask you one other related to this and make sure that I am completely clear on the position. One, obviously the wastes are quite different from WIPP waste repository than proposed for Yucca Mountain. So, the casks and a number of other things would be completely different. And, I what I wanted to contrast really was sort of the system that they've developed, either identification, communications, and those sorts of things that go along with what I would call the WIPP

transportation system that's been proposed.

MR. BECHTEL: Right. Right. I feel that the system issues are concerns that -- system issues should be addressed as one.

DR. CARTER: Okay. Thank you, sir.

DR. VERINK: As a sort of a followup on some of the questions that Dr. Carter is talking about and noting your interest in MRS and its potential influence on various infrastructure and maybe transportation issues, I wonder if you'd believe that the state of Nevada should consider getting in the sweepstakes for locating it in the state so that the location would -- perhaps might mitigate some of these very points that you're talking about?

MR. BECHTEL: I would probably have no comment on that. I think we pretty much stand by the law which exempts -- currently exempts Nevada from the location of MRS. I still feel that's appropriate.

DR. VERINK: That's the state law?

MR. BECHTEL: No, the amendments which exempts Nevada.

DR. PRICE: I have a couple of questions for clarification. Have you done any survey of the people who visit your county as to their perceptions about Yucca Mountain or the transportation issues related to Yucca Mountain?

MR. BECHTEL: Clark County has not done that. The state of Nevada has done some surveys. And, of course, there's --

Bob Halstead will be speaking later, I understand. Clark County has not done any surveys. We may wish to do surveys in the future on that.

DR. PRICE: Um-hum. So, at this point, you don't know to what extent there is a concern on their part as they visit your town?

MR. BECHTEL: No. No, sir.

DR. PRICE: And, with this rapid growth that you're presently seeing, it would be difficult not to make an assumption, but maybe it would be an incorrect assumption, I don't know, that at least at this time Yucca Mountain has not provided much of a damper that you can tell on the growth that's going on?

MR. BECHTEL: Oh, we're still growing pretty quickly. So, I --

DR. PRICE: Yeah. So, that perception on the part of whoever is moving into the community is not evidently a negative one, at least as far as you can tell?

MR. BECHTEL: As far as we can tell, yes, sir.

DR. PRICE: But, you haven't done any specific research on the issue?

MR. BECHTEL: No. No, sir.

DR. PRICE: With respect to the rail access, which of the three of the final routes that DOE was considering, the Jean, the Caliente, and the Carlin routes, from your view-

point would be the most favored?

MR. BECHTEL: Well, I think the least favorable would be the one going through Clark County and what's termed as the Jean routing, I guess, would be the least acceptable and anything that would not traverse Clark County, I guess, would be the most acceptable.

DR. PRICE: In other words, I take it by elimination that either Caliente or Carlin would be preferable to Jean and you have no preference between those two?

MR. BECHTEL: Again, from the viewpoint of Clark County, right.

DR. PRICE: Yes.

MR. BECHTEL: And, other areas in Nevada would probably have concerns about those two.

DR. PRICE: I was a little confused about what you meant about flexibility of routing since routing decisions are a state matter. What do you mean by you should have flexibility of routing?

MR. BECHTEL: I think while the state by law has the opportunity to designate routes, I think we're not totally sure that that will actually be the final routing. I think there's a few other steps that have to be -- you know, things are looked at like distance and other things that kind of enter into the equation. So, I think we still feel that, I guess, in making the decisions that there be flexibility and

thought to individual circumstances and to make sure that obvious danger points are not considered for routing, although they may be part of a designated system, I guess.

DR. PRICE: So, your concern is that DOE might possibly pre-empt in some areas the determination in the state of Nevada?

MR. BECHTEL: Yes, I think that's a concern, right.

DR. PRICE: You mentioned the infrastructure replacement costs, but at this point that's just a normal event and is not impacted, at all, by Yucca Mountain to date nor would it be in the very near future.

MR. BECHTEL: No. No, it's a normal event. If you consider the fact that if there's additional things going on, additional influxes of people, that obviously is going to affect -- you're going to have the replacement plus having to do additional things. So, I think that's something that we have to consider on the local level as being costs that --

DR. PRICE: But, that which you're experiencing right now is not affected by Yucca Mountain at this point?

MR. BECHTEL: I think it would probably be minimally right now. There's obviously things going on in the program and a lot of the things are happening in Las Vegas in the way of personnel working on the program, but it would be a minor part, I would say, compared to if we actually got into, say, a construction of the repository. That would be a more

dramatic impact ordinarily.

DR. PRICE: Have you in your planning applied for any grants through DOT and FHWA type thing for this kind of planning with respect to --

MR. BECHTEL: To Yucca Mountain or --

DR. PRICE: Yucca Mountain?

MR. BECHTEL: No, no. Our grants are entirely through the Department of Energy.

DR. CHU: On the question of concern about Federal correction of state actions, I think on this you meant DOT rather than DOE so that the record is --

MR. BECHTEL: Yes.

MR. CHU: Okay. On this same question, are there any provisions within the highway routing route that you would like to see modified in 164? In the sense that what's required now of the states when it makes its decisions, basically it boils down to what the state thinks what constitutes an adequate type of comparative risk assessment in the sense of comparing the safety of two alternative routes connecting A and B. Are there some criteria in it that you would like to see modified when you say that there should be greater flexibility?

MR. BECHTEL: I'd have to say I'm not really prepared to indicate.

DR. CHU: Okay.

MR. BECHTEL: I guess my -- when I say flexibility, I guess what I mean is that, you know, insuring that local concerns are addressed within HM-164, that it not be considered as maybe the be all and end all of regulations.

DR. CHU: One last question --

MR. BECHTEL: I have one -- do we have an opportunity maybe to follow up with comments subsequent to this? I mean, are --

DR. PRICE: If you'd like to make a comment now, go right ahead.

MR. BECHTEL: No, I mean, like you said, you know, like say in written comments later on?

DR. PRICE: Oh, sure. Sure. Yes, certainly.

MR. BECHTEL: Yeah, I think we would like to reserve, you know, the last question. I'm sure we would definitely provide some insight into that.

DR. CHU: I have one last question about the MRS. The support for the MRS is based on the potential of the amount of shipments that you could reduce. You referred to the consolidation function and so on and so forth. And, as we know it, the DOE currently does not plan to consolidate at MRS; they do, however, assume that the MRS will perform some kind of a marshalling function. Now, if an MRS becomes only storage and doesn't even serve a marshalling function so that the amount of traffic that could be reduced will be quite a

bit less than what you think it might be, would the Clark County support for the MRS be correspondingly reduced?

MR. BECHTEL: I think the main concern is the reduction of shipments and I think we'd have to --

DR. CHU: Thank you.

DR. PRICE: One question I forgot when it was my turn. How do you get flexibility to define the studies? You mentioned you wanted to have independence in defining your study. How would you propose to get such independence?

MR. BECHTEL: I think we feel that the independence is already built into the law. I think if you look at the section that entitles the affected local governments to do environmental studies and essentially to be able to define impacts, I think it's there. I think our concern though is that we not be overly constrained by the Department of Energy or others in being able to define those studies.

DR. PRICE: I think that's my question. How would you not be so constrained? How could you avoid such constraint?

MR. BECHTEL: One of the, I guess, frustrations we've had in this program is the fact that grants are made available by the law to enable the state, Indian tribes, local governments to be able to determine what impacts are. I think we feel, each of us, that we've got insight in our respective areas to be able to define what those impacts are.

In some respects, the programs as set up by the Department

of Energy and the grants, while we're very appreciative of the funding to be able to do the work, they're treated in some respects more like contracts than grants. And, I think we feel that we need the proper flexibility to be able to define what those studies are and I think that that's the only statement I want to make. The fact that our studies, our programs are reviewed by the Department of Energy for acceptability or non-acceptability and we need to be sure that we're able to be able to define the work as we see fit.

DR. PRICE: I guess, I need to follow up. Is really an issue then you would rather that the Department of Energy was not doing such a review, that it was reviewed some other way?

MR. BECHTEL: Well, the Department of Energy is dispensing the money. So, they obviously have to do some things with the grant, but I think we should be allowed a considerable amount of flexibility to be able to define the work that we feel we need to do with a minimal of disruption, I guess, and I'm obviously not -- I'm not sure I'm getting at the -- it's --

DR. BARNARD: I've got a couple of background questions for you. Approximately, what percentage of the state of Nevada's income comes from tourism, the gaming industry?

MR. BECHTEL: Let's see, I'm not sure. The percentage of the population, just speaking for Clark County, that works in gaming or ancillary is I think about 65 to 70% of the

workers. So, it's a pretty healthy chunk.

DR. BARNARD: Okay. You mentioned a very high growth rate for Clark County.

MR. BECHTEL: Yeah.

DR. BARNARD: And, you also mentioned the factor that the climate as being one attractive characteristic. Are there other reasons why people --

MR. BECHTEL: Except in the summertime.

DR. BARNARD: Except in the summertime. Yes, I noticed that this morning. Are there other reasons why people like Clark County, low taxes or something like that?

MR. BECHTEL: Oh, yeah, there are definitely low business taxes and with regard to a lot of industry in, say, southern California because of the great growth over there and there's a lot of interest in just, you know, being close to markets, large markets like Los Angeles, and having room to kind of spread out a little bit in Nevada.

DR. BARNARD: Approximately, how many underground tests are conducted at the Nevada Test Site each year? Do you have any idea?

MR. BECHTEL: A number. I couldn't get --

DR. BARNARD: A number? Is it one or 10 or 20 or --

MR. BECHTEL: I would imagine 10. I'd be just guessing. You live in Las Vegas and sometimes you don't think about it. We're on the seventh floor of a building and I'll get up

and like on a ship or something and I realize that another test is going off. But, it's just kind of part of the woodwork.

DR. BARNARD: So, you actually feel the vibration from the test --

MR. BECHTEL: If you're in a building. If you're up in a building, yeah.

DR. BARNARD: Are there any other adverse impacts that you see in Las Vegas that is noticeable as a shock waves or --

MR. BECHTEL: Well, of course, they warn people not to do things on ladders and --

DR. BARNARD: Yeah, okay. Okay. Do these underground testings affect the tourism, at all? Whenever they conduct a test, people don't clear out of the city, do they?

MR. BECHTEL: No.

DR. BARNARD: They just cross their fingers?

DR. CARTER: I'd like to make an observation. They won't even clear out of a casino when they've got that --

MR. BECHTEL: We had some -- a side light, but we had some flooding. There's a flood control channel that goes underneath the Imperial Palace and we had some flooding about, I guess, six or even years ago and the fire department was trying to get people out of the casino because we were concerned that it was a blockage in this pipeage and there

were going to be maybe some structural damage to the building and they literally had to drag some people out of the casino.

They were having a good streak or something, I don't know.

Risk-takers.

DR. BARNARD: Do the residents of Clark County complain about the shock waves from the tests?

MR. BECHTEL: I have not noticed a great amount of, you know -- my wife occasionally.

DR. BARNARD: Okay. If most of the wastes that might end up going to Yucca Mountain were routed around the county, do you think there would be any significant impacts from the repository development that folks in Clark County would be particularly concerned about?

MR. BECHTEL: There's obviously a health and safety concern for the site. Whether that would reduce the level of concern in Clark County, I guess that's something we would have to test.

DR. BARNARD: Thank you.

MR. BECHTEL: Um-hum.

DR. CARTER: You know, let me add one, I think, in clarification on the testing program that goes on and has been for some years. And, that is that there's a test ban limit on the size of nuclear devices that can be tested at the Nevada Test Site. So, I dare say only when they test devices that are up near that limit, but below it, do they

have any appreciable ground motion. As Dennis said, these are announced in advance so people in precarious positions can take appropriate action before the event rather than be startled by whether they're on a ladder washing the windows outside of a 30 story building or something of that sort.

The other thing I was going to suggest, Mr. Chairman, that if we're about finished with this that perhaps Jerry Duke, Dennis' associate, might want to make a comment or two. Now, that's just a suggestion.

MR. JERRY DUKE: Thank you for this opportunity. I believe what I would have to say will be off the cuff, but I'd like to clear up some of the issues that Dennis has been talking about. In particular, transportation is a very high profile side of the whole Yucca Mountain waste project. The potential impacts and threat of release is very alarming to the citizens of Clark County. We haven't, to date, monitored that through analysis or through any sort of survey, but rest assured it is very probable that it will continue to pop up in the media and in public meetings. One of the things we want to do is develop appropriate contingency planning so that if this were to take place, we were able to handle it in a way that would minimize all risk possible.

Other than that, I really don't have anything else to say on what Dennis has said.

DR. PRICE: Could I ask you, you mentioned it is a

considerable alarm, I think something like that being your words. And, could you try to grapple a little bit with the question of why is it a considerable alarm?

MR. DUKE: Sure. I think a couple of things. One has been the media. Their attention focuses on these kinds of events and possible events and it is a very powerful medium, the television is, and a day hardly goes by that our two local newspapers don't report something on the Yucca Mountain program, be it transportation or DOE institutional issues, et cetera. So, what you have is a population who, although is desiring to move into Clark County, is unaware to a large extent of the issues, but when they begin to reside and become a part of the community, it comes to the forefront of one of the issues in Clark County in addition to water, safety, other Governmental aspects.

DR. PRICE: And, in your appreciation or estimation of the media treatment, is it valid and accurate?

MR. DUKE: I think I should stay away from commenting on that.

MR. BECHTEL: I might want to add one thing. A number of years ago, the Beatty area was being considered for some dirt shipments from New Jersey and I think, in part, there was a fanning of the flames by the media. But, we had a number of Commission meetings where this was considered by the Commission and the place was packed. And, there was

obvious fear in the eyes of the public that the concern was that they were going to be bringing shipments into Las Vegas and transferring the shipments to truck in the downtown Las Vegas area. There was obviously a lack of sensitivity on the part of the shippers, the state, and a number of people about, you know, the potential implications of that and from my understanding the dirt was fairly benign, although it varied from cask to cask. But, there was a pretty extensive media campaign and I think frankly that really there was some mothers with babies and there was obvious concern. So, I think that can be translated over into high level shipments if you consider those shipments maybe coming through Las Vegas. So, I think the fear is there. We haven't really assessed it. We may want to at some time, but there's no doubt that the public -- it's not just the public in Las Vegas, I think all over the country has a fear of things nuclear.

DR. PRICE: My reason for asking the question about your perception of the validity of the coverages, I'm not that familiar with the coverage for one thing. So, I can't make that evaluation myself. And, the other is whether or not the program for the media -- I think basically reporters want to provide valid responses and instructions and information. And, whether or not there's a program for the media, if the media is at the very source of fears, should be implemented

in some sort of way or to provide accuracy and I'm not saying who should implement it, but just asking these questions about it.

MR. BECHTEL: Um-hum. One of the things we do have in our program is the public awareness program and the intent is to provide information to the public, maybe to try to reduce a lot of the emotion that's around radioactive waste, but also recognizing that there are some legitimate issues that have to be considered, trying to separate the wheat from the chaff, you know, what is important that we should look at, the public should know about, and what things may be a little less important. And, I think it's our intent in our program to do that. We've got a number of programs we're about to develop including a newsletter in order to get information out to the public. So, we feel it's important that the issues are aired.

DR. PRICE: Um-hum.

MR. BECHTEL: I was wondering possibly if maybe Jerry might want to amplify maybe some things on HM-164, maybe on some recommendations.

MR. DUKE: I think what you were speaking to Dennis about before was the state's responsibility in routing issues and we are in the process now of looking at some highway route control quantity substance shipments and how that would relate to Yucca Mountain. Well, one of the things that the

state and DOT, Nevada Department of Transportation, has said throughout this process is that these are not defective routes for the high level waste shipments to Yucca Mountain.

So that that's where Dennis was speaking to the flexibility.

We do not know and will not know until another study is undertaken as to what the specific routes will be. It's easy at this time to say that they would be the routes because we have a limited roadway system, but greater study needs to go into looking at ways to get the shipments from, say, Wendover coming from the east or from Arizona, to and up through Clark County. Some of the things that need to be looked at in addition to routing are dedicated roadways in themselves that might traverse some of the non-populated areas just like a dedicated rail which DOE needs to look at because at this time it would -- I don't think it's prudent to just assume that all the existing roadways need to be looked at in the context that they're there. Further analysis needs to be included on it.

DR. PRICE: Could you explain a little further maybe, when you mention something like a dedicated roadway, what the criteria might be to implement such a step as this?

MR. DUKE: If risk could not be mitigated to the point within the valley, if it had to go through the Las Vegas Valley, then that probably would be an overriding -- one of the greater parts of the criteria. That if, in fact, we

cannot mitigate risk coming through the valley, then certainly we need to -- it might be enough that we should begin to look at that. One of the things I heard you say is that other states would have been also interested in shipments as it passes through their communities. The way, I think, you have to put it into perspective is that Las Vegas Valley is at the end of the funnel. We will have the greatest impact if it comes through Clark County so that's why our concern and we are hoping that the MRS and the coupling of the MRS will not just be a marshalling yard, but rather consolidate shipments because, if and in fact those come to fruition, that is another way for us, we think, early-on to look at ways to mitigate the risk.

DR. PRICE: Yes, I think we understand the funnel effect here.

MR. DUKE: Yes.

DR. PRICE: Thank you very much.

MR. DUKE: Thank you.

DR. PRICE: Okay. The next witness is Mr. Lee Gibson, Planning Coordinator, Regional Transportation Commission of Las Vegas, Nevada.

DR. BARNARD: I'm not sure when we're going to break for dinner, but the woman at the State Line Saloon would like to know how many of us plan to come down for dinner whenever we do break. I guess, she's wondering what she needs to do for

this large influx of people that's going to be in. Can I get a show of hands of the people here who plan to go down there for dinner?

DR. CARTER: I was going to see first who was going to invite us to dinner at their home.

(Whereupon, dinner plans were discussed.)

DR. BARNARD: Are you going to join us, Mel?

DR. CARTER: I haven't gotten a better offer.

DR. PRICE: All right. Thank you for waiting for us. Please proceed?

MR. LEE GIBSON: Thank you. I'm Lee Gibson, the Planning Coordinator of the Regional Transportation Commission of Clark County, Nevada. I would also like to introduce Mr. Bruce Turner. He is the principal planner of the planning division staff and he is dedicated to the transportation of high level nuclear wastes and he'll be assisting me today.

RTC's address for the record is 301 East Clark Avenue, Suite 300, Las Vegas, Nevada, zip code 89101. On behalf of the Regional Transportation Commission, I would like to welcome the members of the Technical Review Board to Nevada and thank you for this opportunity to share concerns of staff.

RTC is involved in nuclear waste planning activities through an interlocal agreement with the Clark

County Nuclear Waste Program managed by Mr. Dennis Bechtel. Clark County, the designated affected local government, assists RTC to insure that transportation related planning activities meet with the requirements I am about to discuss.

The Regional Transportation Commission is an independent commission made up of representatives of governments from all of Clark County. We are designated the Metropolitan Planning Organization by the state of Nevada pursuant to the United States Department of Transportation regulations. As such, we are the organization concerned with all aspects of transportation for the largest concentration of population in the state of Nevada, some 760,000 persons.

As the Metropolitan Planning Organization, RTC is responsible for maintaining a comprehensive, coordinated, and continuing transportation planning process as required by 23 CFR 450.100 to 200, attached to the written testimony as Exhibit 1. Compliance with these regulations maintains Clark County's eligibility for Federal funding for highway and transit improvements. RTC continually assesses the effect of projected urban development on future travel requirements for our region. This allows our agency to plan for the efficient movement of persons and goods through the Las Vegas Valley in a timely manner. It also allows our elected leaders to work with and plan the effective use of Federal funds programmed for highway, transit, rail, and aviation improvements. The

RTC has a local responsibility for all aspects of the transportation planning process.

The prospective movement of high level nuclear waste through our area is of interest to us from a transportation planning perspective. Specifically, we are concerned with the direct effects concerning choice of mode; timing of shipment flows; daily, monthly, and annual volumes; vehicular operating characteristics; alternate routes; and, contingency plans. Contingency plans are particularly important to the RTC. Even if the Department of Energy produces route plans that do not traverse Clark County, events may occur that require the shipment of nuclear waste on a temporary basis through our jurisdiction.

The transportation issues involved associated with a repository also must be related to the overall condition of the transportation system within southern Nevada. As current rapid growth escalates, citizens feel greater and greater frustration with the transportation system. Indeed, between 1985 and 1989, vehicle miles traveled doubled from 3.3 billion miles to 6.6 billion miles traveled within our area.

Elected leaders are now attempting to address transportation issues through a new program of revenue sources that will allow local government to implement highway and transit solutions in accordance with Clark County's transportation needs. The Department of Energy should recognize that these

attempts to deal with transportation issues are taking place at a time when, one, baseline conditions change daily; two, planning efforts are only now addressing the appropriate solutions; and, three, the repository may induce changes that affect the planning, design, operation, and institutional processes that local government now uses to address transportation development.

In the opinion of the RTC staff, Yucca Mountain transportation research needs must now focus on baseline studies that document operational issues, population risks, and institutional relations. An urgent need exists to establish the basis for assessing these impacts due to Yucca Mountain activities before characterization work resumes. These baseline studies would be linked not only to Yucca Mountain transportation effects, but also socioeconomic aspects and institutional issues that may surface during the course of the project and also may arise from unforeseen circumstances.

The institutional issues are critical. The latitude given to local government with respect to conducting studies of the effects of the Yucca Mountain Project are ill-defined. Section 5032 of the Nuclear Waste Policy Amendments Act of 1987 authorizing Federal payments to local affected governments is couched in general terms that authorize local entities to carry out studies appropriate to their situation

at their discretion. It is RTC's experience that Federal/local relation may become strained when such general terminology is used as program guidelines. To correct this situation, one of two courses of action may be followed.

One, allow local government the initiative to develop their own research programs that incorporate citizen concerns within the context of the repository and local issues. This would require a great deal of trust by the Department of Energy and local government judgment. However, local governments would be responsible for the outcomes and subsequently responsible to the General Accounting Office as a local grantee.

The second option would be for the Department of Energy to participate in policy oversight and management role in local government research activity through issuance of regulations and directives modeled, for example, after the Urban Mass Transportation Administration.

The consequences of the first action for RTC would include that our mission as the MPO would be greatly enhanced. The RTC's ability to coordinate the transportation issues with local concerns would be greatly improved. For example, RTC would be better able to fully integrate and adapt existing analytical tools to meet the effects of the repository in a comprehensive fashion. DOE would, of course, lose substantial control over the grant program. However,

local government would carry the burden for insuring that control is exercised pursuant to grant contracts and all applicable Federal statutes.

Should the second course be chosen, DOE would gain a greater appreciation of local concerns regarding the transportation of high level nuclear waste. DOE would have to assume a more proactive position and even possibly participate as other Federal agencies do in the comprehensive, coordinated, and continuing planning process. For example, DOE may require that extremely detailed work plans, progress reports, and compliances be submitted, and that the local governments submit themselves to a contextual review of their activities over a given year and then specify a program for improving the plans with those grant programs. It would also be necessary for DOE to actively investigate policy issues and direct the local effort more closely. Of course, the regulations and sensitivities pertaining to oversight may make this approach inappropriate.

RTC staff looks forward to continuing to work with the Department of Energy on this matter of such crucial interest for the future of southern Nevada. Thank you again for the opportunity to share the thoughts of the staff of the RTC with you here today. I will be happy to answer any questions concerning the testimony submitted.

DR. PRICE: Thank you. Questions?

DR. CARTER: Lee, let me ask you a couple of things. I guess it's my impression, having the opportunity to visit in Nevada and Las Vegas reasonably frequently, how does Clark County relate in terms of accident severity and so forth, frequency of accidents, with the other parts of the state? I guess, it's my impression when I come here that Clark County is quite high in two things; one, the number of automotive accidents and the other is the severity of those accidents, the considerable number of deaths involved in vehicular accidents. Is that a good impression I get when I come here or a bad one? Or, an accurate one, let's put it that way.

MR. GIBSON: I believe on our Federal aid interstate system, our accident rates are similar to most urbanized areas of our population size. On highways that are beyond state control, I'm afraid I can't answer that. To my knowledge, I have not seen anything go by my desk that would indicate that we have an abnormally high accident rate, but again I cannot quote any statistics at this point.

DR. CARTER: Like I say, I just have the feel that even on a state basis that Nevada ranks fairly high in terms of vehicular accidents.

MR. GIBSON: Yeah. Now, I would point out that as our vehicle miles traveled increase -- and, of course, it is increasing very rapidly, as I pointed out -- then, of course, your total number of accidents increases commensurately with

that as your total miles traveled increases. So, the absolute number of accidents is, of course, increasing because you have more trips.

DR. CARTER: The other thing, are you involved or is your group involved with transportation of hazardous materials, toxic substances?

MR. GIBSON: Directly, no, we are not involved with the regulatory components of the transportation of hazardous materials. However, as the designated Metropolitan Planning Organization, it would be our responsibility pursuant to DOT regulations and FHWA procedures that we would be the agency responsible for planning the movement and looking at the issues associated with the movement of hazardous materials through the Las Vegas Valley.

DR. CARTER: The reason for the question, I presume that a lot of people are just as concerned, if not more so, related to transportation of hazardous materials and toxic substances than they are with nuclear waste, either low level, high level, or transuranics. And, I guess the question is, you know, why has the county or your group singled out the transportation of high level waste in this case as opposed to, you know, a similar program or a similar intention, I suppose, to the hazardous materials?

MR. GIBSON: I believe that the repository has just basically increased awareness of the movement of hazardous

materials. As planners, we need to place within context of the overall movement of hazardous materials where nuclear waste would fit in and I believe it's our obligation to citizens that we serve that we be able to provide timely information on that topic. As I stated in my testimony, baseline conditions change daily, and just as traffic conditions change daily, I'm sure the movement of hazardous materials change daily, as I'm sure occurred this past week with the mobilization of Armed Forces. I'm sure there was a significant movement of hazardous materials through our area.

DR. PRICE: Could I just follow up and ask if you have done any surveys of the flow of hazardous materials?

MR. GIBSON: No, we have not.

DR. CARTER: Let me ask you one other question. I guess several folks have mentioned during testimony this afternoon the business of grants versus contracts and I don't think this is necessarily the time to go into it in detail, but obviously I guess in terms of Federal agency money when they use contracts, the assumption is made that they can indeed direct pretty well what they would like so the money is not only directed towards what they consider their needs or their desires, hopefully needs, as opposed to a grant which has more flexibility with certainly much less control by the Federal Government. And, the other is I'm sure there's some limitations on what they can do in terms of grants as opposed

to contracts, in terms of accountability, and the watchdog agency, the Government Accounting Office.

MR. GIBSON: Okay. So, you're basically saying that contracts would afford the Federal Government a greater level of control over local Government activities, correct?

DR. CARTER: Well, I didn't say it quite that way. Over the activities that they're funding, they're supplying the money for? In this case, it happens to be a local county, yes.

MR. GIBSON: Let me see if I can answer your question. It is my experience, as basically the head of the planning division of my MPO, that the distinction between grant and contract is very minimal and it's a legal distinction. Now, I'm not an attorney, but I do know that whatever stipulations are placed in a grant, you are required to abide by those stipulations just as you would have to abide by stipulations on a contract.

DR. CARTER: Yeah, but there are not nearly as many stipulations and, in fact, can be fewer in terms of grants. They're usually for basic research and this sort of thing, you know. People want to study tsetse flies or whatever it may be.

MR. GIBSON: In a traditional research grant, yes, I would agree with you, but in other grant programs of the Federal Government there is more control and I think it's

just up to the particular Federal agency to decide the level of control that they wish to exercise through their grant program.

DR. CARTER: Yeah.

MR. GIBSON: I think that's been a source of confusion in that we are not sure of the level of control that is to be exercised through the grants.

DR. CARTER: That obviously ought to be, you know, a straight forward proposition, but I dare say that there is a distinction between grants and contracts.

MR. GIBSON: Oh, absolutely, there is a legal distinction.

DR. CARTER: In terms of what's expected of them and the degree of control and the degree of accountability.

DR. PRICE: Have you tried DOT and FHWA for any grants -- I'm asking the same question I asked previous with -- for planning in this area?

MR. GIBSON: Yes. And, if you would like me to, I could present into the record the overall work program for fiscal year 1991 and this delineates the funds that were expected to be received or will be received from the Federal Highway Administration, the Nevada Department of Transportation and the Urban Mass Transportation Administration, local funds, funds from Clark County, a whole host of sources. These funds are used for the planning of the highway and transit

systems and aviation systems in Clark County.

DR. PRICE: Yes, we'd like to have that entered into the record if you would, please.

MR. GIBSON: Right. I should point out that these funds from the Federal Highway Administration in 1991 are going towards the development of a planning variable report and it's also going towards the update of our regional transportation plan. That update of the regional transportation plan is a very significant document not only for the citizens of Clark County, but also for nuclear waste because it will establish the roadway system that we envision over the next 20 years and improvements, of course, will be funded through a mixture of local and Federal funds.

DR. PRICE: Will that include routes as they are endorsed by the state?

MR. GIBSON: Routes for the shipment of high level nuclear waste?

DR. PRICE: Yes?

MR. GIBSON: Well, the state, of course, has not endorsed any routes for the shipment of high level nuclear waste.

DR. PRICE: I understand that, but will the report --

MR. GIBSON: No, this will not designate any routes relative to the shipment of hazardous materials. This plan will simply delineate the roadway network that will be built

over the next 10 year period.

DR. CHU: You were proposing some alternatives to the funding of these studies. Are there some specific problems that have arisen vis-a-vis with DOE that may have caused you to want to propose a different approach?

MR. GIBSON: I think there is a lack of formal communication. We have very good informal communications with the Department of Energy. We talk with them. They are available -- I cannot say. But, I think it would be helpful for them to perhaps participate more on a formal basis. My work program is developed through --

DR. VERINK: Formal or informal, I can't tell --

MR. GIBSON: Formal. We have a very formal system at RTC. All our work plans are reviewed by multiple committees. These committees consist of technical representatives from each of the local communities that are members of RTC. It's also reviewed by citizens. But, just as the FHW participates in our planning technical committee or just as the Nevada Department of Transportation participates, perhaps the Department of Energy should attend these meetings. These meetings are open. They conform to the open meeting law of Nevada. You know, it's made available. I think that it would be helpful for them to participate. I think it would also be helpful for them to recognize that the RTC has to prepare comprehensive and coordinated work programs. I have

to be able to relate the work in the Yucca Mountain Project to the best of my ability and my staff's abilities to the overall transportation issues facing Clark County. Only in that way can we develop programs that will adequately address not only the severe traffic congestion, but the unforeseen aspects of that program, of the repository program. And, I'll be honest with you, I'm not an expert in nuclear waste transportation. You know, we've got to do a lot of digging.

We've got to get out there and we've got to figure out what these effects are. And, that's important to us. And, I think one thing from local government's perspective that sometimes I see lacking in Federal programs, particularly in other Federal agencies I deal with, is we are accountable to citizens and I can tell you that in my regional transportation plan, you know, it's important that we take account of how we will deal with nuclear waste.

DR. CHU: Your suggesting that the DOE take the lead from the FHWA on how to work with MPO's on getting the HRP money?

MR. GIBSON: Or just talk to the FHWA. That's all I'm saying. Just talk, just figure out, coordinate somehow.

DR. CHU: Yeah. That was a string of letters. I ran the alphabet. You also mentioned that should DOE adopt or should, in fact, the Congress adopt the first alternative that you proposed because that may require legislative change

that then you will be reporting directly to the GAO, that is you'll be responsible to the GAO as opposed to the DOE being responsible to the GAO. The GAO did recently issue a report concerning the way the Department oversaw the grants. Do you have any opinions on that?

MR. GIBSON: I've had to answer to the Inspector General of the Department of Transportation and I can't imagine anybody else being any worse. Yeah, we're audited by the Federal Government constantly. Just recently, we went through a review of our UMTA grant programs. They come in and they tell you exactly what you're doing wrong and they tell you how to fix it. And, it's a very, very fine level of detail that that Federal agency gets involved in. So, if I'm answerable to the GAO, I have no problems with that because, you know, hey, one Federal agency to me is like all -- they're all the same.

DR. CHU: No, I meant do you have any opinions about the most recent GAO --

MR. GIBSON: The most recent audit?

DR. CHU: Yeah?

MR. GIBSON: I may have personal opinions, but I don't think they're germane to the record.

DR. CHU: A clarifying question about your baseline study. Were you wanting to do it for all of transportation, all travels, all traffic, or just freight transportation or

--

MR. GIBSON: Yeah.

DR. CHU: And, how the spent fuel shipments would relate to the volume of freight transportation?

MR. GIBSON: I had a specific task or I have a specific task in my OWP entitled Hazardous Materials Baseline Study. We basically want to set the context of the other materials that are moving through Clark County to which we can compare nuclear waste materials, specifically the high level, and begin developing risk profiles. If I don't know what's out there today, how am I to compare nuclear waste? That's the issue.

DR. CHU: But, I mean is what you mean by baseline referring to freight transportation?

MR. GIBSON: All modes.

DR. CHU: All modes.

MR. GIBSON: Unless you know which mode you're always going to ship that stuff by.

DR. CHU: Thank you very much.

DR. PRICE: Our next witness is Mr. Allan Fisher. He's the Chairman, Transportation of Spent Nuclear Fuels Committee, Association of American Railroads, Director of the Operating Rules, Consolidated Rail Corporation, Philadelphia, Pennsylvania. Mr. Fisher?

MR. ALLAN FISHER: Thank you, Mr. Chairman, good

afternoon. I am grateful to the Nuclear Waste Technical Review Board for asking me to present the railroad industry's views on the movement of spent nuclear fuel and high level nuclear waste over the rights of way of the nation's railroads.

I am currently the chairman of the Association of American Railroads Committee on the Transportation of Nuclear Materials by rail. The objectives of the committee are to make recommendations to the railroad industry regarding nuclear waste transportation and to assist the Department of Energy in developing their transportation plan.

In presenting this perspective from the railroads, I am continuing a dialogue which railroad industry representatives have participated in at many open forums on Nuclear Waste in the last few years. I believe that these discussions are vital to insure that the public perceives rail movements of spent nuclear fuel as the safest and most efficient method of transportation from the utilities to the repository.

While the railroads have agreed to move spent nuclear fuel, they are fearful that the Price Anderson Act may not cover many of the potential claims arising from transportation incidents of spent nuclear fuel. Specifically, rail incidents involving spent nuclear fuel without a breach of a cask do not appear to be covered under

the Price Anderson Act.

You may be thinking that if there is no release of radioactive material there should not be large economic consequences to the railroad companies. On the contrary, the railroads believe that no mechanism yet exists to properly coordinate emergency response after an initial evacuation around any derailment involving spent nuclear fuel. After it has been determined that there has been no leakage of radioactive materials, we wonder who will give authority to the railroads so that they can begin clearing the derailment.

During these traffic disruptions, all rail traffic may be delayed for days or weeks while the railroad line is shut down. Therefore, when we say we are betting our railroads every time we move spent nuclear fuel, we do not consider this to be an exaggeration.

The railroad industry continues to address other issues which need to be resolved. We object to DOE and the utility industry's perceived need for extra heavy casks and rail cars. In our view, the extra heavy cask has two obvious drawbacks. These are reduced flexibility in routing and a higher exposure to rail incidents. The lack of flexibility is due to the fact that not all rail lines can accommodate extra heavy cars. If the unforeseen happens on the primary or secondary rail route, the shipment may have to sit and wait for additional clearance on another alternate route and

then possibly be moved at extremely slow speeds to permit safe transit over a rail line not maintained for these extra heavy loads. When rail lines of lesser maintenance standards are used, the potential for derailments and/or long delays increase. The extra heavy cask and car are also restricted from many auxiliary tracks and will therefore have fewer possible points that may be used as a safe harbor. If the railroads involved must store this car on the main line, it will delay other revenue movements of the railroad. Extra heavy cars also have the potential of more mechanical difficulties because of more moving parts, higher center of gravity, potential unequal distribution of load, and less favorable cornering and stability characteristics. Therefore, we have strongly recommended that the DOE standardize on a normal size cask/car combination.

For many years, the AAR has recommended standards for the safest possible movement of spent nuclear fuel. These standards include planning in advance the route of the movement and using the safest routes and tracks; scheduling of the train both as to the day of the week and the time of the day; surveillance of the train en route monitoring the performance of both the car and its contents, as well as locomotive, idlers, and rider cars; controlling the speed of the train, not exceeding 35 miles per hour maximum with further restrictions where appropriate; controlling movement

of other trains being met or passed en route, where appropriate; providing for emergency response in the event of unusual occurrence en route; providing for escorts to include operating supervisors, police, and DOE experts; instilling maximum public confidence in the safety of nuclear movements through sensitive areas.

We believe the rail industry can best perform its mission of handling nuclear spent fuel safely by utilizing dedicated trains. We look forward to working with the DOE and the utility industry to insure that spent nuclear fuel continues to be moved in the safest and most efficient manner.

Thank you.

DR. PRICE: Thank you. Let me ask you a question here while they're still writing. You mentioned controlling the speed of the train at 35 miles per hour maximum. Why do you pick 35 miles per hour and why do you need to reduce speed?

MR. FISHER: There are two reasons for the 35 mile an hour recommended standard maximum speed. The first involves the fact that there really has never been --

DR. PRICE: Let's hold on a second and see if we can get this stopped.

(Pause.)

DR. PRICE: All right. Mr. Fisher, our apologies for this interruption and we were asking you about the reason for

the 35 mile per hour limit that you had recommended?

MR. FISHER: Originally, the 35 mile per hour recommended maximum speed was based on the AAR's research and test department's evaluation that the full scale testing done in the early days with the drop tests were only good for the equivalent of 35 mile an hour collisions, impacts. And, today, that 35 mile an hour is also maintained because the present generation of casks has not had full scale testing and we don't really know in the industry whether it is necessary to do it or not because the DOE still refuses to share with the AAR the information regarding the casks design safety factors. So, we cannot realistically assess the risk.

DR. PRICE: Would you explain further when you're saying that they refuse to share what process you've gone through in an attempt to get the information and what frustrations you've encountered?

MR. FISHER: The present series of casks -- and I'm speaking about a middle generation that were used for the Three Mile Island shipments -- the railroad industry received really no information on those casks, whatsoever. The new casks that are being designed and built, the railroad industry has not received any information on that yet and hopes that the DOE based on meetings we've had will start to share some of the information so that we can reassess our position on whether we need full scale testing or not.

DR. PRICE: Well, is it your opinion that they have information which they have not shared?

MR. FISHER: Well, I'm not technically qualified to answer that, but those within the research and test department have just told me that we do not have the information now.

DR. PRICE: Okay. But, you don't know whether DOE has the information and is withholding it at this time?

MR. FISHER: I do not personally know.

DR. PRICE: All right. Go ahead?

DR. CARTER: Yeah, I've got a couple of things I'd like to ask you about. One, the name of your committee, I believe, is Committee on the Transportation of Nuclear Materials?

MR. FISHER: That is correct.

DR. CARTER: Okay. I'd seen it another way that just dealt with spent nuclear fuel and I wanted to make sure what the correct title was.

I wonder if you would run through with this, if you would take a moment or two, the railroad's experience, the American Railroad's experience, in transporting high level waste and used fuel elements? I don't believe it's very extensive and I think it's primarily in recent years, but why don't you fill us in on that if you would, please, sir?

MR. FISHER: Well, I cannot personally give you specific

shipping campaigns that were done by the railroad. I do know that we have -- my own railroad, Conrail, has just completed a 30 shipment movement, 30 different dedicated trains, of debris from Three Mile Island. I also know that we have for many years been shipping high level waste from Defense Department sources, I believe to be nuclear submarine material, from Portsmouth, New Hampshire, which by the way, I remember one of those shipments moving on the very first day of the Three Mile Island shipment. While we had the Three Mile Island making all of the news in the newspaper, quietly on another part of our railroad there was a defense shipment moving with no one outside of our railroad knowing about it.

DR. CARTER: Okay. But, I guess the question is still the same about the involvement primarily of high level waste and used fuel elements. Now, you mentioned shipping a fair amount of material from Three Mile Island. I presume a lot of that might have been low level waste or things of that sort, in addition perhaps to some high level material. Is that correct?

MR. FISHER: I am not aware of how the material broke down from the Three Mile Island.

DR. CARTER: It could have been some combination of those two, but I suspect it was not all high level material would be my guess.

Now, you mentioned your concern about the Price

Anderson Act. How do you get around the fact that you now accept high level waste and used fuel elements, at least in some cases? How do you cover these from an insurance standpoint?

MR. FISHER: Well, as you know, the railroads are self-insured and basically we believe that by handling these movements and dedicated train service with adequate supervision including a trainmaster or a road foreman aboard the train, a mechanical superintendent aboard the train, a police captain aboard the train, and police escort at all points, that we can handle it safely. We also want to say that we want -- the railroad industry wants to be good citizens. We don't want to have to refuse to move this material.

DR. CARTER: Okay. Now, I guess, part of the history and going back to the early days was that there was very little involvement, if any, on the part of the railroads in transporting radioactive material in the United States. And, it certainly was not non-existent; they indeed did this. Certainly, the bulk of the material was moved by highway and part of the problem, I presume, was either in the management decisions by railroads and/or union concerns, the nature of the material that was to be transported. Are you familiar with that?

MR. FISHER: I am not familiar with the history of early movements, no.

DR. CARTER: The other thing, you mentioned emergency response teams. And, certainly, the Federal Government and the states have put a considerable amount of effort over the years into training emergency response people throughout the country to deal with transportation accidents and other accidents involving nuclear materials. And, I guess there are at least some 10 Federal agencies that have put these plans and procedures together on a coordinated basis and they have trained people, equipment, and these sorts of things. And, I guess, your evaluation or the railroad evaluation, this is not satisfactory at the moment or is there problems with the system that we've got to deal with these things at the present time?

MR. FISHER: The railroad industry, Conrail for one, have taken the sources given to us by the DOE for handling nuclear material accidents and we have not been able to find any contractor that they have referred us to that is capable of handling a breached cask or a release of material.

DR. CARTER: That's an interesting thing to --

MR. FISHER: I realize there are many publications giving lists of contractors and the DOE continues to claim that they have these response teams, but the railroad industry has not been able to track it down. And, you know, if we had an accident today with a shipment, we don't know really -- we would call the DOE certainly and CHEMTREC, but

we really don't know who we would call.

DR. CARTER: Well, I think, you know, I can refer you to some documents outside the meeting, I'd be glad to do this, where these teams are identified, the location, the people you need to call, and this sort of thing. So, they are available. In fact, I know people that serve on those teams at the present time.

MR. FISHER: The worry that the railroads have is that the -- we may have the experts to give us advice, but we don't really have any contractors that have the knowledge to actually rerail the equipment or tell us what to do at an accident that has a release of materials. Now, let me also state that the railroads really don't believe based on good faith that we will ever have a breached cask, but it is a worry.

DR. CARTER: Well, I guess, the other thing is that I listened to your testimony and it seemed to me at least that I characterize that you projected a rather grim picture of the transportation business as far as railroads are concerned. So, I guess I'd be interested in, you know, whether now or later that you'll come up with a list of recommendations of things that need to be improved and certainly you've identified some of those, I believe, today.

DR. PRICE: You indicated a concern that if you had an accident involving a train carrying a cask that it could tie

up a line for a long time and you raised a question about who would give you authority to clear the line. Who gives you authority now to clear the line in a hazardous materials accident that may be similar in nature? For example, you had an accident, but you have not lost containment of the material, and if this is not a comparable analogy, why is it not a comparable analogy?

MR. FISHER: Well, I can speak from personal experience as a division superintendent a few years ago where I had a main line derailment in the middle of Edison, New Jersey, on the northeast corridor with a tank car load of chlorine at the bottom of a wreck. Now, there was no leak of the chlorine. And, of course, as soon as we had the derailment, the local fire chief evacuated the scene. Anyone has that right, any fire chief or police chief has that right to evacuate the scene. But, two days later, until we got the governor's or the state's personal representative, we still couldn't go in and reraill the cars because of the fear that the chlorine could leak. And, this is one of the worries that we have is that everybody has the right to declare an evacuation and don't go near the derailment. But, who in the Government or in the DOE or a responsible person is going to say, okay, local fire chief, let them in there, let them reraill?

DR. PRICE: So, this is not uniquely a nuclear waste

problem, but it's a hazardous material problem, in general?

MR. FISHER: Well, we see it more with the fire departments and the police departments receiving more and more training in how to react to hazardous materials incidents. We see it more and more as a nuclear waste issue because the fire departments are getting better education on hazardous materials.

DR. PRICE: So, you believe then if the fire department's emergency responders were better trained in the nuclear area then they could assume that responsibility as you say they're doing now for other hazardous materials?

MR. FISHER: Yes. That would probably be true, yes, sir.

DR. PRICE: Okay. Thank you very much. We appreciate your coming down and --

DR. CHU: Can I ask a quick followup?

DR. PRICE: Yes.

DR. CHU: I'd like to follow up on one of the questions that Dr. Carter asked about the picture that you have painted and that perhaps at some future occasion we might hear some recommendations. You have listed a number of concerns on Page 3 and 4 of your testimony concerning the various operational features that you think would be desirable to have whenever you're shipping spent fuel, such as the scheduling of the train both with respect to the day of the

week and the time of the day, and then controlling the speed and then controlling the passing and meeting situations. So, presumably then, you see safety problems in situations where you didn't follow these procedures. Okay. Now, without taking a lot of time now to get into what the AAR thinks are the safety problems, let me just ask whether during these years you have petitioned the regulatory agencies -- I mean, the Department of Transportation -- for rulemaking to address some of these issues that you think may present -- which are maybe gaps in safety protection?

MR. FISHER: We have, speaking for my railroad, insisted upon using all of those guidelines in the movement of high level nuclear waste and so, therefore, as long as we're allowed to use those guidelines, we don't believe we need additional regulations to cover that. And, of course, one of the things that my committee eagerly awaits is the new and additional data on the new generation of casks so that we can have our research department take a look at see if some of these restrictions can be lifted at a future date.

DR. PRICE: Well, while we've still got you in the chair, I'll ask one more question if I may. You mentioned the surveillance of the train en route, monitoring the performance of both the car and its contents, as well as locomotive, idlers, and rider cars. Is what you are putting forth here specially-equipped trains with respect to

monitoring and, if so, specifically what would this special train be?

MR. FISHER: No, there is no special equipment that we have insisted upon or believe necessary. In fact, one of the pieces of equipment that has had to be put on the train is a caboose which we really don't use on any of our freight trains anymore and that is because of the DOE riders and they're specifying that they need a caboose. But, basically, every time that that train stops for any reason, it is mechanically inspected by a supervisor. And, along the route, besides having a police captain aboard for security, we have police officers monitoring its moves at every place that it goes through.

DR. PRICE: So, this isn't equipment, but this is handled by the personnel who are on board?

MR. FISHER: That is correct.

DR. PRICE: And, you're not in this particular thing referencing GPS type satellite monitoring of the position of the train or anything like that?

MR. FISHER: No. In most of the major routes on the major railroads, there is a constant monitoring by a train dispatcher and he has a visual display of exactly where the train is. That is true on almost all main lines, heavy main lines, of Conrail and I'm sure it's also true of many of the western roads.

DR. PRICE: And, how is it that you determine the exact position of a train?

MR. FISHER: Well, you have the position within the length of a block which is usually between two and three or four miles and that is done by the use of track circuits which are visually displayed to a train dispatcher. We also have continuous radio contact with our trains.

DR. CHU: Did your Three Mile Island shipments follow your day of the week and time of day --

MR. FISHER: Every shipment moved at exactly the same schedule. Now, you may say that for security purposes, that may have been a bad thing, but on the other hand, we never experienced any problems on Conrail of a security nature. We had to give the states, of course, the 72 hour notice before the train moved and at some places there were some inspections made of the train. But, every move started on a Sunday morning which starts the light period of our traffic moving on the railroad. You know, business builds up over the week and is loaded from Monday through Friday by most industries, and by Sunday, the railroad has started to clear off. So, that move went across our railroad from Harrisburg, Pennsylvania, to east St. Louis, and was completely off of our railroad in the early hours of Tuesday which is the lightest period of traffic on our railroad.

DR. CHU: How did the Union Pacific feel about getting

in on Tuesday?

MR. FISHER: The Union Pacific does not have the terminals and the urban intensity that we do on Conrail. Now, they do have heavy traffic, but it was really based on our originating the shipment and I have to say that in future moves we would try to control that movement also on our railroad.

DR. CHU: Did you have time of day restrictions?

MR. FISHER: Well, once the shipment started, it was not stopped anywhere unless it was stopped for crew changes which took about five minutes at three or four points on the railroad or for state inspections, as necessary.

DR. CHU: So, you did move pretty much continuously?

MR. FISHER: It moved continuously other than when other trains were passing it and then that train stopped while the other train passed it.

DR. CHU: Yes, I was only asking about the scheduling on the day of the week and the time of the day. So, once you had it moving, then basically it kept moving except for some of these situations?

MR. FISHER: That is correct.

DR. CHU: And then, Conrail picked it up for the remainder of the -- I mean, not Conrail, UP picked it up for the remainder of the move in St. Louis?

MR. FISHER: That is correct.

DR. CHU: And, went to Idaho -- so, it went pretty much for a whole week?

MR. FISHER: And, on almost every movement, the schedule was almost exactly the same.

DR. CHU: All right.

MR. FISHER: The train moved within about the same schedule and same trains of time.

DR. CHU: Yes. The reason why I ask that is when you have a shipment -- and when the repository shipments eventually occur, we're going to look at distances which are about a couple of thousand miles in length and that Conrail have some thoughts on. If you did have preferences for days of the week as to how you might implement that?

MR. FISHER: Well, basically, the pattern I've told you is anything originating in our sector of the country that is when we would want to move it. We would want to get it through the cities and through the congested areas when traffic is at its lightest density.

DR. CHU: I'm thinking now more of the country as a whole. In other words, we have movement now only from, let's say, Harrisburg to east St. Louis, but we have the continuation of the movement to points west for yet another 1,000 miles.

MR. FISHER: Well, you know, I'm not belittling that, but us easterners, eastern railroaders, seem to like to think

of the western roles as nice straight stretches of track with no big cities and I know they do have some, but many of their main lines go for many hundreds of miles without encountering any major populated areas. So, we think that most of the problem of congestion in railroading is in the east.

DR. PRICE: One of the arguments against dedicating a train is that it might become an easier target for sabotage and that kind of a thing. If the 35 mile an hour restriction were to be limited because you were satisfied with the casks and their capability of withstanding transport at higher speeds, would that affect your idea of dedicated trains?

MR. FISHER: I don't believe so. The reason I don't believe so is because we like the idea on Conrail that we can assure ourselves and the public that we are doing everything we believe is necessary to move that shipment as safely as possible. And, normally, a special train movement on Conrail does not involve the movement with supervisors present. And, we think that our dedicated trains for the nuclear waste with the supervisors present is what's giving us that extra measure of safety and also we're looking a very great deal at the public perception of how we handle this traffic. So, I believe we still will do that. I think that the transit times will increase immeasurably if we're able to allow the passing of trains at speed. That again, of course, when you get to passing of trains, you've got the speed and the

different forces multiplied with that and that's one of the things that we need the data on the casks for.

DR. PRICE: I think we can try again now. Thank you very much. We appreciate your patience with us.

All right. Our next witness is Robert J. Halstead, Transportation Adviser, Nuclear Waste Project Office, State of Nevada, Carson City, Nevada.

MR. ROBERT HALSTEAD: Good afternoon, Mr. Chairman.

With your approval, I'm going to dispense with the use of overheads and talk from the handout. I think we have enough for everyone to have a copy.

Before I begin, I wanted to ask you one question about the anticipated length of testimony that you would like from me in question period. I had made arrangements to fly home tonight at 7:00, which means that I should--this is not so much for the record, but I had made arrangements to catch a 7:00 flight from Las Vegas, which means that I should be leaving at 5:00. I would be very happy to stay longer and make arrangements to catch a later flight tonight. But I just thought I should say that to you before we get into the discussion. I assume from hearing questions on past speakers that there may be a quite a number of points that we will want to discuss this afternoon and I'd be happy to stay here and make myself available for that.

DR. PRICE: I think that judgment is going to be

entirely yours and we'll proceed and see how the length of things goes and then whether or not you elect to catch your flight as scheduled. I think that's something you are going to have to--a decision you are going to have to make on your own, and if you need a break to make other arrangements, if you decide to do that, well just let us know.

MR. HALSTEAD: Okay, I'll start off trying to be less long-winded than usual, then.

Well, on behalf of the State of Nevada Nuclear Waste Project Office and the Nevada Agency for Nuclear Projects, I would like to thank you for this opportunity to discuss our transportation concerns with you. Before I get into those however, I want to begin by congratulating Dr. Price on his recent re-appointment to the Board by President Bush, and I understand that Dr. North was re-appointed also?

DR. PRICE: I believe so.

MR. HALSTEAD: Today I'd like to give you a brief overview of a broad range of transportation issues that the State of Nevada has identified that may be associated with the proposed nuclear waste repository at Yucca Mountain. However, I'm also hoping that we'll have an opportunity later this year to provide you with a longer, more detailed presentation on these same concerns including the discussion of a number of studies that we are in the process of finalizing. By the end of September, we hope to have

finalized all the contractor reports that are currently in the works, and as well, we will have our fiscal year, 1991 work plan available for discussion. And also by the end of October we hope to have completed a preliminary transportation impact study which is currently being prepared by the Transportation Research Center at the University of Nevada, Las Vegas. And that actually looks at the three potential rail access corridors and two of the potential highway routes to Yucca Mountain. So I'm hoping that we in addition to our discussion today, will have some opportunity in the near future to discuss these issues in greater detail.

So with that, given our time situation, without appearing to be too abrupt, I'm going to go right into the discussion on the overheads. There are four general areas that I'd like to share some of our concerns with you today in regard to what we see as unresolved safety issues, regarding transportation of spent nuclear fuel of high level waste.

Secondly, there were some site specific transportation issues which relate to Yucca Mountain. Third, there are some programmatic concerns that we would like to share with you about the Department of Energy's Office of Civilian Radioactive Waste Management Transportation Program. And finally we would like to say a few words about the public perception of transportation risks.

Turning to the overview of unresolved

transportation safety issues, let me say that unresolved means to us unresolved. Once we've studied these issues to our satisfaction, we may be less concerned about these issues than we are at the present time. The opposite is also true.

Our identification of these issues is primarily in response to positions that have been taken by the Department of Energy in a variety of documents and my discussion of these five issues is taken largely from a report which we prepared for the Nevada Legislature in late 1988. It goes by the moniker of the ACR 8 Report, which is in response to Assembly Concurrent Resolution 8. And I'd be happy to provide you with a copy of that as well as other documentation.

There are five areas where we see unresolved safety issues. One is the relevance of the nuclear industry's fine past safety record when judging the potential track record of the Department of Energy as a shipper of spent nuclear fuel and high level waste to Yucca Mountain.

Second issue, health effects of routine shipments.

Third issue, probability of severe transportation accidents.

Fourth issue, adequacy of federal safety regulations.

And the final issue, questions about shipping cask performance in severe accident or terrorist attack situations.

Turning to the first safety issue, nuclear industry's transportation safety record, let me give you a quick overview of four sub-points and then we will talk a few minutes in detail about the issue of the potential for the dramatic increase in the number of shipments to a repository compared with a historical record.

The first thing that we must say is that the nuclear industry has a very impressive safety record. There are no two ways about that. It is however, not a perfect record. There have been instances of releases from casks in shipment, although these to my knowledge all occurred prior to 1963 or 1964, and thereby would pre-date the current regulations that we have which established the performance standards for shipping casks. Indeed it can be argued that the current performance standards that we have were adopted in part because of concerns that surfaced during the late '60's and early '50's and particularly in part of the engineering staff at Oak Ridge National Laboratory.

There have also been incidence of equipment failure, particularly with the IF300 rail cask and the TNL-1 and the ACR 8 truck cask and at least one case of attempted sabotage of a rail shipment which occurred in late October 1986, during the Monticello-Morris shipping campaign conducted by the Northern States Power and Burlington-Northern Line.

DR. PRICE: Excuse me. I would like to just interrupt and let me ask--we have been doing this to speakers and I'll try not to do it again.

MR. HALSTEAD: Sure.

DR. PRICE: If you could provide documentation to the Board for these specific instances at your convenience.

MR. HALSTEAD: Sure. Some documentation, Dr. Price, for all of these issues is contained in the ACR 8 report that I mentioned in my--I'll have to see if the copy that I have with me is marked up or not. But I will leave you the copy that I have at the end of my presentation.

In some of these cases frankly the documentation for reasons that we are not fully aware of has not been fully developed. For example the cask leakage incident that I refer to is one that I stumbled upon by accident in a 1964 Atomic Energy Commission report. I've never seen it referred to in any of the other literature here.

So, the reason I present these to you as unresolved issues, we are talking basically about work that is in process. And yes, there's documentation enough to support the concerns here which are all issues in which we feel there's a need to study particularly specific incidences and as I'll say later, the study, some specific shipping campaigns which may more closely replicate the kinds of distances and conditions we would expect on shipments to a

repository at Yucca Mountain, is precisely in some cases because some shipping campaigns are atypical that they are of special interest to us for further study. But, yes, I'll provide you a copy of the ACR 8 report.

The second sub-point here is very simply that the number of shipments to a repository regardless of which case of assumptions you use, will in our opinion represent a dramatic increase over what a historical record is. Depending on which set of assumptions you use it seems to us there will be at least a ten-fold increase in shipments and possibly as great as a 50-fold increase in shipments.

We also expect the shipment characteristics to differ greatly. We don't have a complete data base on all of the shipments that have occurred, although we are hoping to take up that issue in our physical year, 1991 study plan, but from the shipments that we have data available on from the 1980's, I think it's fair to say on average both rail and truck shipments, civilian shipments have been in the range of 400 to 600 miles. I can think of a few large utility shipment campaigns that are slightly larger.

On the other hand we assume that rail and truck shipments to Yucca Mountain based on the analyses done by Sandia, are likely to average about 2,000 miles. This of course will open up all kinds of questions about equipment performance, and about human factors, not to mention some

different concerns about different topography and climate and so forth because of the different distribution of shipments in terms of east and west of the Mississippi River.

Final sub-point here has to do with the DOE's transportation safety record and our concern that it may not be equal to the fine record that the Nuclear Utilities have.

I confess that we are hindered in making a fair judgment of the Department's track record, because we do not have available, the kind of shipment by shipment of data on the DOE's shipments, particularly in naval and research reactor fuel, equivalent to the information that we have on the utility shipments. So, perhaps if that data is made available, we'll have a more appropriate basis for making a determination. The little bit of information that we do have for example, the September 1988 GAO report on the Department of Energy's use of shipping casks for some of the shipments like the Brookhaven shipments and cases where the NRC had significant safety concerns about those casks, lead us to believe that it is at least fair for us to ask the question about how the Department of Energy's past track record compares with the utilities.

Another reason for this concern is that while the Nuclear Waste Policy Amendments Act of 1987 did extend some of the NRC regulations to all Department of Energy shipments.

It is not clear that the full range of NRC regulations would

apply to all shipments, particularly in instances where defense shipments and possible security issues might be involved.

DR. CARTER: Mr. Chairman, could I interrupt if it's agreeable with Bob before he leaves us, since you are talking about specific things, I'd like to ask a couple of questions.

Is that agreeable?

MR. HALSTEAD: Sure.

DR. CARTER: What on these particular things, when you say no releases, since the early '60's, but, accidents have occurred, equipment has failed and in one case attempted sabotage. You know unless you are specific in these cases, you know these can denote a particular impression which is bad. So unless you can document these sorts of things, you know, they are not extremely useful as I'm sure you know.

The other question I wanted to ask you about, the bottom line of course is whether there has been any exposure to any of the workers involved in these sorts of things or members of the public. And if you have any information of that sort, we'd certainly be very much interested in it.

MR. HALSTEAD: Well, as I said, the only incident that I know of or the most recent one that involved a release occurred in 1963 or 1964. It was coolant leakage from a rail cask. I don't know if any record was maintained of personnel exposures. There was a clean-up which as I recall cost about

\$25,000 back in the days when \$1,000 meant a little more than it does today.

I certainly understand your point. It's difficult to talk about some of these issues. However, when the literature has been prepared by parties who frankly do not always have an interest in discussing these issues. For example, in the Battelle Memorial Institute lessons learned study of shipments, there is a discussion of the Northern States Power shipments. There is no discussion of the attempted sabotage incident. There is no discussion of the incident on shipment number 12, where the State of Minnesota inspector found an exceedance of the surface radiation level.

Subsequently an NRC inspector was brought in who did a swipe test and got a lower amount. And I guess what I'm saying is there is a whole literature here that we believe needs to be compiled so that the useful experiences of the industry are used to development the kind of system safety plan that from my reading of your March Report, I believe you feel should be compiled and we are certainly in full agreement with that.

I was the person representing the Governor's office in Wisconsin who had called the Nuclear Regulatory Commission in late October of 1986, and conveyed this information about the sabotage incident. And I was the person who had to relate back to my governor, that the NRC did not feel any

need to reinspect the tracks before subsequent shipments went through. And these are some of the concerns that I believe need to be documented in a way that they are useful to us.

DR. CARTER: Well according to the rules and regulations and I presume these are legal sorts of things and transportation accidents, these are certainly expected to legally have to be reported. They have to be reported to presumably independent regulatory agencies such as the NRC or the Department of Transportation. So you know there is a system at least, now whether it's functioning properly may be a different question, but all accidents of a certain nature, certainly any that are serious involving either a threat to human life or an injury or this sort of thing or certainly exposure have to be reported, unless somebody violates the law.

MR. HALSTEAD: I fully agree, Dr. Carter, that the problem is that incidents are never so neat in their scenarios as what we addressed in the regulations. In the case of Minnesota, a length of rail was removed and a train hauling plywood immediately ahead of a dedicated train hauling spent fuel was derailed. It was not an incident involving the spent fuel train, hence there was no NRC reporting requirement. It's not listed in the safeguards inventory which--I'm sorry, I can't remember the formal name of it now. And because there was a subsequent FBI

investigation which as I understand is still open, this is an example of the kind of limitations that there can be in using published data bases to address--this is again one of the issues that Professor Abkowitz raised in his human factors study for Battelle, that we have some real data base problems to address these kinds of issues.

DR. CARTER: Well I think the main point I'd make, is your experience apparently is different from mine. Most of the accidents I've been involved in have been involved in transportation. In fact, most of the nuclear accidents, transportation and other things, these things attract a crowd and it's usually like a fire drill. And so there is not too few people so the data is going to be hidden, but basically too many people involved quite often. They sort of get in each other's way. I guess my perspective is a little bit different.

But, let me ask you about your last bullet, namely DOE's transportation safety record. It may not be equal to the Nuclear Utilities record. Again, when we are talking about the shipment on spent nuclear fuel, high level waste, we are really talking primarily about the adoption and use of the DOE and NRC licensing requirements and the rules and regulations involved in transportation. We really are not talking about DOE or the utilities. They are party to this thing, but they still have to comply with the same set of

rules, regulations and standards.

MR. HALSTEAD: Well, Dr. Carter after many years of working with--many years, ten years seem like many to me. They may not seem like many down the road to you, but working with well managed nuclear utilities like Northern States Power, like Wisconsin Electric Power, like Wisconsin Power and Light, I find unfortunately that there is a great difference in the mind set of the people who have been involved with those transportation programs when compared for example to the track record of the Department of Energy with the Brookhaven shipments, which is the case that is documented and most detailed in the GAO study, where the DOE made a conscience decision to make a number of shipments through a highly populated area using I believe the MH1A Cask which the NRC had refused to certified and had alerted DOE that they had considerable concern about now.

Now reasonable people might evaluate the data establishing the risk differently. So I'm not saying that there aren't two sides to the question, but--

DR. CARTER: It still doesn't negate the fact that we've got a hymn book and it's put together in this case by the Department of Transportation and the Nuclear Regulatory Commission and whether we are talking about the nuclear utilities or DOE when it comes to use of high level waste, they have to be legally singing out of that hymn book.

MR. HALSTEAD: I wish that were the case, Dr. Carter. But as I read the regulations at the current time, DOE shipments which are conducted for research and development purposes involving civilian fuel are not subject to the regulations, nor of course are the military and research reactor shipments where there is compliance that's voluntary through interagency agreements. But, it is not the same relationship that the NRC has with licensed civilian utilities. I hope that the Department of Energy will operate successfully in the future under these regulations. The point that we believe it is important and fair to make is that the DOE cannot piggyback the fine record of the civilian utilities in this country. They have a fine record. They've earned that record.

We would like very much to see the same kind of shipment-by-shipment data that we have available on the utilities standard. I don't mean to overstate the number of accidents that have occurred. To my knowledge there are two rail accidents that have occurred. One involving casks actually containing spent fuel and one the grate crossing accident that the TMI shipments encountered in St. Louis. And there are four known truck accidents. One of which was on the return shipment of empty casks.

Now we haven't actually calculated the total number of shipment miles yet, but that's an awfully good record. My

kind of rough cut is with truck, at least, you've got somewhere in the neighborhood of one to two accidents per million shipment miles. That's a very good record considering there weren't any releases in those accidents, although a driver was killed in one well-known one for 1971.

So I'm not trying to imply that the record is worse than it is. I think it's a fine record on the civilian side and the concern that we have at the state level, in any number of aspects of the DOE program is the DOE taking credit for the fine reputation that the nuclear utilities have.

Let's hope that they do it in the future. I honestly don't see the historical track record being the same. I'm sorry for that digression like that--

DR. CHU: I'd like to ask a fairly important point of clarification about the point about the hymn book. When you were saying that DOE had the latitude for research purpose-- you know for shipping, research, fuel and so on, okay, what this Board's concern with is that the civilian radioactive waste management program as directed by the Nuclear Waste Policy Act. Under that Act it's my belief that DOE does not have the latitude to sing from a different book, is that correct?

MR. HALSTEAD: Well, it's correct, but there are grey areas and the grey area involves for example shipments of civilian fuel to Idaho, say for use in the dry cask storage

program, or possibly the dual purpose of cask program. And so far as I understand this the position the Department has taken is, if a particular activity is paid for from research and development appropriations as opposed to nuclear waste fund monies, it is exempt even though it may relate to portions of the civilian program.

For example, to develop interface information that's necessary to design transportation casks to receive spent fuel from a storage only metal cask. But you are correct in terms of the future shipments that would be coming to Yucca Mountain. Our assumption is that they will be fully regulated by the NRC. We certainly would settle for nothing less at the state level.

It is not clear, for example, if there were a research demonstration of dual purpose casks at the proposed repository surface facilities, whether that would be covered by these regulations if it were funded through research and development money. That perhaps is a far-fetched case, but there certainly are some grey areas there.

In terms of the shipment numbers, if we turn to the next page and summarize the commercial shipment numbers that Ron Pope at Oak Ridge put together. I think that they show there have been frankly a relatively small number of shipments compared to the large number we would anticipate to a the repository. Nonetheless the 2600 cask shipments we've

had in the U.S. are not unimportant. The difficulty is in translating the experience with those shipments to the future shipments to Yucca Mountain, because of the anticipated differences in the shipment characteristics.

We asked Nuclear Assurance Corporation to prepare a report similar to the report they did for Sandia in '84, updating the inventory of civilian shipments. We don't have absolutely complete data on all the utility shipments, but from them we know that about 75 percent of the rail shipments and 80 percent of the truck shipments have occurred between origins and destinations east of the Mississippi River.

We know that there are frankly very few long-distance shipping campaigns, but these are precisely the ones that we think should be highlighted for study for the lessons that they might teach us about the future shipments. These would include the Humboldt Bay Shipments to West Valley by rail and truck between 1969 and 1971. The San Onofre to Morris truck shipments in 1972 to 1980, the Vepco shipments to Idaho by truck in 1985 and 1986, and of course the TMI rail shipments to Idaho. I'd also throw in the Cooper Station and Monticello shipments to Morris during the mid-80's precisely because those shipments were made by dedicated train. And I think there are some special lessons to be learned by studying those campaigns. It's also true that world-wide there is much more experience with shipment of

nuclear spent fuel and high level waste than we have in the United States. Certainly, it's in the neighborhood of 70,000 to 80,000 shipments.

Unfortunately again, the direct transferability of that experience is somewhat limited we think by the reliance on ships for most of the long-distance shipments, particularly the shipments from the far east. And because most of the truck and rail shipments have been considerably less than we would anticipate in the U.S. on the order of 200 to 300 miles at the maximum.

Turning to the number of shipments that we anticipate, I have two overheads here, one total nuclear waste shipments to a repository based on the assumptions that were contained in the Department of Energy's 1988 draft mission plan amendment. Let me note that these assumptions, the assumptions on which these numbers are based differ considerably, from the assumptions that were used in the 1989 transportation studies for the MRS Review Commission. We have not redone our calculations because we've been waiting for an official mission plan which post-dates the 1987 Nuclear Waste Policy Amendments Act.

DR. CARTER: Were the MRS numbers higher than these?

MR. HALSTEAD: They were slightly lower, Dr. Carter, than our numbers because they assumed about a 50 percent higher truck capacity, but on the other hand, they did not

include high level waste in all of the analyses that they did. I think the better estimate of the range of what I would consider the high shipment case, I would not call it a worse case, because frankly we are somewhat concerned that if the WIPP facility should prove un-licensable, that in addition to the waste streams already planned for Yucca Mountain, we might unfortunately have to deal with a large amount of transuranic waste. But leaving that aside, this is the worst case that I care to consider at the present time.

And you can see that whether you take the optimistic assumption that there will be--that burn-up credit allowance will be granted by the NRC or whether you go with our more conservative assumption, based on the assumptions DOE was making in 1986 and 1987, where we are simply doubling the capacity of the current generation of casks, we are still talking that if we go with the 100 percent truck scenario, which we think is reasonable given the lack of rail access, although we prefer to see the shipments made by rail, that you are still talking about the possibility of somewhere from 45,000 to 76,000 shipments if the 70,000 MTU cap is left in place.

Frankly we are very much concerned that if one repository is licensed, there is not going to be the effort to license a second one, in which case, if we were to accommodate the anticipated spent fuel according to the EIA,

no new orders case using the same assumptions that were used in the MRS transportation studies, plus looking at the high defense waste disposal numbers which come from the 1987 integrated data base numbers from Oak Ridge, you can see a potentially large increase in those shipments as well.

The point is not to look at specific numbers given all the uncertainties, but to compare the range of potential shipments to repository with past experience. I've belabored the point and I won't belabor some of these other points. But I think that is a critical one in understanding why the State of Nevada is so concerned about the whole range of safety issues, is because we see the possibility of a dramatic difference in the number and nature of the shipments that might come to Yucca Mountain compared with the historical record of the utilities.

Turning to the second safety concern that I wanted to call to your attention, Health Effects of Routine Shipments, this is an area where the state has probably done the least work of its own, and I only include this to call to your attention the issues that have been raised with us which we have been asked by our advisory group--excuse me, our state and local government advisory group and by our technical review committee to address in future work. And these include the routine radiation during incident-free transport. The issue of cask weeping, excess surface

contamination and the extent to which the new cask designs being developed address this issue. And most importantly, there are a number of concerns about the health effect assumptions in RADTRAN. Specifically the relationship between the cumulative dose per person Rem and calculated cancer fatalities, but also concerns have been raised with us about the adequacy of those health effects of sub-programs dealing with the special vulnerability of certain sub-groups in the population like children, pregnant mothers, health effects other than cancer. And I would say that we will be closely following the results of the third party study of the Department of Energy's personnel radiation exposure data, the data that was recently released by Secretary Watkins.

This is not to say we are going to do nothing on this issue while those data are evaluated, but we feel that that's potentially a very important data base for addressing some of the health effects issues.

Turning to the third point probability of severe accidents, some of these issues are perhaps not as neatly arranged or as I might have, in fact, there are some cross-cutting issues here, but this is a good place to address some of our concerns about the use of probabilistic risk assessment. We have concerns generally in three areas.

First, while we are committed to the use of probabilistic risk assessment, we believe that probabilistic

risk assessment must be also complimented by deterministic analysis, worse case analysis if you will even though this is no longer required for NEPA purposes under the council under Environmental Quality Guidelines.

Secondly, we feel that it is important to develop guidelines for the use of probabilistic risk assessment in communicating risks to the public. And we have commissioned some work in that area by Roger Kasperson's group at CENED at Clark University and indeed one of the reports that we will be releasing shortly, does just this. It puts forth guidelines to be used when PRA is used to communicate this to the public.

A third concern with probabilistic risk assessment is the need to consider human factors in the risk assessment process itself, and in the assumptions that we make about emergency response organization performance. And here again we have a study by William Freudenberg at Department of Rural Sociology, the University of Wisconsin, that delves into some of those factors. That again should be available in four to six weeks.

Turning to RADTRAN 4.0, I presume soon to be RADTRAN 4.1, available through Transnet. Let me say from personal experience of dealing with Sandia Labs since at least 1980, that I can remember over RADTRAN, that we are cautiously optimistic. I might say, cautiously delighted by

what seems to be the potential evolution of the RADTRAN model as a tool for the types of analysis that are involved both with the probability and consequences of severe accidents.

Nonetheless, we are concerned as you are with model validation. And several areas that we have identified that we hope to take up on our fiscal year 1991 work plan include review of the following aspects of RADTRAN. The assumptions about the probability of severe accidents, the assumptions about the distribution of accidents by severity category and the assumptions about the performance of the casks and contents in severe accidents, i.e., the release fractions and finally the accident clean-up data.

We are also quite interested in testing RADTRAN or a model which we may develop at the University of Nevada Las Vegas based on the RADTRAN principals, using route specific data, where we use Nevada specific data on accident rates, population topography, whether environmentally sensitive areas, property values and all the inputs that determine the validity of the probabilistic assessment number.

Turning to a fourth point, federal safety regulations, briefly we are concerned about regulatory gaps in current DOT and NRC regulations, along with the office of technology assessment in their 1986 report to Congress. We are concerned that the lack of federal resources which are available for enforcement of those regulations.

I have added to this document a listing for you of the provisions relating to highly radioactive materials transport of a resolution sponsored by Governor Bob Miller of Nevada which was adopted unanimously by the Western Governor's Association about three weeks ago and forms the basis for recommendations that the state has made to the various congressional committees. And I hope by giving you this perspective on the changes that we would like particularly in the Hazardous Materials Transportation Act, that you will get a sense of what we can consider to be constructive remedies to the regulatory gaps without imposing an unreasonable burden on interstate commerce.

In particular we are concerned that some of the legislative proposals raise ambiguities about the current state routing designation HM-164. In our discussions with committee staff those may be unintended. But that's a concern that we have to retain the permanent state authority.

In particular we would also like to add some new regulations. One, a regulation for a radiological safety inspections at origin and destination for each shipment, and also we would like to go beyond the language which is currently in the Exxon Bill which would require the use of dedicated trains for shipments of spent nuclear fuel. We would support the position developed by the AAR, that we would like to see special trains used for shipments to the

repository.

Turning to the fifth area, shipping cask performance, we have some concerns in three areas. First concern involves the current NRC performance standards. In particular we are concerned that the impact standard, the thirty foot drop test on unyielding surface may not capture all of the forces that might be--that might result from a severe accident. We are also concerned with the current fire standard. One potential change in the fire standard has been recommended to us by an expert study team as to increase the standard to one hour, 2,000 degrees fahrenheit. Let me say that we feel that we need much more study before we can actually recommend any changes and indeed upon further study and consideration, for example of administrative controls, like a special train, speed limit requirements, special passing rules. Upon further study we might decide that the existing performance standards are adequate.

At the current time, we are not completely comfortable with them. Nor are we comfortable with the absence of a full-scale physical testing requirement for NRC certification. But again this is an area where we feel that we need to do much more careful study before we actually recommend a remedy.

For example, our expert study team assembled by Mountain West Research had suggested a post-certification

physical test to destruction of a randomly selected cask out of the first 10, 20 or 40 constructed. That may well be what we end up recommending, but at the current time we are trying to study issues as basic as what is the range of cost for physical testing and in this regard we have a study which again we hope to be able to release in four to six weeks, prepared by David Snedecker that we've used the testing programs of the central electricity generating board in the United Kingdom with the testing of large rail magnets, casks.

We've also looked at the full-scale thermal testing for the TruPack 2 as well as the testing of some of the full-scale components for the NUPACT 125B, which is the type B container which was used in the Three Mile Island quarterly shipments to Idaho. I think there's some important lessons to be learned there, but frankly we are not ready to draw any conclusions.

Finally on the general issue of the potential for human error, again a human factors question, we would like to see more study in the way in which the potential for human error needs to be addressed in all phases of the cask program both in design, certification, fabrication, operations and maintenance.

Now I've included two overheads summarizing some of the findings of related to this general issue in a study in which Lindsay Audin has prepared for us which is a critical

review of the modal study. And the portions of this study which relate to the modal study, have been completed long ago, but there are some difficulties which arise out of the fact that we hired Nuclear Assurance Corporation as one of our peer reviewers and then we had some concerns about issues which don't relate to the modal study at all, but which have to relate to some assumptions about past performance of some of their truck casks that we've not resolved those.

But the technical reviewers have agreed with the major conclusions of Audin's study that there are some real limitations in using the modal study to validate the adequacy of the existing cask performance standards, particularly the use of strain on the outer cask shell is the primary variable to define cask damage as opposed to for example, including a consideration of failures of the seals and welds, inadequate data on accident conditions particularly on the probability of impact of high temperature fires, and the adequate attention to interactive processes, particularly the loss of water from water filled neutron shells. Of course remember we are talking about current generation casks in the modal study and not the new ones which are going to be considerably different. And the admitted failure to consider human error which of course was one of the assumptions clearly stated by the Lawrence Livermore Lab in the beginning.

Rather than debate the merits or demerits of the

past, the modal study, we believe the important conclusion to draw from the evaluation of the modal study, is the way that we should proceed to address these questions for the new transportation system that's being designed to serve the repository, whether it's at Yucca Mountain or someplace else.

And these assumptions are listed here, the different spent fuel characteristics, the larger cask payloads, new cask designs and materials, uncertainties about the modal mix, and the different shipment characteristics. And our recommendation would be to have a new effort on the scale of the modal study with full stakeholder participation from the beginning. So that parties like the State of Nevada would be involved in shaping the study design as well as reviewing it and using the assumptions that are specific to the repository.

I will move very quickly through the remainder of these issues. I think it is important to spend some time in discussing the safety issues in detail and again I hope we will have a chance to talk about them in even greater detail at a later date.

There are a number of site-specific transportation issues relating to Yucca Mountain. In particular, for starters, this was not from a national transportation network prospective, a particularly good place to put a repository. Now admittedly transportation was not the primary criteria in

selecting the site, but I've included two pages that summarize the data on comparative transportation systems requirements and impacts of the five sites, and I don't think we have to go into the details.

The one thing that I would say that I find interesting is that while all of this data was developed, quite admirably I might say by the Department of Energy in great detail, I don't believe it was ever presented in a clear, comparative format before the decisions were made in December of 1987. I put it in there only to document for you the enormous challenge that the Department of Energy, particularly the Yucca Mountain project office faces in developing transportation access to the Yucca Mountain site.

These challenges go out of my other five points, the current lack of rail access as I state in the third overhead relating to this issue. The nearest--the absolute shortest distance to the nearest mainline is 100 miles and to the nearest alternative mainline is about 260 miles. In fact as the crow flies is not the way we build rail spurs and the access route that's currently under consideration by DOE is approximately 400 miles. Another alternative is about 400 miles in length. Another shorter one is about 110 to 120, which goes through some particularly tough terrain in the Spring Mountains which if you drove in by 95 on U.S. 95 you saw them to the west towards the California line as you drove

in.

Another site characteristic is of course limited access to the interstate highway system. Approximately 90 to 100 miles from I-15 and considerably longer distance to the only other interstate route into Nevada, which is of course I-80 in the north.

The potential future population growth in the Las Vegas Valley is a particular concern here. And I should say because the issue of routing came up the state's position at the current time is that we will do everything possible within documentable safety issues to make sure that shipments did not have to move through downtown Las Vegas, or to that extent the entire Las Vegas Valley if that's possible.

It's partly because the way we do probabilistic risk assessment is highly population sensitive. It also has to do with the perceived risk issue in the potential that we might harm the state's tourism and gaming economy. I'll say a little more about that when I talk about perceived risk at the end.

Finally, there are also some issues that have to do with potential conflicts with U.S. Air Force Operation at the Nellis Air Force Bombing ranges. This is an issue that DOE identified as potentially unfavorable issue in the 1986 environmental assessment. We were of the understanding the DOE was going to prepare a report with the Air Force on those

issues. At this time we are told that the status of that report is uncertain.

There's also a need to consider the potential impact on Nevada Indian Tribes. Much of the area traversed by any rail access or highway access impacts lands that are claimed by the Western Shoshone Nation under various mid-nineteen century treaties. More specifically you have the issues of the Maiope Band of Piutes reservations lands along in the proximity of the Union Pacific rail line and I-15. And you have the issue of potential conflict with the Walker River Indian Band over the location of their reservation. It ends along what might otherwise be a promising rail corridor coming down from the north. It's identified as the Minot Option in the DOE rail routing documents.

Let me turn quickly to the third area of concern which has to do with the programmatic issues involved with the DOE's transportation program. Again I'll try to be very brief and answer questions.

We believe it is absolutely essential that the DOE soon put out a revised and updated mission plan that fully incorporates the changes in the program which are driven by the 1987 Nuclear Waste Policy Amendments Act.

In that revised mission plan and the comprehensive transportation plan which will eventually accompany it, we're told we need some of the program assumptions like MRS, no

MRS, low and high level cases for the amount of defense high level waste to be disposed through repositories. So we need those key assumptions spelled out.

And secondly, we need to see a greater use of sensitivity analysis in the mission plan of the transportation plan to accommodate not only programmatic issues like MRS, no MRS, but rail access, no rail access, use of dual purpose casks and so forth. I will say that I'm encouraged by the greater attention to different assumptions and sensitivity analyses in the transportation studies that were done for the MRS review commission. And I hope we will see that kind of flexibility exhibited in the new mission plan in the transportation documents.

Secondly, we feel that there is a need to redirect the OCRWM from reactor cask program. In a word there seems to be a key systems analysis issue here that we are developing a rather extensive and expensive hardware program without having a very good idea in many component areas about what the overall waste management system, the transportation component is supposed to serve. In particular there are issues that have been raised by the utilities. I think probably best stated in Howard Shimmen's presentation at the February 1990 Transportation Coordination Group that lay out those concerns.

From the more specific concern of the State of

Nevada, we believe that greater consideration to the use of dual purpose casks needs to be brought in as soon as possible into the Yokerman Cask program.

Finally, we have some concerns with the DOE's plans for implementing Section 180(c) of Nuclear Waste Policy Amendments Act. This is the provision which requires the Department to provide financial and technical assistance to the states along the potential transportation corridors, to the repository, MRS and other facilities. The DOE has taken the position that they will not begin implementing that portion of the Act, until three to five years before shipments begin. We believe that's a misreading of congressional intent that this section is to provide assistance to the corridor states not only for emergency response planning, but as the line which in the committee report accompanying the Act clearly states planning for the safe routine transportation of spent fuel and high level waste.

In particular, we believe that early implementation is important so that the potential corridor states are allowed to participate in the evaluation of DOE program documents in the evaluation of the preliminary design reports and so forth, because the development of the program is already underway. And as far as I know all states other than the State of Nevada are now effectively precluded from

receiving any federal financial assistance to be involved with those programs.

Finally, turning to my last area, public perception of transportation risks, the State of Nevada has a very broad and involved series of studies on socio-economic impacts, both past studies completed and current ones in progress. In particular the question came up earlier about the perceptions that vacationers might have. Paul Slovik of Decision Research, Inc., is currently doing some work on this issue for us. It includes a survey of convention planners and an opinion survey of persons who have recently attended conventions in Las Vegas. That's a small part of a much larger project.

We just had the peer review meeting on that report two weeks ago. And I don't know how quickly that will be available. But, I guess this really goes back to the point that Steve Bradhurst raised in the first presentation today, which I would endorse on behalf of the State, and that is that we feel that the socio-economic issues, while they are often considered less technical than other aspects of the program are indeed important, often quantifiable study efforts. And it would be very appropriate for the Technical Review Board to take up those issues and we would certainly like the opportunity to present our findings to you. That said about the work that we've done establishing the

potential for adverse socio-economic impacts.

Let me close by simply referring you to some results from recent survey data. This is in November 1989, the State of Nevada telephone survey. If memory serves me well, there were about 1,000 state-wide respondents of the survey. So it's within normally accepted confidence levels.

And we also over-sampled in Nye County because of the relatively small population here.

What you find in regard to public concern about safety is a very considerable concern state-wide that highway and rail accidents will occur in transportation to the repository. Better than 40 percent saying that they somewhat agree; better than 36 percent saying they strongly agreed.

What I find significant is that even in Nye County where there is much stronger support for the repository according to our surveys than state-wide where there is frankly, greater support for the expansion of nuclear power in the United States than there is state-wide, there is still considerable concern about safety impacts even here in Nye County.

Similarly turning to a question that we had included in the survey about the extent to which shipments of nuclear waste could be made safe from sabotage or attack by terrorists, you see that there was considerable concern state-wide, and again even in Nye County where the attitudes

towards nuclear activities maybe somewhat different than the state-wide sample where there was still considerable concern.

I'm not trying to draw any conclusions about the significance of those numbers and I personally am always uneasy about the uses of opinion survey data. But they do-- the surveys that we've done to date do seem to suggest that transportation safety and protection safeguards protection are issues that there is a fairly wide-spread public concern about.

Again, I thank you for the opportunity to make this presentation. I apologize for the length of time that we've taken and I hope that on another occasion, we'll have a chance to delve into these issues more fully. Thank you.

DR. PRICE: Thank you.

Let me just ask you something about the surveys real quickly. You mentioned that you had 1,000 respondents so it was within normally accepted confidence levels, but as you know the confidence level is determined by the variability of the response not necessarily the end. Do you know what the confidence level was where did surveys were?

MR. HALSTEAD: I believe 95 percent, but I'm--I did not review that before I came. But certainly this is a document that we can make available, that we can make available to you.

Also, I should say that the survey was a long

involved survey instrument. I believe it took about 20 minutes to administer and most of the questions of course were not about transportation. These questions were the evidence that our technical review committee, which includes people like Mike Bronzini from Penn State and Edith Page from OTA and various academic experts in the whole range of socio-economic disciplines, raised the issue with us and our study team two weeks ago, that in fact we have not done enough on the transportation issue in the course of our extensive work on the stigma affect. What images do people currently have of Las Vegas? How might their images change if there were a repository here? And we are in the process depending on what our fiscal year 1991 budget looks like of making some plans to pursue those questions in a more meaningful way.

I include these for your information. Like I say, I do not want to make any particular case for the significance of those findings.

DR. PRICE: May I ask other panel members for questions.

DR. CARTER: Well a couple of things. One, are you satisfied or is the State of Nevada satisfied with the current MRS?

MR. HALSTEAD: We don't have an official position on it, Dr. Carter.

DR. CARTER: I mean the one we have in existence in the United States.

MR. HALSTEAD: I'm not sure I know which one you are referring to.

DR. CARTER: Well, as far as I know there is only one. This is located in Morris, Illinois.

MR. HALSTEAD: Right.

DR. CARTER: It's regulated by the NRC under the appropriate regulations for monitoring retrievable storage. Most people as far as I know completely lost sight of that if they have ever known it.

So we do have one and we've got a fair amount of experience with it. It's a waterpool storage of used fuel elements.

MR. HALSTEAD: Absolutely. And I'm well familiar with it from tracking the Point Beach and Genoa shipments when I worked for the State of Wisconsin there. I guess the response I give about the state's position is that given the current controversy over siting an MRS and given the current prohibition in the law over co-location--not so much the co-location of the MRS facility in the state that has the repository, we have felt it's been inappropriate for us to take a formal position on the MRS as proposed by the DOE.

I think I can tell you candidly that there is a broad range of staff opinion on our staff about the possible benefits of an MRS. I personally am on record for a number of years in supporting the benefits of an MRS. There are

other people on our staff who don't feel it would be wise and who particularly feel that dual purpose casks at reactor are a preferable alternative.

Indeed our endorsement of dual purpose casks if I may add a point here is precisely because of the constant policy changes which have affected the waste management system coupled with the incredibly demanding requirements for licensing a geologic repository site. And the reason we feel so strongly that the Yokerman Cask program should be redirected to include the dual purpose cask is precisely because it allows additional flexibility which may be necessary because of policy changes or maybe necessary because of unanticipated technical findings.

A dual purpose cask it seems to us would address at reactor storage needs. It is certainly for a storage only MRS; could facilitate that type of a system configuration. And certainly if you needed to have lag storage at the surface facilities that were a repository and many of the advantages of having dual purpose casks.

DR. CARTER: Another thing related to that--like I say most people when we talk about an MRS it is something that's in the future whether it's going to be good or bad. Like I say there actually is a licensed MRS in the United States in operation.

The other thing and I suspect the state has some

views and I don't think I'd like to pursue them today, but we could pursue them later, but they are certainly involved in this, not only the MRS possibility, which has obviously handled larger volumes of used fuel elements and so forth in the Morris, Illinois capacity has, but it's the regulatory things that the NRC has been doing. And there are two of these in particular that I would call to your attention.

One is in their waste confidence hearing, they indicated that you could indeed, from an health and safety standpoint store used fuel elements at the reactor sites, either in above-ground storage or in waterpools for approximately 100 years. That's one point.

The other point, they are in the process now of extending or at least making provisions to extend operating licenses for nuclear utilities from the present 40 years for another 20 years. And this impacts the whole rationale theory that we are discussing of a repository and all that goes with it.

MR. HALSTEAD: I absolutely agree and I can assure you that we are closely monitoring those developments.

DR. CARTER: Okay, another thing I'm sure you recall, and that is that this particular panel through the Board recommended that DOE perform an evaluation and found out whether or not it was feasible to do a validation study of the Rem or Rad codes, and even made a couple of suggestions

of types of places that that could be done.

The other thing I wanted to ask you quickly about the health affects or a couple of things about it. One is clarification. You mentioned the health affects factors, I presume from absorbed doses related to RADTRAN. It is the point of the state that these factors are used in error and that there are better factors available or just what? I presume you are talking about health affects for a particular exposure either in Rem or Rad.

MR. HALSTEAD: Let me preface this by saying as I said before, this is an area where I personally believe we have done the least amount of the necessary work, so I would be very cautious about making any firm recommendations. The one issue is the actual cancer fatality relationship to the person. We, in a report again which is not final, have suggested the use of a factor that is as I recall basically two and a half times the current factor that is assumed in RADTRAN.

I think the larger issue which our staff, our health physicist, Peter Siegler has raised, is that we would like to wait and monitor the studies on the DOE personnel exposure data and see if there is any need to re-think the whole health affects relationship.

I include it mainly because these are issues that have been brought up in public hearings, have been brought up

in our advisory group and we honestly don't have an adequate basis for resolving them.

DR. CARTER: Okay. I guess the point I would make here is that essentially over a period of time what's involved in the radiobiological community, people involved is not only federal agencies that are involved in establishing or setting these, but lots of public involvement these days as you well know.

But also with the groups like NCRP, ICRP and so forth, is that primarily they are concerned is with cancer, cancer induction. This is a stochastic effect and in the past we've paid an equal amount of attention I suppose to genetic defects. And I might add now that we are coming out of the Hiroshima/Nagasaki studies which have been ongoing for a long, long time and have not found as far as my reading of it, any significant genetic defects.

So when you talk about other effects related to transportation, I'd be very much interested in what you've got in mind.

MR. HALSTEAD: Well, I'm particularly referring to the issues that I'm sure you are familiar with that have been raised by Goffman and Stuart and Bertells. And these are issues that since I'm not trained in radiation and health physics that I'm not competent to comment on. We defer those to our other staff.

Quite frankly we haven't fully developed the strategy of how we will deal with those issues except to say we believe that people who raise those issues have a legitimate concern in raising them. We don't know what the best way of resolving controversy is.

DR. CARTER: Of course this area would take a lot longer to discuss adequately than we've done at the moment. But I think primarily the folks that you've mentioned, their contention I believe is not really a difference in the health effects, it's the levels that affects or not affects.

MR. HALSTEAD: That's right.

DR. PRICE: Any other questions?

DR. CHU: Yeah, but I may be getting in the way of his airplane.

MR. HALSTEAD: We'll either make other arrangements or I'll risk--

DR. CHU: I'll try to make this brief.

DR. PRICE: We'll need to brief. We have three persons who would like to deliver comments before we break for dinner. For their own reasons they have to leave. So we'll have to keep it somewhat brief.

DR. CHU: All right. I have a couple of questions. One is that you mentioned a couple of points about the need for worse case analysis. And there are a couple of questions I have about that. One is kind of a definition as what you

mean by the worse case in the sense clearly if you can describe an accident to me or I can think of something that's worse, so there is some concept of a worse case analysis.

And the other question is that you brought out the point of the Council of Environmental Quality, since 19--

MR. HALSTEAD: '86.

DR. CHU: 1986, no longer requires that type of analysis in the NEPA process. And if I recall the reasoning was that the usefulness is not clear because if you take it to the likelihood of occurrence if it's very unlikely that they occur, then their role in an environmental impact statement is problematic.

So now you are raising the question of the need for worse case analysis. What do you see as what role they will play in the risk analysis?

MR. HALSTEAD; I'll definitely be taking a later plane home. That's a real important question and I know we can only deal with it superficially here.

First of all our expert study team assembled by--

DR. CHU: If you prefer, we could save that subject for another time.

MR. HALSTEAD: Well let me just give you the basic outline of it.

First of all some type of deterministic incident analysis and I perhaps should not use the phrase worse-case

analysis precisely because it is so vague and could mean so many things to so many people.

But in particular this is important when you are evaluating a tool like RADTRAN. It's very important to pick out of RADTRAN what is the worse type of incident that the model allows to be considered? What kind of a probability is assigned to it and most importantly, what kind of documentation is there for establishing that type of incident and the probability of severity. That's one of the key concerns that we continue to have about RADTRAN.

How do we evaluate it? It's pretty easy to take the approach we took in the old days and say yeah, a worse case analysis means a 100 percent release fraction. I personally don't consider that credible and once lost a court case for taking that position in public. I didn't take it. I advised someone not to take it but they didn't take my advice.

We are in the process of trying to develop what the envelopes defined in the worst case accidents that we should be concerned with are. In particular in a work plan that we are developing for next year, we want to look at two areas. We want to look at defining severe accidents, not just based on accidents that have occurred, but accidents that might have occurred with combinations of events.

Let me give you an example. Last year's horrible

San Bernadino train derailment which involved a run away unit train full of water that jumped the tracks at 102 miles an hour. That accident in and of itself fell on a pipeline and two weeks later there was an horrific fire. Both of those incidents involved loss of life.

My understanding is the National Transportation Safety Board concluded that the pipeline fire was a result of damage to the pipeline from the cleanup effort, but I'm not sure that that's proven beyond a shadow of a doubt. So that's an example of a potential combination of impact and fire incident that we might use in shaping for ourselves what envelope we would put around this question of what is the worst--what is the most severe accident that we consider credible for analysis.

A second way of approaching this is to look at infrastructure characteristics along the routes that are being involved. A fall from a high bridge is an issue that's been a concern for a long time. You remember this was an issue in the use of the Mackinac Straights Bridge in Michigan for the Chalk River shipments. And it's a one way that we might approach this is to look at what the most severe fall accidents which might occur from high bridges which are either on the interstate system or on state designated alternative routes. That's the approach we are thinking about now as a way of adding something constructive to this

discussion.

So again, I reiterate when I'm talking--I guess I should stop using the term worst case analysis, but as I guess by definition that implies 100 percent release in some horrific distribution.

But we are certainly struggling to define severe accidents that we are convinced envelope the types of conditions that we believe both the casks and the administrative controls governing the transportation system should consider.

DR. PRICE: So basically you've got to wrestle with that word credible?

MR. HALSTEAD: Absolutely.

I will gladly stay if you would like to finish the discussion. It's too rare an opportunity--I can catch a later flight. I really can. I just should make a phone call.

DR. CARTER: I was going to suggest we wave bye-bye and let him catch the earlier plane.

DR. PRICE: Thank you very much and we do appreciate your coming. As you know our report to Congress did include some of the areas of concern of human factor, system safety and systems analysis questions which I think we shared.

We do appreciate you coming in.

MR. HALSTEAD: Thank you. And if I could just say in

parting that we read the transportation sections of your report very carefully, and we very much appreciate the thought that went into those recommendations, and I haven't seen anything in there that we don't fully agree with.

DR. PRICE: Thank you.

DR. CARTER: Bob, don't start flying until you get on the plane.

DR. PRICE: We have three persons who have asked to address the Board. They are those that fall in the area of second style of our hearings today. And that is that they have not submitted prepared statements. And they are limited to five minutes in their presentation.

The three that we will have before our break for dinner, and then there is one who said they could stay until after dinner. But, let's see how this goes and we'll decide whether or not the fourth person goes ahead and presents to us before the break for dinner. We can kind of hang that loose, I think.

And so the first person that I have listed here is Mr. Ernest Travis.

DR. BARNARD: I think the presentations are supposed to be limited to five minutes and I'll just keep track of the time and indicate how much minutes you have left.

MR. ERNEST TRAVIS: I will not take five minutes of your time.

DR. PRICE: And as with all the other speakers, speak close to the mike because there seems to be a problem.

MR. TRAVIS: I'm sorry, sir, I could not hear you.

DR. PRICE: Speak closely into the mike.

MR. TRAVIS: Yes.

What I wish to recommend to this distinguished Board whom I thank for the opportunity to appear and be heard today is very simple.

I'm extremely impressed with Mr. Fisher's written testimony to the Board on the subject of rail transportation.

Incidentally I will confirm my own testimony by letter this weekend to the Board. I wasn't informed that copies of testimony would be helpful in written as well as oral form.

The simple--some they say simplistic recommendation I have, is that all transportation should be by rail through remote areas on trains dedicated solely to this purpose, operating over specially built rails constructed for this purpose. Four simple rail lines through the desert to the north, south, east and west railheads, directed on Nevada's borders with Arizona, California, Oregon or Idaho and Utah would greatly enhance the public perception of Nevadans about location of a safe repository in this area. How the rest of the country gets it to our railheads is a matter for us to determine, but piggybacks certainly come to mind.

Let me acquaint to you with my motivation in

appearing here. I'm a member of the academic community, a teacher, and I appear here as a representative of the Nevada Nuclear Waste Study Committee. The NNWSC believes in a swift completion of scientific studies to determine the safety of storage in this part of the desert and heavy reliance on those studies in the final decisions about location of a repository.

I'm afraid the public perception of members in my profession is degenerated largely to a suspicion that we are largely emotional esoteric and perhaps even leftists, and I wish to assure the Board there are many of us in the Las Vegas area that are not that way. I earned a living for ten years before I've done any teaching. I've been teaching 32 years and I certainly want to see us rely on fact and not on the paranoia.

For my part and I know many other teachers who agree with me, I will accept the results of good scientific research and I wish the politicians would do so also, but whether they will even allow it to be completed seems to be a problem.

I personally feel our Nevada delegation has betrayed their constituencies, steam rolled right over them and paid very little attention to what I believe to be the real desires of a great body of students. And as evidence of this I would like to submit to you that we conducted a survey

in the Clark County School District and well into the 80 percent of the students there, the young people, were very open minded about location of a facility here, although they felt as I do that we should know the facts. And that they are not available to the public.

I feel very much like I do when my daughter came to me when she was in high school and wanted to know what I thought about marijuana and I said, Jan, we don't have the research available yet, I can't tell you. She said, I'm going back into my class and tell my teacher exactly that, that until we know, it's a good idea to lay off of the stuff.

Well, it's certainly is a good idea to lay off locating nuclear waste anywhere until you know if it's safe. But, let's get the facts.

DR. PRICE: Thank you very much. The next person is Mr. Rick Dale.

MR. RICK DALE: Good afternoon. My name is Rick Dale, and for the record I would like to state I am an employee of Weddle/Caldwell, a public relations firm that receives a grant from the U.S. Council for Energy Awareness to provide staff assistance for a private citizens group called the Nevada Nuclear Waste Study Committee.

I am speaking today at the request of Hugh J. Anderson, III, who co-chairman of the 9,000 member Nevada Nuclear Waste Study Committee.

The Nevada Nuclear Waste Study Committee is a non-partisan group of responsible citizens that believe the only basis for determining if Yucca Mountain is, or is not, a suitable site for the proposed repository is through exhaustive characterization of the site.

Frequently, we read reports attributed to Nevada's elected officials that all Nevadans are against Yucca Mountain. This is simply not true. There are large numbers of Nevada citizens who understand the need and the potential impact of the proposed repository, should the site be scientifically proven to be safe.

This understanding is in part borne out of Nevada's nuclear heritage. The Nevada Test Site has been an important element in the development of this area for nearly 40 years.

Hundreds of nuclear weapons tests have been conducted at the site, and quantities from nuclear materials have been transported on our highways during this time. These activities have made the Test Site a de facto repository, one might argue.

These activities resulted in huge amounts of scientific research and understanding. It is scientific research and understanding, and not political rhetoric, that is the common thread amongst these Nevadans for advocating continued study of the repository.

Scientific study is the key.

As a private citizens group, the NNWSC will dedicate its efforts toward ensuring that the technical studies of the high level repository proposed for Yucca Mountain proceed in an orderly and scientific manner. The NNWSC believes that the public health and safety of Nevada citizens must be the primary focus of all scientific investigations related to the repository program, and that all questions be answered fully and completely prior to any operation of a repository.

No other project in the history of the United States, perhaps the world, will be more thoroughly researched, studied or scrutinized than the proposed Yucca Mountain repository. Given the intense scientific scrutiny by prestigious and independent scientific groups, such as the National Academy of Sciences, the Nuclear Regulatory Commission, the United States Nuclear Waste Technical Review Board, we believe there is little room for "bad science."

It is the belief of the NNWSC that the transportation studies undertaken to date have been well thought-out, have included numerous opportunities for public comment, and have addressed Nevadan's concerns about not transporting high level nuclear waste through highly populated areas.

While we are satisfied with the progress to date, we realize many more studies and years of research will be

necessary to accurately determine the transportation impact of the proposed repository.

It is the desire of the NNWSC to insist that the members of the Technical Review Board vigorously carry out their Yucca Mountain oversight mission, and not to compromise your scientific activities for political considerations. As residents of Nevada, and citizens of the United States, we can expect nothing less.

You have a major responsibility before you. We wish you will in your mission. And, I thank you for this opportunity.

DR. PRICE: Thank you, Mr. Dale.

The next witness is Mr. Bill Greis. I'm pronouncing it that way. The last name is spelled G-R-E-I-S.

MR. BILL GREIS: Sir, that was the German pronunciation and the German spelling. I'm a sauerkraut, but we call it Greis.

Gentlemen, my name is Bill Greis and I have been a resident of Clark County since early 1962. I happen to be one of those so-called dinosaurs who have been fortunate in surviving the anti-nuclear vendetta here in Nevada over Yucca Mountain. My background includes over 40 years work experience in the field of nuclear energy and I would hope that that means that I have the right to opinions that are not shaped by political posturing and/or scare headlines in

our local newspapers.

For the record, I feel very comfortable with the U.S. Department of Transportation's regulations governing the shipment of radioactive waste to the proposed high level waste repository at Yucca Mountain.

Furthermore, I feel confident as to the future safety and welfare of our successor generations regardless of what the newscasters report. My wife and I have raised two children here in southern Nevada and we have a grandson and also a granddaughter who will start elementary school in Las Vegas this month.

If either my wife or I had any qualms, whatsoever, regarding the validity of the proposed Yucca Mountain investigative program and the potential related effects on our children, and their children, and their children's children, then we most assuredly would oppose it.

I have come here today to speak to the members and representatives of the Nuclear Waste Technical Review Board as a citizen who is concerned with the nation's future energy needs.

I would like to conclude my brief remarks by saying that I understand that the Nevada Department of Transportation has recently concluded its risk analyses of alternate highway routes and that I look forward to learning more about the inter-relationships between the federal and

State of Nevada departments of transportation. It is vital that they reach agreement on how best to select access routes to Yucca Mountain.

DR. PRICE: Thank you, sir. I appreciate it.

I understand that there was one who signed--no, there is not another person who signed--there was one for after dinner but we could take that person now.

The next witness is Ms. Judy Treichel.

MS. JUDY TREICHEL: Thank you. I'll regret that I just unloaded myself from Mr. Halstead's vehicle. We rode down together.

I'm the Executive Director of the Nevada Nuclear Waste Task Force. And we have a full-time office in Las Vegas with a local phone that's there and available during all regular working hours as well as a toll free 800 number.

We are a non-profit organization and we serve the State of Nevada. We develop and implement programs which will promote the public participation in the U.S. Department of Energy's high level nuclear waste program here in Nevada.

Our general purpose is to promote an informed citizenry.

The Task Force activities must be performed in strict conformance with provisions of a contract with Nevada Agency for Nuclear Projects/Nuclear Waste Project Office. We also must comply with all related laws of the State of Nevada. Our operation is subject to audit by the State, the

U.S. Department of Energy, the IRS and the General Accounting Office. And we've been under contract to the State of Nevada since February of 1988.

As you probably know and have seen some of the polls that Mr. Halstead gave a few of the numbers from, the vast majority of Nevadans are opposed to the siting of a high-level nuclear waste repository anywhere within the state. During the last sessions of Nevada's Legislature, a law and two resolutions were passed which opposed or prohibited the storage of high-level waste in Nevada. A great deal of pressure was put on legislators to pass those measures and I know about that because we received tremendous number of calls asking who is my legislator and how do you get a hold of the people and that sort of thing.

And a major poll that was taken to determine the citizen's attitude about the nuclear waste repository, it's interesting to note that there were higher levels of concern about transportation than even about the repository itself.

That's about it for what our office does. We just talked to a great number of people mainly by phone but we have quite a few that walk in also as we are located rather centrally in town.

We receive lots of requests for information about transportation. Most of the material we have is similar to the sorts of reports that you have heard today from the State

and from others who have talked. But people normally will talk about common sense issues or about their own experiences on the highways regardless of what the technical reports say.

They are terribly concerned about what an accident would mean in or near Las Vegas because they see nuclear waste as being something that's invisible but would be contained within a highly visible accident and they have scenarios that they talk about where you would have all the major news services talking about something like that.

They are afraid of radiation because it can't be seen, because they don't necessarily believe the Department of Energy. There's a major distrust of the Department of Energy, and when they understand what the Price Anderson Act is, they see that as possibly being not as adequate as it should be for what they feel the needs are.

The discussion of railroad travel for nuclear waste doesn't seem to hit home very much because as you know there are no railroad tracks out here.

They are skeptical about retrievability. They worry that if Yucca Mountain doesn't work, it just means a contaminated site with contaminated ground water, and the Department of Energy's answer to them is that the waste is retrievable, but there again that raises additional transportation questions because retrievability sometimes would just mean to them that it's additional transportation

or an unanticipated transportation to get waste back out.

As other people have said, transportation of any kind is difficult within the Great Basin. There aren't a lot of roads. In other places where you have Highway Patrols out re-routing traffic, in this area, they many times will just stop travel, because when a road is impassible, it just plain is.

I'm here because in most cases I do not testify, I just run an office there and I encourage other people to come and testify, but because the hearing is quite a ways from Las Vegas, I decided to come up because we did have a lot of talk about this. It was noticed in the newspapers. People wanted me to come up and complain about the location of the meeting.

I'm not going to do that. There were Las Vegans, many of whom were cut out of the process, but the folks who live in this area are many more times cut out of the process. So I think it's fine that you are out here and I would just as soon come up. And in their stead I have tried to very briefly give you some of their concerns.

I will take any questions that you have. I know that I had to really hit this very quickly.

DR. PRICE: I think there are a couple of questions.

MS. TREICHEL: Okay.

DR. CARTER: Let me ask you, there are a couple of individuals here, one I guess represents a firm, the Energy

Awareness. This is a national organization that I'm somewhat familiar with and it has a large membership. The other two gentlemen represented themselves, I believe, and you represent a Task Force. I guess I had a couple questions about it, if you might care to respond.

What I presume from the name that it is strictly a Nevada group. You don't have people from Utah or California or somewhere else. Is that correct?

MS. TREICHEL: That's right. We are operating just within the state.

DR. CARTER: What's the membership in the group in terms of members?

MS. TREICHEL: We have a mailing list of about 9,000, but it does include people from outside the state. The newsletter has gotten around to a great many people. And we are not an organization that has membership meetings and that sort of thing. The membership is strictly to show a level of interest and to be able to get newsletters and information.

DR. CARTER: So you don't have a formal membership list. I presume when you send this out it may go to people that may or may not read the literature they get. Like most organizations, you know a lot of members of most groups are quite inactive or passive, or whatever you want to call it.

MS. TREICHEL: Yeah. We are working under contract to the State of Nevada and a lot of what our mailing list is, is

to give them a good idea of the level of interest and to get State information out as well as any DOE information or other alternative sources that come in.

DR. CARTER: The other question, you had a statement in there and I've not had time to look at this, but you've got a statement that the vast majority of Nevadans are against the high-level waste repository. What's that statement based on?

MS. TREICHEL: It's based on polls that are taken formally through the University system which are you know credible polls, but we spend a lot of time in placing--

DR. CARTER: Are these telephone polls by the way?

MS. TREICHEL: I think that's--yeah, I think so. It's the same poll that I think Mr. Halstead extracted those questions from.

But we spend a great deal of time out in public places going to the public. And you find it's usually about 85 percent. If we have a petition or poll out there where people can sign up where they stand, that's about how it runs.

And I know you asked earlier about the tremendous influx of people, and that's interesting too, because we have asked people, you know, do you think about this when you move here? And they say yeah, but what you are talking about is something in 2010. I've got a job now--they have a lot of apprehension about the future.

DR. CARTER: Yeah. But my question related whether this was sort of an informal thing and it sounds like perhaps that it is rather than, you know, what we would consider scientific studies. I suppose it might go on over a period of time and operated out of a University or something.

MS. TREICHEL: I would say 99 out of a 100 calls that we get in the office are from people who are extremely opposed but that would probably be why they would call.

DR. CARTER: Okay, obviously. So you've got a distorted group to deal with, maybe. I'm saying that in a nice sense.

MS. TREICHEL: We just answer no matter who calls. We are an equal opportunity answerer.

I've also included with this just for your kind of edification an article that was the front page article on the Federated Fire Fighters of Nevada, this newsletter. And it sort of reflects what we have found to be true of the kind of thing that goes out and the sort of concerns that rural and emergency responders have.

DR. CARTER: You also run, I believe educational programs. You have speakers to address the various aspects of a repository program. Is that true?

MS. TREICHEL: Yeah. We've got one coming up at UNLV and it will include CEA, it will include the Department of Energy and energy efficiency expert and people from two of the activist organizations here.

DR. CARTER: I think several of us had the opportunity to be involved in one of those programs back some months ago at the University of Nevada, in fact.

MS. TREICHEL: Okay.

DR. CARTER: That's very helpful. Thank you, ma'am.

MS. TREICHEL: Okay. Thank you.

DR. PRICE: Just for the record, I believe Mr. Travis and Mr. Dale spoke for NNWSC as representatives of that if I'm not mistaken of that. And Mr. Greis was speaking as a concerned citizen.

MS. TREICHEL: Is that it?

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

DR. BARNARD: Thank you for coming out.

DR. PRICE: I believe we will take a break at this time and have lunch--have dinner. I'm on Hawaiian time.

We have two more signed up am I correct? Do you want to do those now? If it's all right, we'll just continue on for these next two.

The next witness is Mr. Charles Hilfenhaus.

MR. CHARLES HILFENHAUS: Thank you for giving me the opportunity to speak. I'll keep my remarks as brief as possible so you can get to dinner as soon as possible.

I found about this meeting through the newspaper and it didn't indicate that it was specifically transportation issues, so my remarks are more generally

addressed to the issue of the need for Yucca Mountain or any high level, permanent geological disposal site.

I feel that there are two alternative issues to a high-level permanent geological site that are not being explored at this time. The first of those issues is reprocessing, and as I recall from my studies, the decision not to explore reprocessing technology was made for political reasons during the Carter Administration and it was in exchange for getting other nations to sign the Nuclear Weapons Non-proliferation Treatment, that the United States agreed not to go with reprocessing technology.

And I am not aware that since 1978 there has been any significant or substantive study of the feasibility of reprocessing technology that would indicate whether it is a viable alternative today. The only peripheral information I have is from press reports over about the last year and a half that the Japanese are interested in acquiring our spent nuclear fuel to engage in reprocessing technology.

Now it's been said that there are only two things that are certain and that's death and taxes, but I think I can say another thing that's certain, that if the Japanese want to get spent nuclear fuel for reprocessing, they will do it, they will do it in a profit and it won't be very many years before we'll be buying that spent nuclear fuel back from them and technology that we probably have developed the

pilot projects for in this country. I think that's the pattern in several other industries, and I think we can reasonably expect that that might happen again.

Even if reprocessing is not feasible now, it might be feasible technology in the future and that brings me to the issue of a long-term MRS type facility, which is not something that is being explored as an alternative to a permanent geological facility.

The issues that would be involved there is if a better system of storage of nuclear waste comes along in the future and I think we can assume, given the length of the nuclear age, that something probably will come along in the future. Reopening a permanent facility would involve some of the same political problems that are going on right now in finding a site for a permanent facility. Sending a cask to a long-term MRS facility would simply be an inventory situation. You would not involve major political difficulties.

As I said, there may be other better systems of disposal. One today that seems to be science fiction would be space disposal. However, we have to remember that in 1900 Professor Langely had proven conclusively that heavier than air machines would never fly and three years later the Wright brothers took off.

We don't know that 100 years from now if may not be

quite feasible to take the high-level nuclear waste we have and take it into space somewhere and get it completely off the planet.

Yucca Mountain has been chosen primarily as a high-level repository for political and economic reasons. It's already adjacent to the Nevada Test Site, so there are people, and this has not been brought up, but who have extensive experience in handling nuclear materials. That's one of the positive effects. However, it's also the fact that Nevada has the smallest congressional delegation and that's been another overriding concern.

However, when political and economic reasons become the determination for making scientific decisions, that doesn't usually make for good sense nor for good public policy. So I think we really have re-explore the issue of what should be done with the Nation's high-level nuclear waste and the options of recycling or reprocessing or long-term MRS, or has been brought up earlier, on-site storage at the nuclear power plant until a better system comes up, should be explored.

Thank you.

DR. PRICE: Thank you, sir.

Anybody want to ask him any questions?

DR. CARTER: I would just like to ask you--I presume you represent yourself, I would like the question of whether

that's true or not and then the question is tell us a little bit about your background.

MR. HILFENHAUS: Well, I signed up that I represent the Peace Camp and while I have worked at the San Onofre Nuclear Power Plant, right at the moment I'm about 14 days into a 45 day fast for comprehensive test ban and I've been sitting out at the main entrance to the Nevada Test Site going like this (demonstrating) to the workers every morning.

You could call me a professional trouble maker, although I think I try to solve problems more often than I try to make them.

DR. CARTER: Well, on the other hand you at least are using two fingers instead of one.

MR. HILFENHAUS: Well, I'll tell you, over the past four years since I've been there, an awful lot more workers are giving me the two fingers back where they used to give me the one finger when I started out there. So, I think I've getting somewhere.

DR. PRICE: Thank you, sir.

Mr. Mike Gilgan.

MR. MIKE GILGAN: Welcome to Amargosa. You've got a dinner appointment? You gentlemen?

DR. PRICE: Well it's informal and there is simply a five minute limit on the speakers.

MR. GILGAN: Well the point is, I was going to say are

you coming back after dinner?

DR. PRICE: Oh, yes.

MR. GILGAN: Oh, you are? Well I can come back.

DR. PRICE: Well, let's just go ahead and do this now and then we will have those who are signed up to be witnesses now completed.

MR. GILGAN: Well, this caught me by surprise. I didn't quite know what to expect here this morning or at noon. But one of the things listening to what you gentlemen say is very entertaining and I'd like to yak with you a little while.

But according to the map there, you can see it. There's a route from Jean to Yucca Mountain. I think this is what they should be working on. There was a T&T railroad and there was a lot of problems with it, washes out and all that. That run up through the Amargosa Valley here.

There's a road from Death Valley, a wagon road from Death Valley Junction. And Death Valley Junction to Jean for transporting borax. That's a little bit before my time.

And I think that would be a better route than the old T&T railroad. And I think it should be one that's studied, and it's also the shortest route to Yucca Mountain. That takes care of that.

The whole nuclear business disturbs me here and being a retired engineer, manufacturing engineer, I see the EEC come along, I see the Pacific Rim come along, and I can

see this country going downhill. And one of the biggest problems as far as I see is to get the nuclear business off the ground, getting the whole thing off the ground, I think I got off on the wrong foot by establishing this nuclear waste fund.

DR. CARTER: Excuse me, could you speak a little closer to the mike, sir. I think they are having a little difficulty picking you up.

MR. GILGAN: I think one of the big problems was in establishing the nuclear waste fund. Britain was socialists for years and they have the telephone and the nuclear industry and everything was government. Mike Padgett took care of most of that, and the telephone is now a private industry and the British Airways is a private industry and the nuclear reprocessing plant is a private industry. And the nuclear waste fund is too much a slush fund and it's going everywhere.

I have an irrigation pump and that became a 2.4 percent more for electric if it was nuclear. I'm very cost conscious. And I think there's too much money wasted that doesn't accomplish anything.

And I heard here today that Nye County said that Las Vegas is worried about the huge population, thousands of people coming in from workers from the Yucca Mountain. Also they are very scared about the nuclear shipments going

through there. Well, I've got an answer for them, I've known that for several years. Put the whole thing lock, stock and barrel here and you won't go through Las Vegas. If you can get them to come from Jean, and you have workers coming right in here and it would be much more economical and you'd save bussing all these people from Las Vegas. One of our county commissioners said that 95 percent of the people were going to be bussed from Las Vegas to Yucca Mountain. That don't make sense. That's why back east we would think they were crazy, bussing people from New York--Hartford, Connecticut, you know, it don't make sense.

But anyway, the politicians our Nevada politicians, are strictly anti-nuke, let's face it. There's a lot of anti-nuke non-profit organizations around here and they are all going pretty damn good as far as I can see. I talked to a woman in Las Vegas and her husband is a professional engineer out of New York. He wasn't there. I talked to her and I mentioned to her about Yucca Mountain, and she said I hope they never get that thing. And I said well, what's wrong with it. And then she started telling me. She said if they have one little slip up there, she says, it's the end of the world. I couldn't figure out what she was talking about.

What she was talking about was a chain reaction that went around the world like a hydrogen bomb. I said, where did you hear that? She said Mr. so-in-so. I don't know who he was.

Apparently he works for Prudential Insurance though.

Now this is the kind of propaganda that people in Las Vegas are being subjected to and this is what they believe, you know. And this is why it is so strictly anti-nuke. And I think the salvation of this country really is to start with kindergarten. Start teaching the kids what nuclear energy is, what an atom is and what an electron is, so a stranger can't come by and scare the hell out of them. So I'd like to get started on that in Nye County, really to start it in the schools if I could. The American Nuclear Society have gotten a lot of the information for kindergarten on through high school.

But I can't see--I think the safety thing is greatly overrated. It was an accident there was a release of spent fuel or something, I'd prefer to see that to most types of chemicals, because if I was in the clean-up crew, I could suit up and get a detector, an assimilator or radiation counter or something and you could tell exactly where the stuff was and gather it up and get rid of it. But with high-level waste, you can't do that. So people I think this safety deal is really exaggerated.

I guess you gentlemen have seen this video Smash Hit? Have any of you seen that?

DR. PRICE: Which one is that?

MR. GILGAN: Smash Hit.

DR. PRICE: Smash Hit?

MR. GILGAN: Yeah. It's English. It's testing the casks and this is probably for public consumption, but it's a cask of uranium metal fuel, and it was put on a railroad track as if it fell off a train sort of thing. Back three miles and they had a steam engine with three coaches on it and let it go. It was doing 100 miles an hour when it hit it. The train was completely demolished. And the cask was just shifted a little bit on the track. And they told me that it was pressurized, the loss of pressure was in milligrams and was so small that the temperature did not change.

So when they started talking about the casks and danger and all that, you could look at the casks if they were made according to the right specs they should be indestructible. And they are talking about designing casks here, the International Atomic Energy Agency in Indiana had all kind of specs and everything for casks. They don't license them, but they have the specs and everything and each company has got their own, basically. So there's a lot of information on safe casks and transportation. So, I think a lot of this is overrated and we are spending millions and millions on it to--and there ain't no reason. It's not productive.

So--I had a couple of other things, but the dry

storage casks, Governor Bryan or Senator Bryan was here in this building and he said no way are we going to have the Yucca Mountain repository here. The dry storage casks is all right and we're licensed for 50 years and it will be renewed for another 50 possibly.

That isn't the solution to the problem. The only solution it has, is hopefully what I would like to see some day is reprocessing and get 107 of the elements that are available out of that spent fuel. But to put it into dry storage 100 years, doesn't make sense to me.

The repository is supposed to be created for 50 years. I think by the time of 50 years with the right technology, they'll know whether they want to pull it out or not.

DR. PRICE: Well, we thank you very much, and there maybe some questions.

MR. GILGAN: Shoot. Anything you want to ask I'll be glad to throw an answer at it.

DR. PRICE: Well thank you very much. I guess not. I appreciate your coming.

I believe that covers all those who had signed up on the sign-in sheet to serve as witness. And we are going to go take a little break and have a little bit of supper and come back. So, we'll be back shortly in case there's anybody else.

Thank you.

E V E N I N G S E S S I O N

7:50 p.m.

DR. PRICE: Gentlemen and ladies we'll reconvene. It's 7:50 p.m. And we have a witness, Ms. Doris Jackson.

MS. DORIS JACKSON: My name is Doris Jackson and I'm a resident of Amargosa Valley, Nevada. I don't have a prepared statement. I didn't really plan on saying anything. I just want to relate a little story.

As all of you know I own a local casino here in the Valley, a small casino. I have a lot of truck drivers stop in my casino. Often in the middle of the night the highway department from California will come their and meet trucks and bring them on into the State of Nevada, and I understand why they travel in the middle of the night. But this just about--what some truck drivers tell me, one in particular about driving hot loads. And I'm concerned about the safety, how often it goes on, if this is an isolated case or not, I don't know.

But the loads, they have eight hours to get them where they are going and get back. They tell me about then spraying the trucks down. When they get back they turn the hose on them and run the hose over their bodies for 20 minutes. They are not to touch the truck except to get in the driver's seat and drive it. They are very nervous. I

ask them why they do it and they make \$1,500 a load. However, it wasn't bringing it into Nevada, it was in California.

But, for the safety factor of--I don't even know what he had, he doesn't either, because it was tarped and covered and so on. But they said he had 8 hours and in ten hours it would go through the bottom of the truck it was so hot.

Now these are not people who are drinking. They are drinking coffee. And they do get lonesome on the road and they like to talk. So I was just taking it all in and I thought well I wonder how often this happens and how hot is the product? And then he talked about taking it on this side of Calico up in the mountains and that the road was washed out in some areas and how nervous he was that he would get in an accident and so on.

So it was a major concern to me. I thought it would be to you too.

DR. CARTER: Do you know where they came from and where they were going and what they've got or any of those?

MS. JACKSON: Well, he drives out of Riverside area and it would be up toward Daggett, up in that area somewhere.

DR. CARTER: Where it originated?

MS. JACKSON: No, where he delivered it.

DR. CARTER: Well that's in California.

MS. JACKSON: It's in California.

DR. CARTER: You don't have any idea what the cargo is?

MS. JACKSON: No.

DR. PRICE: How long ago? Was it a long time ago or recently?

MS. JACKSON: Well he told me about this about three nights ago. And I don't think it had been--I think it happened in the last month.

DR. BARNARD: Does he do this a lot?

MS. JACKSON: Huh?

DR. BARNARD: Does this happen a lot?

MS. JACKSON: That's what I'm asking you. Does it?

MR. BARNARD: Well, this one fellow mentioned this one instance, has this happened to him several times, or--

MS. JACKSON: Well, when I asked him why he did it, I said, well why would you do something like that if you knew you had a hot load. He said because I made \$1,500 for one trip, that's why.

MR. BARNARD: Yeah.

MS. JACKSON: And that seemed to be his major concern. He said, well they hosed me down for about 20 minutes.

DR. CARTER: Well I don't think we have absolutely any information on what you might be talking about and don't have any idea.

MS. JACKSON: Well, when we talk about safety and

hazardous materials, what are we talking about? If this is happening now and it seems to be like a matter of fact.

DR. CARTER: We don't have any idea of whether you are talking about radioactive material, presumably you are as far as we know. And the other thing of course, we are primarily to deal with the opposed repository program in Yucca Mountain. Of course this sounds like to me it's in California--I guess Daggett is down near Barstow, relatively close to Barstow.

MS. JACKSON: It's this side, uh-huh.

DR. CARTER: I'm afraid I can't help you ma'am.

MS. JACKSON: Well it just concerns me.

DR. PRICE: Yes, it doesn't sound like it's related to spent fuel transportation.

MS. JACKSON: No, I'm sure that it isn't. I don't know of anything that would come out of Riverside in that area, but if they are that haphazard about shipping that type of material, I hope it doesn't happen when they start delivering spent fuel.

Thank you.

DR. PRICE: Okay. Thank you.

Okay, we'll take a recess. It's 7:55, and await to see if others sign in for witness.

(Whereupon, a recess was taken off the record.)

DR. PRICE: All right, we'll reconvene at 7:58, and our

witness is Charles Holtz.

MR. CHARLES HOLTZ: Yes, my name is Charles Holtz. I'm a retired engineer and farmer and probably a few other handymans (sic) around, wine maker and whatever. And I seem to always to have something to say, except tonight I didn't come prepared to say anything, although I do have a few concerns that may indirectly concern you people too.

I think one thing that bothers me about transportation and handling nuclear waste materials has been evidenced by the nuclear place we have up near Beatty. That's supposed to be a low-level place. But I have seen in several instances where material that was previously classified as high-level has been declassified into another category. And so while you people are probably are concerned more with getting the orders to ship something and shipping it and that it's contained and packaged according to their specifications, you may not have any control over how they may declassify something. And this seems to be happening all the time, and it worries me that the next thing that happens is something that's being packaged and as we understand so far, probably will be -- vitrified glass is a solid material and pretty well packaged. What happens if something gets declassified to the point where you wind up with some liquid waste that's not vitrified? Would you have control over that?

And that's basically my concern. I think that some of the routes that I looked at, I was pleased to see them consider the one that goes from Baker up through Shoshone and up. That's a pretty remote, little traveled route. And I thought that would be pretty good. It probably wouldn't be quite right for people coming from the east coast, but I think that's all I have to add.

Thank you.

DR. PRICE: Thank you.

All right, we will recess at 8:01.

(Whereupon, a recess was taken off the record.)

DR. PRICE: All right, we will reconvene at 8:09. And before we hear the next witness, I would like to take this occasion before our large crowd dwindles, to thank Paula Alford for the work she went to to set up this meeting and Helen Einerson and Joanne Donnelly and the work of the staff in making all these arrangements. I would like that to be on the record.

And we have a witness now, Ken Garey.

MR. KEN GAREY: Good evening. My name is Ken Garey. I am a reserve deputy in Nye County Sheriff's Department. That's why I'm in uniform tonight. I work without pay and furnish and clean my own uniforms as a matter of fact.

I've lived in this community for 27 years and I worked for various contractors at the Nevada Test Site. I'm

a graduate engineer, retired from Westinghouse Electric after completion of the spent fuel demonstration program at the E-MAD Facility in area 25.

I worked on my first nuclear project in 1959 and have been associated with nuclear projects since that time. Most notably was the disassembly of 21 reactor assemblies used in a Kiwi and Phoebus test series and a ram jet reactor for the Pluto series. The spent fuel demonstration program which just recently completed, utilized 17 spent fuel assemblies from the Turkey Point Florida Power Plant.

I continued in the nuclear industry as a consultant engineer on projects including decontamination and site clean up work. As a matter of fact, I was on Yucca Mountain this noon and regretfully missed the opening remarks of this Review Board.

One meeting however, that I did attend and caught the opening remarks was at the last International Waste Management meeting held this spring in Las Vegas. As many of you are aware, the governor of Nevada called this meeting of the foremost experts in the world a fraud perpetrated by the Department of Energy. The governor was late and spoke out of order in the program so the gentleman sitting next to me who was a professor from Peking University in China was confused about the program change and asked who the speaker was. The only thing I could reply was it's a politician trying to

communicate with science. He nodded in full comprehension.

Comments from our Las Vegas neighbors this afternoon were interesting. One of my functions in the Nye County reserve deputy program is to attend classes and instructions as a first responder to hazardous material accidents. When I get detained at the Spring Mountain or Wyoming rail crossings, I take out my manual code book of hazardous material signs and refresh my memory on the markings on the rail cars that pass through these sitings within probably 15 feet of our my front bumper.

I see liquified petroleum, Broming, Chlorine, Sulfuric Acid and similar materials. I was also on Tropicana Avenue when Pepcon exploded both times. Needless to say, I am more comfortable here in the Amargosa where I can look out my living widow and see Yucca Mountain.

In our community we have a community monitoring station operated by the EPA with continuous air sampling, tritium molecular sieve and ion chamber connected by satellite relay along with eighteen similar stations in this area to a central laboratory. I maintain a full set of instruments issued by EPA for emergency use including micro R meter, milli-R meter and high level gamma detectors. This equipment is provided to monitor and protect our community as well as provide background data for the Yucca Mountain Studies.

The Nevada Test Site, I feel, is an ideal location to conduct studies and for consideration of storage of high level nuclear waste.

The National Laboratories scientific community and most of all experienced personnel are available there.

The security is in place and many corporate entities have had good experiences at the Test Site.

A waste repository is merely a continuation of the ongoing nuclear development of the Nevada Test Site.

The Nuclear Regulatory Commission has set forth rules and regulations requiring compliance. Notably these are spelled out in the 10 CFR and 40 CFR regulations, and in addition the workmanship standards and materials are required to comply with the NQA-1 requirements for NRC licensing. With these guidelines in place, investigation, design, construction of the nuclear repository will be carried out in a safe and responsible manner in my opinion.

The public at these public informational exchanges such as the one we are attending today are examples of the NRC standards and regulations. Public opinion and comment is a necessary part.

I am confident that the nuclear industry can and must move forward into the next generation of reactors if this world is going to meet its energy requirements. A responsible approach to waste management is one aspect of

energy development, and the Yucca Mountain repository investigation is an important part of that development.

The investor-owned public utilities acknowledge their responsibility by funding these studies.

The transportation studies which I have heard today are being conducted in a uniform manner with NRC compliance and I feel that a solution to our nuclear waste management program is obtainable if we all work at it.

Thank you.

DR. PRICE: Thank you. Any questions? Just a minute.

MR. GAREY: Sure.

DR. CARTER: Well I'm glad to see someone who worked in the SNPO office or at least near the SNPO office? You remember the office that ran the Rover program?

MR. GAREY: Yes, sir.

DR. CARTER: I guess you are one of the few people in the audience I suspect today that will probably work in and around spent nuclear fuel if you were involved in the Rover Program in the East-MAD area.

MR. GAREY: Right.

DR. CARTER: The whole purpose was to disassemble and study those fuel elements and the reactors themselves that were designed for space proposal. So you've had some experience with the material or something very similar to what we are talking about as far as these hearings are

concerned and the transportation issues involved.

I want to ask you one question, Ken, what sort of engineer were you at Westinghouse, or what sort of engineer are you?

MR. GAREY: I'm an electrical engineer.

DR. CARTER: Electrical.

MR. GAREY: Uh-huh.

DR. CARTER: We've enjoyed having you here.

MR. GAREY: The most interesting part of course was the spent fuel assemblies out of the Turkey Point Reactor. They were the first and second discharge of that reactor with 25 and 33 burn-up rates. They were intact fuel assemblies fortunately, and we handled those on a continuous basis.

Every week we were working on one assembly, either canisterizing it, cutting canister open--we did full calorimetry on them to determine the amount of heat they still maintained, what their decay rates were and verified this with the laboratory standards. And of course, this was my first experience working under the 10 CFR and 40 CFR rules along with NQA-1 workmanship standards. That was quite an experience.

DR. CARTER: I'm sure it was.

Maybe for the record maybe it should be made clear that these fuel elements from Turkey Point were actually the fuel elements out of the commercial reactors there and they

were transported to the Nevada Test Site, or near there and were used in this program and they were actually put into canisters and then they were stored for appreciable periods of time on above ground and just below ground silos, in essence, and a lot of experimental data were collected for them. Is that not correct?

MR. GAREY: That's correct. And then we also put those at the Climax Mine, which would be very similar material to the Yucca Mountain tuff and used electric heat to simulate additional fuel assemblies in close proximity of the live assemblies and instrumented that, of course again, with NQA-1 standards and determined just how rock would react to the heat build-up. The radiation itself wasn't any problem. That was the easy part to solve.

The heat transfer and so on, the unknowns which have to be experimented with. I'm sorry to hear that we are having so much trouble getting on with the Yucca Mountain studies because I feel that it is very necessary for a program to determine whether or not Yucca Mountain is a suitable repository or not.

DR. CARTER: Thank you, sir.

MR. GAREY: Thank you, gentlemen.

DR. PRICE: Thank you.

We'll recess at 8:19 p.m.

(Whereupon, a recess was taken off the record.)

DR. PRICE: I would like to reconvene given that we have no additional witnesses. Reconvene for the purposes of adjourning. Before we do, I would like to express my appreciation for the hospitality of all of you. We have enjoyed our visit. I think you can tell that by our formal dress, our judiciary garb and we do thank you for your hospitality and with that, we are adjourned at 8:33 p.m.

(Whereupon, the hearing concluded at 8:33 p.m.)

INDEX OF EXHIBITS

<u>NUMBER</u>	<u>DESCRIPTION</u>
1	Written Comments of Dennis L. Price
2	Written Comments of Stephen T. Bradhurst
3	Written Comments of Lee Gibson
4	Written Comments of Allan C. Fisher
5	Written Comments of Robert J. Halstead
6	Written Comments of Rick Dale
7	Written Comments of Bill Greis
8	Written Comments of Judy Treichel
9	Written Comments of Ken Garey

CERTIFICATE

This is to certify that the attached proceedings before:

UNITED STATES NUCLEAR WASTE TECHNICAL REVIEW BOARD

In the Matter of:

TRANSPORTATION AND SYSTEMS PANEL

PUBLIC MEETING

Location: NYE COUNTY, NEVADA Date: AUGUST 17, 1990

was held as herein appears, and that this is the original transcript thereof for the file of the board.

Official Reporter

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