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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON NUCLEAR WASTE
(ACNW)

151st MEETING

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THURSDAY,

JUNE 24, 2004

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ROCKVILLE, MARYLAND

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The Advisory Committee met at the Nuclear
Regulatory Commission, Two White Flint North, Room
T2B3, 11545 Rockville Pike, at 11:00 a.m., Michael T.
Ryan, Acting Chairman, presiding.

COMMITTEE MEMBERS:

MICHAEL T. RYAN, Acting Chairman

JAMES H. CLARKE, Consultant

ALLEN G. CROFF, Invited Expert

GEORGE M. HORNBERGER, Member

RUTH F. WEINER, Member

1 ACNW STAFF PRESENT:

2 JOHN T. LARKINS, Executive Director

3 NEIL COLEMAN, Designated Federal Official

4 LATIF HAMDAN

5 HOWARD J. LARSON

6 MICHAEL LEE

7 RICHARD K. MAJOR

8

9 ALSO PRESENT:

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11 JOSEPH D. ZIEGLER, U.S. Department of Energy

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

11:00 p.m.

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3 CHAIRMAN RYAN: Good morning. I guess
4 we'll go on the record please. This is our last
5 presentation of this meeting. We're going to hear
6 from the Department of Energy's Response to the NRC
7 Independent Evaluation of DOE Documents Supporting the
8 Yucca Mountain License Application. We have a remote
9 location giving the presentation. Good morning.

10 MR. ZIEGLER: Good morning. I'm Joe
11 Ziegler from Las Vegas. I'm the Director of License
12 Application and Strategy from the Department of
13 Energy.

14 CHAIRMAN RYAN: Just for your information,
15 we have your slides in front of us and I think we're
16 going to see them on the screen here as well.

17 MR. ZIEGLER: Okay. Good. I'm going to
18 just briefly walk through the slide package and then
19 I'll take any questions you have. If you want to stop
20 me during the presentation, that would be fine as
21 well. If you could go to page two of the slides, this
22 gives a little outline of what I'm going to what I'm
23 going to go through. I'm going to briefly summarize
24 the NRC's technical evaluation from our perspective.
25 I'm going to use a lot of their own words. I'll speak

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1 of high response, how we evaluated the NRC findings,
2 we have done in response to those findings and in
3 particular, a team effort we have put together we call
4 the regulatory integration team, talk about what
5 changes and improvements we have made over the last
6 year in our corrective action program and then I'll
7 summarize very briefly.

8 If we go to slide no. 3, just briefly, NRC
9 approached us in the fall of 2003 and basically told
10 us they wanted to do a technical evaluation of our
11 processes leading up to our total system performance
12 assessment (TSPA) and to do that, they wanted to
13 develop teams that would include TA personnel,
14 technical personnel, some of their federal staff, some
15 of their contractor staff to come in and look and
16 evaluate selected, what we call, analysis and model
17 reports (AMR) and those are the direct leads into our
18 total system performance assessment in various
19 technical topical areas.

20 NRC selected three to look at. The first
21 one was General and Localized Corrosion of the Waste
22 Package and its outer barrier in particular. The
23 second one was Commercial Spent Nuclear Fuel Waste
24 Form Degradation Model and the third one was Drift
25 Degradation Analysis of Rock Mechanics of the drifts

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1 and how they perform.

2 Those evaluations were conducted in one
3 week segments. NRC sent between eight and twelve
4 people in each week. The first one was in November of
5 2003, then December of 2003 and in January of 2004.
6 They looked at the controlling processes, our
7 processes, our databases, how we implemented those
8 procedures and they also looked at our corrective
9 action program, how we were doing and the time of
10 identification and effective resolution of issues as
11 we did our work.

12 NRC's evaluation in a nutshell came up
13 with three basic types of findings. They found some
14 good practices. Some of those were related to how we
15 house the data, how we house the software and the
16 models, our ability to retrieve and access those
17 databases.

18 Okay. I'm being asked here to ask you to
19 put your speakers on mute except when you're speaking.
20 There's some feedback on this end. I don't know if
21 it's showing on your end or not.

22 CHAIRMAN RYAN: You might also check your
23 other microphones and those -- They may be on.

24 MR. ZIEGLER: She's doubling checking that
25 but I think we've done that. Thanks. So in a

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1 nutshell, that's what they were looking for. They
 2 found these good practices. They also noted that the
 3 Staff's support during the evaluations was excellent.
 4 That's so much a technical issue but its's something
 5 that we have spent a lot of effort on here because we
 6 understand that we need to learn how to be a licensee
 7 from a rigorous regulator. That's something that we
 8 on this project have not always done well. I think we
 9 showed that we know how to do that now and we got a
 10 lot of compliments in that area. I appreciate our
 11 Staff work in that area.

12 They also noted some improvements such as
 13 the process procedures that we were using, the
 14 software development and control procedures, the
 15 amount of validation procedures and processes. Those
 16 have been evolving over the years and have actually
 17 had great improvement in recent months and in the last
 18 year or so, part of that due to some long-standing
 19 conditions adverse to quality that had been identified
 20 through our quality assurance program, but the Staff
 21 here has done a lot of good work in that area
 22 improving those processes. And thirdly, they
 23 identified a lot of concerns and they noted them.

24 I'll go to the next slide and give you a
 25 general feel for what those types of concerns were.

1 I was a little hesitant to characterize them myself so
2 what's on slide number four are quotes out of the NRC
3 evaluation report that they sent back to us. But
4 basically their concerns and findings were in three
5 areas as far as where we needed to improve.

6 The first one dealt with the clarity and
7 the technical basis and the sufficiency of technical
8 information to support those technical bases. What
9 they found was that looking at that documents, and
10 they did a lot of document review for they were doing
11 a lot of database review, is that it wasn't clear in
12 many instances what the bases for the technical
13 information and parameter distributions that were
14 used.

15 What they also found is that as they
16 talked to our analysts, as they interviewed our
17 analysts and authors of those reports, that the
18 information generally did exist and in many cases, it
19 was just providing the 'right' pointers, maybe it
20 existed in a different document, existed in a
21 different database and had not been carried through to
22 the documentation. They noted that reasonably we
23 should been able to catch that during our review and
24 checking processes.

25 The second area they identified was

1 deficiencies that I believe they stated they confirmed
2 the deficiencies that we had already identified
3 through our corrective action program and these had to
4 deal with quality assurance deficiencies and the
5 manner in which we controlled and qualified data.

6 We have a lot of data that goes back many,
7 many years, decades in some cases. It wasn't
8 collected under an NRC regulated quality assurance
9 program at the time. So we had to a lot of data,
10 reconstruction is not the right word, but validation
11 of that data to make sure that it was suitable for its
12 intended purposes and had met all the traceability
13 requirements. So there's been some long-standing,
14 what we call now, condition reports on data
15 qualification, software development and controls and
16 model validation in general.

17 NRC Staff confirmed the deficiency that we
18 had identified that we were working actively in our
19 quality assurance program and corrective action
20 programs to correct those conditions, where indeed we
21 had identified the right things and we were indeed
22 making progress in working those things out. We were
23 not, in the documents they reviewed, where we needed
24 to be yet at that point, but we made a lot of progress
25 and I'll tell about some of the additional progress we

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1 made since the technical evaluation in a few minutes.

2 The third area was one of the general
3 implementation. If you look at the quote, and we
4 clarified this at the exit meeting that was held here
5 in Las Vegas a couple months ago, is that if we
6 continue to use the policies, procedures, methods and
7 practices at the same level of implementation of
8 rigor, it would basically lead to extensions of the
9 review of our license application and its supporting
10 documents because of the ease of traceability and
11 transparency.

12 The clarification point was because they
13 had been very complimentary during the evaluation of
14 the procedures, of the methodologies, of the recent
15 improvements that had been made, but the criticism
16 here was of the implementation. The rigor of
17 implementation was not what it needed to be of those
18 documents that they reviewed. Now those documents
19 typically were prepared over a year, year and a half,
20 ago. So we have had some on-going problems in that
21 area and again we made great strides in improvement
22 and I'll talk about that a little bit later.

23 If you go to page five, slide no. five,
24 once we got the written evaluation report, we analyzed
25 it in several different ways. We analyzed it with a

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1 technical staff. We also went over and did a broad
2 evaluation so that we could try to characterize the
3 findings. I guess the second bullet on slide five
4 gives a very brief summary of that.

5 Forty-five percent in our view were
6 dealing with transparency and traceability issues or
7 ease of traceability issues. I think once we pulled
8 the string, we were able to show that traceability
9 existed, but the ease of traceability such that the
10 regulator could go in and pull the string and find
11 everything they needed without recourse back to our
12 personnel was not what it should have been.

13 Thirty percent were technical issues.
14 When I say technical issues, there may be one or two
15 exceptions. They weren't really issues where we had
16 broad disagreements with technical approach. They
17 were more with the clarity of the explanation of
18 technical basis which is what I talked about
19 previously.

20 Twenty-five percent were actually positive
21 observations of everything they found. There were
22 about 100 or so. I don't remember the exact number of
23 these total findings. They didn't number them, but we
24 went through and counted.

25 We generally agree with NRC's conclusion.

1 I think there were two technical points they made
2 dealing with emplacement drift degradation that we
3 basically have a differing view on the approach and
4 maybe some of the technical bases. Some of the
5 modeling used by NRC's contractor in that area, we
6 think, maybe the physics aren't exactly correct. So
7 some issues come up in those areas. But other than
8 two things, I think we're in agreement with the
9 findings that the NRC technical staff made.

10 Slide no. 6. Again our post evaluation
11 review then went more in-depth into the technical and
12 the substance of portions of the evaluation.
13 Transparency and traceability, we had identified
14 previously. I guess we had known for some time. I
15 had talked about it and other DOE management had
16 talked about it in several NRC management meetings
17 over the last year, we did those quarterly, that we
18 knew the way our technical bases were developed.

19 We managed it in a broad program out of
20 our facilities and the staff in Las Vegas, but we've
21 gone out to several national labs, Las Alamos,
22 Livermore, Sandia, Berkeley and others actually. So
23 the work is being done at multiple locations around
24 the country and by different staff even within some of
25 those locations. So there's somewhat over 100 of

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1 these analysis and model reports and there's some
2 other technical feeds as well.

3 But when the work was out, even though
4 we're requiring everybody to work with the same
5 procedures and have been for the past few years, it
6 wasn't that way probably before about 1999. But
7 consistency and procedural implementation has been
8 issue that's been an on-going issue. Also we knew
9 that there were going to be integration issues when we
10 have staff again spread out geographically to where
11 there is communications, but it's not as good as if
12 the staff all is one place.

13 So we knew there was going to be an
14 integration task that we would have to do before we
15 actually submitted the license application. When I
16 talk about that, that's things like there are certain
17 parameter values and parameter sets that have to be
18 used in various parts of the analysis, for instances,
19 water and infiltration and seepage.

20 I'm a nuclear engineering so I don't want
21 to pretend to be an expert in those areas, but those
22 parameter values have to used in many different parts
23 of the evaluation. As those parameter sets are being
24 developed, sometimes they were being developed at
25 multiple places. So we use different datasets in

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1 establishing those parameters.

2 Now we've now gone back and much of the
3 integration and identified any issues with it. It's
4 not that we found inconsistencies. It just they're
5 different sets. So what we tried to do was do a better
6 job in the correction of these things of integration.
7 That's something that you and me would have to do, but
8 we really hadn't started that in earnest and I think
9 these technical evaluations gave us the incentive to
10 get that process started.

11 The way we did that is we developed a
12 regulatory integration team. I'm going to talk about
13 that more in a couple slides, but basically we pulled
14 about 140 or 150 people together here at one place in
15 Las Vegas. We divided them up into their technical
16 areas of expertise.

17 We also put in staff that was very
18 experienced in regulatory processes and communication
19 processes and dealing with the regulators. We also
20 integrated a quality assurance staff into these teams
21 and subteams. By doing that, we were addressing the
22 traceability, transparency and these other issues.
23 I'll go more into specifics in a minute.

24 We also paid better attention to our
25 corrective action program. We had a lot of actions

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1 already in progress, but we tried to basically
2 accelerate those actions and to make sure that we had
3 dealt with the long-standing issues. Since the
4 technical evaluations, those three areas that I
5 mentioned, data qualification, software development
6 and the retrieveability and documentation and model
7 validation, I think two of those condition reports had
8 been open for nearly three years. The other one had
9 been open for nearly two years.

10 Two of those are now closed, the one on
11 software development and documentation and
12 retrieveability, the one on data qualification. So
13 that means our process is not just for what we're
14 doing today, but going back into the past to make sure
15 that everything is suitable for its intended purpose
16 and the safety analysis going forward is adequate and
17 serves that need.

18 The model validation condition report is
19 still open because as we go through this regulatory
20 integration process, we want to make sure there's an
21 output of that process to make sure that we will not
22 close that condition prematurely. But we are well on
23 our way to closing that and we expect that one to be
24 closed in late summer as well.

25 If you go to slide 7, the initial

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1 evaluation looked at the apparent cause of the
2 problems that had been identified and we initiated a
3 lot of condition reports within our corrective action
4 program that basically we agree with the NRC Staff
5 with the findings, narrow interpretations of what the
6 regulatory requirements were. We can go in there and
7 if you look at our reports, we met the specifics of
8 the regulatory requirements. Our technical staff did
9 a pretty job.

10 We didn't communicate that very well
11 though. So we didn't put ourselves in the place of
12 the regulator staff such that they need to look our
13 products, they need to understand them. If they want
14 to pull the string and fully trace them back to all
15 the bases, the technical bases, the modeling bases,
16 the data validation and verification bases, that needs
17 to be easy for our regulator staff because we don't
18 want just adequate technical products.

19 We want to facilitate a timely and
20 efficient NRC review of these products because our
21 ultimate goal is not to submit the license
22 application. Our ultimate goal is to get a
23 construction authorization, construct the repository
24 and to operate it and to be able to do that in a
25 timely way and have any chance of 2010. We have to

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1 basically facilitate NRC review process. So we want
2 to do that.

3 We also had insufficient focus on the
4 transparency and traceability. It's kind of the same
5 issue. It's that we did not really put ourselves in
6 the regulatory shoes and we try to do that more now.
7 That's basically about bringing a regulatory
8 perspective, a licensing perspective, to these
9 documents and to entire body of work.

10 The recommended corrective actions were to
11 emphasize the transparency, the completeness, the
12 traceability, use the experienced regulatory reviewers
13 - I have covered some of this - establish
14 accountability. So we put these teams together in one
15 location in Las Vegas. These subteams have gone
16 through, identified any issues and problem areas, not
17 just similar to the ones NRC identified, but we have
18 a complete checklist that they went through that
19 includes all of the types of things that were
20 identified by NRC. Identified those, bring in a more
21 senior team to look for common elements of problems to
22 make sure if one technical area was finding types of
23 problems then we looked for those types of problems in
24 the other areas as well.

25 So we just went through a comprehensive

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1 process where one team wasn't finding something and we
2 went back to make sure they were accountable and they
3 understood what they needed to be looking for.

4 In those cases, we did some retraining
5 there. We tried to institutionalize our license
6 because we had to tweak our procedures a bit to make
7 sure that these types of problems that had been coming
8 that there are warnings and notations and procedural
9 staffs that we will specifically look for those types
10 of problems.

11 On the next slide, I go into a little bit
12 more detail on the regulatory integration team. It's
13 basically a one-time effort to do an extensive
14 evaluation and analysis of all of the analysis and
15 model reports that we're going to need to support our
16 license application. It's regulatory focused. We're
17 looking at the requirements, but we're also looking at
18 the focus of a perspective of the regulators. That's
19 what we're trying to do.

20 We divided this effort up into two phases.
21 The first phase which has just been completed is the
22 evaluation phase where we have gone through and
23 identified a number of actions in these 100 plus AMRs.
24 I think we're up to about 2700 actions. Phase two
25 then will be to take these actions and implement what

1 we need to implement to make the improvements we need
2 in our analysis and model reports. So we've
3 identified and documented the issues and we're
4 revising where it's necessary. We're in the revision
5 mode of the Phase two mode now.

6 Our objective is to refine the analysis
7 and model reports, to improve the integration, the
8 consistency, the transparency and traceability and
9 we're also double-checking if there's any additional
10 technical issues that need to be resolved. We're not
11 really finding a lot of technical issues. So we're
12 confirming NRC's evaluation and our previous
13 evaluations and self-assessments and we're really
14 focusing on that regulatory perspective.

15 On slide 9, the primary task out of the
16 regulatory integration team, and again this summarizes
17 the bases, the checklist that we are using that the
18 team needs to get through and identify actions that
19 were necessary. We looked at the TSPA architecture.
20 In other words, we looked at the way the analysis and
21 model reports and other inputs and fed the total
22 system performance assessment. So we go through the
23 entire process starting with the technical bases,
24 parameters, data.

25 We looked at the risk significance. We

1 actually tried to focus on the AMRs and give priority
2 to those and run those through the system first that
3 might have the most risk significance or most effect
4 on the performance of the repository. Now we did the
5 model, but we did them in risk-rank order. We looked
6 at data confirmation, data qualification, to make sure
7 that the data we were using to support validation of
8 the model was adequate.

9 We looked at parameter evaluation to make
10 sure the traceability and technical parameters we were
11 using were developed and the handout from AMR to AMR,
12 but again many AMRs use the same parameters. We
13 wanted to make sure there was consistency in this
14 parameter used across the evaluation and adequate
15 technical basis.

16 We looked at our evaluation of features,
17 events and processes to make sure that where we had
18 screened certain processes and features out is not
19 being risk significant to our modeling. We did
20 accurate basis for that. We looked for the ones that
21 were screened in that we had developed bases
22 adequately and modeled them correctly. And we looked
23 at the analysis and model evaluation to traceability
24 of inputs and outputs, the appropriate and consistency
25 of data. We actually specifically went back and

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1 looked that NRC's Yucca Mountain review plan to make
2 sure we were addressing the elements that we knew the
3 regulator would be looking for. We looked at the
4 transparency of our discussions and we looked at again
5 the technical bases.

6 So what did we find? What we found was
7 many of the same things NRC had found. I guess a
8 brief summary, and it's not on a slide, is that it
9 looks like we have about 3,000 open items, about six
10 percent, with some sort of technical problem, a
11 traceability problem with some sort of technical
12 input. About 35 percent were dealing with the
13 transparency of clarity of our model support or
14 justification that we put in writing the documents. We
15 had 16 percent procedural or quality errors and 26
16 percent were dealing with just a document problem, the
17 clarity in the document, did we follow the right steps
18 to make it very easy and retrievable.

19 So that's kind of the nature of what we
20 found under the regulatory integration team and we are
21 actively now implementing the corrective action for
22 that. We expect all of that work to be done by
23 September.

24 The other set of findings the NRC had were
25 dealing with the corrective action program

1 effectiveness. We have already implemented a lot of
2 actions. We had already through these long-standing
3 condition reports and other timeliness of effective
4 corrective action had made some great strides in the
5 last year and a half in our corrective action program.

6 We have done a fairly large rewrite of our
7 corrective action program processes. We have
8 installed new software to be able to help manipulate
9 and manage data within our corrective action program.

10 I guess the greatest benefit of that is hugely
11 increased ability to trend data as far as corrective
12 action goes and define, seek and be aware of adverse
13 trends and then pay attention to those adverse trends
14 across the board, not just in the AMR areas, but
15 across the board in all of our quality effective work.

16 So we had made a lot of those
17 improvements. The NRC did confirm that those
18 improvements were necessary. Our performance recently
19 has been much, much better. As I mentioned some of
20 these long-standing condition reports or what we used
21 to call CARs or corrective action reports have been
22 closed and the remaining long-standing condition
23 report that has not been closed which we expect to be
24 closed within the next couple months.

25 The rates for creating action plans once

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1 a condition adverse to quality has been identified, we
2 were taking then, in a sense, three or four months
3 just to create a corrective action plan. We got those
4 numbers down below 100 days in almost all cases and in
5 most cases for the less significant ones, we're down
6 below 60 days in creating and having an approved
7 corrective action plan.

8 We also have brought down the number of
9 days it takes to actually fully implement the
10 corrective actions. We're down at around 100 days
11 average on what we call "Level A" and "B" and that's
12 the more significant condition reports. Our average
13 time to complete corrective actions has been improved
14 by a matter of about 30 days on average.

15 We are on-going with our corrective action
16 program improvements. The software that we've
17 developed is good. It provides increased training
18 capability, but it also provides an additional burden
19 on our staff. There are some efficiencies that can be
20 developed to make it more efficient for our staff so
21 they don't have to spend as much time just using the
22 system. We want them to spend their time on actually
23 identifying and correcting conditions. So I guess all
24 and all in corrective action we did all these
25 individual, but what it really comes down to and I

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1 think what makes by far the biggest difference is a
2 hugely increased management attention to corrective
3 action to make sure they are identified properly and
4 once identified, to make that they are corrected
5 promptly and effectively.

6 One area that came through and it came out
7 of the training program, we have training ability in
8 our corrective action, is that a lot of our conditions
9 adverse to quality really deal with one element and
10 that's human performance. So our trend analysis
11 really brought this to our attention in a much great
12 stead.

13 We've done a lot of things and just some
14 of the things we've done to deal with this -- It's
15 also in the design area. It's in the pre-closure
16 safety analysis area. It's across the board on our
17 quality effecting activities and actually some non-
18 quality effecting activities because it's just good
19 work practice. We've increased our pre-job rates.

20 When assignments were made, we briefed the
21 assignees with the types of errors and problems that
22 have occurred in similar work in other instances. We
23 identified problems within process work. We've done
24 something we call "Timeout for Quality" where we take
25 that lesson of that work and we just don't correct it

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1 on the spot there which we do, but we also do a
2 Timeout for Quality and try to communicate that lesson
3 across the product areas so that the error and the
4 lessons learned from that error aren't just benefitted
5 by the individual who made it, but it's identified
6 across the project.

7 We've integrated an awareness of error-
8 likely situations. In some of our procedures and work
9 plans and pre-job briefs, we know where errors are
10 being made in many cases and we just haven't
11 communicated that well going into to the work. So
12 we're doing a better job of communicating where errors
13 are likely to occur before the work is done such that
14 the staff doing the work can pay particular attention
15 to those areas and avoid the problem.

16 We put some of that same stuff in
17 procedure critical steps. So we have done some
18 procedure modification in certain key procedures where
19 we're having on-going error. We put warnings or
20 notifications within those procedural steps. We've
21 clarified expectations and values. We've made it
22 clear to our staff and we continue to communicate that
23 periodically both at an upper senior management level,
24 but we're forcing that down into the direct
25 supervisory level that we expect our staff when

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1 there's a problem to identify it, to stop work, to
2 write a condition report, get it corrected and get it
3 communicated such that we can communicate it across
4 the project and that our values are for getting
5 quality work down. Where there's a problem, correct
6 the problem in an effective and efficient way.

7 We issued a management directive that
8 basically supports this. We've communicated it in
9 many different ways. We continue to periodically put
10 it in our newsletters. One of the most effective
11 things I think is in some of our newsletters we
12 basically identify a quality issue of the week. This
13 is where a particular issue has been identified and
14 that brings reality back to it because if it's not a
15 problem you have to deal with personally or a
16 particular staff member has to deal with personally,
17 sometimes it doesn't seem real. So we put that back
18 into the process and that seems to be paying dividends
19 as well. All in all, we're well on our way to making
20 the system work and work very well.

21 In summary on the last slide, basically
22 the NRC technical evaluation confirmed many of our own
23 findings. We appreciate they did find some things
24 that we had not found, but the types of the things
25 they found we were aware of and I think their

1 evaluation brought it to a head and let us know that
2 we needed to take some immediate action. We have, I
3 believe, been responsive to their technical
4 evaluation.

5 Some of the things we had already started.
6 Some of the things we basically probably accelerated
7 some to make sure that we dealt with it, but it really
8 was eyeopener and I think it's been somewhat helpful
9 to us. Actually getting these corrective actions in
10 place has been a very good thing. We have
11 demonstrated some progress in our preparation for
12 licensing and I think that's a very important point.

13 We are dedicated to providing a high
14 quality license application and applying the insights
15 from the NRC's review as well as our own QA
16 evaluations and self-assessments. As of right now,
17 we're still on target to get all this work completed,
18 to get the corrective actions completed from not just
19 the technical evaluation but our long-standing
20 corrective action program problems and get the license
21 application submitted to the NRC in December of '04.

22 So all in all, it has been a somewhat
23 trying exercise, but it's been very useful to go
24 through this process. I think a lot of improvements
25 have been made. If you have any questions, I would be

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1 more than happy to entertain them now.

2 CHAIRMAN RYAN: Thank you very much, Joe.
3 I'll start to my left. George.

4 MEMBER HORNBERGER: Joe, first of all.

5 MR. ZIEGLER: I think you're on mute. I
6 can't hear here.

7 MEMBER HORNBERGER: Are we set now?

8 MR. ZIEGLER: Yes, that's good.

9 MEMBER HORNBERGER: Joe, first, can you
10 give me a little more information on the 140 person
11 team? Where do these 140 people come from? Are they
12 DOE people? Are they Yucca Mountain project people?

13 MR. ZIEGLER: Yes. Most of them were
14 project people that I'd say about one-third of them
15 were already in Las Vegas, about not quite two-thirds
16 of them mostly come from the national labs. So they
17 either came from Berkeley or Livermore or Sandia or
18 Las Alamos and some other locations. We basically
19 hand selected from the groups that had been working on
20 these technical areas the right technical expertise,
21 the people that we thought were the best of the people
22 working on the project. The best of the best. We
23 brought them to Las Vegas.

24 We added to that QA support staff and we
25 actually went outside and brought in some additional

1 people with regulatory expertise where we brought very
2 experienced people in in regulatory proceedings,
3 licensing staff and other NRC regulated activities and
4 we integrated them within the team. Some of them were
5 in the management of the overall project. So I'd say
6 probably 95 percent of them came within the project
7 from one place or another, but they were a hand
8 selected group from within the projects.

9 MEMBER HORNBERGER: And is this team still
10 functioning or was this a task force that came
11 together and disbanded?

12 MR. ZIEGLER: Okay. They are still
13 functioning and we're expecting them to continue to
14 function through September. The Phase 1, the action
15 identification phase, has just completed and we're in
16 the corrective action phase right now where we're
17 modifying.

18 I think nearly every AMR is going to
19 require some degree of modification. So it's the same
20 team that's come together to identify the actions and
21 the problems and they are actually going to correct
22 the problems. So they would be here through September
23 and as the work is completed - the whole 150 won't be
24 through September - then they will go back into their
25 other jobs. The most immediate thing that they are

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1 going to be moving back into right now is LA, license
2 application, Chapter preparation because we want to
3 take these same lessons learned and our technical
4 documents and make sure that those lessons are applied
5 to the license application itself.

6 MEMBER HORNBERGER: Okay. And also just
7 to make sure that I did get this clear from your
8 presentation, on your fifth slide, you mentioned that
9 30 percent of what NRC identified were technical
10 issues and then you went on to say that essentially
11 all of them, the technical information was there and
12 it was more traceability. Then if I heard correctly
13 on the presentation part that you made that we didn't
14 have a slide of the 3,000 issues or something, I think
15 I heard you say that about three percent were
16 technical and some 35 percent were traceability. That
17 is I thought I heard you distinguish between technical
18 issues and traceability issues later. I was wondering
19 what the three percent of technical issues how you
20 categorize them.

21 MR. ZIEGLER: Okay. Two different sets of
22 information. On slide five, that's NRC's report and
23 what they reported back to us.

24 MEMBER HORNBERGER: I know that.

25 MR. ZIEGLER: The other information, I

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1 think it's six percent. I may have said three
2 percent. But a relatively low percentage and our
3 categorization is a little bit different. I don't
4 have examples of those technical errors or problems,
5 but I can tell you that none of them were show-
6 stoppers. None of them made us go out and collect
7 additional data. None of them made us go out.

8 I think in one instance we did go out and
9 did some reanalysis, maybe a couple of instances. So
10 in those instances, we were looking at the technical
11 bases, not just how we portrayed the technical bases
12 but was the documentation, was the backup and
13 supporting information adequate to support those
14 technical bases? In some cases, we actually had to go
15 back and do some modification to either the analyses
16 or make sure that the datasets that we were using
17 actually supported the information that the on-going
18 analysis that we did and the conclusions that were
19 drawn.

20 There were a couple of instances where we
21 had to go back and actually apply additional datasets
22 or different datasets because the datasets that were
23 used had not been through the data qualification
24 process yet. So that six percent was a little more
25 technical than just clarity of explanation.

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1 Now there still wasn't anything identified
2 where the information ultimately didn't exist or we
3 weren't able through additional analysis to correct
4 the problem, but they were more, I think, technically
5 oriented in a sense of actually having to do
6 additional technical work versus just clarify the work
7 that had already been done.

8 MEMBER HORNBERGER: Thank you.

9 CHAIRMAN RYAN: Ruth.

10 MEMBER WEINER: Joe, could you describe to
11 me what happens when you find a mistake or a
12 traceability error? What happens? What do you do
13 then? Suppose you have a document and you see that
14 the wrong table has been put in or there is a number
15 in the table which you question. What happens?

16 MR. ZIEGLER: Okay. Within the regulatory
17 integration -- If it happened outside of this
18 regulatory integration team, what would immediately
19 happen would be a condition report would be issued.
20 It would go into our corrective action program. We
21 would identify an action plan, document that. The
22 corrective action would be taken and it would work its
23 way through the program and we would close the action
24 once the corrective action was complete.

25 Within the regulatory integration team

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1 since basically the entire regulatory integration
2 team, if you will, is a corrective action process, is
3 we have gone through every AMR and actively sought to
4 find those kinds of problems with teams that were
5 experts in the particular technical area. We've
6 identified about 3,000 actions and most of the actions
7 were of the type that you just mentioned, either that
8 or just a clarity traceability, you know, the wording
9 could have explained this better based on what we did.

10 Those actions have been compiled into a
11 database and distributed out. Then they compared the
12 actions in various subgroups to see that if one
13 subgroup identified actions whether those actions
14 needed to take place across the board or whether they
15 were limited to a more focused area. Once we
16 determined the extent of the conditions, then these
17 actions are being grouped.

18 The technical subgroups are in the process
19 of implementing the corrective action. So we are in
20 the process of modifying the AMRs to correct those
21 conditions that were found. That process is a very
22 proceduralized, strict, compliant process. As we go
23 through those modifications, then there will be
24 additional checks. So we make the change we're
25 required. The qualified reviewers that did not do the

1 work check the changes in another check step to make
2 sure once all those technical areas and changes were
3 identified that there's another double check.

4 Then it goes through and is signed off by
5 appropriate technical staff and management. Each of
6 those steps is signed off by appropriate technical
7 staff and management. What comes out the other end is
8 an AMR in this case that have had all the corrective
9 actions made, that has had all the checks on the
10 changes within the framework of those corrective
11 actions made and then is signed off by management.
12 Then it is used as the bases for the TSPA that will
13 ultimately feed the license application.

14 MEMBER WEINER: So it sounds like a good
15 program in its structure. How do you deal with the
16 individual or individuals who were responsible for the
17 mistakes? Let me be very specific. Do you encourage
18 people to find their own mistakes and correct them or
19 do you land on them like a ton of bricks when they
20 make one?

21 MR. ZIEGLER: We don't land on them like
22 a ton of bricks. I guess what we found is that it is
23 true that certain groups probably have had less of
24 this kind of problem than others. But what we try to
25 do is encourage people to identify the errors

1 themselves because the first line of defense is the
2 individual doing the work. We want to encourage the
3 individuals to do the work. So we're trying to take
4 a broader look and not place personal blame on the
5 individuals.

6 But what we are doing though is where
7 there's more of a problem in one area than the other,
8 we are providing some remedial training in those
9 areas. We are emphasizing to the management in those
10 areas that they need to pay more attention. So we're
11 trying to put additional focus and management
12 attention where the errors occur, but we're trying not
13 to punish our employees because we want our employees
14 to bring forth problems when they come up.

15 MEMBER WEINER: Thank you. I have just a
16 couple more questions. When NRC Staff discussed this
17 with us, they gave us a couple of examples because I
18 work best from examples. The best people to answer
19 the transparency questions as in why did you make this
20 measurement at temperature X instead of temperature Y,
21 the best person to answer that question is the person
22 who did the work. So I would like to know. To what
23 extent do you actually call on the technical people
24 who did the actual work that went into the AMRs when
25 there is an NRC review like this?

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1 MR. ZIEGLER: Actually, extensively, when
2 the NRC came in and did the evaluations, we set up
3 interview schedules so that the authors were the
4 actual ones that interviewed with NRC and I think
5 that's where the nature of the NRC findings came.
6 They were largely able when they talked to the authors
7 to know that the adequate information existed. But
8 just from reading the documents, it wasn't as apparent
9 as it needed to be..

10 So I absolutely agree with you. And when
11 we pulled the teams into Las Vegas, we pulled either
12 the individuals that did the work or if there were
13 multiple individuals doing the work, we hand selected
14 the ones that we thought could best represented that
15 work when we pulled the teams to Las Vegas.

16 MEMBER WEINER: The final question. What
17 kind of internal review do you have for an AMR? In
18 other words, what is the review procedure that the AMR
19 goes through before it sees the light of any kind of
20 day?

21 MR. ZIEGLER: Okay.

22 MEMBER WEINER: When somebody prepares a
23 draft, what happens to it?

24 MR. ZIEGLER: The way it works, first
25 there has to be a technical work plan and that

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1 technical work plan has to go through an approval
2 process not just management approval, but a secondary
3 technical reviewer has to review the technical work
4 plan and our QA organization that currently works the
5 technical work plan to make sure that all the QA
6 program requirements are within the work plan. We
7 have to rigorous follow the work plan. If we need to
8 vary from the work plan, then we go back and modify
9 the work plan. So we go through that same type of
10 review to modify it.

11 The work plan requires the author to do
12 the technical work. It requires them to use data
13 sources that are qualified data sources. It requires
14 them to use software that has been developed and
15 qualified according to the quality assurance
16 procedures for software that may be associated with
17 the model. The models that are developed have to be
18 validated according to some very strict model
19 validation requirements that are in Supplement 3 to
20 our quality assurance program.

21 Once the work is completed a technically-
22 qualified reviewer that did not participate in the
23 work, is independent of the work itself, has to review
24 the work and check it and make sure that it is
25 adequate and meets all the requirements technically

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1 and the other process requirements. Once that step is
2 complete because we have had some outstanding issues,
3 we have a mandatory step that's under our procedure,
4 I think, AP 2.14Q that says we do a second technical
5 review to make sure that the work is done and
6 adequately and meets all the requirements, it
7 adequately uses data, model validation software, and
8 other elements that are required.

9 Then after that -- Well actually during
10 that review, typically this work is done by
11 contractors. Simultaneously with that review for the
12 key products such as AMRs, the key primary inputs to
13 our licensing and safety analysis, my DOE staff
14 actually does a review of the work in concert with
15 that secondary technical review. Once that is all
16 complete, all comments have been resolved and
17 documented and resolved, then there's a final
18 management sign-off and the work is complete. In
19 addition to that, all this work, the quality assurance
20 audit and surveillance at least on sampling basis,
21 that's done across the board.

22 MEMBER WEINER: So you should expect no
23 further findings of deficiencies such as were found
24 with these three particular AMRs. You got your
25 program under -

1 MR. ZIEGLER: We certainly don't expect
2 any broad findings across the board. There may be
3 isolated instances that may result in from just
4 differences of opinion. Sometimes we get a quality
5 assurance auditor or self-assessor or regulator that
6 has an opinion about, especially, on these clarity
7 traceability issues. So I would expect it to be much
8 less but occasionally that type of thing is there
9 should be no technical errors.

10 MEMBER WEINER: Thank you.

11 CHAIRMAN RYAN: Allen.

12 MEMBER CROFF: Thank you, Mike. We talked
13 a lot here about the AMRs and trying to fix those. As
14 I understood what you said before, you've tried to
15 apply the same lessons learned, of let me call it,
16 upward in the document hierarchy toward the license
17 application. To what extent are the relevant lessons
18 learned being applied downward in the document
19 hierarchy?

20 MR. ZIEGLER: Downward. I guess the
21 primary inputs of these AMRs would be the data that's
22 collected, the software that's developed. You know a
23 model is developed and that's kind of the AMR, but
24 software has to be developed and controlled and that
25 software has to match the model that's were developed

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1 to separate those two steps. We have applied these
2 same controls to those processes as well and again the
3 lessons are in there. That's the starting point.
4 It's to decide which data needs to be collected.
5 Again there has to be technical work plans to do that
6 work. The data has to be collected. It has to be
7 verified. It has to meet all the measurement and test
8 equipment. So we have applied it downward as well,
9 but the technical leads tend to start at the AMR
10 level. So the same technical leads that define the
11 data needs that define the software needs that define
12 those other input needs.

13 MEMBER CROFF: Okay. My second question.
14 Can I assume that these AMRs are a part of this large
15 block of documents that's coming into the NRC?

16 MR. ZIEGLER: The AMRs will be referenced
17 in the license application and they will be made
18 available to the NRC. They are actually not part of
19 the application. They are analytical inputs to the
20 license application and they will be made available to
21 the NRC.

22 MEMBER CROFF: I wasn't clear in my
23 question. There's this large block of documents
24 that's supposed to be here at the NRC any day now, I
25 guess, I'll call it. Are the AMRs part of that block?

1 DR. HAMDAN: THE LSN.

2 MEMBER CROFF: As part of the LSN. Thank
3 you for the nomenclature.

4 MR. ZIEGLER: Oh, the LSN. Absolutely.
5 The AMRs, yes, absolutely. Those are the primary
6 inputs.

7 MEMBER CROFF: And so can we expect
8 modifications to be submitted through the next several
9 months to these as you guys revise the AMRs at your
10 end?

11 MR. ZIEGLER: Yes, absolutely.

12 MEMBER CROFF: So we'll see changes in
13 these things as they go along.

14 MR. ZIEGLER: Yes, sir.

15 MEMBER CROFF: Okay. Thank you.

16 CHAIRMAN RYAN: Jim Clarke.

17 MEMBER CLARKE: Joe, this is a follow-up
18 to Ruth's last question and perhaps where Allen was
19 going. I don't know if you are continuing to generate
20 AMRs or if you're pretty much done with that exercise.
21 But my question is if you were to generate a bunch of
22 AMRs over the next few months, what would you do
23 differently compared to what you had done to generate
24 the ones that required the corrective action? I hope
25 it's not too academic, but I just wonder what came out

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1 of this process that you would really change how you
2 would develop any future documents.

3 MR. ZIEGLER: I think the biggest lesson
4 learned here is that I think where we are today and
5 what we're doing today if we had started there we
6 would have been in better shape. But I think we would
7 have done a better job of integrating all the
8 different pieces. We have these 100 and some odd AMRs
9 out here and they were done by groups across the
10 country. I think we'd do a better job of integrating
11 and planning the work before the work started.

12 Now that may be a little over simplified
13 because the work we're talking about has gone on over
14 the last 20 years in many cases so the groups didn't
15 exist as they exist today, but doing a better job of
16 integrating and making sure we knew how the pieces of
17 the puzzle fit together in a systematic way before we
18 get so far into the work that we start getting these
19 inconsistency in integration issues. I'll give you an
20 example.

21 Five years ago, we didn't really didn't
22 have one software development and control procedure
23 that we were using across the entire project. We
24 didn't have one model development procedure that we
25 used across the entire project. We didn't have one

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1 data collection procedure that we used across the
2 entire project. So I think the biggest lesson learned
3 is that we should have practices and procedures and
4 processes in place, one practice for every type of
5 work and then we should have forced all of our
6 contractors and laboratories and participants to use
7 that one set of processes.

8 To me, that's the biggest lesson learned
9 because trying to control it by equivalent processes
10 by groups that in my opinion are not used to working
11 in such a rigorous regulatory environment actually
12 caused us to go back and have to redo a lot of work or
13 at least redocument a lot of work. I think that's the
14 biggest lesson. It's to consistent processes and
15 practices across the project, sharing of lessons
16 learned when there are problems and just sticking to
17 that consistency.

18 Even if the work could have been spread
19 out, I think having a centralized group so if there's
20 any problems, then there's one place to go to get that
21 problem resolved so that the problems were resolved
22 and communicated once you have the problem across the
23 board is the way to go. That's what we've instituted
24 now. So I think from this point forward, I think we
25 can manage this project and these problems very well.

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1 I've always known for the most part that had we done
2 a better job of that cross integration and consistency
3 in our processes, I think we could have avoided a lot
4 of this.

5 MEMBER CLARKE: Thank you.

6 CHAIRMAN RYAN: Okay. Thanks, Jim. Joe,
7 I want to turn your attention to the bottom of page
8 four in your slides. When the NRC gave its
9 presentation to us last month, the last sentence of
10 your third quote there is what caught my attention.
11 "This could as a consequence prevent NRC from making
12 a timely decision regarding the issuance of a
13 construction authorization." I do appreciate what
14 you've gone through today in some detail about how
15 you've addressed the specifics of the quality
16 improvements efforts over all and you've done a nice
17 job of outlining what you're done.

18 I'm curious to hear your opinion on two
19 points and I think I know the answer to the first one.
20 Do you view that the things that you have done are
21 going to help avoid that kind of delay? I'm assuming
22 the answer is yes based on all the practices and
23 policies and improvements that you've outlined to us
24 today. But the \$64,000 question to me is have you had
25 additional interaction with NRC Staff on getting

1 either their concurrence or agreement that you're on
2 the right track and what I'm really looking to do is
3 to get you to talk about how have you brought closure
4 to this whole exercise with NRC and do you have what
5 you can characterize as a joint view moving forward or
6 are you waiting for that secondary assessment and so
7 forth? Does that make sense to you?

8 MR. ZIEGLER: Yes, it does. I do think it
9 will largely address the issues raised by the NRC
10 Staff. I don't think that means we're not going to
11 get any requests for additional information on our
12 license application. I still expect a lot of
13 requests, but I think this will probably alleviate
14 some of the larger number. We probably won't get as
15 many as we would have gotten and it probably won't
16 take as long for them to review it to be able to
17 determine what additional needs they have.

18 As far as feedback, I guess I got two
19 types of feedback. I think you had a couple
20 presentations on KTIs and KTI agreements by my staff.
21 We instituted a process about, I guess, a year ago
22 where we created technical basis documents and while
23 the issues weren't exactly the same, they probably
24 weren't articulated as well, we recognized based on
25 KTI agreement responses from NRC that although we

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1 responded to the questions, maybe we didn't do a good
2 enough job of putting that response into the framework
3 of the way that the physics of the repository would
4 work.

5 And we created this concept of technical
6 basis documents which basically put the context and
7 technical groupings together of the physics of how to
8 repository would work. In those instances, we did
9 what I think is a much better job of communications of
10 transparency and traceability. I heard the NRC Staff
11 say that in public forums and when we took the context
12 of the agreement and the response to that agreement
13 and put it into that context.

14 So we started this kind of lessons learned
15 back then. I think part of what we're doing here in
16 the more formal process is applying some of those
17 lessons learned and we've had very positive response
18 from the NRC Staff about that. They were hesitant at
19 first. I think they were saying we were making this
20 big change and it's not really going to do anything,
21 but I really think it did put things in a perspective
22 and light that facilitated their review of KTI
23 agreements. So I have that data point that basically
24 says "Okay, we're doing similar things here into the
25 licensing products. I would expect that this will

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1 help facilitate the review as well.

2 We sent a letter. We were required to
3 give a response within 30 days of the exit meeting
4 that the NRC had and their exit meeting, publicly here
5 in Las Vegas, was on May 5th. We responded on May
6 28th and what we outlined, much what I outlined to you
7 today, is to what we were doing and had done to
8 address these issues. I'm not sure whether NRC plans
9 to respond to that formally, but we have gotten some
10 indication that they believe we understand the issues
11 and what we're doing sounds like it will address the
12 issues.

13 Of course, NRC always tells us and
14 rightfully so that the proof is in the pudding. Once
15 we implement and once we're complete, have we done an
16 adequate job? So they are not going to commit to this
17 is adequate until they get the produce and I don't
18 blame them for that.

19 CHAIRMAN RYAN: I fully understand that
20 you're not going to get that commitment up front, of
21 course. So I guess the answer is you haven't really
22 received a formal response on the implementation nor
23 a final follow-up audit of other AMRs or other similar
24 activities. Is that right?

25 MR. ZIEGLER: That's correct.

1 CHAIRMAN RYAN: Okay. I appreciate that.
2 And again, I'm just trying to be real clear that there
3 hasn't been a formal test of all the things that you
4 talked about and that are quite clear and sound
5 correct and appropriate given the context, but as you
6 pointed out, the proof is in the pudding. So we'll
7 see how it goes. Again to me, the key was raised as
8 an issue that could have an impact on schedule and
9 making a timely decision. Well, I guess we'll learn
10 more as time goes on.

11 MR. ZIEGLER: Right. We plan to be
12 extremely responsive to the NRC Staff and doing
13 everything we can do to facilitate a timely license
14 application review.

15 CHAIRMAN RYAN: And you sure made that
16 clear in your summary which we all appreciate. Thanks
17 very much.

18 MR. ZIEGLER: Thank you.

19 CHAIRMAN RYAN: Any other questions? Mike
20 Lee has a question, NRC Staff.

21 MR. LEE: Yeah, Joe. You made reference
22 in your presentation that there was still one
23 outstanding corrective action that DOE was addressing.
24 Could you just elaborate on that briefly?

25 MR. ZIEGLER: Yeah. There were basically

1 three outstanding condition reports significant
2 conditions adverse to quality over the last two or
3 three years. There were others but they were dealt
4 with in a more timely fashion. The one that's
5 outstanding is the one that was written against the
6 model validation process. The subject of what we were
7 talking about here today is basically developed in the
8 AMRs and validated in the models that were already in
9 those ARMS.

10 We have made a conscious decision even
11 though we believe we have taken the right actions to
12 identify all the problems. We have a work plan in
13 place that we're following, but because we're revising
14 the AMRs and those revised AMRs through this process
15 I described are not going to start coming out of the
16 pipeline.

17 I think that some of them start next
18 month, but we wanted to see actual product, substance
19 of numbers of these products coming through the final
20 approval before we close that condition. So the
21 actions that were taken to close the conditions are
22 indeed the actions that I described today. But we're
23 not comfortable closing that until we actually see
24 internally product coming through the process and
25 we've identified which of those products that it will

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1 be so we have every confidence that we'll be able to
2 close the condition, the actions that were taken were
3 adequate.

4 Much like I said, the NRC Staff says the
5 proof is in the pudding. The RTA approach and line
6 management approach are going to be the same way.
7 We're not going to close that condition adverse to
8 quality prematurely.

9 MR. LEE: Thanks.

10 CHAIRMAN RYAN: Any other questions? Yes.

11 DR. HAMDAN: Thank you. Joe, this is
12 Latif Hamdan and I have just a follow-up on our
13 chairman's question about the license application
14 verification schedule. I wonder if you can comment on
15 this work has impacted or how it was impacted by the
16 work that you have done -

17 MR. ZIEGLER: In our schedule?

18 DR. HAMDAN: Right.

19 MR. ZIEGLER: It's had some internal --
20 It's provided some intermediate scheduling challenges.
21 I don't see it changing the end point schedule at all.
22 We knew that we were going to have to do additional
23 integration work. So as the AMRs were being
24 completed, the first revision of them were being
25 completed, we knew that we were going to have to bring

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1 a group of people together to do some integration and
2 cross-checks.

3 I guess we didn't know we were going to
4 call it regulatory integration team. We probably
5 didn't feel the extent of what the team needed to be
6 so that we needed to give 100 percent through all of
7 the AMRs, but we did that. I guess the biggest impact
8 is a resource challenge in that I have a lot of KTI
9 agreements and responses to KTI agreements that are
10 due. Actually, I have about 50 more due to NRC
11 between now and August.

12 I have this AMR process that's going to be
13 going on between now and September and I am in the
14 process of preparing license application sections that
15 all deal with the same technical expertise, the same
16 topics. So I guess the biggest challenge is one of
17 keeping that consistent and making sure that the
18 technical expertise that's being applied has been
19 consistently applied across those three basic products
20 lines. So it's a scheduling challenge.

21 I guess I often say a compliment to the
22 technical staff and the general staff on this project
23 is they are taking that challenge. So I'm keeping the
24 adequate technical expertise plugged in all three of
25 those product lines, making them consistent and making

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1 these improvements as we go.

2 I won't tell you that it's not a
3 challenge; but this is where we wanted to be two years
4 ago. We wanted to be in a position to be able to head
5 in towards a high quality license application that met
6 all these technical challenges and I think we're here.
7 While I don't want to downplay the challenge, our
8 staff is up to it and they think what they're doing is
9 important.

10 Management knows it's important for
11 various reasons and so we're going to get it done. So
12 I don't see it affecting the overall schedule in the
13 end at all. I see a high quality license application
14 in December.

15 CHAIRMAN RYAN: Anything else? Joe, thank
16 you very much for your time. We appreciate you being
17 with us this morning.

18 MR. ZIEGLER: All right. Thank you very
19 much.

20 CHAIRMAN RYAN: Thanks. I think at this
21 point this ends our information gathering part of the
22 meeting and we can go off the record. So I suggest
23 that we just take a couple minute break and then
24 reconvene and pick up any action items to close out
25 and we'll be finished. We have just a few of your

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1 graphs to finish. We'll just take a couple minute
2 breaks in place and go from there. Off the record.

3 (Whereupon, at 12:07 p.m., the meeting of
4 the Advisory Committee on Nuclear Waste
5 was concluded.)

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CERTIFICATE

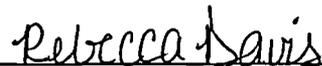
This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission in the matter of:

Name of Proceeding: Advisory Committee on
Nuclear Waste

Docket Number: N/A

Location: Rockville, Maryland

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



Rebecca Davis
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U.S. Department of Energy
Office of Civilian Radioactive Waste Management



DOE Response to NRC Staff Evaluation of Analysis and Model Reports, Process Controls, and Corrective Actions

Presented to:
Advisory Committee on Nuclear Waste

Presented by:
Joseph D. Ziegler
Office of Repository Development
U.S. Department of Energy

June 24, 2004
Rockville, Maryland

Overview

- **NRC Technical Evaluation**
- **DOE Response**
- **Post-evaluation Review**
- **Regulatory Integration Team**
- **Corrective Action Program Effectiveness**
- **Summary**



NRC Technical Evaluation

- **Fall and Winter 2003-2004 NRC conducted three targeted technical evaluations of Analysis and Model Reports (AMR)**
 - Each evaluation involved one week of on-site review
 - NRC evaluated
 - ♦ **Technical information/products**
 - » *General and Localized Corrosion of the Waste Package Outer Barrier (November 2003)*
 - » *Commercial Spent Nuclear Fuel Waste Form Degradation Model (December 2003)*
 - » *Drift Degradation Analysis (January 2004)*
 - ♦ **Controlling processes**
 - ♦ **Corrective actions**
 - **NRC's evaluation**
 - ♦ **Found some good practices**
 - ♦ **Noted improvements**
 - ♦ **Identified concerns**



NRC Technical Evaluation

(Continued)

- **NRC Concerns**

- “The team identified some concerns with both the clarity of the technical bases presented in the three AMRs evaluated and the sufficiency of technical information used to support DOE’s explanation of the technical bases, which could reasonably have been identified and corrected during the AMR checking and review process.”
- “The team also found concerns in the effectiveness of DOE’s corrective actions. The number and similar pattern of concerns found in all three AMRs suggests that other AMRs may have similar limitations”
- “If DOE continues to use their existing policies, procedures, methods, and practices at the same level of implementation and rigor, the staff’s review of the License Application (LA) could be significantly extended because of the need for a large volume of requests for additional information in some areas. This could, as a consequence, prevent NRC from making a timely decision regarding issuance of a construction authorization.”



DOE Response

- Analyzed NRC's evaluation results in detail
- Categorized NRC's concerns and observations
 - ~45 percent were transparency or traceability issues
 - ~30 percent were technical issues
 - ~25 percent were positive observations
- Generally agreed with NRC's conclusions, except for two issues concerning emplacement drift degradation analysis methods and codes



DOE's Post-evaluation Review

- **Transparency and traceability**
 - Previously identified
- **Regulatory integration team**
- **Corrective action program**
 - Actions largely already in progress



DOE's Post-evaluation Review

(continued)

- **Apparent cause**
 - Narrow interpretations
 - Lack of focus
 - Regulatory perspective
- **Recommend corrective actions**
 - Emphasize transparency, completeness and traceability
 - Experienced regulatory reviewers
 - Establish accountability
 - Institutionalize lessons learned



Regulatory Integration Team

- **Scope**

- One-time comprehensive evaluation of analysis and model reports that support a License Application
 - ◆ Regulatory focused
 - ◆ Phase 1- Evaluation
 - ◆ Phase 2- Production
- Identify and document issues
- Revise as necessary

- **Objective**

- Evaluate and refine analysis and model reports
- Improve integration, consistency, transparency and traceability
- Regulatory perspective



Regulatory Integration Team

(Continued)

• Primary Tasks

- Total system performance assessment architecture
- Risk significance
- Data confirmation
- Parameter evaluation
- Features, events and processes evaluation
- Analysis/model evaluation



Corrective Action Program Effectiveness

- **Background**
 - Implemented actions
 - Considerable improvements
- **Current CAP performance**
 - CAR closures
 - Acceptable rates for action plans and their completion
 - Average time to complete corrective actions
- **Ongoing CAP improvements**



Corrective Action Program Effectiveness

(Continued)

- **Human Performance**
 - Identified by trend analysis
 - Pre-job briefs
 - Timeouts for quality
 - Integrating awareness of error-likely situations
 - Integrating awareness of procedure critical steps
 - Clarified expectations and values
 - Management directive



Summary

- **NRC Technical Evaluation confirmed many of DOE's own findings**
- **Responsive to NRC Technical Evaluation**
 - Demonstrated progress in DOE's preparation for licensing
- **Dedicated to providing a high-quality License Application**
 - Applying insights from NRC's review
- **Submittal of License Application in December 2004 on target**





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