

DEC 02 1988

Mr. Sam Rousso, Acting Director  
Office of Civilian Radioactive Waste Management  
U. S. Department of Energy  
1000 Independence Avenue, S. W.  
Washington, D. C. 20545

Dear Mr. Rousso:

SUBJECT: FORTHCOMING COMMISSION BRIEFING BY THE DEPARTMENT OF ENERGY

By letter dated November 22, 1988, Mr. Robert Browning of my staff forwarded to you a copy of the transcript of the November 16, 1988 briefing to the Commission on the Status of the Location of the Exploratory Shaft at Yucca Mountain. Although this briefing was given by members of the U. S. Nuclear Regulatory Commission staff, the Commission itself raised several concerns on the overall high-level waste program that the U. S. Department of Energy (DOE) should address. Therefore, the purpose of this letter is to provide you with a second copy of the November 16, 1988 transcript which has identified the concerns expressed by the Commission. The concerns raised by the individual Commissioners are marked by a vertical bar on the page. The Commission has requested that DOE address these concerns in its upcoming briefing of the Commission on December 20, 1988. If you need any additional assistance, please feel free to contact Mr. Robert Browning, who can be reached at (301) 492-3404.

Sincerely,

(Signed) Hugh L. Thompson, Jr.

Hugh L. Thompson, Jr., Director  
Office of Nuclear Material Safety  
and Safeguards

Enclosure:  
As stated

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1 UNITED STATES OF AMERICA  
2 NUCLEAR REGULATORY COMMISSION

3 \*\*\*

4 BRIEFING ON STATUS OF LOCATION OF EXPLORATORY  
5 SHAFT AT YUCCA MOUNTAIN

6 \*\*\*

7 PUBLIC MEETING

8 \*\*\*

9 Nuclear Regulatory Commission  
10 One White Flint North  
11 Rockville, Maryland

12  
13 Wednesday, November 16, 1988  
14

15 The Commission met in open session, pursuant to  
16 notice, at 10:00 o'clock, a.m., the Honorable LANDO W. ZECH,  
17 Chairman of the Commission, presiding.

18 COMMISSIONERS PRESENT:

19 LANDO W. ZECH, Chairman of the Commission  
20 KENNETH CARR, Member of the Commission  
21 KENNETH C. ROGERS, Member of the Commission  
22 JAMES R. CURTISS, Member of the Commission  
23  
24  
25

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**STAFF AND PRESENTERS SEATED AT THE COMMISSION TABLE:**

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V. STELLO, EDO  
S. CHILK, SECY  
J. GUTTMAN, SECY  
W. PARLER, OGC  
J. KENNEDY  
D. GUPTA  
J. BUNTING  
H. THOMPSON

**AUDIENCE SPEAKERS**

R. BROWNING

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

[10:00 a.m.]

CHAIRMAN ZECH: Good morning, ladies and gentlemen.

Mr. Roberts will not be with us this morning.

Today, the Commission will be briefed by the Office of Nuclear Material Safety and Safeguards on the regulatory concerns regarding the exploratory shaft facility for the Yucca Mountain site.

As you are aware, the Nuclear Waste Policy Act, as amended in 1987, requires the Department of Energy to develop a site characterization plan for a high-level radioactive waste repository. The exploratory shaft facility is an integral part of that plan.

The exploratory shaft facility is an integral part of that plan. The exploratory shaft facility will be utilized by the Department of Energy to conduct various tests and experiments to gather vital information for characterization of the Yucca Mountain site.

Earlier this year, the Staff reviewed the consultation draft site characterization plan, identified NRC's concerns, and formally transmitted major exploratory shaft facility issues to the Department of Energy.

Today, the Staff will inform the Commission on the status of those exploratory shaft facility issues and outline the approach tentatively agreed upon by the Department of

1 Energy to resolve these issues.

2 I understand that the Staff has kept the State of  
3 Nevada and affected counties and Indian tribes informed of the  
4 current activities of this program. This is an information  
5 briefing this morning, and copies of the presentation should be  
6 available at the entrance of the meeting room.

7 Do any of my fellow Commissioners have opening  
8 comments to make before we begin?

9 [No response.]

10 CHAIRMAN ZECH: If not, Mr. Stello, you may proceed.

11 MR. STELLO: Thank you, Mr. Chairman.

12 Our briefing this morning will be a follow-up of the  
13 May 4th meeting that we had with the Commission on the point  
14 papers commenting on the consultation draft site  
15 characterization plan. We will be concentrating in the  
16 briefing on some of the issues and problems that we see that  
17 need to be resolved before DOE goes forward with their  
18 exploratory shaft, and that will be the major element of the  
19 briefing this morning, which we think is important for the  
20 Commission to understand what those issues and what our views  
21 of them are.

22 I will ask Hugh Thompson now to introduce the other  
23 speakers at the table and get into the briefing.

24 MR. THOMPSON: Thank you, Mr. Stello.

25 Mr. Chairman, Mr. Commissioners, as you know, the

1 exploratory shaft is the first key technical issue that we've  
2 had to face in resolving the proposed site characterization  
3 activities with DOE, and it's been one that we have been  
4 identifying our concerns with for some time. This particular  
5 one, since we had the meeting with the Commission in May of  
6 last year, we've had four meetings with the Department of  
7 Energy spanning the May, June, July, October, November  
8 timeframe, in there, where we've been identifying our  
9 approaches. We've essentially resolved and focused the issues  
10 down from 128 down to 53, so there are still some significant  
11 issues that we have to address with DOE in resolving our  
12 concerns, and some of these aspects will be addressed today.

13 Joe Bunting, who is the Chief of the Engineering  
14 Branch, will begin today's briefing, and he will be assisted by  
15 Dinesh Gupta, who is the geotechnical team leader for the Yucca  
16 Mountain project, and Jim Kennedy, who is the quality assurance  
17 section leader.

18 CHAIRMAN ZECH: Thank you very much. You may  
19 proceed.

20 MR. BUNTING: Thank you, sir.

21 Would you turn to Chart I, please? We will use Chart  
22 I for the purpose of an overview.

23 The first purpose of the briefing is to give you the  
24 factual information on these major issues regarding the  
25 exploratory shaft, and they are shown on this chart, and they

1 will be discussed in detail during the presentation, and Dr.  
2 Gupta will use the scale model to further explain these when he  
3 begins his part of the presentation.

4 However, I would like to briefly touch on each of  
5 these issues now.

6 Number one is the location of the shaft, and the  
7 focus here is on the demonstrated criteria used by DOE for  
8 selecting the siting of these shafts and the potential for test  
9 interference, and here we're talking about the potential for  
10 interference between the tests themselves and between the test  
11 and the construction activities associated with the exploratory  
12 facility.

13 Second, the DOE plans to penetrate the barrier  
14 between the repository and the groundwater below the repository  
15 by continuing one of the 12-foot diameter shafts down through  
16 that barrier.

17 And three, the extent of the proposed underground  
18 exploration. The question is, how representative will that  
19 exploration be of the entire site at Nevada?

20 Now these have been briefed to you previously. The  
21 last one, number four, is a new insight in design control,  
22 which is one of the criteria that's contained in our 10 CFR 60  
23 QA requirements. This is a new insight that we've gained over  
24 the past six months, which we want to relate to you here today.

25 Since we briefed you in May, we've given further

1 consideration to the significance of the objections, concerns,  
2 and the 128 open items that were identified by the Staff during  
3 the review. We've come to the conclusion that these issues  
4 identified by the Staff must be considered as just the symptoms  
5 of a major problem and not be confused with the problem itself,  
6 and we suspect the problem includes an inadequate design  
7 control process.

8 In our briefing to you in May, we did not make the  
9 connection between the multitude of issues raised by our  
10 comments and the questionable adequacy of the design control  
11 process. Our initial realization of a major problem came about  
12 during our observation of DOE's 50 percent design review, and  
13 there it became obvious to the NRC Staff that DOE's architects  
14 and engineers were working to rather rigid requirements given  
15 to them by DOE, and the requirements did not seem to adequately  
16 incorporate 10 CFR 60 regulatory requirements.

17 Also, there seemed to be a clear lack of interface  
18 control between the various DOE contractor design and  
19 construction organizations who were present at the meeting. We  
20 have brought this to DOE's attention, and they have indicated  
21 their commitment to implement a design control process that  
22 meets regulatory requirements for future activities. We still  
23 have to deal with past activities and specifically the adequacy  
24 of the design to be presented in the site characterization plan  
25 for the exploratory shaft facility.

1           Although we are proceeding to resolve these  
2 individual open items, and the numbers now have been reduced by  
3 over 50 percent, we must be careful that we adopt an approach  
4 that is sufficiently comprehensive to address the problem and  
5 not just the symptoms.

6           It is well to understand that on this first-of-a-kind  
7 undertaking, the NRC Staff is not able to catch every DOE  
8 omission or inadequacy, and we must rely to large extent on the  
9 adequacy of DOE's engineering process and specifically the  
10 design control process.

11           The second purpose of the briefing, as highlighted on  
12 your chart, is to make you aware of the approach that we are  
13 pursuing to resolve this problem. We will first familiarize  
14 you with the extent of the facility itself, and then we'll  
15 identify the pertinent regulatory requirements, so that you can  
16 appreciate both the importance and the timeliness of the  
17 material we're presenting here today.

18           Then Dr. Gupta and Mr. Kennedy will present the  
19 issues in some detail, and I will follow up with the resolution  
20 approach and a summary.

21           Turn to Chart II, please. What is the ESF, the  
22 exploratory shaft facility?

23           Some people may think that this is just the vertical  
24 shafts that provide access to the underground test area of the  
25 site characterization.

1           Could you put up Figure 1, please?

2           This diagram illustrates the major features of the  
3 exploratory shaft facility. This is as related in DOE's draft  
4 site characterization plan. Here you see the three head frames  
5 on the surface, the two 12-foot diameter shafts 300 feet apart,  
6 the main underground test area. The dotted lines illustrate  
7 the long exploratory drifts at the repository horizon, and the  
8 cutout at the bottom represents the DOE plans to penetrate the  
9 barrier below the repository level with one of these 12-foot  
10 shafts.

11           So when we talk about the exploratory shaft facility  
12 here today, we're talking about all that you see in this  
13 diagram, and these features will be further highlighted by Dr.  
14 Gupta, using his scale model, when he makes his presentation.

15           If you would turn to Chart III, why is the ESF  
16 important?

17           One of the regulatory requirements we wish to focus  
18 on here today is contained in 10 CFR 60.21, which requires --  
19 and I'm going to quote this -- "a comparative evaluation of  
20 alternatives to the major design features that are important to  
21 waste isolation with particular attention to those alternatives  
22 that provide longer radionuclide containment and isolation.

23           Now there are three important features of this  
24 requirement I'd like to focus on.

25           Number one, major design features important to waste

1 isolation; two, comparative evaluation of alternatives; and'  
2 three, alternatives that would provide for a longer  
3 containment.

4 From a regulatory viewpoint, the Commission has  
5 expressed in its Statement of Considerations the position that  
6 shafts were considered a major design feature important to  
7 waste isolation. From a technical viewpoint, this facility is  
8 a major design feature important to waste isolation for the  
9 following reasons:

10 It is the interface for any future repository  
11 expansion and will become part of the repository itself, if the  
12 site is found suitable and developed by DOE. How this facility  
13 is sited, designed, and constructed could impact on the  
14 validity of the data derived from the site characterization  
15 tests themselves, and how effectively it can be sealed will  
16 impact on long-term waste isolation and repository performance.

17 Now in contrast with these regulatory requirements,  
18 the documentation provided to date by DOE to support its siting  
19 and design of the facility does not include waste isolation as  
20 a criterion. Instead, it focused on cost and constructability.

21 Furthermore, the required comparative evaluations  
22 were not provided. For example, we could have looked at  
23 alternative locations, alternative designs of the shafts,  
24 alternative underground exploration plans that would have  
25 listed the major uncertainties and the ability of various

1 alternatives to resolve those uncertainties.

2 Now I want to point out, I cite these examples just  
3 for illustrative purposes, and I don't mean to imply that DOE  
4 must consider these alternatives.

5 Now the documentation provided by DOE also did not  
6 demonstrate the process nor the criteria that were used to  
7 translate these various regulatory requirements into their  
8 subsystem requirements document. Now this document became one  
9 of the principal inputs into the design process they had in  
10 place, and this is one of the documents that contained the  
11 rigid requirements that I referred to in relating the  
12 observation of the 50 percent design review.

13 If you will turn to Chart IV, turn now to why is this  
14 subject important now. In the first instance, it is timely,  
15 because DOE wants to begin construction in November of 1989.  
16 However, from a regulatory perspective, both the law and NRC's  
17 rules require the DOE to defer sink of the shafts until it has  
18 received and considered comments from the Commission.  
19 Furthermore, 10 CFR 60.18(d) requires the Director, NMSS, to  
20 provide DOE with NRC's site characterization analysis, and this  
21 analysis shall include a statement of no objection or we have  
22 to list the specific objections with respect to DOE's program  
23 for characterization.

24 Because this exploratory shaft facility is more than  
25 just the access shafts, and it includes the site

1 characterization areas itself, the exploratory shaft facility  
2 concerns cannot be viewed in isolation from the site  
3 characterization plan and NRC's site characterization analysis.

4 Now no hearing or construction authorization is  
5 required at this time before they begin construction of the  
6 exploratory shaft facility; however, should the site be found  
7 suitable and DOE submits an application, we will have to make a  
8 compliance determination with respect to 60.21, and  
9 particularly those parts pertaining to the shafts at the time  
10 of the repository construction authorization, after the shaft  
11 has already been constructed.

12 Now I want to point out that a "no objection" reading  
13 from the Commission at the time of the site characterization --  
14 at the time of the ESF construction does not prejudice the  
15 Commission or the Staff in this review of the construction  
16 application. However, if we want to minimize the potential for  
17 impediments to the licensing process in the future, we have to  
18 be sensitive to raising significant concerns now and being sure  
19 that DOE adequately addresses those before we give our  
20 objection.

21 Dr. Gupta will now present this detailed ESF  
22 technical issues and will be followed by Mr. Kennedy.

23 COMMISSIONER CARR: Could I ask a question first?

24 CHAIRMAN ZECH: Sure, go ahead.

25 COMMISSIONER CARR: If we don't give them a "no

1 objection" finding, can they go ahead?

2 MR. BUNTING: Yes, sir.

3 COMMISSIONER CARR: So all we do is go on record, and  
4 then they can do what they want to do.

5 MR. BUNTING: Yes, sir.- This is a possession  
6 license, not a facility license, so our ultimate --

7 COMMISSIONER CARR: But they are required to get our  
8 comments before they can go ahead.

9 MR. BUNTING: That's correct.

10 COMMISSIONER CARR: So what if we don't send our  
11 comments?

12 MR. BUNTING: Then I guess they can't go ahead.

13 COMMISSIONER CARR: Oh, okay.

14 CHAIRMAN ZECH: All right. Let's proceed.

15 MR. GUPTA: Thank you, Mr. Chairman, Commissioners.

16 In January of this year, DOE submitted the  
17 consultation draft site characterization plan that contained  
18 the exploratory shaft design. We reviewed that design,  
19 recognizing the fact that if the site is found suitable for  
20 repository development, the ESF facility would be incorporated  
21 in the repository. It will become a part of the repository  
22 itself. And I will illustrate that point with this scale model  
23 here.

24 What we have here is a scale model of the repository  
25 that shows the terrain at the Yucca Mountain. The blue surface

1 here is the groundwater table, which is about 1700, 1800 feet  
2 below the ground surface. The repository would be developed  
3 about 1000 feet below the ground surface. The final  
4 repository, there will be surface facilities here from which  
5 the waste would be transported through a ramp that would come  
6 from the surface down to 1000 feet below ground at this  
7 location.

8 The excavated rock material would be carried out  
9 through another ramp that would be coming out just about in  
10 this area to this stockpile here.

11 The final repository would have four shafts. Two of  
12 these would be what we now know as exploratory shafts. Those  
13 two shafts would be come ventilation shafts in the final  
14 repository. There would be two additional shafts, the  
15 emplacement exhaust shaft and men-and-materials shaft that  
16 would be built later on as part of the repository.

17 So the overall design would have four shafts and two  
18 ramps as surface openings.

19 CHAIRMAN ZECH: How far is the bottom of the shaft  
20 above the water table?

21 MR. GUPTA: It's about 400 feet -- 700 feet.

22 CHAIRMAN ZECH: 700 feet?

23 MR. GUPTA: Yes.

24 CHAIRMAN ZECH: All right. Thank you. You may  
25 continue.

1 here is the groundwater table, which is about 1700, 1800 feet  
2 below the ground surface. The repository would be developed  
3 about 1000 feet below the ground surface. The final  
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20 above the water table?

21 MR. GUPTA: It's about 400 feet -- 700 feet.

22 CHAIRMAN ZECH: 700 feet?

23 MR. GUPTA: Yes.

24 CHAIRMAN ZECH: All right. Thank you. You may  
25 continue.

1           We made comments on this, and there are concerns that  
2 this could be subject to flooding and erosion, and in response  
3 to those concerns in April '87, DOE decided to move those two  
4 shafts and put it on the side of the wash, indicated by black  
5 dots up there.

6           This location is definitely better than what was  
7 previously proposed by the DOE; however, DOE at this time is  
8 still evaluating whether there could be any concern with  
9 respect to flooding and erosion at the new locations, and DOE  
10 has indicated that they plan to provide us with their analysis  
11 with respect to flooding and erosion with the SEP for the new  
12 location.

13           CHAIRMAN ZECH: When are they going to do that? What  
14 is their schedule for providing you that analysis?

15           MR. GUPTA: With the SEP, that should be coming in  
16 next month.

17           CHAIRMAN ZECH: Next month?

18           MR. THOMPSON: At the end of next month, the end of  
19 December.

20           MR. GUPTA: The end of next month.

21           CHAIRMAN ZECH: Proceed.

22           MR. GUPTA: May I have the next figure?

23           In addition to the flooding and erosion issue, there  
24 are interference concerns with respect to relative distances  
25 within the two shafts. Also within the two shafts in the

1 underground test areas and between the shafts and the future  
2 waste emplacement areas. The two shafts are located 300 feet  
3 apart. Some of the testing would be conducted with 200 feet of  
4 these two shafts, and the plan is to place the waste within,  
5 say, 500 feet of these openings.

6 We have raised this concern that there might be  
7 potential interference concerns with respect to this opening  
8 and the underground testing that DOE is planning. These  
9 interference concerns are not related to the locations of the  
10 two shafts in the wash area. They are strictly related to how  
11 the overall design of the ESF fits in together.

12 In two previous bore holes at the site, water from  
13 one bore hole founds its way into the other bore hole, and our  
14 concern is that by locating the two shafts so close to each  
15 other, since ES-1 would be primarily used for conducting a  
16 number of important tests, would be instrumented heavily, that  
17 by locating the other shaft so close to ES-1, there might be  
18 some interference possibility.

19 A similar concern is with respect to the testing that  
20 would be conducted at the main test lab, which is 1000 feet  
21 below the ground surface.

22 DOE also needs to evaluate the effect of locating the  
23 two shafts so close to the future waste emplacement areas.

24 In addition, the DOE did not include sufficient  
25 details on test locations and their zone of influence in the

1 consultation draft site characterization plan. Therefore, we  
2 cannot evaluate at this time whether the tests could interfere  
3 with each other. Some of the tests were not identified at all.  
4 For example, seal tests and performance confirmation tests were  
5 not identified at all.

6 In our meetings with the DOE, they have indicated  
7 that they are considering these concerns, and they plan to  
8 address them in the SEP also.

9 COMMISSIONER CARR: What drives the 300-foot figure?

10 MR. GUPTA: It is an old design where the two shafts  
11 are not 12 foot in diameter. One shaft was six foot in  
12 diameter, and the distance had to be of that order for safety  
13 reasons.

14 Now -- and for ventilation reasons -- now they have  
15 increased the diameter of the two shafts, and there is no real  
16 reason to keep them so close.

17 COMMISSIONER CARR: So they can move them apart  
18 without any design objectives or it doesn't -- I mean, they  
19 didn't put them close together, so they could use common  
20 facilities for drilling or --

21 MR. GUPTA: Well, there are some advantages in doing  
22 it this way, as you've just illustrated, but we don't see any  
23 real reasons to locate them so close to each other.

24 MR. THOMPSON: But I must admit, I believe DOE, on  
25 the other hand, believes that the 300 foot is an appropriate

1 area, and they are now evaluating that distance in response to  
2 our concerns and will either justify their position or that  
3 distance or will be coming forth with a new distance.

4 CHAIRMAN ZECH: All right. Thank you.

5 COMMISSIONER CARR: It seems like if it had some  
6 design basis, it would be 343.6 feet or something.

7 MR. THOMPSON: I think it was somewhat arbitrary.

8 COMMISSIONER CARR: Okay.

9 CHAIRMAN ZECH: All right. Let's proceed.

10 MR. GUPTA: May I have Vu-graph No. 6, please?

11 The third of our objections is related to the DOE's  
12 plan to penetrate ES-1 below repository horizon level into an  
13 important rock barrier between the repository level and the  
14 groundwater table.

15 In response to this objection, DOE stated that they  
16 are further analyzing the need for this penetration. By  
17 penetrating ES-1 below the repository horizon level, they  
18 wanted to verify that indeed the barrier is an important  
19 barrier between the repository and the groundwater level, and  
20 also they wanted to do some testing regarding the flow  
21 characteristics of the rock interfaces.

22 However, in response to our concerns, DOE is now  
23 planning to perform a damage versus benefit analysis before  
24 deciding about the penetration.

25 COMMISSIONER CARR: Are they going to get data from

1 that that they couldn't get from smaller diameter bore holes,  
2 they think?

3 MR. GUPTA: That's what they're evaluating right now

4 MR. THOMPSON: Or they may be able to get data from  
5 another place that's not specifically located on the site. So  
6 I think that's the -- the key area is, is this the only place  
7 to get the data with respect to that barrier and what's  
8 happening underneath there?

9 MR. GUPTA: Their current position, illustrated in  
10 the draft mission plan amendment, is not to penetrate into that  
11 barrier and terminate the two shafts at 1100 feet.

12 May I have the sketch on the extent of exploration,  
13 please?

14 In addition to the three objections on the ESF I just  
15 talked about, we identified many other concerns on the ESF  
16 design. An example of these comments would be the proposed  
17 limited extent of exploration.

18 As you can see, the main test area is located in the  
19 northeast corner of the repository block, which is colored in  
20 green. The three long groups are indicated in red. And we  
21 considered that that much testing would not provide sufficient  
22 information about the southern portion of the repository block.  
23 There is no underground drifting planned to the south, as  
24 indicated here.

25 COMMISSIONER CARR: Is that rag going to penetrate

1 the perimeter like that sketch shows, one of the drift shafts?

2 MR. GUPTA: In the final design of the repository,  
3 there would be a perimeter drift, but for exploration purposes

4 --

5 COMMISSIONER CARR: They want to go beyond the  
6 perimeter?

7 MR. GUPTA: No. They are doing the testing and the  
8 exploration only in the northeast corner.

9 COMMISSIONER CARR: But I'm looking at your red line  
10 that goes past the area.

11 MR. GUPTA: Oh, yeah, they are going beyond that.  
12 Actually there is a feature there, the drill hole wash that  
13 they want to see if there could be any potential conflict. And  
14 it would also be a ramp, a portion of the ramp in the future  
15 repository.

16 May I have the cross-section of the repository,  
17 please?

18 This cross-section here shows that there are many  
19 features -- it's an east/west cross-section -- shows that there  
20 are many parts and sections that go through the repository, and  
21 the repository shape is bounded by many faults, and it's  
22 important to explore whether there would be sufficient room in  
23 the south and that area is suitable for repository development  
24 or not.

25 May I have the next Vu-graph, please.

1           COMMISSIONER CARR: And the concern is over the area?  
2 Do they have enough area for it?

3           MR. GUPTA: Yes, that is correct. And also it has  
4 different geologic features than the north. By just exploring  
5 the northern block, you don't get sufficient information about  
6 the southern portion.

7           DOE plans to supplement the exploration by separate  
8 bore holes in the southern portion of the block. We have  
9 raised this concern that bore holes alone may not be suitable  
10 for exploration of this portion of the block, and that the DOE  
11 should consider additional drifting to the southern portion.

12           As previously mentioned by Mr. Bunting, we considered  
13 that the objections and the other comments and questions that  
14 we have raised appear to be a symptom of a major problem. What  
15 we suspect is that it may be a problem related to DOE's design  
16 process.

17           Mr. Kennedy is going to talk about that aspect.

18           CHAIRMAN ZECH: All right. Thank you. You may  
19 proceed.

20           MR. KENNEDY: Good morning.

21           Before I begin on design control, I would like to put  
22 this issue into some kind of perspective with our objection on  
23 the consultation draft site characterization plan.

24           As you know, when we commented on DOE's on  
25 consultation draft site characterization plan last May, one of

1 our five objections was on quality assurance. We stated that  
2 we didn't have confidence in the QA program at that time. We  
3 recommended that DOE not start new site work until the program  
4 was qualified and we, on the NRC Staff, had conducted  
5 sufficient reviews and audits to agree that it was qualified.

6 Now included within that new site work, of course, is  
7 the sinking of the exploratory shaft.

8 Mike, could I have the organization chart?

9 This isn't in your package, by the way. This is an  
10 organization chart of the DOE program, beginning with  
11 Headquarters, the DOE Project Office in Nevada, and the prime  
12 contractors.

13 Last June, we met with DOE after issuing our  
14 objection on the consultation draft SEP. We agreed -- we  
15 rather discussed -- what we needed to do to agree that their  
16 program was qualified. We identified all the specific review  
17 actions we need to take to review their QA program, and if it,  
18 in fact, is qualified, to agree that it is so.

19 Now this chart depicts all of the major organizations  
20 in the repository program. It starts at DOE Headquarters at  
21 the top, the Office of Civilian Radioactive Waste Management.  
22 The next block is the Nevada Project Office, now called the  
23 Yucca Mountain Project Office, and underneath that are the  
24 major participants in the program -- the three national labs,  
25 the three Nevada test site contractors, and the USGS.

1 Does that cover them all? I think so.

2 Now what we did in June was, we identified all the  
3 specific actions that we need to take with respect to each of  
4 those organizations. Now that involves reviewing the QA plans  
5 and procedures. It involves observing at least two DOE audits  
6 of each of those organizations, and if the programs, in fact,  
7 are developed sufficiently, we feel we would have enough  
8 confidence, based on those actions, to agree that the program  
9 was qualified, and that they could go ahead and begin new site  
10 work.

11 Now there's a lot of work to do by us. There's a lot  
12 of work --

13 MR. THOMPSON: You might note, Jim, that we have  
14 reviewed one of the QA programs for the Nevada office of the  
15 Yucca Mountain and have approved that with certain, I guess,  
16 conditions that need to be addressed. So we have taken some  
17 and have made some specific progress in approving the DOE QA  
18 programs.

19 MR. KENNEDY: I didn't say this, but we also have  
20 schedules laid out for all of these review actions, when DOE  
21 needs to submit plans to us and when DOE needs to conduct  
22 audits, et cetera.

23 Some of those initial schedules have slipped, so  
24 we're not -- the program is not on schedule right now, although  
25 the recent slip in the schedule for the construction of the

1 exploratory shaft may accommodate the schedule slips we've had  
2 so far.

3 COMMISSIONER CURTISS: Is that because of DOE's  
4 timing in submission of the plans or our review of those plans?

5 MR. KENNEDY: Both. We've completed one review of  
6 the first plan, and it took a little bit longer than we  
7 expected because, first, we didn't resolve all the issues that  
8 we expected to in the meeting that we had in July, and second,  
9 because it was a first. It just didn't go as quickly as we  
10 thought. We put down a real ambitious schedule, 30 days for  
11 preparing a safety evaluation and getting it through all the  
12 Staff and OGC. We didn't make it on the first one. We're much  
13 more optimistic on later ones.

14 But also DOE is slipping on submission of QA plans.  
15 A number of those are overdue.

16 I was about to mention that we have a number of  
17 review actions, and all of those have been identified, and  
18 they're on a master plan.

19 DOE has many more actions to take to make the program  
20 ready to review. Now they have made some real progress in the  
21 last ten months or so in upgrading their QA program and getting  
22 it closer to where it needs to be. As we've reported in the  
23 quarterly progress reports to the Commission, they've  
24 accomplished the following in the recent past:

25 First, they elevated the position of QA Manager for

1       Headquarters -- that is, the Office of Civilian Radioactive  
2       Waste Management -- to report to the Director of OCRWM. This  
3       has been a long-outstanding Staff issue. It's one that we  
4       identified three or four years ago. And finally, I believe,  
5       back around the middle of this year, they elevated that  
6       position.

7               COMMISSIONER CARR: Did they fill it?

8               MR. KENNEDY: I was about to say, they just filled  
9       it, too. I think back in July. And they filled it with an  
10       individual who has extensive management and NRC licensing  
11       experience, so we're happy about that.

12              They also got accepted by the Staff, as Mr. Thompson  
13       was just referring to. The Yucca Mountain project QA plan.  
14       This is the first QA document that's been accepted by the Staff  
15       in this program, and it's a major accomplishment for them.

16              What this plan does is lay out the general  
17       requirements that each of the organizations, each of the prime  
18       contractors in the organization chart, need to meet in their QA  
19       programs. So it's a big accomplishment for them.

20              They've also conducted ten audits of their prime  
21       contractors in the last ten months or so, and they have become  
22       much more effective in identifying problems with their  
23       contractors.

24              One thing we're doing now is, instead of our going  
25       out and independently auditing at this point, we're going out

1 and observing DOE audits, and we're putting the burden on DOE  
2 to conduct good audits to find the problems with their  
3 contractors and get them corrected, and we've noticed a big  
4 improvement in the way they've conducted audits in the last ten  
5 months.

6 MR. THOMPSON: It's not that we won't conduct our own  
7 independent audits. It's just that we can get a more effective  
8 view of what DOE is doing in their QA program by actually  
9 observing their QA audits and making sure they do the program  
10 right, and that's, you know -- they have the primary burden on  
11 that. So we think this is a very effective way to use the  
12 resources that we have in improving the QA program.

13 MR. KENNEDY: Now there's still a long way to go for  
14 them, and I don't want to imply by listing off these  
15 accomplishments that the objection is close to being resolved,  
16 because it isn't.

17 Some of the early milestones have been missed, and  
18 there are quite a few review actions yet to be taken by the  
19 Staff. But there is progress being made, and I've been  
20 involved in this for five years now, and progress is being made  
21 at a faster rate than it ever has in the last five years.

22 Now I mentioned this broad concern, because design  
23 control is -- the design control is an issue, is one that's a  
24 subset of the overall QA program concerns that we have. We are  
25 working on design control in resolving the overall QA objection

1 in parallel, and our plan is to resolve both before the sinking  
2 of the exploratory shaft.

3 The design control is particularly important now,  
4 because it affects our ability to comment on the site  
5 characterization plan, which is due to be submitted at the end  
6 of next month. I'll talk about this a little bit more later.

7 CHAIRMAN ZECH: Excuse me. Let me interrupt you for  
8 a second.

9 You say the site characterization plan is scheduled  
10 to be issued next month.

11 MR. KENNEDY: At the end of next month, right.

12 CHAIRMAN ZECH: What you've commented on already, as  
13 I understand it, is the consultation draft site  
14 characterization plan; is that correct?

15 MR. KENNEDY: That's right.

16 CHAIRMAN ZECH: And there's where you've given your  
17 concerns.

18 MR. KENNEDY: Exactly.

19 CHAIRMAN ZECH: And they've been working on these  
20 concerns. Can we then expect that those concerns that you have  
21 already voiced will be incorporated in the plan that will be  
22 issued by the end of December, next month?

23 MR. KENNEDY: Only in a general way, because the site  
24 characterization plan, especially for quality assurance, has  
25 only a relatively small chapter on quality assurance.

1           CHAIRMAN ZECH: Well, then, --

2           MR. KENNEDY: It will be addressed, but in order for  
3 us to resolve the objection --

4           CHAIRMAN ZECH: Well, as I understand what you're  
5 saying, though, it may not be addressed sufficiently; is that  
6 correct?

7           MR. KENNEDY: There will not be enough information in  
8 the plan.

9           MR. THOMPSON: I think we'll get to that, Mr.  
10 Chairman, because there's a kind of parallel process that will  
11 be ongoing. The site characterization plan which will be  
12 submitted for review, it will - it's been developed in response  
13 to our previous comments, and as we said earlier, the focus on  
14 the QA problem and the design control problem was done -- was  
15 kind of concluded after they probably put a lot of the site  
16 characterization plan together.

17           So they've got a re-review process that's in  
18 progress, and I think we'll talk about exactly how we're going  
19 to be addressing this in parallel.

20           But you're right, Mr. Chairman, we've got to address  
21 both of these in parallel, and there is some risk that the site  
22 characterization plan may have to be revised to reflect any  
23 changes that may come out of this parallel review.

24           CHAIRMAN ZECH: Well, if I understand what you're  
25 saying -- and I don't want to interrupt your briefing to any

1 degree -- but you've indicated previously that you see an  
2 inadequate design control problem in the DOE process.

3 You've been concerned about the adequacy of the  
4 design. Those are clearly fundamental, it seems to me, and  
5 you've talked about addressing problems, not the symptoms,  
6 again rather fundamental in my judgment. Those are kind of  
7 fundamental concerns.

8 So therefore, if what you're telling us is that  
9 they're going to issue a site characterization plan late next  
10 month that still has those concerns involved in them, how will  
11 you be able to review that plan? Do you have confidence that  
12 you will be able to review the plan at the end of next month,  
13 recognizing already that it has perhaps those deficiencies?

14 MR. THOMPSON: I think we will address that, Mr.  
15 Chairman.

16 MR. KENNEDY: That's the heart of the issue, in fact.

17 CHAIRMAN ZECH: Please do.

18 MR. THOMPSON: That's why we all want to make sure  
19 that you understand how we're going about that process.

20 CHAIRMAN ZECH: I think we understand it, but I'd  
21 appreciate your addressing those as you go on.

22 You may proceed.

23 MR. KENNEDY: Okay. Now thus far today, Dr. Gupta  
24 has talked about a number of specific concerns related to the  
25 exploratory shaft. As he said, we believe these may be

1 symptoms of a larger problem, and that needs to be corrected by  
2 DOE, and that problem is design control.

3 This is important to us as a regulatory agency,  
4 because we can't review all the work that DOE performs with  
5 respect to the shaft or any other activity, for that matter.  
6 It is not enough for DOE to just address the specific issues  
7 that we raise, because we have not, will not, and cannot look  
8 at everything. They and we need to rely on a program of  
9 controls implemented by them to give us confidence that work is  
10 performed adequately, and this program is a quality assurance  
11 program of which design control is a part.

12 Now the scope of the design control program is  
13 activities affecting the public health and safety, and for the  
14 repository, this is activities which are either important to  
15 safety or waste isolation, terms which are defined in Part 60.

16 Now it's the Staff's position that the exploratory  
17 shaft facility is important to waste isolation. The ESF  
18 activities, therefore, need to be performed under a design  
19 control program which meets our QA requirements in Part 60.

20 Now let me define the problem that we see in the DOE  
21 design control program. We have design requirements in 10 CFR  
22 Part 60. DOE has design requirements in a document called its  
23 Subsystems Design Requirements Document. This is a detailed  
24 design requirements document which is used by the various  
25 organizations within the DOE program.

1           The problem is that there's no documented design  
2 control process that clearly shows how DOE considered all the  
3 Part 60 requirements in developing its detailed design  
4 documents. In fact, there are at least three areas, as  
5 mentioned by Dr. Gupta, where it appears that these  
6 requirements were not addressed or were not addressed  
7 adequately.

8           Failure to adequately these Part 60 requirements now  
9 could jeopardize the ability to license the repository in the  
10 1990s, but what makes this particularly important right now is  
11 that DOE is scheduled to submit their site characterization  
12 plan next month. As Joe Bunting mentioned earlier, under the  
13 Nuclear Waste Policy Act and under 10 CFR Part 60, we are  
14 required to review and comment on that plan, and DOE is  
15 required to consider our comments, particularly on the  
16 exploratory shaft.

17           However, DOE hasn't demonstrated to date that the  
18 design, as presented in the site characterization plan, is  
19 adequate, and thus our ability to give valid comments on the  
20 site characterization is in question and will remain so until  
21 our concern is resolved.

22           That's the heart of the issue that you were bringing  
23 up earlier.

24           CHAIRMAN ZECH: Right. Well, when is that going to  
25 be? You going to get a plan, and then how are you going to

1 resolve these issues? Do you have any --

2 MR. KENNEDY: That's what Joe Bunting is going to  
3 talk about.

4 CHAIRMAN ZECH: All right. Is that next?

5 MR. THOMPSON: The grand finale. Now, Joe, you've  
6 been built up so well now --

7 [Laughter.]

8 COMMISSIONER CARR: Let me make sure I understand  
9 this design control problem. Is it basically the rationale  
10 behind the design, and then the rationale behind any changes to  
11 the design that you're missing?

12 MR. KENNEDY: It's really the rationale, right, the  
13 design input. That is, taking the basic requirements, design  
14 requirements of Part 60 and incorporating them into their  
15 design.

16 COMMISSIONER CARR: You mean, why you pick this  
17 design over any other design?

18 MR. BUNTING: The question you raised earlier: Why  
19 12 feet? Why 300 feet apart?

20 COMMISSIONER CARR: Some substantiation for that.

21 MR. GUPTA: Some of the requirements were very  
22 specific, like the two shafts shall be located at these  
23 coordinates at the site. They shall be 300 feet apart. They  
24 will be 12 foot in diameter.

25 COMMISSIONER CARR: The question is why.

1           MR. GUPTA: Why, yes. We didn't see any  
2 documentation to justify that.

3           COMMISSIONER CARR: Does the program also, then, once  
4 you get the initial design agreed to, all the changes have to  
5 be explained in the same manner?

6           MR. KENNEDY: Absolutely, absolutely.

7           COMMISSIONER CARR: And so that's lacking in both  
8 cases right now.

9           MR. THOMPSON: There are two aspects about it. There  
10 are some things that may not be safety-related with respect to  
11 the design of the exploratory shaft. Right now, the approach,  
12 the conservative approach, that we're saying is, treat it as  
13 it's all important to waste isolation, quote, safety-related.  
14 And if there were other things later on, you can demonstrate,  
15 you know, the elevator operations, et cetera. There may not be  
16 a need for all activities associated with the exploratory shaft  
17 to be under this design control QA program for NRC  
18 requirements, but until we can identify those parts that are  
19 not, we believe that the best approach is to take this approach  
20 that everything is safety-related or important to waste  
21 isolation.

22           COMMISSIONER CARR: It might break out to subsurface  
23 or --

24           MR. THOMPSON: There may be some aspects associated  
25 with it.

1           CHAIRMAN ZECH: Have you addressed all these concerns  
2 to the appropriate DOE officials?

3           MR. THOMPSON: Yes, sir.

4           CHAIRMAN ZECH: You have?

5           MR. THOMPSON: That was those meetings that we've had  
6 with them --

7           CHAIRMAN ZECH: I hope so.

8           MR. THOMPSON: -- back in May and July and October  
9 and November.

10          CHAIRMAN ZECH: Well, there should be no surprises as  
11 to what we're expecting to get from DOE; is that correct?

12          MR. BUNTING: That's correct.

13          CHAIRMAN ZECH: All right. You may proceed.

14          MR. BUNTING: If you would turn to Chart IX, please,  
15 this is the resolution approach, which has been tentatively  
16 agreed to by the Staff. As stated by Mr. Kennedy, DOE has  
17 agreed to implement a design control process for future  
18 activities, but it will not be applied to design data that will  
19 be presented in the site characterization plan on which DOE  
20 expects the Staff and the Commission to review and render our  
21 "no objection" or list our specific objections.

22                 The Staff has taken the position that DOE's  
23 resolution approach for the siting and design information  
24 presented in the plan -- this is the site characterization plan  
25 -- must include a demonstration that they have included 10 CFR

1 60 regulatory requirements in their siting and design criteria;  
2 for example, waste isolation. We have to see that.

3 They must also demonstrate that they have included in  
4 their decision criteria the appropriate interface requirements  
5 between construction, the exploratory facility, and other  
6 ongoing activities -- testing, for example. And for future  
7 activities, the Staff has taken the position that the design  
8 control process that meets 10 CFR 60 requirements must be in  
9 place before beginning to sink the shafts.

10 Now the Staff has tentatively agreed to this multi-  
11 step process which is summarized on this chart. The first four  
12 bullets that you see on the chart relate to analyzing the  
13 acceptability of the design as it's presented in the site  
14 characterization plan.

15 The fifth and sixth bullets have to do with approving  
16 the design control process before beginning to sink shafts.  
17 This is future activities.

18 The last bullet indicates that the results of our  
19 evaluation of the design acceptability analysis, which is the  
20 first four steps, will be reported in and as part of the NRC's  
21 site characterization analysis.

22 Now the opportunity for interaction with DOE during  
23 their conduct of this acceptability analysis is uncertain  
24 because of the prediction pressures for the site  
25 characterization plan next month. Now DOE has indicated that

1 they do want to meet with us on this process next week.

2 The acceptability analysis is planned to be submitted  
3 as part of the site characterization plan itself, but the  
4 concurrency of this approach has some risk, which can probably  
5 be best illustrated from this next and last chart.

6 Turn to Chart X, please.

7 The first area of risk is in the NRC's schedule for  
8 review of the site characterization plan. One month has been  
9 added to this schedule to accommodate the review by the new  
10 Advisory Committee on Nuclear Waste and also by review by you,  
11 the Commissioners.

12 Now assuming that DOE's acceptability analysis is  
13 submitted with the site characterization next month, the Staff  
14 will be required to review this additional documentation during  
15 this same intense review period and reach an independent  
16 judgment on its adequacy.

17 In addition, we have to also review all the  
18 documentation which they will be submitting to close out these  
19 numerous action items that are still open. We do not yet have  
20 a feel for what this will entail, but if past is prologue, we  
21 can expect a substantial additional volume of information.

22 CHAIRMAN ZECH: Is that what that question mark up  
23 there means?

24 MR. BUNTING: Yes, sir.

25 CHAIRMAN ZECH: All right.

1           MR. BUNTING: The question mark up there means, for  
2 the next part, will they actually submit it then or not, and  
3 I'll speak to that next.

4           CHAIRMAN ZECH: All right.

5           MR. BUNTING: The second area of -- well, to finish  
6 up the first one, the notion on the first one is, we have an  
7 additional workload to be performed in the same time period  
8 we've already laid out, and that additional workload is this  
9 new design acceptability analysis, as well as the close-out of  
10 open items, and that's assuming it's submitted on time.

11          MR. THOMPSON: That is a slight change of the  
12 approach that we had before. At one time, DOE was wanting  
13 quick comments on the exploratory shaft, in a three-month  
14 timeframe. Now, you know, it's an integrated part, and I think  
15 it's a sounder approach to do it as a full part of the  
16 Commission's comments and reviews on the site characterization  
17 plan. It just fits together better with our ability and the  
18 fact that the exploratory shaft design information is not being  
19 made available to us earlier. So there is a change, I think,  
20 from what we may have told the Commission in some earlier  
21 reports on the review schedule there.

22          COMMISSIONER CARR: As I read this, you're not  
23 looking, then, for the best design; you're looking for an  
24 acceptable design.

25          MR. BUNTING: Yes, sir.

1           COMMISSIONER CARR: So you're not really looking to  
2 generate the design control that you'd like to have a a basis.  
3 I'm just trying to make sure the original start point is a  
4 workable one.

5           MR. BUNTING: Yes, sir.

6           COMMISSIONER CARR: Okay.

7           MR. THOMPSON: But we are looking for, you know, the  
8 aspect of a full QA program, such that we believe that this is  
9 an important issue that DOE ought to start those site  
10 characterization activities, you know, in a first-rate way.

11           COMMISSIONER CARR: But they don't have to prove that  
12 the ESF is being built --

13           MR. THOMPSON: Oh, that's correct.

14           CHAIRMAN ZECH: But it has to be acceptable, and it  
15 has to be, you know, it has to give us the confidence that it  
16 truly is acceptable. So it just -- I hope it's not going to be  
17 something that's right at the margin where there's a concern  
18 about it. It should be acceptable in every sense of the word.

19           MR. THOMPSON: And certainly technically sound and  
20 acceptable as part of eventually being a part of the repository  
21 at the site for a long period of time.

22           CHAIRMAN ZECH: All right.

23           MR. BUNTING: If we could put the chart back up,  
24 please, the second area of risk is the DOE schedule, which is  
25 shown on this bottom lower line, and I want to talk to the

1 question mark that you raised earlier.

2           Although this schedule does reflect a five or six-  
3 month slip in the start of construction of the facility, there  
4 is no slip in the planned December submittal of the site  
5 characterization plan, and there is very little time remaining  
6 between now and the scheduled time for that plan's submittal.

7           Now the longer the delay -- and that's what the  
8 question mark is supposed to illustrate -- the longer the delay  
9 between the submittal of the site characterization plan and the  
10 submittal of the design acceptability assessment, the more  
11 uncertainty there will be that we will be able to complete the  
12 site characterization analysis within the scheduled time. If  
13 we get a bunch of information dumped somewhere in the middle of  
14 our review process, it may impact on things we've already  
15 looked at. So that's just a risk.

16           CHAIRMAN ZECH: It may impact on the effectiveness of  
17 your review process; is that what you're saying?

18           MR. BUNTING: Yes, sir.

19           CHAIRMAN ZECH: Well, then I think it's important  
20 that you take the time you need to do it right.

21           MR. BUNTING: Yes, sir.

22           CHAIRMAN ZECH: If it lengthens the process, so be  
23 it, as far as I'm concerned. You've simply got to have the  
24 time to have the confidence that you're doing it properly.

25           MR. BUNTING: Yes, sir.

1           COMMISSIONER CARR: Do you have to finish that before  
2 they can start site preparation?

3           MR. BUNTING: No, sir.

4           COMMISSIONER CARR: So really you have to finish it  
5 before they can commence with the construction. So you've got  
6 a four-month hole in there right now.

7           MR. BUNTING: Yes. I'm going to speak to that.

8           COMMISSIONER CARR: Okay.

9           MR. BUNTING: Now the third area of risk is in the  
10 outcome of the acceptability analysis itself. If DOE finds  
11 some significant omission or if we, the Staff, have a  
12 significant problem with the justification they submit, it's  
13 likely going to take time to resolve that problem. That's just  
14 another risk that I point out to you.

15           I want to be quick to point out that there is a four-  
16 month difference now on this schedule between our scheduled  
17 issuance of the site characterization analysis and the start of  
18 construction of the facility in November. We don't know how  
19 much slip, if any, DOE could tolerate in the issuance of our  
20 report and still hold to their start-construction schedule.  
21 But as stated earlier, both the Act and our rules require that  
22 they defer sinking the shafts until they have considered the  
23 Commission's comments.

24           Now to summarize, we presented you today with the  
25 factual information, together with the new insights we've

1 gained, on the significance of the multitude of issues raised  
2 on our review of the consultative draft site characterization  
3 plan.

4           And remember, we've only discussed five of these  
5 issues here today. We've also presented you with this  
6 tentative approach to resolve the issues of design control,  
7 both for the future and for past activities, and have outlined  
8 the associated risks. We've had numerous interactions with  
9 DOE, and progress is being made in resolving many of these  
10 individual open items, and we have made DOE aware of our  
11 concerns regarding the larger problem of design control.

12           In closing, we want to state that we are well aware  
13 that DOE is responsible to meet and to demonstrate that it has  
14 met the regulatory requirements, which in this instance are  
15 quite clear. We have related to DOE those conceptual steps we  
16 believe must be included in any attempt to validate past  
17 actions. We are ever mindful that responsibility rests with  
18 them to implement a successful approach to resolve this  
19 problem. The decision on the specific approach and the  
20 implementation is DOE's. We do not consider that our efforts  
21 to suggest certain conceptual concepts would prejudice our  
22 evaluation of the adequacy of the approach, its implementation,  
23 or its outcome.

24           This concludes our presentation. Thank you, Mr.  
25 Chairman.

1 CHAIRMAN ZECH: All right. Thank you very much.  
2 Questions from my fellow Commissioners?  
3 Commissioner Carr?

4 COMMISSIONER CARR: Yes. This thing is designed  
5 already, isn't it? So you've already got the --

6 CHAIRMAN ZECH: Excuse me. Answer when you nod your  
7 head. Please give us a yes or no.

8 MR. BUNTING: I'm sorry. I want to say that one  
9 phase of the design is done already, a preliminary design.  
10 They will go three reiterations of the design.

11 COMMISSIONER CARR: We have that already, and so -- I  
12 assume?

13 MR. GUPTA: We are getting copies of it. We do not  
14 have a full set of the design yet.

15 COMMISSIONER CARR: We can get them.

16 MR. GUPTA: We can get them.

17 COMMISSIONER CARR: So we can get ahead of the  
18 problem and the design analysis. We'll know pretty much what  
19 areas we're worried about, so when the analysis comes in, we  
20 can focus on those first, I would assume.

21 MR. GUPTA: That is correct, yes.

22 COMMISSIONER CARR: Okay. I'm a little worried about  
23 management problems. They're playing musical chairs over  
24 there. Since I've been here, we've had a lot of different guys  
25 in charge over there, and I can't figure out, how do you feel

1 about -- have you got somebody to work with over there that  
2 feels like he's going to be there long enough to get it done?

3 MR. THOMPSON: Well, that is an issue, Mr. Chairman,  
4 that is one that we do face. They have certain individuals, I  
5 think, who have a continuity in the licensing process. Some of  
6 their, you know, key managers have changed and moved on. That  
7 certainly could be part of the symptom of why some of the  
8 design control issues themselves kind of fell apart, because  
9 that is one tool where you can -- management can use to assure  
10 themselves that the process is working as you have changes in  
11 managers.

12 So that's one of the reasons that we think this is so  
13 important.

14 COMMISSIONER CARR: I guess my concern is, are they  
15 making decision, or are they waiting for somebody to come in  
16 who can make them?

17 MR. THOMPSON: They are making decisions. At least  
18 our experience in the last six to eight months is, you know,  
19 the previous set of managers were making decisions, and we were  
20 able to make progress, and I think, as Jim Kennedy said, we've  
21 made more progress, I believe, in the last year than we had in  
22 the previous four years in getting issues resolved.

23 So I see the DOE people making decision. Obviously,  
24 there will be a new change, and we will be observing it, and  
25 we'll report back to you any time we see a problem with them

1 making decisions.

2 COMMISSIONER CARR: Okay. You mentioned that we  
3 missed our 30-day goal. How far did we miss it?

4 MR. KENNEDY: I think -- it gets a little confused,  
5 because there are some assumptions about --

6 COMMISSIONER CARR: Was it an order of magnitude, or  
7 another 30 days, or --

8 MR. KENNEDY: Two weeks or 30 days, something on that  
9 order.

10 COMMISSIONER CARR: Is that going to -- are you  
11 reevaluating that? Do we need to put more resources and  
12 manpower into it?

13 MR. KENNEDY: Our strategy is right now, we've got  
14 another one due in shortly, and after the first one is done, we  
15 think the others are going to go much smoother, and the first  
16 one we get after that will be the test.

17 MR. THOMPSON: I'll be watching that very carefully,  
18 Commissioner, because one of the things we are looking at is  
19 the staffing levels in order to be able to do our reviews in a  
20 timely fashion, and QA is a key area right now.

21 CHAIRMAN ZECH: Commissioner Rogers?

22 COMMISSIONER ROGERS: In the whole process, as you  
23 see it, is there the mechanism for identifying any really  
24 serious sticking points with respect to our ultimate ability to  
25 -- that could be identified as early on as possible? In other

1 words, what are we doing to avoid making a final decision on  
2 this -- waiting until we have to make a final decision on this  
3 site before identifying any really killer problems with respect  
4 to the suitability of the site?

5 It's an issue that obviously is, you know, out there,  
6 and we're talking about a fairly long overall process before we  
7 start to render our decisions, and I know we're working  
8 together with the DOE on this, but have we got some way of  
9 really trying to make sure that very serious questions about  
10 the suitability of the site are looked at as early as possible?

11 MR. THOMPSON: Well, certainly that's our key  
12 underpinning, the looking at it, because, you know, if we  
13 identify a fatal flaw, we're going to call it as soon as we  
14 find it.

15 But let me see if Bob Browning may want to address  
16 that in a little more detail, because I think that's a key  
17 issue, both from resources of the U.S. Government, as well as  
18 the industry.

19 MR. BROWNING: I think the key issue with regard to  
20 your question is sinking the sift, getting down to depth, and  
21 finding out what's going on down there. I think there's a  
22 consensus on our technical staff, at any rate, that that's  
23 going to be the key question as to what's going on at that  
24 site. Therefore, there is a legitimate reason for keeping  
25 production pressure on getting down to depth. Whether this is

1 exactly the right way to get down there or not is a question,  
2 but there's absolutely no question that it's important to get  
3 down to depth and start drifting, start exploring, start  
4 running the tests at depth. That's the key to the answer to  
5 the question.

6           Until we do that, we can do a lot more stuff from the  
7 surface, but my impression from talking with my staff, at any  
8 rate, is that we've about exhausted our ability to investigate  
9 this thing from the surface.

10           COMMISSIONER CARR: So anything from a surface  
11 evaluation standpoint that would say this is an unsuitable site  
12 has been done, then?

13           MR. BROWNING: That's my impression; yes, sir.

14           CHAIRMAN ZECH: All right. Anything else?  
15 Commissioner Curtiss?

16           COMMISSIONER CURTISS: I had just one quick question,  
17 going back to the point that Mr. Thompson made.

18           As I understood the way you articulated the point, we  
19 are assuming, as an agency, that all of the DOE design  
20 requirements are safety-related, unless DOE can establish that  
21 they aren't. And I wonder in the context -- well, I guess I  
22 have two questions.

23           One, were we -- what was this agency's involvement in  
24 the preparation of DOE's subsystem design requirements? Were  
25 we involved in that stage?

1                   MR. GUPTA: No, we were not involved in that project  
2 at all.

3                   COMMISSIONER CURTISS: I'd be interested in what the  
4 premise is for assuming that all of the design requirements are  
5 safety-related and whether the time necessary to complete the  
6 work on the parallel review of the SEP and the design  
7 acceptability analysis may, in part, be minimized if there's  
8 some kind of prima facie showing that some of these  
9 requirements can be disregarded, lest we get into the situation  
10 where we're trying to prove the negative on every single DOE  
11 design requirement.

12                   MR. THOMPSON: I was talking about the design  
13 requirements related to these exploratory shafts, because they,  
14 in fact, do become part of the repository, if, you know, the  
15 plan proceeds as we currently understand it.

16                   I don't know --

17                   MR. BUNTING: I think we'll defer to Mr. Kennedy,  
18 because that's a fundamental premise in the QA and how you  
19 approach QA. You can't go back and --

20                   MR. KENNEDY: I think it gets to how does DOE show  
21 that some of these things are not important to waste isolation,  
22 and some of them, I think, are going to be obvious. We are  
23 starting with the premise that everything is important to waste  
24 isolation until they can show otherwise.

25                   Some, I think, are going to go away fairly

1 straightforwardly, like the hoist that's used to lower men and  
2 materials down the shaft.

3 CHAIRMAN ZECH: Would you speak up just a little  
4 louder, please, for the reporter and also the audience. Thank  
5 you.

6 MR. KENNEDY: Some are going to go away fairly  
7 quickly, like the hoist, for example. That's fairly obvious  
8 that that's not going to be something that affects waste  
9 isolation.

10 Others may be more difficult to show that they are  
11 not important to waste isolation. For example, drilling and  
12 blasting of the shaft. Blasting will create cracks in the  
13 rock. It will create pathways for water, and that's likely to  
14 be one that's going to be an activity that is going to be  
15 important to waste isolation.

16 Does that answer your question?

17 CHAIRMAN ZECH: Yes. Commissioner Rogers, you had  
18 another question?

19 COMMISSIONER ROGERS: Yes. What's your thought on  
20 the expected time to sink these shafts of about 18 months? How  
21 does that look?

22 MR. GUPTA: That seems to be realistic, yes.

23 COMMISSIONER ROGERS: Is that 24 hours a day, seven  
24 days a week operation?

25 MR. GUPTA: Yes, three shifts. And it would be

1 interrupted with the testing and all those requirements. We  
2 consider that to be an appropriate estimate.

3 CHAIRMAN ZECH: Has the Department of Energy  
4 indicated a willingness, in our view, to resolve these concerns  
5 that you have for the exploratory shaft facility?

6 MR. BUNTING: Yes. They have indicated a willingness  
7 to -- at least a tentative agreement on these -- the seven  
8 multi-step approach that's been laid out here. We are  
9 interpreting that to mean yes.

10 CHAIRMAN ZECH: All right. Then you consider that  
11 you are making satisfactory progress?

12 MR. GUPTA: Yes. As a matter of fact, we have  
13 already planned a meeting with the DOE next week, discussing  
14 the first step of this process.

15 MR. THOMPSON: I think, Mr. Chairman, in the November  
16 meeting, we really reached that area where I think we were in  
17 agreement that there's a plan to be put in place to resolve the  
18 technical concerns that we had, and we were satisfied that if  
19 DOE did the steps that we we agreed to in the November meeting,  
20 that that would be appropriate in resolving the --

21 CHAIRMAN ZECH: But it's my understanding that you're  
22 going to get the site characterization plan in December, and  
23 all of your concerns will not be resolved. I think that's what  
24 you're telling us.

25 MR. THOMPSON: That's correct. But we have the

1 parallel path that they will submit that design acceptability  
2 document. Right now, DOE is trying to submit it at the same  
3 time, which should address most of the technical concerns.

4 CHAIRMAN ZECH: I guess my concern about this is, you  
5 already know you're going to get a site characterization plan  
6 that you're going to have concerns in, and my concern, then,  
7 really is the effectiveness of your review.

8 So what you're going to be doing apparently will be  
9 repeating some of your concerns as you review this site  
10 characterization plan; is that correct?

11 MR. THOMPSON: That would be correct for those  
12 aspects -- remember they weren't addressed in the site  
13 characterization plan.

14 COMMISSIONER CARR: Is it the plan itself or the  
15 details that come with it.

16 MR. THOMPSON: The details that are going to be in  
17 acceptability should address the questions that we raised  
18 previously with respect to the design adequacy. So we won't be  
19 reviewing anything in the site characterization plan that  
20 addressed the waste isolation issue, as I understand it.

21 CHAIRMAN ZECH: And in those areas, then -- and on  
22 that specific issue -- DOE already knows your concerns, and  
23 even though they haven't been finally addressed, they will be  
24 addressed eventually; is that correct?

25 MR. THOMPSON: They are addressing that in the

1 parallel document.

2 CHAIRMAN ZECH: All right.

3 MR. THOMPSON: So it's kind of like a supplement, you  
4 might want to say. It's the first supplement to the site  
5 characterization plan.

6 CHAIRMAN ZECH: I must say, I think it could have  
7 been done a little bit better. It would have been nicer to get  
8 the site characterization plan with all of our concerns  
9 addressed. And what you're telling us, I guess, is that since  
10 that's not the case, that you have, or DOE has, a parallel  
11 initiative to eventually address these plans in a supplementary  
12 way or something like that; is that correct?

13 MR. THOMPSON: We believe we can do it in this  
14 approach. Unless the Commission directs, you know, otherwise,  
15 we plan to go this way.

16 CHAIRMAN ZECH: But do you need the Commission to get  
17 involved?

18 MR. THOMPSON: Not at this time.

19 CHAIRMAN ZECH: Or are you satisfied --

20 MR. THOMPSON: We're satisfied at this time that the  
21 program is working.

22 MR. STELLO: Let me try to make a point that maybe  
23 will help. I understand the problem you're describing, and I  
24 agree, it is a problem. But there is one aspect of this that I  
25 think mitigates a great deal. And that is, those particular

1 design issues that were significant in our mind and we're very  
2 important, we've already told you about them, and those will be  
3 addressed.

4 Now the broader implication of the problems of lack  
5 of design control, as it may have affected some other things,  
6 they clearly by definition are not the major, significant  
7 issues that would have caused us to say, no, we can't go  
8 forward; we don't agree.

9 So those that are important are already on the table.  
10 Those will be addressed. To the extent -- and I'm not trying  
11 to say we aren't going to have a problem, because every time  
12 you go about doing a review like this, it's difficult -- but I  
13 think that the big issues are at least on the table, and they  
14 are aware of them, and they will be addressed.

15 CHAIRMAN ZECH: All right, fine.

16 COMMISSIONER CARR: Mr. Chairman, I notice that DOE  
17 is going to come over and brief us on this on the 9th of  
18 December, according to my current schedule.

19 CHAIRMAN ZECH: Yes, I think that's correct.

20 COMMISSIONER CARR: I would hope that you have  
21 relayed to them that we want some answers to some of these  
22 questions we're asking today before they get here, because  
23 obviously their plan is going to come after they get here.

24 MR. STELLO: I assume they're in the audience, and I  
25 think you can count on their being aware of the issues that the

1 Commission is interested in.

2 COMMISSIONER CARR: I hope your assumption is  
3 correct.

4 MR. THOMPSON: I'll verify that. I'll be seeing Mr.  
5 Russo this Friday.

6 CHAIRMAN ZECH: All right, fine. Well, let me just  
7 say, I would like to commend the Staff for the efforts that  
8 they've taken in this regard. This is a very important issue.  
9 I think the High-Level Waste Division has done an excellent  
10 job.

11 I would also join Commissioner Carr's concern about  
12 the management changes that we've had at DOE. I think we've  
13 had some fine people involved in it, in this whole important  
14 issue in DOE, but when they have as many changes that have  
15 taken place, it does -- the continuity has to have some kind of  
16 an impact.

17 So I would encourage the Staff to continue working on  
18 this issue, continue making known your concerns to DOE,  
19 watching very carefully that you have the time to review the  
20 whole plan and take the time you need to review it with  
21 confidence.

22 I'd also ask that you continue working closely with  
23 the State of Nevada, the affected counties and Indian tribes  
24 that might be affected, and I look forward -- I know that my  
25 colleagues do, too -- when we hear from DOE, to hear their

1 presentation.

2 I can't help but have the feeling that even though we  
3 are talking about something that's going to happen in the  
4 future, that the decisions and the questions that we're raising  
5 now are extremely important, and we must have confidence that  
6 the experts we have in the reviewing of this whole technical  
7 issue will be able to proceed one step at a time, carefully,  
8 conservatively, but with confidence that we're making the right  
9 regulatory decisions.

10 But I do think the Staff is acting responsibly. I  
11 would ask you to continue an energetic approach. Continue  
12 raising concerns. This is a very unique and important national  
13 issue, and we have the special trust and confidence of the  
14 public in this regard. I hope all of you will keep that in  
15 mind.

16 Our fellow citizens are indeed counting on us to make  
17 the right decisions, and it is a large responsibility. So we  
18 need to take the time we need, in my judgment, and we need to  
19 be careful, conservative in our scientific and engineering  
20 judgments, and I think that we're doing that so far. But I  
21 just can't emphasize the importance of it, even at this stage  
22 this now, that we continue to keep this high on our priority  
23 list.

24 And I hope, Mr. Stello, that you will give the Staff  
25 every support that they need, and I hope also that you will

1 continue to keep the Commission informed and ask for any  
2 specific help that you feel that is necessary.

3 MR. STELLO: Yes, sir.

4 CHAIRMAN ZECH: Commissioner Rogers?

5 COMMISSIONER ROGERS: - Yes. To what extent have we  
6 used to date our advisory center at Southwest Research  
7 Institute in anything that we've been hearing about today?

8 MR. THOMPSON: On the exploratory shaft?

9 COMMISSIONER ROGERS: Yes.

10 MR. THOMPSON: I don't believe we've used them too  
11 much in this area. Joe?

12 MR. BUNTING: No, sir, we have not. We have received  
13 one report on the potential for flooding, but it was really  
14 done by our subcontractor, the center's subcontractor. They  
15 just didn't have the capacity to do that at this time.

16 But that was a conscious effort on our part, that  
17 during this first year, there would be a plan, and we  
18 consciously decided to rely on an existing contractor to  
19 support this review.

20 COMMISSIONER ROGERS: Well, are they following --

21 MR. BUNTING: Yes, sir, they are.

22 COMMISSIONER ROGERS: -- this whole thing in great  
23 detail?

24 MR. BUNTING: Absolutely, absolutely.

25 COMMISSIONER ROGERS: So they can see how the systems

1 that they've been putting together for assisting us would work?

2 MR. BUNTING: Yes, sir. Mr. Patrick, the Technical  
3 Director, was with us and supported us in our review in October  
4 at the Forrestal Building with DOE where we laid out these  
5 problems, particularly design control.

6 COMMISSIONER ROGERS: I think it's very important to  
7 make sure that they are part of this, even if we're not relying  
8 on them for consultation, that at least they are finding out  
9 what the problems are, so that they can develop their own  
10 systems for future assistance to us.

11 CHAIRMAN ZECH: Is there another comment?

12 MR. KENNEDY: Yes. I should add that just recently  
13 they started assisting us on observing DOE audits, including  
14 some of the audits of the DOE contractors that are working on  
15 the shaft design.

16 CHAIRMAN ZECH: Very good.

17 Are there any comments from my fellow Commissioners.

18 [No response.]

19 CHAIRMAN ZECH: If not, thank you for an excellent  
20 presentation.

21 We stand adjourned.

22 [Whereupon, at 11:12 o'clock, a.m., the Commission  
23 meeting was adjourned.]

24

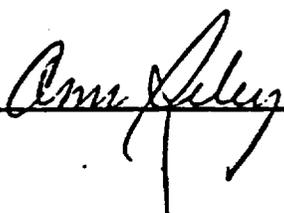
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**CERTIFICATE OF TRANSCRIBER**

**This is to certify that the attached events  
of a meeting of the U.S. Nuclear Regulatory Commission  
entitled:**

**TITLE OF MEETING: BRIEFING ON STATUS OF LOCATION OF EXPLORATORY  
SHAFT AT YUCCA MOUNTAIN  
PLACE OF MEETING: Washington, D.C.  
DATE OF MEETING: WEDNESDAY, NOVEMBER 16, 1988**

**were transcribed by me. I further certify that said  
transcription is accurate and complete, to the best  
of my ability, and that the transcript is a true and  
accurate record of the foregoing events.**

  
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**Ann Riley & Associates, Ltd.**

COMMISSION BRIEFING  
ON THE  
REGULATORY CONCERNS REGARDING  
THE EXPLORATORY SHAFT FACILITY (ESF)  
FOR THE YUCCA MOUNTAIN SITE  
NOVEMBER 16, 1988

CONTACT:  
J. O. BUNTING  
X23394

PURPOSE:

1. TO INFORM THE COMMISSION OF MAJOR  
ESF ISSUES, STATUS.
  - SHAFT LOCATIONS/INTERFERENCE  
BETWEEN TESTS
  - SHAFT PENETRATION INTO BARRIER  
BELOW REPOSITORY
  - EXTENT OF EXPLORATION
  - GA (DESIGN CONTROL)
2. MAKE COMMISSIONERS AWARE OF  
RESOLUTION APPROACH.

WHAT IS THE ESE?

- TWO 12 FT. DIAMETER SHAFTS, 300 FT. APART
- SURFACE FACILITIES
- DEDICATED UNDERGROUND TESTING AREA 900 FT. X 1100 FT. WITH 3000 FT. OF DRIFTING
- 5000 FT. OF ADDITIONAL DRIFTS FOR EXPLORATION

WHY IS THE ESF IMPORTANT?

MAJOR DESIGN FEATURE IMPORTANT TO  
WASTE ISOLATION

- INTERFACE FOR REPOSITORY EXPANSION
- VALID SITE CHARACTERIZATION TESTS
- LONG TERM PERFORMANCE

WHY IS IT IMPORTANT NOW?

- MAJOR DECISION LEADING TO PARTIAL CONSTRUCTION OF REPOSITORY
- NO CONSTRUCTION AUTHORIZATION NEEDED
- NOT A LICENSING ACTION
- IF SITE FOUND SUITABLE, COMPLIANCE DETERMINATION MADE AT LICENSING HEARING

ESF ISSUES

SHAFT LOCATIONS/INTERFERENCE BETWEEN TESTS

- FLOODING AND EROSION
- INTERFERENCE WITH ES-1 TESTING BECAUSE OF PROXIMITY TO ES-2
- INTERFERENCE WITH UNDERGROUND TESTING BECAUSE OF PROXIMITY OF THE MAIN TEST AREA TO ES-1 AND ES-2
- INTERFERENCE BETWEEN TESTS CANNOT BE EVALUATED WITH EXISTING INFORMATION

ESF ISSUES

ES-1 PENETRATION INTO BARRIER BELOW  
REPOSITORY

- DOE HAS COMMITTED TO ANALYZE NEED FOR PENETRATION OF ES-1 INTO MAJOR ROCK BARRIER BETWEEN REPOSITORY LEVEL AND UNDERLYING WATER TABLE.

ESF ISSUES

EXTENT OF EXPLORATION

- PROPOSED TEST AREA SMALL  
 COMPARED TO REPOSITORY SIZE
- DOE PLANS TO SUPPLEMENT WITH  
 SURFACE BOREHOLES
- BOREHOLES ALONE MAY NOT BE SUITABLE  
 FOR EXPLORATION

DESIGN CONTROL

- THE EXPLORATORY SHAFT FACILITY (ESF)  
IS IMPORTANT TO WASTE ISOLATION
- ESF DESIGN ACTIVITIES IMPORTANT TO  
WASTE ISOLATION
- ESF ISSUES INDICATE PROBLEM IN DOE'S  
DESIGN CONTROL

### RESOLUTION APPROACH

- GENERATE OR REEVALUATE DESIGN CRITERIA
- ANALYZE CURRENT DESIGN
- SUBMIT DESIGN ACCEPTABILITY ANALYSIS
- IDENTIFY IMPACT OF DEFICIENCIES
- INDEPENDENT ONSITE DOE REVIEW OF DESIGN PROCESS
- NRC OBSERVATION OF DOE ANALYSIS AND ONSITE REVIEW
- NRC COMMENTS ON SITE CHARACTERIZATION PLAN

# ESF RESOLUTION APPROACH

