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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

**Title: BRIEFING ON STATUS OF DOE HIGH LEVEL
 WASTE VIABILITY ASSESSMENT**

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF THE SECRETARY

BRIEFING ON STATUS OF DOE HIGH LEVEL WASTE
VIABILITY ASSESSMENT

Nuclear Regulatory Commission
Commissioner's Conference Room
One White Flint North
11555 Rockville Pike
Rockville, Maryland

Tuesday, March 16, 1999

The Commission met in open session, pursuant to notice, at 1:10 p.m., the Honorable SHIRLEY A. JACKSON, Chairman of the Commission, presiding.

COMMISSIONERS PRESENT:

- NILS J. DIAZ
- GRETA DICUS
- EDWARD MCGAFFIGAN
- JEFFREY S. MERRIFIELD

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1 STAFF AND PRESENTERS SEATED AT COMMISSION TABLE:

2 ANNETTE VIETTI-COOK, Secretary of the
3 Commission

4 KAREN CYR, Office of General Counsel,
5 U.S. Nuclear Regulatory Commission

6 DR. WILLIAM TRAVERS, EDO

7 DR. CARL PAPERIELLO, Director, NMSS

8 JOHN GREEVES, Director, Division of Waste
9 Management

10 MICHAEL BELL, Chief, PA/HLW, NMSS

11 ROBERT LOUX, Director, Nuclear Waste Project
12 Office, State of Nevada

13 STEVE FRISCHMAN

14 DENNIS BECHTEL, Planning Manager, Nuclear
15 Waste Division, Clark County

16 TAMMY MANZINI, Lander County

17 DR. MIKE BAUGHMAN, Lincoln County

18 JOHN JERVES, Inyo County, California

19 CALVIN MEYERS, Moapa Band of Paiutes

20 ROSS MORRES, Liaison, Western Shoshone
21 National Council

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P R O C E E D I N G S

[1:10 p.m.]

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2
3 CHAIRMAN JACKSON: Good afternoon, ladies and
4 gentlemen. Today the NRC Staff, the State of Nevada, and
5 the affected local and tribal governments will provide the
6 Commission with a briefing on their views on the Department
7 of Energy viability assessment of a potential repository at
8 Yucca Mountain, Nevada.

9 The Department of Energy previously briefed the
10 Commission last month on its high level waste program and
11 viability assessment. In response to Congressional
12 direction and the FY 1997 Energy and Water Development
13 Appropriations Act, DOE issued its viability assessment of
14 the repository Yucca Mountain on December 18th, 1998.

15 The purpose of that assessment was to provide the
16 President, the Congress, and the public with information on
17 the progress at the Yucca Mountain site. Its purpose also
18 is to identify the critical issues that need additional
19 study before a decision can be made on whether to recommend
20 the site for development as a geologic repository for spent
21 nuclear fuel and high level radioactive waste.

22 Although there is no specific requirement for NRC
23 review of the viability assessment, the Commission is
24 reviewing the document as part of its responsibility for
25 pre-licensing consultation required by the Nuclear Waste

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1 Policy Act of 1982.

2 A paper documenting the Staff review has been
3 prepared by the Staff and presently is under Commission
4 consideration.

5 In addition to the NRC Staff, we will be hearing,
6 as I've said, this afternoon from representatives of the
7 State of Nevada and the affected units of local government
8 and the tribal governments on their respective views on the
9 viability assessment.

10 The Advisory Committee on Nuclear Waste and the
11 Nuclear Waste Technical Review Board are scheduled to brief
12 the Commission tomorrow morning on this subject.

13 In order to keep the meeting on schedule, the
14 Commission will try to only interrupt the presentations from
15 time to time to ask pertinent questions, and then I'm
16 essentially asking my colleagues to join me in this,
17 although I'm usually the guilty party, to let you get
18 through, and then at the close of each presentation, I will
19 open the discussion to additional general comments and
20 questions from the Commission.

21 So I understand that copies of the Staff paper and
22 the viewgraphs are available at the entrances to the
23 meeting, so unless my colleagues have anything to add, Dr.
24 Travers, please proceed.

25 MR. TRAVERS: Thank you, Chairman Jackson, and

1 good afternoon.

2 Today the Staff will discuss our major comments on
3 DOE viability assessment, or VA, for the Yucca Mountain high
4 level waste repository site. As you have stated, the Staff
5 has provided the Commission a paper that presents the
6 results of our review of the VA. In directing that DOE
7 prepare the VA, the Congress specifically directed that the
8 VA include an assessment of four elements; one, a
9 preliminary design; two, a total system performance
10 assessment; three, DOE's plans for the license application,
11 including costs and; four, an estimate of the total cost to
12 construct and operate the repository.

13 DOE's assessment has addressed each of these four
14 areas.

15 The Staff's review of the VA, while not
16 legislatively required, has been conducted as an extension
17 of NRC's ongoing activities during the pre-licensing phase
18 of the repository program. Our program continues to focus
19 on early identification and resolution of technical issues
20 that could impact eventual licensing.

21 In this regard, our presentation today will focus
22 on those areas where we believe further DOE attention is
23 needed. While we believe that further work is needed in a
24 number of areas, we agree with DOE's decision to continue
25 its site characterization and pre-licensing activities for

1 the Yucca Mountain site.

2 Seated with me today are Carl Paperiello, of
3 course, who is the Director of the Office of Nuclear
4 Materials Safety and Safeguards; John Greeves, who is the
5 Director of the Division of Waste Management; and Mike Bell,
6 who is the Chief of the High Level -- I'm sorry, of the
7 Performance Assessment and High Level Waste Integration
8 Branch in the Waste Management Division of NMSS.

9 With that, let me turn the presentation over to
10 Mike Bell.

11 MR. BELL: Good afternoon, Chairman,
12 Commissioners, and thank you, Dr. Travers.

13 Could I have the outline of the briefing, please.

14 Basically today I would like to outline for the
15 Commission essentially what the Staff did, that's the scope
16 of the review of the viability assessment; why we did it,
17 the objective of the review; how we went about it, the basis
18 of our review; and what we found, and I will summarize at
19 the end.

20 The VA, as Dr. Travers mentioned, was required by
21 Congress and was to address four specific topics:
22 preliminary design concept; a total system performance
23 assessment of the expected performance of the repository
24 based on information that was available as of last July; a
25 license application plan, detailing the work that would need

1 to be done to prepare a license application, including the
2 cost estimate for that work; and then total life cycle costs
3 of the construction and operation of the repository.

4 In the NRC Staff's review, the Staff focused on
5 the first three topics there. We did not particularly look
6 into the cost estimates that DOE prepared.

7 As Dr. Travers mentioned, the Commission had no
8 explicit statutory requirement to review this, but it's an
9 extension of our ongoing pre-licensing consultation with the
10 Department under the Nuclear Waste Policy Act.

11 The objective of our review was essentially a
12 forward-looking one, based on the information in the
13 viability assessment and work the Department had planned to
14 conduct between now and the year 2002, when they are
15 currently scheduled to submit the license application.
16 Would they be developing the kinds of information that the
17 Commission would want to see in a complete high quality
18 license application. And we focused on test plans, the
19 conceptual design concept, their total system performance
20 assessment of repository performance, which is the key
21 element of a risk-informed performance-based review of an
22 application, and then their plans for work to get to that
23 point.

24 The Staff not only reviewed the information that
25 DOE presented, but conducted an independent analysis of the

1 Department's total system performance assessment, using its
2 own total system code developed by the NRC Staff and the
3 Center for Nuclear Waste Regulatory Analyses.

4 We did sensitivity analyses to look at what were
5 the most important contributors to performance, and
6 attempted to identify the major elements that DOE was
7 relying on, what the significant issues were that came out
8 of the Staff's analysis, focused on any differences, and
9 identify the relevant questions that needed to be
10 ventilated.

11 On slide 6, DOE in the viability assessment
12 considered a 25 millirem per year all-pathways standard to
13 the average member or critical group residing in Amargosa
14 Valley 20 kilometers away from the repository, and as the
15 Commission is aware, this is also the performance standard
16 in proposed Part 63, which is now out for public comment.

17 The Staff did uncertainty and sensitivity analyses
18 to try to identify those parameters, those parts of the
19 models that were most sensitive to performance and used this
20 to focus on the review of the Department's license
21 application plan.

22 The Department, in the viability assessment,
23 concluded that based on the available information and the
24 analyses that they had done that they should proceed with
25 continued characterization of the Yucca Mountain site, and

1 basically the Staff's conclusion, after reviewing the
2 information in the viability assessment and considering its
3 own work, we have no reason to disagree with that conclusion
4 in that Yucca Mountain continues to be a site that is worthy
5 of consideration as a future high level waste repository.

6 In the Staff's review, we identified no new issues
7 that affect post-closure performance of the repository.

8 Basically the kinds of issues that surfaced are all
9 encompassed within the Staff's key technical issues that
10 have been the focus of the NRC's pre-licensing program for
11 the past several years.

12 In fact, it was gratifying to me personally to see
13 that in the viability assessment, the Department did a
14 cross-walk of what they considered the key parameters of the
15 repository performance, and the Staff's key technical
16 issues, and you know, where each of our key technical issues
17 were addressed in the viability assessment. It shows that
18 the Department is paying attention to the pre-licensing
19 guidance that they are getting from the Regulatory Staff.

20 There were a number of positive aspects of the
21 review of the viability assessment which I will touch on in
22 a minute, and there are some areas where we did identify
23 some major comments that we think DOE needs to be aware of
24 and to take into consideration and attached to the Staff
25 paper is a draft letter to Lake Barrett that lays out these

1 comments that we are recommending that the Commission
2 approve be transmitted.

3 We organized our comments along the same
4 categories as the major divisions in the viability
5 assessment.

6 First I will touch quickly on some of the positive
7 aspects of the viability assessment. It is the first
8 comprehensive presentation that synthesizes all of the site
9 characterization information that has been gathered over
10 more than a decade and a half of investigation of the Yucca
11 Mountain site, the current conceptual design, and DOE's
12 performance assessments that are currently available.

13 The review that was done by the NRC Staff was
14 excellent preparation for reviewing a major DOE submittal.
15 It gave us a chance to use some of the licensing tools that
16 we are developing, to -- we used the acceptance, the draft
17 acceptance criteria in the issues resolution status reports
18 that the Staff has been issuing for the key technical
19 issues, and we believe that this worked quite well.

20 We had a number of technical changes with the
21 Department to discuss key aspects of the viability
22 assessment prior to its being submitted, and the Department
23 provided much of the supporting technical documents that
24 were the basis for the viability assessment in advance of
25 submitting the document.

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1 Slide 10. There are a number of areas when we did
2 our review where DOE's plan of work appears appropriate and,
3 if carried out, they would have information that the Staff
4 would consider would be appropriate for a complete high
5 quality license application. Some examples are on slide 10
6 and 11, and just let me elaborate on some of these.

7 Essentially one of the issues that the Staff had
8 considered in the key technical issue of seismicity dealt
9 with the likelihood of a fault rupturing waste packages,
10 causing releases and the impact of that on performance.

11 Essentially the kinds of models that DOE is using
12 for that, the data are appropriate and the work that is laid
13 out in the LA plan seems to be on the right track.

14 Another area where initially there was great
15 divergence between the NRC Staff and the DOE Staff was on
16 the flow in the unsaturated zone where initially DOE had
17 very low estimates of the infiltration to the repository
18 horizon, but in the viability assessment, based in part on
19 things like the chlorine-36 data, they are now using
20 estimates of the infiltration rates that are much closer to
21 NRC Staff's estimates.

22 There are some areas where we are in agreement
23 simply because DOE isn't taking credit for certain
24 phenomena, like we are in agreement now that flow was
25 primarily fracture-dominated in the unsaturated zone and not

1 through the matrix, and there will not be significant matrix
2 retardation.

3 I don't plan to go through all them, but let me do
4 touch on the last point on slide 11, essentially for our
5 dose assessments. We are looking at a critical group at the
6 same distance using current data, lifestyles and locations
7 as was recommended in the National Academy of Sciences'
8 technical basis report.

9 Now let me turn to some of the areas where we do
10 have some more significant comments, and on slide 12, I show
11 a figure out of the viability assessment with the engineered
12 barrier system design enhancements.

13 DOE not only presented a reference design in the
14 viability assessment, they presented a large number of
15 alternatives to the reference design that are still under
16 consideration.

17 Now as the designer, they need to have the
18 flexibility to look at alternatives and try to optimize the
19 designs to protect public health and safety. However, there
20 are so many variables that have a major impact on
21 performance and on the data needs that we think the
22 Department needs in the very near future to reduce the
23 number of alternatives being considered; in fact, identify a
24 true reference design that will be the basis for the license
25 application, because there is just not enough time and money

1 between now and the year 2002 to investigate the many
2 alternatives that are still open, things like whether or not
3 to use a high or low thermal loading, whether or not to have
4 drip shields, ceramic coatings, backfill, whether or not to
5 have a ventilated repository. Some decisions need to be
6 made if, you know -- unless the Department, you know, is,
7 you know, anticipating that the schedule will have to be
8 extended.

9 COMMISSIONER McGAFFIGAN: Madam Chairman?

10 CHAIRMAN JACKSON: Please.

11 COMMISSIONER McGAFFIGAN: Could I ask a question
12 on this point? I raised it with Lake Barrett as well. What
13 if in the year 2025 they come up with something that clearly
14 is better? Would the process -- obviously we haven't put
15 all these issues having to do with closure, or most of them
16 -- would we at that point -- could they come in and change
17 the reference design through a normal license amendment
18 process?

19 MR. BELL: Yes. I mean that's --

20 COMMISSIONER McGAFFIGAN: So you're not -- you're
21 saying that for purposes of applying for a license, they
22 need to have a design in fact that doesn't preclude over the
23 very long lifetime of this repository, if it actually is
24 licensed, that they couldn't continue to incorporate --

25 MR. BELL: Not at all.

1 COMMISSIONER MCGAFFIGAN: -- improvements that are
2 analytically supported. You are just saying they can have
3 more time to do it.

4 MR. BELL: That's exactly right, but in fact it's
5 -- I think it's anticipated in the NRC's rules for geologic
6 repository that as the facility gets excavated, they are
7 going to learn things about the site and the, you know,
8 designs may change over the 30 years or so of operation.
9 And I think the proposed language in 63.44, the 50.59-like
10 change, is an attempt to get at this, anticipating that
11 there will be design changes, when are they sufficiently
12 significant that they require coming in for NRC review and
13 amendment to the license, and what sorts of minor changes
14 like spacing of containers or something like that could DOE
15 make on its own.

16 CHAIRMAN JACKSON: Please.

17 COMMISSIONER DICUS: A follow-up question to that.
18 You have clearly been sending the message to DOE that they
19 need to converge quickly enough. Do you have a point in
20 time, though, that you would say you must do it now to
21 support a safety case for a license application, should
22 there be a license application, or are you going back away
23 and leave that up to DOE?

24 MR. BELL: Well, I mean it's basically DOE's
25 decision as to, you know, what schedule they plan to come in

1 with the license application. Their current announced
2 schedule is March 2002, and to prepare an application to
3 submit in that time frame, they really need to, by the end,
4 I would say, two years before that have most of the
5 decisions made and so they can do the analysis and start
6 writing their document. So they've got about a year.

7 COMMISSIONER DICUS: Thank you.

8 MR. GREEVES: They spoke of narrowing this design
9 down in the May time frame.

10 MR. BELL: Yeah. Well, they --

11 MR. GREEVES: So they know this issue, and the
12 last meeting I was at, they have a target for their M&O
13 contractor to come back with a -- now that's a
14 recommendation, as I understand it, to the Department. But
15 it will be visible. We will all get insight to it.

16 MR. BELL: Okay, slide 14. This slide may be
17 different from the one that the Commission got in advance.
18 Under the column headed Unsaturated Flow and Transport, an
19 earlier version of this slide had spatial and temporal
20 distribution of flow filled in, and the key here is the
21 areas in the lower part are key parts of the performance
22 assessment, where we still have differences, and the
23 grayed-in areas are -- on the figure, the blue and
24 blacked-in areas, are areas where the Staff doesn't have any
25 significant differences, and the first version of this slide

1 incorrectly had spatial and temporal distribution of flow
2 filled in. Essentially, as I said earlier, we don't have
3 significant differences with how the Department is currently
4 modeling the flow through the unsaturated zone, mainly
5 because they are now recognizing fast pathways and not
6 taking much credit for matrix diffusion.

7 CHAIRMAN JACKSON: How does this framework address
8 pre-closure safety assessment?

9 MR. BELL: This is not the -- this is the
10 post-closure safety case, essentially, with the 25 millirem
11 all-pathway standard or eventually an EPA standard, that is
12 a total system performance standard for post-closure that
13 will need to be met, the major engineered and natural
14 barriers that contribute to that, the engineered system, the
15 geosphere and the biosphere and then the key elements that
16 comprise those barriers. It's a figure we have used before
17 in our PA briefings and is essentially the -- this is the
18 model that the Staff's performance assessment code uses to
19 assess repository performance, and the areas --

20 MR. GREEVES: For post-closure.

21 MR. BELL: For post-closure, the areas that are
22 filled in are the areas where we have differences.

23 CHAIRMAN JACKSON: Do you have a framework for
24 pre-closure?

25 MR. BELL: We are developing the framework for

1 pre-closure. In the viability assessment we did not focus
2 on things like surface facilities, pre-closure. We don't
3 think that those are areas on which the viability of the
4 site, you know, would be at risk. Essentially the
5 pre-closure activities and the surface activities are
6 similar to the kinds of things that are done at other
7 fuel-handling facilities, fuel-storage facilities, and the
8 areas that the Staff focused on in the review of the
9 viability assessment were the post-closure.

10 MR. GREEVES: What is unique to this site, unique
11 about this site, unique about post-closure performance.

12 CHAIRMAN JACKSON: Dr. Paperiello?

13 MR. PAPERIELLO: Madam Chairman, most of the
14 operating facilities, the above-ground facilities that would
15 be used to prepare the fuel for placement is essentially the
16 same as for an ISFSF which we are currently licensing, and
17 which we developed standard review plans for. It is my
18 expectation that the licensing criteria and the practices
19 that we look for are those which currently are used for
20 above-ground facilities in which fuel is either stored or
21 manipulated.

22 There probably will be some mechanical issues in
23 moving the fuel around underground, but I don't see any
24 particularly new technical issues that would be involved
25 and, in fact, if we had to process the application, I would

1 use the Staff from the spent fuel program office to in fact
2 do the reviews for the above-ground facilities and the
3 handling of the fuel before it is finally emplaced.

4 CHAIRMAN JACKSON: Now one last question. I
5 notice that there are some technical issues on this chart --
6 that are not on this chart, you know, seismicity or
7 tectonics. Does that mean that they are not -- that they
8 are not deemed as being important for the repository
9 performance?

10 MR. BELL: Seismicity and tectonics are some of
11 the release pathways that fall under this direct release and
12 transport column.

13 CHAIRMAN JACKSON: Okay.

14 MR. BELL: And they are grayed-in because
15 essentially we don't have significant differences.

16 CHAIRMAN JACKSON: Okay.

17 MR. BELL: It's on target.

18 CHAIRMAN JACKSON: It's on target relative to --

19 MR. GREEVES: Closure, in terms of the -- well, we
20 the dialogue we have with the Department has made
21 significant progress in that area. Isn't that correct,
22 Mike?

23 CHAIRMAN JACKSON: Well, let me understand what
24 significant progress means. It means progress relative to
25 your judgment of their approach to making the safety case;

1 is that the point?

2 MR. BELL: Well, that's right. In fact, in the
3 seismic area, they submitted two topical reports that the
4 Staff has reviewed, outlining their -- the probabilistic
5 side and the methodology they plan to employ in the license
6 application, and the Staff has concluded that those -- that
7 that methodology would be acceptable if they used it in the
8 application.

9 CHAIRMAN JACKSON: Commissioner?

10 COMMISSIONER DIAZ: Well, on the same area, this
11 is something that has been around now for a couple of years.
12 This is difference in the area of, you know, volcanism or
13 disruption of waste packages, and obviously the Staff
14 disagrees with DOE and now with the peer review panel on the
15 importance of the volcanism. What is the major source of
16 the difference between NRC Staff's assessment and the
17 Department's and the peer review panel's assessment?

18 MR. BELL: Well, there are two components of the
19 volcanism issue. One is how likely is it where we think we
20 have bounded the problem and don't -- we are within about an
21 order of magnitude of the Department.

22 Where we have differences is in how we do the
23 consequence analysis. We believe that the kinds of volcanic
24 events that DOE looked at in the viability assessment is
25 less energetic than historical types of volcanism that's

1 occurred in the Yucca Mountain region, plus when the waste
2 packages were impacted during a volcanic event, they took
3 credit for the C-22 material of construction that's used as
4 a corrosion barrier in the waste packages that we don't
5 believe they have the data to justify. So those are some of
6 the types of questions we think need to be addressed. It's
7 essentially the kinds of assumptions and models you use in
8 the consequence analysis where we have differences from the
9 Department.

10 COMMISSIONER DIAZ: It's been now, I think I
11 remember, two years since we discussed about this. Are we
12 convincing them, are they convincing us, or are we getting
13 farther apart? Which way is it?

14 MR. BELL: Well, we believe we are coming closer
15 together, although the viability assessment doesn't really
16 reflect it. If you look at the LA plan, part of the
17 viability assessment, it doesn't have plans to do additional
18 further work. However -- and I'm getting about three slides
19 ahead of myself -- the LA plan is essentially a snapshot in
20 time. DOE finished writing it last August. In fact, it
21 represents planning and work that's probably about a year
22 old now, and in subsequent meetings and technical exchanges
23 that we have had with the Department, they have identified
24 some plans to do additional work to support their
25 consequence analyses that the Staff considers would address

1 our concerns. So we do think that's coming to closure.

2 COMMISSIONER DIAZ: Well, I think that I would
3 like to see something that, you know, narrows these things
4 down in a logical manner in which, you know, we have seen
5 where the options are, DOE's review panel on where we are,
6 and if there are some issues that need to be addressed, I
7 would like to know what those are.

8 MR. BELL: Okay. I had planned to go through each
9 of the areas where there were differences in detail in the
10 next couple of slides.

11 Now one of the things that the Commission needs to
12 be aware of regarding the TSPA is that the Department had
13 its own peer review panel take a look at the peer review
14 --I'm sorry, at the performance assessment for the viability
15 assessment, and the peer review panel wrote a very strong
16 letter to the Department that the Staff actually thinks is
17 -- represents a misunderstanding of what Congress intended
18 in the viability assessment.

19 We had a conference call with two members of the
20 peer review panel, oh, about a week and a half ago, and we
21 became aware of the letter, and what we learned is that
22 essentially they interpreted the Congressional language to
23 do a performance assessment of the probable behavior of the
24 repository to mean that the Department is required to make
25 accurate predictions of what would happen in the future, and

1 the peer review comments essentially questioned the ability
2 of anybody to predict accurately how any repository would
3 perform, you know, many thousands of years in the future,
4 and I guess we question whether that's really what the
5 Congress intended, especially -- well, the other matter that
6 the peer review questioned was the lack of supporting data
7 for the models in the viability assessment, and the
8 Congressional language was clear that it was based on data
9 available as of July 1998, and so we aren't looking for that
10 kind of supporting information essentially until the license
11 application, and certainly not in the viability assessment.

12 As I mentioned earlier, we not only reviewed the
13 Department's total system performance assessment, but used
14 our own code to do an independent analysis, and identified a
15 number of areas in our models where there are differences,
16 the extent to which they take credit for the cladding to
17 survive for long periods of time. The small likelihood of
18 having any initial failures in waste packages, the extent to
19 which they took credit for the corrosion resistance to the
20 alloy C-22, based on very limited data, and in fact a number
21 of these areas were areas where the peer review panel
22 criticized the DOE performance assessment, but with the
23 understanding or the suggestion on the part of the peer
24 review panel that they had to have all the answers, you
25 know, at the time they wrote the viability assessment, and

1 basically we are flagging many of the same issues to DOE in
2 the letter we are suggesting to send, but essentially
3 casting them as areas where the information needs to be
4 gathered in order to support a license application.

5 The second area, in addition to the lack of data
6 on the waste package itself, is the environment that the
7 waste package has to survive in. There's very limited data
8 on both the amounts and the chemistry of the water that will
9 eventually come in contact with the waste package, and in
10 fact this is an issue that you will hear tomorrow morning
11 about the -- from the technical review board.

12 One of the reasons this particular issue is so
13 complicated is because of a hot repository design where
14 initially you have boiling conditions, two-phase flow, salts
15 can deposit on waste packages, and then when water comes
16 back in, you have the potential for very concentrated
17 solutions in contact with the waste package.

18 The TRB, in fact, is recommending a lower
19 temperature design to avoid having to provide the
20 information in the license application.

21 Now the NRC Staff is not in the position to make a
22 recommendation, you know, essentially a design
23 recommendation to the Department. It's just that if they
24 choose to go with the hot repository design, the information
25 needs are greater.

1 COMMISSIONER McGAFFIGAN: If the review panel
2 recommendation were accepted, what issues that are -- would
3 -- maybe aren't addressed here would be introduced by a
4 ventilated repository that has a lower temperature? That's
5 not the reference design at the moment, but if DOE were to
6 take the recommendation that they are getting, what
7 implications does that have?

8 MR. BELL: Well, one of the things that
9 potentially it does, and basically someone has to look in
10 detail at design, is that you may end up requiring a larger
11 area for the repository. It's not -- I haven't, at least,
12 seen the analyses that would say ventilation alone is
13 sufficient, and in order to get a sufficiently low
14 temperature, you may have to space waste packages further
15 apart and it may require more repository area. And the
16 issue of whether or not there is enough space in the
17 repository at Yucca Mountain is a longstanding one, and I
18 guess is one of the things that has driven DOE over the
19 years to the hotter temperatures.

20 The next issue deals with the flow and transport
21 in the saturated zone, and again it is a lack of data
22 question. DOE essentially has most of its wells and
23 information about the hydrology of the site in close to the
24 repository, and there's an absence of data between about the
25 10 kilometer distance and the 20 kilometers where the

1 critical group is currently considered to reside.

2 One of the reasons this is very significant is
3 because within this distance, the flow changes from the
4 fractured tough aquifer into an alluvial aquifer, and
5 depending on how much credit can be taken for flow-through
6 alluvium, there is a possibility that significant chemical
7 retardation by the -- of radionuclides by the soils could
8 take place.

9 CHAIRMAN JACKSON: Question?

10 COMMISSIONER DICUS: Okay, in our SECY paper where
11 this issue is discussed, it says also that DOE has assigned
12 relatively low priority to this planned work. Now again
13 that seems back like to the issue with volcanic activity bit
14 of problem where we need to perhaps come to some greater
15 closure on it.

16 MR. BELL: Well, it's an area where the Staff, you
17 know, is in active dialogue with the Department's Staff and
18 contractors. I guess in this case I haven't seen any work
19 plans that would make me make a positive statement as I made
20 about the potential for coming closer together on volcanism.
21 But the -- there is a potential that some of the wells that
22 are being funded by DOE to be put in by Nye County will at
23 least get part of this information and, you know, we may be
24 hearing about that later this afternoon.

25 COMMISSIONER McGAFFIGAN: Could I follow up on the

1 Commissioner's question, that the words in the paper are it
2 may be possible for DOE to implement in a relatively short
3 time prior to the license application some additional field
4 work independent of the Nye County drilling program,
5 possibly including exploratory drilling and surface
6 geophysical investigations to specifically delineate and
7 characterize the alluvium along the flow path, et cetera.

8 Do we have an idea as to how much that would cost?
9 I mean is this an expensive activity, or is this something
10 that's modest compared to other activities under way?

11 MR. BELL: Well, drilling wells to depth is, you
12 know, not inexpensive, but essentially we are talking about
13 costs of perhaps, you know, \$10 million, perhaps, which are,
14 you know, very small compared to the total cost of the
15 project, and if, you know, if the lack of the data leads to
16 a prolonged licensing review, they will spend the money, you
17 know, many times over in just the cost of delay.

18 COMMISSIONER DIAZ: So can you make a statement on
19 is, you know, the Department moving aggressively to close
20 the uncertainties in these issues, to the point that it will
21 support, you know, the license application in a timely
22 manner? I mean what is the status of the Department's
23 programs in the case of these uncertainties?

24 MR. BELL: Well, in the case of this particular --

25 COMMISSIONER DIAZ: Well, we talk about the

1 volcanism and the --

2 MR. BELL: Well, as I say, we have seen draft work
3 plans on volcanism that would address the Staff's concerns.
4 I haven't seen the corresponding work plans for this flow in
5 transport issue.

6 CHAIRMAN JACKSON: Would you go on, please.

7 MR. BELL: Okay. And I guess we have already
8 touched on the igneous activity. And, in fact, I think you
9 may have already gotten into the discussion of the LA plan.
10 The point I did want to make here is that really some of the
11 information in the LA plan at this time is about a year old,
12 and there have been continuing discussions. The Staff came
13 out with a whole round of revisions to its issue resolution
14 status reports on the key technical issues that provided
15 additional guidance to the Department, and I can't say that
16 this has happened in the case of the saturated zone flow and
17 transport, but I know in certain areas when DOE is having
18 these workshops to plan their future work, they use the
19 issue resolution status reports and the acceptance criteria
20 in them to say, well, here, you know, is what NRC is going
21 to look at and the question they want answered, you know,
22 what work do we need to do to make that happen. And I think
23 that's a very positive result, and you know, I'll -- we'll
24 do what we can to try to make that happen in the flow and
25 transport in the saturated zone.

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1 The last area that we would like to discuss under
2 the heading of the LA plan is quality assurance, and in part
3 it's that the LA plan simply makes a statement that the
4 license application will have to be supported by a quality
5 assurance program that meets Appendix B to Part 50, without
6 any elaboration on what the problems and issues are, and
7 what might have to be done to fix it. And as you heard from
8 Lake Barrett last month, the Department recognizes they have
9 some shortcomings in their quality assurance program. They
10 are taking aggressive action to address some of these
11 issues, and the NRC Staff is closely following their work
12 because the QA program is potentially the Achilles heel of
13 this program, and they can -- you know, have done years of
14 technical work that when they get into the licensing
15 proceeding, if they can't produce the documentation to show
16 that it was done to NRC Appendix B criteria, they, you know,
17 will run into difficulties.

18 CHAIRMAN JACKSON: Now I understand that most of
19 the data that DOE plans to rely on in a license application
20 currently is designated as unqualified. Now will this be
21 resolved by the time of the projected date of the
22 application?

23 MR. BELL: Well --

24 CHAIRMAN JACKSON: As far as you can -- I mean,
25 taking the steps that they are taking now relative to QA,

1 what does this mean in terms of qualification of the data?

2 MR. BELL: The Department, you know, recognizes
3 the problem and is developing plans to fix it. You know,
4 whether or not those plans will be successful is something
5 yet to be determined. I mean we plan to review those
6 corrective action plans. There is a commitment from --

7 CHAIRMAN JACKSON: Well, let me give you this --
8 let me just get to a specific, so that we are not talking in
9 the abstract.

10 If most of the data that DOE plans to rely upon in
11 the license application is currently designated as
12 unqualified, what in their plans will address that?

13 MR. BELL: Well, I could give you one example,
14 since we are getting into specifics. The material they are
15 relying for the corrosion resistant barrier, the C-22 alloy,
16 the test specimens that they are using were procured from a
17 supplier who did not have an approved QA program, and the
18 procurement documents that DOE used for the procurement, you
19 know, were inadequate. I mean these are the results of
20 their own audits. This is not NRC Staff's conclusion.

21 Basically what DOE is doing now to correct that
22 situation is they are going to do their own analyses to
23 verify that the material is, you know, what it's, you know,
24 supposed to be, and so that's a situation that's remediable,
25 but if, you know, the things had been done appropriate from

1 the start, they would not have the time and expense of
2 having to go back and certify that the material is
3 appropriate material.

4 CHAIRMAN JACKSON: Does the degree of formality of
5 a Commission hearing process affect the importance of QA in
6 the repository program?

7 MR. GREEVES: I'm not sure I -- QA is built right
8 into the regulation so they have to do something. As far as
9 the hearing, you know, the Agency has had hearings on
10 projects in the past and, unfortunately, projects have
11 fallen because of lack of QA. Karen may be able to help me
12 remember what those projects were, but I mean --

13 MS. CYR: I don't think --

14 MR. GREEVES: -- the standard is whatever the
15 standard is. The criteria you have to make a decision
16 against are not affected by the degree of formality of the
17 hearing.

18 CHAIRMAN JACKSON: Yes, this is a point of
19 clarity. There are those who believe that the nature of the
20 hearing, you know, has something to do with the standard
21 that has to be met. And I just wanted clarification for the
22 public record. Okay. Thank you.

23 Carl? I'm sorry.

24 MR. PAPERIELLO: Yes. We have, just as a point of
25 information on what we are doing, last year we had a whole

1 series of meetings with DOE at a very high level on quality
2 assurance. They came in the fall with a plan to straighten
3 out quality assurance. I formed, in January, a task group
4 made up of people from all within NMSS, the fuel cycle, not
5 only just waste management, but fuel cycle and spent fuel
6 program office. So I have a group of five individuals, QA
7 experts, who are looking at what DOE is doing to see what
8 they're -- you know, to see whether or not they are
9 implementing adequately the plan.

10 The plan is not the problem. It's implementation
11 of the plan. We will be out there -- we've already had two
12 trips out to Yucca Mountain. They are reviewing DOE's work,
13 in both March and April. We will be meeting with DOE
14 management at the end of April to get DOE's presentation on
15 what they think they have achieved to date, but my staff
16 will also be able to tell me what we believe they have
17 achieved to date. We plan on telling the Commission by
18 October. DOE's plan basically shows this problem, they may
19 not have all the data validated, but they should have a
20 program which they are sure works by October, and we plan on
21 reporting back to you, and I will use this task force as an
22 independent oversight so the Commission and everybody should
23 know by October whether or not this plan that DOE has
24 presented is successful.

25 CHAIRMAN JACKSON: Okay. Thank you.

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1 MR. BELL: Okay, I'm ready to move on to the
2 summary, which is, you know, very straightforward.

3 The Congress required the Department to issue the
4 viability assessment and address certain key factors. The
5 Department complied with this requirement. In the viability
6 assessment they concluded that work should proceed towards
7 the decision on site recommendation, and that site
8 characterization should continue. Part of the viability
9 assessment was a plan for the remaining work that DOE would
10 do to develop the license application, and Staff has
11 reviewed that plan, has comments which we suggest be
12 transmitted to the Department. But while we have these
13 comments on the details of the DOE LA plan, we have no
14 disagreement with their recommendations. They should
15 continue site characterization.

16 CHAIRMAN JACKSON: Let me ask you a few questions.

17 Would consideration of what we understand of the
18 EPA's draft high level waste standard change in any
19 significant way the basis for NRC Staff review of the
20 viability assessment? And if so, in what manner?

21 MR. BELL: Well, in the sense that having to
22 demonstrate that you need a separate groundwater standard,
23 basically this would make the issues on flow and transport
24 even more significant, and the amount of site
25 characterization information that will be required to show

1 that a groundwater standard could be met at any point in the
2 plume, which is essentially the sorts of standards that EPA
3 has under consideration, would place a tremendous burden on
4 characterizing the flow system, and I would see that as
5 being the principal impact.

6 CHAIRMAN JACKSON: You spoke -- you wanted to say
7 something, Mr. Greeves?

8 MR. GREEVES: Yes, I wanted to follow on that.

9 The alternative standards people are looking at
10 are two orders of magnitude lower. I mean it came out in
11 the Congressional hearing, and if you have to meet a
12 standard that is two orders of magnitude lower, it would
13 change your investment strategy as to how you spend your
14 money to acquire data. So it is a significant issue. And,
15 as Mike said, in the saturated zone there would be a lot
16 more focus on what is going on in the saturated zone --
17 correct me if I'm wrong, Mike -- but DOE is not putting that
18 much and counting that much on the saturated zone. If you
19 get a standard that's two orders of magnitude lower, I think
20 that would change your approach to the process, not only in
21 characterizing the site, but what you would be doing with
22 these alternative designs also.

23 CHAIRMAN JACKSON: Okay. Dr. Paperiello?

24 MR. PAPERIELLO: Just an observation, Madam
25 Chairman. I believe that many of the alternative package

1 designs that were offered in the viability assessment in
2 large part were driven by DOE's considerations on what they
3 might have to do if there was a major change in the
4 standard, and how can you solve in the next two years a need
5 to have -- get the reduction? If not -- probably you'd get
6 a faster return by looking at the package than trying to do
7 more exploration. Some of the phenomenon that were not
8 considered, like geochemical retardation in the unsaturated
9 zone, probably would take a very long time to acquire the
10 information, turn around and develop a package made out of a
11 much more expensive and corrosion-resistant, might be the
12 fastest way to address the problem.

13 CHAIRMAN JACKSON: So does that characterize the
14 Staff's thoughts on the level of DOE reliance on an
15 engineered barrier system? I mean are there thoughts that
16 the Staff has vis-a-vis an overall license application of
17 the degree of reliance by DOE on the engineered barrier
18 system?

19 MR. PAPERIELLO: I think that the -- if -- it's a
20 question of not just relying on the barrier, but how much
21 you can know about it and how fast it's going to -- you can
22 get the information. I think from everything -- and I'm
23 not, obviously, an expert on geochemistry, nor am I really
24 an expert on corrosion --

25 CHAIRMAN JACKSON: More than we are.

1 [Laughter.]

2 MR. PAPERIELLO: But looking at the amount of time
3 and expense it has taken to acquire information about the
4 geology of Yucca Mountain, it would appear to me that if you
5 had to make a change over a period of a couple of years,
6 that an attempt to do it by relying on the package and the
7 engineered barriers, they might believe can be achieved
8 faster, and clearly that's my -- I'm giving you my
9 assumptions when I see eight different designs, particularly
10 when I see things like drip shields, ceramic coatings on
11 the package, and this is what makes in a sense the system
12 performance assessment a bit uncertain, because if you are
13 assuming a new package design, like a ceramic coating
14 improves corrosion and survivability of a package, you also
15 need the data to prove that that's correct. And you might
16 have to, in fact, revisit seismicity. I'm just -- again,
17 I'm not an expert and I don't know whether or not seismicity
18 would cause, you know, a ceramic coating to crack a package.
19 I'm just making something up, I don't know. But that would
20 be -- this is the reason why settling on the design is an
21 important issue.

22 CHAIRMAN JACKSON: Let me ask you two other quick
23 questions.

24 You mentioned the code the Staff used in its
25 analysis. Is that code fully developed and validated and

1 verified? Or is it still under development?

2 MR. BELL: Well, the code is being is being
3 developed incrementally. It's developed primarily by our
4 contractors at the Center for Nuclear Waste Regulatory
5 Analyses. It's developed under a QA program that has
6 configuration and control and such.

7 A code that is going to predict performance for
8 tens of thousands of years will never be fully validated.
9 There you can look at parts of the models and run test cases
10 and compare things with analytic solutions and get
11 confidence that, you know, the pieces are working correctly.

12 CHAIRMAN JACKSON: And all of that has been done?

13 MR. BELL: Yes. And it's --

14 CHAIRMAN JACKSON: Let me just ask this last
15 question.

16 You have mentioned the issue resolution status
17 reports. Did they help you, help the NRC Staff to prepare
18 for the viability assessment issue?

19 MR. BELL: Oh, very much. They have helped the
20 Staff to focus its review and plan its program --

21 CHAIRMAN JACKSON: So does this bode well for the
22 suitability review, site suitability review in 2001? Do you
23 expect that to be an integral part of your --

24 MR. BELL: Yeah, very much so.

25 CHAIRMAN JACKSON: Let me go down the line.

1 Commissioner Dicus?

2 COMMISSIONER DICUS: I have got two or three
3 questions quickly, Mike, five minutes.

4 Now I am going back to the SECY paper again that
5 we have on this subject, 99-074, in which it states that
6 DOE's estimated expected peak dose is between 0.04 and 0.1
7 millirem per year, and the NRC's estimated peak of expected
8 dose is approximately 0.6 millirem per year. Now those are
9 low and there may not be a terrible difference, but it's a
10 difference in the terminology that I find somewhat
11 confusing. Expected peak dose as opposed to peak of
12 expected dose. And I understand they really are different
13 because they are based upon different calculation methods.

14 MR. BELL: I can explain --

15 COMMISSIONER DICUS: Let me get to my question.

16 I did find this a little confusing, so if you
17 would explain the difference between our dose estimate and
18 DOE's dose estimate, and then has the NRC Staff done the
19 same performance calculation as DOE, so that we can really
20 compare apples to apples?

21 MR. BELL: Well, the explanation of the two
22 differences, the Department in the way it interpreted the
23 Congressional direction to look at the probable performance
24 was to take mean values of all the parameters that went into
25 the model, and did a point calculation based on means. And

1 that's what their dose measure is.

2 The NRC Staff's model actually uses probabilistic
3 distributions of the input parameters, calculates a
4 distribution of the dose, possible dose outcomes, and our
5 value is the mean of that distribution, and because the
6 systems aren't linear, essentially, the mean of the
7 distribution is a higher value than the point value based on
8 all the means being input. And, in fact, we have gone back
9 and run our model using the means as DOE did, to compare the
10 two, and find that there's about an order of magnitude
11 difference if you do your calculation just using mean values
12 input as opposed to looking at the distributions.

13 COMMISSIONER DICUS: But when you did that, were
14 we close to DOE and what they found?

15 MR. BELL: Yeah, it -- our mean number would be
16 lower, but, you know, we would interpret that to say if, you
17 know, the way we are doing the analysis is the way we would
18 expect the analysis to be done in a license application, and
19 if they did it our way, the number would come up.

20 COMMISSIONER DICUS: Okay. That's understood.

21 Okay, the other thing has to do with total system
22 performance assessment and VA, which I understand that was
23 the tool that DOE used to assess the repository's
24 performance in support of the viability assessment. Now
25 once we have moved beyond the viability assessment phase,

1 does DOE plan to use a different version of the TSPA, for
2 example, a TSPA SR to support site recommendation, or a --

3 MR. BELL: Very much so, yeah.

4 COMMISSIONER DICUS: -- modeling case. They have
5 that under process. And then one quick final question.

6 In the discussion of the repository design in SECY
7 99-074, it states the Staff has concentrated on, and I
8 quote, at this point, "the design control process being
9 employed by the DOE to document designs and design changes."

10 Then the paper goes on to say that the NRC Staff
11 has yet to review, and again I am quoting, "the DOE process
12 for the design of the repository." And so I think this
13 latter quote is not very clear to me on what you mean. I
14 wonder if you could clarify it.

15 MR. BELL: Well, the design control process is
16 essentially a quality assurance issue. Basically criterion
17 4 of Appendix B of Part 50 requires that the design and the
18 license application be developed under a design control
19 process so that when changes take place, you can be assured
20 that you are still accomplishing, you know, the intended
21 function of a particular component or system, and one of the
22 longstanding quality assurance issues that the Staff has had
23 with the Department is the adequacy of the design control
24 process.

25 Now the -- I believe that the other statement that

1 you quoted was not meant in a QA context. Basically we were
2 just concerned about the multiplicity of alternative
3 designs.

4 COMMISSIONER DICUS: Okay. Thank you.

5 CHAIRMAN JACKSON: Commissioner Diaz.

6 COMMISSIONER DIAZ: Now going back to the
7 engineered barriers and the characterization of the site, it
8 seems to me there is almost a Catch-22 according to what
9 Carl was saying in here. The more uncertainty that remains
10 on the site characterization to meet a standard, the more
11 the Department has to rely on engineered barriers which
12 changes the design, which makes the design more expensive,
13 and then less reliance on the original site.

14 Is all this driven by the standard in itself? You
15 know, because the uncertainties are always there, but if
16 they are below that that would impact on protection of
17 public health and safety, then that would be an acceptable
18 uncertainty. But once the uncertainty impacts on public
19 health and safety, then you drive the, you know, the
20 Department to do more and more things with barriers.

21 Are the uncertainties, you know, in the design and
22 the repository beyond that that our standard can capture, or
23 are they beyond that which the EPA --

24 MR. BELL: The lower and lower you drive the
25 performance standard, the more it drives you to a zero

1 release design, and essentially as Dr. Paperiello stated
2 earlier, you know, the -- that drives you to more reliance
3 on engineering, and I guess to comment on one of the -- part
4 of the way you phrased the question is we are talking about
5 levels here that are far below what's necessary to protect
6 the public health and safety. I mean the NRC's position is
7 that 25 millirem all-pathway actually protects the public
8 health and safety and is well within the 100 millirem per
9 year internationally recommended safety limit. And driving
10 the particular pathway down to the 4 millirems, if you use
11 one dose methodology, or two-tenths of a millirem if you use
12 a different dose methodology, isn't really adding to
13 protection of public health and safety.

14 COMMISSIONER DIAZ: But it does increase
15 uncertainty on the cost and --

16 MR. BELL: It certainly does.

17 COMMISSIONER DIAZ: Okay. Thank you.

18 CHAIRMAN JACKSON: Commissioner McGaffigan.

19 COMMISSIONER MCGAFFIGAN: Could I ask a couple
20 questions about the U.S. Geological Survey comments. You
21 saw those, they were submitted back in November, I believe,
22 before the viability assessment came out. But the thrust of
23 many of their comments is that the models that we are using
24 at the moment are overly conservative. They sort of go
25 against you guys in some sense. One of the comments that I

1 found here was we have previously seen that the climate
2 models, associated infiltration rates and seepage flow model
3 are overly conservative, and to this list we can add the
4 saturated zone transport model, in their opinion, which
5 assumes only minor dilution of radionuclides once they reach
6 the water table, regardless of climate.

7 I guess my concern, you know, is the experts about
8 geology see lots of overconservatism in the DOE's
9 performance assessment approach, which I assume gets
10 reflected in ours, which is very similar, and they come to
11 the conclusion that all of this overconservatism is not
12 without cost, naturally, and it comes in the form of
13 engineered barriers that are correspondingly
14 conservative---- we have just been talking about that -- so
15 as to protect against overly conservative estimates of
16 seepage into the emplacement drifts. It is in this
17 connection that the VA credibility is most readily
18 distinguished from site credibility, specifically the
19 concrete drift liners and high thermal load do not seem to
20 us to be reasonable reference design engineered barriers.

21 So I guess I would ask you how do you take into
22 account the USGS views about some of this stuff which is
23 that the whole thing is already overly conservative, and how
24 does that get filtered into our process, if at all?

25 MR. BELL: Well, I mean the Staff tries to

1 consider, you know, all the pertinent points of view,
2 including the source arguments that the GS is making here.

3 We -- the seepage into the drifts is one of the
4 issues that comes up repeatedly. It's a part of our issue
5 on the amount and chemistry of water that contacts the waste
6 package. It's the -- it's one of the issues that peer
7 review panel also brought up. And there is an opportunity
8 during some of the tests the Department is running over the
9 next several years to get better information on that, that
10 would, you know, help us determine whether the GS is right
11 or the peer review panel is right, or the Staff is right.

12 COMMISSIONER McGAFFIGAN: How much of an -- I mean
13 I'm looking at a page, I don't want to quote it at great
14 length, but you know, they come to the conclusion that in
15 any case most water would bypass the waste canisters, and
16 they, I assume -- this is a summary report for their
17 director -- I assume that they have -- they go on, in the
18 next sentence, such behavior has been confirmed by
19 experiments in the exploratory studies facility in which
20 large rates of infiltration have been artificially
21 maintained, et cetera.

22 Is this all of the margin? You know, it doesn't
23 change the .6 millirems except at the -- a couple digits
24 down, or is this at the heart of it? If you believe the
25 USGS case, would that .6 millirem average peak dose go down

1 to, you know, a factor of 10 or 100?

2 MR. BELL: Well, I'd say, you know, we still don't
3 have the information to make a judgment on that, and you
4 know, in the comments we are proposing to send to Lake
5 Barrett, you know, we have -- one of the detailed comments
6 addresses some of the work that we think needs to be done.

7 COMMISSIONER MCGAFFIGAN: I'm just thinking of a
8 later licensing case. You know, if you have the director of
9 the U.S. Geological Survey testifying on behalf of the DOE
10 license application and saying if anything it's orders of
11 magnitude too conservative, that will have some real weight
12 with the Commission, I would imagine, whatever Commission
13 exists at that time. But it would also be nice not to have
14 a violent disagreement at that point with the Staff, between
15 the Staff and the USGS, if it could be avoided.

16 CHAIRMAN JACKSON: Well, the issue really is
17 whether the safety case is made. The statement is that one
18 approach is more conservative, but the safety case is made,
19 that there is a less conservative approach that makes the
20 safety case where all the Staff's responsibility is to
21 determine if the safety case is made. So at a certain level
22 you could argue as long as that's the case, it doesn't
23 matter.

24 COMMISSIONER MCGAFFIGAN: But we also may be
25 driving -- it may be that the EPA standard lurking out there

1 is driving them to focus on the package. It may also be
2 even our standard, overly conservatively implemented, may
3 drive them in that direction, and so I just want an honest
4 implementation of the standard.

5 CHAIRMAN JACKSON: I understand the point you're
6 making.

7 MR. BELL: Well, it is USGS researchers, you know,
8 who have done the work that came off with the current
9 infiltration rates.

10 CHAIRMAN JACKSON: Commissioner Merrifield?

11 COMMISSIONER MERRIFIELD: I hope the Chairman will
12 recognize the degree of seriousness I took her suggestion to
13 withhold to the end.

14 [Laughter.]

15 CHAIRMAN JACKSON: Let me, just for the record,
16 say how much I appreciate it, unlike the Chairman and other
17 Commissioners.

18 [Laughter.]

19 COMMISSIONER MCGAFFIGAN: He gets the gold star;
20 right?

21 COMMISSIONER MERRIFIELD: Thank you.

22 I want to make a brief comment and ask a question,
23 and the comment is twofold:

24 One, I think it is useful to recognize, you know,
25 the degree of Staff work that has gone into this whole

1 process. These are very technically complex and complicated
2 issues, and I would like to recognize the Staff for that
3 work.

4 The other part I'd like to mention, I had an
5 opportunity last week, along with Mr. Bell, to tour this
6 Center for Regulatory Waste Analysis in San Antonio, and
7 have to share with you, the Commissioners -- some of them
8 may not have visited that facility -- how impressed I was
9 with the work that they are doing and the importance that I
10 think that work has in the analysis that we are doing in
11 working with DOE in trying to grapple with the issues
12 associated with a potential repository at Yucca Mountain.
13 It's a very impressive facility, and I recommend those who
14 haven't been there to go visit.

15 My question is this, and it gets back to the issue
16 of the waste packages and the evolution of where DOE is
17 going. I noticed in the Staff evaluation of DOE's viability
18 assessment as it relates to waste package corrosion, there
19 was a comment right up front, and I'll quote it:

20 "It is unclear whether DOE will be able to acquire
21 sufficient data applicable to conditions at the proposed
22 repository in time to demonstrate compliance with NRC
23 requirements."

24 That's a sort of very basic issue here. In the
25 visit that I had last week, you know, we have folks who are

1 working for us down at the center analyzing the different
2 materials that are going to be used for those waste
3 packages. If there is a shifting sand in how those designs
4 are going to come out, it does raise some questions about
5 our being able to be satisfied, and therefore providing us
6 sufficient information. So I guess that's one of the
7 questions. You know, do you still feel that strongly about
8 where DOE is?

9 And the related question is resource implications.
10 Do we have the staff and money necessary to be able to
11 respond in a timely manner to the -- in the analysis that we
12 are going to be required to do? And if not, do we need to
13 seek more?

14 MR. BELL: Well, I can answer the second part more
15 directly. I think we do have the staff to do the analysis.
16 The issue on, you know, whether they can get the data is the
17 more difficult one, and it may require say a different
18 approach, bounding assumptions, taking less credit for
19 certain parts of the system.

20 You know, there are a number of areas of
21 differences in the details of the model, for example. They
22 have a much longer lived waste package and take much more
23 credit for the cladding being intact. But once the cladding
24 fails, their model for the dissolution of the fuel pellets
25 dissolves them very rapidly, more rapidly than in our model.

1 So, you know, perhaps there are some tradeoffs or
2 differences in models that, as we approach the final
3 licensing, we could reach agreement at the Staff level that
4 that's a more defensible assumption than taking more credit
5 over here.

6 COMMISSIONER MERRIFIELD: I just want to make for
7 the record my personal comment. It makes it very difficult
8 for our Staff to analyze this fully when we seem to be
9 working on a moving target, and the faster the Department of
10 Energy can come to a decision about how it wants that waste
11 package to look like, that will make it a lot easier, I
12 think, for us to do our analysis and meet our obligation to
13 protect the health and safety as we should.

14 MR. GREEVES: Just one key example is the thermal
15 load on the repository. If you have a hot repository, it
16 makes your data needs much more difficult. You have to
17 consider coupled interactions of thermally, geochemically
18 and hydrologically. With a cool repository, a lot of that
19 data acquisition activity is a lot easier to obtain. So
20 just that one topic, is it a hot repository or is it a cool
21 repository, changes the data acquisition dynamics
22 significantly. I think you will hear more about that.

23 Thank you.

24 CHAIRMAN JACKSON: Okay. Thank you.

25 We are 45 minutes late.

1 [Laughter.]

2 CHAIRMAN JACKSON: Nevertheless, I will excuse the
3 Staff. We will take a five-minute break so everyone can
4 stretch, and then we will move along.

5 [Recess.]

6 CHAIRMAN JACKSON: I am happy to welcome to the
7 table Mr. Robert Loux, who is Director of the Nuclear Waste
8 Project Office for the State of Nevada, and I believe you
9 are going to introduce your colleague.

10 MR. LOUX: Yes, I will do that.

11 CHAIRMAN JACKSON: Please, we will try to exercise
12 at least as much restraint while you make your presentation.

13 MR. LOUX: I'll do what I can.

14 Madam Chairman, members of the Commission, on
15 behalf of Government Quinn and myself, we certainly
16 appreciate the opportunity to be here today to listen to the
17 Staff's view of the VA, and other presenters, as well as
18 give you our own views of the VA.

19 As you know, our presentation has been cast both
20 in the context of VA and the Commission's role in
21 pre-licensing and as a repository regulator.

22 In its February 8th, 1999 presentation to you,
23 Lake Barrett, Acting Director of the Office of Civilian
24 Radioactive Waste Management, pointed out that while "the
25 viability assessment is not one of the decision points

1 defined in the Nuclear Waste Policy Act, its completion is
2 significant because it gives policymakers information
3 regarding prospects for geologic disposal at Yucca
4 Mountain."

5 So if the Commission has decided to review the
6 technical aspects of the VA, it too can contribute key
7 information to policymakers regarding the prospects for
8 geologic disposal at Yucca Mountain. As has already been
9 noted, there are significant contrasting views about the
10 message policymakers can draw from the VA regarding the
11 prospects for geologic disposal.

12 On one hand, the VA states, as Lake Barrett told
13 you, that based on the viability assessment DOE believes
14 that Yucca Mountain remains a promising site for geologic
15 repository, and that work should proceed to support a
16 decision in 2001 on whether to recommend the site to the
17 President for development as a repository.

18 Uncertainties remain about key natural processes,
19 the preliminary design and how the site would work -- design
20 would interact. Mr. Bell also informed you while the VA
21 reveals no show-stoppers, it does identify areas where
22 additional work is necessary before site suitability can be
23 determined.

24 On the other hand, as noted earlier, DOE's peer
25 review panel has taken a much less optimistic view. The

1 panel, in its February 11th, '99 final report, points out
2 that Congress defined the objective of the TSPA to be the
3 assessment of the probable behavior of the repository. The
4 panel's conclusion is that "it is unlikely that the TSPA VA,
5 taken as a whole, describes the long term probable behavior
6 of the repository."

7 The panel goes on to say that "at the present time
8 the assessment of the future probable behavior of the
9 proposed repository may be beyond analytical capabilities in
10 any scientific and engineering team. This is due to the
11 complexity of the system and the nature of the data that now
12 exists or could be obtained within a reasonable time and
13 cost."

14 The repository system's post-closure performance
15 as analyzed in the VA relies on the four key attributes
16 identified in DOE's safety strategy: limited water
17 contacting the waste package; long waste package lifetime;
18 low rates of release of radionuclides from breached waste
19 packages; and radionuclide concentration reduction during
20 transport from the waste package.

21 The first figure that is attached to our
22 presentation -- and I didn't use them as viewgraphs, but
23 they are in the back of the presentation -- illustrates
24 DOE's view of infiltration, waste mobilization and transport
25 in the Yucca Mountain repository system.

1 Projected repository performance, i.e., individual
2 dose at the accessible environment boundary, relies on each
3 of these attributes combining its expected share to the
4 combined natural and engineered barrier system.

5 The failure of any one of the components to
6 function as well as predicted will have an adverse effect on
7 total system performance.

8 This is confirmed by the analysis reported by the
9 Yucca Mountain project to the technical review board in
10 January 25th, 1999 meeting. The analysis was designed to
11 illustrate the relative contribution of the repository
12 system barriers by neutralizing one barrier at a time in
13 successive runs of the total system performance model during
14 the 10,000 year post-closure -- initial 10,000 year
15 post-closure years.

16 The results shown in the second viewgraph indicate
17 that during this period -- and that is the second graph
18 figure in my presentation -- indicate that during this
19 period the waste package is responsible for over 99 percent
20 of the expected repository performance, and if it were
21 eliminated from the system, the expected individual dose
22 rate at the accessible environment would be about 1 rem per
23 year within about 2000 years after closure.

24 In contrast, if the sum of all natural barriers'
25 contributions to performance during the same period were

1 neutralized and the waste package were the only barrier, the
2 expected dose rate would be only about 1 millirem per year.

3 The result of this analysis is significant for a
4 few reasons:

5 First, it indicates that the proposed repository
6 system does not exhibit defense-in-depth as stated by DOE in
7 the VA to be the property of a system of multiple barriers
8 that are diverse, independent and redundant, such that
9 failure of any one barrier, single barrier, will not result
10 in the failure of the entire system. While the engineered
11 barrier may be planned to illustrate defense-in-depth
12 through dual waste package layers and possible drip shields
13 and backfill, the repository system as a whole does not meet
14 the VA's description of defense-in-depth. An engineered
15 barrier does not function as an independent means of
16 limiting individual doses. If it functions as expected, the
17 waste package only serves to delay the time of peak dose
18 that the natural barriers would permit with or without the
19 engineered barriers. And we do not believe that under any
20 regulatory circumstance, an expected individual dose rate of
21 1 rem per year to members of the public should be considered
22 acceptable.

23 We are often reminded of the Commission's stated
24 principle that future generations should not be subjected to
25 radiation doses from a repository any greater than those

1 considered acceptable to the current generation from other
2 sources.

3 The nearly complete reliance of the Yucca Mountain
4 TSPA, VA and waste package and other possible engineered
5 contributors is a contradiction of the geologic disposal
6 concept described in the DOE's 1980 Final Environmental
7 Impact Statement management of commercially-generated
8 radioactive waste.

9 The EIS states, "Geologic barriers are expected to
10 provide isolation to waste for at least 10,000 years after
11 the waste is emplaced in the repository and probably provide
12 isolation for a millennium thereafter. Engineered barriers
13 are those designed to assure total containment of the waste
14 within the disposal package during the initial period during
15 which most of the intermediate-lived fission products decay.
16 This time might be as long as 1000 years."

17 Each of the key attributes of the repository
18 safety strategy is subject to broad uncertainty, as
19 exhibited in the VA. The uncertainty in waste package
20 lifetime is said to be about three orders of magnitude, and
21 the TSPA VA shows uncertainty range in dose projections in
22 the 10,000 year calculation about four orders of magnitude,
23 with the 1 million year period at about six orders of
24 magnitude.

25 The question then is can these uncertainties be

1 reduced significantly. The TSPA VA peer review panel
2 appeared to think that the answer is no, at least in the
3 near future, and at a reasonable cost relative to DOE
4 schedule and resources, and the answer may be never.

5 Our view, parenthetically, is essentially what
6 more data and information really can be garnered in the next
7 two years to reduce uncertainty at all.

8 An interesting example of the irreducible
9 uncertainty involved is the assumption about climate change
10 in the TSPA VA models. A relatively small shift in the
11 projected periodicity of a short term super-alluvial climate
12 condition can result in calculated individual peak dose rate
13 being not 1 rem per year, but 5 rem per year.

14 While the DOE has said that the VA has been
15 written independent of regulatory consideration, it must be
16 recognized that the results of the TSPA VA are being
17 evaluated within the context of regulatory and safety
18 standards, whether specific standards for Yucca Mountain
19 repository exist or not.

20 We have said earlier that an expected individual
21 dose rate from Yucca Mountain repository at 1 rem per year
22 is unacceptable, and since the preliminary release path from
23 the repository is into a currently potable groundwater, it
24 is also unacceptable that expected doses to the public
25 resulting from the repository contaminating this drinking

1 water supply would exceed existing national standards.

2 Much of the technical presentation of the
3 viability assessment is based on data, analysis and codes
4 that do not meet the Commission's quality assurance
5 requirements for licensing, as was spoken of earlier.

6 The DOE is now engaged in the intensive program to
7 repair shortcomings that have been observable in the program
8 since its beginning in 1983. This repair effort cannot be
9 completely successful. It's clear that some of the
10 information in the VA and its sources will not be properly
11 qualified for use in a license application, although it may
12 be needed to meet -- may be needed to meet a completeness
13 standard and not to further expand the already broad range
14 of uncertainty in the performance assessment.

15 The TSPA VA reveals the expectation of very rapid
16 groundwater flow from the repository location of the
17 boundary of the accessible environment assumed in the model
18 would be at 20 kilometers from the edge of the repository.
19 It is clear from the model realizations published in the VA
20 that highly soluble radionuclides released from the
21 repository can arrive at the 20 kilometer boundary in as
22 little as 500 years after release. This indicates that the
23 groundwater travel time from the undisturbed Yucca Mountain
24 site to the accessible environment is thought to be as rapid
25 as 500 years by the DOE. The medium and mean values for the

1 model realizations are slightly below and above 1000 years,
2 respectively.

3 The matter of groundwater travel time from the
4 repository location to assumed distance boundary of the
5 accessible environment as shown in the TSPA VA raises two
6 regulatory issues, one for the Commission, of course, and
7 one for DOE.

8 For the Commission, the groundwater travel time
9 that can be inferred from the TSPA VA model realization is
10 in conflict with the Commission's subsystem performance
11 requirements for groundwater travel time in Part 60.

12 Likewise, the Secretary of Energy, we believe,
13 should disqualify Yucca Mountain from site consideration for
14 development as a repository because it meets the groundwater
15 travel time disqualifying condition in the DOE guidelines.

16 Because the travel time has been inferred from
17 realizations of the DOE's Yucca Mountain performance model
18 with numerous realizations indicating travel time less than
19 1000 years, the tests of regulatory language, fastest,
20 likely and significant pathways have all been met.

21 In summary, the VA reveals a number of important
22 factors regarding potential safety of Yucca Mountain high
23 level waste repository system. These include a repository
24 system that fails to demonstrate defense-in-depth; an
25 overwhelming reliance on engineered barriers to compensate

1 for waste isolation deficiency and unresolvable
2 uncertainties and unnatural conditions at the site. Within
3 ranges of known uncertainties, expected dose rate to the
4 public can be at unacceptably high levels, and a site that
5 does not conform to existing Commission licensing
6 requirements and DOE site recommendation requirements with
7 regard to undisturbed groundwater travel time from the
8 proposed waste emplacement location to the accessible
9 environment.

10 In conclusion, Madam Chairman, the viability
11 assessment suggests a number of issues for the Commission's
12 consideration during its review, and these include first, is
13 defense-in-depth meant to be applicable to the full
14 repository system, or only to subsystems such as engineered
15 barriers, as DOE seems to believe.

16 Secondly, how does the Yucca Mountain repository
17 system as described in the VA reconcile with the geologic
18 repository concept of multiple barriers and waste
19 containment in isolation established in the 1980 EIS that
20 selected deep geologic disposal of high level nuclear waste
21 as the preferred alternative in its record of decision.

22 Thirdly, what level of uncertainty is appropriate
23 and acceptable regarding key safety factors at the
24 repository system in determining reasonable assurance that
25 the repository will meet established safety standards.

1 Fourth, is the use of incomplete data and analysis
2 in the license application preferable or not to the use of
3 unqualified data and analysis?

4 And last, does the Commission have a pre-licensing
5 duty to inform DOE that Yucca Mountain site, based on
6 current information, does not conform to the established
7 licensing criteria, at least the current standard.

8 Thanks for the opportunity to present our views
9 today, and we would be happy to answer any other questions
10 you may have.

11 CHAIRMAN JACKSON: I did have a couple of
12 questions. Can you tell us what level of groundwater
13 protection the state uses today for naturally-occurring
14 radionuclides such as radon, uranium, and radium, and how do
15 they compare with the levels projected based on the TSPA?

16 MR. LOUX: Well, the state has adopted as a matter
17 of delegation from the EPA, the National Safe Drinking Water
18 Standard as applies to all of the states' aquifers, and
19 indeed there are state regulations independent of the EPA
20 delegation authority that does not allow any degradation of
21 aquifers at all. So in our view, use of the aquifer as a
22 part of system performance, system management is defined in
23 the VA, does not meet and would not meet the Nevada state
24 regulations.

25 CHAIRMAN JACKSON: Does the state have any

1 pre-closure safety concerns or any transportation concerns?

2 MR. LOUX: Well, I guess the real answer is yes,
3 depending on how long you want to talk about these sorts of
4 things.

5 Clearly I think that in the pre-closure safety
6 issue, I think the state has a number of concerns related to
7 seismicity at the surface facilities, given the magnitude
8 and the nature of seismic events that are occurring in the
9 region on an ongoing basis. As I'm sure you are aware, in
10 January, there were swarms of 4.7 and above events in the
11 immediate vicinity of the proposed facility.

12 As it relates to transportation, I suspect that
13 that might be a topic for another discussion. There are
14 numerous concerns that we have got with the existing
15 transportation regulations as well as the concept as DOE
16 views the system, and it would be very lengthy to go into
17 them today.

18 CHAIRMAN JACKSON: You talked about what's
19 missing. There was an implied statement about DOE's plans
20 for additional testing and analysis. I mean are you -- do
21 you feel that the uncertainties can be reduced by DOE's
22 plans for additional work or not?

23 MR. LOUX: Well, I would let Steve -- by the way,
24 and I failed, I apologize, to introduce Steve. Steve
25 Frischman is with me today. He's a technical policy

1 coordinator for the office, and I will let him follow up in
2 a moment, but you know, statements have been made in recent
3 meetings and even by DOE itself as well as the peer review
4 panel that much of the uncertainty as it relates to the
5 natural conditions cannot be resolved any further; that it's
6 unlikely, especially given the short time period remaining,
7 at least as DOE views the characterization period, that they
8 can be reduced very much at all. It appears that DOE
9 believes there's more promise in reducing uncertainties in
10 the engineered barrier system.

11 Steve, do you have anything to add?

12 MR. FRISCHMAN: Yeah. I think your Staff is
13 correct in pointing to, among other things, the necessity
14 for a much better understanding of the saturated zone
15 hydrology, because there is, depending on who's looking at
16 it and how, there's a large reliance on that, and especially
17 if there is a separate groundwater standard, then it's going
18 to require a great deal more understanding than there is
19 now.

20 Now also given the very high reliance or heavy
21 reliance on the waste package, first as your Staff pointed
22 out, there doesn't seem to be a rapid movement towards
23 trying to lock in on something that is analyzable.

24 On top of that, the current favored waste package
25 corrosion-resistant material has not got a very long history

1 in terms of experience with that material. The laboratory
2 experience with it is considerably less. An analog has been
3 looked at in a non-analogous situation, and some credit is
4 being taken for that in people's thinking.

5 Also the instability issues of an alloy different
6 from corrosion are far from understanding, so this -- I
7 think maybe DOE has been charitable to itself about -- in
8 the VA, about three orders of magnitude uncertainty in its
9 overall view of lifetime of that waste package. It may have
10 a lot of uncertainty attached to it just because the
11 engineering world has virtually no experience and for the
12 type of claims that the Department is trying to make, I
13 don't think that experience is achievable in -- you know,
14 even if the licensing period were considered to go through
15 closure.

16 CHAIRMAN JACKSON: Okay. Do you believe that the
17 NRC is providing you with sufficient access to our
18 regulatory process?

19 MR. LOUX: Yeah. Yes.

20 CHAIRMAN JACKSON: You do. How do you think we
21 should judge the effectiveness of our program? You know,
22 what outcomes should we be measuring?

23 MR. LOUX: Well, I think one of the measurements
24 that you might examine in perhaps a different way than you
25 are thinking is the view and the role of the public as they

1 look at the independence of licensing proceeding as a whole,
2 and I think that perhaps you will learn a lot more about
3 that with the upcoming meetings out in Nevada that are going
4 to be taking place next week. But I think that the
5 independence of the Commission and the independence of the
6 Staff from the project is going to be very key to any sort
7 of public credibility licensing process, and so from my
8 perspective, that's one that has to be carefully looked at.

9 There already is a view that in fact that all
10 these federal agencies, if you would, all interact together
11 and they are very intertwined, and I think that the
12 Commission and the Staff has to work extremely hard to
13 demonstrate its independence from the project and not be
14 perceived as helping the project along, trying to make it
15 work.

16 All of those sorts of things are comments we hear
17 regularly from the public, that there appears to be a
18 joining or a meeting of minds, if you would, between the
19 Commission and DOE. And I think, of all things, that's
20 probably the most critical portion that I can think of off
21 the top of my head.

22 MR. FRISCHMAN: Can I add one point?

23 CHAIRMAN JACKSON: Yes. Go ahead.

24 MR. FRISCHMAN: Yes. Let me give you a concrete
25 example that came up just very recently of where people may

1 be concerned that your staff is taking sort of a personal
2 interest in a license application to the extent that if they
3 think the department's approach may be too conservative and
4 so on, the staff will inject itself in and essentially
5 suggest that our way may be better for you than yours.

6 An example of that was in the last meeting of the
7 Technical Review Board when the second figure that we
8 presented here was presented to the Technical Review Board,
9 and I must say they were quite wide-eyed when they saw it,
10 and as I was, too.

11 Your staff later responded, we don't think it's
12 that bad, meaning we don't think the situation is that bad,
13 we don't think the reliance on the waste package is as great
14 as you claim that it is.

15 Well, this makes some of us, including some
16 members of the public who were in the audience, begin to
17 wonder are you the regulator or are you the co-author of the
18 license application?

19 COMMISSIONER McGAFFIGAN: Could I --

20 CHAIRMAN JACKSON: Yes.

21 COMMISSIONER McGAFFIGAN: It strikes me, in
22 response to that, that that's the function of the staff if
23 they're in the room and they have opinion to say it.
24 Obviously the U.S. geological survey is a couple orders of
25 magnitude in yet another direction thinking that the

1 geologic environment is going to provide lots of protection.

2 So would you have them stay mute if they have a,
3 you know, something to contribute?

4 MR. FRISCHMAN: I would have them stay mute until
5 they evaluate the basis for this analysis because that's the
6 first any of us had ever seen of it, and it was explained as
7 simply as we explained it to you in our presentation here,
8 and if there is some basis for your staff thinking the
9 situation is not that bad, I would think we should all be
10 privy to that basis before we get a simple statement that
11 actually came as almost a recovery after a lunch break. We
12 don't think the situation is as bad as you portray it.

13 COMMISSIONER McGAFFIGAN: I honestly think the the
14 record of previous Commission briefings here have pointed
15 out the differences between the staff and DOE on this
16 matter, and it isn't surprising to me that the staff has run
17 some runs under our Code that might -- maybe not exactly the
18 one that was here -- that might let them be able to reach
19 the conclusion that, quote, it's not that bad. That's an
20 ongoing -- I mean, you know, we've had all these meetings in
21 public, and I'm pretty sure that this is not a new
22 conclusion on the staff's behalf.

23 MR. FRISCHMAN: Well, what I was trying to portray
24 was here's an independent Federal advisory committee getting
25 a presentation from the Department of Energy, the potential

1 applicant, showing what they believe to be their situation
2 with their case, and the regulator, not in a formal
3 presentation, the regulator feels compelled to respond by
4 defending the subject of this independent review to a
5 greater extent than it feels it itself can defend itself.
6 And I'm not saying right or wrong in terms of what your
7 staff has done or not done; what I'm saying is the
8 impression that is conveyed is that your staff thinks it can
9 write a better license application in terms of success in
10 getting a license than the Department of Energy can, and the
11 public is not very impressed by such signals that they
12 receive.

13 MR. LOUX: Well, I guess to further emphasize the
14 point that you make, you know, USGS is a DOE contractor. I
15 mean, you don't want us to confuse your staff with being a
16 DOE contractor, I assume.

17 COMMISSIONER McGAFFIGAN: No, it's -- but I'm not
18 -- I'm just telling you that our staff has historically told
19 the Commission in previous briefings that perhaps DOE
20 doesn't have to, you know, rely on as perfect a waste
21 package as perhaps they're being pushed to rely on, that
22 that was what our code was telling us. At least that's my
23 recollection of what the staff has said in previous
24 briefings.

25 MR. LOUX: I guess our point is that this is an

1 area that I think everyone needs to be very concerned about
2 and very cautious about, because there is a very large
3 perception, at least with the public in Nevada, that there
4 is very little difference between the two.

5 CHAIRMAN JACKSON: Commissioner Merrifield.

6 COMMISSIONER MERRIFIELD: Yes, I want to weigh in
7 in support of the comment that Commissioner McGaffigan made.
8 I mean, I think our staff -- it is unfortunate if the public
9 and you took that interpretation from some comments from our
10 staff. Since I've been here, and it's been about
11 four-and-a-half months, I can say I believe our staff takes
12 very seriously the role that we have as an independent
13 regulatory body that will weigh whether we believe this is
14 safe or not, and if we don't, we're not going to approve it,
15 and I think that's consistent with the views taken -- that
16 certainly I would take as a commissioner. I can't imagine
17 any of the other commissioners would feel any differently.

18 We have a very bright staff with their own basis
19 of technical knowledge, and I can imagine a circumstance in
20 which they would weigh in -- would make a comment of that
21 nature, but I don't think one should take from that that we
22 are in some kind of a cabal with DOE to make sure that we're
23 bound and determined to get this site licensed.

24 I think very clearly, we are going to make an
25 independent evaluation of the health and safety of this

1 site, and if we do not believe it is safe for the
2 individuals who live around it, we're not going to support
3 it.

4 MR. FRISCHMAN: I think you have to recognize the
5 situation where such an interpretation as I tried to
6 describe to you is easy to come out. One is, the people in
7 Nevada have no experience with the Nuclear Regulatory
8 Commission other than what they have seen over the years
9 relative to an advocacy by the Department of Energy for the
10 Yucca Mountain site.

11 Also, the only real experience the people of
12 Nevada have in decisions regarding nuclear issues is through
13 the Department of Energy, which has been a self-regulator
14 and a self-serving one at that in most cases.

15 So I point out to you that the situation is one
16 where our sitting at this table recognizing your
17 responsibilities all together, and I think fairly and
18 clearly recognizing, doesn't get translated to the people of
19 Nevada who are ultimately the recipients of whatever
20 decision you make.

21 MR. LOUX: I guess just our point one more time is
22 that it would be important for I think credibility of the
23 whole process for a great deal of effort to be made in
24 trying to stress and demonstrate that independence at every
25 opportunity.

1 CHAIRMAN JACKSON: Stressing it within the context
2 of the prelicensing consultation that the Nuclear Waste
3 Policy Act in fact calls for.

4 MR. LOUX: Right.

5 CHAIRMAN JACKSON: All right. I think what you're
6 saying is that it's an issue of perception on the one hand
7 and our making clear what our legal duty and requirements
8 are on the --

9 MR. FRISCHMAN: Right. And I think it's probably
10 unfair to assume that the people of Nevada understand that
11 one little line in part 60 that I presume will remain in
12 part 63 regarding any interaction constituting informal
13 conference. Well, I would submit that you'll find few
14 people in the State of Nevada who would either understand
15 that language or its implication.

16 CHAIRMAN JACKSON: Tell me a little -- elaborate a
17 little more on what you mean by defense-in-depth for a
18 repository.

19 MR. LOUX: Well, as we understand 60 and its
20 basis, it is a system of redundancy, a system in which if
21 one of the components does not perform as modelled or
22 predicted, that you do not have system failure.

23 The way that the VA is set up and the way that we
24 have looked at their performance is that all of these things
25 have to work in sequence and together, that if any one of

1 them fails, the system goes down -- at least that's how
2 we're viewing it.

3 CHAIRMAN JACKSON: So you're saying it goes beyond
4 redundancy in the engineered barrier system itself?

5 MR. LOUX: We think it applies to the entire
6 repository system, just not the engineered barrier system.

7 MR. FRISCHMAN: If I can add an observation to
8 that, and this is a conversation that I've had occasionally
9 with your staff, and that's I have asked in the past whether
10 it's appropriate to apply the concept of ALARA to a
11 repository, and the answer keeps coming back in various
12 forms but suggesting that concept of ALARA probably doesn't
13 apply here because ALARA really applies to operating
14 systems. My view of the repository as presented in the
15 viability assessment is that post-closure, it's still an
16 operating system because performance relies entirely on the
17 -- almost entirely on the operation of the waste package,
18 and it is understood that through time, that waste package
19 performance is going to decline to the point where
20 ultimately, it has no performance whatsoever.

21 So what you have is a long-term operating period
22 for the waste package, and it seems to me that the fact of
23 closure doesn't end operation for the concept of the
24 repository as presented in the viability assessment. It
25 operates using a mechanism that is intended to fail. And

1 for defense-in-depth, I don't see it. All you're doing is
2 delaying, using a metal container to delay the appearance of
3 the true ability of the site, and as we see from that EIS,
4 the true ability of the site is supposed to be in the
5 forefront, and it's supposed to operate -- it is supposed to
6 operate essentially consistently through time for purposes
7 of waste isolation. The operating piece of the repository
8 is the container which provides, under the language,
9 containment as a front-end redundant safety measure to
10 protect against the very energetic fission products.

11 So the point that we are making is the site does
12 not stand up to its portion of defense-in-depth, and the
13 site is the -- is the fundamental and mainstay of the
14 concept of geologic disposal and it's not there.

15 MR. LOUX: It's maybe one percent of performance
16 in DOE's model.

17 CHAIRMAN JACKSON: Commissioner Diaz.

18 COMMISSIONER DIAZ: Yes. The issue of
19 defense-in-depth, of course, you know, you've got to take
20 defense-in-depth in steps, and, of course, if you can delay
21 something for a long period of time like, you know, decay,
22 then that certainly works in your favor.

23 I mean, you can't take defense-in-depth as one
24 system failing and the other one just taking its place. It
25 is a concept in which every one does a little bit of the job

1 all the time and one of them actually, you know, eventually
2 is the last barrier.

3 Now, in the concept of a reactor, the containment,
4 okay, we do have models that assumes the containment
5 failure, just like we assume that there will be leakage from
6 the repository. As long as it is within the bounds of
7 public health and safety, that still could be a licensable,
8 you know, concept as long as it meets a certain standard.

9 MR. FRISCHMAN: But what we tried to point out in
10 our paper here, that even -- you know, given the
11 presentation in the viability assessment, if the waste
12 package failed within 10,000 years, you would have a dose at
13 20 kilometers of on the order of one rem. A number of
14 thousands of years out, when the waste package has failed,
15 you have a dose on the order of one rem, meaning that's
16 telling you that you don't have a geologic barrier that
17 keeps you within a range of protecting health and safety if
18 your other barrier goes away.

19 COMMISSIONER DIAZ: I hate to say this, but maybe
20 your expectation of the viability assessment were larger
21 than ours.

22 [Laughter.]

23 MR. FRISCHMAN: I would hope so.

24 COMMISSIONER DIAZ: Because it is not supposed to
25 provide all the answers; it is supposed to say we have

1 gotten to a certain point, and yes, we -- you know, the
2 Department recommends and I think the staff agrees that it
3 is sufficient to continue. But it is not a complete answer.
4 We hope to have better answers when, you know if and when --

5 MR. LOUX: And our concern is with a decision
6 within two years or three years and a limited budget, much
7 of which or some of which is going to have to be spent on
8 trying to qualify data, what more information can you
9 gather? We don't think there is a heck of a lot more that
10 you can really know in two years, if you've spent nearly 20
11 years in whatever to get where you are now.

12 MR. FRISCHMAN: You might be better off licensing
13 these under an independent spent fuel regulation -- I mean,
14 if the geology is providing virtually no performance
15 contribution, you might be better off licensing under the
16 independent spent fuel assessment.

17 COMMISSIONER DIAZ: Certainly some uncertainties
18 are not going to disappear within a year, but there is an
19 issue that we have to wait for what I call data convergence.
20 When that data is convergent, then you can really start
21 assessing better what the uncertainties are you have to deal
22 with. And I think what we are hearing is that there have to
23 be some convergence of data that makes more, you know, sense
24 of what the boundaries are, and that's what our expectations
25 are.

1 MR. LOUX: Well, hopefully there will be less in
2 the four to six orders of magnitude that's in the VA of
3 uncertainty.

4 CHAIRMAN JACKSON: Let me give a -- Commissioner
5 Dicus.

6 COMMISSIONER DICUS: Let me go briefly back to the
7 Chairman's first question on naturally occurring radioactive
8 materials that may be present in aquifers, and in fact
9 Nevada is a delegation State. If I recall correctly, that
10 also requires mitigation systems if a level of naturally
11 occurring radioactive materials is above the EPA limit if
12 the State is a delegation State. Are you aware of any
13 mitigation systems that may exist?

14 MR. LOUX: No.

15 COMMISSIONER DICUS: Does that mean no, there
16 aren't any, or you're not --

17 MR. LOUX: I'm not aware of any.

18 COMMISSIONER DICUS: Okay. I may ask that
19 question of local governments too.

20 MR. LOUX: Okay.

21 CHAIRMAN JACKSON: Commissioner Diaz, any further?

22 Commissioner McGaffigan.

23 Commissioner Merrifield.

24 Thank you very much.

25 MR. LOUX: Thank you.

1 CHAIRMAN JACKSON: Let me call forward the
2 representatives of affected units of local government: Ms.
3 Manzini, Mr. Bechtel, Mr. Baughman, and Mr. Jerves, I
4 believe, three of you representing counties in Nevada and
5 one, Inyo County, in California. Am I correct?

6 And, Mr. Bechtel, since you're in the middle of
7 the table, you get the --

8 MR. BECHTEL: Well, I guess we're -- maybe we
9 could have Mr. Baughman --

10 CHAIRMAN JACKSON: You want Mr. Baughman to speak
11 first? Okay.

12 DR. BAUGHMAN: Thank you, Madam Chairman, Members
13 of the Commission. My name is Mike Baughman. I am here
14 representing Lincoln County today. With me at the table to
15 my far right is Tammy Manzini. Tammy is from Lander County,
16 Nevada. To my immediate right is Dennis Bechtel. Dennis is
17 with Clark County, Nevada. And to my left is John Jerves.
18 John is with Inyo County, Nevada. I'd also like to --

19 MR. JERVES: California.

20 DR. BAUGHMAN: California. California.

21 [Laughter.]

22 COMMISSIONER MERRIFIELD: You just got annexed.

23 [Laughter.]

24 DR. BAUGHMAN: We'll see who does the annexing.

25 [Laughter.]

1 It does happen regularly. It does happen, much to
2 their chagrin.

3 [Laughter.]

4 Let me also recognize a couple of people in the
5 audience, because there are three or four folks who have
6 traveled a great distance. Bill Olquist, and I'll just ask
7 them to raise their hands. I can't see whether they're --
8 Bill is the Lander County Commissioner. Jason Pitts, who is
9 actually in your media room, is here representing the
10 chairman of the Lincoln County Commission, and he is
11 responsible for the graphics and the presentation here that
12 we're providing you today. Eve Coverwell is in the
13 audience. She is from the city of Caliente, here on behalf
14 of the mayor and also representing Lincoln County. And
15 finally Pete Cummings is in the audience. He is here on
16 behalf of the mayor of the city of Las Vegas.

17 Collectively we are here representing the ten
18 units, affected units of local government that were
19 designated by the Secretary of Energy as having a clear
20 stake in the outcome of your decision about whether or not
21 to license a repository in the State of Nevada. I would
22 just note parenthetically that we depend upon you a great
23 deal to protect our public health and safety. Certainly we
24 are on the front lines of this issue in terms of the
25 long-term fate of these materials, and we are obviously very

1 concerned about the fate to our generation and the
2 generations to follow, both from a public health and safety
3 standpoint and from an economic standpoint.

4 Let me just begin by noting that the four of us
5 will go through a rather quick presentation and we'll try
6 and keep you on schedule. I will go through and let you
7 know who we are and what we've been up to, kind of what our
8 concerns are. Dennis will then focus on the VA and give you
9 some of our perspectives in particular on the VA. Tammy
10 will then give you some of our perspectives on NEPA. And we
11 see the NEPA and the VA process being very closely linked.
12 John Jerves will then address issues concerning regulatory
13 compliance, which does include transportation. And then I
14 will wrap up.

15 With regard to the introduction, collectively the
16 ten units of local government in Nevada and California
17 represent about 1.3 million persons. If you're following
18 the news, we are one of the fastest-growing regions in the
19 United States. People find our area a very popular place to
20 come to live, to work, and to play. Tourism is a very
21 important part of our economy, and obviously public
22 perception of our region is very important in terms of
23 whether they choose to come there or not.

24 There is a map in a presentation booklet which I
25 think you were provided which does give you a pretty good

1 sense of where we are, the geographic relationship of the
2 different counties. I would note that Nye County is the
3 host county. The representatives of Nye County were unable
4 to be here today due to some scheduling conflicts, but
5 clearly they are a very key player in all that you do and
6 all that we do.

7 The ten counties are also in a region which has
8 historically been the recipient of various forms of
9 radioactive exposure or exposure to things radioactive.
10 Obviously the weapons tests, we are a site for low-level
11 radioactive waste disposal on the Nevada Test Site, also a
12 site in the Beatty area.

13 In the Department of Energy's current programmatic
14 EIS we are one of the sites that has been identified as kind
15 of a central repository or depository for future waste
16 streams of low-level waste, and the expectation is that we
17 will have a great deal of more shipments coming in over the
18 next 30 years of both low-level waste and potentially
19 high-level waste, and I would note that we are concerned
20 about the cumulative effects of exposure both from a
21 historical standpoint, current shipments coming through and
22 then obviously future sources of exposure.

23 The AULGs represent one of the fastest-growing
24 regions in the Nation. That is important because one of the
25 uncertainties and the assumptions that is made in the VA

1 perhaps has to do with the stability of the population or
2 how the population might change over time, and we would
3 suggest to you that if growth continues at the rate it has,
4 most of the United States will be living in and around Las
5 Vegas.

6 [Laughter.]

7 That's kind of a far-fetched assumption, but
8 certainly going strictly by the trends, that does seem to be
9 possible.

10 What have we done? The affected units of local
11 government have been basically funded by the Department of
12 Energy. Oh, I guess that's about 1987 or so. They have
13 developed various capabilities. In virtually every case
14 they have county staff, some of which are with you today.
15 They have retained consultants. They have advisory
16 committees. I would note that the advisory committees are
17 typically made up of a cross-section of technical people,
18 lay people. They have met in many cases for six, seven
19 years now. They have put in really thousands of hours in
20 trying to understand the nuclear fuel cycle, the
21 waste-management issue, and the potential for impacts to
22 occur in their areas.

23 The counties have engaged in independent research.
24 They have relied a great deal upon our university system.
25 The University of Nevada - Las Vegas, the University of

1 Nevada at Reno -- they have hired consultants, both local,
2 national consultants, consultants with national reputations.
3 Earlier we heard comments about the Nye County area drilling
4 program. I think that is a very good indication of work
5 that is being done in the technical area. Nye County is
6 working to fill some real data gaps. Unfortunately we do
7 not have representatives of Nye County here, so if you start
8 asking questions about the early warning drilling program,
9 we're going to be a little shallow on answers.

10 Risk assessment. The counties out there have
11 engaged and have retained primarily experts, the University
12 of Nevada at Las Vegas research center to conduct
13 independent risk assessments using the RATRAN models to help
14 them understand what the implications of transportation both
15 by rail and truck through their communities are. A lot of
16 effort has been spent on socioeconomic impact assessment and
17 monitoring largely because of the tourism base of our
18 economy and the concern that negative perceptions about the
19 area can reduce visitation, which could have a very serious
20 effect on the economy.

21 I would also note that in the rural areas of our
22 State, they are becoming the playground for Las Vegas, much
23 as you would have here in the D.C. district where you might
24 go out to recreate in some of the rural areas. The rural
25 areas surrounding the Yucca Mountain area are becoming the

1 playground for Las Vegas. And so if we have a problem in
2 those areas again perception plays then on perhaps whether
3 people are willing to visit there.

4 The counties have been involved in review and
5 comment on DOE, NRC, a whole host of documents. We have
6 provided recommendations to the Secretary of Energy and to
7 the Congress, and we have designed and implemented effective
8 public information programs.

9 I would underscore the view that again we are on
10 the front lines, that the elected officials that are here
11 today and those that we represent take very seriously their
12 role in keeping the public informed, helping them to
13 understand what this project is all about and this program
14 and help them to make informed decisions about how to
15 respond to the Yucca Mountain proposal.

16 And let me just digress for one moment, because I
17 failed to recognize that your staff on October 22
18 participated with us in Nevada in a workshop, which was
19 really a precursor to this presentation today. The purpose
20 of that workshop was to help us understand exactly what it
21 is NRC is doing, how they perceive their role, some of the
22 nuances of what they're doing, and some of the very specific
23 techniques that they're employing to exercise, you know, the
24 fiduciary responsibility that NRC has with this program.

25 It was a very useful endeavor. We have the Center

1 for Nuclear Waste Regulatory Analysis involved, video,
2 teleconference -- or videoconferencing, and we had a very
3 good exchange. It was very helpful. And much of our
4 presentation today in part is based upon what we learned in
5 that October 22 meeting.

6 What are we concerned about here today and what
7 will underscore the presentation? We are very concerned
8 about uncertainty. Certainly the State of Nevada has
9 pointed that out. Your staff has pointed that out. We are
10 very concerned about uncertainties and whether those
11 uncertainties are too great to go forward. Coupled with the
12 uncertainties then are unanticipated consequences. Our
13 greatest fear is that through all of this we will license
14 and build and begin operating the project and something will
15 happen that we didn't anticipate, we will not have prepared
16 for mitigating that kind of an impact or consequence, and we
17 in Nevada will get left holding the bag.

18 We really charge ourselves and we would certainly
19 challenge you to look beyond if we can the uncertainties in
20 a quantitative assessment and really try and anticipate, you
21 know, what might otherwise have gone unnoticed. And let's
22 be creative then about how we design perhaps conditions to a
23 license and remediation to be sure that we don't get left
24 holding the bag.

25 Mischaracterization of impacts, the failure to

1 consider impacts, and the failure to identify impacts are
2 all kind of grouped together. That has a lot to do with
3 scoping and what the DOE may consider in their EIS, and
4 we'll hear from Tammy on that, and what you may then as a
5 result include within your own EIS that you adopt.

6 I talked about failure to identify and commit to
7 implementation mitigation measures. Obviously if you don't
8 identify them, you're not going to commit to them.

9 Finally, insufficient AULG input to comments on
10 key documents. We do have a concern that the NRC adequately
11 incorporate or provide for opportunities for the affected
12 units of local government to influence your decisions then
13 that you carry forward in terms of the licensing process.
14 For example, on the EIS, or even in the VA, the comments
15 that you've gotten today from staff on the VA we think would
16 have benefited greatly from input from the affected units of
17 local government, kind of that give-and-take process. And
18 although we have had a chance to have engaged the staff
19 along the way, perhaps a formal shot at providing your input
20 prior to you getting your comments would have been
21 appropriate.

22 With that, let me --

23 CHAIRMAN JACKSON: Have you raised those concerns
24 before?

25 DR. BAUGHMAN: I know we raised them in the

1 workshop in terms of when we learned a little bit about
2 process. I think this is probably from my sense with the
3 Commission this is the first time we've formally raised them
4 before the Commission.

5 CHAIRMAN JACKSON: But you're saying that you feel
6 that perhaps one needs to go over to a more formal mechanism
7 for having you provide your input.

8 DR. BAUGHMAN: Yes. If you're going to prepare a,
9 you know, a formal Commission piece, this is our Commission
10 response, in a letter, you know, obviously something you're
11 providing the Congress, obviously you're going to adopt an
12 EIS or whatever. We think that all of those formal
13 decisions, and that may be different than simply just the
14 licensing activity, but just a formal decision to submit a
15 letter of comments would benefit from our perspectives. I
16 think the State would probably feel the same way.

17 CHAIRMAN JACKSON: You're aware, I hope, that we
18 haven't formally transmitted anything to anyone.

19 DR. BAUGHMAN: I understand.

20 CHAIRMAN JACKSON: And so part of our motivation
21 in having you come is to in fact offer the opportunity for
22 you to --

23 DR. BAUGHMAN: We appreciate that.

24 CHAIRMAN JACKSON: To give us the benefit of your
25 perspectives and insights.

1 DR. BAUGHMAN: Okay. Thank you.

2 CHAIRMAN JACKSON: Okay.

3 DR. BAUGHMAN: With that I would like to turn it
4 over to Dennis, and he will provide you some of our specific
5 perspectives on the DOE viability assessment.

6 MR. BECHTEL: Thank you very much. For the record
7 again I'm Dennis Bechtel. I'm the planning coordinator for
8 the Clark County, Nevada Department of --

9 CHAIRMAN JACKSON: You own the engineering
10 company?

11 MR. BECHTEL: This is just a hobby for me.

12 [Laughter.]

13 I really appreciate the opportunity to meet with
14 you today, and I would echo Mike's comments. I think the
15 workshop that your staff put together and allowed us to
16 interact with was excellent and provided some perspectives
17 on issues that we need to concentrate on.

18 What I'd like to do initially is just kind of
19 emphasize the importance of the viability assessment
20 document to the affected governments. We are kind of the
21 context that this whole program is being undertaken. We're
22 the end of the funnel, the bottom line, and we -- it is
23 important for us to rely on regulators and others to make
24 sure that they understand that this is a -- it's a very
25 mechanical process, but it takes place in the context of

1 people and communities and economies, and that can't be
2 emphasized too much.

3 I'm going to go very roughly to the overheads.
4 What I'd like to do is kind of just kind of summarize some
5 general comments and then provide some specific issues that
6 we would like for you to consider in your review.

7 We -- Clark and others -- are in the process of
8 undertaking a more formal review of the viability
9 assessment, and we will be providing some more complete
10 comments at a later time, and would be willing to I mean
11 obviously provide the Nuclear Regulatory Commission with our
12 concerns that I hope that you will consider.

13 A key concern that the affected units of local
14 government have is that the viability assessment will be
15 misinterpreted as an affirmation of Yucca Mountain as indeed
16 a suitable site for the permanent storage of spent fuel and
17 high-level waste. The NRC in its role as regulator needs to
18 emphasize to Congress and others that the VA is indeed a
19 very preliminary step on the long road as we see it to site
20 suitability determination.

21 This is especially important this year when this
22 document may be employed to justify changes in the program,
23 and I'm referring to H.R. 45, the interim storage
24 legislation. It is incumbent upon the NRC to ensure in its
25 role as a regulator that Congress is apprised of the need

1 for considerably more data, analysis, et cetera, before the
2 suit suitability determination is actually made.

3 CHAIRMAN JACKSON: Let me ask you a question here.
4 You know, the USGS has, you know, in preparing its report on
5 the viability assessment, indicated its feeling that a
6 plain-English description accompanied by simplified
7 calculations could be of great value to the public, helping
8 increase understanding and having the DOE analyses more
9 readily comprehended by the public. Do you agree with that?

10 MR. BECHTEL: I think as in most things where
11 you're dealing with a highly technical subject I think it's
12 important that the public be able to understand the basis
13 for decisions in a way that they can understand it. And
14 coupled with that is a lot of opportunity for the public at
15 meetings to ask questions. So I would agree that I think
16 that this is true of a lot of, you know, government programs
17 I guess where we all get involved down in the weeds and
18 sometimes the public has a more general view of expectations
19 and understandings, and I think that is definitely
20 important.

21 CHAIRMAN JACKSON: Please.

22 COMMISSIONER DICUS: Let me follow up on that,
23 because we did put that same question to DOE when they were
24 here briefing us, and as I recall -- I may need some help
25 here -- but I think they said they weren't planning to do

1 that. And perhaps that needs to be revisited, because we
2 did raise it with them at the time.

3 MR. BECHTEL: Yes, I would agree that this is a
4 subject that requires many -- not just meetings. Too often
5 meetings are just kind of DOE conveying information to the
6 public and with the public comment period at the tail end,
7 but some actual, you know, workshops and interactions to be
8 able to get into, you know, detailed concerns that the
9 public would have.

10 DR. BAUGHMAN: Madam Chairman, if I just might
11 follow up, perhaps to aid both the Commission and DOE in
12 understanding perhaps how to focus this kind of an effort,
13 because the concern might be do we convert all this to
14 layman's terms, which is obviously an overwhelming endeavor.
15 We might pay particular attention to the kinds of questions
16 that the public will ask, for example, when you come to
17 Nevada in a few weeks, your staff, let's listen to the
18 concerns they have, let's convert the kinds of information
19 we have that address those questions into layman's terms, so
20 that at least they can read about, understand, the issues
21 that they are concerned about. And that maybe boils it down
22 some.

23 CHAIRMAN JACKSON: Um-hum. Do you feel that we
24 also need to take that admonition in terms of more of a
25 plain-English approach?

1 DR. BAUGHMAN: I would certainly think so, Madam
2 Chairman. If they don't understand what you're doing, they
3 have no sense that you're protecting the public health and
4 safety.

5 MR. BECHTEL: They need to have an understanding
6 of your role, too, you know, what your role is in the
7 process. It's a very important role, and I think it's
8 important for the public to understand that.

9 COMMISSIONER DICUS: If I could --

10 CHAIRMAN JACKSON: Please.

11 COMMISSIONER DICUS: Just a slightly different
12 subject that is on your slide here. I think -- rest assured
13 I think there's a pretty good understanding of what the
14 purpose of the viability assessment is and what it means.
15 And it's not an answer, it's a statement where we are right
16 now. And I think it brings out many of the uncertainties
17 and what has to be the going forward if we can come to a
18 license decision. So I think that's understood, but I
19 appreciate your bringing it out.

20 CHAIRMAN JACKSON: Please, Commissioner.

21 COMMISSIONER DIAZ: If I may go back to the
22 previous issue of the communication with the public, I think
23 you have a vital role.

24 MR. BECHTEL: Yes.

25 COMMISSIONER DIAZ: And especially, you know, to

1 have people understand --

2 MR. BECHTEL: Um-hum.

3 COMMISSIONER DIAZ: What the role, the independent
4 role of the NRC is, because we might say it, but I think,
5 you know, your role in that is very vital to the community.

6 MR. BECHTEL: Oh, yes. And we, as Mike indicated,
7 we take this responsibility of communicating as best we can
8 to the public very strongly. But I think it's, you know,
9 we're kind of a surrogate at some time, so it's important
10 for the NRC and others to convey that.

11 CHAIRMAN JACKSON: We can't ask you to do our jobs
12 for us, but we can ask for you to help us.

13 MR. BECHTEL: Other issues, my general comments,
14 recently the DOE's being required to expend considerable
15 resources to correct a number of quality-assurance problems.
16 Of course that was discussed earlier. It is important for
17 NRC to monitor these problems and thereby determine whether
18 these in fact affect any broad conclusions that are reached
19 in the viability assessment. Once again Congress should be
20 apprised of these inadequacies and the extent -- what needs
21 to be done to correct these inadequacies as well.

22 CHAIRMAN JACKSON: So let me make sure I
23 understand. You feel that we need to address the issue of
24 whether the QA concerns affect broad conclusions of the VA.

25 MR. BECHTEL: Right. Um-hum.

1 CHAIRMAN JACKSON: Okay.

2 MR. BECHTEL: The original objective of the site
3 characterization phase was to ensure that scientific
4 analyses were conducted with sufficient rigor and backed by
5 adequate data to ensure that suitability would be determined
6 for permanent storage. What has happened, however, is that
7 the time schedule has driven the process. We are therefore
8 concerned that, to provide one example, that expert
9 elicitation may be used as surrogates for greater analysis.
10 It should be ensured that conclusions reached for licensing
11 have a strong basis in scientific analysis rather than
12 dependence on analogous behavior. And I know the DOE peer
13 review committee also felt that there was quite a bit of
14 need for more data and less dependence on experts.

15 The VA and site characterization analyses have
16 been performed adjacent to a site that has undergone a
17 considerable odyssey -- considerable nuclear testing over
18 the years. In addition to the need to consider the
19 cumulative effects, the viability assessment and the site
20 characterization phase need to consider that other things
21 have happened on that site that need to be factored into a
22 total analysis.

23 There is, however, some of this is a question of
24 the adequacy of the site to contain radioactivity to the
25 accessible environment for the time periods contemplated.

1 . And evidence for example of plutonium migration a relatively
2 far distance from a testing site, presence of chlorine-36 in
3 the repository levels as examples, demonstrate the need for
4 more data analyses to determine the site suitability. NRC
5 should encourage these uncertainties to be addressed.

6 Another general comment I have is with regard to
7 the engineered barrier system as well. Analysis presented
8 in the VA indicate that geologic and hydrologic barriers do
9 not provide adequate protection by themselves. Therefore,
10 it seems as if the equation has shifted from realizing that
11 the data is going to be present for a very long period of
12 time and that the engineered barrier system seems to be
13 taking up the slack on at least for the shorter term. So I
14 guess our concern is that the original idea was to have some
15 confidence in the natural system to take care of the longer
16 time period, and they seem to be swinging more to a
17 consideration of an engineered barrier system. And I think
18 that's --

19 CHAIRMAN JACKSON: Do you feel that represents a
20 lack of confidence in the natural system or a conscious
21 decision to take less or no credit or less credit for
22 geologic barriers to simplify the license?

23 MR. BECHTEL: Well, there is a component, I mean,
24 the waste canister does have a place in the total system.
25 But I think it seems to be where the inadequacies are with

1 regard to an understanding of the saturated hydrologic
2 system, and I think our concern is that because it would
3 take more time to develop data to better understand that,
4 that the engineered barrier system seems to have taken on a
5 stronger component because we do have some body of
6 experience on the deterioration of metals. And so I think
7 our concern is that that is kind of replacing the original
8 objective of the permanent repository. I think that the
9 State addressed that as well.

10 With regard to more specific comments on the VA, I
11 just have several. The use of conservatism in the
12 assumptions in the VA appears to be uneven. Some
13 assumptions are highly conservative. As an example, no
14 dilution occurs during pumping. Others are nonconservative,
15 amount of dilution, for example, in the unsaturated zone.
16 And some are controversial, the amount of credit to be taken
17 for cladding as a barrier. The effect of the individual
18 assumptions and the differing degrees of conservatism on
19 TSPA from the point of the VA results cannot readily be
20 assessed but could be considerable.

21 The data bases for many of the models that make up
22 the overall performance assessment methodology is limited,
23 in some cases highly limited. Some of these data
24 deficiencies might be critical to the veracity of assessment
25 results. For example, the corrosion rates for a

1 corrosion-resistant waste package material. Others might be
2 less important, overall dilution of the saturated zone.
3 Research and analysis in all areas of significant data
4 deficiency will be necessary to determine which are
5 important and which are not.

6 Some of the analyses appear to be off-target with
7 respect to which data and modeling conditions are important.
8 For example, the loads of local chemical and physical
9 conditions that can exist and produce aggressive localized
10 corrosion processes such as crevice corrosion is more
11 important than general corrosion rates, the overall
12 conditions in the repository. It is apparent from all
13 analyses that the identification and characterization of
14 failure and degradation phenomena that attack unique points
15 of system vulnerability are most important. The vernacular
16 of the tale controls the action. Further DOE action to
17 identify and characterize these areas of unique
18 vulnerability is needed.

19 Then finally, the overall uncertainty in the
20 TSPA-VA results for expected performance at 10,000 years
21 spans four or five orders of magnitude. This uncertainty
22 range stems from inherent variability of performance
23 parameters such as permeability, lack of data which can
24 narrow and focus assumed ranges of parameter values. There
25 are hundreds of parameters involved in the complexity of the

1 system. It is unlikely this uncertainty band could be
2 significantly narrowed by actions such as acquisition of
3 additional data and refinement and validation of models.
4 The benefit of such activities, however, will be to validate
5 the results of TSPA analyses that are brought to the
6 licensing process. And I mention it's unlikely in the short
7 time period data collection that these are going to be
8 corrected.

9 CHAIRMAN JACKSON: What other suggests would you
10 offer, or do you basically believe this is unattainable?

11 MR. BECHTEL: Well, I don't think it's
12 necessarily -- I think the uncertainty range has to be
13 reduced by less of a compliance on the schedule, and I think
14 if this is -- this is truly a scientific undertaking.
15 There's a lot about the system we don't know. There's a lot
16 about doing this we don't know. And I think it's important
17 that science be able to be performed to determine whether in
18 fact this site will contain waste for a long period of time.
19 And I think under the current schedule I don't think we're
20 going to be able to get at that. I think it's just
21 impossible. And it's going to cost money, and that's
22 another question, I guess. But I think that's the only way
23 that we're going to be able to reduce the uncertainty.

24 DR. BAUGHMAN: Madam Chairman, if I might just
25 add, this may be an area where the perception of your staff

1 getting too close to the DOE staff and the perception that
2 perhaps you in a sense are helping to write the application,
3 or might be doing work that finds its way in the application
4 becomes an issue, and it's kind of a double-edged sword.
5 Clearly if your staff are able to provide DOE guidance on
6 those areas which will yield the greatest benefit in terms
7 of reducing uncertainty in producing a license application
8 which then might help you as Commissioners approve or not
9 approve a facility, but basically to protect public health
10 and safety, then it seems to me to be to our advantage to
11 have you folks interacting in that regard, particularly if
12 it helps to focus the work in such a way that we don't spend
13 money on wasted endeavors, which we have spent a whole of a
14 lot of money on wasted endeavors.

15 I think there's been a lot of work done that's
16 been, you know, pretty much wasted. And obviously as they
17 move into the home stretch, if the key issues are going to
18 be addressed, there's going to have to be some coalescing
19 around what those are, and unfortunately that takes on the
20 appearance of some form of collusion.

21 CHAIRMAN JACKSON: Okay.

22 COMMISSIONER McGAFFIGAN: Madam Chairman.

23 I appreciate your willingness to try to condense,
24 but one of the slides you slipped over was number 22. You
25 also seem, if I'm reading it right, to be joining the

1 consensus from this independent advisory board, et cetera,
2 that reads: Increasing acceptance that a cooler repository
3 would avoid many of the difficulties and uncertainties in
4 modeling resulting from a hot repository.

5 Do I interpret that phrase to mean that you guys
6 are endorsing a hard look at a cool repository?

7 MR. BECHTEL: Might I add that there was supposed
8 to be one other person with me on this. But we are not -- I
9 don't think this is -- reading it now, I can see where you
10 might get that impression. But we are not promoting one
11 type of repository design over another.

12 CHAIRMAN JACKSON: I see.

13 MR. BECHTEL: So we'll just leave it at that.

14 CHAIRMAN JACKSON: Okay.

15 MR. BECHTEL: And I think, just to kind of
16 summarize, once again the viability assessment is very
17 important. The public and Congress, which also has an
18 imperfect understanding I think of the technical
19 difficulties of trying to characterize a site, need to
20 understand that a lot more work needs to be done, and not
21 having the work done properly is I think a bit of a
22 disservice to the citizens of Nevada and California that
23 might have to live with this, the results of these analyses.

24 CHAIRMAN JACKSON: Okay. Thank you.

25 Ms. Manzini, are you next up?

1 MS. MANZINI: Yes.

2 I'm Tammy Manzini, and I am the program
3 coordinator Lander County, one of your more rural affected
4 units of local government, and I'm here today to speak about
5 NEPA regulations and compliances that are directly related
6 to the Yucca Mountain EIS, and as everybody else, I
7 appreciate the opportunity to be here to comment before the
8 Commission.

9 So with that, I'd better get started. And I'd
10 like to start by bringing to your attention some of the
11 language that is contained in the Nuclear Waste Policy Act
12 that reflects key NEPA regulations that we feel that the NRC
13 needs to recognize and address, and one of the sections is
14 407(a), which is on slide 27, which states: "In general.
15 Issuance of a construction authorization for a repository or
16 monitored retrievable storage facility under Section 405(b)
17 shall be considered a major Federal action significantly
18 affecting the quality of human environment for purposes of
19 the National Environmental Policy Act of 1969."

20 And section (b) states: "Preparation. A final
21 environmental impact statement shall be prepared by the
22 Secretary under such Act" and it specifies 42, "and shall
23 accompany any application to the Nuclear Regulatory
24 Commission for a construction authorization."

25 Section 407(a) and (b) imply that:

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1 Construction authorization is the major federal
2 action of the EIS being prepared by DOE.

3 The EIS is to be prepared so that it coincides
4 with the license application submitted to NRC.

5 The EIS must support the decision to issue a
6 construction authorization.

7 Because the decision to issue a construction
8 authorization lies solely with NRC, it appears that DOE is
9 preparing the NRC's EIS.

10 CHAIRMAN JACKSON: Now actually if you go back to
11 your viewgraph 28 --

12 MS. MANZINI: Um-hum.

13 CHAIRMAN JACKSON: Where you refer to the NEPA
14 requirements under the Nuclear Waste Policy Act --

15 MS. MANZINI: Um-hum.

16 CHAIRMAN JACKSON: It does explicitly say that the
17 EIS is something that the Secretary of Energy is to prepare.
18 It's not NRC.

19 MS. MANZINI: Right.

20 CHAIRMAN JACKSON: And you know that Congress
21 intended for the NRC and DOE to cooperate in the development
22 of the EIS to avoid unnecessary duplication on interrelated
23 actions. So can you elaborate a little bit more on your
24 concerns in this area?

25 MS. MANZINI: I feel that the concern is I don't

1 know whether or not the AULGs have had any interactions with
2 NRC pertaining to what their role is in the EIS preparation.
3 We have had numerous conversations and discussions with the
4 DOE on the EIS. And as such I am not myself familiar with
5 what you guys are -- between the two organizations you are
6 doing to interact with each other on the EIS as far as any
7 information to avoid duplication is concerned.

8 CHAIRMAN JACKSON: So the issue is one of
9 transparency of the interaction.

10 MS. MANZINI: Right.

11 CHAIRMAN JACKSON: Not that there is an
12 interaction at all.

13 MS. MANZINI: Well --

14 CHAIRMAN JACKSON: The law drives the process.

15 MS. MANZINI: Right.

16 CHAIRMAN JACKSON: To that interaction, because in
17 fact you talk about on your viewgraph 30 --

18 MS. MANZINI: Um-hum.

19 CHAIRMAN JACKSON: You know, then you quote from
20 section 407(c), and it states that any such environmental
21 impact statement, the one, you know, to be prepared by the
22 Secretary, shall to the extent practicable be adopted by the
23 Nuclear Regulatory Commission --

24 MS. MANZINI: Right.

25 CHAIRMAN JACKSON: In accordance with the relevant

1 Code of Federal Regulations.

2 MS. MANZINI: Um-hum.

3 CHAIRMAN JACKSON: In connection with the issuance
4 blah blah blah of a construction -- so the point is that the
5 law is directing us to the extent practicable.

6 MS. MANZINI: Exactly.

7 CHAIRMAN JACKSON: To in fact adopt the EIS that
8 the Secretary prepares. So that's what the law directs us
9 to do. So I guess the question I'm trying to get at is not
10 to argue with you about that, but rather to understand is
11 the concern the transparency of the nature of the
12 interaction that the NRC has with DOE in terms of the
13 potential adoption of DOE's --

14 DR. BAUGHMAN: Madam Chairman, maybe Tammy, if I
15 can just respond as well, you may be familiar with the
16 concept of third-party EISs, and in Nevada we have a lot of
17 mining. And in the mining industry the Bureau of Land
18 Management will be the responsible agency, the mining
19 company will put up the money, the Bureau of Land Management
20 will choose the preparer of the EIS, will oversee the
21 preparation of the EIS, the mining company is the funder.
22 And then subsequently the BLM issues the decision.

23 In your case you're like the BLM. You're going to
24 issue the final decision as to whether or not the project
25 goes or doesn't go. The difference here is DOE is in

1 essence funding the project. They're choosing the
2 contractors. They're deciding what gets included, what
3 doesn't get included. Then they're giving it to you, and
4 you under law then are expected to take it and with some
5 fairly strong language adopt it to the maximum extent
6 practical under some very tight time constraints. Our worry
7 is what influence are you able to have in terms of preparing
8 an independent -- or a document that independently meets
9 your own needs as the regulating agency versus the needs of
10 the project proponent.

11 CHAIRMAN JACKSON: Okay.

12 MR. BECHTEL: Or how you may consider our comments
13 or our concerns with the document.

14 CHAIRMAN JACKSON: Okay.

15 COMMISSIONER MCGAFFIGAN: Could I just -- and I'm
16 just trying to understand -- if DOE issues an EIS, a
17 draft -- they first have scoping, then they have a draft
18 environmental impact statement. I understand the scoping
19 has already occurred, hasn't it? And the draft
20 environmental impact statement is due later this year. Then
21 they under statute have to consider the comments that they
22 get during that comment period, and then the final EIS
23 comes -- is part of their license application, in which case
24 I suspect you guys will be further commenting on whether the
25 final EIS adopted your comments.

1 And then we to the extent practical, it doesn't
2 say maximum, to the extent practical, adopt that EIS, as we
3 do in a reactor proceeding, we're doing license renewal at
4 the moment, we don't get an EIS, but we get an environmental
5 document from Calvert Cliffs, from Baltimore Gas and
6 Electric or from Duke, and we work off of that document in
7 our public interactions so that we don't replicate the
8 wheel.

9 So I think it's partly -- it may be again one of
10 the -- it strikes me that there's going to be more than
11 ample opportunity for you to make the case in any proceeding
12 that the comments and how DOE chose to respond to them in
13 the final EIS to make that case -- you don't like how they
14 did it, you can tell us. And you can make a case that this
15 part of the EIS shouldn't be adopted and we need to do more
16 analysis or whatever. But maybe at some point we need to
17 get an understanding of how the EIS process is going to work
18 in practice, but it's not unreasonable the way the Congress
19 laid it out here. We ultimately have to make a judgment as
20 to whether the EIS is submitted. Jeff is the expert.

21 COMMISSIONER MERRIFIELD: No, no, no, I'm not. In
22 this case I was going to ask, Madam Chair, I mean, it's not
23 my understanding that we're a mere rubber stamp, and
24 maybe -- perhaps counsel can help us understand what our
25 role is in that process and provide a little clarity here.

1 MS. CYR: You may have to ask the staff, because I
2 don't know exactly what the role is, but the idea here is
3 because they're both Federal agencies, they're both subject
4 to NEPA, they both have the obligation to do a thorough
5 EIS -- they issue sort of a -- which is represented by the
6 CEQ regulations when that situation occurs where you have
7 two Federal agencies to the extent that you in a sense
8 compile the data once and rely on it, and it's useful to
9 both agencies, you can -- the CEQ provides for that.

10 So that's really what -- the process that's
11 underlying the statute was if DOE has the obligation to
12 carry that, then the NRC to the extent of the data that's
13 gathered and informs their decision can also inform our
14 decision, we can rely on that data in informing our
15 decision. But you're right, we have an independent
16 responsibility to have an EIS that supports our decision,
17 and to the extent that it's not, the data that's prepared or
18 that DOE has gathered is not adequate, we have to do a
19 supplement in a sense to what they've done in order to have
20 a sufficient process to support our decision.

21 And I can't speak to the extent to which the staff
22 has had ongoing -- you'd have to ask them to talk about it
23 in terms of the details of how they interacted with DOE so
24 far in terms of understanding what the scope of the data
25 gathered that they're doing to help inform that so that in a

1 sense it can maximize the extent you can up front gather
2 that data to inform us. But we clearly have an independent
3 responsibility once they've submitted that application to us
4 to look at that document and see where the gaps are, what
5 additional information we need to support decisions that we
6 need to make and to gather that information and document
7 that information in support of the decisions that we have to
8 make.

9 CHAIRMAN JACKSON: Does the staff have any
10 comments to illuminate this discussion?

11 Mr. Greeves has been nominated.

12 [Laughter.]

13 MR. GREEVES: The best that I think I could add at
14 this time is we are aware we have the responsibility. The
15 staff has a plan to follow the EIS process. We've gone to
16 the scoping meetings. We are in dialogue with DOE, and we
17 have people assigned to follow this issue. And I think as
18 Karen mentioned, we independently do a number of EISs, we
19 know what an EIS looks like, and I think the Act sets up a
20 goal where only one Federal agency prepares the EIS. They
21 don't want both of us doing the same thing.

22 CHAIRMAN JACKSON: But you're prepared, if it
23 comes to that, for the staff to issue a supplemental EIS.

24 MR. GREEVES: Yes. I think that's what Karen
25 identified.

1 CHAIRMAN JACKSON: Right.

2 MR. GREEVES: To the extent it was deficient, we
3 would make up the difference.

4 COMMISSIONER MCGAFFIGAN: May I ask, are we a
5 formally consulting or commenting agency on the DOE EIS?

6 MR. GREEVES: I'm going to need some help from OGC
7 on that, or actually what our characterization.

8 Mr. Bell has said in the background that we are a
9 commenting agency on the DOE EIS, which is a type of agency,
10 as you know, under the CEQ guidelines. I guess he's going
11 to --

12 CHAIRMAN JACKSON: Are you going to illuminate
13 further?

14 MR. BELL: Michael Bell, from the NRC staff.

15 CHAIRMAN JACKSON: Can you talk more directly into
16 the microphone? Thank you.

17 MR. BELL: Okay. Michael Bell from the NRC staff.
18 There is a subpart within part 51, I don't recall if it was
19 (g) or (j), that deals with how we're going to adopt DOE's
20 EIS for Yucca Mountain. It's already been determined we
21 want to be a commenting agency as opposed to a cooperating
22 agency, since there was a view that that might compromise
23 our independence. I guess my understanding of the process
24 under the Nuclear Waste Policy Act is there's a lot that
25 happens with that EIS before it ever gets to us.

1 The EIS is subject to judicial challenge before it
2 even goes to the site recommendation stage. Then it
3 accompanies the site recommendation to the President and the
4 President's recommendation to Congress and it's part of the
5 decision if the State wants to object, and the framework
6 laid out in the Nuclear Waste Policy Act has a lot of
7 consideration of that environmental impact statement before
8 it ever would get submitted to the NRC as part of a license
9 application. And I think the staff's intent really would be
10 if there were deficiencies in the EIS it's to try to get the
11 Department to supplement it rather than have NRC supplement
12 the EIS as a part of the --

13 CHAIRMAN JACKSON: Well, NRC requirements which
14 implement the CEQ regulations are codified in 10 CFR Part
15 51, and the question then becomes are you expressing
16 reservations or concerns about those NRC requirements that
17 have been codified in Part 51.

18 MS. MANZINI: Actually I wouldn't say we're
19 expressing reservations concerning that. If you look
20 further on we reference that particular section that you're
21 talking about. I think what the main concern here is that
22 the AULGs pertaining to the EIS had a question and I --
23 later on in this presentation it will be addressed also --
24 had a question as to what role the NRC was going to be
25 playing in the implementation of the EIS.

1 Until today as a matter of fact I wasn't aware
2 that you were interacting with the DOE for this. And I
3 don't know of anybody else that is either. I was assuming
4 that you got a copy of the EIS issued by the DOE like the
5 rest of us would, and at that time that you would either
6 adopt it or supplement it or amend it or whatever it takes
7 to --

8 CHAIRMAN JACKSON: Mr. Bell, would you go back to
9 the mike and explain what it means to be a commenting agency
10 as opposed to a consulting agency? I think that would
11 provide -- or a cooperating agency.

12 MR. BELL: Yes. If we were a cooperating agency,
13 it would essentially -- the EIS would essentially be a joint
14 document. NRC and DOE would prepare it together. Basically
15 the way the framework is set up in Part 51 now is DOE
16 prepares it. We will comment on it during the public
17 comment period just like the State and local governments and
18 other interested parties. Presumably, you know, staff
19 thinks our comments will carry a lot of weight because
20 eventually we do have this statutory responsibility to
21 adopt.

22 CHAIRMAN JACKSON: And if NRC -- let's cut to the
23 chase -- if NRC is not satisfied or DOE does not adopt or
24 make changes in conformance with NRC's comments, what then
25 happens and how does that affect the authorization we have

1 to give?

2 MR. BELL: At this point I'm beginning to feel
3 like a lawyer with some of these questions.

4 CHAIRMAN JACKSON: Karen, can you illuminate?

5 MS. CYR: I apologize, because I can't recall
6 exactly in terms of the statutory framework exactly when and
7 how the comments, but I think Mike is right that because
8 that accompanies that and we have a particular statutory
9 role as DOE moves through the process to provide our
10 comments that those comments will go to all of the aspects
11 of whatever they're providing as they go. So I think our
12 comments at that time are expected to comment not just on
13 whatever their site characterization report is but to the
14 extent the EIS accompanies that as well. But I will have to
15 provide you more detail on that, because I just don't have
16 the statute in front me at this time.

17 COMMISSIONER McGAFFIGAN: Madam Chairman.

18 CHAIRMAN JACKSON: Please.

19 COMMISSIONER McGAFFIGAN: You know, I guess we're
20 all learning a little bit --

21 CHAIRMAN JACKSON: Good.

22 COMMISSIONER McGAFFIGAN: From the outline of the
23 law here, because it is a little extraordinary. Could you
24 explain or maybe Karen, the judicial review provisions that
25 are already in statute that the final EIS is -- there's an

1 expedited process in it presumably whereby it can be
2 challenged and the court has to -- I mean, is there -- has
3 the law already set time lines for the courts to make
4 decisions, because they don't tend to cooperate very much in
5 making quick decisions in this country. How does the
6 current time line envision if it's challenged that all this
7 would be together in time for a license application or a
8 site-suitability determination in 2001, 2002? Do we know?

9 MS. CYR: I can't answer that for you; no. I
10 mean --

11 COMMISSIONER DIAZ: Well, obviously the staff is
12 going to have to define this.

13 CHAIRMAN JACKSON: Well, I think I'll make one
14 direct suggestion. I think (a) we need clarification, and
15 you can come back to the Commission. But as you provide
16 that clarification to the Commission, this is (b), you need
17 to provide that clarification to these folks.

18 DR. BAUGHMAN: And, Madam Chairman, if I just
19 might, when you talked about the role of NRC and its legal
20 staff, you indicated that you will be providing comments to
21 the DOE on the sufficiency of that document and, you know,
22 whether you think it meets your needs and what not. That's
23 a very important point where we would like to be able to
24 provide you with input, because your comments will probably
25 carry more weight and get more attention by the Department

1 of Energy than anybody else's, because it has to ultimately
2 be your document as well.

3 And I have to note that in the workshop that we
4 have with the NRC staff as I recall they were rather unclear
5 as to whether or not the NRC would seek any input in helping
6 to shape their comments, you know, public input to help
7 shape your comments that you might then give to the DOE in
8 response to the draft EIS, and we would very much appreciate
9 the opportunity to do that.

10 CHAIRMAN JACKSON: Karen, you had --

11 MS. CYR: Well, 51.109 provides for how the EIS
12 would be used in our proceedings, and it provides at the
13 time we issue notice of hearing, that's after we have the
14 application, that at that time we will state our position
15 about whether or not it needs to be supplemented and there
16 will be an opportunity for people to file comments on that.
17 And if we file then a supplemental EIS there will be
18 opportunity for comment.

19 We will provide all of our -- we will go through
20 in a sense an EIS process at that time. So there's a --
21 51.109 provides in the context of the licensing process how
22 a structured process by which the Commission will go about
23 adopting or supplementing the EIS that has been prepared by
24 the Department of Energy.

25 Now with respect to the earlier part in terms of

1 the DOE getting to that site -- going through the site --
2 and getting to the application stage, I'd have to get back
3 to you with some more detail.

4 COMMISSIONER McGAFFIGAN: It strikes me that the
5 question that was just asked though is the question there
6 will be -- under statute and CEQ guidelines there will be a
7 comment period of some length on this document when it is --
8 the draft EIS.

9 MS. CYR: We would comment to DOE.

10 COMMISSIONER McGAFFIGAN: And we would comment to
11 DOE, and I think the question is whether -- and typically
12 comments get sent, as yours do, the last day that they're
13 due, I suspect. And so therefore, you know, you'll be
14 working on your comments right up to the last day and we'll
15 be working on ours and there will be two parallel tracks,
16 and I think your question if I'm translating it for you is
17 is there a way to build in a period where your comments
18 would be completed and we could look at them before
19 submitting our comments just to take those into account
20 given the weight that our comments according to Mr. Bell may
21 be given by DOE. And that again would be unusual, but it's
22 maybe something to think about.

23 CHAIRMAN JACKSON: Okay. Why don't we in fact
24 then ask Karen to research that issue relative to --

25 MS. CYR: I don't think we currently have

1 any positions on how we would go about providing our
2 comments back, but I think --

3 CHAIRMAN JACKSON: But the question of whether
4 there's anything that would preclude --

5 MS. CYR: Us from taking other people's --

6 CHAIRMAN JACKSON: From taking other people's
7 views into account as we prepare our comments.

8 MS. CYR: Nothing occurs to me, but we'll look
9 into that.

10 CHAIRMAN JACKSON: Right. And then we can pass
11 that along.

12 MR. BELL: Madam Chairman.

13 CHAIRMAN JACKSON: Yes.

14 MR. BELL: One of the issues that came up in the
15 discussions back last October was the intent of the NRC
16 adoption was not to give the commentors a second bite at the
17 apple. There is a process in the law for judicial review of
18 the EIS, and if that judicial review was carried out --

19 CHAIRMAN JACKSON: Now you're talking like a
20 lawyer.

21 [Laughter.]

22 But you said you weren't.

23 MR. BELL: Well, if that judicial review is
24 carried out and, you know, some party is unsatisfied with
25 the outcome, the intent was not then that they could come

1 again and raise the same comments to NRC.

2 CHAIRMAN JACKSON: Well, let's -- I think what we
3 need is clarity of, you know, laying out of how the process
4 really works.

5 MS. CYR: We'll provide you an outline of
6 exactly --

7 CHAIRMAN JACKSON: Right. And then we can also
8 share that, I think, with them.

9 COMMISSIONER MCGAFFIGAN: Just one last -- every
10 time Mr. Bell opens his mouth -- but if they don't exercise
11 their right to seek judicial review do they still have the
12 right to challenge in our process?

13 MR. BELL: That's --

14 CHAIRMAN JACKSON: We don't need to do this now
15 any longer in an ad hoc way. I think we need to get the
16 answer. And we'll just ask Karen and the staff to come back
17 to us with that information, and then we will also share it
18 with the local governments.

19 COMMISSIONER DICUS: I think we should thank them
20 for bringing us such a sticky wicket.

21 [Laughter.]

22 CHAIRMAN JACKSON: I do thank you, because, you
23 know, it's clear the kinds of issues. But I now ask you to
24 kind of if we can move along apace here --

25 MS. MANZINI: Move along. I can do that.

1 Okay. Go to slide number 30, pertaining to the
2 section 407(c)(1) States. Any such environmental impact
3 statement shall to the extent practical be adopted by the
4 Nuclear Regulatory Commission in accordance with Section
5 1506.3 of Title 40, Code of Federal Regulations, in
6 connection with the issuance by the Nuclear Regulatory
7 Commission of a construction authorization and license for
8 such a repository or monitored retrievable storage facility.

9 CHAIRMAN JACKSON: If I may, I hate to do this to
10 you, but I actually believe that the discussion we've just
11 had takes us along to about slide, you know, 34.

12 MS. MANZINI: Okay. Okay. NEPA compliance -- why
13 is this relevant to the NRC?

14 Will the Yucca Mountain EIS be adequate to support
15 a decision to issue a construction authorization given the
16 current uncertainties about the repository's performance and
17 design? Such uncertainties include for example:

18 Issuance of new repository siting guidelines.

19 Final repository design which is key to the
20 proposed action.

21 Completion of postclosure and preclosure safety
22 case.

23 Issues include, among others:

24 Site specific transportation impact analysis along
25 corridors in and around the Yucca Mountain site.

1 A thorough cumulative analysis which takes into
2 account past, present, and reasonable foreseeable impacts
3 from radiological exposure associated with NTS operations.

4 A worst case scenario involving credible but
5 unlikely events which lead to a substantial breach of waste
6 packages and release of radioactive materials.

7 And these are just some of the issues. I'm quite
8 sure there will likely be a lot more. And as you know --

9 CHAIRMAN JACKSON: Does your county itself conduct
10 worst case analyses as part of the environmental review
11 prior to approving new construction or similar decisions?

12 MS. MANZINI: Our county -- what we do normally on
13 our oversight issues in our county, like I say, we're
14 relatively small. Our funding is not, you know, to the
15 extent where we can do these type of studies. However, what
16 we do do is we focus on issues that would pertain mainly to
17 our county such as transportation, emergency response
18 issues, due to the fact that we have had high-level nuclear
19 waste shipments through our county through another DOE
20 program which was the foreign reactor shipments. So what we
21 do is we focus on issues that pertain mainly to us,
22 socioeconomic issues.

23 CHAIRMAN JACKSON: No, I understand, but I'm
24 asking in doing that do you include in that consideration of
25 worst case scenarios --

1 MS. MANZINI: Um-hum. Yes, we do.

2 CHAIRMAN JACKSON: Okay.

3 And also on any of these issues, as you are aware,
4 the NRC has the authority to require that these be included
5 in the EIS.

6 Continuing on, on 36, the extent to which these
7 and other issues of concern are addressed will be better
8 understood with the release of the draft EIS this summer.

9 To wrap up -- conclusions -- there is a need to
10 better understand NRC's rule with respect to NEPA --

11 CHAIRMAN JACKSON: That's clear.

12 MS. MANZINI: -- compliance.

13 [Laughter.]

14 MS. MANZINI: I had to bring that up, right? With
15 respect to the DOE EIS for the Yucca Mountain Project NRC
16 clearly has the authority and obligation to provide guidance
17 for its preparation. Such guidance needs to consider
18 incorporation of site-specific impacts along transportation
19 routes near Yucca Mountain and technical data and analysis
20 which influences overall system performance and final
21 repository design.

22 NRC should provide opportunities for the AULGs to
23 discuss relevant issues which need to be addressed in an EIS
24 which is adopted by the NRC.

25 CHAIRMAN JACKSON: Thank you.

1 MS. MANZINI: Thank you.

2 MR. JERVES: I am John Jerves and I am
3 representing Inyo County, California, and I am standing in
4 for Brad Mettam, who was unable to attend. Normally I would
5 say that I do not deal with the technical issues but rather
6 more with the policy issues of this program, but I will do
7 my best to respond to any questions and if I can't I will
8 refer to my colleagues as well here at the table.

9 My colleague on the right, Mike Baughman's
10 reference to Inyo County, Nevada is perhaps reflective of
11 the tendency to forget that Yucca Mountain is indeed a
12 regional issue -- the Department of Energy and the United
13 States Congress also tend to fail to see the importance of
14 California's role in this issue and we hope very much that
15 NRC will not also make this assumption about it being an
16 exclusively Nevada issue.

17 In Inyo County we are concerned primarily with
18 groundwater issues and especially the linkages between the
19 aquifer under Yucca Mountain and the water supplies that
20 reach the surface in Death Valley, which is one of the key
21 economic foundations of a primarily desert county.

22 With that introduction I would like to refer to
23 the slides.

24 The AULGs do not oppose a performance-based
25 standard. We do feel a dose-based standard that requires

1 hypothesizing on the lifestyles and habits of some future
2 critical group introduces too many areas of conjecture and
3 contention.

4 The exclusive use of total system performance
5 assessment to determine repository performance does not
6 provide for defense-in-depth. It also requires the use of
7 stacked and abstracted models in an analysis of system
8 performance that is not easily comprehensible by the public,
9 and may I emphasize that comprehensibility to the public is
10 an important factor in acceptability.

11 CHAIRMAN JACKSON: Let me go back to this.
12 Explain to me the sense in which you mean that the quote/
13 unquote "exclusive use" of the TSPA does not provide for
14 defense-in-depth.

15 MR. JERVES: Well, I was just going to say that we
16 are referring specifically to a belief that we have that
17 there should be a groundwater travel time standard that
18 should be maintained as part of the requirements for
19 repository performance. That is much easier for the public
20 to understand -- if you have a specific standard that refers
21 to groundwater protection than it is for the public to
22 understand a total system performance approach.

23 CHAIRMAN JACKSON: Okay. Why don't you move on.

24 MR. JERVES: The decision by the NRC to release
25 proposed standards prior to the release of standards by the

1 EPA, while this is intended to provide DOE with a standard
2 to use as a goal, creates confusion in our view as to what
3 the eventual standards may be and also who controls the
4 different portions of the regulatory environment.

5 CHAIRMAN JACKSON: Do you recognize that the NRC
6 is required to adopt standards issued by EPA?

7 MR. JERVES: Yes, I do.

8 CHAIRMAN JACKSON: And intends to modify the
9 proposed Part 63 as necessary?

10 MR. JERVES: I understand. It's the signal that
11 it gives I think that is more our concern.

12 I might insert at this point a question to the
13 NRC, because I understand that there are ongoing
14 negotiations between the NRC and EPA and DOE in this regard,
15 and we of course are wondering as to when we might expect to
16 see a standard released that would guide the future
17 activities of the Department of Energy.

18 CHAIRMAN JACKSON: I think those negotiations are
19 basically DOE's and EPA's administrations -- OMBs.

20 MR. JERVES: I see. I would like to make some
21 comments on transportation.

22 The 10 AULGs collectively represent the end of the
23 funnel, as one of my colleagues as said for transportation
24 to Yucca Mountain. We feel that the DOE budget for
25 transportation planning has been -- well, we have noted that

1 the DOE budget has been substantially reduced and now
2 additional low level waste transportation to the nuclear
3 Nevada test site including potential intermodal shipments
4 increases the importance of this transportation planning.

5 Low level waste transportation routes will likely
6 set a precedent for high level waste shipments, particularly
7 in an effort to avoid the metropolitan Las Vegas area and
8 this will imply using longer routes in rural areas on
9 non-interstate roads, and it will relocate transportation
10 routes to areas where there is less well-established
11 emergency response capability.

12 We do believe that radioactive materials can be
13 transported safely providing that transportation planning
14 and preparation is done in a timely manner and done
15 cooperatively with the local governments and provided also
16 that sufficient resources are available to prepare local
17 jurisdictions for routine transportation and potential
18 impacts.

19 Finally, I would say that we support the licensing
20 support system and the continued maintenance of an LSS
21 administered by the NRC.

22 CHAIRMAN JACKSON: Thank you.

23 MR. JERVES: Thank you, Madam Chairman.

24 DR. BAUGHMAN: Madam Chairman, if I might just
25 conclude with some closing conclusions and recommendations,

1 and this is beginning on page 48, just a couple pages.

2 I think the first bullet we have addressed.
3 Obviously we are looking for increasing opportunities and
4 continued opportunities to interact with your key points.

5 The second bullet, NRC should encourage DOE to
6 increase its emphasis upon early identification and
7 resolution of transportation issues. I think everyone has
8 been downplaying the issue of transportation. It's kind of
9 "build it and they will come." I can assure you that that
10 is a wrong assumption and Commissioner McGaffigan referred
11 to the schedule and litigation and what is going to hold
12 this thing up. This is the sleeping gun -- so to speak --

13 I mean -- or the smoking gun I should say.

14 If we don't address this issue it is --

15 CHAIRMAN JACKSON: The sleeping gun.

16 DR. BAUGHMAN: -- is sleeping.

17 [Laughter.]

18 DR. BAUGHMAN: Transportation is under wraps and
19 nobody seems to be addressing it.

20 CHAIRMAN JACKSON: I asked a question, as you may
21 recall, in the earlier panel did people have a concern about
22 preclosure and about transportation.

23 DR. BAUGHMAN: Yes. Thank you.

24 The third bullet -- NRC should require DOE to
25 reduce uncertainties within the draft Yucca Mountain

1 Environmental Impact Statement. That may seem premature to
2 you right now. There is a direct linkage between the
3 analysis contained within the EIS and the analyses within
4 the VA so we have uncertainties in the VA. We have
5 uncertainties in the EIS -- the very EIS that you are
6 expected to perhaps adopt to the extent practical, and we
7 would encourage you to move that along.

8 NRC should encourage DOE to provide comprehensive
9 inclusions of measures to mitigate impacts within the DEIS.
10 This is an important point. In the workshop with the Staff,
11 it became apparent to us and our understanding was that when
12 this final EIS is litigated on the DOE side, it is
13 litigated -- the Court will decide what then needs to be
14 addressed to kind of bring the NEPA process to closure and
15 presumably the DOE will prepare the supplement to do that.

16 That EIS will identify, is required to identify
17 measures to mitigate impacts and DOE will then prepare a
18 mitigation plan or something like that.

19 Our concern is when you then prepare a license or
20 a construction authorization and subsequently a license
21 which you can condition -- you can condition that license --
22 is we would like to see important issues of mitigation and
23 things that we think need to be mitigated included as
24 conditions to that license. If they are not addressed in
25 the EIS, the DOE EIS, they will not come to you. If you do

1 not include them or ensure that they are a part of your EIS
2 that you subsequently adopt, it may be a very hard case to
3 make then to get them into a condition of a license and in
4 fact Staff suggested to us that it was their sense that if
5 it wasn't included in the EIS or identified by DOE and
6 subsequently in your own EIS, the chances of its making its
7 way into a condition in a license were probably slim to
8 none.

9 So we would encourage you to remain very
10 open-minded about identifying mitigation measures and we
11 would like to see those woven subsequently into the license
12 as conditions. That is our guarantee that that mitigation
13 will be implemented.

14 CHAIRMAN JACKSON: It strikes me that that comment
15 again plays back into all of us having clarity of
16 understanding.

17 DR. BAUGHMAN: Yes.

18 CHAIRMAN JACKSON: Of the NEPA process, of the
19 EIS, how you make input, et cetera, where along the way, et
20 cetera.

21 DR. BAUGHMAN: Finally, I would just point out
22 that, and it is not here but certainly the counties in the
23 state of Nevada have all encouraged DOE to extend their
24 planned review period for the EIS. They are currently
25 envisioning 90 days. Certainly you are going to have to

1 respond. You might want to consider advising the DOE that
2 you think 90 days is too short as well. We are asking for
3 six months -- 180 days.

4 Thank you, Madam Chairman.

5 CHAIRMAN JACKSON: Thank you very much. Let me
6 just make sure my colleagues have no additional questions.
7 Commissioner Dicus?

8 COMMISSIONER DICUS: It is not a question but kind
9 of a comment. It is on the transportation issue and we do
10 hear you. The Chairman indicated she has asked the
11 question. We have asked the question. DOE and others -- I
12 recall one of the briefings asking something about they were
13 going to do a report on the transportation. I didn't get
14 all that good an answer, but it is on the drawing board.
15 clearly it doesn't get the attention perhaps because of the
16 other technical issues that are going on, but we understand
17 its importance.

18 It is my understanding, and I was involved before
19 I came to the Commission in Southern States Energy Board's
20 Transportation Subcommittee, that there is going to be a
21 pretty strong outreach program. Certainly the state can do
22 some route designations into local governments, and so I am
23 looking at your Slide 46 and do you have reason to believe
24 that is not going to happen or you are wanting to emphasize
25 its importance -- because in Slide 46 you indicate that it

1 can be transported safely so long as there is transportation
2 planning and preparation and sufficient resources.

3 DR. BAUGHMAN: Well, we have been advised -- I
4 don't know, we have been advised by our own DOE folks in
5 Nevada for example to not look to Section 180(C) for example
6 in the Act which addresses this as our likely source of
7 funding to get the job done because DOE I think is concerned
8 that there won't be that much money to be spread over the
9 nation to address this issue, and we ought to be thinking
10 about our unique avenues as affected counties and states and
11 through the NEPA process perhaps to gain other forms of
12 funding to get the job done, which is a clear signal to me
13 that DOE views themselves as they are going to be
14 constrained in trying to meet the needs across the nation.

15 MR. JERVES: I would emphasize the reference to
16 doing it in a timely manner. Going back to 1989, when the
17 first effort was made by the Department of Energy to open
18 the WPPSS site, the preparations that were made by that time
19 for emergency response along the routes to the WPPSS was
20 woefully inadequate and certainly we would not want to see a
21 repetition of that when it comes time to ship to this
22 facility.

23 CHAIRMAN JACKSON: Commissioner Diaz.

24 COMMISSIONER DIAZ: Just a quick comment and
25 response --

1 CHAIRMAN JACKSON: Please.

2 COMMISSIONER DIAZ: -- to some of your concerns in
3 the state government.

4 I think people keep looking at defense-in-depth
5 and I think it might be worthwhile for the staff and the
6 Commission to consider how do we address the issue of
7 defense-in-depth at the repository in very common terms, so
8 that we can dialogue or discuss it, and that seems to be an
9 underlying issue that maybe we need to get back from the
10 staff how we deal with that.

11 CHAIRMAN JACKSON: That is a good idea, to discuss
12 defense-in-depth within the repository.

13 Commissioner McGaffigan.

14 COMMISSIONER MCGAFFIGAN: No questions.

15 CHAIRMAN JACKSON: Commissioner Merrifield.

16 COMMISSIONER MERRIFIELD: No questions.

17 CHAIRMAN JACKSON: Well, thank you very much.

18 I'll excuse this panel. We have one more.

19 I would like to call forward Mr. Calvin Meyers,
20 representing the Moapa band of Paiutes -- did I pronounce it
21 the right way?

22 MR. MEYERS: Yes.

23 CHAIRMAN JACKSON: And Mr. Ross Morres, who is the
24 liaison for the Western Shoshone National Council.

25 Mr. Meyers, why don't you begin? Good afternoon.

1 MR. MEYERS: Good afternoon, ladies and gentlemen.

2 Thank you for having me here and the one thing
3 that I would like to really bring to everybody's attention
4 in this room is that the only way I am able to get here is
5 because I was -- I got an invitation to travel to the
6 tribes. I used to do this because we got funding through
7 the state. The state didn't refund us anymore because their
8 funds got cut back, but we have more at stake than anybody
9 in this room and the reason why I say that is because the
10 land that we live on is the land where we came from. It is
11 important to us.

12 It is important to us because we have a feeling we
13 have no place to go. If our land is ruined, we will have to
14 die along with it.

15 I used to be on the steering committee for the
16 county, which was good. At least I got some of my views
17 across to the county people about how we view the land, what
18 we think about this project.

19 The biggest thing we think about the project is
20 that like this meeting we are at the end and to most tribal
21 people, it's like we are just the speed bump in your highway
22 to get the thing to Yucca Mountain.

23 I have this -- it is called a Rapid Cultural
24 Assessment. It is for the intermodal transportation to low
25 level waste in the Nevada test site. This book here we had

1 done within 10 days at very little cost but the only reason
2 why we had a chance to do it is because the Nevada test site
3 people had allowed us to. They had funded us to do this
4 study.

5 The Yucca Mountain Project -- I have not received
6 anything from them for about four or five years. The Yucca
7 Mountain Project believes that we are just a nuisance to
8 them -- and we are, because they are putting right in the
9 middle of where we used to live at. We used to roam that
10 country where the Yucca Mountain Project will be at.

11 Another thing that I have always talked about was
12 the transportation of nuclear waste. It is not going to
13 magically get there. It has to go on the road or rail and
14 those roads and rails go right through my reservation, and
15 we are not advised of anything.

16 The United States, of which you are part of and
17 which DOE is a part of, have a fiduciary responsibility to
18 the tribes which they are not living up to as of this day.

19 I feel strong that they do not take, the Yucca
20 Mountain Project people do not take what we say seriously
21 and like I said we are just like flies on the wall. We are
22 pests -- and we are not.

23 We have as much right as anybody else, which you
24 people call public -- we are not public. We are higher than
25 public because the Government put us that way. You have the

1 fiduciary right, responsibility to the tribes. You don't
2 have it to the state or the county or the cities, but they
3 get more listening to than we do. We don't even get funded.
4 We don't have -- we don't actually have enough people to do
5 a real lot of studies. The only studies that we do is
6 looking at what comes down the road and what we can actually
7 find out, and most of the things that I find out are from
8 other people. It's not actually DOE.

9 DOE does not come to the tribe and does not inform
10 us of what is going on, and when they send like the EIS, the
11 draft EIS that they did before, they expect us to comment on
12 these technical things that they want to do, yet they don't
13 want to give us the funding to find out what they are really
14 talking about, so you can't in my mind make a decision if
15 you are uninformed on what the project is.

16 I have lived on the reservation almost all my
17 life. It is not a place that you people would know. The
18 reservation is not just like living in Washington, growing
19 up in Washington, D.C. It is a matter of pride of who you
20 are, where you come from and where you are going.

21 We cannot -- one reason we cannot leave our land
22 is that that land is part of us. The land that you people
23 want to, are thinking about polluting is part of us. The
24 land itself is part of us -- the animals themselves are part
25 of us. The air and the plants are part of us -- and we

1 can't separate that and I am telling you this because I want
2 you to know the way that we think.

3 It is not that we want to be a nuisance. It is
4 that we have to be heard too. We have to be told what is
5 going on, what is going to affect our lives, because as I
6 said we cannot live anywhere else, because when we move
7 somewhere else, part of us still stays at home and it is
8 that part that when a lot of the older people it is because
9 they want to come back to where they have grown up and that
10 is where they expect to live their last of their lives.

11 One of my biggest problems is that having nobody
12 and no staff to read a lot of these -- like this
13 assessment -- I don't even know what it looks like, but yet
14 we are supposed to know, we are supposed to be able to
15 comment and we should be able to. It's not that we can't.
16 It's just that we just don't have -- we don't have funding,
17 we don't have the people to do it.

18 The people that are doing the projects do not let
19 us know what is going down, what is coming up, so that is
20 one of our -- I guess what our biggest problem is is lack of
21 participation from their side

22 MR. MORRES: Madam Chairman --

23 CHAIRMAN JACKSON: Please.

24 MR. MORRES: When Secretary Richardson came to
25 Nevada recently, were you invited to be part of the group

1 that --

2 MR. MEYERS: No. But that is essentially what I
3 wanted to say. Thank you.

4 CHAIRMAN JACKSON: Thank you very much. Mr.
5 Morres.

6 MR. MORRES: Yes, good afternoon.

7 CHAIRMAN JACKSON: Good afternoon.

8 MR. MORRES: Pretty nice tepee you folks have
9 here.

10 [Laughter.]

11 MR. MORRES: You know, I would like to give you a
12 little of my background first. I spell my name Ross Morres
13 with an "e" -- you know, like Morris the Cat, only with an
14 "e" --

15 CHAIRMAN JACKSON: Right. That is my husband's
16 name too.

17 MR. MORRES: Oh, great. I am a descendant of the
18 Wocca River Paiute tribe of Nevada, and I kind of echo the
19 sentiments that my colleague Calvin has just expressed.

20 I am not college degreed either, but I have
21 considerable hours of post-graduate work in Business
22 Administration. I am a World War II Veteran, having
23 commenced my military career in the United States Navy in
24 1942 and concluded my Service as a purchasing and
25 contracting officer with the Nevada Air National Guard some

1 36 years and eight months later.

2 Upon return to my home of birth in Carson City,
3 Nevada in 1946, I subsequently served as the Executive
4 Director of the Nevada Indian Commission on the staff of the
5 Honorable Paul Laxalt, Governor of the State of Nevada.

6 I then served on the staff of the Honorable
7 Michael O'Callahan, the succeeding Governor of the State of
8 Nevada. I was assigned by Governor O'Callahan as the
9 Director of the Civil Rights Office of the Nevada State
10 Highway Department, predicated upon my knowledge and
11 experience gleaned from administering Federal construction
12 contracts with the Air National Guard.

13 Based upon this background I accepted a position
14 at the Civil Rights Office of the Department of Defense here
15 in Washington. Since there were and currently are many
16 issues that are and should be addressed by the United States
17 Congress, I felt that this was a great opportunity to lobby
18 for the indigenous people of the State of Nevada.

19 Because of my relationship with Chief Raymond D.
20 Yowell of the Western Shoshone National Council,
21 representing the Western Shoshone Nation, I agreed to
22 function as a liaison here in Washington, D.C. to the U.S.
23 Congress and Federal Departments on matters which affect the
24 Western Shoshone Nation's indigenous people and specifically
25 the original indigenous native lands pursuant to the Treaty

1 of Ruby Valley between the United States Government and the
2 Western Shoshone Nation as ratified in 1863.

3 Having said all that, it gives great pleasure to
4 be here today to express the concerns of the Western
5 Shoshone National Council, considering the Western Shoshone
6 Nation is not Federally recognized as an Indian tribe.
7 Unfortunately I was not asked to represent the Western
8 Shoshone National Council until last Wednesday and thus I am
9 kind of ill-prepared, so I will address the Western Shoshone
10 National Council concern that is a big issue with the
11 Western Shoshone Nation, of which I have some knowledge, but
12 first, Chief Yowell extends his apology that he could not be
13 here today because of this is the calving season out there
14 and he has already lost a couple of calves.

15 Secondly, someone from the Western Shoshone
16 National Council is more knowledgeable about the issues
17 before the Commission here was unable to come.

18 Third, I offer my apology that a more astute
19 representative could not be here and that is why I am here.

20 Fourth, I ask your indulgence in listening to what
21 I have to say and not just to hearing some phantom
22 exhortation. The primary and primary issue of the Western
23 Shoshone National Council and representing the Western
24 Shoshone Nation is the fundamental right of ownership of the
25 land vested by the Creator such as God directed Moses to

1 bring his people to the land flowing with milk and honey.

2 A treaty between the Western Shoshone Nation and
3 the United States Government was consummated and ratified by
4 the U.S. Congress in 1863. This treaty between two nations
5 is known as the Treaty of Ruby Valley, and Article VI of the
6 United States Constitution states in part, quote, "This
7 Constitution and the laws of the United States which shall
8 be made and pursuant thereof and all" -- and parenthetically
9 what does "all" mean? -- well, the American College
10 Dictionary defines "all" as "the whole of with reference to
11 quantity" -- and continuing on, closing my parenthetical,
12 "all other treaties made including the Treaty of Ruby Valley
13 or which shall be made on the authority of the United States
14 shall be the supreme law of the land and the judges in every
15 state shall be bound thereby and anything in the
16 Constitution or laws of any state to the contrary
17 notwithstanding."

18 However, the United States Government and the
19 United States Congress failed to recognize this supreme law
20 of the land and their responsibility to the Western Shoshone
21 Nation.

22 The President directed that all Federal
23 Departments coalesce with American Indian tribes on a
24 government-to-government basis to seek solutions on issues
25 of concern. I believe the Nuclear Waste Policy Act

1 stipulates that the appropriate Federal Department and
2 Agency consult with the various American Indian tribes.

3 Therein lies the delusion or perhaps better said
4 as a deception. Somehow an Indian tribe to have standing as
5 a player in a government-to-government negotiation must be a
6 Federally-recognized tribe. The Western Shoshone National
7 Council posed the question why does an Indian nation
8 exercising and governing as a sovereign nation pursuant to a
9 bonafide treaty have to be Federally recognized to do
10 business with the Federal Government?

11 Time permitting, there is an answer. Mr. Lake
12 Barrett, Acting Director of the Office of Civilian
13 Radioactive Waste, provided a briefing as recorded in the
14 unofficial transcript of a meeting to this Commission on
15 February the 8th of 1999 here in Rockville, and perusing Mr.
16 Barrett's recorded briefings, I don't recall nor had I read
17 any question posed by a Commission member wherein the land
18 title was discussed.

19 With respect to the Western Shoshone National
20 Council, the United States Government presumes that the 29
21 million acres of Indian treaty land has been acquired by
22 gradual encroachment, a new aspect of United States law
23 called due process, then might makes right, irrespective to
24 honor. The fact that the Western Shoshone Nation signed a
25 treaty of peace and friendship and the United States

1 Government does not view that a crime or offense has
2 actually been committed to, to which the United Western
3 Shoshone Nation is the victimized recipient, and most
4 disturbing is the fact that the Commission has not seen
5 cause to raise this issue of land title although it has been
6 raised many times.

7 In my review of the unofficial transcript of DOE's
8 program viability assessment, the title issue is not a
9 component. I realize this is a political issue and not an
10 agenda item in the licensing application process, but it
11 should be.

12 As an agent for the United States Government,
13 those Federal employees having the authority to approve the
14 licensing application may be held as collaborators by
15 circumventing the supreme law of the land, notwithstanding
16 the fact that the Nuclear Waste Policy Act is contrary to
17 the United States Constitution.

18 This is paramount to the Western Shoshone National
19 Council. The Western Shoshone Nation has not sought redress
20 from the courts of the United States to date.

21 This concludes my remarks, and I want to thank you
22 for the opportunity to speak on behalf of the Western
23 Shoshone Nation and if you have any question, I will try to
24 answer it.

25 CHAIRMAN JACKSON: Thank you very much.

1 Commissioner Dicus?

2 COMMISSIONER DICUS: I don't have a question, just
3 a quick comment I would like to make.

4 First of all, I would like to thank the NRC Staff
5 for all the work that you have done on this, but I would
6 like to thank the representatives from the state together
7 with the Affected Units of Local Government and our Native
8 American representation for coming. I know it is a lot of
9 effort to be here and to prepare for this sort of thing, but
10 I think this has been very useful.

11 I think we have learned some things. Your
12 insights have helped a lot, so I just wanted to thank you
13 for coming.

14 CHAIRMAN JACKSON: Commissioner Diaz?

15 COMMISSIONER DIAZ: Ditto.

16 CHAIRMAN JACKSON: Commissioner McGaffigan?

17 COMMISSIONER MCGAFFIGAN: Pass.

18 CHAIRMAN JACKSON: Commissioner Merrifield?

19 COMMISSIONER MERRIFIELD: I guess I would say the
20 same thing. I guess you raised -- in the last presentation
21 you raised an interesting question about our raising the
22 issue of the land title. This is a new issue for me.
23 Certainly I'll encourage our legal counsel to take a look at
24 that and it's something we'll certainly have to consider in
25 the future, so I appreciate your bringing that issue forward

1 to us.

2 MR. MORRES: If I may offer one suggestion. The
3 Commission may or may not be aware of the Indian newspaper
4 that is published, "Indian Country Today" -- and you will
5 find a lot of things in that paper of what occurs to the
6 Indian nations throughout this country.

7 We have problems in Alaska, in Washington state.
8 There's even some discussion going on up on the Hill that
9 there is a proposal to tax the Indian gaming when, as my
10 colleague, Calvin, has just expressed, the support of Indian
11 tribes in this country is a treaty responsibility that the
12 Federal Government doesn't adhere to.

13 We go to the Appropriations Committee and we asked
14 for some -- or the Western Shoshone Nation asked for some
15 money to define their boundary rights and as a volunteer
16 lobbyist I discussed it with members of Congress and it
17 passed the House side and went to the Senate side and there
18 was some discussion about the Interior's appropriations
19 request, so it went to a conference committee, and during
20 the conference committee -- I don't know if you are familiar
21 with the Snyder Act --

22 CHAIRMAN JACKSON: Yes, we are.

23 MR. MORRES: Your attorney's not here but she
24 probably is.

25 CHAIRMAN JACKSON: We are familiar with the Snyder

1 Act.

2 MR. MORRES: The Snyder Act provides that
3 appropriations will be provided for the general welfare of
4 Indians. Somehow or another in the Department of Interior
5 the Secretary has been defined as a trustee of Indians. How
6 did he become a trustee? If he is a trustee, why doesn't he
7 provide that trusteeship that he is supposed to do?

8 But nevertheless, getting back to this
9 appropriation, it went to a conference committee and because
10 the Western Shoshone National Council is not a Federally
11 recognized tribe the Interior opposed it and as a
12 consequence even though the Snyder Act is on the books, that
13 portion of the budget was deleted, and there are many other
14 situations with respect to that. You may have read in the
15 papers where Mrs. Shalala has had to ask for additional
16 money in the health care for this year, for this next year,
17 and there are various, various appropriations for Indian
18 tribes that are based upon treaties but the Federal
19 Government doesn't seem to want to recognize it, and this is
20 just for your information.

21 I am not trying to belabor you or chastise you,
22 but there are some serious concerns with the indigenous
23 people of this country, particularly with the land values.
24 If a developer wants a piece of land, no problem -- just go
25 and take over -- just a bunch of Indians, you know, just

1 like Calvin and I, you know. We are tag-alongs. We have a
2 short presentation and we are the last ones on the list
3 whenever something functions, says, oh, well, wait a minute,
4 what about the Indians? We were always the tag-alongs, but
5 what contribution did Indians make to this country? We had
6 lousy immigration laws.

7 [Laughter.]

8 [Applause.]

9 CHAIRMAN JACKSON: Well, thank you very much.

10 Let me say the following. There is always an
11 issue in terms of placement, you know, on the schedule, but
12 it is never the intention of the Commission by virtue of
13 placement on the schedule to imply any lesser or greater
14 importance of any given group's presentation.

15 MR. MORRES: I am not trying to chastise you. I
16 am just saying that --

17 CHAIRMAN JACKSON: -- and because I am particular.
18 You know, I am very sensitive to this issue of how all
19 people are treated, and so I just wanted to assure you of
20 that.

21 MR. MORRES: Well, I appreciate it.

22 CHAIRMAN JACKSON: And your participation was not
23 an afterthought in this particular briefing but a
24 forethought.

25 MR. MORRES: We appreciate that very much and I

1 don't mean to insult you or --

2 CHAIRMAN JACKSON: No, I am not insulted at all.

3 MR. MORRES: What I am suggesting is that
4 historically you can look at any issue, whether it is
5 education with the Johnson-O'Malley Act --

6 CHAIRMAN JACKSON: I understand.

7 MR. MORRES: Indian people are the tag-alongs.

8 CHAIRMAN JACKSON: Well, I think what you have is
9 a Commission here where at least a number of us come from
10 backgrounds that particularly sensitize us --

11 MR. MORRES: Yes, I appreciate that.

12 CHAIRMAN JACKSON: -- to those issues, but I would
13 like to thank the NRC Staff, the State of Nevada, the
14 Affected Units of Local Government, and our representatives
15 of Tribal Government for making the effort today to come
16 here and the Commission as you can see, I hope you can see,
17 benefits greatly from these kinds of sessions, very
18 comprehensive, and today's presentations provided an
19 excellent discussion of various important aspects of the DOE
20 viability assessment and the overall Yucca Mountain activity
21 because aside, obviously, from the technical and
22 programmatic issues, I think that we have been made strongly
23 aware of at least three additional issues -- one tied into
24 program and that is the EIS process under NEPA; the issue of
25 land titles, as the Commissioner has mentioned; and I think

1 the larger issue that has come out of ensuring the
2 participation of all affected parties in these deliberations
3 and how we can best ensure that, and so I think we have to
4 take that into account, and so you can be assured that all
5 of this -- you know, we have been sensitized to all of these
6 things, and they are going to be useful to us in the ongoing
7 work that we have in our responsibilities under the Nuclear
8 Waste Policy Act.

9 So unless my colleagues have any additional
10 questions or comments, this meeting is adjourned --

11 MR. MORRES: I would like to make one more
12 comment, if I may. I want to thank the Commissioners very
13 much for the awesome job that you do have ahead of you and
14 we just wish you well.

15 CHAIRMAN JACKSON: Thank you.

16 [Whereupon, at 4:54 p.m., the briefing was
17 concluded.]

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CERTIFICATE

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

TITLE OF MEETING: BRIEFING ON STATUS OF DOE HIGH LEVEL
WASTE VIABILITY ASSESSMENT

PLACE OF MEETING: Rockville, Maryland

DATE OF MEETING: Tuesday, March 16, 1999

was held as herein appears, is a true and accurate record of the meeting, and that this is the original transcript thereof taken stenographically by me, thereafter reduced to typewriting by me or under the direction of the court reporting company

Transcriber: Mary Carpenter

Reporter: Doug Swift



VIABILITY ASSESSMENT REVIEW

Presented by

Michael Bell, Branch Chief

**Performance Assessment & HLW
Integration Branch**

MARCH 16, 1999

OUTLINE OF BRIEFING

- **Scope of Viability Assessment (VA) & Staff Review**
- **Objective of Review**
- **Basis of the Review**
- **Review Results**
- **Summary**

SCOPE OF VA & STAFF REVIEW

- **Preliminary Design Concept**
- **Total System Performance Assessment**
- **License Application Plan and Cost Estimate**
- **Costs of Construction and Operation**
 - **Not Reviewed**

OBJECTIVE OF REVIEW

- **Identify DOE'S Progress in Development of Information Necessary for a Complete and High-Quality License Application (LA)**
- **Identify Major Comments With Test Plans, Design Concepts, Total System Performance Assessment (TSPA) and LA Plan that, if not Resolved, Might Result in an Incomplete LA or Lead to a Protracted Licensing Review**

BASIS OF THE REVIEW

- **Conducted Independent Analysis of TSPA VA Using NRC Developed Code to Focus On**
 - **Major Elements of DOE Performance Assessment**
 - **Most Significant Issues in Evaluating Adequacy of LA Plan**

BASIS OF THE REVIEW

Continued

- **Considered Individual Dose Standard Similar to Part 63 Rulemaking in Evaluating Uncertainties & Sensitivities**
- **Evaluated Licensing Needs and DOE'S Plan to Produce High-Quality LA as Scheduled in 2002**

REVIEW RESULTS

- **Staff Agrees With DOE Decision to Continue Site Characterization**
- **Identified No New Issues**
- **Identified Several Positive Aspects of VA**

REVIEW RESULTS

Continued

- **Developed Major Comments**
 - **Preliminary Design Concept**
 - **Performance Assessment**
 - **LA Plan**

POSITIVE ASPECTS OF VA

- **First Comprehensive Presentation That Combines Site Characterization, Design and Performance Assessment**
- **Facilitated Review and Avoided Surprises Through Early and Frequent Interaction**
- **VA Identifies Areas Where Additional Data Collection or Analysis is Needed For Developing LA**

POSITIVE ASPECTS OF VA

Continued

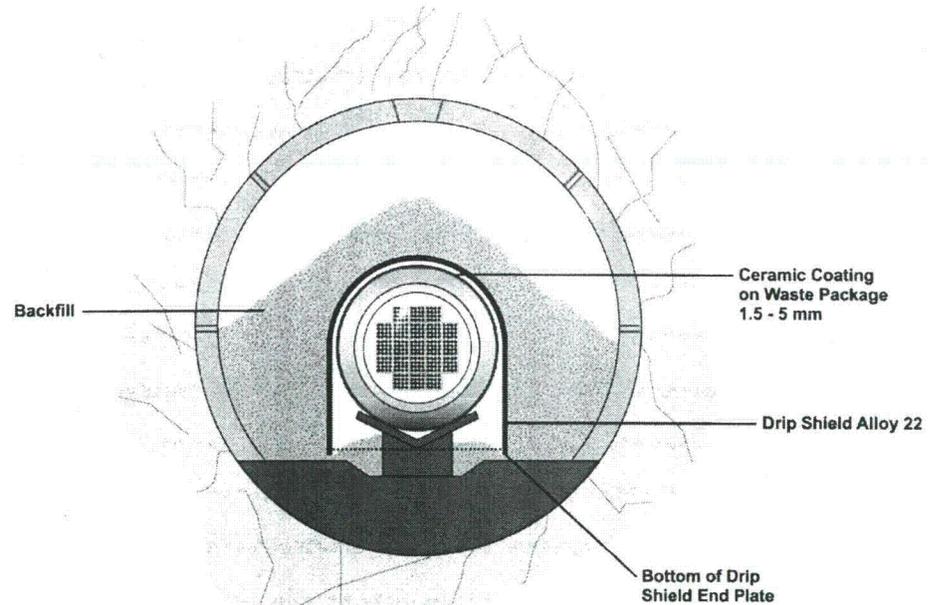
- **NRC Staff Agrees That Planned Work Appears Appropriate in Following Technical Areas**
 - **Mechanical Disruption of Waste Packages**
 - **Spatial and Temporal Distribution of Flow in Unsaturated Zone**
 - **Distribution of Mass Flux Between Fracture and Matrix**

POSITIVE ASPECTS OF VA

Continued

- Retardation in Fractures in the Unsaturated Zone**
- Airborne Transport of Radionuclides**
- Dilution of Radionuclides in Soil**
- Location and Lifestyle of Critical Group**

ENGINEERED BARRIER SYSTEM WITH DESIGN ENHANCEMENTS (BACKFILL, DRIP SHIELD, AND CERAMIC COATING)

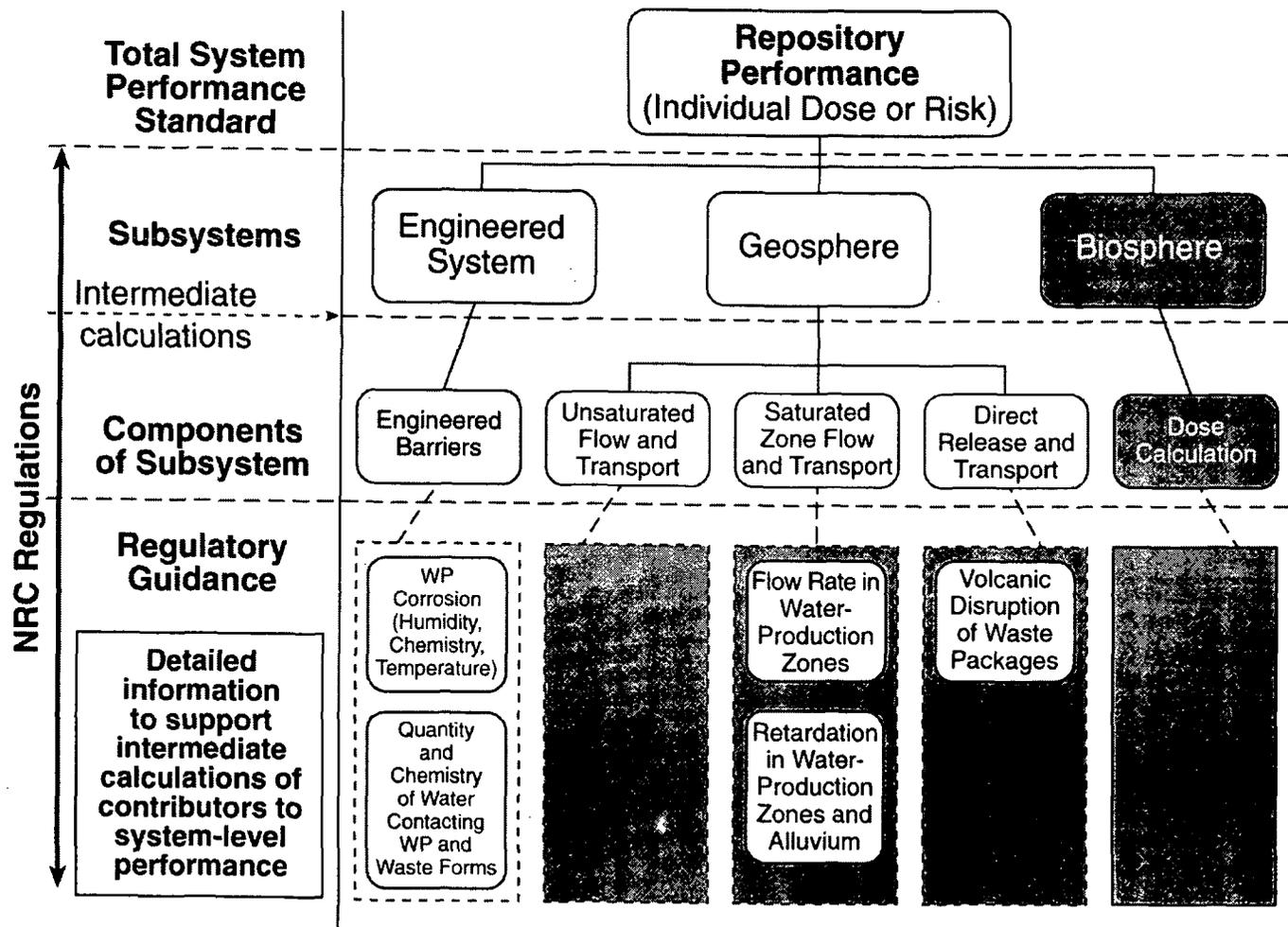


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MAJOR COMMENTS

- **Preliminary Design Concept**
 - **Reference Design Provided but Many Significantly Different Alternatives Under Active Consideration**
 - **May not Converge Quickly Enough to Support Safety Case for LA**

PROPOSED NRC REGULATORY FRAMEWORK FOR YUCCA MOUNTAIN



MAJOR COMMENTS

Continued

- **Total System Performance Assessment**
 - **Waste Package Corrosion**
 - **Quantity & Chemistry of Water Contacting Waste Package and Waste Forms**
 - **Saturated Zone Flow and Transport**
 - **Igneous Activity Consequence Model**

MAJOR COMMENTS

Continued

- **LA Plan**
 - **Snap Shot in Time**
 - **Since LA Plan Issued DOE Continues to Focus on:**
 - **Resolution of Issues with NRC Staff**
 - **Internal Workshops on Key Processes and Events**
 - **Implementation of Revised Workplans**

MAJOR COMMENTS

Continued

- Quality Assurance**
 - VA is not a Licensing Document**
 - DOE has Identified Number of Deficiencies in the QA Program**
 - Data not Adequately Qualified For Use in the LA**
 - DOE Recognizes the Problem and is Implementing a Program to Correct it**

SUMMARY

- **DOE issued VA As Required by Congress**
- **DOE Concluded That Work Should Proceed Towards a Decision on Site Recommendation**
- **DOE Developed a Plan For Remaining Work to Complete LA**
 - **NRC Staff has Comments**
- **NRC Staff Agrees with DOE Decision to Continue Site Characterization**

STATEMENT OF
ROBERT R. LOUX, EXECUTIVE DIRECTOR
NEVADA AGENCY FOR NUCLEAR PROJECTS
NUCLEAR WASTE PROJECT OFFICE
CARSON CITY, NEVADA

TO THE
UNITED STATES NUCLEAR REGULATORY COMMISSION
ROCKVILLE, MARYLAND

MARCH 16, 1999

We appreciate the opportunity to meet with you today to hear the views of the Commission Staff and others, as well as present you with our summary view of portions of the Department of Energy's Viability Assessment of a Repository at Yucca Mountain (VA). As you will note, our presentation is intended to be cast both in the context of the VA, and the Commission's role in the pre-licensing period and as the repository regulator.

Introduction

In his February 8, 1999 presentation to you, Lake Barrett, Acting Director of the Office of Civilian Radioactive Waste Management, pointed out that "While the Viability Assessment is not one of the decision points defined in the Nuclear Waste Policy Act, its completion is significant because it gives policy makers key information regarding the prospects for geologic disposal at Yucca Mountain." Since the Commission has decided to review technical aspects of the VA, it too can contribute key information to policy makers regarding the prospects for geologic disposal at Yucca Mountain. This objective is somewhat different from the Staff's early intent in suggesting such a review, which was to seek to assure that there will be "no surprises" from the Commission for DOE at the time of site recommendation, if the Secretary finds the site suitable. The Nuclear Waste Policy Act requires that at site recommendation, the Commission provide its "preliminary comments...concerning the extent to which the at-depth site characterization analysis and the waste form proposal for such site seem to be sufficient for inclusion in any application to be submitted by the Secretary for licensing of such site as a repository."

There are already significantly contrasting views about the message policy makers can draw from the VA regarding the prospects for geologic disposal at Yucca Mountain. On one hand, the VA states (and Lake Barrett told you on February 8) that "based on the viability assessment, DOE believes that Yucca Mountain remains a promising site for a geologic repository and that work should proceed to support a decision in 2001 on whether to recommend the site to the President for development as a repository... Uncertainties remain about key natural processes,

the preliminary design, and how the site and design would interact." Mr. Barrett also informed you that while the VA reveals no "show stoppers", it does identify areas where additional work is necessary before site suitability can be determined.

On the other hand, the Total System Performance Assessment - Viability Assessment (TSPA-VA) Peer Review Panel, formed by the waste management system Management and Operating Contractor to evaluate and critique the TSPA-VA and make recommendations for its improvement for possible use in a license application, has taken a much less optimistic view. The Panel, in its February 11, 1999 Final Report, points out that Congress defined the objective of the TSPA-VA to be the assessment of the "probable behavior of the repository." The Panel's conclusion is that "it is unlikely that the TSPA-VA, taken as a whole, describes the long-term probable behavior of the proposed repository." The Panel goes on to say that "at the present time, an assessment of the future probable behavior of the proposed repository may be beyond the analytical capabilities of any scientific and engineering team. This is due to the complexity of the system and the nature of the data that now exist or that could be obtained within a reasonable time and cost."

The Repository System

The repository system's postclosure performance, as analyzed in the VA, relies on four key attributes identified in the DOE's Repository Safety Strategy:

- Limited water contacting the waste packages;
- Long waste package lifetime;
- Low rate of release of radionuclides from breached waste packages; and
- Radionuclide concentration reduction during transport from the waste packages.

According to the VA, these key attributes constitute a continuum that describes the Yucca Mountain repository concept: First, only a small fraction of the precipitation that infiltrates Yucca Mountain will appear in the waste emplacement drifts as seeps, and only a portion of the waste containers will be contacted by drips that can lead to corrosion failure.

Second, in the repository environment, the waste packages will fail at varying rates, based on the availability of moisture contact, but on the whole, the packages will be resistant to corrosion failure for a very long period of time, with only a few corrosion failures predicted in the first 10,000 years after emplacement.

Third, once a waste package fails, radionuclide release will

be limited by the resistance of most of the fuel cladding to corrosion, and the low solubility of most radionuclides in the contacting water.

And fourth, after radionuclides are released from the waste package, there may be some sorption and matrix diffusion that reduces their concentrations in the groundwater, as well as dilution during transport down gradient that would serve to limit calculated doses to individuals at the accessible environment boundary.

Projected repository performance, i.e., individual dose at the accessible environment boundary, relies on each of these attributes contributing its expected share to the combined natural and engineered barrier system. The failure of any one component to function as well as predicted will have an adverse effect on total system performance. This is confirmed by an analysis reported by the Yucca Mountain Project to the Technical Review Board in a January 25, 1999 meeting. The analysis was designed to illustrate the relative contribution of the repository system barriers by neutralizing one barrier at a time in successive runs of the total system performance model for the initial 10,000 postclosure years. The result indicated that during this period, the waste package is responsible for over 99% of the expected repository performance, and if it were eliminated from the system, the expected individual dose rate at the accessible environment would be about 1 rem per year within about 2,000 years after closure. In contrast, if the sum of all natural barriers' contributions to performance during the same period were neutralized, and the waste packages were the only barrier, the expected dose rate would be only about 1 millirem per year. Of course, the relative importance of barriers changes through time as the waste packages fail, but it is important to note that the expected peak dose in the base case calculation, with all barriers functioning as expected, is on the order of about 1 rem per year, occurring at about 200,000 years after closure when most of the waste packages have failed.

The result of this analysis is significant for a few reasons. First, it indicates that the proposed repository system does not exhibit "defense in depth", as stated by the VA to be "the property of a system of multiple barriers that are diverse, independent, and redundant such that failure by any single barrier will not result in failure of the entire system." While the engineered barrier may be planned to illustrate defense in depth through dual waste package layers and possible drip shields and backfill, the repository system as a whole does not meet the VA's description of defense in depth. The engineered barrier does not function as an independent means of limiting individual dose. If it functions as expected, the waste package only serves to delay the time of peak dose that the natural barriers would permit with or without the engineered barrier. And, we do not

believe that under any regulatory circumstance, an expected individual dose rate of 1 rem per year to members of the public should be considered acceptable. In this belief, we are mindful of the Commission's often stated principle that future generations should not be subjected to radiation doses from a repository any greater than those considered acceptable to the current generation from other sources.

The nearly complete reliance of the Yucca Mountain TSPA-VA on the waste package (and other possible engineered barrier contributors) is a contradiction of the geologic disposal concept as described in the DOE's 1980 Final Environmental Impact Statement (EIS) Management of Commercially Generated Radioactive Waste. The EIS states, "Geologic barriers are expected to provide isolation of the waste for at least 10,000 years after the waste is emplaced in a repository and probably will provide isolation for millennia thereafter. Engineered barriers are those designed to assure total containment of the waste within the disposal package during the initial period during which most of the intermediate-lived fission products decay. This time period might be as long as 1,000 years..."

Each of the key attributes of the Repository Safety Strategy is subject to broad uncertainty, as exhibited in the VA. The uncertainty in the waste package lifetime is said to be about three orders of magnitude. And, the TSPA-VA shows an uncertainty range in dose rate projections in the 10,000 year calculation of about 4 orders of magnitude, with the 1 million year period at about 6 orders of magnitude. The question is: Can these uncertainties be reduced significantly? The TSPA-VA Peer Review Panel appears to think that the answer is No, at least in the near future and at a reasonable cost relative to the DOE's schedule and resources, and the answer may be Never. Primary contributors to this conclusion, with which we agree, are the complexity of the Yucca Mountain site and geologic setting, and the long time period involved in performance projection.

An interesting example of irreducible uncertainty involves an assumption about climate change in the TSPA-VA model. A relatively small shift in the projected periodicity of the short-term superpluvial climate condition can result in the calculated individual peak dose rate being not 1 rem per year, but 5 rems per year.

Another even simpler example involves the model assumption of one juvenile failure of a waste package 1,000 years after emplacement. Any assumption that is in excess of this one juvenile failure will result in a proportional increase in the expected individual dose rate. There is no scientific basis for the TSPA-VA model assumption of only one such failure, but within reasonable bounds, there is no basis for this or any other assumption, therefore the uncertainty remains irreducible.

Regulatory Considerations

While the DOE has said that the VA has been written independent of regulatory considerations, it must be recognized that the results of the TSPA-VA are being evaluated within a context of regulatory and safety standards whether specific standards for a Yucca Mountain repository exist or not. We have said earlier that an expected individual annual dose rate from a Yucca Mountain repository of 1 rem per year is unacceptable. And, since the primary release path from the repository is into currently potable groundwater, it also is unacceptable that expected doses to the public resulting from the repository contaminating this drinking water supply would exceed existing national standards. This level of dose rate from groundwater could be reached rapidly if the VA performance assessment model assumed 10 to 20 juvenile failures out of the thousands of waste packages rather than only one, and if the waste package failures occur earlier than the arbitrarily set 1,000 years after emplacement in the repository.

Much of the technical presentation in the Viability Assessment is based on data, analyses, and codes that do not meet the Commission's Quality Assurance requirements for licensing. The DOE is now engaged in an intensive program to repair these shortcomings that have been observable in the program since its beginning in 1983. This repair effort cannot be completely successful. It is clear that some of the information in the VA and its sources will not be properly qualified for use in a license application, although it may be needed to meet a completeness standard and to not further expand the already broad ranges of uncertainty in the performance assessment. The ultimate consequence of this shortcoming is that it detracts from the credibility of any claims of safety that may be made about a Yucca Mountain repository system.

The TSPA-VA reveals the expectation of very rapid groundwater flow from the repository location to the boundary of the accessible environment, assumed in the model to be 20 km (12 miles) from the edge of the repository. It is clear from the model realizations published in the VA that highly soluble radionuclides released from the repository can arrive at the 20 km boundary in as little as 500 years after release. This indicates that groundwater travel time from the undisturbed Yucca Mountain site to the accessible environment is thought to be as rapid as 500 years by the DOE. The median and mean values for the model realizations are slightly below and above 1,000 years respectively.

The matter of rapid groundwater travel time from the repository location to an assumed distant boundary of the accessible environment, as shown by the TSPA-VA, raises two regulatory issues, one for the Commission and one for DOE. For

the Commission, the groundwater travel time that can be inferred from the TSPA-VA model realizations is in conflict with the Commission's 10 CFR Part 60.113(a)(2), which states:

Geologic setting. The geologic repository shall be located so that the pre-waste-emplacment groundwater travel time along the fastest path of likely radionuclide travel from the disturbed zone to the accessible environment shall be at least 1,000 years or such other travel time as may be approved or specified by the Commission.

There has been no groundwater travel time other than the 1,000 year criterion approved or specified by the Commission. Therefore, notwithstanding the fact that the Commission currently is seeking to eliminate this requirement through its proposed new Yucca Mountain specific licensing rule, 10 CFR Part 63, the Commission should inform DOE immediately that the Yucca Mountain site does not conform to its existing repository licensing requirements. The Commission should state that this information is based upon its review of the Viability Assessment.

Likewise, the Secretary of Energy should disqualify the Yucca Mountain site from consideration for development of a repository because it meets the groundwater travel time disqualifying condition, 10 CFR Part 960.4-2-1(d) of its site recommendation guidelines, in which the Commission has concurred as a statutory requirement. The disqualifying condition states:

A site shall be disqualified if the pre-waste-emplacment ground-water travel time from the disturbed zone to the accessible environment is expected to be less than 1,000 years along any pathway of likely and significant radionuclide travel.

Because the travel time has been inferred from realizations of the DOE's Yucca Mountain performance model, with numerous realizations indicating travel times less than 1,000 years, the tests of the regulatory language "fastest", "likely", and "significant" all have been met.

The Commission should inform the Secretary of its finding immediately because the Secretary's duty under the law is to act in a timely manner. The Nuclear Waste Policy Act as amended requires "If the Secretary at any time determines the Yucca Mountain site to be unsuitable for development as a repository, the Secretary shall - (A) terminate all site characterization activities at such site..." (emphasis added) (Sec. 113(c)(3)).

Summary

The Viability Assessment reveals a number of important factors regarding the potential safety of a Yucca Mountain high-

level nuclear waste repository system. These include:

- a repository system that fails to demonstrate defense in depth;
- an overwhelming reliance on engineered barriers to compensate for waste isolation deficiencies and unresolvable uncertainties in the natural conditions of the site;
- within the ranges of known uncertainties, expected dose rates to the public can be at unacceptably high-levels; and
- the Yucca Mountain site does not conform to existing Commission licensing requirements and DOE site recommendation requirements with regard to undisturbed groundwater travel time from the proposed waste emplacement location to the accessible environment.

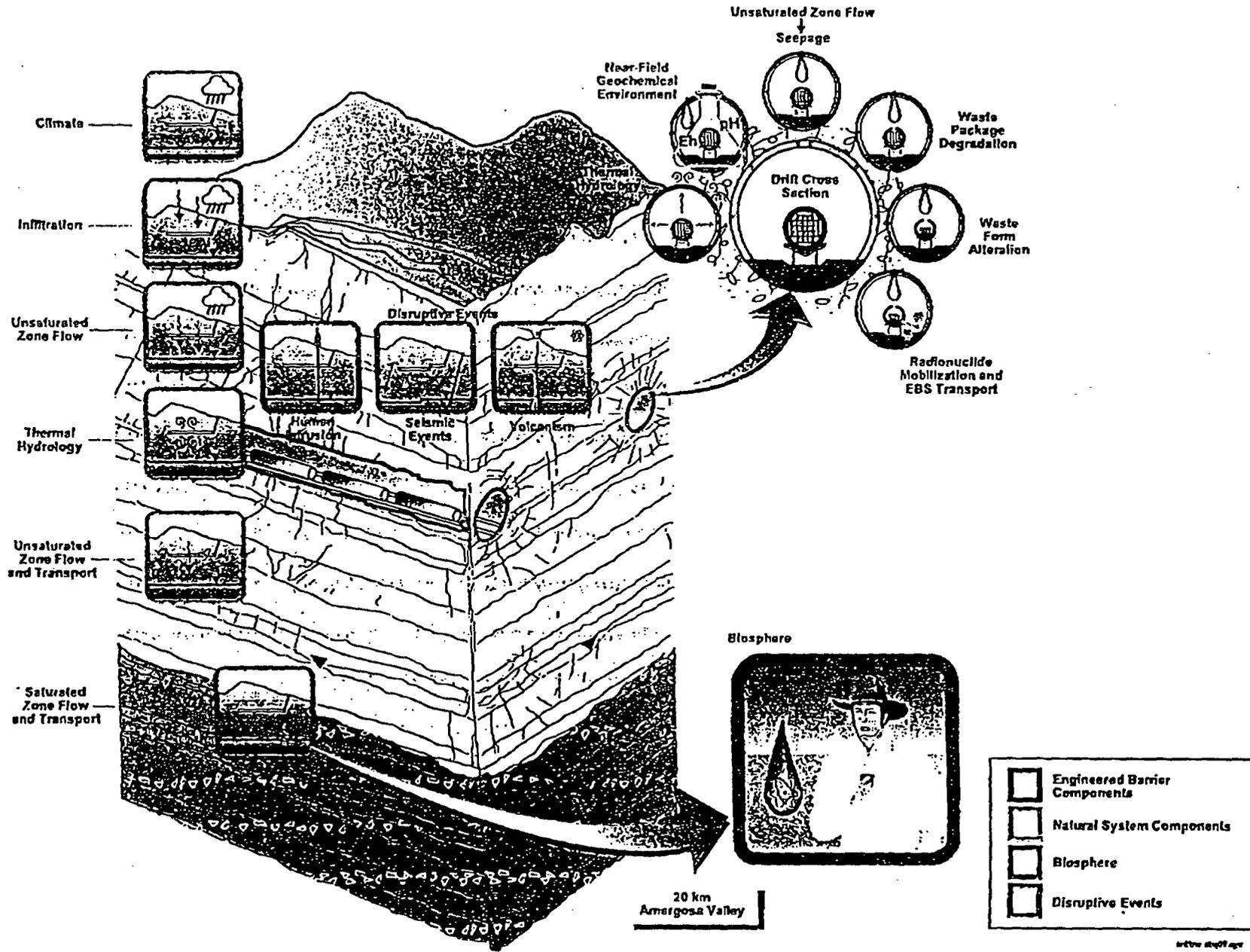
Conclusion

The Viability Assessment suggests a number of issues for the Commission's consideration during its review. These include:

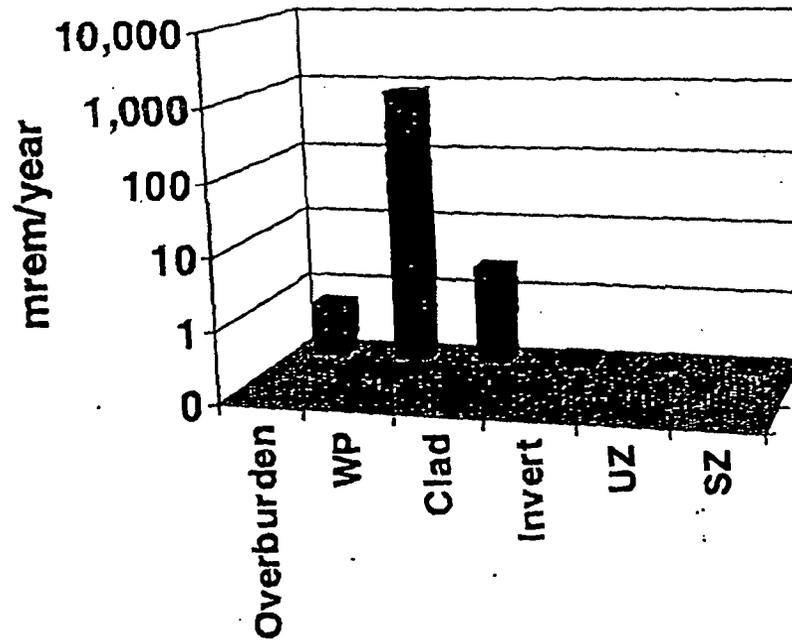
- Is defense in depth meant to be applicable to the full repository system, or to subsystems only, such as engineered barriers as the DOE seems to believe?
- How does the Yucca Mountain repository system, as described in the VA, reconcile with the geologic repository concept of multiple barriers and waste containment and isolation established in the 1980 EIS that selected deep geologic disposal of high-level nuclear waste as the preferred alternative in its Record of Decision?
- What level of uncertainty is appropriate and acceptable regarding the key safety factors of the repository system in determining reasonable assurance that the repository will meet established safety standards?
- Is the use of incomplete data and analyses in a license application preferable, or not, to the use of unqualified data and analyses?
- Does the Commission have a pre-licensing duty to inform DOE that the Yucca Mountain site, based on current information, does not conform to its established licensing criteria?

Thank you for the opportunity to present our views of the DOE' Viability Assessment and associated regulatory issues.

TSPA Model Components



Relative Contribution of Barriers - VA Design (10,000 Years)





Affected Units of Local Government

**Nuclear Regulatory Commission
Presentation**

March 16, 1999



INTRODUCTION

**MARCH 16, 1999
ROCKVILLE, MD**

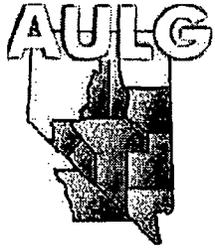
MIKE BAUGHMAN, PhD.



INTRODUCTION - WHO WE ARE

- **AULG designated by Secretary of Energy pursuant to NWPA**
- **Collectively, AULG represent over 1.3 million people in Nevada and California**





INTRODUCTION - WHO WE ARE (cont.)

- **The AULG's are in areas with multiple sources of potential radiation exposure including: historic weapons tests, current LLW disposal, and ongoing transportation of radioactive wastes through the region.**
- **The AULG's represent one of the fastest growing population centers in the United States.**





INTRODUCTION - WHAT WE'VE DONE

- **Capacity building: county staff, consultants, advisory committees, data processing capabilities, tours of nuclear facilities**
- **Independent research: use of University of Nevada, Las Vegas; University of Nevada, Reno; independent consultants**
 - **Geotechnical/Geohydrology (Nye County Early Warning Drilling Program)**
 - **Risk assessment (RADTRAN evaluations of transportation risk)**
 - **Socioeconomic impact assessment and monitoring**

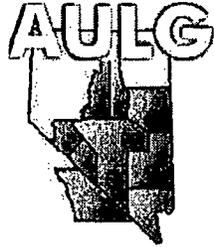




INTRODUCTION - WHAT WE'VE DONE (cont.)

- **Review and comment on DOE and other documents**
- **Provided recommendations to the Secretary of Energy and Congress**
- **Designed and implemented effective public information programs**





INTRODUCTION - OUR CONCERNS

- **Uncertainties**
- **Unanticipated Consequences**
- **Mischaracterization of impacts**
- **Failure to consider impacts**
 - **Transportation**
 - **Cumulative risk**
- **Failure to identify impacts**





INTRODUCTION - OUR CONCERNS (cont.)

- **Failure to identify and commit to implementation of mitigation measures**
- **Insufficient AULG input to NRC comments on key documents**

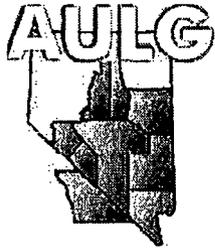




VIEWS OF AULG ON DOE VIABILITY ASSESSMENT

**MARCH 16, 1999
ROCKVILLE, MD**

**MALACHY R. MURPHY, NYE COUNTY
DENNIS BECHTEL, CLARK COUNTY**



VIABILITY ASSESSMENT

- **VA IS NOTHING MORE THAN A STATUS REPORT TO CONGRESS, AND WE CAUTION AGAINST USING IT FOR MORE THAN THAT.**
- **IS ENTIRELY PREMATURE TO TREAT VA AS ANY KIND OF PRELIMINARY SUITABILITY DETERMINATION.**
- **VA ITSELF ACKNOWLEDGES MUCH UNCERTAINTY REMAINS ABOUT YUCCA MOUNTAIN ITSELF, THE REGIONAL SETTING, THE PRELIMINARY DESIGN, AND HOW THE SITE AND DESIGN MIGHT INTERACT.**





VIABILITY ASSESSMENT

- **OUR REMARKS ARE DIRECTED AT THE PRINCIPAL AREAS OF UNCERTAINTY THAT WE SEE, AS WELL AS SOME PROGRAMATIC SHORTCOMINGS IN THE VA.**

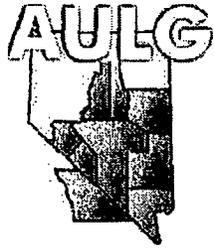




VIABILITY ASSESSMENT - PROGRAMATIC

- **SITE DESCRIPTION IS INCOMPLETE.**
 - **DESCRIPTION DOES NOT MENTION LOCAL JURISDICTION (NYE COUNTY).**
- **DOES NOT SAY WHETHER DOE ASSUMES THAT THE LOCALE WILL REMAIN “UNPOPULATED” FOR THE NEXT 100, 1000, OR 10000 YEARS, WHICH HISTORY SHOWS CLEARLY WILL NOT BE SO.**





VIABILITY ASSESSMENT - PROGRAMATIC (cont.)

- **IGNORES THE POTENTIAL CUMULATIVE RADIOLOGICAL BURDEN PLACED ON A SINGLE COMMUNITY IN AN INVOLUNTARY SITING PROCESS.**
- **IGNORES POTENTIAL HYDROLOGIC IMPACT TO OTHER AULG OVER THE LIFE OF THE PROGRAM.**





VIABILITY ASSESSMENT - PROGRAMATIC (cont.)

- **VA DISCUSSION OF EFFORT TO AMEND SITING GUIDELINES (10 CFR PART 960) IS INCOMPLETE.**
 - **SITE'S "PROMISE" IS DEPENDENT NOT ONLY ON TECHNICAL ASPECTS BUT ON WHETHER OR NOT IT CAN MEET VARIOUS REGULATORY STANDARDS AND REQUIREMENTS WHICH APPLY.**
 - **SHOULD FORTHRIGHTLY ACKNOWLEDGE PROBLEMS IN FINDING SITE SUITABLE UNDER CURRENT GUIDELINES**



VIABILITY ASSESSMENT - PROGRAMATIC (cont.)

- **VA DISCUSSION OF EFFORT TO AMEND SITING GUIDELINES (10 CFR PART 960) IS INCOMPLETE.
(CONT.)**
- **WHETHER DOE INTENDS TO REPLACE GUIDELINES OR PROCEED UNDER THE CURRENT ONES CONGRESS SHOULD BE TOLD.**





VIABILITY ASSESSMENT - PROGRAMATIC (cont.)

- **DOE HAS SERIOUS QUALITY ASSURANCE PROBLEMS, WHICH THE VA COMPLETELY IGNORES.**
- **THE VA UNDERSTATES THE COSTS OF THE PROGRAM.**
 - **INCONSISTENCY BETWEEN THE VA, VOLS 4 & 5 AND THE TSLCC REPORT.**
 - **WE DO NOT BELIEVE THE VA REFLECTS REALISTIC COSTS OF CARRYING OUT THE FULL PROGRAM, OR FINANCING MANY MAJOR CONTINGENCIES.**



VIABILITY ASSESSMENT - TECHNICAL

- **ANALYSES PRESENTED IN VA INDICATE THAT GEOLOGIC AND HYDROLOGIC BARRIERS DO NOT PROVIDE ADEQUATE PROTECTION BY THEMSELVES. ARE WE MOVING TOWARD ALMOST TOTAL RELIANCE ON EBS? IF SO VA SHOULD BE CLEAR.**
- **APPARENT LACK OF CONFIDENCE IN THE NATURAL SYSTEM NEGATES PURPOSE OF DEFENSE IN DEPTH**





VIABILITY ASSESSMENT - TECHNICAL (cont.)

- **PERFORMANCE OF EBS IS BASED ON LIMITED EXPERIENCE OBTAINED OVER A SHORT PERIOD OF TIME.**
- **LIFETIME OF CANISTER MATERIAL SEEMS HIGHLY SPECULATIVE.**
- **NO EVIDENCE TO SUPPORT PROMISED PERFORMANCE OF CERAMIC COATING.**





VIABILITY ASSESSMENT - TECHNICAL (cont.)

- **SEEPAGE INTO DRIFTS IS UNDERESTIMATED.**
- **VA ESTIMATES ONLY 5% OF SURFACE INFILTRATION BECOMES PERCOLATION, AND 1% SEEPS INTO DRIFTS. TESTS IN ESF INDICATE THIS IS LOW BY FACTORS OF 40 TO 67.**

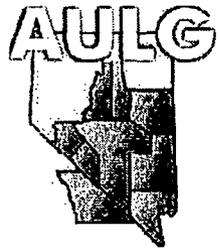




VIABILITY ASSESSMENT - TECHNICAL (cont.)

- **DATA IS NEEDED FROM THE CALICO HILLS. DOE IS NOT RELYING ON IT AS A NATURAL BARRIER BECAUSE OF LACK OF DATA. THIS MAY NOT BE ACCURATE.**
- **TREATMENT OF SATURATED ZONE IN VA IS INACCURATE. NYE EARLY WARNING DRILLING PROGRAM DATA IS BEGINNING TO SHOW LARGE HETEROGENEITY IN SZ. CURRENT MODELS ARE ENTIRELY MISCONCEPTUALIZED.**

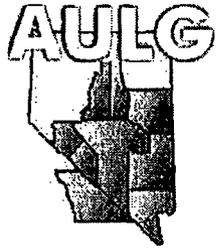




VIABILITY ASSESSMENT - TECHNICAL (cont.)

- **SORPTION GEOCHEMISTRY IS POORLY TREATED AS A POTENTIAL RETARDATION MECHANISM. IT MAY BE UNDERESTIMATED IN FRACTURES AND OVER ESTIMATED UNDER MATRIX CONDITIONS.**





VIABILITY ASSESSMENT - TECHNICAL (cont.)

- **CURRENT BASE CASE DESIGN MAY NOT BE APPROPRIATE FOR OPTIMIZED PERFORMANCE OF A VENTILATED REPOSITORY. INCREASING ACCEPTANCE THAT A COOLER REPOSITORY WOULD AVOID MANY OF THE DIFFICULTIES AND UNCERTAINTIES IN MODELING RESULTING FROM A “HOT” REPOSITORY.**





VIABILITY ASSESSMENT - TECHNICAL (cont.)

- **USE OF CONSERVATISM IN TSPA-VA IS INCONSISTENT.**
 - **CONSERVATISM VARIES FROM HIGHLY CONSERVATIVE TO CONTROVERSIAL.**
 - **EFFECTS OF DIFFERING DEGREES OF CONSERVATISM COULD BE CONSIDERABLE.**





VIABILITY ASSESSMENT - TECHNICAL (cont.)

- **DATA BASES FOR MANY OF THE MODELS THAT MAKE UP THE OVERALL TSPA IS LIMITED.**
- **PRIORITY OF ANALYSES REGARDING DATA AND MODELING CONDITIONS SHOULD BE REEVALUATED, AND EMPHASIS SHOULD BE PLACED ON UNIQUE AREAS OF VULNERABILITY.**





VIABILITY ASSESSMENT - TECHNICAL (cont.)

- **OVERALL UNCERTAINTY IN THE TSPA-VA RESULTS FOR EXPECTED PERFORMANCE AT 10,000 YEARS SPANS 4-5 ORDERS OF MAGNITUDE.**
 - **UNCERTAINTY RESULTS FROM VARIABILITY OF PERFORMANCE FACTORS, LACK OF DATA IN MANY AREAS, AND COMPLEXITY OF THE SYSTEM, PARTICULARLY UNDER ELEVATED TEMPERATURES.**
 - **MORE RIGOR WILL BE NEEDED TO BRING MORE CERTAINTY TO LICENSING PROCESS.**



**NRC's ROLE IN THE NATIONAL ENVIRONMENTAL
POLICY ACT (NEPA) COMPLIANCE FOR THE
YUCCA MOUNTAIN PROJECT**

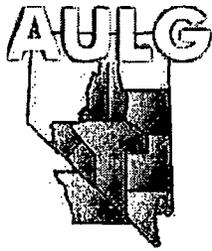
**MARCH 16, 1999
ROCKVILLE, MD**

TAMMY MANZINI, LANDER COUNTY



NEPA COMPLIANCE - NEPA REQUIREMENTS UNDER THE NWPA

- **Sec 407(a) and (b) State:**
 - *Sec. 407(a) In general. Issuance of a construction authorization for a repository or monitored retrievable storage facility under Section 405(b) shall be considered a major Federal action significantly affecting the quality of the human environment for purposes of the National Environmental Policy Act of 1969(42 U.S.C. 4321 et seq.).*



NEPA COMPLIANCE - NEPA REQUIREMENTS UNDER THE NWPA (cont.)

- **Sec 407(a) and (b) State:**
 - *Sec. 407(b) Preparation. A final environmental impact statement shall be prepared by the Secretary under such Act [42 U.S.C. 4321 et. seq] and shall accompany any application to the Nuclear Regulatory Commission for a construction authorization.*





NEPA COMPLIANCE - NEPA REQUIREMENTS UNDER THE NWPA (cont.)

- **Sec 407(a) and (b) imply:**
 - **Construction authorization is the major federal action of the EIS being prepared by DOE.**
 - **The EIS is to be prepared so that it coincides with the license application submitted to NRC.**
 - **The EIS must support the decision to issue a construction authorization.**
 - **Because the decision to issue a construction authorization lies solely with NRC, it appears that DOE is preparing the NRC's EIS.**



NEPA COMPLIANCE - NEPA REQUIREMENTS UNDER THE NWPA (cont.)

- **Sec 407(c)(1) states:**
 - *Any such environmental impact statement shall, to the extent practicable, be adopted by the Nuclear Regulatory Commission, in accordance with section 1506.3 of title 40, Code of Federal Regulations, in connection with the issuance by the Nuclear Regulatory Commission of a construction authorization and license for such a repository or monitored retrievable storage facility.*

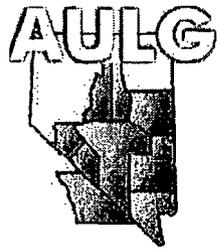




NEPA COMPLIANCE - NEPA REQUIREMENTS UNDER THE NWPA (cont.)

- **Sec 407(c)(1) states:**
 - **NRC must comply with the Council on Environmental Quality (CEQ) regulations for implementing procedural provisions of the National Environmental Policy Act [40CFR1506.3] for adoption.**





NEPA COMPLIANCE - NEPA REQUIREMENTS UNDER THE NWPA (cont.)

- **CEQ regulations for implementing NEPA allow an agency to adopt an EIS if:**
 - **The proposed action for which the EIS was adopted is substantially the same.**
 - **NEPA requirements, comments and suggestions are addressed.**
 - **The EIS contains adequate information to support the agency's decision.**
 - **NRC must in it's own judgment determine whether the EIS is sufficient and adequate for adoption.**

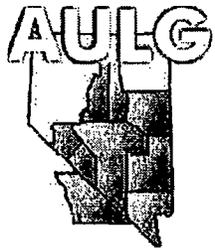




NEPA COMPLIANCE - WHY IS THIS RELEVANT TO THE NRC?

- **It brings into question NRC's role with respect to the Yucca Mountain Project EIS. Clearly, NEPA and NWPAA contemplate an active role in it's preparation.**
- **What steps will NRC have to take to achieve NEPA compliance with respect to the major federal action referenced in NWPAA Section 407, construction authorization.**





NEPA COMPLIANCE - WHY IS THIS RELEVANT TO THE NRC? (cont.)

- **Will the Yucca Mountain EIS be adequate to support a decision to issue a construction authorization given the current uncertainties about the repository's performance and design? Such uncertainties include for example:**
 - **Issuance of new repository siting guidelines.**
 - **Final repository design which is key to the proposed action.**
 - **Completion of the postclosure and preclosure safety case.**

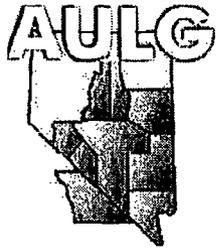




NEPA COMPLIANCE - AULG ISSUES WHICH REQUIRE REVIEW AND ANALYSIS IN THE EIS

- **Issues include, among others:**
 - **Site specific transportation impact analysis along corridors in and around the Yucca Mountain site.**
 - **A thorough cumulative analysis which takes into account past, present and reasonable foreseeable impacts from radiological exposure associated with Nevada Test Site operations.**
 - **A worst case scenario involving credible but unlikely events which lead to a substantial breach of waste packages and release of radioactive materials.**





NEPA COMPLIANCE - AULG ISSUES WHICH REQUIRE REVIEW AND ANALYSIS IN THE EIS (cont.)

- **The extent to which these and other issues of concern are addressed will be better understood with the release of the draft EIS this summer.**





NEPA COMPLIANCE - CONCLUSIONS

- **There is a need to better understand NRC's role with respect to NEPA compliance.**
- **With respect to the DOE EIS for the Yucca Mountain Project, NRC clearly has the authority and obligation to provide guidance for it's preparation.**





NEPA COMPLIANCE - CONCLUSIONS (cont.)

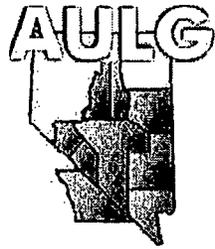
- **Such guidance needs to consider incorporation of site specific impacts along transportation routes near Yucca Mountain and technical data and analysis which influences overall system performance and final repository design.**
- **NRC should provide opportunities for the AULGs to discuss relevant issues which need to be addressed in an EIS which is adopted by NRC.**



REGULATORY COMPLIANCE

**MARCH 16, 1999
ROCKVILLE, MD**

BRAD METTAM, INYO COUNTY



REGULATORY COMPLIANCE - PROPOSED REGULATORY CHANGES

- **The AULGs do not oppose a performance based standard, although we feel a dose based standard that requires hypothesizing on the life styles and habits of some future critical group introduces too many areas of conjecture and contention.**





REGULATORY COMPLIANCE - PROPOSED REGULATORY CHANGES (cont.)

- **The exclusive use of Total System Performance Assessment to determine repository performance**
 - **does not provide for defense in depth**
 - **requires the use of stacked and abstracted models in an analysis of system performance that is not easily comprehensible by the public**

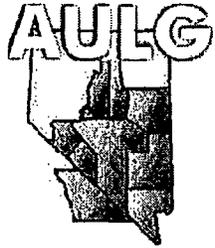




REGULATORY COMPLIANCE - PROPOSED REGULATORY CHANGES (cont.)

- **The AULGs believe that a ground water travel time standard should be maintained as part of the requirements for repository performance.**
 - **to provide defense in depth by the use of the “safety net” of a limit for the most likely transport method — ground water**
 - **to increase public confidence**





REGULATORY COMPLIANCE - PROPOSED REGULATORY CHANGES (cont.)

- **The decision by the NRC to release proposed standards prior to the release of standards by the EPA, while intended to provide DOE with a standard to use as a goal, creates additional confusion as to:**
 - **What the eventual standards may be**
 - **Who controls the different portions of the regulatory environment**





REGULATORY COMPLIANCE - TRANSPORTATION

- **The ten AULGs collectively represent the “end of the funnel” for transportation to Yucca Mountain.**
 - **The DOE budget for transportation planning has been substantially reduced**
 - **Additional low-level waste transportation to the Nevada Test Site, including potential intermodal shipments, increases the importance of transportation planning**





REGULATORY COMPLIANCE - TRANSPORTATION (cont.)

- **The AULGs believe that low-level waste transportation routes will likely set a precedent for high-level shipments which:**
 - **Avoid the metropolitan Las Vegas area**
 - **Use longer routes in rural areas on non-interstate roads**
 - **and relocate transportation routes to areas with less emergency response capability**





REGULATORY COMPLIANCE - TRANSPORTATION (cont.)

- **The AULGs believe that radioactive materials can be transported safely, provided:**
 - **Transportation planning and preparation is done in a timely manner, and done cooperatively with local governments**
 - **Sufficient resources are available to prepare local jurisdictions for routine transportation and potential impacts**

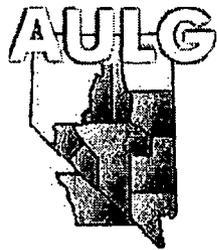




SUMMARY CONCLUSIONS/RECOMMENDATIONS

**MARCH 16, 1999
ROCKVILLE, MD**

MIKE BAUGHMAN, PhD.



SUMMARY CONCLUSIONS & RECOMMENDATIONS

- **NRC should seek AULG input to NRC comments to the Viability Assessment and Draft Yucca Mountain Environmental Impact Statement.**
- **NRC should encourage DOE to increase its emphasis upon the early identification and resolution of transportation issues (routing, mode, etc.).**
- **NRC should require DOE to reduce uncertainties within the Draft Yucca Mountain Environmental Impact Statement.**



SUMMARY CONCLUSIONS & RECOMMENDATIONS (cont.)

- **NRC should encourage DOE to provide comprehensive inclusion of measures to mitigate impacts within the DEIS.**
- **NRC should plan on including measures to mitigate impacts as conditions to licenses to construct and operate the Yucca Mountain repository.**



**U.S. DEPARTMENT OF ENERGY
YUCCA MOUNTAIN REPOSITORY PROJECT
AFFECTED UNITS OF LOCAL GOVERNMENT
PROGRAM SUMMARIES**

MARCH 16, 1999

**AFFECTED UNITS OF LOCAL GOVERNMENT
YUCCA MOUNTAIN PROJECT
PROGRAM SUMMARIES**

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APPENDIX A

AFFECTED UNITS OF LOCAL GOVERNMENT YUCCA MOUNTAIN PROJECT PROGRAM SUMMARIES	A - 1
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Churchill County
Clark County
Esmeralda County
Eureka County
Inyo County
Lander County
Lincoln County
Mineral County
Nye County
White Pine County

APPENDIX B

AFFECTED UNITS OF LOCAL GOVERNMENT YUCCA MOUNTAIN PROJECT CONTACT PERSONS	B - 1
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AFFECTED UNITS OF LOCAL GOVERNMENT YUCCA MOUNTAIN PROJECT

1.0 BACKGROUND

The Nuclear Waste Policy Act, as amended (NWPAs), designated the Yucca Mountain site in Nevada as the only site to be considered for a geologic repository for disposal of spent fuel and high-level nuclear waste. The NWPAs also provided for "affected units of local government" (AULGs) within the vicinity of Yucca Mountain to oversee and participate in the Yucca Mountain Project. By affording AULG participation rights, Congress sought to increase public confidence in the scientific integrity of the repository program, provide citizens the means to interact with the federal government, and demonstrate a commitment to external oversight.

Nine counties in Nevada and one in California have been designated as affected counties.¹ These counties are eligible under the NWPAs to receive financial assistance for a variety of purposes, including:

- Monitoring DOE activities
- Assessing impacts of site characterization and repository development
- Making recommendations to the Secretary of Energy
- Developing claims for impact mitigation and/or compensation assistance
- Keeping county residents informed of project activities and issues.

In addition, Nye County, as the situs county, is entitled to on-site representation in order to monitor DOE's day-to-day site characterization activities.

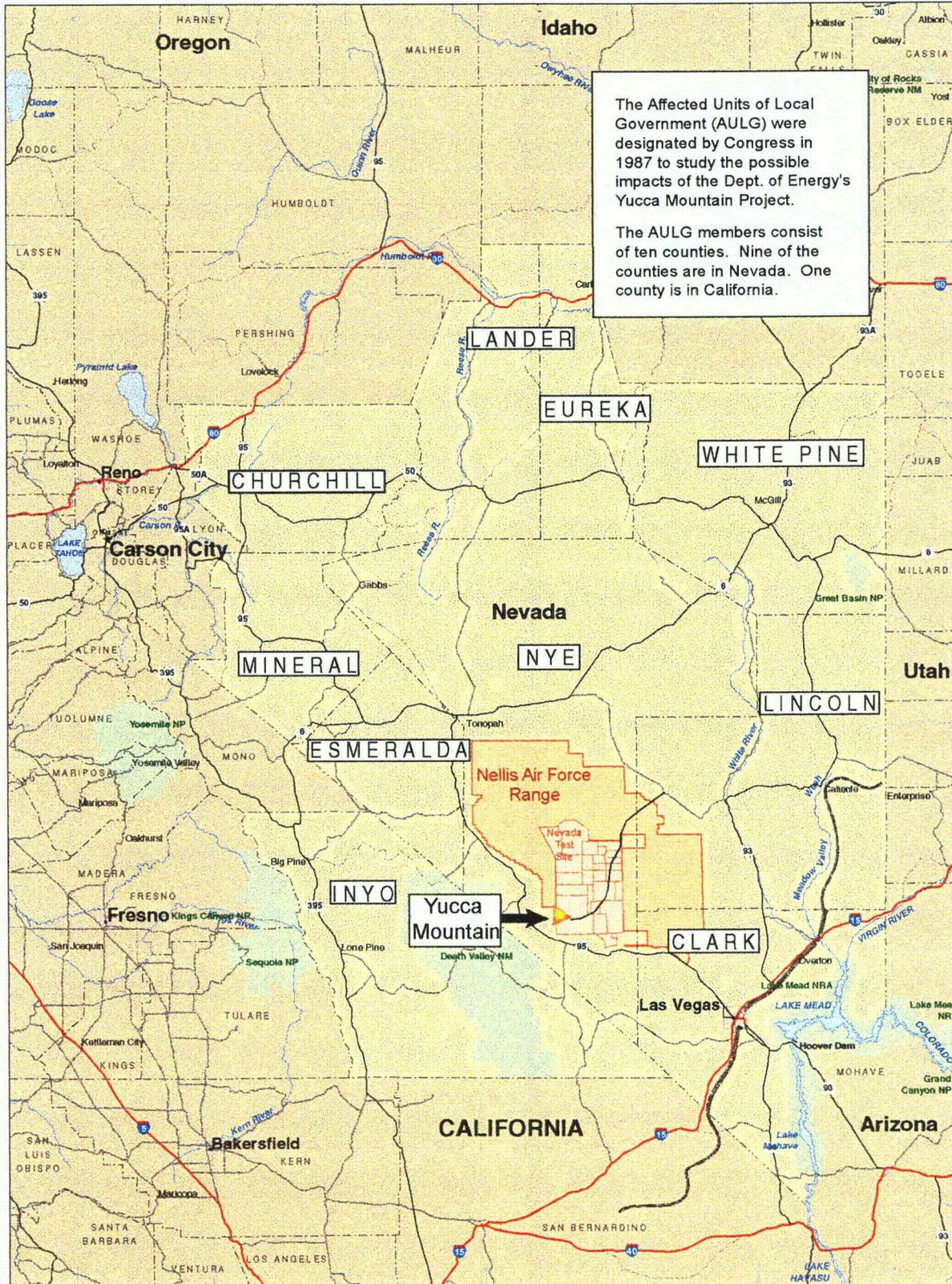
This annual report provides a combined summary of the affected county activities to meet their responsibilities under the NWPAs, with particular emphasis on accomplishments and cooperative efforts to share resources and responsibilities. The counties' programs are generally divided into eight elements:

- Program management
- Program monitoring, review and comment
- Socioeconomic monitoring and impact assessment
- Geotechnical analysis, independent scientific investigations, regulatory and licensing analysis, and on-site representation
- Environmental and radiological impact monitoring
- Transportation issue identification and resolution
- Emergency management issue identification and resolution
- Public information, involvement, and education

¹ The situs jurisdiction, Nye County, was specified by the NWPAs. Churchill, Clark, Esmeralda, Eureka, Inyo, Lander, Lincoln, Mineral, and White Pine were subsequently designated by DOE.

Appendix A lists specific activities and accomplishments for each county under each program element. A listing of affected county contact persons is included in Appendix B.

Affected Units of Local Government



The Affected Units of Local Government (AULG) were designated by Congress in 1987 to study the possible impacts of the Dept. of Energy's Yucca Mountain Project.

The AULG members consist of ten counties. Nine of the counties are in Nevada. One county is in California.

1.1. The Need for Effective Local Government Oversight Programs

The Yucca Mountain Project has reached a pivotal junction. During the coming two years DOE will determine the viability of seeking a license to construct a repository at Yucca Mountain. DOE will also complete National Environmental Policy Act (NEPA) compliance documentation and prepare a construction license application to be submitted to NRC. These activities will involve requirements for document review, independent impact assessment and constituent involvement by affected counties.

What is just as important to the affected counties, is that DOE will make a determination of site viability on the basis of a less extensive site characterization program than was previously envisioned, in order to reduce costs and meet scheduling requirements. To be effective participants in the program, local governments must have the technical capability to fully engage DOE and others on the complex technical issues surrounding site characterization, site suitability, and licensing. The nation's commitment to meaningful oversight by affected local governments will be measured by the degree to which funding to the affected counties is provided at levels to conduct independent assessments and effectively monitor DOE OCRWM activities.

Beyond site characterization and licensing activities at the repository site, Congress continues to pursue legislation which would establish interim storage near Yucca Mountain and commence waste shipments by 2001. This gives new urgency to route selection, transportation impact assessment, and emergency preparedness. Interim storage at the Nevada Test Site could present new and unforeseen challenges to the affected counties. Taken together, these developments present significant new challenges for affected counties to effectively oversee and participate in DOE's expanded technical program.

1.2 The Characteristics of the Yucca Mountain Repository Program As Determinants of Local Government Oversight Program Requirements

The Yucca Mountain Project presents a unique set of challenges to affected local governments. The technical challenges of determining site viability, site suitability and eventually licensing and constructing a repository are unprecedented. At the same time, much of the public is skeptical of the federal government. In this complex and rapidly changing climate, affected counties have a vital interest in 1) participating in site characterization and site viability/suitability evaluations, and, 2) assessing for themselves the impacts of interim storage, transportation, site characterization and repository development. Additional features of the Yucca Mountain Project that influence the affected counties' oversight program requirements include the following:

- Yucca Mountain is the only candidate site for a civilian repository, and no contingency plan address the possibility that Yucca Mountain may be found unsuitable for a repository. Several billion dollars have already been spent on the project, and billions more are anticipated. Powerful "institutional momentum" threatens to advance the program without full consideration of regulatory safeguards designed to increase public confidence and safety. Access to information has been the fundamental tool that has historically protected the general public and our democratic system from the threat of an excessive and arbitrary government. This protection was wisely provided for in the NWPA, as amended, by according a strong role for affected local governments. As noted by the Secretary of Energy's Advisory Board Task Force on Public Trust and Confidence, an informed public, armed with independent technical analysis, is one of the few alternatives that have the potential for protecting the public.

- If an interim storage facility and/or a repository is eventually constructed at Yucca Mountain and begins operations, the nation's most toxic waste will be transported by rail and highway through Nevada to the site. Residents and the natural environment would be at risk for potential contamination. Protection from radiologically related risks to the public's health and safety and the biosphere (acknowledged to be both real and perceived) is an essential function for affected local governments hosting the repository site or through which the waste would be transported.
- The repository program is extremely complex technically and involves many different organizations. The counties must interact with the Yucca Mountain Site Characterization Project Office, a multi-billion dollar enterprise over many years, other federal agencies and oversight organizations, state government, other local governments and organizations, local groups and the general public. Effective participation in this immense program, as dictated by the scale of the risk to which the counties could ultimately be exposed requires resources the counties do not have, and substantial expertise that the counties must develop.
- The duration of the Yucca Mountain Project's pre-closure activity phase has been projected to range from a minimum of 6-7 more years of site characterization, to 50 or more years (if the site is licensed). The project's technical uncertainty, and dynamic socioeconomic context, coupled with the fact that many potential impacts are not well understood, dictates the need by affected local governments to establish and operate comprehensive monitoring and impact assessment systems.
- The Yucca Mountain Project generates a tremendous volume of information. Affected counties must review, organize, store, and retrieve information and communications produced by the DOE, other federal agencies, affected local governments and others.

1.3 Cooperation and Coordination

To ensure that financial assistance funds are used effectively and efficiently, the affected units of local government have diligently cooperated to develop coordinated oversight and impact assessment programs. Coordination on the part of counties has minimized the potential for duplication of effort and made maximum use of available funds. In general, the counties cooperate and coordinate through the following activities - meetings of the State, Tribal, Local Government Coordinating Group, routine sharing of reports, data, and correspondence, cooperation on public information initiatives, cooperation on technical monitoring and analysis, and, cooperation in systems development and applications. The following are examples of specific cooperative initiatives:

- The State, Tribal, and Local Government Coordinating Group meets periodically to exchange information and work together on issues of mutual concern. Meetings of the group are held in each of the affected counties on a rotating basis. Subcommittees have also been formed to focus efforts on issues of special interest, such as engineered barriers, geohydrology, transportation and emergency response, and coordination of information systems.
- Licensing Support Network (LSN) compatible websites are being developed to provide easy access for interested persons to documents developed by the affected counties and simplify communications among the counties.
- Nye County will share its data and findings from its major initiatives in the areas of geology and hydrology, and its analysis and findings on licensing and regulatory matters. Clark County also maintains a technical oversight capability and shares the results of its initiatives.

- The affected counties coordinate their emergency management and transportation planning programs.
- Nye County has developed and is utilizing a computer model which allows the testing of alternative scenarios for repository development to facilitate socioeconomic impact assessment. The system is being made available for use by other counties.
- Clark County is currently developing assessment systems to determine potential impacts from Yucca Mountain activities. These systems are being developed in coordination with the incorporated cities and unincorporated areas of Clark County and are available to other counties..
- Draft comments to DOE and other agency documents are routinely shared by the counties.
- Established economic/demographic models will be adapted by other affected counties for application in their respective programs, significantly reducing developmental costs.
- Affected counties have shared with one another their approaches and experiences with geographic information systems and other computer programs and models.
- Nye and Inyo counties are cooperating on a research project to characterize the interbasin relationships in the Amargosa Valley hydrogeologic system. This system is immediately down gradient from Yucca Mountain.
- Clark County has shared monthly reports on additions to its document and information system with all affected counties.

2.0 PROGRAM ELEMENTS

The following sections provide general descriptions of the various program elements reflected in most county oversight programs. The relative emphasis given to each program element differs among the affected counties. For example, Nye County, through its on-site representation function, has emphasized site suitability issues; Inyo County is most interested in the hydrogeologic system in the region, and Clark County has major focus upon socioeconomic impacts due to transportation.

2.1 Program Management

This element encompasses day-to-day management of each affected county's program. The majority of programs are staffed by at least one full-time employee who is principally located at the respective county seats. Funds are expended under this element in a number of key areas:

Program Salary and Benefits: These costs include salaries and fringe benefits for the staff and contract employees who administer support, and manage the county programs.

Operating Expenses: These include basic expenses for day-to-day operation of a program, such as purchase of supplies, office rent, printing and copying, equipment maintenance and repair, telephone, utilities, publications and periodicals, postage, and equipment rentals.

Equipment Purchase and Maintenance: Implementation of oversight and impact assessment programs requires purchase of equipment, especially computers, which facilitate access to and review of information. The primary purposes of this equipment include 1) technical and administrative management, 2) electronic information sharing, 3) database management, 4) impact assessment modeling, 5) electronic document control, and 6) geographic information systems. County cooperation has reduced the requirement for redundant equipment purchases.

Travel: County officials, staff, and contractors must often travel to interact with organizations and individuals throughout Nevada and the nation. In particular, representatives from affected counties attend and participate in meetings conducted by DOE, DOE prime contractors, the Nuclear Regulatory Commission, the Nuclear Waste Technical Review Board, the State of Nevada, and procurement and contract management specialists. County representatives also participate in national conferences addressing repository-related issues and have toured various nuclear facilities. Finally, Clark and Nye counties, along with the NRC, have regularly observed the conduct of DOE's audits of participant quality assurance programs. Affected counties actively coordinate meeting coverage and reporting in order to reduce cost and attendance redundancy.

Training: To effectively administer and understand the complexities of the Yucca Mountain project oversight program, a certain amount of training is seen as essential to most counties. Program staff may require training in support functions such as financial management and document processing, and in more technical functions such as geographic information system management, regulatory compliance, quality assurance, and other waste management issues.

Contract Management: Because of the repository program's complexity, including its regulatory and technical elements, the affected county programs must use contractors to assist with technical, socioeconomic and program management, data collection and analysis, on-site monitoring, impact assessment, legal research, public information, and regulatory oversight. Although it would not be desirable for all counties to use the same contractors, counties do coordinate their use of contractors whenever appropriate. For example, Lincoln, White Pine and Esmeralda counties have utilized the University of Nevada Reno and the University of Nevada Las Vegas to develop and utilize economic impact and transportation risk models, respectively.

2.2 General Program Monitoring, Review and Comment

Under this element, affected counties participate in a variety of local, regional, and national forums and meetings on the waste management program. Participation at these meetings ensures that the concerns and perspectives of the affected jurisdictions are effectively communicated to federal, state, and other local governments involved with the waste management program.

Monitoring: Monitoring of legislative actions affecting local governments and Yucca Mountain is an essential element in the oversight process. Observation of DOE activities in other state, federal, regional, and local arenas is also important. Monitoring of current activities (on and off-site) focusing on fiscal expenditures, employment, and policies are some of the oversight topics expected to be continued in FY99. Affected counties will also continue to monitor key technical meetings and activities of the Nuclear Regulatory Commission, Nuclear Waste Technical Review Board, industry groups, and other organizations.

Activity Review: Local governments review and comment on a variety of federal, state, and other local government publications pertaining to nuclear waste management. In particular, AULGs anticipate additional technical review of the exploratory studies facility and associated geotechnical issues, such as faulting. These reviews are critical, not only to keep the counties informed on program developments, but to communicate their concerns to DOE and other organizations. The Yucca Mountain Environmental Impact Statement and Viability Assessment are key documents to which counties will offer pre-publication input on, review and provide comments to during FY 1999.

2.3 Socioeconomic Monitoring and Impact Assessment

Affected counties are extremely concerned about the potential impacts of interim storage, site characterization, repository development, and transportation on the quality of life and economic vitality of their communities. Therefore, a major priority for the affected counties is to develop the data and analytic capabilities need to assess potential socioeconomic impacts of the waste management system. To varying degrees, every affected county is assessing socioeconomic impacts. Potential impacts of a repository are only generally understood at present. The schedule, pace, and potential repository configuration are uncertain and dependent on the federal funding cycle. This combination of a highly uncertain and poorly understood (in socioeconomic terms) project occurring in a dynamic socioeconomic climate dictates the need to develop monitoring and assessment systems with the capacity to perform ongoing assessments. As appropriate, counties are collaborating to use similar monitoring and assessment systems and data collection techniques.

Baseline Data Gathering: All affected counties are gathering baseline data on local socioeconomic conditions. Some programs are concentrating on population characteristics in order to ascertain impacts from population influx and out-migration. Other programs are attempting to understand calculated or perceived risks that would arise from locating, operating, or transporting nuclear waste in close proximity to population centers. Information gathered from these programs is often incorporated into database formats for modeling or use in geographic information systems. Other baseline data collection efforts are concentrating on community potentials, policies, and planning issues relevant to Yucca Mountain activities. Where socioeconomic conditions and anticipated impacts are similar, local governments are attempting to coordinate their study approaches.

Geographic Information Systems: Geographic information systems (GIS) have become vital tools for information management, assessment, planning and presentation. Depicting data spatially is an important tool for use in better understanding potential impacts. The Yucca Mountain Project, itself, is using GIS to address the massive information base it is generating. The affected local governments are using GIS to interpret, evaluate, and display a variety of physiographic and socioeconomic data and trends.

Graphic displays provided by GIS make it much easier to understand and plan for the complex interplay of socioeconomic, transportation, and environmental conditions. In addition to use in planning, GIS also provides ready access to the massive amounts of repository and transportation-related data.

Through a number of avenues, local and federal agencies are attempting to coordinate their GIS efforts and maintain a level of congruity among agencies in an attempt to optimize the data's integrity and usefulness. The counties also share consultants and university resources in planning and implementing GIS systems.

Surveys: Some affected counties have used survey methodologies to better understand the attitudes and motivations of their communities. These surveys usually focus on public perception, saliency of Yucca Mountain, public acceptance, public trust and confidence, and a variety of independent issues unique to each jurisdiction. Labor market and economic impact surveys have been undertaken by counties to better understand local labor supply characteristics, economic conditions that may be affected, impact assimilation capacities, and mitigation needs.

2.4 Geotechnical Analysis, Independent Scientific Investigations, Regulatory and Licensing Analysis, and On-Site Representation

Affected counties believe that the evaluation of Yucca Mountain's suitability for a repository must be done with the utmost attention to quality science and technical analysis. For this reason, the counties have given particular attention to their approach to monitoring the characterization of Yucca Mountain. Three approaches have been adopted, to varying degrees, to address this aspect of the AULGs' responsibilities.

On-Site Representation: This activity entails having qualified personnel directly monitor site characterization activities and observe other agencies as they conduct their oversight activities. As provided for in the NWPA, as amended, Clark and Nye county maintain on-site representatives to monitor geotechnical and other activities at Yucca Mountain. The information gathered by these efforts is shared with all the affected counties.

Document, Study Plan, and Progress Report Review: Affected counties also review and comment on documents, study plans, and progress reports generated by DOE. Each county shares its comments with the others. During the coming year, particular emphasis will be placed upon review of the Viability Assessment and the Yucca Mountain Environmental Impact Statement.

Proactive and Independent Scientific and Technical Analysis: A third approach to oversight is to conduct independent analysis to verify or validate work performed by DOE. Nye County has undertaken a proactive program of independent scientific and technical analysis of issues that are important to site suitability determinations and potentially affected by study methodology. A well-qualified scientific team and support laboratory facilities are in place with the intent, for example, of independently analyzing the Yucca Mountain Project's splits of rock, gas and water. The foundation for this approach is provided by the Protocol for On-Site Representation, mutually agreed to by Nye County and DOE. The protocol requires Nye County access to samples and assures DOE that Nye County's work will not be disruptive of ongoing site characterization activities.

2.5 Environmental and Radiological Impact Monitoring

Another major concern of the affected counties is the potential for impacts to the environment caused by off-site releases of radionuclides. The history of inadvertent and unannounced radionuclide releases from the Nevada Test Site gives the so-called "downwind" counties great cause for concern. This element includes all efforts to establish a baseline understanding of environmental and radiological conditions at Yucca Mountain and the possible impacts of Yucca Mountain activities during site characterization and repository development.

Baseline environmental studies: Several counties have begun to collect baseline data on environmental conditions along transportation corridors.

Epidemiological studies: Counties which are located in historically downwind locations from the Nevada Test Site are planning or considering conducting epidemiological studies to assess the health impacts of atmospheric nuclear testing on their populations. These counties are particularly interested in cumulative health and environmental doses.

2.6 Transportation

Since all the nation's high-level waste and spent fuel could be transported through Nevada, transportation risks and impacts are of great concern to local jurisdictions. Local government coordination on transportation issues is being accomplished by sharing data development sources and analytic models. Research and analysis are focused on the following areas:

Baseline Data Development: Work has been concentrated in obtaining existing data or developing new data on rail and highway conditions and usage. Where applicable, local jurisdictions have used available information sources. However, in many areas, AULGs have had to conduct independent transportation studies. These studies have been designed to evaluate highway and rail conditions, factors contributing to safe transport and accidents, characteristics of potential shipments, and options for routing shipments so as to minimize health risks and environmental and economic impacts..

Highway Transportation Network Risks and Analysis: Counties with potential transportation routes are developing county-specific transportation monitoring and assessment programs. Current and potential research topics include creating an inventory of, and monitoring traffic volume and characteristics, and highway conditions. In addition, affected counties are focusing their efforts on developing methods and systems for assessing the potential risk and stigma effects on communities adjacent to transportation routes. Topics of concern include the potential impacts on the desirability of these communities as places to live and locate businesses, and impacts on gaming and tourism.

Rail Transportation: Some affected counties have conducted considerable research on rail transportation. Areas of concern and analysis have focused on current railway conditions in Nevada, safety and risk analysis, and engineering considerations. Use of GIS has aided in understanding current rail corridors and the possibility of proactively assessing the feasibility of future route selection. Work is planned to consider potential rail corridors relative to the protection and enhancement of natural resources near rail corridors. Several counties are using models such as TRANSCAD and RADTRAN to define the risk associated with rail transportation. Affected counties will continue to coordinate these efforts with one another.

2.7 Emergency Management

Emergency preparedness is a key issue in each of the affected jurisdictions. Counties are seeking to understand, inventory, and assess federal, state, and local emergency response capabilities. Reports and databases are currently being developed to ascertain the requirements and federal guidelines, such as FEMA REP 5, as they pertain to local emergency response systems. Counties are developing recommendations for local training and equipment required to establish and maintain adequate first responder capabilities to incidents and accidents involving radioactive wastes.

2.8 Public Information, Involvement, and Education

Individual jurisdictions take a variety of approaches to public information and education. Diverse social and environmental issues among counties contribute to differing needs and priorities among their respective citizenries. Each jurisdiction has developed a public information and education program tailored to meet the specific needs of its citizens. Traditional information streams have not adequately informed the public on major issues of concern. County programs are working to fill the gaps left by traditional information sources by a variety of approaches:

Newsletters: Newsletters are one of the most effective ways to communicate at the local level. Most of the ALGs produce newsletters that cover recent project-related events, county oversight activities, issues of local concern, publications, and meeting schedules. Several counties are cooperating on newsletter production.

Public Presentations: Public speaking engagements in a variety of forums have become a benchmark for education and information dissemination. Program updates and question and answer periods have allowed most jurisdictions to distribute information about the Yucca Mountain Project and county oversight programs. Discussions in public schools have helped increase awareness of political and scientific processes among citizens. Speakers bureaus are becoming more popular as public interest in the Project grows. All affected counties make presentations to interested organizations in their areas about the Yucca Mountain Project and their oversight programs.

APPENDIX A

**AFFECTED UNITS OF LOCAL GOVERNMENT PROGRAM SUMMARIES
YUCCA MOUNTAIN PROJECT**

Churchill County
Clark County
Esmeralda County
Eureka County
Inyo County

Lander County
Lincoln County
Mineral County
Nye County
White Pine County

CHURCHILL COUNTY

Program Goals:

The primary goals of the Churchill County Oversight Program are to focus limited resources to:

- Conduct adequate program oversight and monitoring.
- Identify potential impacts affecting the state and local community areas..
- Provide appropriate levels of public information.
- Understand key geotechnical issues facing the repository program.

Major Activities:

Program Management

The program is actively managed by Churchill County Administration and staff. The County utilizes existing staff resources for program related activities. A management consultant provides planning and assessment services for the County. County staff are responsible for coordinating the public information program.

General Program Monitoring

Program oversight and monitoring activities are guided by the County's Monitoring and Oversight Plan. This plan directs oversight resources to key repository issues and activities. Status reports are prepared for elements identified in the Plan.

General program monitoring is achieved through a cooperative arrangement with Lander County. Both Counties utilize the services of one consultant to attend meetings, review correspondence and reports, and provide analysis of program activities and issues.

Socioeconomic Monitoring and Impact Assessment

In previous years, Churchill County had investigated potential social and economic impacts associated with the repository program. Potential fiscal impacts including impacts to local government revenue sources, and property values were identified and analyzed. The County will continue to monitor risk related behavior, its affects on tourism, and the associated economic and fiscal impacts.

Geotechnical Analysis

Churchill County does not have adequate financial resources to engage in independent scientific evaluations of the repository program. The County does, however, review key technical issues which will be included in the site suitability analysis and the viability assessment. Status reports on key issues will be prepared. The County will monitor activities of technical groups such as the NRC, and the Nuclear Waste Technical Review Board.

Environmental and Radiological Monitoring

Churchill County has taken an active role in the National Environmental Policy Act (NEPA) compliance activities of the Department of Energy. Churchill County has retained the services of an environmental consultant to review the upcoming Yucca Mountain Draft Environmental Impact Statement and provide input into this decision making process.

Transportation and Emergency Management

Churchill County is in the process of completing a comprehensive review of federal and state emergency response resources, and identifying applicable local emergency response standards. The County has actively participated in a separate planning and oversight program related to low level waste shipments to the Nevada Test Site.

Public Information

Churchill County has an active public information program. The County provides annual public tours of the Yucca Mountain site and high school field trips. Additionally, the County produces newsletters which are distributed as inserts to nearly 6,000 subscribers. The County will produce its first newsletter this Spring. Public presentations will be scheduled for this year. In the past, the County sponsored several presentations to groups such as Churchill County High School, local governments, and community and civic organizations.

Completed or Planned Activities for 1998-99:

- ▶ Reviewed and provided comments to DOE's request for proposals for privatization of the waste transportation system.
- ▶ Provided comments to the proposed revision of liability standards for nuclear waste accidents.
- ▶ Participate in transportation planning activities such as the Transportation External Coordinating Group.
- ▶ Participate in the affected unit of local oversight subcommittees.
- ▶ Prepare and distribute quarterly newsletters.
- ▶ Conduct a review workshop and provide technical assistance in preparation for the Yucca Mountain Environmental Impact Statement.
- ▶ Prepare issue summaries to be used in the review and comment of the Yucca Mountain Viability Assessment.
- ▶ Develop the ability to access Yucca Mountain information databases.
- ▶ Review Viability Assessment and Yucca Mountain Environmental Impact Statement.
- ▶ Review proposed NRC repository siting guidelines.

CLARK COUNTY

Introduction

Since Clark County's 1988 designation by the Department of Energy as an *affected unit of local government*, the Nuclear Waste Division, (NWD) has maintained a comprehensive program to address an extensive array of Yucca Mountain Program (YMP) issues. Of primary concern are potential impacts to the public health and safety of the citizens of Clark County, Nevada, related in large part to Clark County's history of serving as a primary transportation route for nuclear materials and waste to the Nevada Test Site (NTS). Clark County includes the cities of Boulder City, Henderson, Las Vegas, Mesquite and North Las Vegas. Approximately 70% of Nevada's population lives in the county, and local area hotel/casinos contribute an equivalent amount of gaming revenue to the State's economy. Thus, the determination of potential adverse impacts to Clark County's vibrant tourist-based economy is an important NWD program element.

In addition to local concerns, Clark County also has a strong commitment to ensuring that the technical studies and analyses conducted by DOE adequately consider the suitability of the Yucca Mountain site. To meet these responsibilities, Clark County will continue to be engaged in monitoring the complex technical and policy issues surrounding site characterization.

In both the impact assessment and site characterization monitoring programs, an important priority is the involvement of Clark County stakeholders through a variety of strategies and approaches.

Current Activities

The evaluation of socioeconomic, transportation, public safety, and related impacts will dominate our study program in FY 1999. Key activities to be addressed by Clark County during 1999 are briefly summarized below:

Review and Evaluation of Key Documents:

- **The Yucca Mountain Environmental Impact Statement (YMEIS).** The draft YMEIS will be released in July 1999. Emphasis will be placed on ensuring that the potential impacts to Clark County, e.g., transportation, public safety, service demands, fiscal effects, socioeconomic conditions, environmental justice issues and others) are accurately described in the final EIS. Among issues of concern are intermodal transportation alternatives to be evaluated for the Valley, Arden, Jean and Apex rail sidings, and legal weight truck routes on Interstate 15, U.S. 95 and the present and proposed Las Vegas Valley beltway.
- **The Viability Assessment (VA).** The VA is an important interim document in the site characterization process. The Total System Performance Assessment (TSPA) is of particular interest to Clark County. It is designed to provide an assessment of the current state of the site characterization program. While Clark County will review the entire document, efforts will be concentrated its on reviewing the various components of the TSPA. Other key VA documents of interest to Clark County are the license application plans and the evaluation of the repository design.

- **Proposed Interim Storage Legislation.** An immediate concern is the current efforts by Congress to legislate the development of an interim facility for storage (ISF) of spent commercial nuclear fuel at Area 25 of the Nevada Test Site. An ISF could be completed by 2002 with a potential operational life expectancy of up to 100 years. Part of Clark County's plan for 1999 is to consider the need to plan for contingencies in case the legislation is approved and an ISF constructed.

Should interim storage legislation be successful in 1999, Clark County could be faced with a number of problems. The use of private carriers still raises concerns about the mode of transport [a large number of shipments could still occur by truck] and routing [traditionally the practice has been for radioactive waste shipments destined for the Nevada Test Site to be transported through the Las Vegas Valley].

Interaction with Governmental Entities, Regional Organizations and Other Groups.

A unique aspect of the Yucca Mountain Program is the large number of organizations and committees that are overseeing the multitude of tasks required for site characterization. Clark County, as an affected local government, has actively participated with these groups on policy, technical and information issues. Program coordination will be on a number of governmental levels.

While Clark County's direct responsibility is to determine effects on unincorporated areas of the county, it is also important to provide funding and resources to incorporated jurisdictions to enable them to assist the county in determining community-wide impacts. As in the past, funding will be provided to the cities of Boulder City, Henderson, Las Vegas, Mesquite and North Las Vegas. Funding support has also been offered to the Moapa Band of Paiutes whose tribal lands are within the jurisdictional boundaries of Clark County.

Public Involvement

Clark County will continue its program to provide information and access to information, as requested, to all members of the public, interested groups, staff of governmental agencies, County officials and other interested parties. The major information to be provided is concerned with NWD program activities, various aspects of the DOE Yucca Mountain Program and related areas. Clark County will attempt to expand opportunities for providing information to the public and involving segments of the public in program development through innovative and aggressive use of the World Wide Web. It is probable that the NWD will reconstitute its newsletter during 1999.

Clark County also has had an Advisory Steering Committee since 1988 to assist staff in evaluating Yucca Mountain Program activities. Membership includes representatives from the county's incorporated cities, the Clark County Regional Transportation Commission and seven citizen members.

Site Characterization Monitoring

The single most important component of the Viability Assessment for Clark County will be the Total System Performance Assessment (TSPA). The TSPA will be a major factor in determining whether the characterization of Yucca Mountain will continue. If the results are determined to be positive, analyses will continue to be performed by DOE to prepare a license application for submittal to the Nuclear Regulatory Commission. One element of the TSPA that Clark County will track will be the models and

components thereof that DOE will employ for decision-making. Other issues regarding the VA and TSPA that are critical to Clark County including sections of the life-cycle cost document and the plan for license application submittal.

Questions to be considered regarding modeling and other sections of the TSPA/VA relate to adequacy and completeness of critical data inputs of the performance assessment; addressing of uncertainties and use in the final result; and, limitations of the performance assessment,

The second major task of the site characterization monitoring program is to stay current with ongoing activities at the Yucca Mountain site by following and commenting on the ongoing site characterization activities at Yucca Mountain. This includes visiting the Yucca Mountain site a minimum of twice per month, and staying up to date on current and planned field work and activities in the ESF. In addition, Clark County staff will gather information about the Yucca Mountain Program by engaging in institutional interactions with a number of federal, regional, state and county agencies.

Impact Assessment and Monitoring

The major purposes of this program activity are to determine and report on present and potential effects of the characterization, construction, and operation of a Yucca Mountain repository on Clark County populations, institutions, commerce, natural environment and transportation system; review and comment on all DOE environmental impact statements, documents and programs in relation to effects on Clark County, and, prepare preliminary guidelines for a request for impact assistance [if directed by Clark County Board of County Commissioners]. These goals will be met in conjunction with an Impact Assessment Task Group that will consist of representatives of cities, tribes and other entities whose agreements with Clark County include the exchange of information for use in impact assessment, monitoring and program review.

Three specific projects will be completed during 1999, including the development of a comprehensive plan for a Clark County impact identification and assessment; the review and commentary on DOE and other documents such as environmental impact statements, environmental analyses, and program plans related to Yucca Mountain and the Nevada Test Site; and, the development of a guidance document for the development of a **Clark County Request for Impact Assistance** for possible future use as directed by the Clark County Board of County Commissioners.

Transportation Analysis and Monitoring

The purposes of the NWD transportation program are to implement a process for performing transportation analysis which is technically sound, within existing policy guidelines and best practice in the field; and, monitor and review all DOE transportation programs for compliance with legal and professional requirements and accepted practices, and potential effects on Clark County residents, visitors, economy and the natural environment.

An important part will be participation in appropriate meetings, seminars and conferences. This task will be implemented by participation in conferences on the issue of transporting high level waste. The task will include a data collection program targeted at obtaining the specific information needed by the County. The task will be coordinated with other staff members to ensure that the group's data requirements are fulfilled.

ESMERALDA COUNTY

Esmeralda County has been overseeing the site characterization of Yucca Mountain since 1988 even though Esmeralda County was not granted "affected" status by the U.S. Department of Energy until 1991 after successful joint petition with Inyo County, California, to the Ninth Circuit Court of Appeals.

Esmeralda County's proximity to the proposed repository in neighboring Nye County and its location on a potential highway route and rail route make it vitally interested in the environmental, health and safety impacts of the project its socioeconomic effects.

Esmeralda County seeks to ensure that repository siting activities, and subsequent transportation of wastes through the County do not cause adverse impact on the public health, safety or welfare of County citizens. To this end, the County has established a Repository Oversight Program (ROP) to review, monitor, and evaluate federal siting activities at Yucca Mountain. The objectives of this program are to:

- Oversee and monitor the Department of Energy program activities including testimony and written comments on specific program elements.
- Inform and educate the public through an "Esmeralda Report" newsletter, provide speakers to County residents and sponsor tours of the Yucca Mountain site for both adults and students to provide residents with an understanding of the repository siting effort.
- Support a Citizen Advisory Council composed of Esmeralda residents. The Advisory Council provides citizen input to the Board of County Commissioners on the repository program.
- Identify potential transportation impacts from proposed highway, and rail routes, including needed improvements to the highway transportation and development of a risk management plan.
- Assess our present emergency response capabilities with our first responder personnel to determine training and equipment needs should nuclear waste be transported through the County.
- Identify equity offsets and methods of mitigating adverse impacts associated with waste transportation and a repository.
- To evaluate alternative transportation routes for the purpose of reducing local impacts

EUREKA COUNTY

Introduction

Eureka County has a duty to its citizens to provide oversight of the DOE's Yucca Mountain nuclear waste activities and plans. The impacts, effects, and risks of proposed transportation routes and other repository-related activity require a full level of involvement and oversight by Eureka County. DOE continues to consider a number of possible rail routes to transport nuclear spent fuel and high-level radioactive waste to Yucca Mountain from the nation's nuclear power plants and defense facilities, including rail routing through Eureka County.

Eureka County has established a basic program that (1) informs the public about the repository project; (2) collects and analyzes baseline socioeconomic and transportation data; and, (3) provides oversight and monitors site characterization, planning, and the regulatory process.

Previous Accomplishments

Since the inception of Eureka County's nuclear waste program in 1992, the county has initiated and established a program to provide monitoring and oversight of the Yucca Mountain project, and to gather and analyze data related to possible impacts to Eureka County. Activities have included designing and implementation of a public involvement and education program, establishing an information office, monitoring repository related developments, initiating the Town History program, and developing Geographic Information Systems (GIS) capacity to collect and analyze data. The county has also studied socioeconomic conditions and trends, transportation impacts, emergency management conditions and needs, and data about past radioactive fallout in Eureka County.

Current Activities

Transportation Assessment Program

One of the likely Yucca Mountain impacts would be transportation of nuclear waste by rail, truck, or both, through Eureka County. To assess those impacts, it is necessary to develop baseline transportation data for rail and truck movement. Designation of a rail corridor by DOE continues to be open ended; thus, the county's program is designed to respond to other routing configurations that could impact the County. The county is continuing to gather and analyze baseline data related to the proposed rail routes and highway routes in Eureka County. Data development includes refinement of baseline mapping using a Geographic Information System (GIS), and map development.

The Carlin Rail Route Issues Identification Report, prepared in FY-93, identified the key issues that the county must be concerned about related to the proposed rail route. However, the proposed routing for the rail corridor now has changed significantly, and new impact analysis is needed. The county intends to analyze the impacts of potential transportation alternatives in Eureka County. The county also will conduct a land use parcel analysis of current proposed rail options within the county.

Geographic Information System Development

The county is committed to developing a geographic information system at the county level, accessible and usable to track and analyze data related to possible Yucca Mountain project impacts on Eureka County. The GIS development is integrated into the county's overall program. Data collected as part of the various activities undertaken by the county will be incorporated into the GIS, and the GIS database will be refined and edited to enhance route analysis and emergency response. The program includes ongoing training to ensure that county personnel are proficient in the use of the county's GIS.

Public Involvement and Education Program

Eureka County is committed to ensuring that county residents are informed about the proposed repository project and the potential impacts that the repository could have on the county and its residents. The county will conduct community town meetings on the repository project as needed to inform residents and answer questions. The county will produce periodic information to inform residents about current repository developments and to answer their questions about nuclear waste and the repository program. This includes the updating of the county's Yucca Mountain website, established in FY-98. The county intends to continue working with the school district to ensure that the youth of Eureka County are informed about the repository project. The county will assist civic groups and other organizations to find speakers and information on the repository project.

Emergency Management Assessment Program

The county will update an existing emergency management needs assessment done in FY-93. Eureka plans to foster communication with emergency management directors and LEPCs to improve coordination related to the projected demand for emergency services from the Yucca Mountain project. The county intends to participate in emergency management planning meetings at the state, regional, and national level in order to improve local emergency management capabilities and have input into DOE emergency management policy, such as the implementation of section 180(c) of the Nuclear Waste Policy Act.

Yucca Mountain Environmental Impact Statement Oversight/Participation

DOE has completed the scoping for the Yucca Mountain EIS, and is in the process of preparation. During this time it is crucial for the county to be able to participate fully in the oversight of the EIS preparation. The county also intends to prepare itself so that it will be able to fully participate in the draft EIS hearings. The county's program over the years has been geared toward the goal of fully participation on the EIS. We will continue toward this goal in FY-99.

Repository Monitoring and Oversight

It is the county's responsibility to monitor developments related to the repository in order to be able to protect the interests of the county and to keep residents informed about the project. The county intends to monitor and oversee DOE's implementation of the Nuclear Waste Policy Act as amended to ensure that the health and safety of citizens of the county are protected. This would include participation in meetings of the DOE, State of Nevada, NRC, Nuclear Waste Technical Review Board, EPA and other regulatory and oversight agencies and groups involved in the issue, and attendance at meetings on any

related topic. The county may also participate in coordinated activities where appropriate with other counties or the State.

Nuclear Waste Repository Program Management

The county is responsible for managing the grant from the DOE to the county. Anticipated management activities include the development of applications for funding, oversight and coordination of contracts and consultants, and documentation and reporting on program and fiscal activities of the DOE funds.

Conclusion

Eureka County's Nuclear Waste Repository Oversight Program is designed to ensure that the public's health and safety are safeguarded and that impacts to the county are identified. The program also endeavors to keep county residents informed about repository developments, and ensures that the County's voice is heard on repository-related matters that could impact the County. The county is committed to cooperating with other counties where practical and cost effective on activities related to Yucca Mountain project oversight.

List of Publications and Reports

Nuclear Waste Update, newsletter, published 2-3 times per year 1993-96, one issue in 1998
Eureka County Socioeconomic Conditions and Trends, 1992
Carlin Rail Route Report, 1993
Eureka Memories: Oral History Project, 1993
Eureka County Socioeconomic Conditions and Trends, 1993
Emergency Management Existing Conditions and Needs, 1994
Emergency Response Case Studies, 1995
Atmospheric Pathways Report, 1995 (in cooperation with Lander County)

INYO COUNTY

Mission and Program Goals

Inyo County is the sole local jurisdiction outside the State of Nevada that has a recognized oversight role in regards to the proposed repository at Yucca Mountain, and as such must view certain issues from a different perspective. The State of Nevada and its political subdivisions may ultimately benefit from provisions in the Nuclear Waste Policy Act as Amended, which provide for benefits to the host state. Inyo County receives no such consideration and must therefore make every effort to identify, quantify and mitigate any potential impacts to the County or its residents, acting solely in its capacity as an Affected Unit of Local Government.

Inyo County's oversight program began in 1988, when the County requested designation as an "affected unit of local government" (AULG). After initial denial of its request, Inyo County successfully petitioned the Ninth Circuit Court of Appeals and was designated as an AULG on May 20, 1991. In October, 1991 the County received its first funding under the Nuclear Waste Policy Act as Amended, to perform oversight and impact assessment activities as described in the Act. Prior to this time, County oversight activities were supported by the general fund of the County.

Inyo County's Repository Assessment Office seeks to ensure that repository siting and subsequent repository activities do not adversely impact the public health, safety, or welfare of County residents. The County has established a Yucca Mountain Repository Assessment Office to review, monitor and evaluate siting activities at Yucca Mountain, and to perform such activities as are required to assess the potential impact of repository activities on the County. The objectives of this program are to:

- monitor and comment on site characterization activities in order to ensure that the interests of Inyo County are represented.
- identify potential groundwater impacts on Inyo County from the proposed repository and to ensure that the groundwater resources of the County are protected.
- To identify potential transportation impacts on Inyo County and its residents and to ensure improvements are made to the transportation network and the local emergency response infrastructure to accommodate safe transport of nuclear wastes through the County.
- determine the extent of potential environmental, economic, social and risk related impacts on Inyo County from the proposed repository at Yucca Mountain.
- provide accurate information to the residents of Inyo County, and to encourage public participation in County decisions regarding the repository.
- Yucca Mountain repository site characterization activities are extremely convoluted, involving many different organizations at the national, state, and local levels. Inyo County must provide meaningful input to the many organizations involved, while determining the impact of their actions on the County. These impacts include impacts to community services and facilities, population impacts, fiscal effects, environmental hazards, transportation impacts, impacts to emergency response capabilities, social and cultural effects, stigma effects, and impacts due to the perception of risk. The near term tasks are described by category below.

General Program Monitoring, Review and Comment

Repository siting efforts are national in scope, involving the U.S. Congress, the Department of Energy, the Nuclear Regulatory Commission, the Environmental Protection Agency, the General Accounting Office, nuclear utilities and their representatives, utility ratepayers, public utilities, state and local governments and their representative organizations, the Nuclear Waste Technical Review Board, and others. In order to maintain an understanding of the current and future direction of the program, the County will continue to monitor the activities of these key policy, implementation, regulatory and oversight organizations through attendance at meetings and periodic interactions with their representatives. Requests for comments on program documents, especially as DOE seeks to enhance public participation, continues to absorb significant program resources.

Geotechnical Analysis, Independent Scientific Investigations, Regulatory and Licensing Analysis

The carbonate aquifer underlying Yucca Mountain also provides water for southeastern Inyo County, including Death Valley National Park. In addition to its status as a unique natural resource, the area contributes significantly to the County's economic base. Specific tasks include:

- completion of a program of spring sampling begun last year, that is intended to supply key data useful in determining the connection between the deep carbonate aquifer under Yucca Mountain and the waters of the Death Valley area;
- the start of a set of cooperative studies over the next three years, undertaken cooperatively with Nye County and in coordination with work being performed for the National Park Service. These studies are all focused on providing additional data to support recharge and discharge estimates in the ground water model for the Death Valley regional flow model.
- reviewing and commenting on on-going Department of Energy ground-water modeling efforts.

Transportation and Emergency Management

With both mode and route designation yet to occur, Inyo County is developing the baseline information needed to be an effective participant. Specific tasks include:

- analyzing data on baseline traffic volume, vehicular mix, and hazardous materials information for Highway 127, in cooperation with the California Department of Transportation.
- a proactive effort to work with the State of California hazardous materials routing agency under the federal provisions for alternate highway route designation for route controlled quantities of radioactive materials.

Public Information, Involvement and Education

The residents of Inyo County need access to balanced, comprehensible information in order to develop an informed opinion on the Yucca Mountain repository siting program. Specific tasks designed to facilitate access to this information include:

- maintaining informational displays in the central and branch libraries. These displays include selected general program documents and publications, as well as information on Inyo County's activities relating to the repository.

Accomplishments to Date

The county has developed the capacity to provide effective oversight of the various policy and programmatic areas of the repository siting effort, commensurate with the funding available.

As part of the County's examination of the hydrology of the region, a report was released (An Evaluation of the Hydrology at Yucca Mountain: The Lower Carbonate Aquifer and Amargosa River, Hydrodynamics Group, February 1, 1996) synthesizing available information on the carbonate aquifer and recommending future study. The spring sampling program is a direct result of the analysis of hydrologic data gaps in this report. An additional report on the spring sampling data collection effort is scheduled for release in March, 1999.

A more ambitious effort to gather hydrologic data as input to the regional ground water model being developed by the Department of Energy is underway in the 1998-1999 fiscal year. This effort includes work being done cooperatively with Nye County and the National Park Service. Using information gathered in a series of origin and destination surveys, the County is preparing a report describing the traffic mix, volumes, and special considerations along State Route 127.

In cooperation with the California Department of Transportation, the County has also assisted in the preparation of a Route Concept Report, which examines the need for improvements in State Route 127 in the future as two cases - with shipments to Yucca Mountain and without. This information will allow the County to make initial assessments of potential impact upon this transportation route, given the estimated number and types of shipments.

LINCOLN COUNTY

Background

Beginning in 1984, the State of Nevada, using Nuclear Waste Fund dollars, provided Lincoln County with a modest grant to enable County monitoring of the Department of Energy's (DOE) activities to evaluate numerous sites across the United States for the nation's first repository for high level radioactive waste. In later years Lincoln County received funds directly from the federal government. To facilitate a coordinated effort, the Board of Lincoln County Commissioners entered into a memorandum of understanding with the City of Caliente to establish a joint repository oversight and impact alleviation planning program. Between 1984 and 1994 repository activities of the County and City were largely focused upon identifying and understanding possible local implications of the proposed facility in the event a Nevada site was selected.

Current activities are focused on increased public information and involvement and the implementation of models previously developed for evaluating impacts and interacting with decision makers to mitigate impacts. With the release of the Viability Assessment and as DOE gets closer to a site suitability decision and as Congress considers interim storage legislation, Lincoln County has actively sought to minimize impacts and maximize favorable impacts associated with these potential outcomes.

Transportation issues are of particular interest to Lincoln County since the routes in the interim storage legislation take the high-level waste through the City of Caliente. The County has been an active stakeholder in policy discussions concerning transportation and the possible development of new transportation approaches and infrastructure.

Program Activities 1984-1998

During the past fifteen years, Lincoln County and the City of Caliente have established and maintained an effective repository oversight and impact alleviation planning program. The Board of Lincoln County Commissioners and the Caliente City Council have vested their Joint County/City Impact Alleviation Committee with the responsibility of providing guidance on all aspects of the program. The Committee currently meets monthly. Committee representatives provide important programmatic linkages to residents of communities throughout Lincoln County.

The Lincoln County repository oversight and impact alleviation planning program has undertaken a wide variety of studies and program initiatives as a means to establish baseline information and evaluate repository system implications locally. A description of the County's oversight work follows:

Transportation

The mainline Union Pacific rail line crosses Lincoln County and bisects the City of Caliente. DOE has identified the mainline as a likely route for shipments of spent nuclear fuel. Proposals being considered by Congress to develop an intermodal transfer facility in Lincoln County have the potential for causing the vast majority of shipments to go through local communities. In

addition, DOE has identified and evaluated a proposed rail spur across Lincoln County which would afford rail access to Yucca Mountain without having to pass through or near to the Las Vegas metropolitan area. The State of Nevada Department of Transportation has also identified a possible preferred highway route for transporting radioactive waste which traverses Lincoln County. Transportation of radioactive wastes is then a key issue for the County and City

Transportation Risk Assessment

The Transportation Research Center (TRC) at the University of Nevada, Las Vegas, (UNLV) is assisting Lincoln County and the City of Caliente with transportation risk assessment. The objectives of this project are to 1) determine the level of risk associated with legal weight and heavy haul transport of high-level radioactive waste between Rachel, Nevada, and the Yucca Mountain site via Valley Road and Gate 700 on the Nevada Test Site; 2) determine the level of risk associated with rail to truck intermodal operations involving high-level radioactive wastes at Caliente; 3) identify highest accident risk segments of the street and highway network in Lincoln County; and 4) identify alternatives for mitigating accident risk within high accident risk street and highway segments in Lincoln County. The results of the TRC work will be used by the County and City in providing comments to the DOE's Draft EIS for the Yucca Mountain Project.

Socioeconomic and Impact Alleviation

Lincoln County has collected baseline socioeconomic information required to evaluate prospective impacts of the repository system. Industry, employment, income, and population trend data are being compiled and organized into automated environments. Fiscal information for the County and City are being collected in a similar manner. Capacities of local infrastructure to assimilate additional demands induced by prospective population growth have also been considered.

Current work includes development of an economic and fiscal impact model. The Center for Economic Development (CED) at the University of Nevada, Reno is assisting Lincoln County, the City of Caliente, and their Joint City/County Impact Alleviation Committee (JCCIAC) to refine impact scenarios and apply an economic/fiscal impact model developed for the County. The refined model will better reflect actual County and City revenues and expenditures and 2) enable delineation of the allocation of impacts between various revenue and expenditure categories at the County and City level. CED will also aide the County, City and JCCIAC in developing appropriate Yucca Mountain related impact scenarios. The results of the CED work will be used by the County and City in providing comments to the DOE's Draft EIS for the Yucca Mountain Project.

Licensing Issues

Lincoln County intends to continue its work on determining the potential for atmospheric migration of radionuclides and their relation to health and safety issues. In addition, Lincoln County plans to continue its cooperation with the Nye County geotechnical program, especially in areas that focus on potential impacts to off-site populace.

Lincoln County has entered into a cooperative agreement with the United States Geological Survey (USGS) to facilitate development of a regional groundwater model for the recharge area

to the Death Valley ground-water flow system. Western Lincoln County is included within the recharge area to the Death Valley system. Currently, USGS is completing geologic mapping and gravity surveys of western Lincoln County.

Government Monitoring and Program Review

Under this element the County and City have typically participated in a variety of local, regional and national forum and meetings concerning the Civilian Radioactive Waste Management program. Participation at these meetings is designed to ensure that the perspectives and concerns of the County and City are considered by federal, state and other local government officials pertaining to nuclear waste management. Elected representatives of the County, City and members of the Impact Alleviation Committee have also sought during recent years to meet with their counterparts at locations of existing DOE or nuclear facilities.

Public Information

The goal of the County and City public information program is to provide information from all sides of the issue encouraging the formation of informed decisions in response to the Yucca Mountain issue. Program elements for the information program include continuation of the "Tracks" newsletter and distribution of it to all households within the County, updating of a County home page, maintenance of an information office, further development of a speakers program including the use of respected outside speakers, and development of cooperative education programs with the School District.

A special emphasis is placed on radiological risk communication. Risk related information is woven into all local communications. Educational tours of Yucca Mountain and other relevant facilities are conducted on a regular basis.

Environmental Impact Statement

While the actual role of the Viability Assessment in the site characterization, and ultimately, the licensing process of Yucca Mountain is somewhat uncertain, the Environmental Impact Statement (EIS) is well defined and important.

Lincoln County will monitor the process and track DOE's response to the Lincoln County/City of Caliente Repository EIS Scoping Report to assure that DOE is addressing the interests and concerns of local communities. The draft EIS will be released later this year and Lincoln County will play an active stakeholder role in the development of this document.

Taken together, these elements represent the continuation of an ambitious yet necessary program of credible oversight and impact alleviation by Lincoln County and the City of Caliente.

MINERAL COUNTY

Introduction

Mineral County's Nuclear Waste Projects Office performs the monitoring and oversight of Yucca Mountain activities and other related issues on behalf of Mineral County.

Previous Accomplishments

The County has and will continue to provide a myriad of public information to all members of the public, interested groups, staff of government agencies, County officials and other interested parties. VCR viewing and newsletters at the County Library, County newsletters distributed throughout the County, provide Yucca Mountain News Clips to anyone seeking information; provide internet addresses through the local TV network; and provide public workshops on the Yucca Mountain program and related activities.

Current Activities

Oversight of the Yucca Mountain (YM) Project includes:

- Attending needed meetings and training; reviewing documents; and providing comments to appropriate activities
- Monitoring the development of policy and activities of the Department of Energy (DOE), particularly the Office of Civilian Radioactive Waste Management (OCRWM) and the Yucca Mountain site characterization program, and the progress of the DOE Yucca Mountain Draft Environmental Impact Statement (DEIS).
- Monitoring key technical meetings of the Nuclear Regulatory Commission (NRC), Nuclear Waste Technical Review Board (NWTRB), the DOE's Affected Units of Government (AUG), the State and Tribal and Local Government Coordination Group meetings
- Monitoring the DOE's privatization related to transportation of the nation's nuclear waste, the mode of transportation, and the routes to be used.
- Assessing the Emergency Management (EM) Program response capabilities should the nuclear waste be transported through the County; provide training and needed equipment to EM participants to ensure the County would be able to respond as a 1st responder; and train all personnel in the use of the Geographic Information System (GIS) program so proficiency can be achieved and individuals can be easily assisted in possible locations of a radioactive incident.

NYE COUNTY

The Nye County Nuclear Waste Repository Project Office (NWRPO) works to protect the interests of the citizens of Nye County in negotiations related to nuclear waste activities occurring within the County. Transport, disposal and storage of waste in and through the County are included in NWRPO's mission and scope of work. Nye County has established certain rights of participation related to nuclear waste activities occurring within its' boundaries. These rights are outlined in the 1982 Nuclear Waste Policy Act (NWPA), as amended; the Nye County Comprehensive Plan; and the Framework for Formal Interactions with the U.S. Department of Energy. Activities related to this participation are managed by the NWRPO in Pahrump, Nevada.

Nye County's legal standing under the NWPA includes authority for Yucca Mountain Project oversight activities and for on-site representation. The County's NWRPO, established in FY1986, is administered by the manager of the Nye County Department of Natural Resources and Federal Facilities, on behalf of the Nye County Board of Commissioners.

Nye County's on-site activities at Yucca Mountain range from monitoring DOE site characterization and quality assurance program implementation to collecting data under its Independent Scientific Investigations Program (ISIP). ISIP activities include independent data collection related to borehole drilling, the Early Warning Drilling Program, and verification and maintenance of pressure and humidity instrumentation in the Exploratory Study Facility (ISF) tunnel.

Nye County NWRPO - Authority and Mission

Nye County is the host to two hazardous facilities of regional or national significance: the Beatty Low-Level Radioactive and Hazardous Waste Facility, and the Department of Defense Low-Level Radioactive Waste Disposal Facility on the Nevada Test Site. Yucca Mountain, also in Nye County, is the sole candidate site for the nation's first high-level nuclear waste repository.

Although Nye County did not request such status, it is federally mandated as the candidate site for the Yucca Mountain repository. Because Nye is the host county for the proposed project, it has legal standing as the unit of local government with limited jurisdiction over the site. Based on this fact, Nye County has certain rights of participation, funding and onsite representation related to Yucca Mountain policies and activities.

Nye County NWRPO - Meeting the Challenge

Congress has, over time, made dramatic changes to the nation's nuclear waste management policy. Given this fact, the Nye County Board of Commissioners must operate under certain assumptions to reach the goals of its Yucca Mountain oversight program. Nye County anticipates making continuing and significant adjustments to this program to meet the challenges posed by these assumptions and ongoing changes in national waste management policy. NWRPO operating assumptions include:

- The repository opening date may be later than 2010;
- A rail spur to NTS will be built;
- An Interim Storage Facility will be established at the NTS;
- HLW and spent reactor fuel will be shipped to an Interim Storage Facility before 2003;
- In any case, the cumulative effects of high-level and low-level waste disposition within County borders must be considered as part of Nye County's long-term planning activities.

Nye County's Comprehensive Plan

The April 1994 Nye County Comprehensive Plan references the U.S. Congress' designation of Yucca Mountain as the single candidate site for the nation's first civilian high-level nuclear waste repository. The Plan recognizes that Nye County should set goals, objectives and policies regarding the establishment of the Yucca Mountain facility. The primary purposes of the County's nuclear waste policies and actions are to protect the health, welfare, and economic well-being of its residents and environment, and to plan for population growth and other effects of the repository, if it is located in Nye County.

Framework for Formal Interactions

On October 19, 1992 DOE's Director of the Office of Civilian Radioactive Waste Management (OCRWM), signed a Framework for Formal Interactions between Nye County and the U.S. Department of Energy. This agreement outlines Nye County's responsibilities related to its special status under the Nuclear Waste Policy Act of 1982, as amended, and a related participation grant. The document assures Nye County issues of concern, and any possible disputes, will be resolved quickly and effectively.

The Framework for Formal Interactions states DOE's position that "engaging in the process of interactions with Nye County (is) consistent with and appropriate under the broad mandate of the NWPA, as amended, concerning program participation by affected units of local government." The Framework also notes that "Nye County's participation in these interactions is critical for the effective and efficient implementation of its program work and related funding, as authorized under NWPA, as amended." Each party's role in relation to joint consultation activities is outlined within the document.

In addition, DOE/OCRWM and Nye County agreed to "consult during development stages of upper level policy documents and formal notices that will communicate policy direction for the high-level waste program, including subsequent revisions to these documents, and formal notices." As co-signers of the interaction protocol, DOE and Nye County also agreed to coordinate their socioeconomic data collections, assessment activities, and socioeconomic impact mitigation procedures, as appropriate.

The NWRPO's Strategic Plan

During the spring and summer of 1998, after a two-year federal funding delay, the NWRPO program re-organized. One of the principle tasks completed by the NWRPO during the remainder of Fiscal Year 1998 was a strategic plan. The plan includes a five-year vision, a

mission statement, and a set of goals, measurable objectives, and a timeline to be used in management of the project. NWRPO's Vision and Mission Statement are included as part of this document. Goals, objectives and timelines are more dynamic pieces of the overall plan and are updated on an annual basis.

Nye County's NWRPO - Vision 2000

"Community needs and values, environmental protection, effective partnerships, and meaningful opportunities for public involvement, form the framework for Nye County's vision. The NWRPO has a strong history of solving problems by working together with the public, the Nye County Board of Commissioners, the State of Nevada, federal agencies, local governments and technical experts.

The Nye County NWRPO, under the direction of the Nye County Board of Commissioners, is a dynamic, service-and-community oriented organization, which is fully involved in the oversight of the United States' nuclear waste disposal program.

This involvement, specifically recognized and sanctioned by the U.S. Congress, is based on community needs and values, and relationships established with the public, the State of Nevada, Federal agencies, local governments, and other Nye County entities for the purpose of managing and mitigating both positive and negative impacts of the national nuclear waste program on the residents and environment of Nye County.

The NWRPO is dedicated to protecting the health and safety of Nye County residents, effectively representing their interests before all federal agencies and in the regulatory and licensing process, fully informing them about impacts related to the national program, and providing meaningful opportunities for community involvement in all related activities."

Nye County's NWRPO - Mission Statement

"The Nye County Nuclear Waste Repository Project Office (NWRPO) works to protect the interests of the citizens of Nye County by providing independent and responsive scientific, environmental, socioeconomic, transportation, health, safety, regulatory and policy monitoring of activities and impacts related to transport, disposal and storage of nuclear waste in and through Nye County.

To accomplish this mission, the NWRPO will strive to:

- safeguard the health and safety of Nye County residents in relation to transport, disposal and storage of nuclear waste in Nye County;
- protect Nye County's valued natural and environmental resources;
- assure political and economic equity for Nye County residents in relation to nuclear waste transportation, disposal and storage in Nye County;
- provide meaningful opportunities for Nye County citizens to be fully educated about ongoing and long-term activities related to nuclear waste disposal and storage in Nye County;

- assure a reliable and predictable funding source to address the health and safety, socioeconomic, scientific, regulatory and licensing, public education, transportation, equity offset and community protection needs of Nye County as related to transport, disposal and storage of nuclear waste in the County; and
- engage in long-term planning activities to address Nye County concerns related to federal nuclear waste activities in the County and protection of the public health and safety."

NWRPO Program Elements

During fiscal years 1999 and 2000, Nye County will continue activities related to the original five program elements identified for the NWRPO . The emphasis and relationship between the elements may change to reflect new program directions and changing funding levels.

Independent Scientific Investigations Program (ISIP)

The largest element of Nye County's Yucca Mountain Project oversight activities has consistently been its Independent Scientific Investigations Program. Under this program element, the County gathers its own data for independent analysis of geologic and hydrologic conditions at the site and monitors and reviews DOE's scientific characterization of Yucca Mountain. Nye County has designated an on-site representative to the Yucca Mountain project, as provided in the Nuclear Waste Policy Act, as amended. The on-site representative directs the ISIP and maintains a regular presence at the Yucca Mountain site, at DOE's Las Vegas offices, and represents the County at Yucca Mountain-related meetings, including the Nuclear Regulatory Commission and the Nuclear Waste Technical Review Panel.

The ISIP's Early Warning Drilling Program (EWDP) began in November 1998. The EWDP is funded under a separate technical grant from the DOE and administered under a cooperative agreement. The project is a three-year, phased drilling and testing program for a series of early warning wells down gradient of the Yucca Mountain site. The purpose of the EWDP is to establish a groundwater monitoring system to protect the residents of Nye County living in the Amargosa and Pahrump Valleys against potential radionuclide contamination. The program is also intended to provide geologic and hydrologic information that is needed for, and has been missing from, DOE's program.

As part of its EWDP activities, Nye County plans to construct and monitor 22 wells on public lands in the southern part of the county. These monitoring wells will provide needed information on the subsurface conditions down gradient of the proposed repository. The wells will also provide a long-term monitoring network for the early detection of releases from the repository. Current planning calls for completion of nine wells in fiscal year 1999, with the remaining wells to be completed in subsequent phases in fiscal years 2000 and 2001.

Regulatory & Licensing Oversight

The Nye County NWRPO tracks Issues of regulatory and licensing concern, and decides which of these issues are significant to Nye County's health, safety and economic well being. Once these decisions are made, the NWRPO works to ensure the County's views will be considered

by DOE, the NRC, the Environmental Protection Agency (EPA), and others. The NWRPO is also responsible for guaranteeing Nye County is able to participate effectively in all repository or interim storage facility licensing proceedings.

NWRPO's regulatory and licensing activities include (1) monitoring EPA, DOE, NRC and other oversight agencies' regulatory & licensing activities; (2) addressing regulatory and licensing issues with all relevant agencies; (3) working closely with the NWRPO on-site representative to assure the ISIP is addressing issues of regulatory and licensing significance; and, (4) ensuring Nye County is prepared to participate effectively in any future repository or interim storage facility licensing proceedings.

Socioeconomic, Transportation & Emergency Response

Construction and operation of a repository, an Interim Storage Facility (ISF) and associated waste transportation facilities and routes would significantly affect socioeconomic conditions in Nye County. Consequently, it is important that Nye County maintains reliable Information related to DOE's program for spent nuclear fuel and high-level waste management. This program element includes Yucca Mountain Project and Nevada Test Site monitoring, financial analysis, creation and maintenance of the Project Description Scenario Development System (PDSDS), and a database on the geography of nuclear waste.

To guarantee that Nye County makes the best use of its limited financial resources, the County has established a protocol with DOE for socioeconomic monitoring and assessment. The program ensures the party with access to specific data is responsible for collecting and distributing the data and that Nye County NWRPO and Yucca Mountain Site Characterization Office (YMSCO) analysis and projection models are tested and compared using similar information.

To monitor potential impacts, the Nye County socioeconomic program:

- maintains key Nye County socioeconomic indicator findings in a series of databases;
- conducts detailed investigations of specific Nye County conditions which would be affected by development and operation of nuclear waste facilities;
- develops and maintains computer databases concerning the high-level nuclear waste program and the Yucca Mountain Project; and
- maintains and operates a set of integrated economic, demographic and fiscal analysis and project models designed specifically to reflect unique Nye County conditions and potentials.

Government & Community Relations

The effort to develop a repository for disposal of the United States' high-level radioactive waste has been one of the Nation's most important technical challenges. As the site jurisdiction and host county for the proposed Yucca Mountain project, Nye County has serious responsibilities to its citizens. These responsibilities include more than oversight of technical activities at Yucca Mountain. Participation in state, local and national policy-making and regulatory activities, public education, and studying the potential economic impacts of constructing a repository

inside County boundaries, all play an important role In NWRPO's nuclear waste oversight program.

"Government Relations," covers Nye County's relationships with local governments, the State of Nevada, Congress, the Department of Energy, and other Federal facilities. "Community Relations" activities include project communications and public involvement. The NWRPO has a long-standing commitment to keep County residents fully informed about nuclear waste activities. Communicating the results of NWRPO Policy and technical programs is the County's primary avenue for influencing the direction of existing and potential future Yucca Mountain repository programs.

Community Protections & Equity Offsets: The NWRPO focuses on the potential impacts of constructing a high level nuclear waste repository in Nye County. "Equity offsets" is a term used by the NWRPO to define a program focused on creating new jobs, businesses, and an increased tax base to support federal facilities. "Community Protections" include development of a variety of policies, activities, resources and programs needed to support the repository, if it is located in Nye County. These ideas are part of NWRPO's efforts to build Nye County's community support base in relation to the combined effects of the Yucca Mountain facility with other federal facilities within the county. NWRPO's goal is to link existing and new business development centers and communities to Yucca Mountain and other federal projects.

Program Management

Program Management includes all the activities and expenses necessary to operate and support Nye County nuclear waste oversight activities. These activities include Quality Assurance (QA), staff, salaries, rents, equipment, travel, printing, subscriptions, and certain capital costs.

Quality Assurance Program (QAP): NWRPO's QAP provides assurance that data gathered from Nye County's nuclear waste oversight and investigation programs are of the highest quality. The QAP guarantees that NWRPO's scientific activities occur in a systematic and technically sound manner. The QAP uses documented instructions and procedures to ensure the validity, integrity, preservation and retrievability of all NWRPO program data.

Nye County policy requires that NWRPO establish and maintain a documented Quality Assurance Program. In this way, the County is assured the NWRPO will continually achieve quality of performance in all areas of its responsibilities, through the application of effective management systems and in conformance with its mission. The NWRPO QAP meets the requirements of ANSI/ASME NQA-1 and the criteria of IOCFR50, Appendix B.

All NWRPO personnel and contractors or subcontractors who perform or manage quality-affecting functions, work under the procedures outlined in the QAP. The NWRPO Project Manager is responsible for assuring all work completed under his or her direction complies with the requirements of the QAP. The Project Quality Assurance Officer is responsible for establishing and implementing the QAP and verifying that it complies with this policy.

WHITE PINE COUNTY

Introduction

- Gained status as Affected Unit of Local Government in 1991; shut down in 1996; reopened January 29, 1998.
- Located about 250 miles northeast of Las Vegas, Nevada. U.S. Highways 93 and 318 are the main transportation routes.
- Possible alternate routes for shipment of high-level radioactive wastes if Yucca Mountain becomes the repository site:
 - (a): South on Alternate Highway 93 from Wendover, through Ely, southwest on Highway to Tonopah, east on Interstate 95 to the Yucca Mountain Project and:
 - (b) South on Alternate Highway 93 from Wendover, through Ely, south on Highway 6 to SR Highway 318 to Highway 93, to Interstate 15 through Las Vegas, and then northwest on Highway 95 to the Yucca Mountain Project.
- Mining and ranching are main economic thrust for White Pine County.

Previous Accomplishments:

- Reviewed and commented on two important documents with national impacts: (1) proposed revisions to the Price-Anderson Act and; (2) Request for Proposal to revise Section 180(c) implementation Policy.
- Commissioners and/or office staff toured Yucca Mountain in mid-April, Nevada Test Site in mid-May, Hanford Site in July 1998.
- Department of Energy (DOE), Yucca Mountain Site Characterization project personnel made presentations to local Rotary Club, Nuclear Waste Advisory Board, and to local high school chemistry classes.
- A Memorandum of Understanding (MOU), with the Bureau of Land Management (BLM) was signed in June so Project Office staff can use BLM's GIS equipment to input and update pertinent geographic spacial and alphanumeric data. Students digitized more than 100 maps.
- DOE and County staff continue to educate residents about Yucca Mountain and transportation of high-level nuclear waste by making presentations, producing newsletters, highlighting key work at Yucca Mountain through pictures, videos, and written materials, keeping Advisory Board informed.

Program Goals:

- In accordance with the scope of the public health and safety concerns, use County's geographical information data and various input/output models to help illustrate possible effects of transporting nuclear waste through White Pine County and to help update Emergency Management Plan for radioactive materials.
- Project potential risks and impacts from heavy-haul transportation of spent nuclear fuel through White Pine County, and effects from possible atmospheric exposure in the event of a catastrophic accident.

- Review reports/activities associated with pre-licensing application of Yucca Mountain Site Characterization Project: Viability Assessment (VA) due out in 1998; Draft Environment Impact Statement (DEIS) is due out in 1999.
- Participate in pilot training program as emergency management sponsored by Hammer (DOE).

Oversight of Funding for Program Office:

- Two County Commissioners met with Assistant Director Ron Milner and with the Acting Director, Lake Barrett, of the Office of Civilian Radioactive Waste Management in Las Vegas to establish a process of setting up "executive briefings" with Commissioners from the 10 Affected Units of Local Government (AULG).

Interim Storage of High-Level Waste (HLW)

- Interim storage would be located at the Nevada Test Site, 65 miles northwest of Las Vegas. If the proposed bill passes the House and Senate in 1999, it is likely that HLW would be shipped through White Pine County by heavy-haul truck.
- Intermodal transfer point of HLW would be located at Caliente, Nevada, only 134 miles southwest of Ely. Caliente is a major transportation route for residents and tourists traveling east. Definite possibility low-level waste (LLW) would be transferred at Caliente, too.

APPENDIX B

AFFECTED UNITS OF LOCAL GOVERNMENT YUCCA MOUNTAIN PROJECT

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