Official Transcript of Proceedings

NUCLEAR REGULATORY COMMISSION

ORIGINAL ACNWT-0148

Title: 127th Meeting
Advisory Committee on Nuclear Waste

PROCESS USING ADAMS
TEMPLATE: ACRS/ACNW-005

Docket Number: (not applicable)

Location: Rockville, Maryland

Date: Tuesday, June 19, 2001

Work Order No.: NRC-276

Pages 1-148

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NUCLEAR REGULATORY COMMISSION

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127th MEETING

ADVISORY COMMITTEE ON NUCLEAR WASTE

(ACNW)

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TUESDAY

JUNE 19, 2001

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ROCKVILLE, MARYLAND

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The Advisory Committee met at the Nuclear Regulatory Commission, Two White Flint North, Room T2B3, 11545 Rockville Pike, at 10:30 a.m., Dr. . John Garrick, Chairman, presiding.

COMMITTEE MEMBERS:

B. JOHN GARRICK	Chairman
GEORGE M. HORNBERGER	Vice Chairman
MILTON N. LEVENSON	Member
RAYMOND G. WYMER	Member

ACNW STAFF PRESENT:

ANDREW C. CAMPBELL

LYNN DEERING

CAROL A. HARRIS

ACNW STAFF PRESENT (continued):

JOHN T. LARKINS

JAMES E. LYONS

RICHARD K. MAJOR

RICHARD P. SAVIO

AMARJIT SINGH

I-N-D-E-X

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

10:41 a.m.

DR. GARRICK: Our meeting will come to order. This is the first day of the 127th Meeting of the Advisory Committee on Nuclear Waste. My name is John Garrick, Chairman of the ACNW. Other members of the Committee present are John Hornberger, Milt Levenson, and Ray Wymer.

During today's meeting, the Committee will discuss several things: An overview of Private Fuel Storage, an update on the pre-closure approach for Yucca Mountain, public outreach activities, and our usual preparation of reports. John Larkins is the Designated Federal Official for today's initial session. This meeting is being conducted in accordance with the provisions of the Federal Advisory Committee Act.

The Committee has received no written comments or requests for time to make oral statements from members of the public regarding today's sessions. Should anyone wish to address the Committee, please make your wishes known to one of the Committee's staff.

It is requested that the speakers use one of the microphones, identify themselves, and speak

clearly and loudly so that they can be readily heard.

Before proceeding with the first agenda item, I'd like to cover a couple of items of current interest. The first one is that Dr. Sher Bahadur, Chief Engineering Research Applications Branch, Research, will become the Associate Director, Technical Support. That will take place on July 9, replacing Jim Lyons who will become Director of Future Licensing Organization. We're sorry to lose Jim. We know, however, his new assignment is one of great importance. We're very happy to welcome Sher. We've interacted with him several times before and know of his accomplishments and reputation, and we're looking forward to working with you.

Judith Goodwin from the Administrative staff resigned, effective June 1. And, of course, we'll all miss here. As I understand it, she is undertaking a very important activity, and so the action seems to certainly be justified.

On another issue, the Finnish Parliament ratified by a vote of 159 to 3 the government decision in principle to build a spent nuclear fuel storage facility at Olkiluoto. An underground rock characterization facility will be built in Onkalo in the year 2003 to 2004 with bedrock investigations at

repository levels scheduled to start in 2006. This is part of a process started in 1983, with operation of the final disposal facility to begin in Finland in 2020.

The Las Vegas Sun, a newspaper, on May 30, stated that Utah and Nevada officials have united to oppose the proposed temporary high-level waste storage site, Private Fuel Storage, on the Goshute Tribe Reservation, which is an appropriate item, given that that's what we're going to hear about first this afternoon.

So I think, Ray, you're to lead the Committee on its discussion of this topic, and we've been stalling a little bit waiting for some software. I don't think it's arrived yet, has it, so we will have to resort to 1950s technology and proceed. So we'll do that. Go ahead, Ray.

DR. WYMER: Well, there's very little involved in being in charge of this. All I do is introduce Mr. Mark Delligatti and ask him to make the presentation of something we're very interested in, needless to say.

MR. DELLIGATTI: Thank you. I'm glad to be here. It's been several years. The last time I sat before the Committee, I was the Yucca Mountain

Project Manager in DWM, and I think all the faces around this table, except Rich's, have changed since then, but it's nice to be back.

If you'll look at the next slide, please, Rich. I've basically divided my presentation into three parts: Discussion of the PFS proposal, then a discussion of how the NRC licensing process is working on this proposal, and, finally, a summary of the status of the staff's activities. Next slide, please.

PFS is a consortium of eight utility companies. Their names have changed, of course, over the last year or so as various consolidations have taken place. They are proposing to construct and operate and away-from reactor independent spent fuel storage installation, or ISFSI as well call it, on the Reservation of the Skull Valley band of Goshute Indians, and that Reservation is located about 50 miles west of Salt Lake City, Utah.

PFS is seeking a site-specific license pursuant to 10 CFR Part 72, and that is a license that NRC has previously granted at reactors to several operating reactors in the United States. We have also granted an away-from reactor ISFSI license to the Department of Energy at INEEL for the TMI II fuel debris.

In order for this project to fully be implemented by the fuel storage, or PFS, we must also get the approval from three other federal agencies as well as the Skull Valley band, and I will discuss that more as we go along. Next slide, please.

This slide, and I'm sorry it's not clear, is really meant to give you an idea of the location. This is Skull Valley, and this is an artist rendering of what the facility would look like once it were built, and this was prepared by Private Fuel Storage as part of the environmental review process.

Right here -- Rich just enlarged it a bit, and we lost the detail -- but right here on the corner, you can see a sign, and that sign is the boundary line of the Skull Valley Indian Reservation. And that's important to show that that -- on the Reservation, that is -- the facility will border right up against the ranch lands to the north of it. It's in the far corner of that Reservation. It's not a very large Reservation, but there is not very much on the Reservation either. There is a small village where a small group of the Skull Valley band live, and that is several miles away from the proposed facility and on the other side of the main road, Skull Valley Road, which you see here in the foreground. Next

slide, please, Rich.

As I mentioned, the site is the Reservation of the Skull Valley band of Goshute Indians. They are a federally recognized Indian tribe. The Skull Valley band historically has lived in the Skull Valley area in the times before European settlement. They roam throughout the region, from the area that is now Salt Lake City through the western desert.

In order for the fuel to get to the Reservation, were this facility to be built, the preferred option that PFS has chosen is to transport by rail. Now, there is currently no rail line leading to the Reservation; it's a fairly isolated area. However, there is a main rail line going east to west that runs along Interstate 80, which is one of the main highways into and out of Salt Lake City. As I'll discuss a little more later, Private Fuel Storage proposes to hook up with that existing main rail line to bring rail service to the Reservation.

And I'd like to talk to you a little about the Private Fuel Storage proposal in terms of what it will look like, the ISFSI site area. The owner controlled area will be approximately 820 acres; the restricted area approximately 100 acres. Rich, if I

could have the next slide.

It gives you some idea of what this area looks like. The area in red, or the darker geometric shape here, is the Skull Valley Indian Reservation. To the east of the Reservation are the Stansbury Mountains, to the west of the Reservation are the Cedar Mountains, and in between, of course, is Skull Valley. The dark line that you see coming down through the middle of the Reservation is Skull Valley Road. That is the only road that really runs through this area. The line to the left, if I may, this would be the proposed rail line coming into the Reservation.

If you look to the south, at the very bottom of the picture, you'll see a word -- it's probably clearer on your individual slides -- "Dugway." That is the location of Dugway Proving Ground, which has been the site of chemical testing of various kinds of weapons by the United States Army. If you look past the Cedar Mountains, while it doesn't show up clearly on this map, that area is the Utah Test and Training Range. That's one of the Air Force's major training ranges for training for fighter pilots, et cetera.

This area has several other hazardous waste facilities in the general area. You'll see at

the very edge -- let me see if I can get this thing to work here -- okay, right here is Clive, Utah, which is the general location of Envirocare. So just to give you some idea of what this area is like. And the area is western desert, not a lot of vegetation. Some of the ranchers do do some irrigation, but, generally speaking, it's not an area where you'll see a lot of trees or a lot of greenery, except during the wet season, which is a fairly brief period. Next slide, please, Rich.

And to talk a little bit more about the PFS proposal, the principle features of this ISFSI. The facility will be designed for 4,000 casks, or 40,000 metric tons of uranium. That would be the maximum number, that they could never have -- they cannot store more than 4,000 casks. That's a through-put number, so if at any point in the course of their 20-year license they have reached 4,000 casks, they cannot store anymore than that. They can't bring in cask 4,001. And I think that's important to remember, that the Skull Valley Band has made this part of their lease. This is the licensed number of casks that NRC, if we should grant them a license, would be allowing.

The casks that they will be using at the proposed facility would be the Holtec HI-STORM Dry

Cask Storage System. And for transportation, they will use the compatible Holtec HI-STAR. You may recall that Holtec was the first of the new generation of dual-purpose storage and transportation casks to be certified by NRC. The Holtec HI-STAR is an all-metal cask and could be used for storage and transportation; however PFS has chosen the HI-STORM, which is a compatible cask with the HI-STAR. They will be building approximately 500 pads on which to store the spent fuel, and the other major feature will be the canister transfer building. Next slide, please, Rich.

DR. GARRICK: Mark, did you say what was the limiting factor for the capacity?

MR. DELLIGATTI: The limiting factor really is -- the limiting factor appears in two places. In their license, they have requested a license to store up to 4,000 casks on-site. In their lease with the Skull Valley Band, which would be approved by the Bureau of Indian Affairs, the Skull Valley Band will only allow them to store up to 4,000 casks.

DR. GARRICK: Okay.

DR. HORNBERGER: But there's no technical reason.

DR. GARRICK: There's no --

MR. DELLIGATTI: No. That is simply what they have requested. And this is --

MR. LEVENSON: And -- excuse me.

MR. DELLIGATTI: I'm sorry.

MR. LEVENSON: The limit is the cask, not the tons of uranium.

MR. DELLIGATTI: Right. The limit is the number of casks which can hold -- generally speaking, could hold that number of tons.

This is a schematic that PFS prepared of the facility. It shows four quadrants. They have recently proposed changing that to have two groups of -- instead of four quadrants, this would be one solid row, and this would be another solid area here. And you can see, I think, better on that that you're holding the location of the various ancillary facilities.

Again, the key structure will be the canister transfer building. The rail line will come in here. They will put the casks into the -- the rail car into the canister transfer building, at which point they will transfer it from the HI-STAR into the HI-STORM. And then they will have an on-site crawler that will move the HI-STORM onto the pad. Next slide, please, Rich.

This is something you may want to look at after we're done with the briefing. I did want to include it. It's a depiction of the Holtec HI-STORM storage cask. The Holtec HI-STORM is a metal and concrete cask. It has a metal sleeve -- an inner metal sleeve and an outer metal sleeve, and there's concrete poured into the center of it. It makes for a very stable cask, and the concrete is there primarily as a material for shielding. And you can -- as I said, you really can't read it up here, but if you want to read what we have to say that accompanies this on your handout, you can learn a little bit more about the HI-STORM cask.

And if you have any questions on the HI-STORM of HI-STAR cask, we'd be happy to provide you with any additional information. Christopher Jackson is our Holtec Project Manager; he's here with me today. And either Christopher or I would be happy to get back to the staff with any additional information. Next slide.

Again, I wanted to just focus, since transportation is, of course, an important issue any time we're talking about spent fuel or high-level nuclear waste, the new rail line will be proposed to be built at a new rail siding off of the main line.

It would be built at Skunk Ridge. The rail line would be 32 miles long, from Skunk Ridge to the proposed facility on the Reservation. The rail siding and the rail line are all on land managed by the United States Bureau of Land Management, which of course is a part of the Department of Interior. This was chosen by Private Fuel Storage.

Initially, Private Fuel Storage had proposed possibly running the rain line directly down Skull Valley Road, which was a county road managed by Tooele County, Utah. The State of Utah is very much opposed to this facility, and one of the first things that the state did after this application was docketed before the Commission was to take over Skull Valley Road and make it a state road, which would have then required permitting by the state in order for any spent fuel to be shipped on that road or for a rail line to have been constructed.

At that point, Private Fuel Storage considered their options, and they found that it was possible to build a rail route all using federal land, BLM land. However, that land transfer -- the use of that land must be approved by the Bureau of Land Management, which must amend the land use plan for that area. Private Fuel Storage has applied for that

right-of-way before the Bureau of Land Management. That is still pending before the Bureau of Land Management at this time.

Now, Private Fuel has maintained throughout that they also always could go with an over-the-road option of moving the spent fuel from the main rail line, along I-80, down to the facility. Even with the problems that would be caused with permitting from the State of Utah, Private Fuel says if they had to, they could, in which case they would build the intermodal transfer facility at the rail head, and then they would ship the spent fuel in heavy-haul vehicles down Skull Valley Road, assuming they could get the appropriate state permission. But that is definitely their less preferred option. They preferred option is to build a rail line and to bring the fuel in that way. Next slide, please.

And this is just another depiction that Private Fuel prepared to show what the rail line would look like, sort of what the impact on the viewscape of Skull Valley would be were this rail line to be built. And you can see that it's very hard to see. And this would be looking from the Cedar Mountains down onto the rail line, and that is what PFS proposes you could see. But, again, I think what this does show you is

the sort of landscape that Skull Valley currently has. Next slide, please.

Now, I mentioned earlier that there were a number of federal approvals that PFS had to get, as well as approval by the Indian tribe. PFS has signed a preliminary lease, or a conditional lease, with the Skull Valley Band of Goshute Indians, and the Bureau of Indian Affairs approved the proposed lease. However, the final lease still must be completed and negotiated with the Skull Valley Band and must be approved by the Bureau of Indian Affairs, which is another arm of the Department of Interior.

The Bureau of Indian Affairs has told us that they would not approve a final lease until the other federal agencies have all completed their approval processes. Those approval processes include the NRC licensing process, and that process will not conclude until all adjudicatory activities and technical licensing activities have completed. The Bureau of Land Management, as I mentioned, must approve the right-of-way and must approve the land management changes to the land management plans for those areas out in Skull Valley. The Bureau of Indian Affairs must approve the lease. That's a responsibility for any economic development on any

federally recognized Indian tribe reservation. And, finally, the Surface Transportation Board must approve the new rail line.

The Surface Transportation Board is what is left of the old Interstate Commerce Commission. When the Interstate Commerce Commission was done away with during the Reagan Administration, there was a realization that there still needed to be an authority to approve new rail lines, to approve the abandonment of old rail lines, to approve the use of existing rail lines for other uses. The Surface Transportation Board, or STB, has granted the conditional license to Private Fuel Storage for the Great Salt Lake Railway that is a new rail line. However, their approval is contingent upon the completion of the final Environmental Impact Statement.

As I note at the bottom of the slide, the Bureau of Land Management, the Bureau of Indian Affairs, and the Surface Transportation Board have all been cooperating federal agencies with NRC in the preparation of the EIS, as is the direction, the environment direction by the government that when there are federal actions that are related, the agencies should try to work together and create only one EIS, rather than each of us going out and spending

the money and ending up with four EISs basically for the same project. Next slide, please.

Now, the process for granting or getting a site-specific away-from reactor license from NRC requires the submittal of an application to NRC, which PFS has done. That submittal needs to include a safety analysis report, an environmental report, an emergency plan, a physical security and safeguards plan. PFS has submitted all of those to us. There is, of course, an adjudicatory process if an application is contested. In this case, the Private Fuel Storage application was contested by several parties -- I'll identify them shortly -- and in the case of an away-from reactor license like this, the Commission makes the licensing decision. Next slide, please.

I think you're probably familiar with the staff review of ISFSIs, but I thought I would just give you the highlights. The technical evaluation of the application includes siting, general design criteria, accident analysis, quality assurance, physical protection, training and certification of personnel, emergency plan, and financial qualifications. All of that was included in the application that we received from Private Fuel

Storage. Next slide.

The staff issued a safety evaluation report on Private Fuel Storage in September of 2000. In December of 2000, however, PFS informed the staff of new geotechnical and aircraft and cruise missile hazard information. In the period of the months since December, PFS has been providing the staff, through two license applications amendments and then some additional information that the staff required be submitted to complete those amendments, additional information. The staff is currently reviewing the aircraft and cruise missile hazard information. We have not yet reached a determination on that. Next slide, please.

DR. HORNBERGER: Is the cruise missile hazard from a hostile --

MR. DELLIGATTI: No, no. The Utah Test and Training Range, they test cruise missiles. I should note that the tests are in a north/south direction. They're not in an east/west direction where there would be a definite immediately noticeable hazard. But these cruise missiles do have detection, do have systems for destruction if anything goes wrong with them, et cetera. But it's a question of the probabilities, and we're looking at the number of

sorties of F-16s, the number of cruise missiles, et cetera, and, you know, we have to make a determination of whether or not there is a credible hazard there.

And this new information was the result of information that Private Fuel Storage had sought from the U.S. Air Force under the Freedom of Information Act. It took a while to get the information, but PFS, to their credit, informed us as soon as they were aware of this information, and it's now just a question of our going through it and making the necessary supplement to the safety evaluation report, either determining that our conclusions still stand or not.

The geotechnical information was submitted in what the staff found to be an incomplete license application amendment in March of this year. The submittal was not completed; that is, the information that the staff found lacking was only finally provided to the staff, it only reached our hands, at the very beginning of the month of June. The staff, with the assistance of our technical assistance contractors at the Center for Nuclear Waste Regulatory Analyses, are currently reviewing that information. And, again, when we have completed our review, we will issue a supplement to the SER.

MR. LEVENSON: Mark, let me interrupt for a second.

MR. DELLIGATTI: Sure.

MR. LEVENSON: It's a question back on the previous statement you made. Is NRC dependent on PFS to get such information from the military? I mean they have problems with all kinds of things. Can the NRC get it directly?

MR. DELLIGATTI: I think the answer to that is, yes, the NRC could get it directly. I don't know that we could have got it a lot faster than PFS did, because this information comes from Hill Air Force Base and needs to go through a rather lengthy process to get it released. It's sent to the Pentagon, the Pentagon lawyers look it over, and --

MR. LEVENSON: The context of my question is much, much broader than this case. It's just the question of --

MR. DELLIGATTI: The answer is yes. There can be an agency-to-agency transfer of this kind of information.

Okay. If we could go on to the next one. Oh, this is it, I'm sorry. Okay. I didn't go on to the next one; that's the problem. I'm looking at the wrong one.

Okay. Of course, part of a site-specific license is the development of an EIS. As I indicated, we're working with the three other federal agencies. The NEPA review was completed, pursuant to 10 CFR Part 51. We have consulted, as required, on the Endangered Species Act and the National Historic Preservation Act, and I have several members of our team who worked on the EIS here today with me.

And if we go to the next slide, we sort of lay out this EIS process, from the submittal of the application through the completion of a final EIS. These two blue blobs on here we wanted to highlight them, because these are the places where there have been formal public participation in the process. Those were during the scoping process at the very beginning. We went out to Salt Lake City and Tooele County and held public listening sessions out there to hear what the concerns of the folks out there were with regard to what should be included in this EIS. Then as we went through the process, we developed a draft EIS, and we put it out for public comment.

And if you go to the next slide, we talk a little bit about that part of the process. The NRC and the cooperating agencies issued the draft EIS last year, in June of 2000, for a 90-day public comment

period, which is rather long by NRC standards and by the standards of two of the other three federal agencies. Ninety days was the requirement of the third agency.

Now, after we had released these documents, I believe it was a month after the release to the public, we held four public meetings -- three were in Salt Lake City and one was in Grantsville, Utah. Grantsville is really the closest city or town to the Reservation. It's still some distance away, but it was the closest place that had a building that could seat a decent number of people. And we had a great deal of cooperation from the Grantsville School District in providing their middle school auditorium for us. And we had most of the Grantsville police force out there that night to make sure nothing went untoward, and they were just absolutely delightful folks in Grantsville.

DR. WYMER: Did you get good participation?

MR. DELLIGATTI: We got super participation. In the meetings at Salt Lake City, we had had -- held it in the same hotel, The Little America, where we had had the scoping meetings, and I guess it turned out to be a couple of hundred people.

Mel, do you recall the exact number we had in Salt Lake City at the Hotel? It was somewhere in the number of -- the room was absolutely jammed for the first two meetings in Salt Lake City, and that was why we decided to go back for a third one, because it was just an incredible crowd of people that came and wanted to express their concerns about this process.

The meeting in Grantsville was surprisingly well attended as well. It was -- the auditorium/gym of the middle school was just about full of folks representing all sides of the issue. We had -- at the various meetings we had, we had the governor come, we had a representative of the Mayor's Office come. I guess the mayor actually did come, the mayor of Salt Lake City.

DR. WYMER: Did you ask them to come or did they come voluntarily?

MR. DELLIGATTI: They, actually -- we notified them, and they came voluntarily. The Chairman of the Skull Valley Band spoke at each of the meetings, and as well as a great number of citizens representing various facets of the public, with interesting views all around.

If you go to the next slide --

DR. GARRICK: How would you characterize

the emotional level?

MR. DELLIGATTI: Well, at the scoping meetings, the emotional level was rather calm, and this was early in the process. We had advertised in the local papers for these scoping meetings. PFS, at this point, had had some initial public meetings out there. And there was a general -- generally, there was some concern but not too much. When we got to the EIS scoping meeting, there had been an organized effort by groups that were opposed to the facility to bring it to the attention of the general public. And the meetings in Salt Lake City, there was a great deal of emotion. There had been some statements made regarding the perceived safety of the facility that had a lot of members of the public very upset and very concerned. And they came out and they spoke to that, and they had a lot of questions about is this facility safe? You have to understand, these folks have the National Nerve Gas Incinerator in Tooele County already, and they have several other hazardous waste facilities in the area.

DR. GARRICK: And, in particular, 42 percent of the stockpile of the chemical weapons inventory of this country that's in storage is stored there.

MR. DELLIGATTI: Exactly.

DR. GARRICK: And the largest storage site, by far, of any of the Army's facilities. So this is a population that knows about hazardous materials.

MR. DELLIGATTI: Exactly. Now, the incinerator and the storage facility is in Tooele Valley, which is one valley and set of mountains removed from Skull Valley and the proposed Private Fuel Storage facility. But it is, in the minds of many, another hazardous facility that's being placed into Tooele County, and that was one of the reasons for the concerns reached.

There was, however -- there have always been, and continue to be, certain segments of the population who believes that this facility will be a benefit in terms of potential for jobs. Certainly, the elected leadership of the Skull Valley Band is very positive on this, and they are, of course, the residents that will be living closest to this facility.

The Skull Valley Band has told us, in various public forms over the years, that they have been involved since the MRS Program. They were involved with the Nuclear Waste Negotiator. They took

the advantage of the DOE grants. They went out and viewed other waste facilities in the United States and in various parts of the world. They went to Europe, they went to Japan. They really studied this very carefully before they met with PFS and decided that this was a good choice for their Reservation.

Now, as I showed you on the pictures, that Reservation is a very isolated area. There isn't a lot of economic development that is open to them. Because of the situation in Utah, for instance, a casino really isn't a realistic venture for them. This, according to Chairman Bear, is a very good thing for the Skull Valley Goshutes, and he looks forward to it raising their standard of living.

DR. WYMER: You said earlier that it was a very small band. How many are there?

MR. DELLIGATTI: Yes. There are approximately 130 enrolled members of the Skull Valley Band. Only a small minority, only 30 or 40 actually live on the Reservation now. There isn't much housing stock on the Reservation, and there aren't many jobs in the area. So many of them live in Grantsville and in Salt Lake City where they can go for jobs.

MR. LEVENSON: If the railroad gets built, would it be limited to shipping fuel or would it be a

general railroad access that the Tribe might use for other things and other things?

MR. DELLIGATTI: I have to tell you, I'm not sure. My understanding is it would be limited during the lifetime of the facility to shipping fuel. But I know that the Tooele County government has expressed interest in the long-term, after the -- this facility is going to be licensed for 20 years. They could come back for a relicensing, which we could grant them for another 20 years. But their lease with the Skull Valley Band is for no more than 50 years.

So at the end of either the second license or the 50 years, depending on how that time frame works, that rail line would then be available, and they could, I guess, apply to STB for other uses or to extend it down further. I guess there is some question in the minds of the Tooele County government as to the future of Dugway Proving Ground, for instance, how much longer is that going to be operational? I understand a lot of activities have been cut back there. So that's a question that's on the mind of local governments outside the Reservation.

To go back to the level of public interest, we received over 3,800 comments on the draft EIS. Many of those comments came from the State of

Utah. The State of Utah provided, as public comments, many comments that they had made in the scoping forum and in other forums over the year and a half or so prior to the EIS coming out. We also got a great deal -- a great number of comments from individual citizens in the Utah area. We got comments from around the country. And we reviewed and have prepared responses to those public comments, and we have prepared the final EIS.

What's going on right now with the EIS is this new information that came in between December and most recently June on the aircraft crashes and the new geotechnical information, the staff believes that it's prudent to complete our review of that information and make sure that it doesn't change any of our environmental determinations that we made in the EIS or, I think more likely, that it doesn't require us to change any of our responses to the public comments. So we have made a determination that the best way to proceed is to hold release of the final EIS until we are prepared to release the supplements to the SER. That way we'll keep everything on track together. Next slide, please.

MR. LARKINS: Besides the comments from the state, can you say something about the nature of

the comments from the other comments?

MR. DELLIGATTI: The nature of the comments were really all over the place. There were concerns about -- needless to say, concerns about radiation, issues associated with dose, danger to the public, issues associated with the impacts of transportation of a large amount of spent nuclear fuel -- would this cause a particular problem for people along the transportation route. There were concerns about other uses of Skull Valley -- would recreational uses be impacted by this facility? They really just covered the gamut of concerns that people would have with this sort of facility.

Okay. I want to talk a little bit about the other part of the licensing process that is ongoing along with the safety and environmental reviews, and that is the Atomic Safety and Licensing Board hearing process. It's a formal adjudicatory process. I think you're probably familiar with that. A three-judge panel is put in place. Contentions were brought into the process that include safety and environmental contentions. There are a set of hearings at which the contentions are adjudicated, and after the hearing, the ASLB issues an initial decision. The Commission reviews the ASLB decision

and takes that into consideration when they make their licensing decision.

Now, in the ASLB proceeding that's going on for PFS, there have been a number of parties. They include the State of Utah, the Skull Valley Bank of Goshute Indians, the Confederated Tribes of the Goshute Reservation. This is a separate federally recognized Indian tribe with their own reservation. The reservation is located on the Nevada/Utah border, but they were granted status as a party to this case, because there are familial relations between members of the Skull Valley Band and the Confederated Tribe. And, in particular, there was a grandmother and granddaughter who traveled between the two reservations. Now, in the Board's orders, this gave a real connection. It gave the members of the Confederated Tribes a concern that gave them a seat at the table.

Private Fuel Storage, of course, is a party. The Southern Utah Wilderness Alliance joined about midway through the process. They are particularly concerned about the recreational uses of particularly the Cedar Mountains area. Ohngo Gaudadeh Devia is a group of Skull Valley Goshutes who are opposed to this facility. They represent, to the best

of our understanding, a minority of the Skull Valley Band. They are in opposition to the elected leadership of the Skull Valley Band, which has been reelected in the course of this licensing process. And, finally, the NRC staff participates as well in the ASLB proceeding. Next slide.

We had one round of ASLB hearings last summer in Salt Lake City. There were two safety contentions that were adjudicated. They had to do with the financial aspects of the application and with emergency planning. In both cases, the Board has released their findings, and those contentions are, in effect, complete. We have no further actions on those.

The second round of hearings, the schedule is currently November of 2001 for the remaining safety and environmental contentions. That was a schedule that the ASLB put in place before we received the two license application amendments. Until the staff is ready to put out its new schedule for completion of the safety evaluation supplements, the Board wouldn't act to change their schedule. The staff is in the process of preparing to inform PFS of our schedule. Once we do that, the Office of the General Counsel will provide that new schedule to the ASLB, and the

ASLB will then adjust their schedule accordingly. Next slide, please, and final slide.

The remaining PFS licensing action, the issuance of the final EIS, and the supplements to the SER. The second round of ASLB hearings, the ASLB decision, the final NRC licensing decision by the Commission. And that is where we are right now. Gentlemen, thank you.

DR. WYMER: Thank you very much. We'll have questions now. I'm going to start off with the first question. What control does the State of Utah over what is shipped by the Union Pacific Rail Line?

MR. DELLIGATTI: I suppose that the State of Utah -- this is really not an area of my expertise. Rob, do you have any specific knowledge on that? Robert Lewis is one of our transportation experts on the Spent Fuel Project Office staff. I didn't mean to do that to you, but Rob knows a whole lot more about the transportation area than I do.

MR. LEWIS: Generally, the railroads would not -- I think there are certain state requirements that the railroad has to meet, but I think your question probably involves like the routing of the fuel, questions like that. And those typically pertain to highway routing, and the railroad routing

is a completely different subject. And it's done, basically, through industry practice.

DR. WYMER: I thought that was probably the case, but the intent of the question, of course, is can the State of Utah prevent bringing spent fuel into the area?

MR. LEWIS: Well, I'm not a lawyer, but I think, generally, that's an interstate commerce issue, which the Constitution reserves for the federal government.

DR. WYMER: So they, basically, don't have to go to the state to get the stuff to the Skunk, whatever it is.

MR. LEWIS: Skunk Ridge.

DR. WYMER: Skunk Ridge. And then it's all federal land for the proposed railroad into the site. I see, okay. Thanks. John?

DR. GARRICK: You said that the license that's being considered is a 20-year license?

MR. DELLIGATTI: Yes, sir.

DR. GARRICK: What's the operational period of the facility? Is that the same time?

MR. DELLIGATTI: That would basically be the same time, yes. If they choose to come in for relicensing, they need to inform us -- we would

suggest that they give us several years notice that they're coming back in for the relicensing process, because that will be, in effect, the de novo licensing review. But I don't believe there's anybody here from OGC. If what you're getting at is the decommissioning period?

DR. GARRICK: Partly, yes.

MR. DELLIGATTI: Yes, yes. That is really dependent upon the amount of fuel that's stored at the end of the final licensing period, and it's also dependent on the lease. The lease with the Skull Valley Band requires that at the end of the 50 years that land is back to green field, in effect; that it's ready for their unrestricted use. Our decommissioning rules allow for a certain amount of time, and, again, I was hoping that Shef Turk would be here or one of his associates but they're not, but I'm not sure exactly how to describe that decommissioning period and how that relates to the period of operations. But they are slightly different.

DR. GARRICK: What's the significance of 20 years? That seems such a short period of time?

MR. DELLIGATTI: Well, that's generally the licensing period that we feel confident, according to our regulatory requirements, is a time that we can

be sure of the materials, properties, et cetera of the facility. And that at the end of that period, we would feel more comfortable going back and going through a relicensing process to make sure that everything is still in order.

DR. GARRICK: Well, it doesn't mean -- well, the EPA on WIPP, for example, has a recertification process, which is a little different, I guess, than a relicensing process.

MR. DELLIGATTI: Yes. No, this is a relicensing process, and it would be as if granting a new license. In effect, we would want to have the same level of assurance of all the structures and systems and components important to safety. And that would include, you know, looking at the pads and at the foundations, et cetera, and making sure that everything is appropriate for another 20 years.

DR. GARRICK: You didn't say much about the design. Do you know what some of the basic properties of the design are, in terms of --

MR. DELLIGATTI: I don't know how much I can get into that.

DR. GARRICK: I see. Okay. All right. All right, thank you.

DR. WYMER: George.

DR. HORNBERGER: So I have a couple questions just to educate myself. So the PFS submits this application, and part of it is an environmental report.

MR. DELLIGATTI: Yes.

DR. HORNBERGER: But then the NRC is responsible for the EIS.

MR. DELLIGATTI: That's correct. The environmental report is basic information on the state of the environment at the time of the application and what the applicant plans to do to change that environment. From that, we look at that, we asked a couple of rounds of a request for additional information to get more depth and more detail. And from that and other information that we gathered -- the information we got in the scoping process, the information that the other federal agencies brought to the table -- the four agencies together built the Environmental Impact Statement, with the NRC staff being the lead and being the primary builder of the document.

DR. HORNBERGER: Of the document. And is the EIS in this case focused, I assume, almost totally, or perhaps totally, on impacts on -- non-radiological impacts on the environment, building a

rail line and what it does?

MR. DELLIGATTI: It's focused on all impacts, both -- all impacts to the environment. That would be from the siting of the facility, siting of the rail line, construction of the facility, construction of the rail line, consideration of dose radiation associated with the facility's operation. All of that is considered -- water use. Anything that's going to change the baseline of the environment in Skull Valley from the Reservation to that rail line is part of the EIS.

DR. HORNBERGER: Okay. So in terms, then, of the radiological impacts, these are for normal operating conditions, typically?

MR. DELLIGATTI: Yes, yes.

DR. HORNBERGER: And so we're talking very low doses.

MR. DELLIGATTI: Exactly.

DR. HORNBERGER: Extraordinarily low doses.

MR. DELLIGATTI: Yes.

DR. HORNBERGER: Okay. But the impact is not only on people but --

MR. DELLIGATTI: We have to look at plants --

DR. HORNBERGER: -- the critters that live there.

MR. DELLIGATTI: -- plants, animals, people. You know, we went through the whole process of endangered plants, endangered species.

DR. HORNBERGER: Right.

MR. DELLIGATTI: There are raptors in the Valley for consideration. Concerns were raised of would there be a significant dose off the top of the casks in case birds went to -- that is all considered and included in the EIS.

DR. HORNBERGER: Now, I guess one exception would have to do with things like cruise missiles, which now would lead to potentially larger releases.

MR. DELLIGATTI: The question with cruise missiles, and indeed the question with all military operations, because, as I said, I believe the UTTR, I believe, is the largest Air Force training range in the continental United States -- there are a lot of planes flying in that area -- the question comes down to the staff has to evaluate probabilities. And if it comes out to less than one in a million probability, we don't consider that to be a credible accident. And in the initial safety evaluation report, with the

numbers that we originally had from PFS, that was the case, that PFS demonstrated, the staff evaluated.

Again, we have an outstanding expert on the staff, Kazimier Campe, who's been with NRC for a very long time. He's done many of these reviews. He's working with us, along with some great folks down at the Center for Nuclear Waste, and together they have reviewed all of this information that's come in from PFS and the Air Force, and that's what they're doing right now in this new information. And the numbers tell the story. It either is or it isn't, and that will be the decision that we have to make in the supplement.

DR. HORNBERGER: Now, presumably then when they sited a chemical weapons storage facility, did they have to worry about cruise missiles, and did they go through this kind of analysis?

MR. DELLIGATTI: I understand that they did go through an Environmental Impact Statement process. I don't believe it was -- the document that I believe I saw was nowhere near as large as the one that we have put together on this project. But, again, it's the four agencies, and I think there's just -- the NRC way of doing an EIS is one that is very complete, and we try to take in everything into

consideration that we can.

DR. HORNBERGER: Thanks.

DR. WYMER: I have another question. Aside from the amount of fuel involved, what are the principle differences between this facility and the dry cask storage facility at a commercial power reactor?

MR. DELLIGATTI: The big difference is the amount of fuel that's being stored and the fact that you would have to have a canister transfer building. There won't be a pool as they are at most operating power plants. Everything is being done dry; it's a dry transfer process of the fuel. There will be no bare fuel handling at PFS. The fuel will be in canisters, it will stay in canisters, it's just the overpacks that will change. But that's the big difference, the fact that there's not an operating reactor, there's not a pool, and they've got a canister -- a dry transfer system in place.

DR. WYMER: So it's pretty similar.

MR. DELLIGATTI: It's pretty similar. It's in a more isolated location, perhaps, even than some of our power plants are. That would be the other thing, and that brings in certain emergency planning considerations that PFS has been working on. The

state and PFS have a certain push and pull on this. PFS thinks they get an issue settled, the state may take some action that will raise some questions in that regard, and that's part of the ongoing process.

DR. WYMER: Okay. Milt?

MR. LEVENSON: Yes, I've got two questions.

DR. GARRICK: Pull the mic down.

MR. LEVENSON: I've got two questions. First, is the 20-year period also used for dry cask storage facilities at reactors?

MR. DELLIGATTI: Yes.

MR. LEVENSON: Okay. So it's just consistent.

MR. DELLIGATTI: Yes.

MR. LEVENSON: This isn't a new number.

MR. DELLIGATTI: Yes.

MR. LEVENSON: Okay. The second I'm not sure is really appropriate, but my engineering background keeps squeezing out my Committee membership. I don't know whether you can answer, but one of the things I found a little surprising was that the application was only for a single, specific cask, for instance, for shipping and storage, as opposed to saying any licensed shipping cask could be used, et

cetera.

MR. DELLIGATTI: At the time that the application was submitted, there was a requirement that they have at least one dual-purpose cask in the application. Obviously, they had to have a way of getting it there. Their initial application included two possible cask designs. The second cask vendor removed their application, the transfer application, from NRC's review. So that, at this point, they are only seeking approval of the Holtec HI-STORM. If the facility were to be licensed, PFS could come in with an amendment to the application to use other casks that are approved beyond Part 72 dual-purpose casks.

MR. LEVENSON: Okay.

DR. WYMER: Any other questions from people around the table here? John?

MR. LARKINS: Question. Is there a limitation on the age of the material that's going to be -- fuel that's going to be shipped and stored there? I mean should it have been --

MR. DELLIGATTI: It would be at least five-year pooled fuel.

MR. LARKINS: Five-year pooled fuel. So when you look at the risk of transportation accidents, you take that into consideration, in terms, also of --

MR. DELLIGATTI: Right. And this is an issue, I think, that partly will be decided by PFS and DOE, depending on the status of the repository program, where a repository is going to be, if DOE and PFS agree that this facility needs to be queued in a way different from at-reactor facilities. I think all those decisions will impact what fuel actually would eventually get shipped to PFS, were it licensed.

MR. LARKINS: Yes. So certain accidents that we consider for spent fuel storage pools will be less likely and lower consequences for this type of facility.

MR. DELLIGATTI: Right.

MR. LARKINS: Right.

DR. WYMER: George?

DR. HORNBERGER: Yes. I just thought of something else now that John asked that. We talked a little bit this morning in our meeting about the pre-closure aspects for Yucca Mountain, and there they're talking about an integrated safety analysis for a lot of the pre-closure activities. You don't have anything like that. I mean you do have a safety analysis report, but it's not, I take it, a full-blown ISA, or is it?

MR. DELLIGATTI: What kind of pre-closure

activities particularly, you know --

DR. HORNBERGER: Well, you know, the handling of the fuel, the spent fuel, and the transfer to casks.

MR. DELLIGATTI: That's all considered in the safety evaluation report.

DR. HORNBERGER: It is, okay.

MR. DELLIGATTI: Yes.

DR. GARRICK: But it's more of the conventional, if I may use the word --

MR. DELLIGATTI: Yes, yes. It is the kind of review that any dry system would receive from the staff as part of its licensing evaluation.

DR. GARRICK: Okay.

MR. DELLIGATTI: That's what is required by 10 CFR Part 72, our regulations, and that's been the basis of our determination.

DR. WYMER: The staff hasn't really hasn't had to stretch itself very far to wrap around this, based on all the background experience they've had with reactors.

MR. DELLIGATTI: We've had a lot of experience in licensing at reactor facilities, yes. And it's come in very handy in this process. And the assistance of the Center has been very useful as well

in terms of the questions of subsurface, you know, natural system. They've been great; they've been very useful.

DR. GARRICK: And there's no fuel blending or anything of --

MR. DELLIGATTI: No. It comes in in a canister; it goes out in the same canister.

DR. GARRICK: Yes. And no wet processes.

MR. DELLIGATTI: No wet processes. No liquid at all.

DR. HORNBERGER: Another thing that came up in some discussions we had this morning and that is I was just curious whether you take into account the fact that they would be handling older fuel at this facility than at a reactor? And, obviously, it has some --

MR. DELLIGATTI: Again, when you say handling, there will be older --

DR. HORNBERGER: Yes, I know.

MR. DELLIGATTI: -- fuel in sealed canisters.

DR. HORNBERGER: Yes, I know. It's in canisters, but it's just going from one overpack to the other.

MR. DELLIGATTI: Yes. Right.

DR. HORNBERGER: But, still, it's --

MR. DELLIGATTI: Yes, it will be easy. When the cask comes in, when the transportation cask come in, it's wiped before it's transferred. And if there were significant contamination, it would be put back into the transportation canister and shipped back.

DR. WYMER: These storage casks are passively cooled. Is there any consideration given to the fact that as time wears on, it will be fresher and fresher fuel with higher and higher burn-ups and that may cause heat removal problems? Has that come into the picture?

MR. DELLIGATTI: Well, if that were the case, and I may ask one of my colleagues over here to help me out with it, there is a limit for the canister, for the Holtec system.

DR. WYMER: A limit?

MR. DELLIGATTI: The Holtec system has a limit to it that would have to be changed if there were higher burn-up fuel.

DR. WYMER: A curies limit or a --

MR. DELLIGATTI: Beg your pardon?

DR. HORNBERGER: Burn-up limit.

MR. DELLIGATTI: Burn-up limit?

DR. WYMER: It's a burn-up but not necessarily a cooling. So it is a curies limit or not?

MR. JACKSON: You could have a burn-up limit as well as --

MR. DELLIGATTI: This is Christopher Jackson. He is the Project Manager for the Holtec casks in Spent Fuel Project Office.

MR. JACKSON: The cask is limited not only burn-up by also by heat load, so the casket itself has a design basis heat load of 21.4 kilowatts. So you can't put more than 21.4 kilowatts in it today. If they were to raise that through amendment or something, we'd review it and see that they have adequate heat removal.

DR. WYMER: I see. Okay. Thanks.

MR. DELLIGATTI: Thank you, Christopher.

DR. WYMER: Any other questions on this side of the table here? It's a real quiet bunch over there. Okay. Well, now it's time to break, so thank you a lot, Mark. Very interesting, and we'll look forward to seeing how this evolves.

MR. DELLIGATTI: Thank you. It was my pleasure.

DR. GARRICK: All right. With that, we'll

adjourn for lunch.

(Whereupon, the foregoing matter went off the record at 11:40 a.m. and went back on the record at 1:03 p.m.)

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

1:03 p.m.

DR. GARRICK: Our meeting will come to order. This afternoon, we're going to get an update on the pre-closure approach, and the Committee member that's going to lead the discussion is Milt Levenson. Milt?

MR. LEVENSON: Our topic for this afternoon is the pre-closure topics at the proposed repository at the proposed site of Yucca Mountain. I think that we perceive that a major fraction of these activities are very similar, if not identical, to what has been done many times at power plants elsewhere. On the other hand, while there may be many licensees that have done exactly the same thing, I don't think DOE has ever been a licensee for these specific activities. So it isn't necessarily just copying what's been done before.

And I think most of my comments, if I have any, or questions will come during and after the presentation. So Banad, why don't you just go ahead and start out?

DR. GARRICK: And introduce yourself.

MR. LEVENSON: Yes. Introduce yourself into the microphone for the court reporter.

MR. JAGANNATH: Good afternoon. I'm Banad Jagannath. I'm on the staff of the High Level Waste Branch, Division of Waste Management. Today, I'm going to present an overview on the pre-closure safety analysis.

The topic is basically pre-closure topics at the proposed Yucca Mountain. You can see there's a long list of members who are working on the pre-closure team. This is a multi-disciplined team, both at the Center and here, and all of them have contributed to this work.

My presentation outline is basically a brief on the approach we are taking to pre-closure issues and what are the NRC activities in the pre-closure. And based on that, we will identify a few pre-closure topics which we would like to pursue further with DOE at this point. Then I have two example topics from that in a little more detail. Then I'll briefly touch on the path forward and summary. This is basically an overview of our approach for pre-closure.

MR. LEVENSON: Let me interrupt and ask one question. Is the pre-closure activities that you're discussing here, is that a requirement as part of the site suitability or is it just required for the

license?

MR. JAGANNATH: Basically, it's required for the license, but if any of the pre-closure letter items are a part of the site suitability, we have an obligation to mention that. It's probably a link in that respect. Again, our responsibility for the site recommendation goes two components. One is the subsurface characterization, and the second is the waste form characterization. So the subsurface characterization part of this pre-closure activity, but we have dealt with that under the RETME KTI. We had several discussions with DOE, and there was agreement and a resolution to path forward. So most issues have an agreed path forward from that perspective.

The objective of this is to present NRC approach to pre-closure topics related to the repository at Yucca Mountain. Our approach, basically, we had five or six different aspects of it. We are controlled by the proposed 10 CFR Part 63, one of the key components of the use of the risk-informed performance approach, particularly ISA.

Second one is methods. We have worked on the Yucca Mountain Review Plan and licensing application. In this, we have identified areas of

review, once they were done, acceptance criteria and review method to the extent we can at this point. It's still not public yet. But as an activity it's done. As part of a pre-closure activity, there's a pre-closure section which we have covered.

In addition to that, concurrently, since the pre-closure will be ISA approach, we are working on some kind of software tool, which we call a pre-closure tool analysis tool. I think we had a presentation to ACNW sometime in November of last year. It's basically a software to keep track of what DOE is doing so we can go back and look at different components of it, do our own analysis, something like that. After the November presentation, we haven't made that much progress in that area, because we're busy with the other aspects of the program, but someone will pick it up and pursue further development of that software.

In addition to that, we are also reviewing DOE documents on the site hazards, design, and human factors that come along with that. Based on the compilation of all these things, we intend to come up with issues which we think should be discussed with DOE where we have some consensus, basically. And these, again, go through our own screen of whether

it's really important from the risk perspective. We would not pick up every item that we have consensus, only those that are important. But the other ones we'll be discussing with DOE.

Based on that, we'll interact with DOE and discuss and come to a resolution of a path forward. This is our overall approach for the pre-closure issues.

NRC activities on this to date, we have reviewed the DOE's Viability Assessment Report and their draft Environmental Impact Statement report and also the EDA II, Enhanced Design Alternative. We have reviewed that and provided comments and other things with our best items. Under the significant document was the Repository Safety Strategy, Rev. 4. It's not a DOE document, it's a contractor document, because we were told DOE weighs it further. Anyway, we have reviewed that.

As addition to that, DOE also submitted preliminary pre-closure safety analysis recommendation. We have done some preliminary pre-closure safety analysis. We have also reviewed that. In addition, recently, we have reviewed the supplementary DEIS, which was released. The latest Engineering and Science Report review is still under

progress. We haven't had time to go through it and complete. But based on these issues -- the repository safety strategy, the preliminary PCSA, and the other documents, the SDDs and the engineering reports that DOE produces in support of the other documents -- we have identified some concerns where we need to talk to DOE.

In addition to that, our other activity has been development of the recommended review plan. In that, we have identified and documented the acceptance criteria review material under different areas of review. We intend to use those when we review these documents for compliance acceptance criteria. This is one of the grading documents used in our review.

Another activity, as I mentioned before, the pre-closure safety analysis tool, which is currently in progress. We'll pick up the second phase of it this summer. In addition to that, there are several meetings with DOE in Appendix 7, visits and meetings and DOE presentations. This is our knowledge of what DOE's doing in the area.

Based on all the work we are doing to date, we have identified several items of concern, which we call them pre-closure items. Listed them

under the general areas which are ten areas of the Yucca Mountain Review Plan, and these are those areas. This list of items is not a final list. This is just all preliminary identification of topics we've identified based on what we have seen and reviewed to date. I stress on this, because this will have more items coming in as we go along.

So the first document of DOE on this was a letter, which I believe you probably have. A letter wrote to DOE on identifying these ten issues and particular topics in the ten different areas. And I added a few of those which we would like to discuss with them as early as possible. And there are other areas where we have not done much work on the concerns. They're just listed there. And that is a letter of April 27.

Past the letter, you see we have identified all the pre-closure topics under the different areas -- site description, description of structures, identification hazards. In each one of them, these are the items which we identified to DOE in the letter. I'm going to go through them briefly, and then we'll pick two of these things for the detailed presentation later.

DR. GARRICK: I was looking at your list

here when I should have been listening. But is this -- what's different from what we're seeing here as topics of analysis and what you do in your ISA or is it the same thing?

MR. JAGANNATH: Kind of the same thing, but it's not exactly identical. ISA has six or seven different components. We consider, again, the site, the structures, the hazards, the probability of occurrence and occurrence consequences, and consequence. So that logic is still built in there. What we did was we just took heading of each chapter in the review plan and put the items there. These all fit into the ISA.

DR. GARRICK: Oh, okay. But this came of the plan.

MR. JAGANNATH: The review plan, which is based on the performance approach of ISA. It has the same logic.

DR. GARRICK: Okay.

MR. JAGANNATH: Under information flow, so it has the same logical flow.

DR. GARRICK: Okay.

MR. LEVENSON: What's the second bullet up there? What's the design basis ash fall? What does that mean?

MR. JAGANNATH: Oh. All right. This is a design detail where we had a concern. We want to discuss this. Basically, volcanic activity in the pre-closure time DOE has assigned, with 150 kilometers, the probability is less than ten to the minus six, and there is only like a two centimeter thick ash fall. NRC feels the sense of ten kilometers on the site has a probability of ten to the minus six of volcanic activity happening. And then depending on where you assume that distance from the repository, you get different amounts of ash fall coming in. It goes anywhere from two centimeters to an extreme case of, if you have volcanic activity, happens at one kilometer, like 400 centimeters. So this is an issue we would like to discuss with them and resolve.

And also how they treat the ash has an impact on the lower incoming structures and how it impacts the HVAC and filter systems. DOE seems to think if they can address how this is addressed, it will address the ash flow, ash particle-size. I think it's a little different, but there's a little more detail in it because of the probability and whether it happens or not.

MR. LEVENSON: Are you saying that something that has a probability of ten to the minus

six is defined here as a design basis?

MR. JAGANNATH: Well, as part of --

MR. LEVENSON: If so, what's beyond design basis?

MR. JAGANNATH: It's borderline. Ten to the minus -- less than ten to the minus six is a design basis. After ten to the minus six is a design basis, category 2. It's still under discussion, not agreed. We don't know where it will end up. If it's that's close, we need to look at it in great detail.

MR. LEVENSON: Well, I guess the thing that bothers me a little bit is that the consequence of this -- I mean ten to the minus six may be used for a core melt, et cetera. Since the consequences of this, no matter what it is, are many, many orders of magnitude less, you're still using similar numbers for selecting what will be a design basis?

MR. JAGANNATH: As per regulation, this becomes a category 2 event if it is greater than ten to the minus six there.

MR. LEVENSON: No, no. My point is for a design basis doesn't it have to have significant consequences as well as probability?

MR. JAGANNATH: DOE conclude all these things from two criteria: frequency, which is being

lower than ten to the minus six, or a consequence being less than the performance objectives. But here it's not the radiation dose we are thinking, it's the design use with how the design is structured for the ash. It's two centimeters or 400 centimeters. There's something in between. And how you protect the systems. They can probably start the operation, but still there's so much ash in the air, how you control the ventilation system and filter, HVAC, heat pump, other things. It's the design detail issue rather than a performance issue from that perspective.

Most of our issues will be more to the details of the design rather than anything, because we are getting into that little by little. The first one is the geotechnical investigation for surface facilities. We haven't looked at it in great detail, because recently they have done some investigation on that. Our focus has been all along on the subsurface investigations. But the aspect of the standard building is a very important item. In that context, we will look at this in greater detail. We are not identifying any concerns on this, but there's an area where we will focus at the next stage.

The second one is the ash fall, which I just mentioned. Basically, it's an open item in the

sense we have not agreed on the probability of occurrence of the event. Once it is agreed upon, then it's a question of how do you design it.

The next one is under the area of review is the description of structure system and components. It's a very general area. We are only identifying one item here -- high-level risk characterization. Within that just burn-up credit. It's an issue that we want to talk about. There are many other issues which are not identified, so this will be an ever-expanding list, particularly the waste characterization part.

The burn-up credit issue is NRC requests the applicant to identify how much credit they take for the burn-up of the fuel. DOE has indicated that they want to use the burn-up credit. In the previous Tech Exchanges, they have not agreed on the methodology of how to use that. DOE's planning to use reactor records as a basis. NRC says it's hard to measure. There's something in between. That whole methodology is not defined. So if DOE chooses to use burn-up credit, it has to be verified, it has to have some agreement on that. This is one of the issues we will discuss in the coming Tech Exchange. What will happen, we'll discuss at that point.

Next one, going down the line, go to the identification hazards and initiating events. One of the first ones is the aircraft hazard. Again, DOE has measured the aircraft hazard by probability of less than ten to the minus six. But the concern we have is there are many assumptions without databases. There is lack of site-specific information in terms of number of flights and aircraft and flight activity, flight path. And the final conclusion is not supported well. This is one of the ones I'll talk in a little great detail at the end, so I'll skip this at this point.

The next one is nearby military hazards and facilities. Again, our concern is DOE has not done a systematic evaluation of this hazard. There are lots of hazards from the military site: explosives, flight projectiles, test ranges, cruise missiles going there. And these are not systematically analyzed or presented properly. Basically, it's a question of inadequate or insufficient analysis presented. They exclude many facilities on the issues of hazards. We don't plan to discuss this at the next Tech Exchange, but we'll be following this through later.

The next one down the line, operational

hazards. This is, again, basically reviewing the DOE analysis report. What we have found out is they have not given full consideration to the human reliability and software reliability. It's not addressed completely, so we'll look into at greater detail as we go along. So far we haven't done any analysis on our own. It's one of those things we'll follow through later on.

The next one down the list is earthquake as an initiating event. The seismic thing we are doing with the topical report process, we have already a total of three topical reports. One kind of agreed and saw the PSHA methodology. The second one was seismic diameter methodology. Both have been approved. The third one is supposed to be seismic parameters. That will come in by 2002, but DOE has submitted a preliminary report giving some parameters what they call them. The process is still not complete. Once we receive topical report three, then they'll be a consolidated safety evaluation. But this issue we decided to discuss under the topical report process.

The next one down the line is tornado missile hazards. DOE has identified only one hazard in the current document. This is a internal hazard of

pipe stem wall heating the waste package. What they've now done is they've gone through and addressed all the potential hazards which should have hazards. There is a small window where the waste package will be between the waste handle building and the portal. It will be exposed to the environment. One of the things DOE is considering is putting in operating procedure, administrative procedures, and warning systems that when a tornado is coming they will probably start the operation of those things. We had to look into the detail of the preventive measures that are going to be installed to prevent this one.

The next one is, again, fire hazards. We have not done a detailed review of the fire hazard part. DOE has submitted a few documents, but we have not paid much attention to it. But what we were looking for is the hazards on the surface because of diesel fuel catching fire or anything. We hope to look at it in great detail. We haven't done it yet. And, also, make sure all these fire hazards in areas are bonded with the waste package fire design criteria. Fire design criteria covers all these things. That's what we were looking into.

Continuing, we get into the so-called ISA RPCS part in a little more detail, identification of

event sequences. What we found out is DOE has eliminated quite a few event sequences by so-called design, and our concern is those eliminations proper except they have to justify based on technical defensibility and uncertainty and also show that what the consequences criteria are. The frequency criteria satisfied whether the basis on which the element is seen from consideration. And also all the components and systems that take part in that should be functional for the entire duration. If these three criteria are satisfied, then it's all right.

The next one is justification of probability estimations. Going through those things we find a lot of probability values are taken from databases that are not consistently correct or applicable. In some instances, they use database of a longer period of time, some instances, very short period of time, some instance, something not exactly applicable. So this is like a detail where you are going and look at the probability of numbers and frequency numbers and how it impacts.

Our concern is not to look at every detail but where there are borderline cases, where the frequency is put in category 1, not category 2, or category 2 or beyond design basis where any small

change would have an impact on the consequence of the requirements. That's where we will focus our attention to these details. This, again, are details of the frequency estimation.

Next one is going for the consequence analysis, the dose calculation methodology for the category 1 and category 2. Category 2 is really straightforward except probability basis. There's a frequency for it and also there is a dose to be complied with. It's a standard methodology for calculating doses. It's really straightforward. Except in some instances DOE has taken public dose, like more than two identification procedures. They did it for identification, but they have not given the procedure and all those things. The details we will be looking into when they do the detailed analysis.

But the category 1, we are having a discussion, a meeting, and the next meeting we'll discuss that. It's how you comply annual dose. It's a frequency-weighted annualized dose combination of all category events plus the release from the normal operations of both surface and subsurface facilities. And that is used to measure against the 23 millirem requirement for the category 1 event. There is some discussion going on between us on the details of the

methodology.

MR. LEVENSON: In the dose calculation consequence analysis, will you be doing any independent calculations or just reviewing the DOE calculations?

MR. JAGANNATH: We will be doing independent calculations where we think it makes a difference in the analysis. If it's a borderline case or we suspect something, we'll do that. If it's very, very low and everything else is being the same, probably not. That's some of the advantage of the tool we're doing. We can pick up any component in the system and change numbers and do a study on each component. That's how that tool is designed. So we don't have to go from beginning to end.

MR. LEVENSON: Yes. In those calculations that you do, is it the intent that you would do best estimate calculations so you have some measure of how much conservatism might be in the DOE calculations? Otherwise I'm not sure how you know whether there's conservatism in their calculations or not unless you've done a best estimate calculation.

MR. JAGANNATH: We'll probably do both and see whether it makes an impact or not. In either case, if they're still below their radiation limit, it

won't make a difference. If it is a borderline case and it makes a difference, then we'll go into detail and resolve it. At this point, I don't know exactly. We haven't had a case where that makes a difference. And it's still so preliminary we haven't had that many instances where the dose is close to the radiation limit.

Next one, under the identification of structure system component safety and safety controls and measures to ensure availability of safety systems, it's basically our Q-list. It's the quality level categorization. They are NWSCA or the PCSCA. Usually it will identify structure system components are mitigating measures that are important to safety. These are called the Q-list. DOE and NRC are using a methodology which DOE is using, which we have seen, is fairly similar. The methodology for that is similar. We will probably look into more details of how it is implemented and the basis for some of their numbers they use and the whole thing.

They have presented limited ISA results, and what they do is they go through a procedure called TAP 2.3. It's like a checklist. Based on answers to questions, they categorize them as important to safety or not important to safety. This was done maybe a

year or two back where we had not done a lot of ACS work, so it's kind of mixture of probablistic or sometimes putting it in on a function not a system level that is for safety. I understand they're in the process of revising this -- fine-tuning this one.

The next one is the QL categorization method.

MR. LARKINS: Can I ask you a quick question? I'm just curious, on the first one it says, "identification of event sequences." Will the methodology allow you to look at things like coupled events where you have a fire coupled with human interactions or inappropriate human interactions?

MR. JAGANNATH: It should. Yes, it's fairly general. We haven't seen any of those coupled things yet, because we haven't seen a detailed one. Fire is one of the things we have not seen the study. And human factors, DOE has not given us any information on that.

MR. LARKINS: But you plan on looking at that.

MR. JAGANNATH: Yes. That's part of the ISE, integrated systematic evaluation.

This quality level categorization. Based on all the items in the Q-list, DOE proposes to

categorize them into three categories: QL-1, QL-2, and QL-3. And, again, this has a very different criteria. Category 2 is relatively simple. If the event per dose is more than five rem, then you do something to bring it back, and it goes to QL-1.

In the category 1 event, the criteria is, one, we have the dose. It's an annual dose. DOE is proposing to annualize it, a frequency-weighted annual dose. Plus they had a bonding dose. Bonding dose is all the category 1 events, the one dose that gives the highest dose. Together these two should be within the regular development. If it passes the 100 millirem or 20 millirem, it goes to QL-1; 20 millirem, QL-2 less than that.

We are in the middle of discussions with DOE on this one. These items we will discuss with DOE in the Tech Exchange coming up. But we are concerned with the details, how they interpret the dose into these three events and also the difference between the three -- QL-1, QL-2, QL-3 -- since the risk is not that much to start with.

The other topics is under the design of structure system component safety. One of the things was level of design detail. DOE has made us a proposal on the contents of the level of design detail

that they would intend to provide in the application for, one, the consent authorization, and, second, for license to proceed. In both cases, it's a two-stage process. One component will provide enough information of what's available at that time to make a safety case at each stage. And the criteria is there should be enough information for the staff to review independently the compliance with the safety.

The second component of it is based on how they are for the safety components. When they categorize them to QL-1, QL-2, QL-3 and non-Q. There are four categories of systems and components. How much design detail they will give in the license application. The QL-1 item will have all the information needed for the staff to arrive a safety determination independently. QL-2 will have a little less, QL-3 will have a little less, and it will have what is needed. Most of these cases there is general information given, and the details and the calculations are all in the Record Center available to the staff.

Our position has been it's appropriate to require a few more items in the QL-1, QL-2, but basically they have to have enough information that the staff needs to make an independent decision. And

if it's not there, we can go back and ask for it. That was the thing. There is a small position paper on that.

The next item under that was three items: soil structure interaction, ventilation design, and fire production. We have not done much work on these to the extent we have identified any issues, but these are all key areas where we will focus our attention. Soil structure interaction we will look into. Ventilation design is both the pre-closure, the surface design. More than that, the ventilation of the subsurface and the difference in areas of ventilation under the thermal load design, thermal load control criteria. We have seen only few details. That's something we'll dig into in greater detail in future. Fire production, we have not looked into in great detail. That's an area where we will check into.

The next item is engineered barrier system application. Since the waste package is a very important component, we have started to get into the design details of the waste package. Based on the limited review we have done, we have identified four items where we need more information. This is one of the topics we'll be discussing with DOE in the next

Tech Exchange. These are all mostly design related details in terms of how they use the design criteria to come up with a conclusion.

The next one is meeting the 10 CFR 20 requirement. We have not paid much attention to it, because it's fairly common and we have enough experience in the Agency. So at this point, we haven't paid much attention to it. It's something we'll pursue later on.

Continuing the other two topics identified which we haven't done much work is plans for retrieval. When DOE submits their retrieval plan, we'll look at it in great detail. And the last one is the permanent closure decontamination. We've not done much on that, nor has DOE.

These are the ten areas of the review plan. I have two cases as examples.

MR. LEVENSON: Before we leave that, one you went by very quickly, which is what is the thinking generically about what makes an adequate alternate storage for the waste? What does that mean?

MR. JAGANNATH: Adequate translates to it has to meet public safety and health, and DOE has not presented a plan giving alternate storage.

MR. LEVENSON: Alternate for what purpose?

In case the above-ground thing is damaged or an alternate to Yucca Mountain? What means alternate storage?

MR. JAGANNATH: Where do you see that?

MR. LEVENSON: Or is it the waste generated at the site? It's page 10 page on your view graph.

MR. JAGANNATH: Oh. This is -- in the context of retrieval, if you had to retrieve, we have all these tons of waste. Where do you store them when they retrieve it? That has not been -- that's hopefully a short time till they come up with the final solution. Again, when it comes through the portal, which is brought up from there to the storage part, wherever it is, you are looking at a transportation problem and the safety during that time on how it is stored there. These are things we haven't had any details. When it comes, we'll look at this part of the retrieval plan.

MR. LEVENSON: Well, the retrieval plan, presumably, you might have to have the capability to retrieve all of the waste.

MR. JAGANNATH: Yes.

MR. LEVENSON: So are you saying that they need to have alternate storage facilities for all of

the waste? I'm having trouble putting this in context?

MR. JAGANNATH: This is the scenario: If they have to retrieve the waste for whatever reason, retrieval means bringing everything out. If it's just one damage package, it's a different scenario. When they bring everything out, what will they do with it? They have to find a place somewhere. Initially, it will be on the site, and hopefully they will have a plan for a permanent location, wherever it is.

MR. LEVENSON: You mean as part of pre-closure before you start, you would expect to have facilities alternate where you could store it all? I'm having trouble --

MR. JAGANNATH: No, no, no, no. We expect a plan from DOE, what is a retrieval plan. And in the event it has to come, there's plenty of time at that point to go into the details of that, what are the design criteria. At this point, we are looking at it only they have to have a feasible plan where they can retrieve it. They should be able to retrieve from the --

MR. LEVENSON: I understand. I have no problems with the ability to retrieve, et cetera. But the next step of an alternate storage for everything

you retrieve, I'm not sure I understand what we're talking about. It's another hollow mountain?

MR. JAGANNATH: No, no. This is basically at the base of the Mountain. When you bring it up, where do you keep it? Unless there's another site or something --

DR. HORNBERGER: It's just a plan for the eventuality.

MR. JAGANNATH: Eventuality.

DR. HORNBERGER: So in other words, it's a plan to say, "All right. In the unlikely event, or hopefully very unlikely event, that we have to retrieve, we will build three Butler buildings and put the retrieved waste in it.

MR. LEVENSON: Okay. In the text, the word "adequate" is there, which is not on the slide. And that's why I was -- you know, how would you define what's adequate alternate storage at this early a stage?

DR. GARRICK: The only thing you know is that Plan A is not adequate.

MR. LEVENSON: Right. And if after, you know X billions of dollars and a number of decades, if it should turn out Plan A is not adequate, what's Plan -- I mean how do you make Plan --

MR. JAGANNATH: It depends on --

MR. LEVENSON: How much would you expect to see from DOE to meet this? What you would expect to see from DOE to meet this?

MR. JAGANNATH: Right now what we expect under Part 63 is basically a feasible retrievability plan. That plan should address all these components. And so far, you know, it's been a plan expected of DOE and that's it. And the details -- the plan will be there at the time of the initial licensing, and if the retrieval ever happens before that, there's adequate time for our Agency to work out the details of alternate storage. Even the exact details of taking the waste out of the drift, the minor details we will work out at that point. We hope to see a good part of it in the plan, but so far we haven't paid much attention to it as of now.

DR. WYMER: So they're not going to make the plan.

MR. JAGANNATH: The plan will be part of the license application, but at this stage, it's still at the site recommendation stage, so no work has been done on that.

MR. LEVENSON: Yes. I was -- how the staff would decide what is adequate when a plan is

submitted is really --

MR. JAGANNATH: Well, adequate is complying with the regulations protecting public health and safety. That is the bottom line. How it is that depends on so many aspects.

MR. LEVENSON: Are you saying that assessment would be made in case of the eventuality? You wouldn't attempt to make that now.

MR. JAGANNATH: No. I presume it's an eventuality.

MR. LEVENSON: Oh, okay.

MR. JAGANNATH: As of now. I hope I'm not speaking not out line.

MR. LEVENSON: This is part of pre-closure, and it says you're going to -- at the upcoming meeting, you're going to discuss adequate alternate storage.

MR. JAGANNATH: No. In the coming meeting, I'll point toward a few items in the letter that was sent to DOE. I don't know whether you have a copy or not. We are ready with six or seven items. Basically, they are the ones we'll talk to them in great detail. The rest of them we'll just discuss and present similar to this one, a little more in greater detail what our concerns. And a couple of them we'll

talk in greater detail. Basically, the one with the categorization and dose calculation and issues in terms of the burned-up credit and the waste package design details. These are reality. The other ones we'll discuss and make a case and work towards the path to resolution.

Next one, I have two cases of details, the aircraft hazard. Basically, our question is there's considerable uncertainty exists in the number of flights and the data that are used in the analysis. There, on the probability of ten to the minus six, we -- on less than ten to the minus six, our alternate calculation doing an analysis using a different distribution itself shows probability higher than ten to the minus six.

Again, the question is lack of specific data. They used only six month data and then different distributions and, again, have different proportions of different fighter planes and different engines. Again, it did not consider the flight mode -- normal, special -- or the effect area use in the calculation. So it's going back and nitpicking, but big concern is the adequate database and justifying the database they use. It's not the calculation method; it is the database.

We had some initial conversation with them. DOE is aware of it. We'll probably get into more details during the next Tech Exchange.

If you see here, this is a table that shows all these things; it's an example. The first two numbers are what DOE decided based on the incoming flights you have. The last are like a different distribution of different fighters. And the probability is higher than ten to the minus six, where DOE's calculation is lower than ten to the minus six. But it's a borderline case, and, again, it's a question of, basically, what are the number of flights and other things.

Since it's partly sensitive information, it's a question of getting the data, but they were working towards that. And if it happens to be a consent, they will have to go through the design process to address the hazard in the design.

Next one --

MR. LEVENSON: Let me --

MR. JAGANNATH: Excuse me.

MR. LEVENSON: -- ask you a question about one you skipped. Your slide 12, the LLNL study is like six times the DOE numbers.

MR. JAGANNATH: The report LLNL? That

shows 72,000 flights. DOE used only a six-month data taken from a lower level and projected that number of flights. This is one of our concerns -- the huge disparity in the database, the LLNL report and what DOE has gotten from the site.

MR. LEVENSON: You mean the DOE database -- it says based on six-month data. I assumed that was an annual based on six months worth of data. You're saying that's not the case?

MR. JAGANNATH: No, no. Six-month data annualized under project --

MR. LEVENSON: Annualized, okay.

MR. JAGANNATH: Yes.

MR. LEVENSON: So there is a factor of five or six difference between the two studies.

MR. JAGANNATH: Yes.

MR. LEVENSON: That's a pretty big number for --

MR. JAGANNATH: That's one of our major concerns. And we think that the distribution of the flights and each one has its own hazard, how they take it, and which one is more, less, and all kinds of fighter planes there. So that's the one that we don't have the details, and that's where the question is.

MR. LEVENSON: Well, the fact that your

detailed chart is based on the DOE numbers, does that mean you've discounted the LLNL study?

MR. JAGANNATH: Yes. This is just a sensitive study. We were taking DOE's numbers, with correcting in the effective area when a flight comes on crashes. This is what I come up with. You would assume the DOE number except there's a different distribution for the F-16, the F-15, and the A-10. The distribution assumed by DOE, so we went back and assumed other different distributions in the chart.

MR. LEVENSON: Yes, I wasn't looking at the distribution; I was looking at the total number of flights, which is a huge difference.

MR. JAGANNATH: Yes. That is there. This chart shows -- assuming DOE's number, even there, their calculation, we come up with frequency higher than ten to the minus six. So what means is it's not justified or supported. We've got to go back and check it, the details. And if it turns out that it's a hazard, it has to be designed.

Next one is there are four topics in the waste package we have concerns. These are basically detailed technical concerns, which we intend to talk to them. Would you like me to elaborate them or do you want to go on questions, since I'm approaching the

five-minute limit?

DR. GARRICK: No. I presume at this early stage you really don't have details on any of these.

MR. JAGANNATH: No. Based on the few details we've looked at, we have identified some concerns. That's what -- this is all mostly design details, but they have to be cleared out. And we'll have more of these things as we go along.

So, basically, in summary, the pre-closure topics I just briefly mentioned is preliminary list, and we have just conveyed this list to DOE. This list is not final. Our review is still focusing, and we are getting more information from DOE as the information base improves, we'll have more of these things. And as a result of them also we'll continue to interact with DOE.

The last one, plan to path forward. Basically, keep track of the resolution of status of these topics. Since this topic list may grow, I want to make sure we keep track of it. And also make sure all the items that are discussed have basis that is significant with respect to performance perspective. And have more interactions. And complete all the acceptance criteria. That way, by the time it comes we are ready for it. Now, if you have any questions

on that.

MR. LEVENSON: Okay. Ray, do you have --

DR. WYMER: I had a couple of small questions. They're not momentous here. The first one was how does the assumed pre-closure operating period impact the pre-closure treatment of the topics? You're talking about 50 to 300 years, and things can get old. How do you take into account in your pre-closure treatment the fact that --

MR. JAGANNATH: Basically, the surface facility part has a limited life -- 30 years of active life and then there's retirement, conventional engineering, conventional things. The subsurface part, the active part of placing the waste will be done at the end of that placement. Half of it is basically monitoring and ventilation. The ventilation part we intend to look at in great detail because of just the magnitude of the amount of that. So far we haven't done anything details, but some of the items we'll pay a lot of attention to, because it has a lot of implications on the thermal load and the safety case.

DR. WYMER: Okay. And the second question was I didn't say very much, practically nothing, about operations. Is that all supposed to be included under

the meeting that 10 CFR 20 ALARA requirements?

MR. JAGANNATH: Two things, yes. Public and worker dose will be covered under the 10 CFR 20, but the operations by itself we'll look through under the ISA process to identify the suggested component in fire and safety. And this will go through all the operations part. As a product at the end, we have the so-called Q-list and what comes out of that. The consequence part of that, when you -- by the time you define the Q-list it's, one, the FAR 63 dose criteria. It's also concurrently Part 20 compliance. And besides the dose, I think there's a lot of standard things we should have implemented.

DR. WYMER: Okay. That's sort of pretty much cut and dried. It's all in the regs, isn't it?

MR. JAGANNATH: I hope so.

DR. WYMER: Yes, okay.

MR. LEVENSON: George? John?

DR. GARRICK: I only have one comment or possible question. I'm still trying to get clear in my mind the disposition of these pre-closure topics. Are these topics that are to be addressed by the applicant for which you're going to review or are these topics characterizing what you're going to do as independent analysis?

MR. JAGANNATH: No. These are -- what we did was when you look at these things, these are issues or areas of concern where one thing we need to focus our attention in the license review. At this point, based on what --

DR. GARRICK: But you expect that this would all be addressed in the application.

MR. JAGANNATH: Yes. Because it's taken --

DR. GARRICK: So it's primarily a review, and this is kind of a checklist for that review?

MR. JAGANNATH: Part of it, because it's taken from the review plan area, and within that, there are a lot more items which are not listed here. These are the ones we have found to date, which we have concerns.

DR. GARRICK: Yes, okay.

MR. JAGANNATH: Most of them probably will be resolved by our discussions and with the resolution path forward.

DR. GARRICK: It's back to your question really. Okay. Thank you.

MR. LEVENSON: Okay. I've got a couple -- sorry, do you have more John?

DR. GARRICK: No, no.

MR. LEVENSON: I've got a couple of questions. One, with the exception of maybe the ash fall, have you identified anything --

DR. GARRICK: We know which is your favorite question.

MR. LEVENSON: No, no. No. This is not that one. Have you identified anything unique to this site that would indicate there is any risk not already addressed the 40 other places where we do dry cask storage and fuel handling? I mean is the above-ground pre-closure have any unique characteristics?

MR. JAGANNATH: Things that probably a little different than a normal thing is maybe fuel blending if it becomes -- details of that -- at this point, I don't know the details.

MR. LEVENSON: But that's not -- I mean --

MR. JAGANNATH: No, no. As a part of that, if there is a legality issue that comes out of that --

MR. LEVENSON: But those all come up at the reactor plants. Some reactors have actually had some assemblies they take apart and replace pins and put them back in their reactors. So I was just wondering if there was anything unique here.

MR. JAGANNATH: No, nothing that unique

that could be make the really unsolvable issues, no. The degree of uncertainty is nothing compared to what we have in the post-closure place. But there's a lot of details to be worked out in terms of communities understanding what is required.

MR. LEVENSON: Okay.

MR. JAGANNATH: For example, seismic design is probably a replacement, but it can be done.

MR. LEVENSON: Okay. The second question is do you perceive that the license application or the license would have a limit on fuel burn-up or fuel age?

MR. JAGANNATH: Depends on what DOE proposes in their --

MR. LEVENSON: I understand. Do you have any perception as to what they may be thinking of proposing?

MR. JAGANNATH: No, I have no idea on that. I am not a nuclear engineer either, so I will defer that. But I have people that can get to me on that. So far, DOE has not made a proposal to start except they have indicated that they wanted a burn-up credit. And we are discussing the methodology to establish that. We are at that stage.

MR. LEVENSON: The context of the

question, of course, is that fuel development continues in spite of everything else that goes on. And before this repository or a repository is closed, we're probably going to seeing fuel of much higher burn-up. And so I wondered whether there were going to be restrictions arising from today's thinking that might give us future problems.

MR. JAGANNATH: It's a large part of their technical specifications. What they will propose hasn't been announced.

MR. LEVENSON: Okay. The third question is, again, asking for your perception. There's a great deal of experience out there. Very little of it, of the type we're talking about, exists within DOE. Is it your perception that DOE is taking advantage of the significant amount of commercial experience in this area or are we starting over?

MR. JAGANNATH: I assume they are. Money is not a problem. They hire people to do it.

(Laughter.)

MR. LEVENSON: No, but are you seeing an indication of the same kinds of things that you know go on at power reactors all the time?

MR. JAGANNATH: From the pre-closure perspective, because of program restrictions and other

things, DOE is not putting enough resources toward the pre-closure aspect of the design. It's been mostly focused to what is needed for the safety recommendation part of it. I'm sure they will give -- have enough resources to have an excellent staff to work on those things with experience. And there are no nuclear plants right now in the licensing states, so a lot of it is available with experience.

MR. LEVENSON: Yes. Somehow it turns out that practical experience and what really happens is probably more reliable than computer projections. So it would be nice to take advantage of the experience we have.

MR. JAGANNATH: I'm not a modeler so I believe in real engineering.

MR. LEVENSON: Staff questions.

MR. LARKINS: One question.

MR. LEVENSON: Yes.

MR. LARKINS: It appears DOE, in developing your Q-list methodology for the identification of system structures and components important to safety, is a more deterministic approach rather than a risk-informed approach that the Agency has been moving forward towards.

MR. JAGANNATH: DOE is also moving towards

that in this project. But what you see in those documents were written based on work in the last two three years. Initially, because to make progress they did most of the systems under deterministic, sometimes on judgment, sometimes on functional systems. Later on they have done components to the ISA process. It's not 100 percent ISA, because they are also slow in coming up with it. It's not final yet. That's the reason. But based on the discussions we have had, they intend take the ISA approach.

MR. LARKINS: The ISA, does that allow you to identify importance measures?

MR. JAGANNATH: I think when you go to the end of the results, if you analyze the components and their contributions, you can come up with the important measures. I haven't seen anything in that level of detail on them yet, but if you dig into the documents, it will be there.

MR. LARKINS: Do they plan on using expert panels and things like that?

MR. JAGANNATH: We had a discussion with them. They recognized that. The response was there is an internal team within DOE of different expertise, and that would satisfy the expert panel at this point. I don't know, maybe in future we may require of that.

At this point, it seems to satisfy all concerns. So they have a really good staff team there, and that would be their expert panel at this point.

MR. LARKINS: Okay.

MR. LEVENSON: Okay. Any other staff?

DR. GARRICK: Okay.

MR. LEVENSON: Does the audience have anything they want to add or say to use a microphone? If not, John?

DR. GARRICK: All right. Thank you very much.

MR. JAGANNATH: You're welcome.

DR. GARRICK: The next topic on our agenda is public outreach activities. This is something that's very important, as we all know. The Committee has reasonably active in making recommendations to the Commission about public outreach. We have made recommendations concerning maybe improved documentation that would guide the public on how to become more involved. We have made recommendations on the possibility of developing a strategy to convey and communicate to the public more clearly what some of these abstract-sounding reports really mean, such as the performance assessment. We have also talked to the Commission and made recommendations about the

whole business of how to involve the public, particularly early, in the early stages of some of these projects.

So we're now going to -- the Commission staff has been very active, more active than the Committee of late, in dealing with the public and in developing tools and ideas and methods for outreaching, and we're going to hear some of that right now. Who is it? It's going to be Janet and Bret.

MR. LESLIE: Yes. Janet Kotra will lead off, and then I'll take over half way through.

DR. GARRICK: Okay.

DR. KOTRA: Thank you, Dr. Garrick. It's a pleasure to be here this afternoon to address the Committee and to share with you some of our activities in the public outreach arena.

I want to leave with you three general topics that I'm going to lead off with, and my hope is that I'll leave you with an understanding of what's animating our activities, how we're going about structuring our program to better meet our objectives in the public outreach arena, and discuss a little bit about the team that we've assembled to do that.

Then I will turn it over to Bret Leslie

who you'll hear from following me, who will talk specifically about the tools and the techniques that we are refining and trying to perfect in a number of areas that we communicate and interact with the public and with stakeholders in general.

All of our activities in this area are animated by the Agency's overall strategic goal of increasing public confidence. At the highest level of this Agency, it has been identified that this is very much part and parcel of our role as an independent regulator. We are public servants, and it is incumbent upon us to communicate effectively about what we do and in a manner that allows for meaningful participation by the people we protect. And it is with this spirit that we have designed the program I'm going to overview for you today.

I also want you to leave with the notion that we are learning from our experience, that this is something that is very much a work in progress, but it's a work that we're very proud of what we've been able to accomplish so far, and we recognize that there's a long way to go.

I'll offer a simple example that kind of got us started in this area, and that was our experience seeking input on the proposed Part 63.

This Committee has heard from me talking about the strategy that the staff used to develop Part 63 -- multiple barriers, defense and depth. And it was only because I was on the road talking about that, that we had an experience that we weren't as effective as we wanted to be in explaining this one particular aspect of our program. So I'm going to highlight that, but it's only by means of an example.

The Division of Waste Management and NMSS, in general, interacts with and communicates with the public and the stakeholders in a lot of different ways, so please don't take my presentation this morning as meaning that these techniques and tools are applicable only to Part 63 or the High-Level Waste Program.

And, lastly, I want to talk in some depth about the team that we've assembled, and it truly is a team effort to bring this about. No one individual can be the sole representative, if you will, for our activities. And I think the reason I say that will become evidence over the course of my presentation.

As I said in the strategic plan, and actually even prior to this particular version, the goal of increasing public confidence has been identified at the highest levels of the Agency, and

that goal was to be accomplished by providing our stakeholders with clear and accurate information about and a meaningful role in our regulatory program. Well, that can only happen if there is understanding and communication both ways. And I'll talk a little bit more about how we hope that our activities are fostering that two-way communication.

The key messages that we believe in the High-Level Waste Program are important to convey in everything that we do and in every interaction that we have with the public is that first and foremost NRC's primary job is to protect public health and safety and environment. That is our most important job, that we are an independent regulator.

I think this Committee has had experience in meeting with the public and the stakeholder communities in Nevada and recognized that there are a lot of the members of the public who don't appreciate the distinction between the NRC and the Department of Energy. It's extremely important for people to have confidence in our Agency, that they understand the nature of that independence, what burdens that imposes on us, and how that manifests itself in the process and in the way we do business. It's also incumbent upon us, as staff members, to act in a way that makes

that independence real and evident.

We also want to convey that by law we regulate the Department of Energy to ensure the safety of a potential repository. Many people in Nevada have experience with the Department of Energy and its predecessor in other activities where the NRC was not an independent regulator. We need to make that distinction clear for purposes of understanding our role with licensing a potential repository at Yucca Mountain.

And, lastly, we want to make clear that the rules and the decisionmaking process that NRC will engage in for Yucca Mountain is an open and public process, and we want to help people find ways to interact with that process and interact with us in a way that's meaningful for them.

How does the public participate? Well, there are far more than three, but I'm going to highlight three just for purposes of the discussion. There are opportunities for informal dialogue. We have on-site representatives in Las Vegas. They are first point of contact with the communities in and around the potential site. We have public meetings, and the meetings are not just a formal presentation -- deliver the presentation and leave. Our goal is to

facilitate a dialogue, both during the breaks as well as formally in a question/answer session.

The public has opportunities to comment on rules that we've put out for public comment. In fact, we got started in this area, as you'll hear shortly, by soliciting public comment on Part 63. In order for those comments -- in order for the public to be able to generate comments that are meaningful to them and to us, there's a level of understanding about just the basics of what is it we're proposing, what type of comments are we asking for at a particular time? How can those comments be of best effect in our decisionmaking process?

And, lastly, we have a very formal public licensing process that is subject to strictures that are very well understood for people who are familiar with the reactor business, but we haven't licensed a reactor in a long time, as we're all aware, and we've just recently come back from a series of very successful public meetings in Las Vegas and in Parump where we brought attorneys from the Office of General Counsel to explain how this process would unfold if a site is recommended to the President, if that site is approved, and if the NRC would receive a license application. It's a very complex process. It is a

process that the people of Nevada, particularly people in the West that are not familiar with NRC licensing activities, may not be, in fact we know, are not familiar with.

Well, how did we get started? In February of 1999, we issued a draft Part 63 for comment, and we -- recognizing the first-of-a-kind nature of a repository at Yucca Mountain, the fact that we were making a departure from the generic rules of Part 60, we knew that an expanded public input was going to be necessary, and we went out and did some public meetings. Two members of your staff were in attendance at those meetings. They were held shortly after the rule was published, about four weeks after we published the rule.

We want to give people time to -- we held these meetings after people had had a chance to read the rule, although we recognize that most people don't have the Federal Register on their coffee table. So we did bring xerox copies of the proposal, and that's about all we brought. We brought ourselves and the two primary authors of the proposal, Tim McCartin and myself, and we went out to talk about Part 63.

Well, the presentations were very long, they were very technical, and in short, we felt, and

I certainly believe the public felt that they did not receive effective answers to their concerns and their questions. That doesn't mean they didn't get answers, but they weren't necessarily answers that were meaningful to them. In many cases, they didn't get answers at all, because their concerns and their interests extended far beyond what our nominal agenda was, which was to talk about a proposed rule.

We had people who drove over 300 miles to our meeting in Beatty to talk about transportation issues. We didn't have anybody from SFPO to talk about transportation. This was something that we should have anticipated; we didn't anticipate. And it left us and the people we were trying to serve less than satisfied. Not surprisingly, the press was not favorable on these meetings, and we came back with the conclusion and bottom line that we needed more and better preparation if we were going to do this job effectively.

And we, first of all, identified the challenge. We clearly wanted to explain our actions and to listen to public concerns. That's why we had gone out there. What was the problem? But we have to explain complex and technical policy issues in a way that are readily understood by interested members of

the public. And why did we find this so hard? I don't think that this is unique to the NRC staff or to the Division of Waste Management, by any means. But as scientists and engineers, we typically work with highly technical information. We're trained from before we enter graduate school to communicate with other experts. Success is defined in how effectively we make that communication in terms of peer review publications and the like.

This is the environment in which we live and breathe. And to the extent that we're successful, we are called upon daily, or at least weekly, to provide very technically precise explanations and to master a jargon that even down the hall the experts -- I'm not familiar with their jargon; they're not familiar with my jargon. That's, in some cases, a real liability in communicating with each other as technical professionals, let alone with the general public.

The public, on the other hand, in many cases, may, but often may not, understand the technical details, and in many cases don't want to understand the technical details. They have more overarching issues of safety, of fairness, of equity, of confidence and trust that we weren't even -- it

wasn't even on our radar screen the first time that we went out.

They have a variety of questions and concerns. As I indicated, we had people who came to our meetings that were quite concerned about things that really weren't on our agenda but for them were the sole reason they came to our meeting. And we needed to find a better way to serve their needs. And they insist upon short and common sense explanations that make sense to them. And this is almost a foreign language problem in many cases for our technical staff.

What do we do? Well, the first thing we did is we reached for the low-lying fruit. The requests we got over and over again at our meetings was, "Please, you haven't given us enough time to understand what you're asking for. Can you give us more time to comment on your proposal?" And we immediately came back and requested a six-week extension on the proposal, and we got it. That was the least we could do.

We then struggled very hard to identify the lessons that we could from these initial meetings. We poured over the transcripts. We culled a list of questions that were asked during the meetings, and we

identified those that we did a fairly decent job of answering, those that we could have done better, and those we didn't answer at all and endeavored to get back to the individuals or, if the individuals weren't named, that we would at least prepare in the next set of meetings, because that six weeks allowed us to schedule another set of meetings, to go out better prepared to address those same questions.

We gave staff more time to prepare. This is absolutely vital, and this is a recognition at the Management level and at the staff level that this is not something that you throw together on the airplane flying out to a public meeting. This is something that takes serious and responsible preparation to do well, and that if we're not prepared to do it well, that we shouldn't be doing it at all. Our commitment was to do it and to do it well, and in order to that we had to prepare.

And we designated a Project Manager for that next round of meetings. This has now become a regular thing. For any public meetings, we have a Project Manager who is responsible for seeing to it that all of the loose ends come together, that people get the proper training, that they have the proper materials and so forth.

What else did we do? We recognized that we were deficient in our ability, not to communicate about the subjects in which we're technically proficient, that's not the problem. The problem is is in talking about it in a way that reaches a more general group of stakeholders, and this is like foreign language training. So we have engaged experts in risk communication. We've had general, world-renowned experts who have come to the Agency, and I'm sure you're familiar with Dr. Vincent Cavello and Peter Sandman who have come and spoken to the Agency as a whole. We took advantage of that opportunity and arranged for both individuals, actually, to provide focused seminars for Management and staff on risk communications issues associated with regulation of high-level waste.

We revamped our meeting format. We had been working with Chip Cameron, our Trade Facilitator, but we engaged him much earlier and more in-depth in preparing for the meetings. We redesigned the format to allow for shorter presentations, ten to 15 minutes, followed by frequent question breaks. This is a very important point, and we tried to make our view graphs and our presentations plainer. I won't say -- I put plain language here, but I guess I'd have to say

really plainer, because it's still a work in progress. We've gotten a lot better; we still have a ways to go.

And, as I alluded to in the earlier slide, we've anticipated concerns and questions. We called upon experts from other parts of the Office of NMSS to come and be prepared to either answer questions on transportation or, actually, we have found it most effective to have very able individuals from SFPO come in and give a short presentation on what NRC does with regard to transportation and what we do not do.

And we provide for and plan for prompt meeting follow-up. This includes not just responding to questions that we receive in the meeting but also to get together on-site as well as when we get back to headquarters to have lessons learned meetings to try and memorialize what went right, what went wrong, and to try and apply those lessons, where they're applicable, to future outreach activities.

In addition, and Bret will talk a little bit more about this in his presentation, the Agency, as a whole, has developed a feedback form that we are required to carry with us to all of our public meetings. And it's available, and we try and highlight it during our public meetings to encourage people to help us do a better job and provide their

feedback in a very focused way on a standard list of questions that have been reviewed and prepared for use in all NRC public meetings.

What are we still doing? Well, as I indicated at the opening, we set up a high-level waste public outreach team, that this is not a job that you can put on the shoulders of a single individual. This is very much of a team effort. This team meets, as best we can, weekly. We carry out an approved high-level waste communication plan. I'm proud to say that our effort was one of the first in the Agency to get an approved communication plan consistent with guidance provided by the Executive Director for Operations for all high-profile activities within the Agency. We are in the process of implementing that plan. I believe a copy has been provided to the members of the Committee.

We regularly talk about ways in which we can find new opportunities for outreach, and Bret's going to talk about one of the more innovative ones that we found that go beyond just the town hall meeting. I think we have a very real role for meetings. We'll continue to do that. People want to have us come out and meet with them in a formal setting, but it's not the only and sometimes not even

the most effective way to get our messages across and to encourage the kind of relationship and dialogue that we would like to see with the stakeholders we serve.

We're trying to identify key concepts for translation, and I put that in quotes here. Technical concepts, policy concepts that may be readily understood in the hallways of White Flint but are absolutely Greek to members of the public, but are vital for them to be able to meaningfully comment on what we're doing or to understand what we're doing. So we're trying to find different ways to express concepts such as defense in depth or performance assessment, look for innovative graphical displays and techniques, and so forth.

We are developing handouts and displays, and some of those examples are illustrated here. Both of these address concerns that the Committee has raised at various times. This is a poster that describes that various roles of various federal agencies for a potential repository at Yucca Mountain. I won't discuss that here, but you've been provided with copies of this, which was actually distributed in a flyer form, and on the back of the flyer is textual information that goes into more detail than the visual

image on the front. It also has web addresses, telephone numbers, contact information for people if they need to call somebody and get more information. That was developed with input from the Office of Public Affairs and with a great deal of assistance and support from the Center for Nuclear Waste Regulatory Analysis.

The other poster on the other side of the screen is that one that identifies opportunities for public involvement in the pre-licensing and licensing process, were it to get to that point, for Yucca Mountain. And, again, that one also was developed as a flyer with more detailed technical information and contact information on the back. Bret will talk some more about some of our more recent efforts in that regard, and we're trying to get beyond just the poster and the flyer stage, but we're very pleased with what we've been able to accomplish with these, and they've been very well received, and we use them regularly at our meetings.

We're hoping to develop a small library of tools and techniques so that we don't have to hit the ground running in preparing for a meeting by having to develop all of our materials on the spot, that we will have a library of things that we can use and pick and

choose with some discretion that will support the message of that particular meeting.

For example, when we talked about hearing process, we had a fact sheet on our role with regard to the EIS, because that's clearly an important issue in terms of the hearing process and the adoption of the EIS. We had information on the roles of the various agencies, and we had a very useful pamphlet that the Atomic Safety and Licensing Board had put together on their activities. And so, again, we're getting to a point now where we are able to pick and choose handouts and support materials that are complementary to the message of the meeting.

Lastly, we also are just starting to think about ways we can support the technical activities of the rest of the Division. I sit next to Jim Anderson, and we talk every once in a while about plain language introductions to the technical exchanges that we have regularly with DOE, recognizing that not all meetings that we have with an applicant are for the public. They are in the public, but not necessarily for the public. But if a member of the public were to wander in, they might not have a good understanding of what was going on, and we're hoping to develop some introductory material and have worked on that.

I think Jim's done an fabulous job in developing introductory material that puts in context the very detailed technical discussions that come later. Again, as evidence that while this particular meeting may not be a public information session, we care about the fact that if people have taken the time to come and observe it, that they have somewhere they can go to learn more and understand more if they have questions.

Who's on the team? Well, obviously, we have a collection of technical staff. Right now we have Bret and -- I'm the leader of the team; Bret is on the team. We have James Firth to represent the performance assessment perspective. Tammy Bloomer is our expert on materials science and waste package issues. We also have a licensing assistant. What we have learned is that in preparing for these meetings administrative support is absolutely vital, and we were supported very ably by Judith Goodwin before we lost her to a certain advisory committee. And we've also been supported very ably by Darlene Higgs, who now serves as a permanent member of our team and who works with us and is part of all of our planning for these interactions and these meetings.

We also have two members of the Center

staff, Mike Smith and Gordon Wittmeyer, who have helped us enormously in developing graphic materials, and they are in touch with us weekly by telecom and have attended our meetings. The outside rep, Bob Latta, met with us here at headquarters before he moved out to Las Vegas. One of his responsibilities as an on-site rep is to interact with the public and to provide direct feedback to the team on ways in which we can meet those needs better.

We also get support from the Office of Public Affairs. Sue Gagner's with us today. She's a regular attendee at our meetings and has come to both our planning meetings as well as to the public meetings and has been very, very instrumental in facilitating our interactions with the press and with other stakeholders. And, as I mentioned earlier, we have frequently called upon SFPO to support us on issues such as transportation.

What else are we doing? We are endeavoring to support other NRC outreach activities. We have, in turn, sent representatives to the Transportation Package Performance Study meetings. The idea there was not so much to give a presentation but to have someone available if questions about Yucca Mountain came up. We also sent observers to the

public hearings on the draft EIS for PFS. One of the things I noticed, as one of those observers, was that many of the same stakeholders have interest in both activities, and they are present at both activities. And so it is incumbent upon us in preparing for Yucca Mountain to be aware of what those same stakeholders are saying and are interested in and are concerned about with regard to PFS.

Also, in early April, the Agency, as a whole, convened a workshop on stakeholder confidence, and that's where national representatives of public interest groups came and shared with the Agency their concerns about the effectiveness or in some cases lack of effectiveness of NRC's public and stakeholder outreach efforts, as a whole.

We also participate with international efforts. One of the most notable examples I want to offer is participation on the NEA Forum on Stakeholder Confidence. I'm the NRC delegate to the Forum. Department of Energy and Environmental Protection Agency also sends delegates to this Forum. It had its kickoff meeting in August of 2000. There was a second meeting in January this year. And the third meeting, I'm very excited about, has been -- I'm a member of the core group that we are helping to plan a meeting

in December, or I guess it's November now, in Finland. And those plans were in the works before the recent decision of the Finnish Parliament.

But the specific purpose of this international effort is to bring together risk communicators and people involved with stakeholder confidence issues associated with waste disposal to meet with stakeholder groups, the full range of stakeholders groups in Finland and to discuss how this decision was arrived at, what worked well, what didn't work so well, and to share experiences internationally. I think that's an extremely important effort, and we look forward to other opportunities where we can learn from others.

Our results so far are encouraging. We've successfully applied this approach at 11 meetings. We've gotten more and better input from a wide range of stakeholders. It's been frustrating for those of us involved with the Part 63 effort in the sense that we got a lot of very good comments, and I think we got a lot better comments, because we went out again, we extended the comment, we reached out and we tried to make as easy as possible for people to communicate to us what their concerns were about our proposal.

One of those main concerns was don't go

out in front of EPA. And as it's turned out, we have waited for the Environmental Protection Agency, their standards are final, and we're in the process of preparing a package for the Commission that will include the analysis of all the very high quality comments we received on the rule.

Positive feedback from local officials. We have definitely received very encouraging supportive remarks from local officials. The affected units of local government have communicated directly with the Chairman in advance of his visit last year. We're very pleased with that. They're encouraging us to do more of the same to help their constituents understand better what NRC's role is and is not to differentiate us from the Department of Energy for reasons I discussed before.

We've gotten more and more accurate local press. Notice I didn't say positive or better, because I don't think that's our objective here. Our objective here is to see is the press coverage accurate? Does it reflect the message we're trying to convey? That does not presuppose that if we are successful at public outreach, that we're necessarily going to win converts or have everybody love what we're doing and what our positions are. That's not

our objective here. But I think our objective is better served when the press understands our message and effectively conveys it and effectively conveys the messages of our critics as well. But I think that this is very satisfying. Every article that I have seen on our meetings to date have shown a marked improvement in terms of an accurate reflection of the message that we're trying to deliver.

And, lastly, we've had some very warm requests, one of which we've already had the opportunity to honor -- to come back out. People are coming up and saying, "Can you come to my county? Can you come to my community? Can you come to my town and explain to the people that live in Mesquite or in White Pine or in the northern part of the state what you're about?" And we're going to do our best to honor those requests.

And, with that, I'd like to turn it over to Bret, because I think he's got some very important and exciting information to share with you about the specific techniques that we're using to, I think, good effect in getting that message across. So thank you for your attention.

MR. LESLIE: Good afternoon. I'm Bret Leslie, and I'm Technical Assistant in the Division of

Waste Management. And I'm also happy to say that I'm a member of the Public Outreach Team.

Could we go to the second slide? What I hope to do today is to go through some of the techniques we're using and show how we're using those techniques by providing an example. And that example would be the performance assessment example. And we do not have that poster here today, and one of the reasons is it's actually being used this week out in Las Vegas.

Janet indicated we had several posters. The idea is that I will go through as this example, but all of these posters are all in the back, fact sheets are all in the back. So at the break people can feel free to go back and pick those up.

I would also like to go through some of the lessons learned. You heard some that Janet provided, but there's some other ones that only come about when you start working in the details. And, finally, I'd like to go through the path forward.

So moving on to slide three. As Janet indicated, the Agency has some very clear messages that they want to get across, and that's one of our imperatives is really to, when we go out and design a poster or go out and interact in a meeting, is to

provide very clear messages. And, for instance, often it's as simple as, "We're not DOE." And many members of the public don't understand the NRC's role, and we spent some time developing this poster to try to underscore what our role is.

Also, plain language. As Janet indicated, it's a real challenge to try to get across these concepts in a language that is understandable by the general public, and we'll get into that as I describe the performance assessment poster.

The other technique is that we not just have to have the spoken work but also to have a very effective visual, because a lot of people do not respond well to a whole bunch of language on a piece of paper. They are caught by visual, and they understand things using their eyes. And so we've engaged, as Janet said, the Office of Public Affairs has been very helpful in saying, "No, no, that's not going to work." And also the Center for Nuclear Waste and Southwest Research Institute, we use their professional Graphics Department to provide -- once we have the concepts to get it into a mode of presentation that's appealing.

And, as Janet indicated, preparation really is the key. And for each of the activities,

including the performance assessment example, our preparation was critical to, I believe, our success. And that includes anticipating what are the questions. In fact, when we develop this, we have to put our hats on and say, "What is the public actually going to ask?" Because that's the message and the answers we want to try to provide. Finally, we also undergo training for each of these activities.

Moving on to slide number four, which is the techniques. We have to understand that we have many different ways of communicating, and we try to explore those and utilize them or use these as best we can. And as I've said, there are posters in the back. These posters and fact sheets have already been provided to the Committee members previously. But we've developed these posters, brochures, our web page. We're hoping to incorporate all of these materials onto our web page. We do have a fairly extensive web page.

But more importantly, it's not just communicating to the public but it's interacting with the public, which is also key for them to understand and to enhance public confidence. And so if as I go through my talk I'm not dwelling enough on interacting with the public, please jog my memory, because I

really do want to stress that as we go through.

Moving on to our only example we'll provide --

DR. HORNBERGER: So, Bret, do you send them to the NRC main home page to start?

MR. LESLIE: No, we don't. We do have our own web page, and that will probably be on the one of the last slides we have. And we've actually created little business cards that have our web page so that people can go directly there. And we hope in the web redesign effort that that functionality is not lost.

Moving on. Why do we choose performance assessment? Well, one of the things is we realized, as well as the Committee -- the Committee pointed this out in one of their letters -- that performance assessment is really something that the public needs to understand, because this is the way that the Yucca Mountains proceedings will proceed with a performance assessment.

There are three reasons that we also decided to focus on this topic. It's very misunderstood and controversial. You see in peer review journals the controversy is well alive; in fact, some of the consultants to the ACNW are somewhat concerned on what is performance assessment. So one

of our charges is to try to better explain what that is. We also want to describe and interact with the public in the performance assessment framework, because it is and would be part of any potential safety case for a Yucca Mountain repository. Also, the performance assessment has a prominent role in the proposed Part 63.

The next several slides really will be about developing the message and delivering the message. And delivering the message really involves -- again, I want to get back to involving the public. It's not just a one-way street; we want to engage the public and the stakeholders in what we do.

So on slide six, basically we though of two things that we need to do when we try to address performance assessment. One is we need to somehow define what it is and allow the general public to understand what it is. And the other thing is many people misunderstand its role in the safety assessment. And, again, this is one of the topics that the ACNW addressed in one of their letters, is what is its role? So we felt in performance assessment we needed to address those two things.

And as I said earlier, we tried to put our hats on and say, "Well, what questions do people often

ask?" And it's usually who, what, why, and where. Well, the who we decided didn't have a place on our message, but we could certainly talk about what, why, and how. And so we tried to indicate what is performance assessment or what is assessed. And this really is the risk triplet: What can happen, how likely is it, and what can result? And these are terms that people can understand.

Moving on to why do we use it? There are many reasons why the Agency has chosen to use a performance assessment, but one of the main reasons it's a very complex system, and we need some way of tracking what goes on. And this is a very systematic way to evaluate data. Finally, it's also internationally accepted. So we came up with questions -- why would we use it? Let's explain why we use it.

Moving on to how is conducted? Many people say, "Well, it's just a black box," and what we wanted to try to get across is that there are several steps that go on in this task of performance assessment. So we kind of listed these. And these are kind of just -- kind of the thought process of how we develop things. It's not what the final product looks like. Let's move on.

One of the things that has been a constant criticism is performance assessment is a one-shot deal. One of the things we wanted to do is, okay, so what is performance assessment? We wanted to get across that it involves quite a few different steps, but that it also is an iterative process, that we learn as we go along, and we refine our models, we collect more data where more data is required. But this is the graphic that we came up with to try to tie together what performance assessment is. And, again, it may not be the best graphic, but this is what -- we're not professional graphical artists, but this is the topics that we thought in a way that gets across a lot of different things. Let's move on.

One of the other aspects that we really wanted to get across and emphasize in our actions and in our words is the independence between NRC and DOE. And so to get at that, we didn't feel it was enough just to describe what performance assessment is in a generic sense. We felt like we had to also indicate that the NRC would require certain things of any performance assessment and any potential license application. So we tried, again, to list things in not so technical terms that we felt were important to get across the breadth of what a performance

assessment is. We can move on.

And the poster, which you've -- doesn't quite look like the slide; in fact, this is an earlier draft where we had "Performance assessment, a learning process." We ended up saying it's an iterative process. But the idea is that we have a whole bunch of messages. How do we get them and tie them all together? And, basically, the upper part of the diagram is trying to describe what performance assessment is, and the bottom is indicating that whatever DOE does NRC has requirements, getting again at the independence between NRC and DOE and NRC requiring something of the Department of Energy.

As Janet indicated, and of course it's totally illegible on your handouts, but that's why we have the posters in back, is that each of these posters that we developed have the text on the back. And that's because, again, not everyone gets the idea by looking at a picture. We tried to explain things so that we developed these large posters in, again, 11 and a half by 17. We have the visual on the front, and then on the back we tried to explain things as simple as possible.

Now, to give you an example, if you type in Nuclear Regulatory Commission and put it into

something like a spell checker and check the grade level, that's 11th grade. So those three words are actually what caused this document to be hard to read. But this was eventually got down from graduate level down to 12th grade, so this, I think, is as clear as we could try to do it and in as understandable terms as we could. Let's move on.

Developing the message is only one part of the process and delivering the message. And, here, I really want to step back, because it's not just providing the materials; it's involving the public. And we've done this in a variety of ways at technical meetings. And, again, we kind of separate between technical meetings and public meetings, because, for instance, the example I'll show in a second was something that was a professional meeting. We decided that we should try out this performance assessment poster for more of an audience of college professors to see if they could understand it and get their suggestions for how to increase it.

But, also, we're really trying to tie in the performance assessment into each of our technical exchanges with the Department of Energy, and we just recently instituted, as Janet indicated, the beginning of each of the technical exchanges. The Public

Outreach Team is working with the technical staff here at the NRC to come up with an overview -- why are we having this meeting?

Jim Anderson goes through the language on issue resolution, but what the Public Outreach Team has done is to -- we bring the poster, we bring the handouts, we try to come up with a glossary of terms that they're likely to hear in this meeting and try to explain, okay, why is it we're having this meeting? Well, you know, we have some concerns with how DOE is dealing with certain issues, and we tried to define those issues. I actually brought along, and I can share with you afterwards, the example that I will be using at the igneous activity technical exchange later this week; in fact, I'm catching a plane -- that's why I'm speaking so fast is I got to catch a plane.

(Laughter.)

And the web page address was there. The example was, and Dr. Hornberger saw this, is we went to the Geological Site of America last November, actually, and you can see a performance assessment is the middle of the display, but we also displayed the other things. And, again, we were trying to get across our independence. We had about somewhere between 100 and 200 people stop by, which is many more

people than had, at that point, stopped by all of our public meetings.

Ninety percent of the people who walked by didn't realize that we weren't DOE, because DOE is always out there talking about their program in Yucca Mountain. So when the general public or educators see Yucca Mountain, they commonly think of DOE. So half of the struggle was stopping them. You know, we'd ask, "Who are we?" And they'd say, "DOE." And we would pull them in and say, "No, we're not DOE; we're the Nuclear Regulatory Commission, and this is our job." And here we see Mike Smith on the left talking to one of the citizens, and I think that's Britt Hill and Andy Campbell talking. So let's move on.

DR. HORNBERGER: Interested members of the public.

(Laughter.)

MR. LESLIE: Interested members of the public, absolutely.

One of the things is that we definitely feel that we can always improve. And we actually are looking to the public to help improve. And one of the -- going back just for a moment back to those technical meetings, what I said was that we're providing this information to the public. I think

we've done a credible job at trying to involve the public and interested stakeholders in these technical exchanges, and I'll provide three examples that I know of where the staff is reaching out to the interested stakeholders at these technical exchanges to make sure that their concerns are incorporated in a discussion.

Back in August of last year at the Unsaturated Zone, Linda Lamen, who's a consultant for the State of Nevada, brought up a concern. The staff caucused during a break, and we requested DOE a little more information to understand how DOE had treated it. In fact, it ended up being part of our issue resolution agreement was the state's concern.

Second one is at my own technical exchange that I led on the Near-Field Environment. The State of Nevada had concerns also again on a particular topic. And we addressed that within the topic. Although they didn't actually get up and make a presentation, we talked to them during the breaks in saying, "All right. Have we captured your concern in how we're -- the questions we're asking the Department of Energy?" And, in fact, this week, at the igneous technical exchange, the State of Nevada is making a presentation on their view on the igneous activities. So we're attempting to bring in and share and listen

to what the public is saying and the interested stakeholders. I'm sorry, I really needed to do that.

As Janet indicated, we really have to increase our preparation time. Every time we just say, "Oh, we wish we had more time." We're getting better at that. The external review of concepts and message and visuals, we actually use that quite of bit, and Office of Public Affairs is external to us. But we find that running by these things by our friends and neighbors has been invaluable, because, one, we've figured out that there are a lot of people who are colorblind, so colors are very important in visuals. And if they can't determine that one grades into another, that's important. But also the words, is it clear? Can a member of the general public understand it? So we kind of do these dry runs even before we take them out to the street.

Listening to the audience -- really, our meetings, and I think Janet touched upon it, but we are presenting what the public wants. We are actively engaging the public to understand what it is that they want to hear at a meeting, and we try to arrange to make sure that it is. For instance, at Caliente, at Mesquite, and at Beatty transportation was the thing. It wasn't part of what we were talking -- planning on

talking about. So we every time we involved the Spent Fuel Project Office to make sure that they hear something that they want to hear. And we work very closely with the local governments, and this could be the city, the affected units of the local government or the tribal governments in designing these meetings so that they'll be satisfied when we deliver.

As Janet indicated, it's a fantastic team to work with, but it also requires a lot of coordination between offices, and sometimes that's a stumbling block, but we try to deal with it as best that we can.

And let's move on to the path forward. We must be doing something right, because we're getting a lot of requests. It seems like we can't go out anymore without getting another request for public meetings. We will be -- Clark County has requested the NRC to participate in two open houses. They did a survey last December of their own population, and they came back with the results that, one, the citizens of Clark County -- that's here in Las Vegas -- didn't understand what the County's position was many didn't even know what Yucca Mountain was, and many didn't understand what was the process.

So Clark County has decided to hold a

series of open houses. Irene Neves, the Planning Manager for Clark County, has specifically invited the NRC to attend and have poster display similar to these things. And these would occur two times, two weeks from now and in October. And our on-site representative will be there. The technical exchanges, again, we have these series of technical exchanges. We're trying to look for ways where we can engage the public but at the same time allow us to do the work that we need to do, which is the primary focus of these technical exchanges is the interaction between the Department of Energy and the NRC staff.

Janet could expound upon -- if you have questions, we have an upcoming meeting solely associated with tribal interactions, and we will be inviting a series of interested tribes and that will be it. It's not really going to be a public meeting per se. It's to deal with the tribes to understand their concerns and try to understand how best we can interact with them in the future.

We anticipate going back out to Nevada to discuss NRC's Yucca Mountain regulation. We had promised the State of Nevada that we would come out once a final Part 63 regulation was completed. In addition, the review plan, the standard review plan

for Yucca Mountain would also be a subject of meetings. And we also have committed to go back out and support meetings on that subject.

Other requests, just this last week, when we were in Mesquite, we got a question to go up to Elko, Nevada. So, again, each time we seem to go out, we seem to generate another request, and we try to take into account as many requests as we can. Sometime we can't do everything that they want, but we try to do what the public wants.

I think, at that point, some major things that are still ongoing, as Janet indicated, the message development is pretty critical. For instance, how does one define risk-informed performance base to someone in the public. I don't think we've spent a lot of time doing that, and so if the Committee had keen insights on that, that would be very helpful.

Finally, also, we need to really keep the web page up to date, but we're also looking for other ways to use media. We thought about using an interactive display. I think as we go along we learn more and more. For instance, for our open house, we used the Clark County public television to advertise the upcoming meeting. And, actually, some of the attendees said that's where they actually found out

about the meeting.

So, with that, I think I'll close. I know I ran right up against the limit, but I'm happy to entertain questions.

DR. GARRICK: That was a wonderful presentation, except you're right, you used all the time.

(Laughter.)

MR. LESLIE: Was that why it's wonderful?

DR. GARRICK: I'm sure we have a few questions. I'm also aware that Bret is trying to catch an airplane, so we'll try not to overextend, and if you have to leave, we'll understand.

One of the things that strikes me about this public outreach business that I'd like your response to is this whole issue of how much of it is process, and how much of it is the team? You can only say so much if the process is fixed in terms of how the public can get involved.

And what do I mean by that? One of the most common criticisms that I've heard in involving the public, with respect to the NRC and a lot of agencies, for that matter, is the inability of the public to participate in a timely manner and in an effective way, that the government tends to think that

public participation is informing the public, not involving the public. And involving the public is, for example, some public participation in the creation of the fundamental boundary conditions, if you wish, of what it is you're trying to do.

Take, for example, the performance assessment. One interpretation of public participation might be public involvement in the development of the scope and the conditions surrounding the performance assessment rather than getting the public to buy in on the performance assessment at strategic points. Have you observed this at all in your encounters that there's wide variation of opinion about what participation is, but that there is a tendency for government agencies to view participation more as one of informing rather than one of really involving?

DR. KOTRA: I couldn't agree with you more. I think we're at a very interesting time in terms of government/citizen interactions. And I think that for this Agency, we're undergoing what I would characterize as nothing less than a significant cultural change, from informing to involvement. And that's across the board. I think it's reflected in the strategic objective that has been mentioned. And

the terms, not just provide information but provide a meaningful role. And I take that, and the members of my team take that, very much to heart.

That's easier said than done. There is -- we certainly have gotten input from the public about -- sometimes cynical input from the public that, "You don't really mean -- you're not going to do anything with the comments. When have you ever turned down a license," this type of thing. But I think first and foremost -- I'll give a process example, and then I'll turn it over to Bret to discuss the substantive one that you've raised, which is performance assessment.

The last series of meetings I just came from in May was directly in response to public request for understanding our hearing process. In order to participate in any meaningful manner, you have to understand what the process is. And I think that we have not done all we can do in the past to make our process transparent and accessible to the people that we serve. And that was the purpose, the sole purpose of the meetings that we held in Las Vegas, in Parump, in May. People were very appreciative of that.

We laid out very clearly what are the different ways the public can participate. Can they make limited appearance statements? Can they engage

as full parties? Can they have an organization come in on their behalf and engage as a full party? And how is that done, and what's the contention? All of those sorts of process issues that are just mind numbing to the average member of the public who has not had a lot of administrative law experience. It's mind numbing to me. I'm a nuclear chemist; I'm not a lawyer.

So I think the first obligation we have is to inform, because people can't participate in a meaningful way if they're not informed. Once having done that, then we have to ask ourselves the hard questions -- are we willing to use the input that we're working so hard to solicit? And I think that I think in many ways we are, but it's not always obvious to the public. We need to do a better job of making it clear, the deliberative process that we undergo once we have that information.

And I'll turn it over to Bret, because I think that this issue, you know, the Committee has raised in its letter, we have given some very serious thought to. We're not done with performance assessment yet. We've got a lot of communication we have to do about performance assessment in the context of explaining a final rule and how it will work. And

it is very much an iterative process, and a lot of us stumbled over that word, "iterative." I like "learning process" better myself.

DR. GARRICK: By the way, I like "learning process" better too, for what it's worth.

DR. KOTRA: But, anyway, Bret, would you share some thoughts?

MR. LESLIE: Yes. Regarding the performance assessment aspect of it, you know, one of the things that we have to keep in mind is that the public is not a full-time participant, and this was really borne out when we had our open house, which was very informal. It was at night, and I made it a point to kind of ask the question, "Well, would you want to be more involved?" And these were the interested citizens who actually wanted to come to the meeting. And the answer was, "No, we don't have the time."

So in terms of involving a performance assessment, we're trying to engage the people who are attending our performance assessment technical exchanges. And we would argue that all of our technical exchanges are based upon performance assessment. So that's where we're trying to engage the counties and the state and capture their concerns.

Now, the question becomes, well, should

they be in our caucuses, should they -- you know, that degree of involvement is a question, but I think, in general, the general population, first, doesn't understand performance assessment and doesn't spend a lot of time on the whole issue. So if we want to try to engage them in performance assessment, then we would need to have some sort of mechanism where it's worth their while, so to speak, to engage the public in that regard.

DR. GARRICK: Thank you. George?

DR. HORNBERGER: Yes. Actually, just a comment on your response, Bret. It strikes me that that's the appropriate public to have involved in performance assessment. When we speak of public, it actually means several things, and it strikes me that it's the county people and the state and others that have the interest and expertise.

Do people -- have you generated responses in terms of knowing that people use your information? Do you get hits on your web site? Do you get calls to your 800 number?

MR. LESLIE: I can answer that. Since the EPA standard came out, I'm answering about three web hits a day. Jim Thomas is forwarding them to me, and it's a variety of things, not necessarily on the

standard, but apparently has piqued up interest. But it's only been recently that I've been getting things forwarded to me, so in terms of the web, that's as much as I know. This weeks it's been fairly slow.

DR. KOTRA: But also, too, even before the EPA standards came out, once we have people who go out and interact, I always have my phone number and my web address available. People know to contact me. I get calls every couple months or so. In fact, the whole genesis of the meetings on hearing process came from the Nuclear Waste negotiator for Eureka County, and I called her directly to solicit from her specific things that we wanted to be sure to answer when we structured the meeting.

So the more -- as Bret said, every time we go out now we're getting a request for an additional meeting, and people are calling us. People are asking for our business cards. And so we're establishing what I like to think of as a relationship. It's only in the context of that relationship familiarity that people can have the hope of developing some measure of trust. Of course, we could lose that overnight if we don't earn it, but I think the fact is that people put a name with the face, they have a phone number they can call, and when that call comes in, we make the

effort to get them the information, whether it's just a simple access to a new reg or help them navigate the web site, which, as you've indicated, is not all that user friendly yet.

I've spent hours on the phone with people saying, "Okay, I've got the screen in front of me. Where do you want to go? Let me help you get there." Obviously, I couldn't do that full-time, but we don't get enough calls yet for that to be an issue. And I would rather let that person hang up feeling like somebody -- there was a human face on the other end of that phone that cared whether they got their answer or not.

DR. HORNBERGER: A similar question: When you go to the Clark County Office Building, do you see these posted, and are they pinned up on bulletin boards?

(Laughter.)

DR. KOTRA: No, not yet.

DR. GARRICK: Madonna, yes, but --

(Laughter.)

DR. HORNBERGER: No, but I mean that's clearly your objective, right, to have people put these up in their office? Otherwise you wouldn't print them in color.

MR. LESLIE: Well, yes, that's true. We did try to put some of these posters up on the campus of UNLV, but we ran into a little bit of a problem that they wouldn't allow us to post it. So we mainly put up posters in the county buildings when we're coming to meetings, but that's something we can check with, Clark County, for instance, if they would be willing to have some of the ones on the oversight available to the public, generally.

DR. HORNBERGER: That's all I have, John.

DR. GARRICK: Ray?

DR. WYMER: I just have a comment. I don't want this to go to your head, but I'm really pleased to see talented and dynamic people leading this critical effort. I'm impressed with what you've done and what you're doing.

DR. KOTRA: Thank you on behalf of all of us.

MR. LESLIE: Thank you.

DR. KOTRA: On behalf of the entire team, I thank you.

DR. GARRICK: Milt? Lynn?

MS. DEERING: Thank you. I wanted ask if you had done anything with the Cavello idea of the message mapping? Did you ever -- have you ever

explored that or tried to get that --

DR. KOTRA: Yes, we have. And it's one of those works in progress where we're developing a bank of questions and answers. We're still -- these meetings are incredibly resource-intensive to prepare for --

MS. DEERING: Right.

DR. KOTRA: -- as you can imagine. And we certainly build on the materials and the preparation from previous meetings, to the extent that they're applicable. Our hope is to have a computerized database that we can carry with us everywhere we go. You know, plop in a CD and then somebody, perhaps the Project Manager from the meeting or whoever's not speaking, you know, if a question comes up that the speaker is not an expert on in that particular area, you can call it up, and then by the break you can get back to the individual and say, you know -- we're not there yet, but it's something that we're working on, and, yes, we're -- for every meeting we transcribe, we go over the transcript, and we pull out questions.

Like I said, in the case of this hearing process meeting where we had never done anything like that and it was kind of outside of our area of expertise because we had presentations from lawyers,

from OGC, I called the woman who made the initial request, and I developed a list of questions from her and circulated that to the entire team that was going out for that meeting. And so the answers for those will be culled from the view graphs that we've presented, and those will be available to future presenters if questions about hearing process come up.

MS. DEERING: That's great. If you have any advice for ACNW, we're planning our public meeting in October, and it came up this morning that if you had suggestions for how we might conduct our public meeting from all the feedback you've gotten and experience you've gained, I think we would really appreciate that, if you have suggestions now or later for us.

MR. LESLIE: I think the thing that's really helped us the most has been to really directly engage the local government to find out what they want, how they want it presented, when they want it presented, and where they want it presented.

DR. KOTRA: I think I would add to that that preparation is absolutely vital. That is has absolutely nothing to do with how well you know your subject. This is a different type of communication. It is utterly unlike anything I received training for

when I was getting my degree, my multiple degrees, and it's one of the harder things that I've faced. And I think if you approach people with sincerity and respect, you don't have to know all the answers, but the next time you come out you better know the answers to the questions they asked last time.

MS. DEERING: Thank you.

MR. LESLIE: I guess one other thing that I thought was very well received in Las Vegas was the idea of the open house. You know, the NWTRB now whenever they go out to Vegas have an informal coffee and doughnuts prior to their meeting just so that they can meet with the public one-on-one. And I found that the open house where we use the on-site representatives as the focus was a very satisfying and very worthwhile endeavor.

We spent a lot of time with individuals. And they came away -- they may not -- they may have left the meeting still disagreeing with us, but they certainly understood things a lot better and were very appreciative of that type of forum. It wasn't a formal meeting, but, again, you know, there were expectations that people showed up expecting a formal meeting. So you have to communicate what it is that you plan to do ahead of time.

MS. DEERING: Thank you. That's great.

DR. GARRICK: One of the things that you remind me of is that at a meeting I recently attended we had a presentation from the contractor for the Army, the systems contractor on the Chemical Weapons Disposal Program. And they have an enormous problem with respect to reaching out to the public and have made a very deliberate effort in the last year to try to come to grips with this issue.

And they made a similar comment about getting to the local people, and they made one other comment that caught my attention, and that is that they found that they have had a great deal more success when they have dealt with small groups and somehow multiplied that by a large meeting split up into small groups or some other mechanism. But it seems to all have this common element to it is that if you can get the dialogue going in kind of a friendly conversational manner, which you can very much more likely be successful at in small group than a large group, then the communication begins to take place. As you say, you don't always get them to change their view, but at least there's communication.

And I'm just wondering, also, as I make this observation, if there's any kind of exchange that

takes place between different regulatory agencies or different agencies, period, that are involved with this same challenge? Because that is a very intense program that has a tremendous public relations problem to deal with with their eight plants that they're trying to build in the country, strategically located around the country, and the material that they're dealing with is very much more difficult to deal with than what we're dealing with, namely chemical weapons with explosives with bursters and fuses and rocket propellants and all kinds of energy sources available with the material that the was field just doesn't have. So I hear curious kinds of parallel observations.

MR. LESLIE: I'll take a stab at it. I don't think we spend any time searching the web of different agencies. I know I've done it for a different reason here, for EEO purposes, for instance, I've looked at other agencies to see what they've done. I hadn't even considered looking at other agencies to see how they're trying to deal with risk communication.

DR. KOTRA: I actually have. I had an opportunity to attend a conference that was co-sponsored by Public Health Service, by the military,

by EPA dealing with some of the issues that you're talking about but a broader context. It was held up here at the NIH Library of Medicine. And there were lots of speakers from a lot of different agencies who offered materials they were developing. There are agencies that are further along than we are, some that are just waking up to the need to go into this area.

I think that there are some very -- there were interesting speakers from the Public Health Service who had engaged on real risk communication, in the sense if you're talking about public health hazards that are imminent. You had the tainted cooking oil situation in Spain, problems with nerve agents and the like, the AIDS crisis, how do you get people to change their behavior in the face of imminent risk. All of these involve engaging the public with technical information and communicating as a government authority and how can you do that effectively, and how you can aspire trust so that people will listen to your message, in some cases, a very urgent message; in other cases, a less urgent message.

And I think that we have a lot to learn from other agencies. Every time I get a chance, I pick up the material, the training material. I ask

who do they have to do their training? And I think many of the same common threads come through -- this issue of preparation, the issue of training people and doing dry runs so that they aren't winging it. Government bureaucrats these days are being forced to do more and more with less and less. But this is one area where it's just not enough to know your subject area. You have to engage -- the process is as important as the substance.

DR. GARRICK: Okay. Any other comments? Then let me add to Ray's compliment. We are impressed, as a Committee, with the progress that's been made, and it sounds like the energy is just beginning to build up and that we expect more.

DR. KOTRA: Oh goody.

(Laughter.)

DR. GARRICK: Thank you very much. All right. Let's take a 15-minute break.

(Whereupon, at 3:20 p.m., the NRC Advisory Committee Meeting was concluded.)

CERTIFICATE

This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission in the matter of:

Name of Proceeding: 127th ACNW Meeting

Docket Number: (Not Applicable)

Location: Rockville, Maryland

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission taken by me and, thereafter reduced to typewriting by me or under the direction of the court reporting company, and that the transcript is a true and accurate record of the foregoing proceedings.

Rebecca Davis

Rebecca Davis
Official Reporter
Neal R. Gross & Co., Inc.

HIGH-LEVEL WASTE PUBLIC OUTREACH PART 2: TECHNIQUES, AN EXAMPLE, AND PATH FORWARD

Advisory Committee on Nuclear Waste
127th Meeting
June 19, 2001

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Division of Waste Management
High-Level Waste Branch

1

PRESENTATION OUTLINE

- Techniques
- Performance assessment example
- Lessons learned
- Path forward

2

TECHNIQUES

- Clear messages
- Plain language
- Effective visuals
- Prepared presenters
  - Anticipate questions
  - Training

3

TECHNIQUES

Continued

- Different ways of communicating
  - Posters
  - Brochures
  - Web access
  - Interact with public

4

PERFORMANCE ASSESSMENT

An Example

- Several reasons for this topic
  - Misunderstood and controversial
  - Part of the safety case
  - Prominent role in regulation
- Developing the message
- Delivering the message

5

DEVELOPING THE MESSAGE

What is Performance Assessment?

- Systematic analysis of what could happen at a repository
- One of many NRC safety requirements

6

DEVELOPING THE MESSAGE

Continued

What is assessed?

- What can happen?
- How likely is it?
- What can result?

7

DEVELOPING THE MESSAGE

Continued

Why use it?

- Complex system
- Systematic way to evaluate data
- Internationally accepted approach

8

DEVELOPING THE MESSAGE

Continued

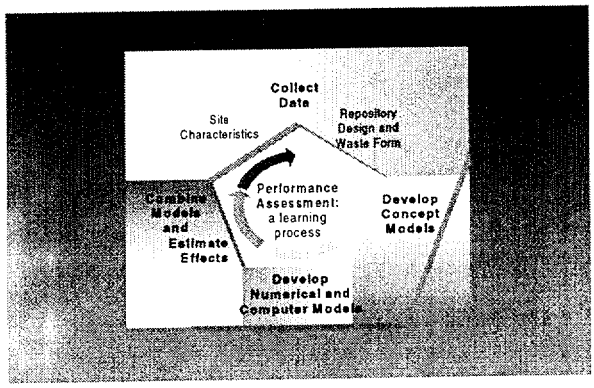
How is it conducted?

- Collect data
- Develop scientific models
- Develop computer code
- Analyze results

9

DEVELOPING THE MESSAGE

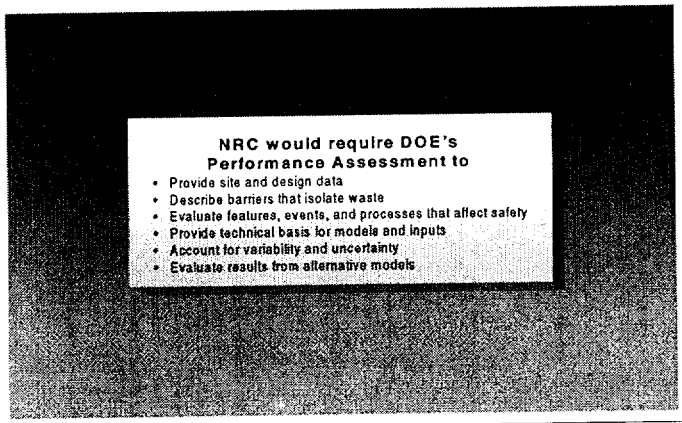
Continued



10

DEVELOPING THE MESSAGE

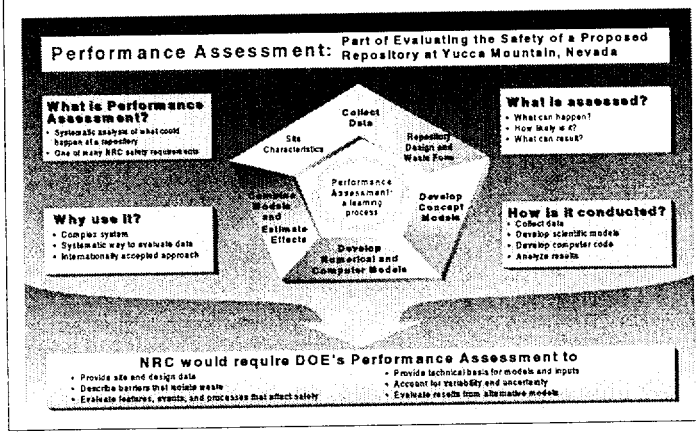
Continued



11

DEVELOPING THE MESSAGE

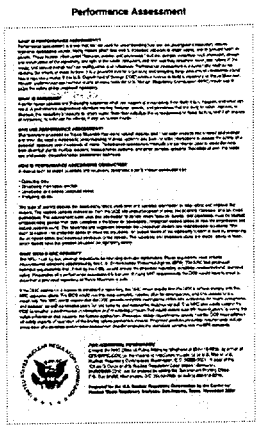
Continued



12

DEVELOPING THE MESSAGE (continued)

- Poster is two-sided
- Written in plain language
- Poster available as handout


Performance Assessment

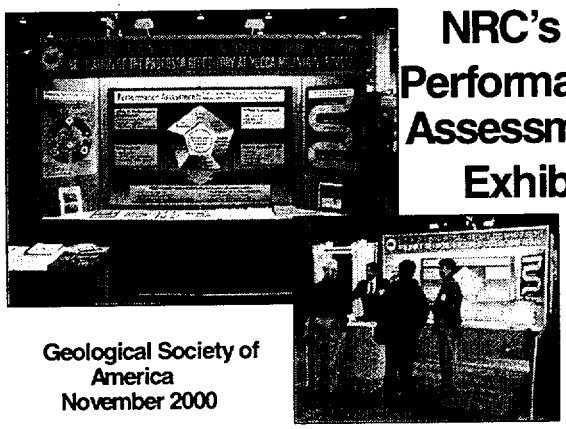
13

PERFORMANCE ASSESSMENT

Delivering the message

- Technical meetings
- Public meetings
- Internet
  - http://www.nrc.gov/NMSS/DWM/hlw.htm

14



NRC's Performance Assessment Exhibit

Geological Society of America
November 2000

15

LESSONS LEARNED

- Always can improve
- Increase preparation time
- External review of concepts, messages, and visuals

16

LESSONS LEARNED

(continued)

- Listen to the audience
- Involve local government
- Team work and inter-office coordination is essential

17

PATH FORWARD

- Meetings
  - Clark County open houses
  - Technical exchanges
  - Tribal interactions
  - NRC's Yucca Mountain regulation
  - Yucca Mountain review plan
  - Other requests
- Message development
- Media - will update web pages

18

Preclosure Topics At Proposed High Level Waste Repository Yucca Mountain, Nevada

Presented by

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At CNWRA; A.Chowdhury, S. Hsiung, A. Ghosh, B. Dasgupta, D.Gute, G. Ofoegbu, R. Benke, J. Stamatakos, D. Dunn, G. Cragnolino, D. Daruwalla

June 19, 2001

127 th ACNW meeting

Presentation Outline

- Preclosure Approach
- NRC Activities on Preclosure
- Preclosure Topics
- Example Topics
- Path Forward
- Summary

Objective

- Present NRC Approach to Preclosure Topics related to proposed High Level Waste Repository at Yucca Mountain, Nevada

NRC Approach to Preclosure

- Based on regulatory requirements of proposed 10 CFR Part 63
- Define acceptance criteria and review methods in Yucca Mountain Review Plan
- Develop a tool for independent evaluation of DOE Preclosure Safety Analysis
- Review DOE documentation on site hazards, design, and human factors
- Identify issues based on DOE information and NRC preliminary assessment
- Assess the risk significance of each issue and address accordingly
- Interact with DOE to define and implement paths forward to close all issues at the staff level

NRC Activities on Preclosure

- Review of DOE documents
  - Viability Assessment (VA) Design; Draft Environmental Impact Statement (DEIS) Report; Enhanced Design Alternative (EDA) II Design
  - Repository Safety Strategy, Rev. 4 (contractor draft)
  - Preliminary Preclosure Safety Analysis for Site Recommendation
  - Supplemental DEIS
  - Engineering and Science Report (review in progress)
  - Project documents supporting preclosure design – System Description Documents and Engineering Reports
- Yucca Mountain Review Plan, Draft
- Development of Preclosure Safety Analysis Tool (in progress)
- Appendix 7 meetings / visits with DOE; Attend DOE Presentations to NRC Commission and ACNW

NRC Activities on Preclosure (contd.)

- Topics identified and listed under general Areas of Review of a potential License Application
- Not an all-inclusive list, but a living list to be revised based on continuing review of currently available and new information
- NRC letter to DOE identifying Preclosure Topics to be discussed with DOE in a Technical Exchange

Preclosure Topics

- Site description
  - Geotechnical investigation for surface facilities
  - Design basis ash fall
- Description of structures, systems, and components, equipment, and operational process activities
  - High-level waste characterization/burn-up credit
- Identification of hazards and initiating events
  - Aircraft crash hazard*
  - Nearby military facilities hazard
  - Operational hazards including human reliability
  - Earthquake as an initiating event
  - Tornado missile hazard
  - Fire hazards

Preclosure Topics (Cont.)

- Identification of event sequences
  - Events screened out by design
  - Justification of probability estimations
- Consequence analyses
  - Dose calculation methodology for category 1 event sequences
  - Dose calculation methodology for category 2 event sequences
- Identification of structures, systems and components important to safety; safety controls and measures to ensure availability of safety systems
  - Q-list methodology
  - Quality level categorization

Preclosure Topics (Cont.)

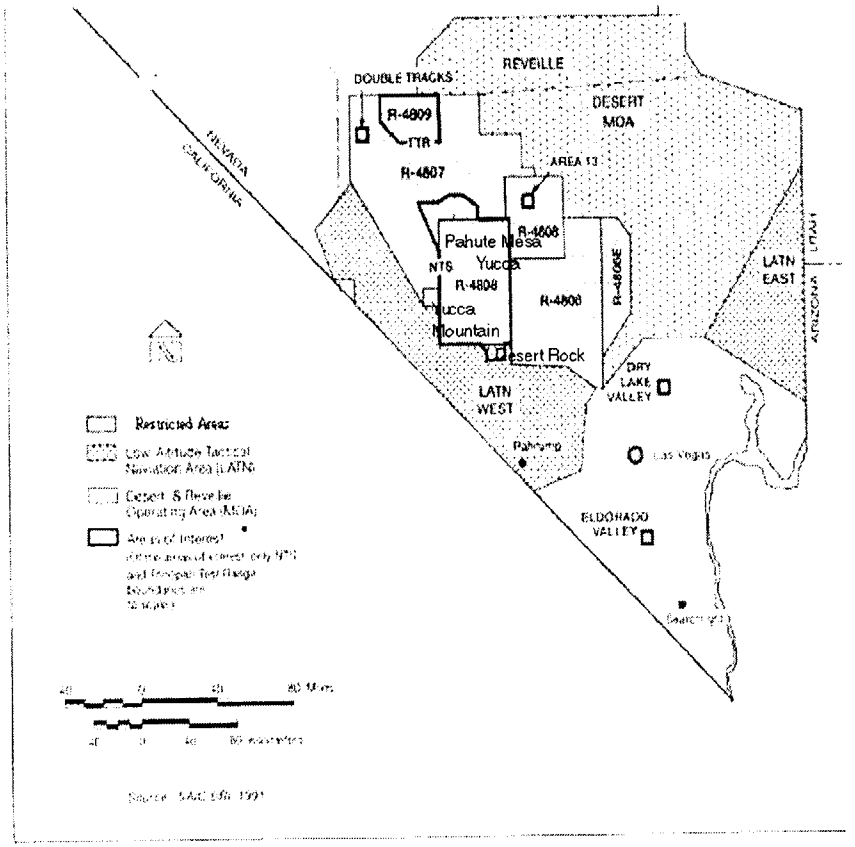
- Design of structures, systems, and components important to safety and safety controls
  - Level of design detail
  - Soil-structure interaction
  - Ventilation design
  - Fire protection design
  - Engineered barrier system design and fabrication*
    - Waste package drop analysis
    - Welding flaws
    - Differential thermal expansion
    - Fire design criteria for waste package
- Meeting the 10 CFR Part 20 as low as reasonably achievable requirements for normal operations and category 1 event sequences

Preclosure Topics (Cont.)

- Plans for retrieval and alternate storage of radioactive wastes
- Plans for permanent closure and decontamination, or decontamination and dismantlement of surface facilities

Example: Aircraft Crash Hazard

- DOE excluded aircraft crash as an initiating event for the proposed repository
- Proposed site 11 statute miles away from 10 mile wide commercial aviation corridors J92 and V105-V135
- Proposed site lies beneath Restricted Airspace R-4808N of Nellis Air Force Range
- Any Department of Defense or NATO aircraft can fly R 4808N
- East-West width of R 4808N approximately 29 miles



Example: Aircraft Crash Hazard (contd.)

- Considerable uncertainties exist in number of annual flights in R 4808N
  - Based on 6 month data after fitting normal distribution (DOE)
    - 12,716 (Mean); 17,542 (90% Confidence); 18,910 (95% Confidence)
  - LLNL study: 73,000
- DOE assumption: 29% F-16, 63.9% F-15 (90% of multi-engine aircraft), 7.1% A-10 (10% of multi-engine aircraft): No basis provided
- F-15 being multi-engine aircraft has significantly lower crash rate
- Uncertainty in flight mode (normal vs special)
- Effective area of a facility calculated using non-standard methodology without proper justification

Example: Aircraft Crash Hazard (contd.)

Total Number of Aircraft	F-16 (%)	F-15 (%)	A-10 (%)	Flight Mode	Annual Crash Probability
12716	29	63.9	7.1	Normal	7.0×10^{-7}
17542	29	63.9	7.1	Normal	9.7×10^{-7}
18910	29	63.9	7.1	Normal	1.1×10^{-6}
12716	29	63.9	7.1	Special	3.8×10^{-6}
17542	29	63.9	7.1	Special	5.2×10^{-6}
18910	29	63.9	7.1	Special	5.6×10^{-6}
12716	100	0	0	Special	4.5×10^{-6}
18910	100	0	0	Special	6.7×10^{-6}
12716	100	0	0	Normal	1.5×10^{-6}
18910	100	0	0	Normal	2.3×10^{-6}
12716	50	40	10	Special	4.0×10^{-6}
18910	50	40	10	Special	5.9×10^{-6}
12716	50	40	10	Normal	1.0×10^{-6}
18910	50	40	10	Normal	1.5×10^{-6}

Decision to exclude aircraft crash hazard from further rigorous analysis Premature

Example: Engineered Barrier System Design and Fabrication

- Waste Package Drop Analysis
- Welding Flaws
- Differential Thermal Expansion
- Fire Design Criteria for Waste Package

Summary

- Preclosure Topics - Preliminary List of Topics Conveyed to DOE
- DOE design is not final yet and NRC review is in progress; list to be revised based on new information
- Interactions with DOE to address these preclosure topics and reach resolution before LA

Plan for Path Forward

- Keep track of resolution status of Preclosure Topics sent to DOE
- Revise list from a Risk or Safety-Significance perspective
- Future Interactions with DOE to resolve Preclosure Topics
- Develop final Acceptance Criteria prior to receipt of License Application

PRIVATE FUEL STORAGE
AN OVERIVEW

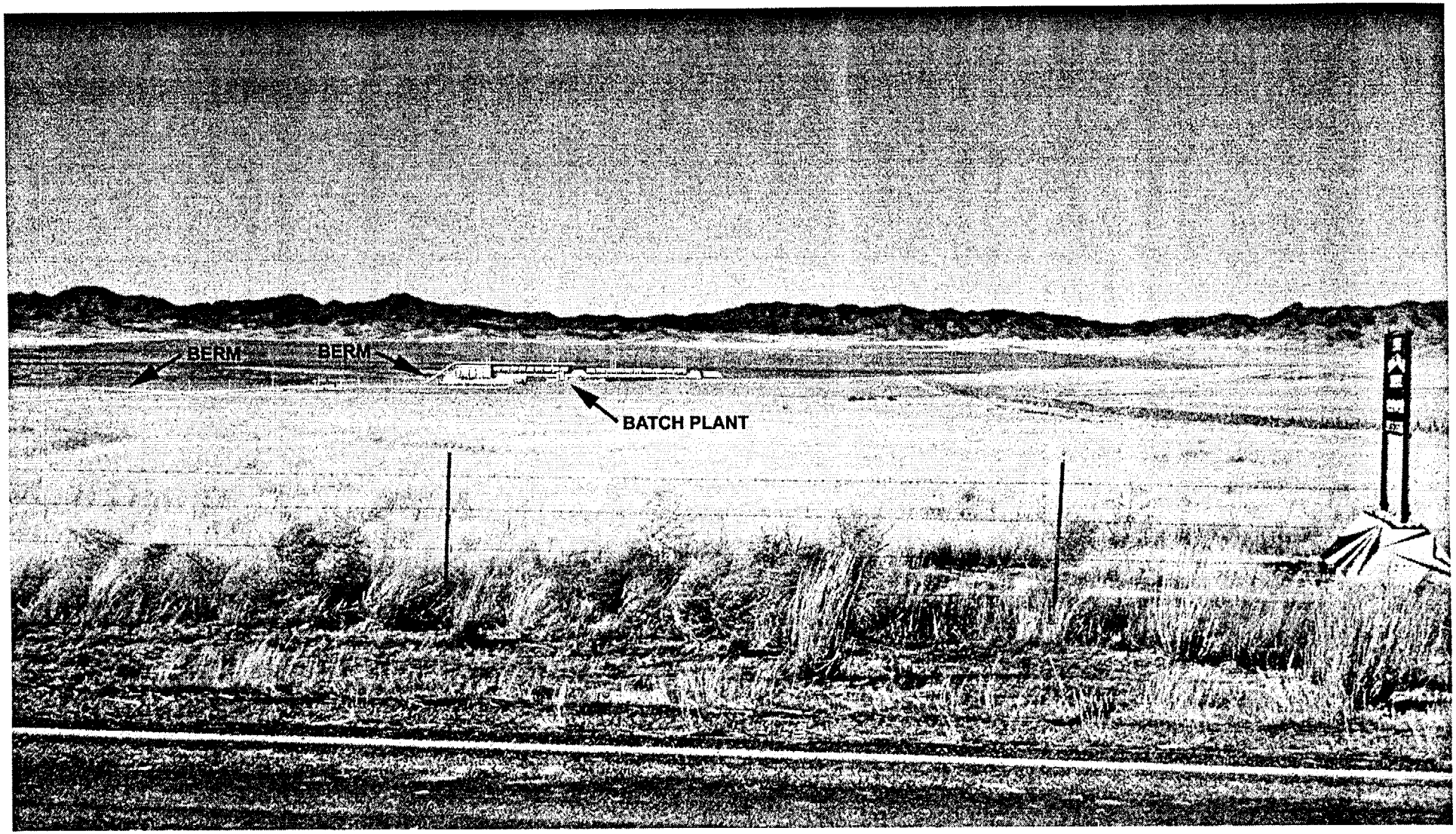
Briefing
For
The Advisory Committee on Nuclear Waste
June 19, 2001
By Mark S. Delligatti, NMSS/SFPO

Presentation Overview

- The PFS Proposal
- The NRC Licensing Process
  - Site-Specific Away- From-Reactor License
  - Safety Review
  - Environmental Review
  - Adjudicatory Process
- Summary of Status

PFS Proposal

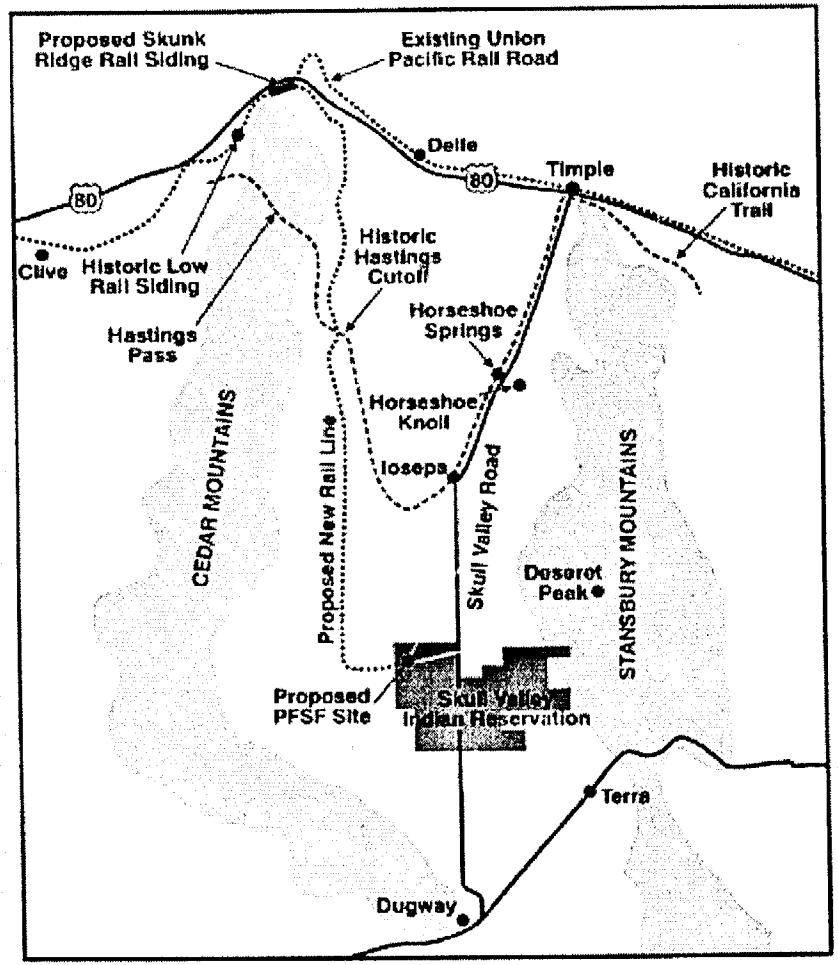
- PFS is a Consortium of Eight Companies
- PFS proposes to construct and operate an away-from-reactor independent spent fuel storage installation (ISFSI)
- PFS seeks a site specific license, pursuant to 10 CFR Part 72
- PFS must also get approvals from 3 other Federal agencies and 1 Indian Tribe.

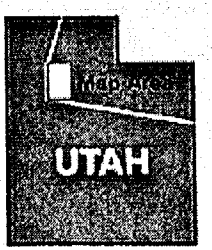


PFS Facility From Skull Valley Road

PFS Proposal

- Proposed Site
  - The Reservation of the Skull Valley Band of Goshute Indians
- Spent Fuel Transported to Skull Valley by Rail
- ISFSI Site Area
  - Owner Controlled Area -Approximately 820 Acres
  - Restricted Area - Approximately 100 Acres



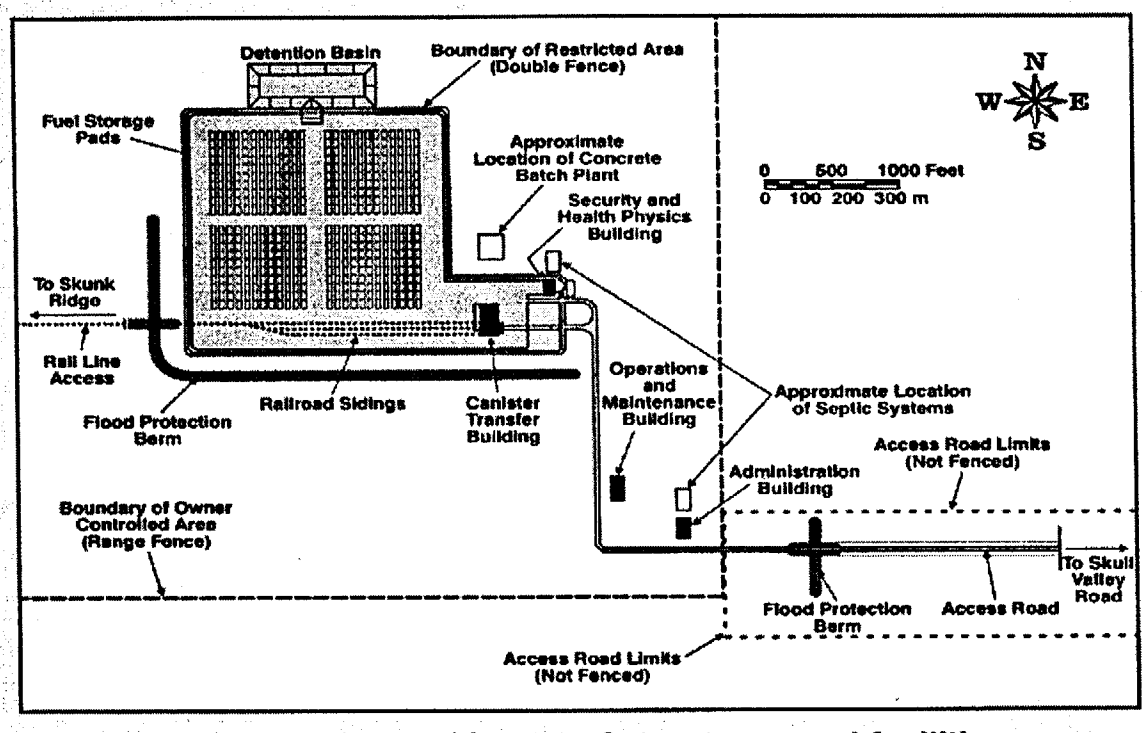


Proposed Project Area in Skull Valley, Utah

PFS Proposal

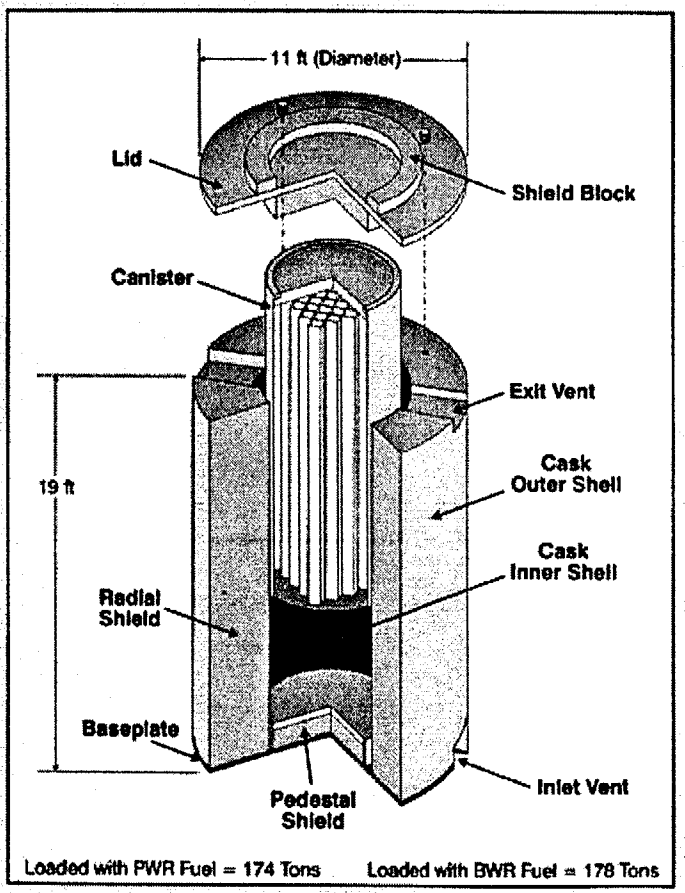
Principle ISFSI Features

- Facility Design Capacity
  - 4000 Casks (40,000 metric tons of Uranium)
- Cask
  - Holtec HI-STORM Dry Cask Storage System
  - Holtec HI-STAR for Transportation
- Cask Storage Pads
  - Approximately 500 pads
- Canister Transfer Building



Basic site plan and layout of structures and facilities at the proposed PFSF.

Holtec Hi-Storm® Storage Cask



Containers for Spent Nuclear Fuel

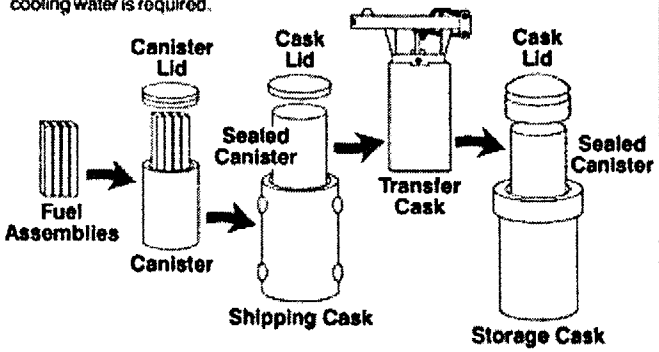
Several types of containers for nuclear fuel are discussed in this DEIS. These include:

Canisters are thick-walled, steel cylinders used to package and contain SNF assemblies. Canisters are hermetically sealed by welding them shut. This DEIS discusses "dual-purpose canisters" that can be used for shipping and storing of SNF. That is, once the SNF is sealed into the dual-purpose canister, it would never need to be removed from the canister during interim storage.

Shipping Casks are thick-walled, steel cylindrical packages certified by the NRC to transport nuclear fuel.

Transfer Casks are radiation-shielded, open-bottomed cylinders used to transfer SNF assemblies from shipping cask into storage casks. All transfer operations would be conducted inside a special room, or "transfer cell," within a closed building. SNF assemblies would be lifted out of the shipping cask into the transfer cask, moved while inside the transfer cask to a position over the storage cask, and then lowered from the transfer cask into the storage cask.

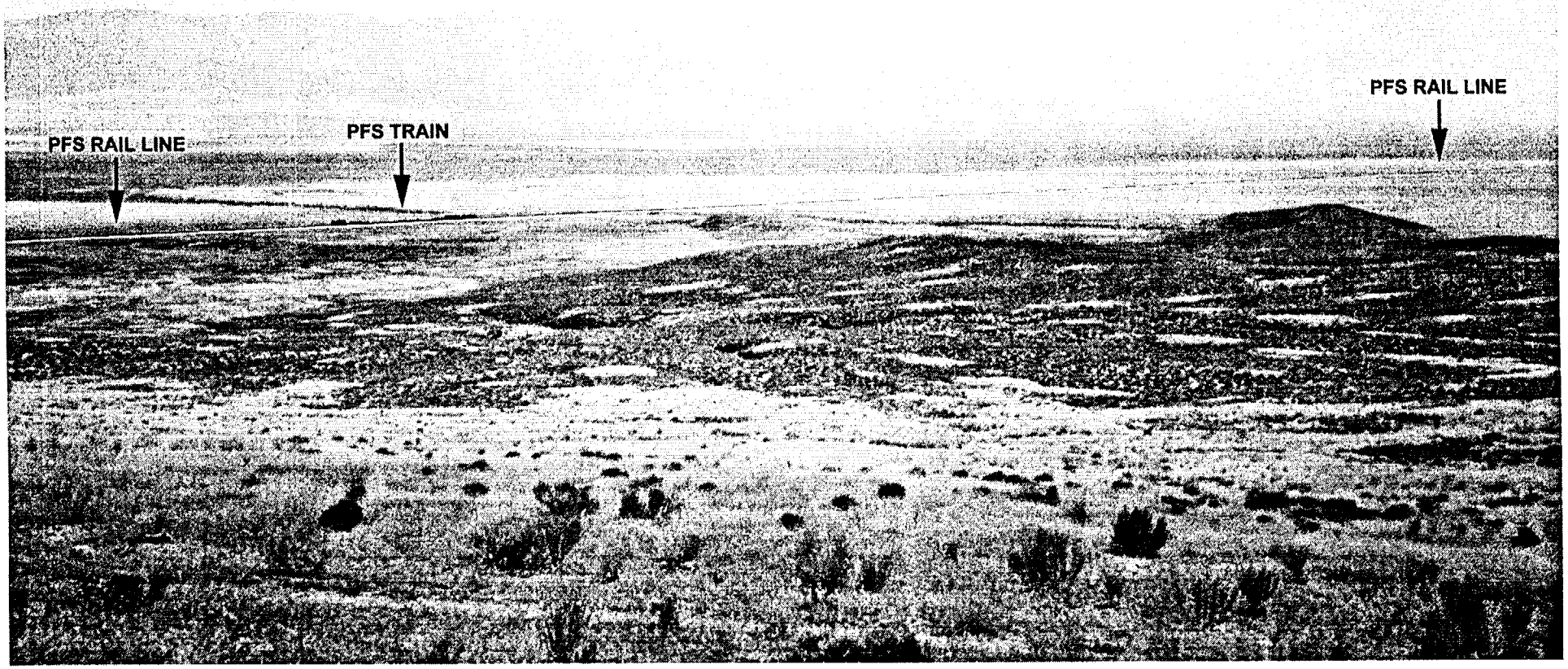
Storage Casks are thick-walled, steel or steel and concrete containers certified by the NRC for storing SNF. The types of storage casks discussed in this DEIS are vertical, cylindrical structures that provide radiological shielding. They are equipped with vents and channels that provide cooling by passive, natural convection processes; hence, they require very little maintenance other than periodic inspections. They are sometimes called "dry casks" because no cooling water is required.



PFS Proposal

Principal Rail line Features

- New Rail Siding at Skunk Ridge
- 32 Mile Rail line From Skunk Ridge to the Proposed Facility
- Rail Siding and Line on Land Managed by Bureau of Land Management
- Intermodal Transfer Facility Alternative to Rail Line



PFS Rail Line from Cedar Mountains at Mid-valley

PFS Proposal

- PFS Proposal Requires Lease with the Skull Valley Band of Goshute Indians and Approvals From Four Federal Agencies
  - NRC
  - Bureau of Land Management
  - Bureau of Indian Affairs
  - Surface Transportation Board
- Other Three Federal Agencies are Cooperating With NRC in the Preparation of the EIS

NRC Licensing Process

Site-Specific Away-From-Reactor License

- Requires Submittal of an Application to NRC
  - Safety Analysis Report
  - Environmental Report
  - Emergency Plan
  - Physical Security and Safeguards Plan
- Adjudicatory Process if Application is Contested
- Commission Makes Licensing Decision

NRC Licensing Process

NRC Staff Review-Safety

- Technical Evaluation of Application
  - Siting Evaluation
  - General Design Criteria
  - Accident Analysis
  - Quality Assurance
  - Physical Protection
  - Training and Certification of Personnel
  - Emergency Plan
  - Financial Qualifications

Status of PFS Safety Review

- Issued a Safety Evaluation Report (SER) in September 2000
- PFS Informed NRC Staff of New Geotechnical and Aircraft and Cruise Missile Hazard Information - December 2000
- Staff is Reviewing Aircraft and Cruise Missile Hazard Information

Status of PFS Safety Review

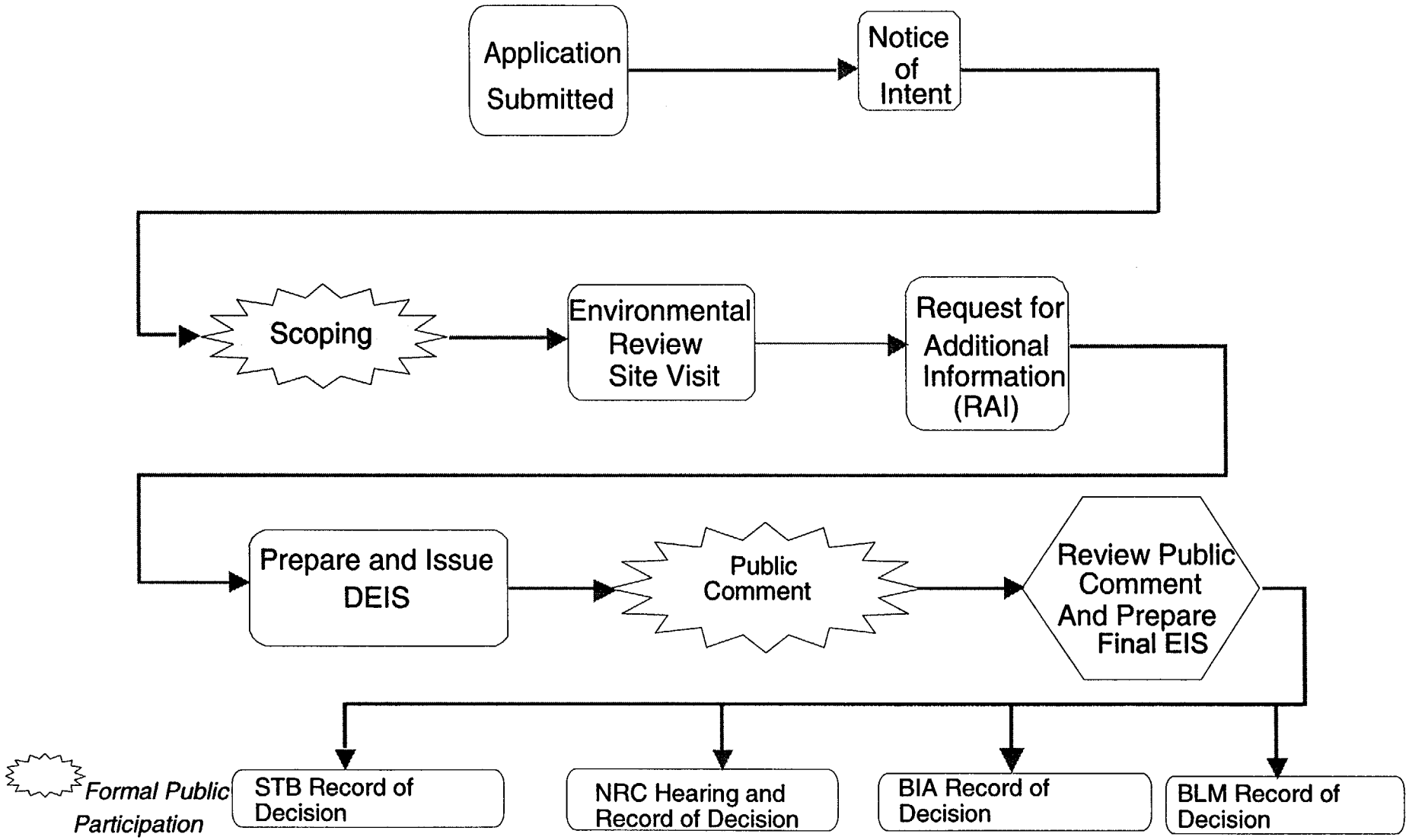
- PFS Submitted an Incomplete Geotechnical License Application Amendment on March 30, 2001
- Submittal not completed until early June
- The NRC Staff is now reviewing the geotechnical information and will issue a Supplement to the SER

NRC Licensing Process

NRC Staff Review-Environmental

- NEPA Review Completed Pursuant to 10 CFR Part 51
  - Environmental Impact Statement (EIS)
- Required Consultation Activities Completed
  - Endangered Species Act
  - National Historic Preservation Act

EIS Process for PFS Proposal



Status of PFS Review

Environmental Review

- NRC and the Cooperating Agencies Issued the Draft EIS in June 2000
- 90 Day Public Comment Period
- Four Public Meetings
  - Three in Salt Lake City, Utah
  - One in Grantsville, Utah

Status of PFS Review

Environmental Review

- Over 3800 Comments Received on the Draft EIS
- Reviewed and Responded to Public Comments and Prepared Final EIS
- Staff is Reviewing New Information to Determine Impact on the Evaluation and Conclusions in the EIS

NRC Licensing Process

ASLB Hearing

- Formal Adjudicatory Process
- Three Judge ASLB Panel
- Contentions Include Safety and Environmental Issues
- After the Hearings ASLB Issues Initial Decision
- Commission Review of ASLB Decision

Status of PFS Review

ASLB Proceeding

- Seven Parties to the Proceeding
  - State of Utah
  - Skull Valley Band of Goshute Indians
  - Confederated Tribes of the Goshute Reservation
  - Private Fuel Storage
  - Southern Utah Wilderness Alliance
  - Ohngo Gaudadeh Devia
  - NRC Staff

Status of PFS Review

ASLB Proceeding

- One Round of the ASLB Hearing Completed
  - June 2000-Two Safety Contentions
- Second Round of the Hearing Currently Scheduled for November 2001
  - Remaining Safety and Environmental Contentions

Summary of The Status of PFS Review

Remaining PFS Licensing Actions

- Issue Final EIS and Supplement to SER
- 2nd Round of ASLB Hearing -
- ASLB Decision
- Final NRC Licensing Decision by the Commission