Official Transcript of Proceedings

NUCLEAR REGULATORY COMMISSION

Title: Advisory Committee on Nuclear Waste
136th Meeting

Docket Number: (not applicable)

Location: Rockville, Maryland

Date: Tuesday, July 23, 2002

Work Order No.: NRC-480 Pages 1-71

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NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON NUCLEAR WASTE

136th MEETING

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TUESDAY,

JULY 23, 2002

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ROCKVILLE, MARYLAND

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The ACNW met at the Nuclear Regulatory Commission, Two White Flint North, Room T2B3, 11545 Rockville Pike, at 12:30 p.m, George M. Hornberger, Chairman, presiding.

COMMITTEE MEMBERS:

GEORGE M. HORNBERGER, Chairman

RAYMOND G. WYMER, Vice Chairman

B. JOHN GARRICK, Member

MILTON N. LEVENSON, Member

MICHAEL T. RYAN, Member

MARTIN J. STEINDLER, Consultant

ACNW STAFF PRESENT:

JOHN T. LARKINS, Executive Director, ACRS/ACNW

SHER BAHADUR, Associate Director, ACRS/ACNW

ANDREW C. CAMPBELL

TIMOTHY KOBETZ

MICHAEL LEE

HOWARD J. LARSON

RICHARD K. MAJOR

RICHARD P. SAVIO

ALSO PRESENT:

ROD McCULLUM, NEI

C-O-N-T-E-N-T-S

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

12:31 p.m.

CHAIRMAN HORNBERGER: The meeting will come to order.

This is the first day of the 136th meeting of the Advisory Committee on Nuclear Waste. My name is George Hornberger, Chairman of the ACNW. The other members of the Committee present are Raymond Wymer, Vice Chairman. John Garrick, Milt Levenson, and Michael Ryan are also participating in today's session. Also, Marty Steindler is a consultant for the Committee and he is participating in today's meeting.

During today's meeting the Committee will:

One, hear presentations from industry and government representatives on the proposed Yucca Mountain Review Plan and discuss elements of a Committee letter report.

Two, discuss preparation of ACNW reports.

John Larkins is the Designated Federal Official for today's initial session.

This meeting is being conducted in accordance with the provisions of the Federal

Advisory Committee Act. We have received no requests for time to make all statements from the members of the public regarding today's sessions. Should anyone wish to address the Committee, please make your wishes known to one of the Committee's staff.

It is requested that speakers use one of the microphones, identify themselves, and speak with sufficient clarity and volume so that they can be readily heard.

Before proceeding, I would like to cover some brief items of current interest. We welcome to today's meeting Dr. Michael T. Ryan, who has been appointed the fifth member of the ACNW. Welcome officially, Michael.

The relevant Senate subcommittee has approved the reappointment of Commissioner Jeffrey Merrifield. However, the full Senate was unable to take up his confirmation prior to the June 30th expiration of his term. He is now doing a special study for Chairman Meserve on the agency's public relations policy.

The Committee notes the departure of Mr. Mike Markley from the full-time office staff. Over the past several years, while serving principally

the ACRS, Mike has also been particularly helpful to the ACNW on several projects, including serving as the Designated Federal Official and Senior Staff Engineer for the Joint ACRS/ACNW Committee. We wish him well in his new assignment with IMNS, which the last two letters must mean "Nuclear Safety," but --

DR. BAHADUR: Industrial and Medical --

CHAIRMAN HORNBERGER: Industrial and Medical Nuclear Safety, IMNS.

They are the items of interest. We are going to proceed to our agenda.

The main item on our agenda for this afternoon is to discuss our comments on the Yucca Mountain Review Plan, Revision 2. We are going to start off hearing from Rod McCullum with the Nuclear Energy Institute, who has some comments from NEI's perspective on the WMRP. Rod?

MR. McCULLUM: Yes, I appreciate the opportunity to come share our comments with the Committee at the time you are considering yours. What I will be talking about today is pretty much our final draft comments. We had them all poised and almost ready to go when the deadline was extended. So, in keeping with the time-honored NEI tradition of never submitting anything until the

very last minute, we will hang on. In that vein, any discussion or feedback from the Committee would certainly be most appreciated.

We have taken a pretty significant look at the Yucca Mountain Review Plan. It is something we consider an important part of the process. I have had industry experts from a number of our member companies in licensing, quality assurance, look at it with me, as well as the folks from EPRI, from the scientific perspective.

Next slide. Of course, it goes without saying how important Yucca Mountain is to the industry. It is an important strategic objective for us in terms of minimizing business uncertainties at the back end of our fuel cycle, and it is to our customers, too. I think the recent strong votes in Congress on what was politically a very difficult issue -- you had a very strong mandate coming out there -- really show how people are customers, as well as, of course, the folks inside the industry appreciate the value of nuclear electricity and the clean air benefits that it brings and understand that this project is important to the continuance and advancement of those things.

Of course, from the very beginning, in

order for us to maximize or to realize the potential of this project to our industry, the NRC's review of the project is key, because, as the first sub-bullet here says, it is not really that we have a place to put the stuff that gives people confidence in nuclear. It is that they are assured in the safety of disposal. The NRC's review is a key component of assuring the safety and providing confidence in the safety of disposal.

It is also very important because, again, as the President and the Secretary of Energy, and a number of Members of the Congress communicated, this is an urgent national priority, that the process be constructed in a way that it provides a workable framework for the project to move forward. We have this incredible vote. We should go strongly forward from there.

The Review Plan is at the very front end of that. I was thinking the other day that, I think it was in 1963, that President Kennedy told Congress, "Let's put a man on the moon." Congress agreed. In 1969, there was one standing there. Now here we are in 2002; the President said, "Let's put nuclear waste in Yucca Mountain," and Congress has agreed. It is going to take until 2010.

So I am not sure why it should take longer, but when you look at difficult undertakings, clearly, somebody had to make some very good decisions at the very beginning. Having the right regulatory framework, as defined by the Yucca Mountain Review Plan, is certainly one of those decisions.

Next slide. There are really two aspects of the Review Plan. We feel that the preponderance of our thinking is more positive than negative, although I will certainly show you the comments where there is room for improvement that are most important in this review plan.

One is its risk-informed nature. We found, as industry has evolved and progressed and gotten better at safety, and improved performance at the same time, that really risk-informed regulation is a key part of that. We think there's even more reasons to be risk-informed at Yucca Mountain, and I will get into that in a little bit.

In fact, these two elements here are both intrinsically related. Of course, the second one is the stepwise approach, because it is something we believe very strongly in, and it is because there is a time component to risk. In

reactor space, you make a decision to start a reactor, and then if things go wrong, you have to react very quickly.

In repository space, if things start to go wrong on you, you have months, years, perhaps decades, at least from the post-closure performance standpoint, and most of our comments are in there. So at the same time you have these lengths of time, you also have progression of science. You will know more in 2010 than you know today, and we should certainly build the process to take advantage of that, to license in steps as we go forward. So what we were really looking for mainly in review was to see that the Review Plan supported a risk-informed approach as well as a stepwise approach.

Next slide. Of course, there are some other areas we are interested in. I mentioned that this is an important and urgent national priority. It needs to be on the front end fairly quickly here, and I think that it is good that NRC is moving forward with the Review Plan. DOE is in the process of preparing a license application right now. Having the Review Plan finalized will help that process.

The distinction between license review

and inspection activities, there's been a lot of pre-licensing review of DOE by NRC. This has been down at a high level of detail, which is a good thing. It has helped strengthen and prepare both agencies to move forward.

There needs to be a caution, especially in a stepwise approach, where the level of detail will grade as you go further along, that the Review Plan reflect what is a licensing review, recognizing that, as the program moves forward, NRC will continue to inspect and look at things in more detail. So this is communicated in there very effectively, and I will talk about that just a little bit more.

The difference between reasonable expectation and reasonable assurance, we feel there is one, and it should be communicated in here. We will have some specific comments on terminology, clarifications, and the role of that pre-licensing process.

Next slide. On the risk-informed side, we feel that there is a strong commitment to the risk-informed approach in the Review Plan. I did not try to count the number of times the words "risk-informed" were mentioned in there, but it was

probably the most often-appearing word that you would see in it.

But just saying you are risk-informed doesn't always make you risk-informed in every respect. So we do feel that there are some improvements needed. I will discuss the specific ones, but in general there needs to be a strong upfront recognition that it is really up to the licensee, DOE to propose, and NRC to approve, these approaches, and the converse of that, a refraining, if you will, from defining too much in advance in the licensing review guidance what those are; less detailed and prescriptiveness in some areas.

Again, this flexibility is very important in stepwide licensing. We need a Review Plan that appreciates that this process will evolve and that, as you get to different steps, you will know more. So being very prescriptive in the early steps could inhibit that or at least mean you have to keep revising the Review Plan quite frequently, if you want to accomplish that.

Next slide. So we feel that in doing this, there needs to be universal -- I started to try to think of using the word "holistic," although I am not sure that is appropriate here, but really a

broad, comprehensive approach to risk-informing this. Yet in the Review Plan, starting with Section 1.3, we see a lot of qualification, and I know this slide is not very risk-informed because I run the risk of hurting somebody's eyesight here, and not informing anybody because you can't read it.

But the reason I have included or force-fit all these quotes in here was "developing a risk-informed," "the extent," "this area will be risk-informed because," "where suitable," "will be risk-informed there" -- it is almost like, well, we will be risk-informed here because we have an excuse to be over here or it is okay over there but not as okay over here. That could lead to an uneven review. It could lead to a situation where different reviewers in different aspects of the review might see the extent to which they are risk-informed differently, and there would be not an overall focus of, what are the most significant risk contributors? Are we focusing most appropriately on those? Are we focusing on them at the appropriate steps in the process and in the appropriate detail for that step of the process? It is less risk-informing by exception, but risk-informing as a rule, we would like to see in the Review Plan.

Next slide. Three specific areas where this is evident: Section 3, the General Information, that review, the type of things that were being asked for, I almost thought I was reading the Review Plan, the details further deep into the license application. It is simply the general information and probably should pull back a little bit there. It is just to make sure the summary information is an adequate summary. It is not really to test the information the way you would at a further level of detail, either in a licensing review or on into an inspection review.

Model abstraction, we noted that in each of the 14 areas where you have the different types of model abstraction they had a specific set of guidance. There was an extreme amount of redundancy in this. We do not feel that this is necessary; that you could, in fact, save yourself 109, or maybe 90-some of 109, pages by simply having one set of guidance applicable to model abstraction.

If there's needs to make exception, then define by exception, well, why does it have to be different for this type of model or why does it have to be different for that type of model, as opposed to the rule being that each type of model

abstraction will have its very own comprehensive, detailed description of how it will be reviewed in there. It tends to set reviewers in different disciplines off on different paths. Again, it is redundant and doesn't facilitate a more consistent look at the review plan. So we will actually in our comments propose a streamlining and put out how we would write this in terms of a more general approach.

Another aspect of this is that right now we have these 14 areas we are focusing in, these 14 types of modeling, but as science advances, the repository evolves, maybe there's 15, maybe there's 13, maybe there's still 14 but there's two that are different than they were before.

So, again, by being that detailed and that specific, you are generating a need to continually keep revising the Review Plan through a notice and comment process that takes some time to stay a step ahead of DOE. In fact, it in this aspect is really written to where DOE and NRC have together come as a result of their significant pre-licensing interactions, and this reflects the significance and the quality of those interactions, but it is a snapshot there. Keeping the guidance

more general would still guide the reviewers to look at these things and be more useful.

Performance confirmation, there's some -- overall, our view I will get into later in stepwise. The performance confirmation provision in here is a positive one.

But there are some prescriptive elements in monitoring and test requirements in there that we feel, again, not appropriate to define at this level. It is curious that some of those same elements were in Draft Part 63. A number of commenters said, no, that's too prescriptive. NRC agreed in Part 63 and said, yes, you're right. And now they have found their way back into the Review Plan.

Quality assurance, probably our most significant area of concern here. We agreed strict adherence to QA is a must, but it has to be the right QA. Industry has learned over time that overprescriptive QA isn't necessarily the right QA.

Our QA experts from industry looked at this and they found it more detailed and more prescriptive, at a lower level of detail than what you would get in Part 50 space. They also found it curious that you have 22 criteria, whereas we only

have 18, and the additional four criteria are for things like software, physical samples, scientific investigation, and field surveys. We have these things there, and we assure them to be high quality with the other 18 criteria that are applicable to everything you do. We get fine without having -- again, you are setting up a specific review path for a specific thing, instead of taking a broader look.

And there's other things in there, like requesting the naming of individuals in the QARD. It would tend to lead to DOE's QARD being significantly at a lower level of detail than a QAPD at a nuclear plant, than a QA Program Description at a nuclear plant would be.

Again, looking at the risk and opportunity to risk-inform, when you look at the hazard of an operating nuclear reactor versus the more static hazard of fuel in a tunnel, why is more detailed QA appropriate in this context than in the former context?

Next slide. Of course, NRC, getting to the stepwise approach, NRC has strongly recognized this as stated here. I think this is a very good quote from the Part 63 rulemaking. It provides the flexibility to make decisions in a logical time

sequence, accounting for the collecting and analyzing of additional information.

It is really an opportunity you have in repository that we don't have in any other endeavor. If there is a question, how will this material perform at that temperature, you don't have to have that question answered before you start putting stuff in the mountain; you can, in fact, see how it performs over decades, if you would like.

Building that into the license, and in the next slide you see a little more detail. The most important thing to realize here, the two most important things are the fact that there are steps down a couple of places on the curve, and the normal operation -- and, again, this is in the post-closure sense. In the pre-closure sense the expectation should be the same as they are for any operating nuclear facility in terms of fuel-handling or whatever.

But in terms of the post-closure sense in normal operations, it does occur until the time the NRC has to make a decision about whether or not to close the repository. All the way up before that time, they will be moving up and down this curve. It ceases to become steps and starts to become more

of a continuing here, because it is such a long period of time, and so much is continuously being gathered here by the scientific program.

So at each of these points your confidence grows as you learn more, as time goes by, and there are times when something will be discovered that will cause your confidence to go down. If it happens here before construction, it is a paper issue. It is design changes that can be made on drawings perhaps or analytical changes that could be made in the total system performance assessment.

If it happens up here, perhaps it could necessitate some physical modifications. You've already begun to build canisters of one material, and you find, well, no, I need another material. So now your first so many canisters would have to be recalled and brought in.

While that might not be desirable, the process should facilitate that. The process should facilitate the stepwise building and continuous building of confidence over time.

Down here in the reactor world, again, there is a time component to risk here. When you get to starting up a reactor, then your timeframes

to react are very short. But you have literally decades to construct startup testing, low-capacity testing, full-capacity testing, to continue to learn. The Review Plan should allow for this. In fact, it does.

If we go to the next slide, two elements of the Review Plan that we think are -- and, of course, of the regulation as well -- except for the few prescriptive elements in performance confirmation, they are effectively executed here.

The research and development program to resolve safety questions, and the sub-bullet here says, "Our vision of how this should be applied," which I think may be a little bit different from the way it is currently being construed, in that this is issues where you don't have agreement, or don't need agreement, until a later stage, when information is available; whereas, performance confirmation you have agreement, you have closure of an issue. You just want to make sure as you learn more, it stays closed or stays agreed.

There is a tendency, I think, because of the unreviewed safety question precedent in the commercial world, to view these as something that you deploy when a problem arises and you don't have

the answer. In fact, in repository space they should actually be much more positive and much more forward-looking than that. In fact, it is actually desirable to construct some of these in advance in a forward-looking manner, as opposed to, "Oh, we can't answer this question. So we will have to carry it forward." Well, deliberately, no, it is more appropriate to answer this question later on. We would like to see that more effectively communicated in the Review Plan.

The performance confirmation program, on the previous graph, this really undergirds everything. Whatever conditions and agreements have been made and whatever backs the license should be continued. I think that's, except for the prescriptive elements, that is well-communicated in the Review Plan.

So the improvements in the stepwise area, as I already alluded to, we would like to see the Review Plan instruct the reviewers in a way that explicitly recognizes the value of the stepwise approach that thinks about safety questions a little bit differently than you think about them in the commercial world, communicating the why behind what these sections do, not just putting them out there.

I think that would also help in terms of the tension regarding level of detail that exists in various sections of the Review Plan. If the reviewers are thinking in a forward-looking manner, it is okay to only have this much detail on my question now because I know that the license is going to require the following to go on forward. Again, that could simply, the existing elements that are in there could simply be communicated in this context that would really fill the goal there.

Again, quality assurance needs to recognize all those different phases: the construction, the testing. Quality assurance, there is a gradation of quality assurance as you move through the phases. It should recognize that.

And definition of the path forward, because, you know, I talked earlier about it being overly detailed and overly fixated on where we are in this stage of the process would necessitate the need to revise the Review Plan continuously. By the same token, no matter what you do, you can't have a Review Plan that says nothing. You will need to update it as the process moves forward.

Laying out how you are going to update it -- also, again, that gives people confidence that

this process going forward is more than empty promises, that there really is some meat to this. So laying out the process for updating the Review Plan goes hand in hand with that.

So that's it for really the two fundamental things that we are concerned about, which is risk-informing and stepwise licensing. Really, this first bullet on even our more detailed comments is almost a subcategory of both of those.

Section 1.1.1 of the document, and it has that pyramid figure, does an excellent job of laying out the distinction between inspection activities and a licensing review. There are areas, some of which I have already pointed out, where we felt that that line gets crossed in the Review Plan. This is understandable because, again, there's been so much highly-detailed interactions between DOE and NRC so far that has really strengthened this process.

Some of those are down at a level of inspection. I know that the NRC observes QA audits of DOE's all the time. There is a tendency, I think, to want to capture that same level of detail in here, but needs to recognize that there will be an inspection program, in addition to a license

review program, and keeping that in concert.

The reasonable expectation versus reasonable assurance, I think the notion of reasonable assurance in the pre-closure context and reasonable expectation in the post-closure context is a good one. NRC needs to more clearly define this distinction. The terms are almost used -- I mean it is pre-closure/post-closure, but they are almost used as if they essentially mean the same thing, and they really don't.

Because, again, in the post-closure sense, you've got that time, that time component of risk, and that forward-looking notation is that, in terms of pre-closure safety, you want to know before the first worker starts manipulating the first batch of fuel that he is protected, as well as everybody who lives and works around the site. In the context of protecting the person who is going to live there 10,000 years from now, you have a few years to continue to investigate whether or not you think you've got that person protected.

So there really is an expectation component to reasonable expectation and more of an assurance component to reasonable assurance, and that should be communicated in the Review Plan.

Again, as I mentioned, we should recognize the extensive pre-licensing interactions. Right now it recognizes it by bringing a lot of that stuff in. You know, it should really take a step back and, without needing to put all the stuff in the Review Plan, recognizing explicitly the contribution that the pre-licensing review makes to the review. The reviewers have that base of knowledge to rely on.

Very specific comments, perhaps I am getting too prescriptive here in terms of my own comments, but the meaning of the term "complete" in the acceptance review, you've got that 90-day clock for the acceptance review. What is complete? That is something that different reviewers could interpret differently, and we would like to see better defined.

There's three terms in here: important to safety, important to waste isolation, and important to performance. Two of these are defined in 63.2, and we feel are used consistently with their definitions, but we didn't find important to performance. I mean, if it is not important to safety and it is not important to waste isolation, why is it important to performance? What are we

looking for here? That term either needs to be defined or dropped. In most cases, probably one of these other two terms is what is really appropriate there.

Bounding values, multiple barriers, the use of the words "spent nuclear fuel" and "high-level radioactive waste" interchangeably need clarification as well.

So, in conclusion, I've stressed on the things we, of course, would like to see improved about the Review Plan, but, overall, the scope and high quality of the document is really evidence that NRC has done a lot to prepare to review this license application. People should take confidence from that, the fact that there is already a tremendous amount of thinking, and that you have an agency that is well-prepared for what will be maybe not putting a man on the moon, but a big challenge.

It does contain a strong commitment to the principles we feel are the most important, the stepwise and risk-informed, performance-based principles. However, as I have discussed in some detail, we feel that in order for those principles to be implemented, that there are some specific improvements needed in the Review Plan.

That is all I have.

CHAIRMAN HORNBERGER: Thanks very much, Rod. I am sure that there are a number of questions for you.

Raymond?

DR. WYMER: I think I will pass for right now and come back later maybe.

CHAIRMAN HORNBERGER: Milt? John?

DR. GARRICK: Rod, I was trying to understand a little better your point with respect to the frequent reference to "risk-informed." I think your point was that there is some indication that they are going to be risk-informed on some things, but no reference to being risk-informed on other things, and therefore, the appearance is that it is going to be an unbalanced review?

MR. McCULLUM: Yes, the idea is that, especially from Section 1.3 and then throughout in the document, got the impression that they were really risk-informing by exception as opposed to by the rule. Your feedback would be valuable here, but I think the very nature of risk-informing is in the whole scope of the review you focus where the risk is the most significant, and you grade according to the risk. But if you are taking a piecemeal

approach, where we will be risk-informed over here because of this, we will be somewhat risk-informed over here because of that, I don't see how you can truly risk-inform the whole scope of the review.

DR. GARRICK: Maybe the answer to this is that, if the NRC, indeed, is adopting the tenet of risk-informed regulatory practice, to say it upfront once and --

MR. McCULLUM: Yes.

DR. GARRICK: -- then forget it.

MR. McCULLUM: Yes. Less use of the word would make the document a lot shorter. Yes.

DR. GARRICK: I am very curious about industry's view of the Review Plan. Is there any way you could characterize that by giving us a hint as to the two or three things they consider to be the most important, either in terms of failings of the plan or in terms of things they would like to change?

MR. McCULLUM: Yes. The two things, of course, we feel in any nuclear licensing endeavor that it has to be risk-informed, performance-based for it to be successful. The high level of detail in a Review Plan, a high level of prescriptiveness is counter to that. We feel there is some of that

in here.

I would say the area where we feel that is the most significant obstacle would be in quality assurance. Then, of course, the second thing is stepwise. It is really in our interest to see this project move forward. We don't see how that can happen if the reviewers all try to put themselves 10,000 years in the future and expect to have perfect knowledge of 10,000 years in the future at step one.

So if the Review Plan does not explicitly recognize it -- and in some areas that may be taking away some of the prescriptiveness and at the same time explicitly recognizing that, hey, you can use the safety question tool as the bridge to the next step. You can use performance confirmation to the bridge to the two or three steps beyond that. That would be all that it takes.

But, really, again, you are getting back to our central interest, which is moving fuel. The stepwise approach is really central to that, as well as, of course, risk-informed. But I would say in both areas I think the area we would like to see most improved is quality assurance, because we have made an incredible journey in the field of quality

assurance. We would like to see the repository not have to start that journey from the beginning over again. It was not always a pleasant journey.

DR. GARRICK: Yes, this Committee was very active during the Part 63 development in keeping as much prescriptiveness as possible out of the regulation, particularly with respect to things like subsystem requirements.

MR. McCULLUM: Right.

DR. GARRICK: Now you have identified quality assurance as an example of where they might be overprescriptive. What other areas do you think the overprescriptiveness kind of creeps back into it that is not in Part 63?

MR. McCULLUM: Well, the most obvious one was the one I mentioned about performance confirmation, where the NRC lays out in some detail what it expects in terms of monitoring and tests, as opposed to -- and I think the Committee may have been, along with us and several others, instrumental in commenting on those things in Part 63, that don't be that prescriptive. The NRC recognizes, yes, we shouldn't be.

Also, I kind of brushed over the model abstraction section. I mean, you've got 109 pages

of how to review a model abstraction, and you've got specific guidance of how to do it for each kind of abstraction. In each one of those areas, you really are going beyond the reg., because you will remember in Part 63 you stay on very general terms as opposed to what DOE will do to define its safety case. Now you are going down and saying, the safety case consists of these 14 things and here's how you review this one, here's how you review that one, here's how you review the next one.

Again, we think you could develop a very strong set of generally-applicable guidance for how you review model abstraction, and looking at how you get to a model that could apply even if they come up with new techniques, new ways of looking at it in the future. So I think there's probably a lot within each one of those 14 sections that crosses over that line.

DR. GARRICK: Yes.

CHAIRMAN HORNBERGER: Can I interrupt for just a second?

DR. GARRICK: Yes.

CHAIRMAN HORNBERGER: So I do understand your use of the word "prescriptive" with respect to QA and Section 4.4 as well, the performance

confirmation. But what you just described in terms of the other sections, the 109 pages, doesn't strike me as prescriptive; you are using the word "prescriptive" in the same sense, because those acceptance criteria and model abstractions certainly do not preclude DOE from deciding exactly how they want to make their case, do they?

MR. McCULLUM: Well --

CHAIRMAN HORNBERGER: I mean, I understand they are detailed. And believe me, I do understand that it is repetitive, because we have all read parts of this.

MR. McCULLUM: Yes.

CHAIRMAN HORNBERGER: But I just want to clarify, make sure that I understand you are using the word "prescriptive" consistently.

MR. McCULLUM: Well, if DOE wanted to make its case using, instead of breaking it up into those 14 models, if they wanted to break it up into only 10 things, combining a couple, if there is one where one of them overlaps into another, I think it would make the Review Plan more cumbersome.

Also, there are interrelationships between the areas, and you almost, by telling the reviewers in each discipline that, "This is your

section. This is how you review a model abstraction. This is your section," you almost facilitate a stovepiping and cut off the cross-pollination. You are right, it is a different sense. Overprescriptive doesn't do justice to what I am trying to say. Instead of an up-and-down level of detail thing, it is more of a cross-cutting thing. But I think it is something we would still like to see addressed.

DR. GARRICK: I think that is all for now.

CHAIRMAN HORNBERGER: Raymond, do you have a comment?

DR. WYMER: Yes, I had a comment. Your understanding of the various qualifiers on risk-informing is somewhat different from the way I interpret it. I have really read that to mean that they were merely pointing out in the YMRP that there are different levels of risk information required for different degrees of risk. That is how I read that, rather than reading it --

MR. McCULLUM: Well, I can go back to what John said on that, and just say that outfront, because that is what risk-informing is all about. But when you make a unique argument for risk-

informing in each area, you've already essentially attempted a linear risk-informing underneath the context of -- I would just go back to saying that upfront, as well as taking out the level of detail, as opposed to trying to give a reason why you have to do it here, why you have to do it there.

DR. WYMER: Yes. It is true that they were sort of presuming the degree of risk in making those statements, but it didn't hit me quite as hard as it seemed to hit you.

MR. McCULLUM: Yes, and that's the way it hits us.

(Laughter.)

DR. WYMER: Okay, that is what I wanted to say.

CHAIRMAN HORNBERGER: Rod, I have just a couple of things I want to clarify, make sure I have your communication straight.

It strikes me that you identified performance confirmation Section 4.4 as overly prescriptive, and that was one comment, but you then also had another comment on performance confirmation. That is that you thought that there should be specific mention or explicit mention that performance confirmation should be viewed as an

opportunity to resolve some issues or agreements that haven't reached resolution in the current terminology. Is that right?

MR. McCULLUM: Well, actually, let me clarify. That goes back to the one slide on those two elements.

Again, I want to distinguish between the usefulness of performance confirmation as a tool to implement stepwise licensing and maybe things that are specific, very specific, very narrow problems with what is in performance confirmation here. I think those are -- again, risk-informing my comments -- those are of a much lower level of importance, the specific problems in the overall importance of it.

But the way we see, you have two tools in here. You have the research and development for safety questions, and you have performance confirmation. I would see research, it is a safety question if you don't have agreement between DOE and NRC. You recognize that information you will collect over time will get you to an agreement, and then you have, of course, provisions for, well, what if it doesn't.

Whereas, performance confirmation is

really where you do have an agreement, where the KTI is closed, for example, and what you want to do is confirm that, as you learn new things, that agreement stays an agreement, that something that both parties assumed doesn't turn out to be incorrect, whereas in safety questions maybe both parties are assuming, each party is assuming something different, and that is okay for now.

CHAIRMAN HORNBERGER: Right, and so I did understand you correctly then. This also ties back in with your suggestion that reasonable expectation should be defined. I mean, your preference would obviously be to have reasonable expectation tied back into this notion that you could have a stepwise approach --

MR. McCULLUM: Right.

CHAIRMAN HORNBERGER: -- and using performance confirmation to resolve some open issues.

MR. McCULLUM: Yes, the term to me, "expectation" versus "assurance," connotes a very long forward look, you know, far into the future, which does imply that you will keep looking as you go into the future; whereas, assurance is that guy is going to be moving the fuel tomorrow; is he safe?

I think they are distinctly different terms, and that should be communicated.

CHAIRMAN HORNBERGER: I guess, lastly -- and, again, this is all sort of part of one thought almost -- you suggest that there should be explicit mention in the Plan made of the stepwise procedure. I am not quite sure that, having looked at the YMRP, that I could myself say, okay, here's how I would suggest you change the plan to do that.

Do you have any ideas on how that might be done?

MR. McCULLUM: Yes. I would build -- and this is one where we are not proposing a specific rewrite; we are just making a comment. But I would propose in this case is I would build on the statement that I had up here on the one slide, which is a quote from the rulemaking -- actually, it was in the response to comments --

CHAIRMAN HORNBERGER: Right.

MR. McCULLUM: -- which I think in one very short paragraph elucidated taking in new information and making decisions as you go along. Then I would follow that with a couple of short paragraphs, and this is how the safety question tool helps you do that, and this is how the performance

confirmation tool helps you do that, and maybe even a sentence or two about, "and this is why you keep the level of detail low, so that you can progress forward," tying that in also to laying out what is the path for updating the Review Plan as you go forward.

CHAIRMAN HORNBERGER: Marty?

DR. STEINDLER: Well, I guess I have just a couple of comments, but one of them I think may be --

DR. GARRICK: One of them may last an hour?

(Laughter.)

DR. STEINDLER: Yes, it that all right?

(Laughter.)

You made two comments which strike me as strange interpretation of what this Plan is all about. One of them, you said that the regulatory framework is to be derived from the Review Plan. The other one, it seems to me that what you are doing is you are looking at the Review Plan as though it were a regulation.

The Review Plan is neither the determiner of the regulatory framework or any part of the regulation, isn't that correct?

MR. McCULLUM: Yes, absolutely, I agree with what you are saying. If I jumbled up my words, I apologize.

What I meant to say, if I didn't say it, this is an important element of the regulatory framework in that it is an implementing tool. It is what guides the reviewers in terms of implementing the regulation.

The comments I was making were intended in the vein of, what are the reviewers going to do with this guidance? If I didn't communicate that appropriately, I apologize, but that was my intent.

DR. STEINDLER: Okay, and so you get down to the question of, what is the reviewer going to do with whatever is written in the Plan?

MR. McCULLUM: Right.

DR. STEINDLER: There are many aspects of that Plan that basically said the reviewer can do whatever the reviewer needs or wants to do based on risk.

MR. McCULLUM: And we agree with that, yes.

DR. STEINDLER: Okay. The reviewer does not have to follow the Plan. DOE does not have to follow the Plan. It is simply a functional outline

to go through this massive license application, the safety case, that is going to have to be looked at by a whole bunch of people.

In that context, I guess I have a difficulty trying to understand why it is, with the flexibility that is already listed in here, that you would object to somebody saying, "Oh, by the way, in Abstraction 12 -- or 14 -- you need to look at the following three items," those three items having been derived from 10 years' worth of interactions between NRC and DOE and other people looking at what is important in that abstraction to the safety case, the high risk.

Now what is wrong with specifying or alerting the reviewer that that is something they ought to look at?

MR. McCULLUM: Well, I think there is nothing wrong with it. I really agree with the first part of your comment. Of course, the Review Plan, the reviewer has the option, DOE has the option to do something different.

I would simply suggest that, when there is something that -- and, remember, we made one comment to describe the relationship of the pre-licensing review to this Review Plan -- is that, in

those various 14 areas where there are things that are important enough that you feel that it is value added to tell the reviewer, "Hey, you know, we went through this whole thing in pre-licensing review in this area," do that by exception, not by the rule.

The way it is structured now is the rule is every type of model abstraction has its own stovepipe, essentially, in the Review Plan. I think it is possible to do what it is you are suggesting, still having a more unified, consistent guidance.

In terms of the reviewer being able to do something different than the Review Plan, well, yes, but the thing is we would like a Review Plan that would help move -- again, our goal, to move fuel -- that helps propel the review forward and to propel it credibly forward. I guess, in our view, having a Review Plan that is defined along 14 specific model abstractions, each one having its own section, isn't necessarily as helpful as one that had consistent, more general guidance with those things that are important identified. But, you know, that is just our opinion.

CHAIRMAN HORNBERGER: Mike?

DR. RYAN: Yes, one question on your graph, if you would throw it back up on the board.

CHAIRMAN HORNBERGER: The question is: Is time a logarithmic scale?

(Laughter.)

DR. RYAN: That's right.

MR. McCULLUM: Where are the EPRI guys when I need them?

(Laughter.)

You went past it. Go back that way again (referring to the slide). There was only one graph in there.

DR. RYAN: Thank you. That is fine.

In fact, that was an interesting curve. It got me to think about the following: At some point there is no longer a license application and the Review Plan; there is a license and license conditions.

MR. McCULLUM: Right.

DR. RYAN: How do you see this Plan evolving, changing, going away on your timeline, and how does that transition process work? How do we get from a licensee review to a license itself?

MR. McCULLUM: I think what you are talking about there, in large part, is the boundary between the license review and the inspection review. Because in a couple of key steps here, NRC

is going to make a licensing decision. They are going to authorize construction. They are going to authorize operating, and they are going to authorize closure.

After having made each of those decisions, they are going to continue to inspect to make sure that the facility is operating within the constraints of what has been licensed, even as that is evolving. That is, again, why we commented it is important, and Section 1.1.1 does this, and I think we would like to see it more rigorously, not rigorously, more consistently carried out through the document, of recognizing that distinction.

Maybe a lot of these more detailed things do belong in an inspection plan. Maybe it is easier in each of these areas and more useful to revise the inspection plan more frequently, based on successive inspections. The Review Plan does lose its utility, at least in certain respects, in each licensing decision. The inspection plan has to take over.

DR. RYAN: Do you feel that transition is explicitly laid out enough?

MR. McCULLUM: No. We would like to see that -- I mean, it is eloquently defined, as I say,

right up in Section 1.1.1, but laying it out further into the document, again, I think that tends to -- remember, I am thinking in terms of what is the reviewer going to do with this Plan. In the way the Plan was written, and at the level of detail it was written in in some areas, there's a thinking, particularly since a lot of these reviewers have already been in what is effectively inspection space, because of all the detailed interactions, there is a thinking, well, we've got to get all that stuff in the licensing Review Plan.

You can approve a license that has conditions in it that you have to live within, and then the details of assuring you are within those conditions then do become -- and I think reminding the reviewers that that exists will help rein in the tendency to want to make all the details part of the licensing review, if that is clear.

DR. RYAN: Yes, it is helpful, and I think it made the other point, that you don't want the reviewers to be thinking about 10,000 years all at once at the beginning.

MR. McCULLUM: Yes. I mean, they need to map out; they need to have the steps in front of them. They need to see that that is going to

progress. They can't be up here way back there. It is just not possible.

DR. RYAN: Thanks.

CHAIRMAN HORNBERGER: Richard? Anyone else? Sher?

DR. BAHADUR: Rod, I just had a comment on your slide 6, which is two slides before that. This is in the similar vein as Marty was mentioning.

In Bullet No. 3 you talk about the prescriptive elements being removed from the Part 63 and then returned to YMRP. To me, from my perspective, this seems to be a strength in the regulatory framework where we take out the prescription from the rule, but then take the similar ideas and put them in the guidance, either for a licensee to meet the rule or for the NRC staff to make sure that there is a compliance.

Yet, you consider that as a criticism. I was just wondering, why? Where's the disconnect here?

MR. McCULLUM: Well, the disconnect is really very simple. It is because putting it back in here misses the reason why it was taken out of the regulation. The reason it was taken out of the regulation was because it was decided that it should

be up to DOE to propose what the monitoring and test program should be, and for the regulator to say, "We agree with that", "We don't agree with that," to ask questions, to suggest improvements.

Putting it back in the Review Plan, it is not a strictly linear relationship between regulation at this level of detail and Review Plan at this level of detail. You fundamentally now cross the boundary between letting the licensee define something and not letting the licensee define it. We don't feel that is appropriate.

DR. BAHADUR: Yes, I think that is an excellent point. Of course, you realize that YMRP is only giving you one way of meeting the regulation.

MR. McCULLUM: I realize that.

DR. BAHADUR: The licensee always has a liberty and independence to come up with an equal and comparable approach by which the rule could be met.

MR. McCULLUM: Right, and we would like to see DOE scientists be as creative as we know they can be. The tendency to rest on the predefined way in the Review Plan, we know it would be out there again. We are thinking in terms of, what are the

people in the system going to do with this plan and will it help them get their job done, when we make those sorts of comments.

DR. BAHADUR: Okay.

CHAIRMAN HORNBERGER: Mike?

MR. LEE: I am kind of troubled by your comment or your observation about looking past or not considering the 10,000-year issue right now. The whole notion behind the repository is to locate a geologic structure and do some limited engineering and rely upon the combination of engineering and geology to contain the waste over a 10,000-year period.

So it seems that one of the principal focuses of at least the construction authorization review is to evaluate DOE's understanding of the issues that would lead to a conclusion with reasonable assurance or reasonable expectation that the repository is going to perform as intended, because that is the Commission's criterion in issuing the construction authorization.

So somehow I think throughout the licensing review you would have to keep your eye on that 10,000-year criterion because that is ultimately what you are going to be building the

repository for. Do you want to elaborate on that?

MR. McCULLUM: Yes, absolutely.

MR. LEE: This isn't an MRS. It is a geologic repository for the disposal of spent nuclear fuel and other high-level waste.

MR. McCULLUM: Absolutely, and the concept of disposal is very important to us. We don't think an MRS gives us the kind of business certainty that disposal does.

MR. LEE: Yes.

MR. McCULLUM: If we could go back to the graph for a second, I am glad you asked that question because I don't want to leave any misperception here. I absolutely agree, you have to keep your eye on 10,000 years. That is the expectation here. I mean, everybody has agreed that that is the appropriate length of time in the future to look.

Saying that you take a stepwise approach to getting to that does not mean you don't keep your eye on it. It is really about -- and the reason I bring this up -- it is about that word on the side there, "confidence." We are well above zero confidence now, and maybe the scale is confusing.

It is not not having a vision of what

10,000 years looks like; it is how much confidence you have in that vision. Another way to put it is in terms of uncertainties. I mean, DOE right now has on the table a TSPA that gives you a dose rate at the end of 10,000 years.

Both the NRC and DOE have varying levels of confidence in everything that goes into that. In some areas you have the same level of confidence. You've closed a lot of key technical issue agreements. In some areas you would like to see DOE do more. In that, both parties are keeping their eye on 10,000 years.

What I am suggesting here is not that you agree on a model and agree on the way the process works and agree on a dose rate, but that you understand that your confidence in what those parameters are 10,000 years from now will increase as time goes by. No matter how much confidence you have now, you will have more 10 years from now, even more 100 years from now.

In reviewing the license application, you look at things in terms of safety questions, in terms of confirmatory research, that are specifically designed into the license to deliberately build your confidence as you go

forward. But there is a certain minimum level of confidence down here. You can't get to a construction authorization without at least this much confidence, and this gets back to: Is it linear or is it logarithmic, whatever it is?

I mean, there's some level of confidence that you have to reach before you can do this. There is even a higher level of confidence you have to reach before you can do this. Indeed, on the pre-closure side, the level of confidence you have to reach here is the same for saying, "Go operate a reactor."

Then, of course, the ultimate level of confidence is here when you are saying, "We've done the best that our civilization can do. We don't feel we have done a disservice to anybody that will be living here 10,000 years in the future." That is what needs to the highest.

Getting back to your point, this whole thing, this whole review does have to be carried out with a very clear focus on 10,000 years. I think that focus gets sharpened by building things into the license that allow you to increase your confidence.

MR. LEE: Thank you.

CHAIRMAN HORNBERGER: I think we are all conceptually talking about the same thing, but I feel I should point out that we don't want to misrepresent what agreements between NRC and DOE are or are not. An agreement to close a KTI or a subissue, I do not think means that NRC staff has agreed that there's sufficient confidence in that, but rather that there is sufficient information for them to judge whether or not a license application meets the requirements.

MR. McCULLUM: Yes, I would agree.

CHAIRMAN HORNBERGER: Perhaps that is a fine distinction in your view.

MR. McCULLUM: No, it is a fine distinction. Of course, the more information you have, either the more or less confidence you have. I mean, you look at these down ticks here. You could have closed an agreement on a topic because you thought you had enough information, and then the one piece of information you didn't have comes in, and now you are knocked back a step.

So the fact that you reached an agreement at this level, you are right, there is a fine parsing between confidence and the distinction of what we have agreed to in terms of information.

CHAIRMAN HORNBERGER: Other questions or comments? Tim?

MR. KOBETZ: With regard to the quality assurance, can you give us some specific examples as to where it is too prescriptive? Because when I looked through it, I thought it gave good acceptance criteria and kind of told you exactly what an acceptable program will look like.

MR. McCULLUM: Well, sure. One example I kind of alluded to was when it talks about organization issues, it asks for individual names as opposed to broad descriptions of who is going to -- or how this is going to organizationally be fulfilled.

There's topics where it appears that the reviewer is going to be required to look -- in a nuclear Part 50 QAPD, you would see merely an affirmation that the requirement is going to be met, that the criteria is going to be fulfilled.

There's a lot of looking into what specifically fulfills that, what individual, what procedure. A lot of this stuff certainly should be addressed in inspection space. When you inspect, when the licensee commits to "my QA program will do this and this and this and the other thing," you

don't just take that for the word. When you go in inspection space, you will look at their this, their that, and the other thing.

Also, the fact that there are 22 criteria, instead of 18 criteria, and I mentioned those four additional criteria are things to which you can apply all the other 18 criteria; they are just specific areas in which you apply it, such as your scientific program or your software. They are areas that in the commercial world we apply the traditional 18 criteria to with great success.

The notion that they somehow have to be special, that they have to be specifically addressed, again, that is getting back to George's point earlier. That is a different -- that is more of a cross-cutting than a linear type of prescriptiveness.

In our detailed comments, we will cite specific examples, quotations, those types of things.

DR. GARRICK: Picking up on that, one of the things we hear about now, once in a while, with respect to QA is a graded QA philosophy; that is to say, a quality assurance program that is commensurate with contemporary risk-informed

regulatory practices.

Were there any comments from industry at all about how the tenets of risk-informing this whole process, how that is mapped into the quality assurance program?

MR. McCULLUM: Yes, we address in our detailed comments -- and I just gave a broad overview here, but we do address that in terms of both our risk-informed comment we have a very specific discussion of quality assurance, and in our stepwise comment we have a very specific discussion of quality assurance.

The notion is that, as you move through the scientific analysis, the construction, the startup, the testing, there are gradations of quality assurance. So as you go forward in time, there is a gradation. As you look pre-closure/post-closure, there is gradations. There's gradations in terms of certain aspects of the repository are more significant risk contributors than others. We do talk to that, yes.

DR. GARRICK: Is that part of the flexibility issue?

MR. McCULLUM: Right, because when you attempt to very specifically define all these areas

in a Review Plan, when you tell all the reviewers, you presuppose that those judgments have been made, and it is really up to the applicant -- one of the first points we made is the recognition in this Review Plan that it is up to the applicant to propose the risk-informing and, of course, up to the NRC to say, "Yes, we agree" or "We don't agree."

DR. GARRICK: Thank you.

CHAIRMAN HORNBERGER: Any other questions or comments?

(No response.)

Okay, thanks very much, Rod.

MR. McCULLUM: Thank you.

CHAIRMAN HORNBERGER: We appreciate it.

In continuing along on the same subject, I would like to invite our consultant, Marty, to make any comments that he wants. I see you have drafted Part 6 while we have been talking.

(Laughter.)

DR. STEINDLER: Part 12.

(Laughter.)

Well, this particular document I guess I viewed from the standpoint of not only the ACNW, but also the Atomic Safety and Licensing Board, and then, finally, of course, the Commission because

that is where everything else ends up.

This discussion and some of the other discussions have made it fairly clear that the speakers sometimes have a great difference in what they think the document is supposed to do, who it is addressed to, and, equally important, what it is not supposed to do. I don't see that people are paying a whole lot of attention to the introduction to this fairly thick document, which I thought made it as clear as most things are in this document, which is damning it with faint praise, about what it is that --

CHAIRMAN HORNBERGER: You liked it, too, huh?

(Laughter.)

DR. STEINDLER: It is a great read.

(Laughter.)

DR. WYMER: If you like mysteries.

(Laughter.)

DR. STEINDLER: That was the point I was trying to make here, that it is clear that this is a guide. It is a guide to a fairly large bunch of people who are going to be stuck with looking at the safety case, and they've got three years to go through it.

It strikes me it is a great idea to give that assembled company as much guidance as you possibly can on what to do, what to pay attention to, and as I point out in one of these notes that I have fired around, by the time this gets around to being reviewed, there are going to be an awful lot of people who have participated in the NRC/DOE interaction that are retired. You are going to have a bunch of folks in here who may not know the history in enough detail to be able to understand and remember the nuances of the interactions and the difficulties and the places where you had big arguments, et cetera.

So I guess I come out of the notion that if you provide some detail on what a fairly naive but very technically-smart reviewer is supposed to look at, that will give him some kind of clue as to what to pay attention to. Those details ought to be somehow related to the level of risk that is involved with them. I suppose that is what people mean by risk-informed, but that is another story for another day, since I never could figure out what risk-informed really means.

I can tell you what I think this document is not. It is not a regulation. It is not

a policy, and it is not a guide of how regulations are going to be enforced.

It is a Review Plan, at least as I read it, it is a Review Plan that tries to take the poor person who is going to try and coordinate this whole thing into a coherent, very short message to the Commission, saying, "Yes, it flies"; "No, it doesn't."

Ultimately, it is going to be the answer that either the Atomic Safety and Licensing Board is going to put together or the Commission is going to put together. They are going to have to put it together from the Safety Evaluation Report that is presumably going to be the product of all these reviews.

Therein lies another problem because I think that the coordination issue is mechanical in this document, but not substantive. It isn't clear how the grades that they are going to instill on each of the pieces are going to eventually come together into a singular, or relatively singular, opinion that, yes, it is or, no, it is not satisfactory. I am talking about the safety case, the DOE safety case.

DR. GARRICK: You gave a lot of emphasis

to this not being a regulation. Of course, I am sure you are sure that the NRC understands that very clearly. Is your worry here that the licensee, the applicant, may be reading this as something that it isn't?

And it is not unprecedented because reg. guides get in that same position.

DR. STEINDLER: Right.

DR. GARRICK: Reg. guides become law in the minds of licensees when in fact they are not.

DR. STEINDLER: And those words are all to be found here, addressed to whoever. The applicant can do what it wants to, but it would be nice if they followed the following reg. guide kind of an approach. That is fine.

The Commission has had a long, and I think fairly successful, history in reg. guides. Have they been too prescriptive? Well, I think a lot of people would say, "Absolutely." Have they allowed for deviation from the reg. guide? Clearly.

There is a little bit of a concern. I don't think, John, that the Department of Energy is going to misunderstand this document. These guys have been at it for 15 years with the staff.

DR. GARRICK: Right.

DR. STEINDLER: They may not be all the same for 15 years, but I think they understand fairly clearly what Part 63 is and what this document is.

It is not so clear that the other potential intervenors, the other folks that contribute, will look at it quite the same way. I thought I heard -- and this is why I made my comment -- NEI saying to me, "Hey, you know, this is almost a regulation." It is not, in my judgment.

DR. GARRICK: Yes.

DR. STEINDLER: It is far from it.

Okay, well, having said all that, how good is it? It is a terrible read. As I think Ray pointed out, your eyes glaze over fairly quickly. On the other hand, it is not supposed to be fun to read.

(Laughter.)

Anyway, I share the concern of the Commissioner who said this is awfully thick, but I think, you know, so it's thick. It is redundant. Yes, it is terribly redundant. Sometimes it looks like it is written by a committee.

Finally, I think the biggest criticism that I would have superficially is that I don't see

how it is all going to come together into a focused final report. That is assuming that a focused final report is the end product. I think it is. I think the Atomic Safety and Licensing -- if I sat on the Atomic Safety and Licensing Board again, and all this stuff would come in front of me for the two years that it takes to hold a hearing, I would say, yes, that's what I would be looking for, some kind of bottom line.

Now the Commission has clear license -- a terrible pun -- to instruct the ASLB to do anything it wants. In the case of the S-3 Table that I was on, the Commission explicitly instructed us to make a record, not to make a conclusion. Okay, so we got a record, and it turned out to be a thick document.

ECCS hearings I think in part were 20,000 pages of a record. So somebody could then go and see what the world of ECCS was all about.

I have no idea what the Commission is going to plan to do here. Eventually, they are going to decide. But if I were sitting on the Atomic Safety and Licensing Board panel, and the Commission would basically come to the panel and say, "Look, you guys do what you're set up to do, an

orderly hearing with all participants being able to cross examine, federal laws of evidence, et cetera, et cetera, et cetera, and at the end we want to know what the bottom line is because that is what we are going to review before we, the Commissioners, give our judgment."

I would expect to see in this document some kind of hint as to how this whole thing is going to come together. It isn't there.

Okay, that is perhaps the one overarching issue that I have. Then my others are on the specificity. I think this thing lacks specificity on issues that 10-15 years of interaction between the staff and DOE have clearly pointed out to be important. Does it remain important as you walk your way through the abstraction process? Some do; some don't. But you can't tell that from here.

It seems to me to highlight the issues that are important, or have been determined to be important to risk, as the abstraction process goes through its machinations, it strikes me would be a very useful thing to have, if I were a reviewer.

DR. GARRICK: But isn't the fact that there are 14 abstractions a product of that kind of

exchange?

DR. STEINDLER: Yes, but that is only one product. I think that is more an organizational issue than it is a risk-related topic issue.

As you look at the world of Yucca Mountain, you've got something on the order of 25 technical and scientific disciplines that have to interact in this system. Well, so they have picked on 14 by combining several. They could have picked on 12, for all I care.

I mean, the issue is, do you cover all the phenomena? I think the 14 probably do. I haven't looked that hard, but I think all of the phenomenon of consequence that have been over the years determined to be important to safety are covered in the 14.

Now the concern that was raised, "Well, gee, there may only be 12 that are important as far as DOE is concerned, when DOE finally comes in," there is enough flexibility in this document that that shouldn't make any difference.

DR. GARRICK: Yes.

DR. STEINDLER: Well, that is basically it. Would I change this document? Well, it depends on how much time I have. To really change it and

turn it into a easily-read, you know, guide for the reviewer, I think it would take a lot of work.

Can you patch it? Yes, I think you can patch it, and I would patch it by specificity because I happen to be a strong believer that somebody is going to be doing the review process who doesn't know everything that has gone on in the past, and somebody ought to remind them.

DR. WYMER: Well, one of the things we discussed among ourselves, Marty, was whether different reviewers would come at this from a different point of view, a different standpoint. Considering one person might say this risk is the biggest in his mind, and another person might say this risk is the biggest. How well does it deal with evening things out so that everybody has the same point of view?

DR. STEINDLER: Oh, I don't think it does that at all. The real question that I would have for you, Ray, is: Is that necessary? My answer is, I think the intervenor process will cover that. Or the performance assessment, digging into the models will determine fairly -- well, not fairly quickly, but it can be used to determine what is important to risk.

I think I would go at it from the standpoint, let's see what the model says. My first question, as you know, is: Is the model still representing the real world? And if the answer there is yes, then let's move on. If the real world is represented by that model, where are the important parameters? How did we get to them? Are they really important?

By the time you have run all that down, in theory, even the reviewer who comes into the review process, like I think they all will, having some personal judgment as to what's important in a particular area, I think they will eventually be driven by the arithmetic to at least a common conclusion.

Now you go back to John's point of some years ago, the uncertainties are so hard to quantify that you can, in fact, have two reviewers looking at the same final answer, ignoring their view of the uncertainties, and come up with different conclusions.

DR. WYMER: At one of the meetings that we had a while back, it was pointed out to us that the disparate pieces of this were being reviewed by different groups in different ways.

DR. STEINDLER: Right.

DR. WYMER: They did, in fact, have very different bases for judging what was important and what wasn't. One of the principal benefits of the get-together that was had among the staff was that they finally sort of converged, but I am not so sure how fine a point that convergence has reached.

DR. STEINDLER: It may not be satisfactory because you don't know it until you get into it, but my general view of, again, the Atomic Safety and Licensing Board activity here is, if the NRC presents a particular point on an issue, one of the abstractions, and DOE thinks they are way offbase, I would expect DOE to rise in orbit and say, "Hey, you guys have got it all wrong and here's why you've got it all wrong." Let's cross examine each other.

That is what the scientific court is really supposed to do. Then with any kind of luck, intervenors or people who have yet another contribution to make, have done their homework well enough so that you may get two, three, four additional technical views, then ultimately the Board, the ASLB, is going to have to say, "Well, we have now heard these three, four, five items. This

is what we and our consultants think the final answer is."

DR. WYMER: So you are relying on checks and balances that are outside of this document?

DR. STEINDLER: Absolutely. Well, presumably, that is one of the reasons that the ASLB was set up.

So I look at this thing and I say, well, it's a pretty good job. Just because I fall asleep when I read it, that's not their fault.

(Laughter.)

And it wasn't supposed to be the world's greatest novel.

DR. WYMER: It happens to us old-timers; we fall asleep when we read.

DR. STEINDLER: Yes, that's right.

(Laughter.)

CHAIRMAN HORNBERGER: Jeff was hoping it would hit the New York Times Best Seller List. I mean, he wrote it to be entertaining.

(Laughter.)

DR. STEINDLER: Whatever. It does lack illustrations though.

(Laughter.)

But somebody made a comment that it

would be good to have an example in an appendix. I don't know whether it was Milt -- or somebody. I would agree with that. It would make it easier for a non-NRC, non-DOE person who reads this to have some kind of an idea of what this process is likely to be. Because the ASLB process, while it seems obvious on the surface if you have been there, may not at all be obvious to somebody who is drilling a hole in Nye County someplace.

CHAIRMAN HORNBERGER: Marty --

DR. STEINDLER: Does that add anything?

CHAIRMAN HORNBERGER: Yes. I just wanted to throw in a question on a slightly different topic. When we just heard from Rod, he mentioned that the NEI thought that they would recommend taking the 109 pages and all the different abstractions and making it one common section. Milt had anticipated that comment; he had made it on his own. He had suggested that, really from almost a legal standpoint, that the NRC would be much better off having it one place and then just talking about exceptions. Yet, that would be, I guess, a fairly major revision of the document, and --

DR. STEINDLER: I don't think so.

CHAIRMAN HORNBERGER: Oh, okay.

DR. STEINDLER: You could lift those same sentences out of 14 out of the 14.

CHAIRMAN HORNBERGER: Okay. So then my question was, you wouldn't count that, then, as a major revision, and therefore, not --

DR. STEINDLER: No, I wouldn't. In fact, I think the point that Milt made was a good one. Take the commonalities and put them someplace. Then I would go back to the abstractions and say, okay, what do I remember, what do I know about these abstractions that were particularly important topics related to risk that you want to highlight for the reviewers. If there are none, there are none. I would find that surprising. But that is where you become specific.

I don't have the same problem as apparently other people do with specificity in this case, because the argument always is, if it doesn't apply, if by some miracle DOE has come in and ignored 10 years' worth of interaction with the staff, or decided that it wasn't very important, fine, the reviewer doesn't have to touch it.

CHAIRMAN HORNBERGER: Again, just to push you just a little bit, it almost sounds as if what you would envision is making those model

abstractions sections contain some of what is in the issue resolution reports themselves. I guess my question is, do we need that kind of redundancy? Because we already have the issue resolution documents and agreements.

DR. STEINDLER: Well, you can reference it if you like.

CHAIRMAN HORNBERGER: Uh-hum.

DR. STEINDLER: The thing that concerned me in one of these was that it sounded like the issue resolution conclusions were going to be de facto incorporated into the staff's conclusions of the DOE safety case, and I don't think that is what they ought to do. I think they need to review the situation as DOE presents it and then come to the conclusion. It may be the same conclusion, but it ought not to be automatic automatically.

Does that confuse things enough?

CHAIRMAN HORNBERGER: No, that's helpful.

Are there other comments? Questions for Marty?

(No response.)

Okay, what we are on schedule to do is to produce a draft letter on the YMRP. We meet in

September in Las Vegas. Our plan, our hope is to approve that letter finally at that meeting. So this is our chance to have some, hopefully, productive discussions to move us from where we are now to where we need to be to have this thing nearly final.

We have had an exchange, an e-mail exchange of drafts, and we have this blue letter, draft letter, in front of us. I suppose the first thing I would suggest we do is probably talk a little bit about some overarching issues before we get to the details.

So let me comment on the things, in particular, that Marty specifically -- are you trying to get my attention? We don't need to be on the record for this, right? So that finishes the recorded portion.

(Whereupon, the foregoing matter went off the record at 1:52 p.m.)