

# **Official Transcript of Proceedings**

## **NUCLEAR REGULATORY COMMISSION**

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Protocol Workshop

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

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PUBLIC INFORMATION MEETING

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SPENT FUEL TRANSPORTATION CASK TEST  
PROTOCOL WORKSHOP

+ + + + +

THURSDAY

MARCH 13, 2003

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PAHRUMP, NEVADA

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The Public Meeting was called to order at  
the Convention Hall, Mountain View Casino and Bowling,  
1750 Pahrump Valley Boulevard, Pahrump Nevada, at 6:04  
p.m., by F.X. "Chip" Cameron, Facilitator, presiding.

PARTICIPANTS:

E. WILLIAM BRACH, NRC

ROB LEWIS, NRC

ANDREW MURPHY, NRC

KEN SORENSON, Sandia National Laboratories

AMY SNIDER, NRC

## I-N-D-E-X

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P-R-O-C-E-E-D-I-N-G-S

(6:04 p.m.)

FACILITATOR CAMERON: If we could have everybody get seated, we will get started with tonight's meeting. Good evening, everyone. My name is Chip Cameron, and I am the Special Counsel for Public Liaison at the Nuclear Regulatory Commission, and I wanted to welcome you to the NRC public meeting tonight.

And the topic tonight is the NRC plan to do full-scale testing of spent fuel transportation casks. And it is my pleasure to serve as your facilitator tonight, and to help all of you have a productive meeting.

And I would have to say that it is nice to be in Nye County, and nice to be in Pahrump. We have had a lot of good interactions here on these issues in the past, and we look forward to it tonight.

One question though is why isn't Sally Devlin with us tonight? No, thanks, Sally. I just wanted to say a couple of things about the meeting process before we get into the substance of the discussion, and what I would like to do is just briefly talk about why the NRC, the Nuclear Regulatory Commission, is here tonight.

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1           And what the format and ground rules for  
2           the meeting are going to be, and to go over the agenda  
3           for you so that you have an idea of what to expect  
4           tonight. In terms of purpose, we want to clearly  
5           explain what our plan is to conduct full-scale  
6           testing.

7           And also to explain what the NRC's role is  
8           in the transportation of spent nuclear fuel. And also  
9           to fill you in on what the responsibilities of other  
10          agencies are. So we want to clearly explain that to  
11          you and the second purpose, and more important purpose  
12          I suppose, is to listen to any comments, concerns,  
13          recommendations, that you might have about this  
14          proposed plan to do full-scale testing, or any other  
15          transportation issues that you want to get into.

16          In terms of the format, it is pretty  
17          simple. We are just in a townhall format tonight, and  
18          we are going to have some brief presentations for you  
19          by the NRC and our expert consultants who are here.  
20          And basically then go out to you for any questions or  
21          any comments that you have.

22          We are taking a transcript of the meeting  
23          tonight, and that will be available on the NRC website  
24          and we probably can also get you a hard copy of that  
25          if you want it.

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1 But because we are taking a transcript, if  
2 you do have anything that you want to say, just signal  
3 me, and I will bring this microphone to you, and  
4 please tell us your name, and affiliation, if that is  
5 appropriate.

6 And we will get you on record, and listen  
7 to your comment, and try to answer your questions.  
8 And I would ask that we only have one person at a time  
9 speaking, not only so we can get a clean transcript  
10 for you all to look at, but also so that we can give  
11 our full attention to whomever has the floor at the  
12 time.

13 And try to be concise in your comments.  
14 We have a lot of people here, and I know that there is  
15 a lot of aspects to these transportation issues to  
16 talk about. So try to be brief. I know that can be  
17 difficult with these types of issues, but that will  
18 help us to ensure that everybody has a chance to talk  
19 tonight, and that is one of our goals, is to make sure  
20 that we give everyone an opportunity to speak.

21 And in terms of the agenda, it is going to  
22 be real simple tonight. We are going to have an  
23 introduction, a welcome by the senior NRC manager, the  
24 director of the Spent Fuel Project Office, and that is  
25 Mr. Bill Brach, who is right here. He is going to

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1       formally welcome you.

2                   And then we are going to go to Mr. Rob  
3       Lewis, who is over here, who is the Chief of the  
4       Transportation Section in Bill's office, Spent Fuel  
5       Project Office, and Rob is going to talk a little bit  
6       -- and we don't want to kill you with long  
7       presentations, but he is going to talk about the NRC's  
8       role and responsibilities, and some of the background  
9       on this testing program that we are thinking about.

10                   And then we are going to go to Mr. Ken  
11       Sorenson, from Sandia Labs, who is here. He is one of  
12       the experts that is helping us with these  
13       transportation studies, and he is going to go into a  
14       little bit more detail on the plan, the draft plan, a  
15       nd what is called the draft test protocol.

16                   And then we have Mr. Andy Murphy, who is  
17       from our Office of Nuclear Regulatory Research. He is  
18       going to tell you about some of the issues that we are  
19       interested in hearing from the public on.

20                   And then we are just going to go out to  
21       you for any questions that you might have. And we  
22       thank you all for being here tonight, and we hope that  
23       we can give you the information that you need, and we  
24       are also grateful for the comments that we are going  
25       to hear tonight.

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1           And I just want to say that it is nice to  
2           have the Chairman of the Nye County Commission, Mr.  
3           Henry Neff, here, and also another Commissioner,  
4           Candice Trummel, is with us tonight.

5           So that is great, and we really appreciate  
6           that attention. I want to just introduce people a  
7           little bit more so that you know what their  
8           backgrounds are, and then we will get started.

9           And I think what I will do is perhaps --  
10          well, maybe I will introduce them as they get up. And  
11          I wanted to make sure that you know that Amy Snyder,  
12          who is in the Spent Fuel Project Office, and she is  
13          the project manager from the Spent Fuel Project Office  
14          for this particular study.

15          So she is a key person on this, and Andy  
16          Murphy is the project manager from the Office of  
17          Research, because this is a research project. And I  
18          will get to those introductions in a minute.

19          Bill Brach has been with the NRC and the  
20          Atomic Energy Commission before that for about 30  
21          years, involved as a manager in all aspects of the  
22          Commission activity, and his latest assignment is  
23          being the Director of the Spent Fuel Project Office.

24          And he has been doing that for the last  
25          four years. And, Bill, could you just give everybody

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1 a welcome.

2 MR. BRACH: Chip, thank you very much. On  
3 behalf of the NRC, first, let me clearly welcome you  
4 to the meeting tonight. As Chip mentioned, our office  
5 is the Spent Fuel Project Office at the NRC, and has  
6 the responsibility for not only licensing the interim  
7 storage of spent fuel, but also the responsibility for  
8 licensing certification of transportation activities,  
9 and the certification of transportation packages that  
10 are used to transport radioactive materials.

11 And that includes the transport of spent  
12 nuclear fuel. Now, the meeting tonight, this is not  
13 our first time to Pahrump as Chip has mentioned. This  
14 is the third in a series of meetings that we have held  
15 with stakeholders, with the public, on the package  
16 performance study.

17 I have been here before and I can tell you  
18 from personal experience that you will find the input  
19 very, very useful, and the forum for this meeting  
20 very, very constructive to dialogue and interaction.

21 So I look forward very much to our  
22 interactions tonight. We are here to listen to your  
23 views, your comments, on the topics that we will be  
24 discussing with you with regard to the package  
25 performance study, and considerations for testing.

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1           So again, welcome, and I look forward to  
2           dialoguing and hearing your views and comments on the  
3           package performance study that we will be discussing  
4           with you this evening. Thank you.

5           FACILITATOR CAMERON: Okay. Thanks, Bill.  
6           And now Rob Lewis is going to give us some  
7           perspectives on our NRC responsibilities, and I  
8           mentioned, he is the Chief of the Transportation  
9           Section. And he has been personally out here before  
10          to talk about transportation issues with you.

11          He has a Masters degree in Engineering  
12          from the University of Arizona, and a Bachelors in  
13          Physics from the State University of New York. And,  
14          Rob, I will turn this over to you.

15          MR. LEWIS: Thank you, Chip. Thank you,  
16          everyone, for coming out, and I would echo Chip and  
17          Bill's comments, and thank you to the Commissioners  
18          for being here as well.

19          I wanted to talk tonight about -- to give  
20          you a little introduction about who we are and what we  
21          do, and how the transportation process works. Some of  
22          what the different agencies that are involved in  
23          transportation of spent fuel, and what they do.

24          I also wanted to talk a little bit about  
25          what we have done at the NRC since the tragedy of

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1 9/11, because I am sure that everyone is interested in  
2 that. And I can't talk a lot about that, but I can  
3 tell you a little bit in terms of how the agency  
4 responded and what we are doing.

5 And the reason that we are all here  
6 tonight is to talk about cask testing, and I will  
7 describe a little bit of the transportation studies  
8 that we have done at the NRC, and then conclude, and  
9 turn it over to Dr. Sorenson from Sandia Labs, who did  
10 a lot of the work on the test protocols document which  
11 describes the full-scale test that we propose.

12 I want to start with the Department of  
13 Transportation, because along with the NRC, that is  
14 the other main Federal agency that has responsibility  
15 for regulation of transportation of all radioactive  
16 materials.

17 We have Mr. Rick Boyle from the Department  
18 of Transportation in the audience tonight, and he is  
19 a counterpart of myself, and we work very closely  
20 together. The Department of Transportation of course  
21 regulates all aspects of hazardous materials.

22 Radioactive material is one of several  
23 classes of hazardous materials, and other hazardous  
24 materials that are transported are gasoline, which is  
25 the most common thing; and chlorine, and many types of

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1 hazardous materials are transported every day around  
2 the country by rail, and by highway, and by air.

3 DOT is the agency that has the primary  
4 responsibility for regulation in general, but some of  
5 the things that they do that touch on spent fuel  
6 transportation safety include the hazard  
7 communications.

8 And what that means is that those are the  
9 placards that are on the trucks to make sure that when  
10 a first responder, a local fire department person, or  
11 a local police department arrives at the scene of an  
12 accident, they can quickly identify the hazardous  
13 materials on board.

14 And to take actions in accordance with  
15 their training, and cordon off the area if they need  
16 to call for help, and call for help from the local  
17 HAZMAT team, or even in some cases call for help from  
18 the Federal Government if the event rises to that  
19 level.

20 For spent fuel the DOT also sets the rules  
21 for routing of spent fuel for highways. The spent  
22 fuel is material that needs to be shipped primarily on  
23 interstate highways, and around cities, by using the  
24 bypasses, the interstate bypasses around cities  
25 whenever it is possible.

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1           Also, the material has to be forwarded as  
2           soon as possible, and so try to keep it in motion  
3           across the country. And DOT sets the rules. The  
4           States, by the way, also get involved, and the States,  
5           knowing their local areas, can set alternate routes  
6           using arguments that might include the relative safety  
7           of alternate routes compared to the preferred route,  
8           which would be the interstate.

9           An important part of radioactive material  
10          transportation is that it is really an international  
11          business. Spent fuel, of course, is the most  
12          glamorous if you will type of radioactive material.

13          It is a very high hazard and needs to be  
14          securely contained in the casks, but there are many,  
15          many types of radioactive materials that are  
16          transported, such as nuclear medicine equipment for  
17          hospitals, material to x-ray wells, for example.

18          There are many, many shipments of  
19          radioactive material, and shipments throughout the  
20          world, and they cross borders. So the DOT, and the  
21          NRC, both work with the Atomic Energy Agency, the  
22          International Atomic Energy Agency, which is the IAEA  
23          -- and you probably heard in the news lately that they  
24          are very heavily involved in the weapons inspection  
25          activities in Iraq.

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1 And Dr. El Bareda is the head of the IAEA.  
2 He is always on CNN lately. We go over there about  
3 three times a year to Vienna, Austria, to meet with  
4 the IAEA and talk about transportation safety.

5 The Nuclear Regulatory Commission. Of  
6 course, the Nuclear Regulatory Commission is an agency  
7 that has licensing, inspection, and enforcement  
8 authority given to us by the Congress in the late  
9 '70s, and our predecessor agency, the Atomic Energy  
10 Commission, started in the late '50s, the early '50s.

11 And we regulate nuclear power plants, and  
12 nuclear medicine departments, and we would license  
13 Yucca Mountain, and for transportation, we have a very  
14 narrow role, in that we certify the casks.

15 And DOE, if they were to make shipments to  
16 Yucca Mountain, if they were to get a license from us,  
17 would need to use only NRC certified casks to make  
18 those transports.

19 The thing about the NRC that I wanted to  
20 say, too, is that we are independently focused on  
21 safety. Our main mission is safety and protection of  
22 human health, and the environment.

23 And we don't try to make design changes to  
24 casks for economic reasons, or to try to maximize the  
25 payload. We only look at the safety of the casks from

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1 that angle, and we do an independent review as well.

2 So we certify the casks as accident  
3 resistant, and how the process works is that a private  
4 company will design a cask, and compile all the  
5 documentation and engineering drawings for that cask.  
6 And they submit that material to the NRC before any  
7 cask is ever built.

8 And we do an independent safety review  
9 with our engineers. We have many types of structural  
10 engineers, materials scientists, and nuclear  
11 engineers. They look at things like radiation safety.

12 And after our independent review, if we  
13 are satisfied that the cask meets our regulations and  
14 would provide adequate safety in accidents, then we  
15 certify the cask.

16 And what that means is that the cask  
17 design has an NRC approval, and then the owner of that  
18 private company that originally submitted it can build  
19 the cask at that point as long as they meet the  
20 conditions that we specified in the certifications.

21 We also have a quality assurance role,  
22 which I will talk to you about in one second. The  
23 second function of the NRC for spent fuel  
24 transportation casks is that we go out and do  
25 inspections, and that is my section.

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1 I am in charge of the group that does  
2 these inspections, and we have one of our inspectors  
3 with us tonight, Mr. Robert Temps (phonetic), over by  
4 the door helping us out with the sign-in sheets, and  
5 we inspect several aspects.

6 We inspect the designers of the cask, the  
7 private company that had the paperwork prepared that  
8 describes the casks, and we go out and do inspections  
9 of how they maintain the paperwork, and that is called  
10 QA, quality assurance, to make sure that all the  
11 records are available so that they can ensure that the  
12 design in the casks that they are building is what the  
13 NRC originally approved.

14 Now, we inspect the fabricators, the  
15 actual factories that put the casks together and roll  
16 the steel, and assemble the casks, and build the  
17 bolts, and everything.

18 We inspect the fabricators for that, and  
19 in addition when the nuclear power plants make the  
20 shipments -- and I should stress that the NRC doesn't  
21 own any radioactive material, and we don't make any  
22 shipments, but that we go and look at the utilities,  
23 the nuclear power plants that would be making the  
24 shipments.

25 Or the DOE, or the DOE contractors that

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1 would be making the shipments. We come in and do an  
2 independent inspection and audit of their activities.

3 And each of these types of entities are  
4 required to have QA programs, which the NRC also  
5 approves those. And once again the QA program is for  
6 us to make sure that what they say they are doing is  
7 what they are doing.

8 The final thing that I wanted to talk  
9 about in terms of the NRC's role, is that we set rules  
10 for protection against theft and sabotage, and the  
11 focus on that is prevention and constant vigilance,  
12 and detection of attempts of sabotage, and the  
13 response if sabotage were to occur.

14 And in the case of spent fuel, we have  
15 requirements that specify that armed escorts are  
16 required, and that the trucks that carry the casks  
17 must have immobilization devices, and that if they  
18 were to come under attack from a terrorist or someone  
19 trying to sabotage it, that they can immobilize the  
20 truck and it is like a dead-man switch. The engine  
21 won't work and you can't move it because gas is very  
22 heavy.

23 And also the trucks have to have constant  
24 communications with the headquarters center as well.  
25 As I already spoke a little bit about, we go out and

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1 enforce and inspect these requirements.

2 The NRC also inspects for the DOT  
3 regulations, and we work together with the DOT when we  
4 make a finding of a violation of transportation  
5 regulations.

6 And very quickly, and we are a little bit  
7 out of sequence on your slides, but I will cover all  
8 the slides, and I am trying to move through these a  
9 little bit quickly so that we can get back to the  
10 discussion.

11 But I just very quickly wanted to set the  
12 stage for the next couple of slides. When we certify  
13 casks, we look at routine transport conditions,  
14 accident conditions and sabotage type conditions.

15 The cask. What a cask looks like, and I  
16 mentioned routine transport conditions, but this is  
17 the cross-section of a cask. And you will see that  
18 right in the center of this cask would be the spent  
19 fuel, and a truck cask might have maybe two tons of  
20 spent fuel, and a rail cask might have about 12 tons  
21 of spent fuel.

22 And the cask itself, the truck cask, might  
23 weigh 40 tons, and a rail cask might weigh 120 tons.  
24 So the amount of spent fuel in a cask is a very small  
25 fraction of the total weight, and that's because there

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1 is very heavy shielding and steel layers around the  
2 spent fuel.

3 You can see here that this layer is a  
4 thick shield of lead, which stops gamma rays and gamma  
5 rays are like x-rays. It reduces the amount of  
6 radiation that emanates through the walls of the cask,  
7 and that is not a release of radiation, but as you  
8 think of an x-ray, it goes through the material, and  
9 a gamma ray behaves very similarly.

10 So in the normal condition of transport  
11 that I talked about, we regulate the amount of  
12 radiation that goes through the cask, and exits, and  
13 in accident conditions we also have limits for the  
14 amount of radiation that can go through the cask.

15 In addition, we have limits, very tight  
16 limits, on the amount of radioactivity that could ever  
17 be released. And when I say released, once again it  
18 is not coming through the cask flaw of the radiation,  
19 but the actual radioactive material inside would be  
20 trying to get out, and we don't allow that.

21 A picture of a cask, and you don't have  
22 this, and so I apologize, but it wouldn't look very  
23 good on a small slide anyway. But this is the picture  
24 of a rail cask on a railroad car, and the cask sits  
25 here on a carrying cradle, and it has these tie downs

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1 as well.

2 And this cask is very similar to the cask  
3 that we are talking about in the package performance  
4 study that we are going to be talking about in a  
5 little bit. This cask would weigh about 140 tons  
6 fully loaded, not including the rail car.

7 AUDIENCE QUESTION: Is that the company  
8 that makes that?

9 MR. LEWIS: Yes, that is one of the  
10 private companies that makes casks. There is about 4  
11 or 5 different companies that make cask designs, and  
12 this is just one example of the types of them.

13 And 9/11 really changed everything at the  
14 NRC. We were very busy right after the events, and of  
15 course everybody knows that nuclear power plants were  
16 one of the things that people thought were a target.

17 And we fully staffed up our emergency  
18 operations center, and all of us worked very long  
19 hours to respond to the evolving terrorism threats,  
20 especially in the early days right after the events.

21 We required all our licensees of spent  
22 fuel storage facilities, and people that transport  
23 spent fuels, nuclear power plants, and even smaller  
24 licensees, to go to the highest level of security, and  
25 that means different things for different people.

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1 But just rest assured that everybody upped  
2 their security level. And we worked -- the safeguards  
3 assessment team is a senior management team at the  
4 NRC, looking at what is the best thing to do in order  
5 to ensure protection of people against the possible  
6 threats that might be occurring.

7 We worked very closely with the FBI, the  
8 CIA, and other agencies to define the possible  
9 threats, and we are still working very closely with  
10 them to this day. And I say that it changed  
11 everything. The entire NRC reorganized right after --  
12 about a year ago actually.

13 We reorganized and we have an entire  
14 office right now that does nothing but look at  
15 security and protection from terrorists. That office  
16 has taken one of the responsibilities of the spent  
17 fuel project office, and that was approval from a  
18 security standpoint for spent fuel transportation  
19 routes.

20 And that office has taken that from us,  
21 along with the other security things that they do.  
22 Now, specifically what we have done since 9/11 is that  
23 we have issued several advisories to our licensees.  
24 We have a very fast mechanism to get information out  
25 so that everybody is on the same page.

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1           We issued several advisories to the  
2           different classes of licensees after we found out new  
3           information, and then we also had issued what is  
4           called interim compensatory measures and orders.

5           Now, what that is, is that an order is an  
6           NRC tool that we can send to a licensee, and it says  
7           that you have to do the following. We are ordering  
8           you to do this. And if you don't, significant  
9           enforcement will occur against you, up to and  
10          including shutting everything down and taking over if  
11          we need to.

12          But the interim compensatory measures were  
13          along the same lines. They were our advice on what  
14          types of things people should be doing to provide  
15          enhanced security during the higher threat environment  
16          to their activities.

17          Interim is the word used because we are  
18          currently performing several studies to look at what  
19          types of things we can do in terms of long term rules  
20          to coordinate our activities like with the Office of  
21          Homeland Security's color-coded system, the yellow  
22          code, orange, and things like that.

23          So in the interim, and until we get the  
24          long term rules in place, we have compensatory  
25          measures and orders to enforce them. I should say

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1 that 9/11 did not stop transportation of radioactive  
2 material. It is still occurring.

3 Now, I wanted to quickly talk about the  
4 fact that we have a very favorable history that we are  
5 very proud of in terms of spent fuel transportation.  
6 There has been about 1,300 shipments of spent fuel in  
7 NRC certified casks in the last 20 to 25 years.

8 Now, that is an NRC certified cask, and  
9 you have heard similar talks and people use different  
10 numbers because there are other casks that have been  
11 shipped that were not NRC certified casks.

12 DOE could have their own casks that they  
13 certify, for example, but not for Yucca Mountain.  
14 Only NRC casks could be used for Yucca Mountain. We  
15 have never had to our knowledge any injury  
16 attributable to the radioactive material that is being  
17 shipped, or any release of radioactive material in  
18 those 1,300 shipments, and we are proud of that.

19 And the last bullet is not about spent  
20 fuel, but just to give you a perspective, 1,300 spent  
21 fuel shipments in 20 years; but using the same basic  
22 regulations, the casks are much more rigorous, but the  
23 normal conditions of transport and the QA programs  
24 that we apply and everything else, are very similar.

25 And about more than 3 million shipments a

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1 year, and that is 10,000 a day, occur of radioactive  
2 material. So that is about one percent or so of all  
3 the hazardous material shipments. Most of that again  
4 is radiopharmacy equipment, material that is used in  
5 nuclear medicine departments in hospitals.

6 We often do transportation studies, even  
7 though we have a very good safety record, and we have  
8 decided actually that to be prudent that we need to  
9 have continued attention always to the evolving issues  
10 in transportation, and the best available technology  
11 to analyze the risks to people.

12 We have done three major transportation  
13 risk studies in the last 20 years, and the fourth one  
14 we are here to talk about tonight is the package  
15 performance study.

16 The risk studies have always confirmed our  
17 confidence in our regulations, and so we have a very  
18 safe set of regulations, and that the risks to the  
19 public of allowing the transport are low.

20 The package performance study, I have a  
21 specific slide that is not in your handouts, which I  
22 will talk about now. I have been out here to talk to  
23 you kind people many times about the package  
24 performance study over the last couple of years, and  
25 we are here to talk tonight because we have made a

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1 major step forward in that study.

2 We have published what is called the  
3 package performance study test protocols. We can out  
4 in 1999 and polled people on what would you like us to  
5 study in terms of transportation tests that we could  
6 do.

7 We took the information back and produced  
8 what was called the issues report, and then we came  
9 back out here again and asked did we capture your  
10 issue correctly, and is there any new issues that you  
11 might have, and that was in the year 2000 that we came  
12 out for the second time.

13 About 2000, we switched from the phrase of  
14 what should we do, to here is what we propose to do,  
15 and that is why we are here tonight to talk about the  
16 proposed tests that the NRC thinks would contribute to  
17 public confidence in the safety of what we do.

18 And also to provide some technical  
19 information in terms of our ability to use computer  
20 models to successfully predict how casks might behave,  
21 regardless of any type of accident that they might be  
22 in.

23 And at this point, I will turn it over to  
24 Dr. Sorenson, who will talk -- well, one second. He  
25 has got a couple of slides on what are the actual test

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1 proposals, and I will turn it over to Chip, and I am  
2 happy to take questions now or after that.

3 FACILITATOR CAMERON: Why don't we -- I  
4 promise that we won't get into a whole lot of  
5 material, but let's hear the specifics, and then we  
6 will have it all out in front of you, and then we will  
7 go for questions.

8 And Ken Sorenson is from Sandia National  
9 Lab, and he is going to provide you with a little bit  
10 more specific information about this draft test  
11 protocol that we have, and he is the manager of the  
12 transportation and packaging department at Sandia.

13 He has been involved for 15 years in  
14 looking at spent fuel transportation casks, doing risk  
15 assessments on them. He is the chair of the package  
16 and transport division of the Institute of Nuclear  
17 Materials Management.

18 And he is also on the editorial board of  
19 a journal, an international journal, that focuses on  
20 spent fuel transportation issues, and that is the  
21 Journal of Transportation of Nuclear Material  
22 Packages.

23 He has a Bachelors degree in Civil  
24 Engineering, and a Masters degree in Civil Engineering  
25 from Colorado State University, and also a Masters in

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1 Business Administration from the University of New  
2 Mexico.

3 And, Ken, and then we have one more really  
4 short presentation after Ken, and we will go out to  
5 you for questions.

6 MR. SORENSON: Thanks, Chip, and good  
7 evening everybody. I want to thank Rob for the  
8 promotion. Actually, if you listen to the byline, I am  
9 not a doctor. I have a Masters degree in Engineering,  
10 but I appreciate that.

11 As I said, it is a pleasure to be here  
12 tonight. Sandia is the technical support organization  
13 for the NRC on the package performance study, and so  
14 the analyses that you see in the protocols were done  
15 at Sandia National Laboratories.

16 The presentation that I am going to give  
17 you tonight is really a version of the hard copies  
18 that you have, and I am going to start on slide number  
19 five, and the first four slides give a little bit of  
20 background.

21 But what I would like to do is just show  
22 you some snapshots of some of the analysis that were  
23 done in the protocols to maybe stimulate your thinking  
24 a little bit so that you could ask some questions, or  
25 stimulate some discussion maybe on what is in the

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1 protocols.

2 This first slide is three bullets on  
3 really what the protocols are all about. The first  
4 thing we want to do is to identify some candidate  
5 casks that could be used for these tests, and in the  
6 protocols there is a rail cask that is identified  
7 there, the Holtec Hi Star 100 rail cask, and there is  
8 also the GA-4 truck cask that is identified in there.

9 It is important to remember that these are  
10 just candidate casks that have been suggested. The  
11 final cask that will be used is under discussion and  
12 that is one of the things that we want to talk about;  
13 which are the most appropriate casks for these types  
14 of tests.

15 Secondly, we are describing concepts if  
16 you will for the impacts in the fire test. What types  
17 of impact tests and what types of fire tests are we  
18 considering.

19 And again as a means to stimulate some  
20 discussion from the public at these meetings, and to  
21 see what are the best ways to do these tests with  
22 these particular casks.

23 And also you see in the protocols  
24 preliminary computer analyses that provide a snapshot  
25 if you will of the type of response that these casks

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1 will be undergoing for these specific types of tests  
2 that are in the protocols.

3 And then thirdly the protocols are really  
4 designed again to solicit public comment and  
5 discussion. This is the third meeting that we have  
6 had. Last week, we were at the NRC headquarters, and  
7 last night in Las Vegas, and then we had some really  
8 or very good input and feedback on these protocols.

9 And so we look for that from you all  
10 tonight as well. I think it is important also to  
11 recognize what these protocols are not. They are not  
12 a prescription document that says that these will be  
13 the tests that will be done, and these are the casks  
14 that will be used.

15 It really is a vehicle if you will to put  
16 some ideas on the table to discuss the best way to  
17 handle these tests, and that is really what the intent  
18 of the protocols are.

19 This first picture here is a picture of an  
20 analysis, a computer analysis on the left-hand side  
21 here, and this is the Holtec Hi Star 100 cask. And  
22 this is what we call a center of gravity over corner  
23 impact.

24 And if you will, if this is the cask, and  
25 it is going over target, the center of gravity is

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1 right over the corner of the cask. So that is what we  
2 call center of gravity over target.

3 And it is on the closure side and that  
4 really is a vulnerable sort of orientation for the  
5 cask and so that is how we chose that particular  
6 analysis to show you here.

7 This big pink area here is what is called  
8 the impact limiter and it was redefined in Las Vegas  
9 yesterday as a shock absorber, and that absorbs a lot  
10 of the energy that is developed during the drop test  
11 and any impact, as opposed to having the cask having  
12 to absorb it.

13 The graph here on the right shows a plot  
14 of the G-forces that are going into that cask as a  
15 function of time here on the bottom. And you can see  
16 the total G-force that is going into that cask is  
17 about 100-G's.

18 And by way of comparison, we did an  
19 analysis for a regulatory 9 meter drop for that same  
20 cask, and the same orientation, and the G-loading that  
21 was developed for that particular test is about 30-  
22 G's. So for this particular cask design at that speed  
23 of 75 miles per hour, and that orientation, the  
24 loading on that cask really is a severe type loading  
25 relative to the regulatory 9-meter drop test.

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1           So again this is a snapshot of how this  
2 candidate cask would perform in this severe type of  
3 loading for a 75 mile per hour drop, drop speed, and  
4 it is one of the items for discussion.

5           AUDIENCE: How was it dropped, vertically  
6 or horizontally?

7           MR. SORENSON: That was dropped  
8 vertically. The question was how was it dropped,  
9 vertically or horizontally, and it was vertically.  
10 That is a good question.

11           And just to make sure. This is only by  
12 analysis. We have not actually done the drop. This  
13 is only by analysis. This second analysis that we  
14 showed here is an analysis of the GA-4 truck cask, and  
15 this is what we call this back breaker orientation for  
16 the analysis.

17           And actually this came out of some of the  
18 public feedback that we got a couple of years ago, and  
19 one of the concerns was what happens if you have a  
20 transportation accident where the impact limiters are  
21 bypassed and you actually have the direct impact on  
22 the cask body, as opposed on to these shock absorbers.  
23 And how serious is that.

24           And so the simulation here or the scenario  
25 is that the cask is running into like a bridge

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1 abutment, and it completely bypasses the impact  
2 limiters.

3 And using the analysis in this picture, we  
4 do not actually add the impact limiters on to the ends  
5 of the cask. The mass is modeled in there and so you  
6 have the right mass, but we just don't show the impact  
7 limiters.

8 But you can see that again that this is at  
9 75 miles per hour, and it is a pretty hard impact, and  
10 it has actually quite a lot of deflection for that  
11 particular cask.

12 The G-loadings for this cask shown down  
13 here peaks at about 150, and has kind of if you will  
14 a steady state G-loading of about 100-G's, 110-G's.  
15 So again this is an idea, a candidate type of test to  
16 do for a truck cask.

17 And with a proposed 75 miles per hour, and  
18 this comes right out of the test protocols. And then  
19 finally I will just show you some analyses, thermal  
20 analyses that we did for the pool fire test. The  
21 regulatory test is an open pool fire test for 30  
22 minutes at one meter above the level of the fuel.

23 And to look at how the casks respond in  
24 these pool fires, we looked at it in different  
25 orientations. The bottom picture here shows the cask

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1 at the pool level, the fuel level of the pool.

2 The middle picture here is the cask at one  
3 meter above the pool, and then the top picture is 3  
4 meters above the pool. And what we are looking at in  
5 this relatively dark area here is what is called the  
6 vapor dome.

7 And that is where you don't have complete  
8 combustion of the fuel mixture, because you have a  
9 lack of oxygen in there. So you have relatively cool  
10 temperatures underneath the surface of the cask.

11 And so we were looking at one point  
12 elevation wise do you get above that vapor dome, and  
13 you have relatively higher temperatures under the cask  
14 like you do on the sides and the top.

15 This picture here is a picture of the Hi  
16 Star 100 rail cask, and that particular picture is --  
17 this particular analysis is one meter above the full  
18 surface.

19 And this plots the temperatures on the  
20 surface of the cask. So you can see the bottom of the  
21 cask has relatively cool temperatures, again because  
22 of this vapor dome area here. So that gives you a  
23 plot, and that gives us an idea of what sort of  
24 temperatures the cask is going to be seeing during  
25 these severe fire tests. And the plot here --

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1 AUDIENCE: What type of fuel?

2 MR. SORENSON: The question was what type  
3 of fuel, and it is jet fuel, I believe.

4 FACILITATOR CAMERON: If you could just  
5 try to hold your questions so we can get you on the  
6 transcript when you do have a question. We will be  
7 done in a few minutes and we can go back to these  
8 slides, because I know it is a lot to ask you to  
9 remember.

10 MR. SORENSON: And just to show you how we  
11 look at these analytically, these different tests and  
12 analyses, and again this is all analysis, but here is  
13 a plot of temperature on different portions of the  
14 cask surface relative to time.

15 We happened to take this analysis out for  
16 an hour, and again these are suggestions or proposals  
17 that we put in the protocols document to have reviewed  
18 by the public so that we could get feedback on the  
19 best way to proceed on these thermal tests and the  
20 impact tests. So that is all I have, Chip, and I will  
21 turn it over to Andy at this point.

22 FACILITATOR CAMERON: Okay. Thanks, Ken,  
23 and we have Andy Murphy, from our Office of Nuclear  
24 Regulatory Research, and he is the project manager on  
25 this study.

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1           And he is going to talk about major issues  
2           for us, and just to give you an idea about his  
3           background. He has been with the NRC for about 24  
4           years working on seismic earth science and structural  
5           engineering issues.

6           And notably in a lot of the work that Andy  
7           has done with the Commission, he has managed large  
8           scale testing programs for things like reactor  
9           components, and systems. So he is particularly  
10          qualified to manage this testing program.

11          And before he came to the NRC, he was at  
12          the Lamont Doherty Earth Observatory, which is  
13          connected to Columbia University in New York City, and  
14          he has a Bachelors in Geophysical Engineering, and a  
15          Graduate Degree in Seismology. And with that, Andy.

16          DR. MURPHY: Good evening. I would like  
17          to as was said earlier, keep up some of the discussion  
18          on the technical issues associated with the test  
19          protocols. I have got a number of issues identified  
20          up here, seven, as part of the document that we put  
21          out for public comment, issued a number of specific  
22          questions that we would like to focus your attention  
23          on.

24          There were 11 questions in the document,  
25          and obviously we are very interested in your comments

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1 on anything that is of concern to you. There were 11  
2 issues that were identified there, and those were  
3 issues that came to our attention as our thoughts that  
4 were appropriate for comment.

5 The first line, if you can see them from  
6 all sides, are the cask designs and how many casks.  
7 In the protocols, we have proposed two designs; a rail  
8 cask, one produced by Holtec Industries; and a truck  
9 cask, the GA-4, produced by General Atomic.

10 We have done our preliminary calculations  
11 as Ken has just indicated for those two casks, and  
12 they are published in the document. The other part of  
13 that question is obviously we picked the two to start  
14 with, and what is the right number.

15 I know that there are some folks that are  
16 very interested in having any of the casks that are  
17 used to transport materials to Yucca Mountain to be  
18 tested, and if we drop down to the fourth question,  
19 the issue of testing full-scale or partial-scale  
20 casks.

21 We have proposed in our document full-  
22 scale testing, or full-sized actual casks in this  
23 program. The second item up there was the orientation  
24 or the type of tests. When we looked at this, we  
25 normally had two types of casks testing available to

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1 us.

2 The first one was to put it on a rocket  
3 sled and to propel it horizontally into an unyielding  
4 target, or to drop it from a tower on to an unyielding  
5 target.

6 We have proposed to use the tower  
7 configuration and drop it, because it is a lot easier  
8 for us to control in an engineering sense. If you  
9 have got a rocket and you light that rocket off, it  
10 does have a little bit of a mind of its own, and just  
11 how much power there is in there, and how fast it is  
12 going.

13 And it is important to us to have an idea  
14 of how fast it is going, because that is an important  
15 parameter in the analyses that we are doing. And we  
16 are in a position that we are wanting to do or  
17 planning to do predictive analysis obviously before  
18 the test happens.

19 And we will publish our predictions as to  
20 what is going to happen to the casks, and produce the  
21 uncertainty or the limits on those predictions. An  
22 important item that has come up in the last two  
23 meetings is not up on this slide, because we have not  
24 thought about it, and that is should we be testing to  
25 failure.

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1           There has been considerable comment in the  
2           last two meetings that we consider testing to failure.  
3           It is an issue that was not in our initial program,  
4           but given the attention that it has gotten like I said  
5           in the last two meetings, it is something that should  
6           be considered.

7           The item there, type the number of  
8           surrogate fuels. These casks are meant to carry spent  
9           fuel assemblies. We do not plan to test with real  
10          fuel in them, but we are planning to put in surrogate  
11          fuel assemblies.

12          At this stage, we are proposing to put one  
13          fuel assembly in each of the two types of casks. The  
14          rail cask would carry 24 pressurized water reactor  
15          fuel assemblies, and we are proposing to have one  
16          surrogate fuel assembly in there.

17          This would be an assembly that basically  
18          looks nearly identical to the actual spent fuel  
19          assembly, except that we would not have the spent fuel  
20          in it. We would have another material, a non-  
21          radioactive material, in there to simulate the fuel.

22          The other 23 assembly locations in that  
23          cask would have dummy fuel assemblies. This would  
24          simply be weight and mass substitutes. They would not  
25          look like a fuel assembly. They would just be weights

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1 and mass.

2 And for the truck casks for General  
3 Atomic, that holds four assemblies, and one of those  
4 would be a surrogate, and the other three would be  
5 dummies. That covers the impact tests and the real  
6 question about scales.

7 The second to the last item up there is  
8 the duration of the fire tests. The certification  
9 tests for the United States, the limit on that is a  
10 half-an-hour. We are proposing that the tests for the  
11 package protocol, or package performance protocols  
12 would be greater than a half-an-hour.

13 The other item up there for questions is  
14 the position of the cask relative to the fire. Ken  
15 showed you three different positions that are  
16 possible. There are actually more. And we are asking  
17 for comment on the placement of the cask in the fire.  
18 And so that takes care of my comments, and I will pass  
19 it back to Chip.

20 FACILITATOR CAMERON: Thank you very much,  
21 Andy. Well, you have heard from -- we have gone from  
22 what the responsibilities are to the details of cask  
23 testing, and now it is time for us to listen to you,  
24 and hear your comments and try to answer your  
25 questions. Let's go right here and then we will go

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1 over to you, sir. Yes, sir, and just tell us your  
2 name, please?

3 MR. UNKERFER: My name is Dick Unkerfer,  
4 a resident of Pahrump. What is your capabilities of  
5 doing the inspection on foreign imports from this into  
6 the field and the transportation?

7 FACILITATOR CAMERON: Rob, do you  
8 understand the question?

9 MR. LEWIS: Yes. That is a good question.  
10 Until recently, until about 2 years or so ago, all the  
11 fabrication for spent fuel casks has been done in the  
12 U.S., but some of the Japanese steel mills have  
13 started to do fabrications.

14 And we just recently went over to Japan  
15 and did our first inspection of two fabricators over  
16 in Japan, and that was in February. So we are  
17 starting to do a lot of that.

18 MR. UNKERFER: And what about the  
19 transportation across the oceans?

20 MR. LEWIS: Through the U.S. Customs  
21 Department mostly, we have the capability to -- the  
22 government has the capability to inspect the material  
23 coming into the country. The Nuclear Regulatory  
24 Commission, our inspection is more at the facilities  
25 where it is ultimately arriving.

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1 But the Department of Transportation,  
2 through the Coast Guard, and the Customs Department,  
3 do inspections of material coming in, imports of  
4 materials coming into the country as well, and we work  
5 with them as well.

6 FACILITATOR CAMERON: Okay. Thank you.

7 MR. LEWIS: And, Chip, one more point.  
8 Just to clarify. We don't have spent fuel coming into  
9 the country, except for some very limited programs,  
10 with the Department of Energy bringing back research  
11 reactor fuel from some under-developed countries, and  
12 they bring that back into the country and bring that  
13 to their sites.

14 But for the commercial side, there is  
15 really zero transport of spent fuel in to the country.

16 FACILITATOR CAMERON: Okay. Thank you.  
17 Yes, sir?

18 MR. BIJOLD: Yes. My name is Jerry  
19 Bijold, and I live in Northwest Las Vegas. I would  
20 have gone to the Las Vegas thing, but I don't think I  
21 could handle seven hours. So I decided to come out  
22 here instead.

23 Under your favorable history that you  
24 briefed, you said 1,300 spent fuel shipments over 20  
25 years. Could you tell me whether there were any

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1 accidents, or any terrorist or other events during  
2 those times, and what happened when they did occur, if  
3 they did?

4 MR. LEWIS: Well, first to the terrorism.  
5 That's easier. We are not aware of any sabotage  
6 attempt ever on any spent fuel transport or any  
7 radioactive material I should say.

8 And there have been four transportation  
9 accidents, however, and in each of those accidents --  
10 with four involving loaded spent fuel casks, in each  
11 of those accidents there was no release and the cask  
12 was put back on the truck or train, and it continued  
13 on its way.

14 But there was one case in Tennessee, I  
15 think, where a driver was killed by the traffic  
16 accident. His truck jack-knifed and the driver was  
17 killed in the early '70s. But the radioactive  
18 material didn't have anything to do with that. It was  
19 just a traffic accident.

20 MR. BIJOLD: Well, the reason that I  
21 asked, and I have a follow-up if you don't mind, when  
22 I computed out -- you know, I live out in the  
23 Northwest side, and I figured that the DOT is going to  
24 want to use interstate highways as a preferred mode.

25 And so you take the Beltway around to Las

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1 Vegas if you use that as an example, and I live a  
2 couple of miles from there. And so when I computed  
3 this out, and Bob agreed with me, within plus or minus  
4 10 percent probably, that I would have one high level  
5 nuclear waste truck every 3 hours, 24 hours a day, 7  
6 days a week, for 38 years. Is that close?

7 MR. LEWIS: Well, I think the Department  
8 of Energy's final EIS, Environmental Impact State, for  
9 Yucca had some predictions of the transport, and I  
10 think that Bob Halstead has produced some alternate  
11 numbers.

12 MR. BIJOLD: Right.

13 MR. LEWIS: So, depending on the number of  
14 trucks --

15 MR. BIJOLD: Well, I am not going to argue  
16 plus or minus 10 percent. I mean, it is pretty close  
17 and that is my point.

18 AUDIENCE: Well, what if it is 20 percent?

19 FACILITATOR CAMERON: I want to try to get  
20 you on the transcript, guys, and so let's keep this a  
21 little orderly. Let me make sure that we answer  
22 Jerry's point. Go ahead, Bill.

23 MR. BRACH: Well, I would like to come  
24 back to just a little bit on the numbers, and realized  
25 that the Department of Energy has not finalized or

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1 identified not only definite transportation routes, or  
2 finalized on the exact numbers of shipments, but the  
3 information that I have seen, and am generally aware  
4 of, is that the Department of Energy has forecasted in  
5 the neighborhood of about a 175 shipments on an annual  
6 basis, and that is 175 per year.

7 And if I remember the numbers correctly  
8 off the top of my head, it is about 130 rail shipments  
9 that they have forecasted and about 45 truck  
10 shipments. I believe that is --

11 MR. BIJOLD: I should specify. It should  
12 be only trucks that I am talking about.

13 FACILITATOR CAMERON: I hate to keep  
14 reminding you of this, but that you really need to be  
15 on -- we need to have one person at a time speaking,  
16 and we need to have it on the transcript.

17 MR. BIJOLD: I'm sorry. What it was is  
18 that I was using a truck scenario. I was not using a  
19 truck and a rail scenario, because I was just asking  
20 about trucks. I'm sorry, but I should have specified  
21 that.

22 So under a truck scenario what would the  
23 figures be approximately?

24 MR. BRACH: Well, my understanding of that  
25 is, and again I am giving the Department of Energy's

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1 information, is that they have forecasted on an annual  
2 basis about 45 truck shipments per year.

3 FACILITATOR CAMERON: Okay. And I put  
4 that number of shipments up there, and if we need to  
5 try and go back and refine that, we will do that for  
6 everybody. I am going to go over here to Sally, and  
7 then we are going to go over to this gentleman, and  
8 then we will go to the next person.

9 MS. DEVLIN: Thank you, and thank you all  
10 for coming. It is so nice to see so many familiar  
11 faces, and of course I have the same questions for  
12 you, and most of the people here are relatively new to  
13 these conferences.

14 And you are always welcome, and we hope  
15 that you will come again and serve food next time.  
16 What is the matter with you. Anyway, this is the  
17 hardest thing I think for people to realize at a  
18 conference like this, but the main word is modeling.

19 You have nothing and you have done  
20 nothing, and this is all planning, and this has gone  
21 on since '93 that I know of. And the thing that  
22 bothers me as I said to Peter Swift at the NWTRB  
23 meeting, you will never get confidence from the public  
24 using surrogates.

25 And using dummies, and just modeling and

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1 more modeling. I said when you have a full-sized  
2 canister that you think will last for 10,000 years,  
3 and you put -- and I thought it was just half-a-metric  
4 ton of the spent fuel rods, and now you are telling me  
5 it is 2, and as many as 12, you have gotten enormous,  
6 and you seem to have nothing.

7 Now, how long is this modeling going to  
8 continue, and how long is it going to continue costing  
9 us, and what do you project? I have never heard these  
10 questions answered, because we are not talking little  
11 stuff.

12 These canisters or whatever are 14 feet  
13 long, and 8-1/2 feet wide, and there is not a road  
14 that would hold them and so on, and I am not going to  
15 get into that.

16 I am just talking about your modeling, and  
17 it really concerns me because this is going to be if  
18 it goes through a real live project that is extremely  
19 hot. I don't hear anything about the 130 degrees C.,  
20 or the 360 degrees C.

21 You are all modeling, and I am very  
22 disturbed by the length of time that you modeled, and  
23 you have gotten it down to two companies, and I am  
24 just wondering what your excuse is, and how much money  
25 you are spending. So, Amy, answer that.

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1 FACILITATOR CAMERON: Okay. Let's see.  
2 Where should we start with Sally. Do you have an  
3 answer?

4 DR. MURPHY: I think probably the answer  
5 that you are looking for is the one associated with  
6 the actual testing. We are proposing that if our  
7 plans continue on the schedule that we are looking at  
8 today, that we will be testing in 2004 and in 2005.

9 So at that stage, we will be trying to  
10 confirm or validate the simulations and the  
11 calculations that we have been using. So we are  
12 looking to have an answer for you as far as specific  
13 data in 2004 and in 2005.

14 And that would be for two tests of rail  
15 casks, a fire, and an impact test of a rail; and a  
16 fire and an impact test of a truck cask as currently  
17 proposed; and as we go through the discussions this  
18 evening, you will hear that there are folks who are  
19 suggesting that we do more. But right now the plans  
20 are for four tests.

21 FACILITATOR CAMERON: Amy, do you have  
22 anything that you want to add to what Andy said?

23 MS. SNYDER: That is what I was going to  
24 say.

25 FACILITATOR CAMERON: Okay. Wonderful.

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1 We are going to go to this gentleman in the back, and  
2 then we will go up to the gentleman who is standing at  
3 the microphone. Yes, sir?

4 MR. MACHARSKY: My name is Gary Macharsky,  
5 and I am a Pahrump resident. I was just wondering  
6 that when you get the actual models doing the tests on  
7 the fire and the impact accident tests that we all  
8 understand, are you going to simulate a terrorist  
9 attack?

10 Are you going to shoot a depleted uranium  
11 round? It will cut through that like butter, and you  
12 all know it will happen. My other question is do you  
13 have any plans, or do you know if there are any plans  
14 with Homeland Security that when they escalate the  
15 attack up to orange like it was last month, are you  
16 going to stop these shipments?

17 Are you going to pull them off the road?  
18 What do you have planned to take care of that problem?  
19 Thank you.

20 FACILITATOR CAMERON: Bill.

21 MR. BRACH: The first question that you  
22 asked pertained to the plans for the package  
23 performance study, and the testing that we have talked  
24 about also includes sabotage testing, and the answer  
25 is, no, this study that we are describing tonight does

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1 not include terrorism sabotage testing.

2 Rob Lewis earlier made reference to some  
3 of the activities going on with the NRC with regard to  
4 -- we call it post-9/11, but it really is looking at  
5 terrorism and sabotage concerns, especially in light  
6 of what happened in September a year ago.

7 We are looking at and considering sabotage  
8 events and activities. One aspect that I will clearly  
9 want to try to identify is that in the tests that we  
10 have described, the impacts, the fire, there is much  
11 information that we will learn from the structural or  
12 from the behavior of the casks in those environments,  
13 whether it be the impact at 75 miles per hour, or  
14 whatever speed is selected eventually for that cask,  
15 as well as the extreme fire conditions.

16 The information that we learned from those  
17 tests clearly we will be carrying over to those folks  
18 at the NRC that worked on the security side, and who  
19 are examining the cask capabilities to withstand  
20 terrorism or sabotage-type issues, because the  
21 robustness or the structural capability of the cask,  
22 and its robustness and its capability to withstand  
23 high temperature loads and heavy impacts, or hard  
24 impacts if you will, that same type of information is  
25 important in their activities, because they are

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1 studying and looking at the capability of the cask to  
2 withstand a terrorist type of attack or approach.

3 The second question you asked -- and this  
4 pertains to the different threat levels that the  
5 Department of Homeland Security has established for  
6 our country, and the five color code scheme.

7 Rob had mentioned that we have issued  
8 interim compensatory measures to the industry that we  
9 regulate. That clearly includes those licensees who  
10 are involved in spent fuel transportation, and it  
11 includes nuclear power plants, facilities that store  
12 spent fuel, and facilities that handle nuclear  
13 materials.

14 We have laid out, and I can't go into the  
15 details, and I apologize, but we have laid out for the  
16 different levels, commensurate with the five levels of  
17 security, different expectations, different actions,  
18 that we, the NRC, and having issued orders, do require  
19 of our licensees to take based on the very different  
20 levels of security that we are at.

21 And realize that we are going to go from  
22 the yellow to the orange level, and there are measures  
23 when that determination is made that we have gone to  
24 a different security level, there are additional  
25 actions that the licensees are required to take in

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1       that regard.

2                       Now, I cannot apologize, and I can't  
3       answer your question specifically, because I can't go  
4       into the details of what those different measures are.  
5       But within the NRC, we have worked that across the  
6       realm of the regulatory activities, the nuclear  
7       activities that we regulate, as well as we have worked  
8       that with the Office of Homeland Security.

9                       So we are trying to maintain a consistency  
10       of NRC actions with other Federal government actions  
11       at the different threat levels.

12                      FACILITATOR CAMERON:   Okay.   And, yes,  
13       sir?

14                      MR. GREEN:   Yes.   My name is Bill Green.  
15       When this gentleman was talking and he had mentioned  
16       or said working along with FBI and CIA, I just  
17       wondered that now that they have formed this Homeland  
18       Security Department, why we deal with those separate  
19       entities and we don't go directly right to the  
20       Homeland Security and they double-check, and then they  
21       tell you?

22                      Because that was the problem that we had  
23       before.   Too many people were asking too many, and  
24       nobody was a direct line.   I understood that was the  
25       reason that we formed this whole different department.

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1 MR. BRACH: Let me if I can, and I will  
2 try to add to that, and if I don't answer your  
3 question, please tell me. Rob's reference to the FBI  
4 and CIA, and your reference to the Department of  
5 Homeland Security, one, the NRC is a small agency if  
6 you will.

7 But recognizing the role and the concerns  
8 with regard to terrorism and security with regard to  
9 nuclear activities, whether it be spent fuel  
10 transportation, nuclear power plants, or others, the  
11 NRC is very active in coordinating with the new  
12 Department of Homeland Security, and usually the  
13 Office of Homeland Security beforehand.

14 But the other intelligence agencies, to be  
15 sure to the extent in the national circles that there  
16 is information with regard to concerns on terrorism,  
17 and the gentleman's earlier question about the  
18 different threat levels, to be sure that we are  
19 coordinating and aware of information so that if there  
20 are actions that the NRC would need to take, whether  
21 it be a change in the security or a threat level, or  
22 if there is information that is pertinent to nuclear  
23 regulated activities, and not necessarily on a  
24 national level that might necessitate a change in  
25 threat levels for the entire country, but maybe a

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1 concern with regard to nuclear activities, that  
2 network, that communication exists and works.

3 And Rob's reference to the other agencies  
4 was just as an example of the interactions that we  
5 have staff at our agency that maintain a continuous  
6 line of communication with these other agencies. So  
7 that type of information we would be aware of  
8 hopefully as soon as it is available in the Federal  
9 Government.

10 MR. GREEN: And basically my other  
11 questions were pretty much the same when you said full  
12 testing. You know, since 9/11, and you keep bringing  
13 up 9/11, since then we have never thought that two  
14 airplanes would bring down two skyscrapers.

15 And then also that hand-held rocket  
16 launchers just being shot, and I just can't believe  
17 that fire testing and dropping on the end, I don't  
18 know how dropping on an end -- unless it is a straight  
19 impact at 75 miles an hour and that would be another  
20 test.

21 But dropping it on the end, I don't see  
22 how any one of those casks will end up dropping on end  
23 from 75 feet straight up other than this test. I  
24 don't understand. Thank you very much. I think there  
25 are other tests that need to be done.

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1                   And it is like when you travel with your  
2 cask, I believe that with the weight factor that these  
3 roads have to be at a minimum a certain level before  
4 they can go anywhere.

5                   And in the State of Nevada, there is not  
6 very many roads that would meet any level of stuff.  
7 Thank you.

8                   FACILITATOR CAMERON: Andy, do you want to  
9 talk about how the drop test reflects real conditions?  
10 I think that is what Mr. Green was talking about.

11                  DR. MURPHY: Okay. I would like to  
12 address a couple of your questions here, and  
13 particularly we will start with the question of the  
14 end drop of the cask from a tower.

15                  We are talking about dropping it from a  
16 tower to reach a velocity of 75 miles an hour. The  
17 cask will not be dropped in a simple end on fashion,  
18 but will be tilted so that the center of gravity of  
19 the cask is over the lid, the corner of the lid.

20                  So that you are getting a more challenging  
21 impact on that cask by dropping it in an orientation  
22 that is cocked to one side. Part of what we are doing  
23 with this program is validating the computer codes  
24 that we use to study, and the models that we use to  
25 study, the behavior of the response of these casks to

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1 different accident scenarios, different sequences.

2 The one that we have chosen and talked  
3 about in the protocol report is a challenging one for  
4 both the cask and for the computer codes. Our  
5 intentions are for our analysts to predict what  
6 happens to that cask when it is dropped in that  
7 orientation.

8 We anticipate that there will be  
9 deformation, permanent deformation of that cask  
10 because of this drop. The code analyst will tell us  
11 before the test happens how much deformation to  
12 expect.

13 This deformation may be -- I will say a 2  
14 inch dent, a 5 inch dent, and we will know that  
15 beforehand, and the public will have that information,  
16 and they will have the uncertainty bounds on that 5  
17 inch deformation beforehand.

18 And there will be public viewing. We  
19 anticipate having a tutorial before we do the tests,  
20 and an ability for the public to view the tests and to  
21 see the test specimens afterwards, and to check to see  
22 whether or not our calculations have been correct.  
23 That is kind of a longwinded answer to your question.

24 MR. GREEN: Why would you test when this  
25 big thing is like this, and then the center is the

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1 main thing, why do they drop it on the end part of it?  
2 Because you can hit a bullet on the end of it and it  
3 will not explode.

4 But if you hit it direct center, that is  
5 when the problem occurs, because you have that cushion  
6 from center to out there. I just wonder why they  
7 chose to drop it like that.

8 FACILITATOR CAMERON: Thank you, Mr.  
9 Green. Can we add anything? I know, Rob, that you  
10 wanted to say something, and then we will have a  
11 question or a comment further.

12 MR. LEWIS: I just wanted to make a point  
13 that Bill said, and I said, too, that we don't want  
14 anybody to get the impression that we are not looking  
15 at sabotage or terrorism type events.

16 We definitely are, but it just is that  
17 that type of information and the possible types of  
18 attacks that we are looking at, and the consequences  
19 of them, those are not public information.

20 But you can kind of get a feel for the  
21 complexity of those studies by looking at this type of  
22 study to see the level of effort that we put into  
23 studies of this kind. So you can do that, but that is  
24 how it is.

25 We are not singularly focused on security

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1 issues. We can't only look at security and forget  
2 about possible transportation accidents. So we have  
3 to look at both, and we are here tonight to talk about  
4 the transportation accidents.

5 The cushion at the end of the cask, part  
6 of the reason for picking the speed we did was to make  
7 sure that we fully crushed that, and then put some  
8 force on the cask body itself.

9 FACILITATOR CAMERON: Okay. Why don't you  
10 tell us what is on your mind, and then we will go to  
11 Mr. Neff, and then Kalynda, and then you. Go ahead.

12 MS. HOLGREN: My name is Judith Holgren,  
13 and I am a resident of Pahrump. I have a question  
14 about -- I would like to distinguish between the  
15 transportation canister which you will be testing, and  
16 the storage canister, which will be going into the  
17 repository.

18 With these canisters, which are going to  
19 be used for transportation, will they be carrying at  
20 any time storage canisters, which will be going into  
21 the repository?

22 MR. BRACH: I may not be able to give you  
23 a satisfactory answer. It is my understanding that  
24 the Department of Energy has not yet finalized the  
25 canister that would be the ultimate disposal canister

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1       that would go into the repository.

2               What we are talking about tonight and the  
3       schematics of the Holtec and the General Atomics, the  
4       rail and the road casks, or truck casks that we have  
5       shown, those are casks -- the Holtec casks, for  
6       example, has an inner-canister.

7               And you may hear us in some of the  
8       discussions refer to that as a multi-purpose canister.  
9       The two purposes that we are talking about that make  
10      it qualified if you will for it to be multi-purpose is  
11      for the transportation and the storage, but that  
12      storage is not the storage as with the disposal in the  
13      repository.

14              That storage, as it may be stored, for  
15      example, at a nuclear power plant, where the canister  
16      would be loaded at a nuclear power plant and stored  
17      perhaps at a concrete storage pad at the nuclear power  
18      plant, and then that inner-canister would be put  
19      inside of a transportation overpack with what we call  
20      impact liners or cushions, or shock absorbers, excuse  
21      me.

22              So that the canister that we are talking  
23      about and that would be included in these tests, would  
24      be for storage potentially at a nuclear power plant,  
25      or another waste reactor storage facility, and the

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1 transport.

2 And I qualified that, because to my  
3 understanding the Department of Energy has not yet  
4 finalized the design for that canister that would  
5 eventually go into the disposal facility or  
6 repository.

7 MS. HOLGREN: Okay. And taking that in  
8 mind then, will there be a situation at Yucca Mountain  
9 where these intermediary transport -- I will call them  
10 inner-casks, will be unloaded into the storage  
11 canisters, which will go into the Yucca Mountain  
12 repository?

13 MR. BRACH: Well, let me qualify that. I  
14 am not a Department of Energy employee, and so my  
15 understanding of what the Department of Energy has  
16 described in their environmental impact statement is  
17 that the canisters, when received at the repository,  
18 would be unloaded, and then that spent fuel would be  
19 loaded into a disposal canister for disposal at the  
20 repository.

21 Now, I may be wrong, but that is my  
22 general understanding.

23 MS. HOLGREN: And then from the point of  
24 view of terrorism or whatever, have there been any  
25 plans made to defend this particular -- I guess you

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1 would call it storage or unloading facility; and this  
2 will be above-ground I am assuming?

3 In other words, they will be taking the  
4 in-the-cask from the transportation canister, and they  
5 will be unloading that at the Yucca Mount repository,  
6 and putting that into what you call the waste package,  
7 or the permanent storage cylinder. Okay. That  
8 particular facility will be an above-ground facility,  
9 and have there been plans made to defend that should  
10 that be necessary?

11 MR. BRACH: Okay. The Department of  
12 Energy is required to submit a license application to  
13 the NRC for the repository. That license application  
14 will need to describe all of the safety and all of the  
15 security measures that the Department of Energy would  
16 take to protect that fuel both from safety and for  
17 security, or sabotage reasons, and that would have to  
18 include all of the fuel handling, all of the fuel  
19 movement activities.

20 And again I am qualifying this because we  
21 had not received the applications, and so I can't tell  
22 you definitely what the Department of Energy's plans  
23 are or will be.

24 But if as you describe it, the application  
25 would have to describe the safety and security

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1 measures that they would take to assure the protection  
2 of that material. And that application would be  
3 subject to NRC's review and approval, both by NRC  
4 safety experts, and staff, as well as our security  
5 experts with regard to protecting against terrorism or  
6 sabotage type of concerns that you have mentioned.

7 MS. HOLGREN: Okay. Thank you very much.

8 FACILITATOR CAMERON: Thank you for those  
9 questions. Before we go to Mr. Neff and the rest of  
10 you, we have been remiss in one part here of telling  
11 people about the comment period, and how they submit  
12 their comments, and when the comment period is over.  
13 Can we just do a summary right now for people on that?

14 DR. MURPHY: Yes, I would be happy to.

15 FACILITATOR CAMERON: And, Mike, thanks to  
16 Mr. Bob Halstead for reminding us of that.

17 DR. MURPHY: Right. I would ask the folks  
18 who have not picked up the presentation that I used in  
19 Las Vegas to pick up a copy of it, because some of  
20 those particular points of information are there.

21 And rather than trying to verbally give  
22 you a 45 letter long address, and it is also in the  
23 protocol report. Thank you, Kalynda. Thank you. It  
24 is there. There is an NRC website that has a copy of  
25 the test protocols, and there is a link in there

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1 directly to a comment page where you can leave your  
2 comments for the NRC.

3 Very specifically, the other question is  
4 that the comment period is approximately 90 days long.  
5 It is longer than 90 days, and it ends on the 30th of  
6 May of this year.

7 The comment period includes materials  
8 presented at this meetings, and the materials that are  
9 submitted through the internet, and materials that can  
10 be submitted either by fax or the old fashioned way of  
11 physically mailed letters. Thank you.

12 FACILITATOR CAMERON: Okay. And I will  
13 put the website up on this flip chart, too, if that  
14 makes it easier for people. But let's go to Mr. Neff.

15 MR. NETH: Henry Neff, Nye County  
16 Commissioner. My question is a little bit different.  
17 I am more curious about the materials that will be  
18 transported inside the casks. And not really  
19 understanding radiation that well, I would like to  
20 know if on the theory of theoretical happenstance, if  
21 one of those depleted fuel assemblies was to pop out  
22 the back of one of the transportation canisters,  
23 purely theoretical, and fall on the road, what is the  
24 time distance for a human being in regard to the  
25 exposure to that particular cell?

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1           Or if you wanted to make it even more  
2           simple, that canister falls off and breaches, and  
3           there is a quarter-inch crack in that canister, what  
4           can we expect as far as release goes?

5           What would have to happen for a human  
6           being to get enough exposure to actually be damaged  
7           from that exposure?

8           FACILITATOR CAMERON: Okay. Rob Lewis is  
9           going to answer that.

10          MR. LEWIS: The dose from an unshielded  
11          spent fuel assembly is very high, and it would be very  
12          hazardous. It would not take very much time at all  
13          for a person to be injured by that. The distance and  
14          exact numbers would be dependent upon the specifics of  
15          the fuel.

16          But the important thing to think about,  
17          too, is that the fuel really can't pop out of the  
18          cask. But there can be -- the second scenario that  
19          you described where the cask may be damaged, and there  
20          may be a pathway to the environment, or a pathway for  
21          the radiation to come through.

22          In that case the spent fuel is still  
23          shielded, and there is a much longer time for the  
24          emergency responders to act and injuries would  
25          probably not occur in that situation.

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1           MR. NETH: If the crack were on one side  
2 of the canister, then obviously this stuff doesn't  
3 spray out and form a cloud of radioactive particles,  
4 and proceed in a straight line from their origin?

5           MR. LEWIS: Well, by way of example, these  
6 tests that we are proposing here, they are very severe  
7 tests, and in these tests I should say there is no  
8 release of radioactive material from the cask.

9           And these tests have probabilities, and we  
10 hate to talk about probabilities, but in terms of  
11 realism, and the shipment numbers for Yucca Mountain  
12 would be 175 shipments a year, you are talking on the  
13 order of an accident that is like one in a million, or  
14 1 in 10 million, and that is described in the  
15 protocols of how we calculated that.

16          MR. NETH: I understand the test that you  
17 are wanting to perform and everything, but some of the  
18 information that I would find extremely valuable, that  
19 if there were a breached cask on the road, and if I  
20 were within a hundred feet of that breached cask, how  
21 much time would I have to get away before I got a  
22 lethal dose.

23          Or if I were on a freeway driving in the  
24 other lane going the opposite direction, and a wreck  
25 were to happen and a cask were to breach, how much

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1 time or how many people would be exposed, and how much  
2 time and how lethal would those doses be?

3 Now, this would be valuable information so  
4 that people could understand the time involved, and  
5 the amount of dosage involved by being exposed at  
6 certain distances from that material?

7 FACILITATOR CAMERON: Okay. We know that  
8 it depends on how many people there would be, and  
9 going into a lot of specific factors, but can we give  
10 any context to Mr. Neff on that issue? Rob.

11 MR. LEWIS: In an accident, we rely very  
12 heavily on the training of the emergency responders  
13 and the HAZMAT team to establish the safety around the  
14 accident.

15 And everyone has heard of hazardous  
16 material accidents, where neighborhoods had to be  
17 evacuated or something. In the case of spent fuel, in  
18 the regulatory test, which is a very severe test and  
19 it encompasses many accidents, the amount of material  
20 that could be released in that is very small.

21 It is equivalent to -- it is almost  
22 negligible, but it is the amount that is equivalent to  
23 a radioactive material package that doesn't even have  
24 the accident resistance packaging, and just the common  
25 type package.

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1           And there really would be no prompt  
2           deaths, or immediate health impacts from that if the  
3           proper HAZMAT response occurred.

4           FACILITATOR CAMERON: Mr. Neff, are you  
5           suggesting that it would be helpful in this report if,  
6           or in some other report, if there was some description  
7           given to people on what possible exposures are? Is  
8           that what your main point is?

9           MR. NETH: Yes, that is absolutely  
10          correct. I mean, for people to come -- I mean, I  
11          think what I keep wanting to base this on is that I  
12          have heard that if you got within 3 feet of a breached  
13          cask that you would get enough of a dose to kill you.

14          However, if I see a truck tipped over on  
15          the road with a spent fuel canister on it, the last  
16          thing in the world that I am going to do is go running  
17          up there and see if the cask is breached.

18          So I think what I am asking is that as far  
19          as in an emergency situation where something does  
20          happen, what is a safe distance? I mean, if people  
21          have to get by the wreck or whatever -- do you  
22          understand what I am saying?

23          You are going to have our HAZMAT people  
24          going out there, and you are going to have to carron  
25          it off, and you are going to have to set up

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1 perimeters. What are those perimeters?

2 What is the exposure, and what is the  
3 dosage that could be released from a core, and I think  
4 that type of information would be interesting for  
5 people to know.

6 Could there possibly be accidents?  
7 Absolutely. What are the exposures from those  
8 accidents, and what can we expect?

9 FACILITATOR CAMERON: Okay. And I think  
10 we are going to have some comment here. And, Mr.  
11 Green, I see that you are getting ready to come up.  
12 I am going to have to go to other people who haven't  
13 spoken. So I don't want you to have to stand there  
14 for a long time, but we will get back to you. Bill,  
15 Amy, however you want to do it.

16 MR. BRACH: Go ahead, Amy.

17 MS. SNYDER: I think the important thing  
18 is to put it in perspective as far as far as what real  
19 world accidents could occur, and then what potential  
20 exposure people could have, especially first  
21 responders. Would that be helpful to you?

22 MR. NETH: Let me put it in the most  
23 severe perspective. There is a ring of a hundred  
24 people standing in a 50 foot circle, diameter circle,  
25 and magically in the middle of that circle appeared an

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1 unshielded fuel assembly.

2 And I know that this is silly, but bear  
3 with me. At the word go, how much time would those  
4 people have to get away from that canister before they  
5 got a lethal dose? Or make the circle bigger, or  
6 whatever you need to do.

7 FACILITATOR CAMERON: I think we  
8 understand the type of information that Mr. Neff is  
9 looking for. Bill.

10 MR. BRACH: I was just going to offer that  
11 the question that you are asking is -- that from one  
12 standpoint, we don't have the information to answer  
13 right now or tell you, and I think that is information  
14 that we would need to consider.

15 But one point that I do want to make is  
16 that if you recall, one of the overheads, and I think  
17 Rob Lewis was showing, was a schematic, a cut-away  
18 schematic of a cask.

19 And if you recall, in the inner-center of  
20 what looked like a pipe diagram is where the spent  
21 fuel would be located. And it showed the dimensions  
22 of multiple layers of lead and metal protection around  
23 the canister.

24 And then also if you recall, Ken Sorenson  
25 had a view graph showing -- it was the model of a

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1 structural impact of a canister at 75 miles per hour.  
2 And if you recall from that schematic, and that is an  
3 extremely severe accident, what we call the impact  
4 limiter, the cushion on the end of the canister, was  
5 fully engaged if you will.

6 And the edge of the canister or the  
7 outside edge of the canister where the spent fuel was  
8 inside the canister, had some dent if you will. What  
9 I am trying to identify is that, one, clearly a goal  
10 and objective in our review and certification of  
11 transportation packages is that these packages  
12 maintain what we call the containment.

13 That is, that they maintain the fuel  
14 inside of the transportation package under all the  
15 accident conditions or scenarios that we evaluate.  
16 And I understand the question, that if that doesn't  
17 happen and it breaches and it opens, and that's what  
18 I am saying, that I don't have that information with  
19 us to answer the question.

20 But the goal of what we do in our review  
21 and certification is to certify casks that can  
22 successfully pass all these different accident  
23 scenarios and conditions, and what we are looking at,  
24 and the subject of the package performance study, is  
25 going markedly beyond the existing regulatory limits

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1 for accident tests, whether it be an impact or a fire,  
2 and testing the ability of these casks to withstand  
3 those extreme or significantly beyond regulatory limit  
4 test conditions to be able to demonstrate that the  
5 integrity and the containment of that canister is --  
6 excuse me, of the cask, is maintained, inside of the  
7 package.

8 FACILITATOR CAMERON: And I think that is  
9 an important point that you made, Bill, but I think  
10 that there still is an express need here for that type  
11 of information.

12 MR. LEWIS: I think what you are asking is  
13 a very common sense type of question, and really what  
14 we need to describe in this protocol, and that's why  
15 we published it for comment, was to see what is the  
16 best way to make people understand what we are trying  
17 to propose here.

18 And the doses around the cask that we  
19 propose, that is something that we can consider adding  
20 to give it perspective. And we will take that for  
21 action, and I think the DOE's final EIS again, that  
22 has some information in there about a maximum credible  
23 accident, and that is a similarly comparable type  
24 probability accident to this type of thing, and we can  
25 look at that in there.

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1 FACILITATOR CAMERON: Okay. Do you have  
2 -- okay. You're fine? Okay. I am going to go to Bob  
3 Halstead, because I think he has some information that  
4 I think may be pertinent to this, and then we will  
5 continue with Kalynda and this gentleman.

6 And Commissioner Trummel, did you have  
7 something also? And Jim Williams, and many others.

8 MR. HALSTEAD: Yes, my name is Bob  
9 Halstead, and since 1989, I have been the  
10 Transportation Advisor to the Nevada Agency for  
11 Nuclear Projects. I have been involved with nuclear  
12 issues for about 25 years, and I want to say a couple  
13 of things in response to Commissioner Neff's question.

14 But first of all, I would like to make  
15 what may sound to you as an unusual comment coming  
16 from a representative of the State, which as you know  
17 strongly opposes Yucca Mountain.

18 But I want to tell you that the State  
19 strongly endorses the study that the Nuclear  
20 Regulatory Commission is currently carrying out. Now,  
21 for more than 15 years, we have advocated full-scale  
22 testing, and it is very important that the NRC is  
23 acknowledging this issue.

24 The testing of the cask is possibly the  
25 single most important transportation safety issue.

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1 There are still some other issues, but if I had to  
2 pick one out of the top 10, I would tell you that this  
3 is the most important one.

4 So first of all, I want to make sure that  
5 everybody understands that this is a really important  
6 thing that they are doing. And secondly I really  
7 believe that they are honest in asking for people's  
8 input, and they want you to ask questions, and if you  
9 think your question is stupid, don't be that way. Ask  
10 your question.

11 All the questions are relevant and all the  
12 ideas are relevant. I know that often in dealing with  
13 government agencies that people don't believe that,  
14 and if I didn't believe that, I would tell you,  
15 because my job is to -- that when I think these guys  
16 are wrong, my job is to harshly criticize them.

17 But in this case, I really think that they  
18 want input, and that's why it is important that you  
19 send them something in writing, and not just what you  
20 say tonight with the transcript.

21 But you take these documents home and  
22 study them, and I am sure that the county has some  
23 very good experts in nuclear waste that can help  
24 develop a response to that.

25 And beyond that, I want to say that the

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1 State has a different proposal for testing. We would  
2 like to see all the cask designs, and not just two  
3 representative ones, tested.

4 That probably means a minimum of five, and  
5 a maximum of eight, and secondly, we want a different  
6 approach to the testing. We want to make sure that  
7 each of those designs meets the regulations, and then  
8 we want to do some additional testing to find out  
9 where the failure thresholds are.

10 Now, that is just one approach. You may  
11 have a better idea than we do, and I am happy to hear  
12 your ideas. And I finally want to say that I am a  
13 little disappointed not to have heard a more precise  
14 technical answer to the question that the chairman  
15 asked.

16 The reality is that spent nuclear fuel is  
17 very dangerous material, even after it has been cooled  
18 for 50 years after it comes out of the reactor, has a  
19 surface dose rate measured in thousands of rem per  
20 hour. Now, the exact health impact over time and  
21 distance, people will vary a little on their  
22 assumptions.

23 But the bottom line is that 25 year old  
24 spent fuel, that is, that it has been taken out of the  
25 reactor and cooled for about 25 years, that is what

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1 DOE's program is based on.

2 Some of the fuel, however, that gets  
3 shipped could be only cooled 10 years, and that makes  
4 a difference. If I were to give you an average, and  
5 I have worked these numbers out, and they are on the  
6 State's website, because when I gave testimony before  
7 the U.S. Senate in May, this was one of the issues  
8 that I wanted to say, that he spent fuel without any  
9 shielding -- to make a long story short, as some of  
10 you know I have a big problem with, that it only takes  
11 from 1 to 5 minutes to get a lethal dose of radiation  
12 if you are within a yard of an unshielded spent fuel  
13 assembly.

14 Now, keep in mind that we don't allow  
15 people to get that close to it, and you would probably  
16 be shot by the security guards before you could get  
17 close enough to it to get that dose.

18 We have the most rigorous regulations we  
19 have for any hazardous material precisely because this  
20 material is that dangerous. So on the one hand, I  
21 want to tell you that there is a big international and  
22 national set of regulations for the design of the  
23 cask, and keeping people away from them.

24 And limiting the amount of time that they  
25 stop in transit and so forth to protect you. But the

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1 bottom line is that it is very dangerous material, and  
2 I would hope that if this question comes up in the  
3 future that you guys would give a straightforward  
4 answer.

5 I mean, I am relying on your documents,  
6 and frankly documents from Sandia National Labs, which  
7 is one of the few places where they have got full-time  
8 people who spend all their time trying to figure out  
9 what would happen, for example, if you got too close  
10 to a spent fuel assembly.

11 I really appreciate the fact that these  
12 guys are holding this meeting here, and they had a  
13 meeting in Las Vegas, and you guys have turned out a  
14 larger number of public than turned out in Las Vegas,  
15 which I think is very much to the credit of Nye  
16 County. Thank you very much. That was very helpful.

17 And let me go to Commissioner Trummel, and  
18 then we will go to Kalynda, and then this gentleman,  
19 Jim Miller, this gentleman, and then we are going to  
20 work our way over to this side of the room. And then  
21 we will do it and come back over here. Commissioner  
22 Trummel.

23 MS. TRUMMEL: Thank you. My name is  
24 Candice Trummel, Nye County Commission. I have a few  
25 comments, and some of them are based on things that I

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1 observed at the meeting yesterday, and some are based  
2 on things here.

3 First, there was a famous political  
4 philosopher who in his study of communication said  
5 that there is a difference between strategic action  
6 and true communication.

7 And I know that some people's motivation  
8 is to see Yucca Mountain open, and some people's  
9 motivation is to not see it open. And therefore they  
10 direct all of their communication regarding the  
11 transportation and these tests towards that end.

12 And I would just like to say that I hope  
13 that we can engage in true communication, because the  
14 issue is not whether it is a good idea to ship spent  
15 fuel, and the issue is not how to stall to prevent  
16 shipments.

17 The issue is how we can try to make it as  
18 safe as possible, and so I would like to open by  
19 saying that I hope that we are engaging in true  
20 communication to that end, and not just stall tactics  
21 or promotion tactics either.

22 So having said that, at yesterday's  
23 meeting, Mr. Halstead mentioned something regarding  
24 managing risks, and I think that is exactly what this  
25 meeting is about; trying to establish the protocols

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1 that will help us most effectively manage our risks.

2 We need very rigorous tests in my amateur  
3 opinion. The fire test for 30 minutes, I would like  
4 to see that definitely increased. However, as I  
5 stated yesterday, I don't know if testing to failure  
6 is necessary, because I don't know how long it would  
7 take to fail.

8 If it takes 30 years to fail, then I don't  
9 think we need to test it for 30 years, but I do  
10 believe that we need to test it for quite an extensive  
11 period of time based upon what we think is even  
12 slightly probable of happening regarding how long it  
13 would take for us to be able to get to the fire and  
14 put it out.

15 And the same goes with the collision test  
16 and the impact test, and possibly incorporating a  
17 puncture test, and all the other suggestions that you  
18 have received from people who are much more well  
19 versed on this subject than I.

20 I am glad to see that we are doing full-  
21 scale tests in order to validate or invalidate the  
22 accuracy of the predictive analysis that has been  
23 conducted by Sandia Labs.

24 However, we need to remember that we will  
25 never be able to guarantee an elimination of risk.

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1 People are at risk right now if we don't transport it.  
2 There is already this waste and so people are at risk  
3 either way you go.

4 Now the question is how do we manage those  
5 risks. Also, I would like to say that I agree with  
6 what Kalynda had stated yesterday that at least some,  
7 if not all, of these extra regulatory tests should  
8 become regulations in my opinion.

9 And public confidence is one of the  
10 objectives which we discussed in more depth yesterday.

11 Then having a star performer of the casks  
12 tested thoroughly, but not making that the standard,  
13 is rather disingenuous to the public. I think that if  
14 these are the tests that we are going to show the  
15 public and say, look, this is completely safe, then we  
16 need to make those tests our regulations, and I would  
17 like to see that looked into.

18 And finally I would like to know what the  
19 acceptable variance between what the predictive  
20 analysis shows and what the results of the actual  
21 tests are, and what is the actual variance there,  
22 because I believe that is tied directly into whether  
23 or not we need to test every type of cask that will be  
24 used.

25 If your predictive analysis is very

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1 accurate, then I would say that your computer modules  
2 are good, and we probably do not need to test every  
3 cask.

4 However, if there is a significant  
5 variance, which is something that would be debated as  
6 to what is significant, then we need to look at  
7 possibly testing all the casks. And thank you for  
8 coming to Nye County.

9 FACILITATOR CAMERON: And I guess one  
10 other point that follows from that which we heard  
11 yesterday is that the NRC should clearly explain why  
12 the particular tests of a specific cask is going to  
13 cover other types of casks also. All right. Let's go  
14 to Kalynda.

15 MS. TILGES: Kalynda Tilges, Executive  
16 Director, Shundahai Network. First of all, before I  
17 go into my questions and comments, I would like to say  
18 that Shundahai has put in suggestions, and we have  
19 studied this issue very extensively, and on the table,  
20 if you don't have it already, we put out two talking  
21 points that gives our statements and our answers to  
22 the specific questions that they ask about this, as  
23 well as how we feel this program is going, and how  
24 well the NRC has done it.

25 Also, if the Waste Isolation Pilot Plan to

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1 New Mexico takes what they call transguranic  
2 (phonetic) waste, which is plutonium laced waste,  
3 people in New Mexico have been living with high level  
4 of sorts nuclear waste shipments for a few years now.

5 They wrote us a letter, and it is called  
6 the WIPP Experience, to explain to people here in  
7 Nevada what it is like living with very high  
8 radioactive shipments every day, and how the NRC and  
9 the DOE will work out degrading whatever standards  
10 were actually put in place.

11 So I suggest that you take a look at these  
12 and read them, and of course please form your own  
13 opinion. Take all the information into consideration.  
14 Now, going to my questions and my comments, I would  
15 have to say that I have to follow up on Commissioner  
16 Neff's question.

17 I am shall we say expectedly disappointed  
18 in your answer. That same question was asked -- the  
19 room that we were in yesterday? The last time I was  
20 in that room for an NRC meeting, Commissioner Neff's  
21 question was brought up like that.

22 And we went round and round talking about  
23 dose calculations, and probability, and risk  
24 management, and until the entire audience was on their  
25 feet screaming at the presenters to just give a damn

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1 answer. And I see the same thing tonight and I am  
2 really disappointed, but again I say it is as an  
3 expected disappointment.

4 If you have figured out what it takes to  
5 shield a cask to limit the exposure to 10 millirems,  
6 then you should have the calculations of what it is  
7 inside that you are limiting.

8 I don't see any reason why you should be  
9 fudging on this. I think it is ludicrous and it  
10 destroys my trust even more. And as I told you last  
11 night, Andy, after the meeting, I really want to trust  
12 you. But as it goes on, you don't give me any  
13 opportunity to do that.

14 So, anyway, on to my questions. Rob,  
15 about your presentation, you mentioned the new  
16 safeguards. You also talked about how you are not  
17 planning on doing terrorist scenarios with this. It  
18 is my understanding at this point that you have ruled  
19 out the need for terrorist scenarios in any of your  
20 accident tests. Is that correct? Is terrorism a  
21 scenario that is not required for licensing of these  
22 casks?

23 MR. LEWIS: No, I think what I was trying  
24 to say is that terrorism is not part of the package  
25 performance study.

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1 MS. TILGES: Is terrorism part of the  
2 licensing requirements right now?

3 MR. LEWIS: I am not sure what -- is  
4 terrorism part of our licensing requirements?

5 MS. TILGES: A terrorism scenario. In  
6 order for a cask to be licensed does it have to pass  
7 any type of terrorist scenario in order for the cask  
8 to be licensed for use?

9 MR. LEWIS: The tests that the casks have  
10 to pass include a drop test, an impact test, a fire  
11 test, and an emersion test. After they pass those  
12 tests, they are evaluated for their performance  
13 against transportation accidents and sabotage events.

14 MS. TILGES: But you do not specifically  
15 require a terrorism scenario -- say like the World  
16 Trade Center, or what the private field storage  
17 license was just denied on, like the very real  
18 possibility of an F-16 crashing into a cask. Those  
19 kinds of scenarios are not required for licensing?  
20 Can I get a yes or a no?

21 MR. LEWIS: Those scenarios are not part  
22 of licensing a cask, but the casks that are licensed  
23 are evaluated for those scenarios.

24 FACILITATOR CAMERON: I think it is  
25 important to be clear in answering Kalynda's question

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1 that even though it might not be part of certification  
2 that it doesn't mean that it is not accounted for in  
3 the regulations, okay?

4 And I think it is a great question, and we  
5 have to be very clear on that so that people know  
6 about that, and I am going to give this back to you,  
7 Kalynda, and I think that Bill wants to try to add  
8 something, okay?

9 MR. BRACH: Let me if I can. The  
10 certification of a cask is of the individual cask.  
11 The NRC has regulations that require -- and I think  
12 that Rob may reference, and also Bob Halstead made  
13 reference, that in addition to the cask that there are  
14 other measures that are put into place to provide the  
15 safe transport of that material.

16 And that includes aspects such as the  
17 presence of armed guards, selections of routes,  
18 coordination with the State and local officials, local  
19 law enforcement authorities along those routes, and  
20 that they are aware of the shipment and of the time  
21 frames for those shipments.

22 And response capabilities are reviewed and  
23 evaluated, and communication networks are established  
24 to monitor and keep track of the shipment.

25 I can't go into the details, but these are

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1 all measures that are added to assure the safety and  
2 security of the transport as that shipment is being  
3 made.

4 So that the individual certification of  
5 the cask -- and Rob mentioned the different accident  
6 tests that are considered, and those are from the  
7 safety standpoint that there are additional security  
8 measures that are brought into place when the shipment  
9 occurs that are in addition to if you will the  
10 robustness of a cask.

11 But the capability to provide response and  
12 reaction to activities, or events, or sabotage events  
13 if they were to occur that would have response  
14 capability protective measures in place.

15 FACILITATOR CAMERON: Thank you, Bill. Go  
16 on with your questions.

17 MS. TILGES: Well, I am really glad you  
18 replaced shock absorber for impact limiters. It is a  
19 start, but clearly you all have a long way to go.  
20 Andy, on your presentation, you said that testing for  
21 casks for Yucca Mountain.

22 Now, first of all, I think that is very  
23 premature, unless you know something that we don't.

24 DR. MURPHY: That was definitely a mis-  
25 speak.

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1 MS. TILGES: Because last night you said  
2 that this was for any cask, any transportation, and it  
3 was not specific to Yucca Mountain. So please bear in  
4 mind that it disturbs me to have it just kind of roll  
5 off your tongue that "for Yucca Mountain."

6 This is supposed to be for any  
7 transportation, whether or not Yucca Mountain happens,  
8 and I don't really think it is right for you to give  
9 the impression that, yes, it is going to happen.

10 We are already being forced to try to  
11 believe that Yucca Mountain is a done deal when it by  
12 no means, way, shape, or form, is a done deal. So  
13 please be careful with that in the future.

14 DR. MURPHY: Right.

15 MS. TILGES: And I was wondering how when  
16 you are talking about a surrogate fuel assembly, how  
17 will you replicate the heat that comes off the fuel  
18 rods inside a real cask?

19 DR. MURPHY: I will ask Ken to comment on  
20 that part of it. I will say that is a specific  
21 technical detail that right now is beyond my  
22 knowledge.

23 MR. SORENSON: Right now, we have not  
24 considered the thermal tests with an internal heat  
25 source. The goals of the test are to, one, validate

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1 the codes so that we can predict the temperatures. If  
2 we can do that in this pool fire scenario without the  
3 internal heat source, it is really a relatively easy  
4 manner to include analytically the heat source inside.

5 And quite honestly, Bob Halstead has  
6 alluded to some of the difficulties in putting in an  
7 internal heat source during these tests, and that is  
8 a very difficult test problem that we have, but we are  
9 open for suggestions on how we might be able to  
10 include a new internal heat source for these tests.

11 FACILITATOR CAMERON: Do you have a quick  
12 follow-up on that?

13 MS. TILGES: Yes, actually I have a  
14 follow-up to a question that I asked before about the  
15 terrorism thing. It just struck me again. That in  
16 June of 1999 the State of Nevada put forth a formal  
17 request to the NRC to look at this terrorism safety  
18 rule.

19 The State of Nevada has heard nothing back  
20 and I am wondering if there was a time line for that,  
21 or if you still have the letter or the request, or  
22 what is going on?

23 FACILITATOR CAMERON: Let me just ask  
24 before we answer, let me just ask Bob Halstead to add  
25 to that anything that he wants to. Go ahead, Bob.

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1           MR. HALSTEAD:   Let me make a general  
2       comment on the terrorism/sabotage issue. As some of  
3       you know the State has produced a number of reports on  
4       this topic. I am sorry that I don't have any copies  
5       with me tonight, but I will be happy to take addresses  
6       for people who want to have them sent, and the stuff  
7       is on our internet website.

8           I know that for some people that means it  
9       is available, and for other people, they would prefer  
10      to have it sent by written comment. In June of 1999,  
11      the State, because of our studies, filed a petition  
12      for rule making.

13          That is the formal way that you ask the  
14      NRC to change their regulations or in this case both  
15      to change their regulations and initiate a study. And  
16      we asked for two things.

17          First, we said we know enough about the  
18      threat of terrorism to ask you to immediately change  
19      your regulations right now to basically beef up the  
20      counter-terrorism measures.

21          And one of the reasons that we did that is  
22      because in fact there was an apparent attempted  
23      sabotage incident in October of 1986 on a rail  
24      shipment of spent fuel from the Monticello reactor to  
25      the Mars, Illinois, station.

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1 I know because I was in the Governor's  
2 Office then working for the State of Wisconsin, and I  
3 made the call to Jan Strasma (phonetic) at the NRC's  
4 regional office in Chicago to see how they were going  
5 to handle that.

6 Now, the NRC has a document called the  
7 safeguards -- you have got to help me out here, Rob --  
8 the SFEL. There is a document where the NRC reports  
9 these incidents, and for some reason they decided not  
10 to list it in there.

11 But the point is that we looked at all of  
12 these issues, and we said that this is a realistic  
13 threat. We did not hear anything back from them. In  
14 the summer of 2001, I contacted one of my sources at  
15 the NRC and said, gee, I have to report to the State  
16 Commission and the Attorney General. Could you tell  
17 me what is happening.

18 They said we are just about to give you a  
19 response. I can't tell you any details. And then of  
20 course in September of 2001, 9/11 occurred. We have  
21 been trying to be respectful of the NRC's  
22 responsibilities, and frankly we have not made a big  
23 deal.

24 Very often we occasionally ask them when  
25 are they going to get around to answering that

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1 petition.

2 Let me say, and Bill can't talk about it, and I can't  
3 talk about it, and those interim orders that Rob  
4 talked about, I can just say in some way, shape, or  
5 fashion, that is the clearest answer that I can give  
6 you.

7 Some of the immediate relief actions that  
8 we requested, immediate changes to regulations, the  
9 NRC has not acted to make it harder for people to mess  
10 with these shipments.

11 On the other hand, we still think that  
12 they have to deal with the reassessment of risk and we  
13 said to them that we are not sure that you need to do  
14 a physical test on a cask. Maybe you do and maybe you  
15 don't.

16 But that is one of the issues that you  
17 have to look at. We have decided right now for the  
18 State that we are going to treat this separately. We  
19 already have this document and asking them to consider  
20 whether they have to do sabotage testing.

21 And I am not trying to let them off the  
22 hook, but that is not my job. But I am saying that  
23 they have said that they are now after 911 dealing  
24 with that separately.

25 It is certainly appropriate for other

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1 people to ask this. I know that the Congressional  
2 delegation has frankly said to me that they think that  
3 we need to rethink our position, and maybe we will by  
4 May 30th.

5 Right now we are putting in our separate  
6 comments on the accident issue for May 30th, and I  
7 don't want you to think that the State doesn't think  
8 that terrorism sabotage isn't important.

9 But we have been trying to understand --  
10 and this is a national emergency over this issue. The  
11 NRC has had their hands full protecting the nuclear  
12 power plants, and so far I believe that they have made  
13 good progress in that area.

14 The issue of protecting the spent fuel at  
15 the plants is something that we think needs a little  
16 more work, and we are going to be among the groups  
17 arguing that they have to beef up the security at the  
18 plants.

19 The main thing that I want to say is this.  
20 These are people of integrity, and I may differ with  
21 them on some of the technical things, but I don't  
22 think you should assume that they are trying to evade  
23 questions about this. It is very hard to give  
24 answers.

25 Anybody who has a security clearance and

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1 knows what is happening can't tell you everything that  
2 they would like to tell you. And that is just a fact  
3 that we all have to live with. Thank you very much.

4 FACILITATOR CAMERON: Thank you, Bob.  
5 That was very helpful, and Bill, do you want to say  
6 anything about the petition, and then we are going to  
7 go to this gentleman and start working our way over  
8 there.

9 MR. BRACH: Let me say one thing. Bob's  
10 summary of the events from June of '99 when the  
11 petition was submitted, and leading up to our review,  
12 and consideration of the petition, and the events of  
13 September 11th, a number of us were shortly after that  
14 involved in as Rob was summarizing a significant  
15 amount of effort on the response activities, and  
16 working 24 hour shifts for many months following that.

17 The staff's action on the petition as Bob  
18 has characterized is still pending before the  
19 Commission. We did send a letter to the State of  
20 Nevada in November or December of last year on its  
21 current status, and as Bob has also mentioned, and Rob  
22 Lewis made reference to the interim compensatory  
23 measures that were issued for not only spent fuel, but  
24 for other regulatory activities that were involved,  
25 whether it be nuclear power plants, or spent fuel

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1 storage.

2 And there is a similarity in some of the  
3 issues and activities that the State of Nevada had  
4 requested and petitioned for staff consideration,  
5 agency consideration, and our consideration, and the  
6 interim compensatory measures that were taken.

7 I cannot go into any of the details here,  
8 but your question, the petition is still before the  
9 Commission. It is not lost, and in our process we  
10 have not yet come to completion with a final  
11 recommendation as to the Agency's actions in response  
12 to the rule making request.

13 MS. TILGES: Thank you. That was a good  
14 answer.

15 FACILITATOR CAMERON: Thank you. Yes,  
16 sir. Could you tell us your name?

17 MR. PATZER: My name is Robert Patzer, and  
18 I am a resident here in Pahrump. This is my first  
19 exposure to these types of meetings, and the first  
20 speaker got me all excited because the key words were  
21 full scale testing. And I am a Ph.D. scientist and to  
22 me this means different than what you are really  
23 talking about, is full-scale testing for predictive  
24 analysis.

25 And I think that should be clear. It has

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1 been as the meeting progressed, but it wasn't for the  
2 first 20 minutes. Another thing in your analysis of  
3 possible accidents, I am sure that some of you have  
4 had a Hazwaper (phonetic) class. You know, the 40  
5 hour class for first responders.

6 If you haven't, you have somebody in your  
7 organization that has all the movies, and so forth. I  
8 suggest that you consider looking at the propane  
9 explosions. We have trailer tankers all over the  
10 rural southwest in Nevada. We don't have pipelines

11 And if you see in those tests that one of  
12 these things that happened in Kingman, the locomotive  
13 was about a quarter-of-a-mile from the propane tank  
14 that went, and a two-ton hunk of it was found over a  
15 mile away from that further on.

16 Of course, the whole train was just  
17 disintegrated. Well, this is a very likely thing.  
18 You can't go on the highway and not have propane tanks  
19 around.

20 Now, this is a slow explosion, and it is  
21 violent, but it is slow, sort of like the ammoniac  
22 nitrate fertilizer or diesel, where it kind of goes  
23 oommmm (phonetic).

24 Well, terrorists wouldn't use a slow  
25 explosion. They would use the high tech explosions,

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1       which have a shock wave that could very well  
2       disintegrate a cask. And we talk about uranium rounds  
3       that would puncture it.

4               These newer explosives, a little satchel  
5       of it just destroys steel. And I think that this  
6       should be considered in your computer analysis. Maybe  
7       you can do some -- you wouldn't want to destroy a cask  
8       probably on purpose, but maybe a damaged cask, and see  
9       what happens to it.

10              FACILITATOR CAMERON: Thank you for that  
11       suggestion, and I think that if we do get suggestions  
12       that are not right on to what this study is looking  
13       at, but are relevant to the testing for terrorism  
14       sabotage, that we should make this transcript  
15       available on those types of issues to the people at  
16       the NRC who are looking at the security issues.

17              The NRC website is right there, but we do  
18       have a slide. Rob, do we have a handout that already  
19       has that written on it back there?

20              MR. LEWIS: Yes.

21              FACILITATOR CAMERON: So if you don't want  
22       to write all of that down, there is a piece of paper  
23       that has it on it. The Nevada website that was talked  
24       about and that has material on it, the address to it  
25       is right up there, and we are going to go to Jim

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1 Williams, and then over to this gentleman. Yes, sir.

2 MR. WILLIAMS: I am Jim Williams, and I  
3 work with the Nye County Nuclear Waste Program, and I  
4 had a few questions that don't necessarily need to be  
5 answered now, but that I think would be helpful to us  
6 as we prepare comments on the report.

7 One is the pros and cons of doing the rail  
8 cask impact test with and without the impact limiters  
9 or shock absorbers. I imagine doing it with that you  
10 don't get any independent data back on the performance  
11 of the cask on its own.

12 And doing it without the shock absorbers  
13 is a tougher test, but arguably less realistic. So I  
14 would be interested in how you compare that, which I  
15 don't think is done in the report.

16 Another is that Commissioner Trummel  
17 mentioned the notion of doing an impact test and doing  
18 a puncture test, and then doing a fire test. And I am  
19 wondering whether there is a technical reason other  
20 than a marginal increase in the cost of all of this  
21 for excluding the puncture in that.

22 In a way that sort of follows the scenario  
23 of the Baltimore Tunnel fire, in which the thing got  
24 punctured and then the fire came. Another has to do  
25 with the last step in the regulatory test regime,

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1       which is emerging in .9 meters of water.

2                   And I am uncertain in my own mind whether  
3       that means that the casks that you are certifying are  
4       not certified for barge shipments that go over much  
5       deeper water. And if the answer to that is that they  
6       are not certified, then is that not an important thing  
7       for the whole, large scale prospective shipment  
8       program.

9                   Another question, and Bill, I think you  
10      asked this about test to failure, and I have a  
11      preliminary question on that, is that if we test to  
12      failure at the impact stage, then what do we have to  
13      work with at the puncture stage?

14                   And if we test to failure at the puncture  
15      stage, then what do we have left to work with at the  
16      fire stage. So I am a little uncertain about the  
17      mechanics of how you would do a test to failure  
18      program.

19                   And then I have a last question that  
20      probably doesn't relate to this program specifically,  
21      or this testing program specifically, but it has  
22      always seemed to me a very important thing to say if  
23      the nation decides to transfer its entire inventory of  
24      nuclear waste from 139 sites in 39 States to one place  
25      in this county, then there is a way to do that.

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1           And that involves the minimum additional  
2   transfer of risk to this community, and in that  
3   connection, it is always -- I mean, you are out there  
4   certifying one cask proposal, and another cask  
5   proposal, and another cask proposal, and you wind up  
6   with casks, rail and truck, that are different in  
7   their outside dimensions.

8           And the way that they are lifted, and the  
9   way that they are opened, and so forth. And as you  
10   build a fleet of certified casks, should you not  
11   encourage them to be standardized in their handling  
12   and lifting aspects that apply to destination of this  
13   national system?

14           FACILITATOR CAMERON: I think that those  
15   are comments for the staff to consider. There was one  
16   question though about the barge certification issue.  
17   Rob.

18           MR. LEWIS: Yes, the one question in there  
19   that I think we have a response for right now is the  
20   certification of the casks is done -- they can go on  
21   any mode. They can go on rail, highway, or on barge,  
22   if they are certified.

23           The particular emergent test that you  
24   mentioned, the 9 meter emersion, or the 3 meter  
25   emersion, is a test that applies at the end of the

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1 entire test sequence, and in an accident scenario that  
2 might mimic as a transportation accident; a bad  
3 collision and a fire, and the cask goes into a river  
4 or something like that.

5 There is a separate emersion test in the  
6 regulations for spent fuel casks, and that is deep  
7 emersion, a hundred meters, I believe. No, 200  
8 meters. Thanks, Bob. And that applies to a separate  
9 undamaged specimen, because in accident scenarios of  
10 that nature, they don't have to do with first a  
11 collision, and then going off a bridge, and into a  
12 river.

13 And the 200 meters has a basis in  
14 continental shelves if you will that barges might go  
15 over.

16 FACILITATOR CAMERON: Okay. Thank you.  
17 We are going to go to this gentleman here, and then to  
18 the sheriff's office.

19 MR. KING: My name is Bill King, a  
20 resident of Pahrump and Nye County. Thank you for  
21 coming to what will probably be the county site for  
22 this proposed repository if it is built, and since we  
23 would be the final destination, all the shipments  
24 would eventually come through Nye County.

25 And we would have the most exposure and

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1 the most concern, and that is probably why there is  
2 such a big turnout. I had two questions, and I think  
3 one of them was answered, but will your testing  
4 results give either a conclusion or comparison of what  
5 is the safest method of transportation, rail or truck?

6 FACILITATOR CAMERON: Andy.

7 DR. MURPHY: Good question. It is  
8 probably possible that once the codes and models have  
9 be validated that it will be possible for individuals  
10 at this stage to run the codes with different  
11 scenarios and to see what challenges arose from those  
12 different scenarios.

13 It is likely that the scenario that would  
14 provide the greatest challenge to a rail cask would be  
15 different than the one that would be used for the  
16 truck cask. And it is very likely that if you  
17 compared two rail casks that they would respond  
18 differently to different specific scenarios.

19 So that one might perform better in a  
20 particular collision and the other ones might perform  
21 better. It is a matter that once the casks are  
22 certified and we understand how they behave, that we  
23 could use our codes to understand how the individual  
24 casks would behave in potential scenarios that would  
25 come up.

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1 FACILITATOR CAMERON: Do you have a  
2 follow-up, Bill?

3 MR. KING: And since a rail cask by its  
4 size and familiar weight could haul a lot more fuel,  
5 and one -- and we are talking shipments. So one train  
6 could haul easily many of these larger casks, and so  
7 that we would drastically -- and we have looked at  
8 this with similar groups, but drastically reduce the  
9 number of shipments, and therefore the exposure, and  
10 was that considered in this comparison of what is the  
11 safest way.

12 First, we will come up with a cask, but  
13 then -- because the ultimate transportation concern  
14 all of us have is getting it from Point A to the  
15 eventual destination. What is going to be the safest  
16 way?

17 FACILITATOR CAMERON: Andy, do you have  
18 something to say on that?

19 DR. MURPHY: No, I think either Rob or  
20 Rick Boyle might.

21 MR. LEWIS: You hit the nail right on the  
22 head there. The benefit of rail transport, you can  
23 ship more casks in a single train and therefore there  
24 is less shipments, and you can have special trains  
25 that have the best rail cars and the best designed

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1 couplers so that the train has a much less probability  
2 of being in a derailment.

3 And in addition the incident free risk is  
4 much less because there is less total transports.  
5 There is definitely benefits to rail transportation.  
6 The NRC, however, is evaluating the casks on the basis  
7 that the casks are safe, regardless of the way that  
8 they are transported.

9 We find our level of safety, and then once  
10 you are below that, we approve it for use at that  
11 level of safety. And then people can optimize the way  
12 that they transport it below the level. So it becomes  
13 an argument on safe, versus safer. And it is not a  
14 bad place to be, I think.

15 FACILITATOR CAMERON: Okay. Yes, sir.

16 SHERIFF DEMEO: Hi, I am Sheriff Demeo of  
17 Nye County, and by the raise of hands, so many people  
18 here are concerned about terrorism attacks on these  
19 casks as they are moving through Nye County.

20 And the concern is that basically the NRC  
21 at times does do drills in nuclear power plants to  
22 test the security, and these drills are pre-planned in  
23 advance where they disarm the officers, and they give  
24 them guns that are basically paint ball guns, or some  
25 type of gun that is safe.

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1           And there has been security breaches even  
2           in those days that have been pre-planned, is that not  
3           correct? In fact, one occurred not too soon after  
4           9/11, when they tested a plant over in California.  
5           And that has been in the newspaper, and it has been on  
6           the internet. So, I think even going on to some of  
7           the sites in the NRC, those security breaches have  
8           been recognized and identified.

9           The concern that the people here have is  
10          that if you cannot secure a power plant at a fixed  
11          location, what assurances can you give to the people  
12          of Nye County and my office that those considerations  
13          are taken fully into effect? I may not be given a  
14          high security clearance, but I have dealt with  
15          terrorists and I have dealt with terrorist cells  
16          during my time of employment.

17          And we find out by 9/11 that the same  
18          terrorist cell that had their footprint in the World  
19          Trade Center bombing in 1993 was connected to the  
20          World Trade Center bombing and destruction in the year  
21          2001, on 9/11.

22          So from the show of hands here, there is  
23          a lot o concern, and in fact as I walk around the  
24          audience here I have been hearing a lot of concern  
25          about this. I did not come here to discuss the NRC or

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1 this platform here, but I just came to provide some  
2 type of police presence.

3 But I think that there is enough concern  
4 here that I think that people don't want to a vague  
5 answer. When it comes time that these casts are  
6 moving through Nye County, I want assurances to my  
7 office and I want assurances that I can give to the  
8 people of Nye County that they are going to be  
9 completely safe.

10 And that the NRC and whoever is providing  
11 security, along with the local law enforcement, which  
12 would be the Sheriff's Office and Highway Patrol, are  
13 capable of doing that, and we are given from you, from  
14 the NRC, assurances that those things have been taken  
15 into consideration.

16 Because I think that the answers here were  
17 very vague, and I think that is why a lot of people  
18 are very dissatisfied with that. I myself was not  
19 happy with hearing the vagueness of the answer.

20 A terrorist attack is as much of a  
21 consideration to the people here in Nye County as the  
22 cask tests that are being presented here, and I thank  
23 you for your time.

24 FACILITATOR CAMERON: Thank you, Sheriff.  
25 Thank you for being here personally, for the meeting.

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1 Bill, any comment?

2 MR. BRACH: I can only agree with what you  
3 said. While I don't live here in Nye County, we  
4 clearly share the concern that these shipments, if  
5 they were to occur to Yucca Mountain, that they would  
6 be safe here in Nye County, and they would be safe in  
7 all over localities, whether it be adjoining counties  
8 here in Nevada to Nye County, or in the gentleman's  
9 earlier comment about going from Point A and going to  
10 a point of destination.

11 And I thought that every hand would go up  
12 obviously with concerns about terrorism and sabotage.  
13 We have the same objective and the same concern. And  
14 we take our responsibility of assuring the safety and  
15 the security, whether it be in transportation or other  
16 activities. That is if you will our fundamental  
17 mission for our agency.

18 And in dealing with spent fuel  
19 transportation, it is the responsibility that we have,  
20 and we are doing our best to be sure that safety and  
21 security are maintained and assured.

22 SHERIFF DEMEO: I don't want to belabor  
23 the point, but I think that consideration has to be  
24 taken from your security plans that you have, and I  
25 think that the people want to make sure that is

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1 considered, that their safety is considered from all  
2 aspects, and not the fact that a cask drops off a rail  
3 truck at 75 miles an hour.

4 I think they want to make sure that  
5 everything -- that there is a very holistic approach  
6 to these cask transportations and movements.

7 MR. BRACH: That is a very excellent  
8 point, and while the focus of our being here tonight  
9 to meet with you and discuss with you the plans for  
10 these tests are from an accident and a safety  
11 standpoint, please don't take that that means that  
12 security and sabotage is not a concern and not an  
13 interest, and the points that you have made I agree  
14 with, and it is safety and security, and both have to  
15 be assured, and that's the responsibility that we  
16 have, yes. sir.

17 FACILITATOR CAMERON: All right. Grant.

18 MR. HUDLOW: I am Grant Hudlow, and I  
19 would to take another cut at what Commissioner Neff  
20 was trying to get at. Inside of the package each of  
21 these spent fuel rod assemblies contain in dust form  
22 the equivalent of the fallout of several Hiroshima  
23 bombs, each of them.

24 So if this thing gets hit, for example,  
25 with a rocket launcher, or gets split open with C-4,

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1 or even simpler things, and you name them, you are  
2 talking about hundreds of miles where people are going  
3 to die.

4 And the radiation from the dust goes into  
5 your lungs and inside your body, and it is not a  
6 matter of walking by it. You are stuck with it until  
7 your lungs expel it, which takes a while.

8 These figures are available from the  
9 nuclear industry, and they are available from  
10 transportation figures and they are available from the  
11 DOE. This is not a secret.

12 So the seriousness of the problem I think  
13 is underlined at this point. Now we know what the  
14 problem is, and then we go into some other technical  
15 things. The cask itself, Sandia said it is a 15 pound  
16 pressure seal.

17 Okay. Lead melts at 327 degrees C., and  
18 you are going to heat the whole thing up to 800 or  
19 900, or whatever, and the lead is molten, and what is  
20 the partial pressure of molten lead at that  
21 temperature? How soon is it before it pops that seal?

22 Sandia also said that at 90 miles an hour  
23 that seal was going to crack open. We are talking 75  
24 miles an hour here. Those are problems that are  
25 rather easily solved. Why would you have a 15 pound

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1 pressure seal on a cask containing something that  
2 dangerous?

3 The fresh fuel, spent fuel, comes out at  
4 360 degrees C., and that has a pressure of 2,200 to  
5 3,000 pounds pressure. Those pressures are easily  
6 handled in the chemical industry, and why can't the  
7 NRC demand that the DOE handle them?

8 And these are things that the general  
9 public has no knowledge of, but the scientists and the  
10 engineers at Sandia certainly need to take these into  
11 consideration.

12 There is one more thing. We have evidence  
13 of collusion between the NRC and the DOE. Judy  
14 Hollgren sent a letter to the DOE and the NRC pointing  
15 out that the NRC regulations say as these people  
16 pointed out require a safety plan.

17 The DOE in its paperwork to the NRC said  
18 they are not going to give a safety plan, and that  
19 they will only give a commitment to a safety plan.  
20 And the commitment is not legally enforceable. So  
21 that means that there is no safety plan.

22 There is three different kinds of safety  
23 plans. There is safety for workers, and there is  
24 safety for the public, and there is safety for the  
25 integrity of the whole system.

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1           This is clear evidence of collusion, and  
2           it needs to be straightened out.

3           FACILITATOR CAMERON: Thank you for your  
4           comments, Grant. Two things though that I think are  
5           important to clarify this, and I know that you weren't  
6           saying this, but you used a reference in terms of the  
7           material in spent fuel rods. You used a reference to  
8           bomb, and I think the NRC said to make everyone  
9           understand that one of the hazards at least from this  
10          spent fuel inside a canister is not that there would  
11          be a chain reaction and an atomic explosion.

12          And if someone could just verify that,  
13          because people shouldn't be thinking that there is  
14          going to be a mushroom cloud out there. Second of  
15          all, the term collusion is a pretty loaded, serious  
16          term, and I didn't hear anything that demonstrated any  
17          collusion between the DOE and the NRC, and I know that  
18          that is your opinion, but I just want people to  
19          realize that, okay? Anybody who hasn't spoken on  
20          this? Is there an answer on the collusion?

21          MR. HUDLOW: No, but he had several points  
22          that he brought up having to do with the chemistry and  
23          the metallurgy of it, and I don't hear any answers to  
24          that.

25          FACILITATOR CAMERON: I think that we have

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1       accepted those as comments to consider. Does anybody  
2       on the panel have anything to say about Grant's  
3       statements, in terms of pressure, et cetera, et  
4       cetera? Andy.

5               DR. MURPHY: Yes, I do have specifically  
6       a comment about your concerns about the fuel, and what  
7       happens to it in a collision in particular. One of  
8       the tasks associated with the package performance  
9       study is to take and come up with, and do some  
10      experiments to understand how fuel in an assembly will  
11      behave in an impact situation.

12             At this stage, there is very little or  
13      almost no data to tell us how the material that is in  
14      the fuel behaves in an accident, and turns into  
15      respirable sized particles.

16             We have plans for the package performance  
17      study to do, and experiments to get data on that  
18      material. At this stage I will say that our plate is  
19      full right now with the impact and the fire, and the  
20      protocols and understandings.

21             But there are folks back at headquarters  
22      in Washington that are developing a program plan we  
23      will call it again on the experiments to produce that  
24      information.

25             And that plan will be available at some

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1 time in the future. And it is part of the integral  
2 package performance study, and will be carried out as  
3 part of that study.

4 FACILITATOR CAMERON: Thank you again,  
5 Grant, for those comments.

6 MR. AMBRIZ: Dick Ambriz. Tie is relative  
7 to transportation. I assume that there is going to be  
8 some company that is going to be transporting all  
9 these containers, and if this is the case, wouldn't it  
10 be advisable for the government to set up a GPS system  
11 that tracks every one of these every inch of the way;  
12 from where their destination is to where they arrive  
13 at.

14 If one of them deviates from the planned  
15 transportation route, then law enforcement should be  
16 notified immediately. I think that this is a very  
17 good thing that you are going to have to look at,  
18 because these trucks are on the road in some pretty  
19 desolate areas.

20 FACILITATOR CAMERON: Thank you, Dick.  
21 Comments?

22 MR. LEWIS: I think that is a good  
23 observation, and I think the actual companies that  
24 would be shipping, that is actually a decision for the  
25 DOE to make, whether that would be private companies

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1 or the DOE themselves.

2 The presence of a GPS detector on the  
3 trucks or on the trains is something that I think they  
4 would look at both from a security standpoint, and  
5 from a merchandise standpoint. They want to track  
6 where the material is at any given time, and so I  
7 think that will definitely be something that will be  
8 strongly considered, and I would be surprised if it  
9 wasn't.

10 FACILITATOR CAMERON: All right. Did you  
11 have another comment, Mr. Green? And then we will go  
12 to Sally.

13 MR. GREEN: Yes, Bill Green. I would like  
14 to thank you for being here, but being a native  
15 Nevadian, and I am 46 going on 47 years old, and I  
16 remember watching the bomb blasts out there and stuff,  
17 and when you were skirting Henry Neff's question over  
18 there, it just made me think that -- well, we are  
19 Nevadians, and we don't trust the government much,  
20 because we have had problems with it, and we have had  
21 people die from working on the test site because they  
22 said it was safe, and it wasn't.

23 And in the Vietnam War, they were dying  
24 from stuff that they were told they didn't have, and  
25 now we found out that they have. I am just hoping,

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1 and I am praying, because I am becoming very saddened  
2 that we are not getting the truth as a public anymore.

3 That when you do this stuff that it is  
4 going to be for the best public safety there is, and  
5 that all intentions are for the best purpose, and not  
6 for some, and not for all. I have just become very  
7 disenchanted. So, gentlemen, and lady, when you guys  
8 speak, we are Nevadians, and not Nevadans. Thank you.

9 FACILITATOR CAMERON: Thank you, Mr.  
10 Green. Sally.

11 MS. DEVLIN: And again thank you for  
12 coming. I have two questions. In the book which I  
13 was privileged to get before the meeting, you talk  
14 about hitting tresses on bridges, and this might  
15 present a problem, and I am sure that it will, because  
16 I learned how to build the railroads, and how to build  
17 the roads, both concrete and asphalt, and now I have  
18 to learn how to build barges, and you heard Jim talk  
19 about the barges and how this would affect  
20 transportation on the barges.

21 I also want to add durgibles. Remember  
22 that. But what my concern is that from the '92 to '94  
23 when Bill and I met, was on the INEEL route  
24 transportation report one canisters, and they tested  
25 it at 24 miles an hour then, and so on and so forth.

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1           One of the tests that they did that you  
2           are not mentioning, and which should pertain to  
3           Nevada, and that is the wind tests. They tested the  
4           canisters with 125 mile an hour winds, which we get  
5           here every day.

6           And you have been out to the test site,  
7           and which they are getting in Iraq now. These are  
8           devastating winds, and I think it is very important  
9           that this be considered.

10          The other thing that w should consider in  
11          lieu of the tresses is the tunnels. Now we had a 3  
12          day tunnel fire in Baltimore and you are not testing  
13          in tunnels, and these things are going to go by both  
14          train, truck, and maybe by barges through a tunnel.  
15          I am not sure what will happen in the next 30 years  
16          before any of this stuff gets done, if it ever gets  
17          done, because we know the costs of it, even though Amy  
18          won't say it.

19          I estimated the canisters at over \$50  
20          billion, and I am just beginning to estimate, and I  
21          think I am very wrong, but I do want you to look into  
22          the tunnels and the wind, and the barges, and I think  
23          it is very important. And who is going to teach me to  
24          build the barge and the cost.

25          I can tell you the cost of the railroad

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1 through here, one of the three transport protocols,  
2 but who is going to teach me to build the barge? And  
3 I know they had one with 3.2 million pounds in Hanford  
4 from a reactor down there.

5 And we are talking king-sized stuff, and  
6 of course this also is the only way that many of the  
7 reactors can get their nuclear fuel out is by barge,  
8 particularly in Illinois, where it has the potential  
9 of killing 10 million people and polluting the water.  
10 So I hope that all these things are all considered.

11 And we realize that you are just modeling,  
12 but I hope that one of these days you do grow up and  
13 you do the real thing. Thank you.

14 FACILITATOR CAMERON: And I guess we are  
15 trying to grow up with this study, right, and do full-  
16 scale testing. Thank you for those suggestions,  
17 Sally. Is there anybody over here that we didn't hear  
18 from? Yes, sir.

19 MR. MCGUINNESS: My name is James  
20 McGuinness, co-founder of Shundahai, and I live in Las  
21 Vegas. And starting off, I keep hearing that you  
22 really want to hear from people, and I keep noticing  
23 that you really don't want to hear from people. You  
24 set these things up in the day time when people are  
25 working or going to school generally.

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1           You spent 3 hours here and you take up  
2 half of it by talking to us, which is great, and we  
3 want to hear this, but when individuals want to speak,  
4 I see them getting rushed unless they have a title, or  
5 a job qualification, or they work with the State or  
6 the government.

7           And I think if you really want to hear  
8 from the people, set these things for 2, to 3, to 4  
9 days in a row, and put them on for hours, and put them  
10 on at night so that people really do get a chance to  
11 listen and speak to you, because giving 3 hours,  
12 people work swing shifts here and this is a 24 hour  
13 town. It is a 24 hour State.

14           You really are not giving them much  
15 opportunity and I don't see that since you came here  
16 to Las Vegas that there is a whole lot of counties and  
17 communities that are going to get affected by the  
18 transportation, why are they not open to these things?  
19 How come you are not going there?

20           I want to see how much time you spent  
21 working on these issues right here, and how many  
22 person hours were spent on this, and now many person  
23 hours are actually spent listening to individuals that  
24 are going to be affected by this issue.

25           And I would like to also figure out that

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1 I heard that the Department of Transportation has the  
2 primary responsibility for transport. Is there a  
3 great accident fund, and how much is in that accident  
4 fund, and who is primarily responsible if there is an  
5 accident and money has to be paid out.

6 Can you tell me exactly how much is going  
7 to come out of the Department of Transportation, and  
8 how much is in the Department of Energy, and how much  
9 from the NRC. And if the money happens to get paid  
10 out because of an accident will it be replenished, or  
11 when it ends you said, oh, that's too bad, and we are  
12 going to continue to ship this waste and forget about  
13 the rest of you.

14 Since I keep hearing that safety is the  
15 big factor here, what is the allowable deaths per  
16 shipment or per all the shipments? I never see that  
17 put out, and I know it is there and I have heard it  
18 from the Department of Energy. How come that is not  
19 prominent?

20 Many people know that you do have things  
21 like allowable deaths for these issues, and that you  
22 always seem to hide and try not to get. And it  
23 greatly disturbs me when I hear that you are not aware  
24 of any of these accidents, and any of these  
25 possibilities, because that is your job.

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1           You are telling me that you are not aware,  
2           and it's not that you are telling me that it didn't  
3           really happen. Does that mean that you are looking  
4           for what we used to call plausible deniability?

5           That therefore you can say, hey, I don't  
6           know and so therefore it didn't happen, or I am just  
7           a low person on the totem pole and I am not being  
8           told. If you are not aware, bring someone higher up  
9           and bring them to talk to us, and let someone who is  
10          aware of these issues speak to us.

11          And then you have all these experts, and  
12          I am just a simple guy. I am lucky I got out of high  
13          school, all right? You are out here and you are  
14          experts, but yet whenever you are being put to a  
15          specific question that you are not comfortable with,  
16          you dance.

17          And that is terrific if you are in a  
18          ballroom, but it is not a good time right now. We  
19          want to hear specific answers. And 1988 was my first  
20          hearing that I went through, and people were talking  
21          about this even before there was a really big  
22          transportation issue.

23          It is now 15 years down the road, and you  
24          are still saying the same thing. We really don't  
25          know. Well, if you don't know, let's shut down the

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1 facilities until we get the answers, because the  
2 facilities are what are responsible for this waste,  
3 and what is going on is that you are basically working  
4 for the nuclear industry, and you are working for the  
5 government, which really wants another 50 reactors to  
6 get put on line as soon as possible, which means more  
7 waste will be coming this way if it does come.

8 And it is always when it comes, when it  
9 comes, how is it going to be transported, and where it  
10 is going to be transported. It is never if. If you  
11 really cared about what the people said -- and we keep  
12 hearing zero. People in Nevada said zero shipments,  
13 no Yucca Mountain, and you don't even have that up  
14 there.

15 So therefore you really don't care what  
16 the people are saying, and all you want to do is put  
17 this little dog and pony show up there, and I hear  
18 about this true communication. There is no true  
19 communication, because you are not listening. You  
20 still do not after 15 years that I have been going to  
21 these things, have at least the possibility that it  
22 will not be brought here, and that there will be no  
23 shipments.

24 FACILITATOR CAMERON: Okay. There is a  
25 couple of points there to address. One is to explain

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1 what the coverage is for liability for accidents, and  
2 how does that happen, and there is something called  
3 the Price-Anderson Act, and I don't know if we can  
4 give Mr. McGuinness the details on that now.

5 And I think that Mr. McGuinness, in  
6 fairness to the staff, there were some questions that  
7 they did not have the specific information on. But  
8 the thing is that they know that the certification  
9 regulatory framework for these casks has worked, and  
10 I don't think that anybody up here said that they  
11 didn't know how many accidents there were.

12 I think that Mr. Lewis specifically cited  
13 some statistics on that. But given that, obviously we  
14 want to hear from you and we want to listen, and if  
15 there is something that we need to evaluate, we will  
16 do that. Can anybody talk to the liability issue a  
17 little bit? Rob Lewis.

18 MR. LEWIS: Concerning the liability,  
19 there is a requirement to have insurance for the  
20 material that is shipped, and I think the Department  
21 of Transportation requires the carrier, the  
22 transporter, to have disaster insurance in the amount  
23 of \$50 million for each transportation.

24 And there is also a law called the Price-  
25 Anderson Act, which is a national law that covers

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1 damages, liability from nuclear type accidents. It is  
2 currently active and applies to cleanup beyond \$50  
3 million, and the Congress has been considering  
4 extending that Act.

5 The other thing is that when I use words  
6 like I don't know of any releases or injuries from  
7 radioactive material, nobody else knows of any that I  
8 know of, and the reason that I used those words is  
9 because I can't tell you what I don't know.

10 So it is not that I am trying to hide  
11 something or that I am implying that anybody else does  
12 know it. It is just that no one knows it, and none  
13 have ever been reported.

14 FACILITATOR CAMERON: Bill, did you have  
15 something?

16 MR. BRACH: I just wanted to try to  
17 address two of the other comments that you made. One  
18 is the question about the allowable number of deaths  
19 in transportation. I want to go back to what I tried  
20 to describe before in our certification process.

21 We don't certify a package until at least  
22 through our review, and within our office we have a  
23 number of folks who have skills in nuclear engineering  
24 and structural and thermal, and materials experts.

25 So we go through the design of the

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1 transportation package, and we do our review and our  
2 separate modeling analysis of the different tests and  
3 conditions to assure ourselves that the package design  
4 successfully meets all of our test criteria .

5 And Rob mentioned this before. This is  
6 the drop, the puncture, the fire, and the emergent  
7 test, and to successfully pass those tests, the  
8 package has to maintain its containment of all of the  
9 contained material.

10 By maintaining inside that package all the  
11 material, we shouldn't be looking at any adverse or  
12 harmful effects on people where death would be as a  
13 result of the transport of the nuclear material.

14 Rob mentioned, and the information that we  
15 have on the 1,300 shipments that have been carried out  
16 in the last 20 years in the shipment of spent fuel,  
17 was that there were four accidents. Rob described one  
18 of those accidents did involve the death of an  
19 individual.

20 It was a death due to the impact of the  
21 truck and the cab and not as a result of the cargo, of  
22 the radioactive material or the cargo that the  
23 individual was transporting.

24 The question of allowable deaths, our  
25 certification activities are based on those packages

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1 containing the material and keeping the material  
2 inside the transportation package, and so it is not  
3 based upon a statistic that these packages will  
4 rupture X-percent of the time.

5 The packages are certified to maintain the  
6 material inside the containment package.

7 MR. MCGUINNESS: Well, you keep putting up  
8 the best case scenario. If everything was the best  
9 case scenario, there would be no problem. But you  
10 also say right here the real test, and you said  
11 control is important. Yes, you can control it in your  
12 laboratory, but you can't control what is going on on  
13 the highways.

14 And therefore if control is so important,  
15 you are putting everything in a best case scenario.  
16 We want the worse case scenario, because that is what  
17 worries me.

18 FACILITATOR CAMERON: Okay. Worse case.  
19 Comment. Look at the worse case scenario.

20 MR. HALSTEAD: Could you write that up  
21 there?

22 FACILITATOR CAMERON: I am going to.

23 MR. BRACH: I would also like to comment  
24 to a question that you raised, and we heard this  
25 yesterday as well on the scheduling of the meetings,

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1 and the sequencing of the meetings. At yesterday's  
2 meeting, we had a meeting in Las Vegas, Nevada, and it  
3 started around 10:00 and it ended at about quarter-of-  
4 eight yesterday evening.

5 We scheduled it at 10:00 because we had a  
6 roundtable discussion and a number of people at the  
7 roundtable were invited people and they represented  
8 various government organizations, local organizations,  
9 local government, as well as other organizations, and  
10 many of the people at the roundtable, they were there  
11 if you will in their work capacity I will call it.

12 And so the predominant part of the meeting  
13 was during the daytime hours, which also matched with  
14 their work hours if you will. We specifically  
15 scheduled the meeting to run into the late afternoon  
16 and early evening hours to allow time for additional  
17 folks, members of the public or other interested  
18 individuals, to attend the meeting if you will who may  
19 have a day time job, to come in the late afternoon or  
20 early evening ot have an opportunity to participate,  
21 as well as ask questions.

22 And a number of people were present and  
23 did ask questions. Bob Halstead made an observation,  
24 and I thank all the people who are here, and I realize  
25 that time is marching on a little bit, but there are

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1 more people here tonight, members of the public if you  
2 will, generally interested in the topic and yourself  
3 have questions that are here, and are asking  
4 questions.

5 Now, the meeting here in Pahrump this  
6 evening, we scheduled it very specifically in the  
7 evening to try to provide if you will maximum  
8 opportunity for those people that have day time jobs  
9 to have an opportunity to be here in the evening to  
10 ask us questions.

11 I mentioned previous meetings that have  
12 been here in Pahrump. Some were in the day and some  
13 in the evening. And the evening I think is more  
14 accommodating, especially for people who have a day  
15 time job to be here in the evening.

16 So we are trying. I wrote down your  
17 comments, because I realize that we are trying to  
18 schedule our meetings to meet as many people's needs  
19 as we can. And your comment about having back to back  
20 meetings, and involvement in other countries, I  
21 appreciate your comment.

22 FACILITATOR CAMERON: Okay. I know that  
23 Kalynda has something and Jerry, and Bob Halstead.

24 MR. HALSTEAD: I just want to make a quick  
25 comment. I have been in government for a long time,

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1 and I have actually been an ombudsperson, and it is a  
2 hell of a thing to try to do what you are saying, to  
3 give fair opportunity, and I don't know the answer,  
4 but I will say one thing.

5 I think that the approach that Kalynda and  
6 some other people came up with of setting up a video  
7 or setting up a camcorder and having citizens put  
8 their comments in that way, and having the NRC make a  
9 commitment that they are going to pay attention to  
10 those comments just as if someone had come to a  
11 meeting. That is one way.

12 That is not the only way to do it, but I  
13 just have to say that in general that we don't do a  
14 great job on this with the State of Nevada, and we  
15 didn't do a great job on it when I worked for the  
16 State of Wisconsin, and there has got to be better  
17 ways to get public input.

18 And, yes, it is easier for people to e-  
19 mail stuff in these days than it was 30 years ago.  
20 But we certainly all need to work harder on that, and  
21 I would like to see greater use of that video  
22 approach, because I think that is a good way, and then  
23 when the video comes in, they can require that a  
24 transcript be made of the video as if you were here at  
25 the meeting doing that.

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1 But that is certainly one way that we  
2 ought to probably all try to expand the opportunities  
3 for people to make their views known. And I really  
4 think that the organizations -- and I don't know who  
5 all worked out that video approach the other night,  
6 but I think that is one good way of doing this.  
7 But obviously it is not going to be a perfect  
8 solution.

9 FACILITATOR CAMERON: And it is a point  
10 well taken, Mr. McGuinness. We can always try to do  
11 better on that. Kalynda, and then we will go to  
12 Jerry.

13 MS. TILGES: Kalynda Tilges. Shundahai  
14 Network, Public Citizen, out of D.C., and Nevada  
15 Nuclear Waste Task Force, put that workshop together  
16 and did the video. And in fact thank you for bringing  
17 that up, because the NRC, for whatever reason, is not  
18 going to be able to do any more public workshops or I  
19 don't know how that is going to work.

20 But the Shundahai Network is working on  
21 getting workshops together where we can maybe get Fred  
22 Dilger or Bob Halstead in as experts and to do public  
23 workshops and taking it out to the different counties  
24 and the different areas ourselves, and giving people  
25 as much information as possible from both sides.

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1 I have to say that I am very strongly  
2 opinionated against this, but I don't expect you to  
3 believe me any more than I expect you to believe them.  
4 I want you to go and get information from every  
5 possible place that you can find it, and read it, and  
6 study it, and make up your own mind, and then however  
7 you feel about it, whether it is with my position or  
8 against it, stand up and say something and be counted,  
9 even if you are totally opposite the way the anti-  
10 people feel.

11 It doesn't matter. I just want to see  
12 people get involved. And I have to say as well, and  
13 again going back to our conversation last night, as  
14 far as trust goes, the people are smart enough to know  
15 that nothing is 100 percent.

16 However, if they see that the NRC is  
17 bending over backwards doing everything they possibly  
18 can to ensure the public safety to be completely open  
19 and transparent, and when we have a question that you  
20 don't know the answer to, or as a matter of national  
21 security, you can't say, don't fudge. Tell us. We  
22 can accept that.

23 If we know that you are trying as hard as  
24 you can beyond what the legal training limits are to  
25 do everything that you can to make sure that every

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1 single person in this nation is protected to the best  
2 possible ability of yours, then we may start trusting  
3 you, even though we know that accidents happen and  
4 people can get hurt.

5 Now, there was a statement that I made  
6 last night where were talking about the duration and  
7 size of the fire test. I want to kind of amend that  
8 request I made last night. I said test to failure  
9 with the hottest burning substance on our nation's  
10 rails and roads. I would like to amend that because  
11 it was brought to my attention that there are some  
12 things that are shipped that burn incredibly hot, but  
13 it isn't shipped in bulk and there is not enough to  
14 cause a pooled fire.

15 So I am going to amend that request to  
16 test as far as the duration and size of the cask test,  
17 and to test to failure, which means to breach to the  
18 open environment with the hottest burning substance  
19 that is shipped in bulk and can pool. Is that more  
20 clear?

21 And then without going over -- and I am  
22 not going to go point by point these 9 questions that  
23 you asked. I have already submitted it. But I want  
24 to state again for the public Pahrump record what  
25 Shundahai experts of the cask testing to promote

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1 public trust, secondly, and public safety, number one.

2 And that is, number one, we expect  
3 reevaluation of nuclear regulatory cask performance  
4 standards with meaningful stakeholder participation.  
5 And if you want to get into what that means, I will be  
6 glad to talk to you in public and in private, or  
7 whatever, but I think or I am seeing that we have two  
8 different ideas of what meaningful means.

9 Number 2, again, meaningful stakeholder  
10 participation from all affected areas, all proposed  
11 routes, and in the development of testing protocols,  
12 selection of test facilities, and the personnel  
13 involved.

14 Number 3, full-scale testing to failure of  
15 casks prior to NRC certification. In other words, if  
16 they don't pass the most rigorous tests that you can  
17 put them through, they do not get certified for use.  
18 This would include every model that is on the road now  
19 and is subject to licensing coming up. Every model  
20 developed.

21 Whether it is on the road now, or you are  
22 thinking about putting on the road in the future, a  
23 randomly selected model -- let me take that back. I  
24 don't want you to take my words out of context. A  
25 randomly selected cask, built to complete

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1 specifications, from every model that would be  
2 licensed or is thought to possibly be on the road, in  
3 real world accidents and attack scenarios.

4 And again we have got to define what real  
5 world is, and I have my ideas and you have yours.  
6 Testing all possible shipping scenarios -- train,  
7 truck, barge, et cetera, and complete openness and  
8 transparency of everything that goes on and that  
9 affects the public.

10 And, number 5, public and media oversight  
11 of all tests.

12 FACILITATOR CAMERON: Thank you very much,  
13 Kalynda. Those are very good constructive comments.  
14 And let's go to Jerry and then we are going to go to  
15 Commissioner Trummel.

16 MR. BIJOLD: Yes, going back to the  
17 initial transportation questions that I asked, and the  
18 Sheriff's comments were very well put, and we finally  
19 got it up here. But being an old retired military  
20 guy, I was under the impression that puncture tests in  
21 one case included a TOE missile that hit the cask of  
22 some type or some type of container, and I have not  
23 seen it, and I don't know where that test was. It was  
24 probably not an NRC test.

25 But what I would like -- and you probably

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1 know something about it. And also there were some  
2 other types of things when it gets to radioactivity  
3 and other things that I can't remember now, and I used  
4 to know many years ago.

5 But it would seem to me like part of that  
6 would go back to the Commissioner's comments that we  
7 have to find a way on the worse case scenario and take  
8 the most rural road we have in Southern Nevada  
9 somewhere, and go ahead and have a bad accident out  
10 there, including a release.

11 And then go through a population center  
12 and take that release, because those are the two  
13 extremes when we talk about worst case scenario. The  
14 best case for the Sheriff would be out on that rural  
15 road somewhere with no one around, and the worst case  
16 would be coming through town someplace.

17 So to me that would be sort of the  
18 scenarios that we should know about, and what would  
19 happen with a real puncture test.

20 Now one of the gentlemen who is not here  
21 tonight, Tom Bucco, who had another thing, has done  
22 another test, or not a test, but he has projected what  
23 would happen if you dropped it in a river, and all of  
24 a sudden it goes down Lake Mead, it would take like  
25 hundreds of years -- and this is with a small

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1 projectile puncture, in order for Lake Mead to lose  
2 its contamination.

3 Well, that is sort of significant to us in  
4 Southern Nevada, I think. You know, things like that.  
5 So I don't want to play worse cast, but I have this  
6 thing that is the better the planning the less we have  
7 to execute, and the better off it is.

8 So I don't want to belittle or belabor  
9 this, but I think it is really important, especially  
10 in view of what has been happening over the last few  
11 years, and the people that are coming after us.

12 FACILITATOR CAMERON: Jerry, can you give  
13 the staff, if there is a study by this gentleman, Tom  
14 Bucco.

15 MR. BIJOLD: I have a copy and I will give  
16 it to you. It is a one-pager basically that says --

17 FACILITATOR CAMERON: Okay. Thank you for  
18 that. Rob.

19 MR. LEWIS: Talking about the puncture  
20 test, and we will take your second point as a way to  
21 define worse case, and that was very helpful in that  
22 regard, but when we were talking about the puncture  
23 test, the certification test that the NRC has for a  
24 puncture, it is not talking about a missile or a type  
25 of attack type puncture. It is more to simulate like

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1 a rail. It is a drop of 40 inches on to a mild steel  
2 bar that is sticking up.

3 And I am familiar with the other tests  
4 that you are talking about, and you are right, that  
5 they were not NRC certification tests, or even NRC  
6 sponsored tests at all.

7 There was some work done by a private  
8 company as part of their marketing for their casks,  
9 and storage casks in this case at the Aberdeen Proving  
10 Grounds in Maryland, and they put a charge, a weapons  
11 type simulation and attached it right to the side of  
12 the cask, and exploded it, and tried to show what  
13 would happens, and we have more specifics about that  
14 with me here if you want to talk more about that, and  
15 we can do that off-line.

16 FACILITATOR CAMERON: Okay. I want to  
17 allow Commissioner Trummel to make a comment near the  
18 end of the meeting, and we are getting near the end of  
19 the meeting, but I think that Bob Halstead has an idea  
20 that he might want to suggest. Bob, did you want to  
21 put this on?

22 MR. HALSTEAD: Yes, I do. It occurred to  
23 me earlier that one of the things that they are doing  
24 is that they are doing a transcript of the meeting  
25 that they had in Washington and last night's meeting

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1 in Vegas, and this one, and the one they are going to  
2 have in Chicago.

3 And they have been pretty good in the past  
4 about getting these transcripts put up on their  
5 website, which is great for those of us who have  
6 computer access. But I don't know if this is  
7 something -- well, there is a public reading room  
8 here, right, because -- well, is there not an NRC  
9 public reading room?

10 We need to make some arrangement, whether  
11 it is at the library or the high school, and maybe a  
12 couple of places, but I think it would be very  
13 important as soon as the transcript of these meetings  
14 is done, to have a copy of the transcript air-  
15 freighted, and make sure that whoever has custody of  
16 it knows that it might be called something, because  
17 somebody might come in and ask for it, and they don't  
18 know the right name.

19 But it really would be useful I think for  
20 people here to hear that a lot of the same questions  
21 that have come up here are things that came up in the  
22 meeting in Washington and came up in the meeting in  
23 Las Vegas, and will probably come up in Chicago.

24 And they have done a good job like I said  
25 making this stuff available over the internet, but

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1 that is not always accessible to everyone. So having  
2 a hard copy of it would be a good idea.

3 FACILITATOR CAMERON: Let me go to Bill  
4 Brach and get a response to that.

5 FACILITATOR CAMERON: Bob, your suggestion  
6 sounds like a very appropriate one. I can't make a  
7 commitment as far as how, or where, or when, but let  
8 us take that back and see what we can do. And I  
9 appreciate that not everybody has either at home or at  
10 other facilities access to the web if you will, or to  
11 the internet.

12 Let us take that back and see what we can  
13 do to facilitate having a hard copy available in the  
14 localities.

15 FACILITATOR CAMERON: I will write that up  
16 there. Okay. Grant, this is going to have to be real  
17 quick.

18 MR. HUDLOW: One of the things that I keep  
19 hearing from the public is that they don't trust the  
20 government, and from the government, I keep hearing  
21 that, well, we are trying to get the input. And there  
22 is a very simple way of doing that.

23 About a third of the Fortune 500 is doing  
24 that now, and these are called turnaround experts.  
25 Lee Iacocaca is one guy that you are all probably

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1 familiar with.

2 DOE had one guy that was a turnaround  
3 expert, and he was not in this Yucca Mountain, but in  
4 environmental cleanup and that was Al Long. He was an  
5 assistant secretary.

6 Leo Deaver was another one that was  
7 learning that and it comes under results management,  
8 the process of learning how to do that. Now how can  
9 you expect the NRC and the DOE, who in general don't  
10 have those kind of people, and don't know what it  
11 looks like, how can you expect them to select somebody  
12 that has those kinds of skills.

13 Those kind of people have a technical  
14 background, and they can understand anything that  
15 anybody says to them, and sometimes it takes them a  
16 couple of weeks with people who don't have technical  
17 training to say something.

18 And they guarantee that they will run a  
19 test and when they get through, everything works, and  
20 it really works. I don't know how to get through to  
21 you that the State has the same problem. They don't  
22 have anybody that understands that either.

23 They don't have anybody that even knows  
24 what those people look like. I don't know how to get  
25 through to you to say that you need one of these kinds

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1 of guys in here.

2 And there are a whole bunch of these  
3 people at Proctor and Gamble. Proctor and Gamble will  
4 only hire engineers for their managers, and they only  
5 demand that all of these engineers get people skills  
6 or they bounce them.

7 And once they get the people skills of how  
8 to listen to people, and how to make things happen,  
9 and how to get things going.

10 FACILITATOR CAMERON: Thank you, Grant,  
11 and I think we have heard other suggestions from you  
12 in terms of managerial skills before, but thank you  
13 for that comment. And let's hear from Commissioner  
14 Trummel, and then Bill, I am going to ask you to close  
15 the meeting and final words, okay? Commissioner  
16 Trummel.

17 MS. TRUMMEL: I just had a couple of last  
18 comments. First, if you send us extra hard copies to  
19 my attention, I will make sure that I get a copy in  
20 the library, and probably John Pollack's office, and  
21 one in Amargosa, and so send us some extra copies, and  
22 I will personally make sure that they are distributed.  
23 That was an excellent idea and thank you very much for  
24 that idea, Mr. Halstead.

25 And secondly since there is such an

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1 interest and since most likely Yucca Mountain -- and  
2 I know that many of this room are not going to like  
3 that I am making this statement, but most likely the  
4 probability is that Yucca Mountain is going to  
5 eventually become a reality.

6 Otherwise, I doubt very much that the NRC  
7 would ever be holding a hearing in Pahrump, Nevada, if  
8 they didn't believe that it was going to become a  
9 probability.

10 And then I would like to see this testing  
11 conducted in Nye County, which is the area that will  
12 be receiving all of the shipments for this high level  
13 waste so that our citizens and the citizens of Las  
14 Vegas, and the State of Nevada, and anybody else who  
15 would like to travel, would be able to see these tests  
16 in progress and the results.

17 And so I am offering you that invitation,  
18 and I hope that you truly consider basing those tests  
19 here in Nye County. Thank you again for coming out  
20 there.

21 FACILITATOR CAMERON: Thank you for the  
22 offer, too, on the testing and the hard copy. Bill.

23 MR. BRACH: First, let me thank you for  
24 your offer to help us as far as a conduit if you will  
25 for providing hard copies and your offer to help

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1 distribute those to the library and to others. I  
2 thank you very much.

3 I want to thank everyone for coming  
4 tonight. I had mentioned at the very outset that  
5 personally, and I think I can speak for all of us  
6 here, I found and we have found that our meetings here  
7 in Pahrump to be very, very good, and from the  
8 standpoint of the expression of views, and the lack of  
9 hesitancy on all of our parts to provide us input, and  
10 that is what we are here for.

11 And the spectrum of views, and the  
12 suggestions, and the considerations for us, whether it  
13 be in how we conduct the meetings, the tests we are  
14 considering, other aspects with regard to our  
15 regulatory roles and our responsibilities, speaking  
16 for all of us here, we take it very seriously, and I  
17 appreciate the time and the effort you have taken to  
18 give us the input and comments.

19 And I want to thank you all. I mentioned  
20 beforehand that the turnout tonight is markedly larger  
21 than the turnout in Las Vegas from the members of the  
22 public, and I thank you for taking the time this  
23 evening.

24 Everybody is busy, and I know that you all  
25 are, and I appreciate you taking the time to be with

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1 us tonight, and provide us your comments. I thank you  
2 very much, and I appreciate as well the facilities  
3 here for the conduct of the meeting. Thank you

4 (Whereupon, the meeting was concluded at  
5 9:08 p.m.)