Official Transcript of Proceedings

NUCLEAR REGULATORY COMMISSION

Title: Advisory Committee on Reactor Safeguards
517th Meeting

Docket Number: (not applicable)

Location: Rockville, Maryland

Date: Friday, November 5, 2004

Work Order No.: NRC-092 Pages 1-52

NEAL R. GROSS AND CO., INC.
Court Reporters and Transcribers
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

+ + + + +

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS (ACRS)

517th MEETING

+ + + + +

FRIDAY

NOVEMBER 5, 2004

+ + + + +

ROCKVILLE, MARYLAND

+ + + + +

The meeting was convened in Room T-2B3 of Two White Flint North, 11545 Rockville Pike, Rockville, Maryland, at 8:30 a.m., Dr. Graham B. Wallis, Chairman, presiding.

MEMBERS PRESENT:

GRAHAM WALLIS	Vice Chairman
RICHARD S. DENNING	ACRS Member
F. PETER FORD	ACRS Member
THOMAS S. KRESS	ACRS Member
VICTOR H. RANSOM	ACRS Member
STEPHEN L. ROSEN	ACRS Member-at-Large
WILLIAM J. SHACK	ACRS Member
JOHN D. SIEBER	ACRS Member

NRC STAFF PRESENT:

SAM DURAISWAMY Technical Assistant, ACRS/ACNW, Federal Designated Official

MED EL-ZEFTAWY

AGENDA ITEMS	PAGE
Opening Remarks	4
Status of Early Site Permit Reviews	
Remarks by Member Kress	5
Briefing By and Discussions with Representatives of the NRC Staff Regarding the Status of the Staff's Review of the Early Site Permit Applications	6
End of Open Session	52

P R O C E E D I N G S

(8:16 a.m.)

VICE CHAIRMAN WALLIS: This is the second day of the 517th Meeting of the Advisory Committee on Reactor Safeguards. I am Graham Wallis. I'm going to chair the meeting this morning.

Our Chairman, Mario Bonaca, is at the Navy Yard representing the ACRS at the retirement ceremony for Admiral Bowman, who is stepping down from in charge of the submarine fleet and now will be Chairman of NEI.

During today's meeting, the Committee will consider the following: status of early site permit reviews, assessment of the quality of selected NRC research projects, Ground License Renewal Subcommittee report, future ACRS activities, report of the Planning and Procedures Subcommittee, reconciliation of ACRS comments and recommendations, and the preparation of ACRS reports.

A portion of the meeting will be closed to discuss safeguards and security matters.

This meeting is being conducted in accordance with the provisions of the Federal Advisory Committee Act.

Mr. Sam Duraiswamy is the Designated

Federal Official for the initial portion of the meeting.

We have received no written comments or requests for time to make oral statements from members of the public regarding today's sessions.

A transcript of a portion of the meeting is being kept and it is requested that the speakers use one of the microphones, identify themselves, and speak with sufficient clarity and volume so that they can be readily heard.

We will now proceed with the meeting. The first item on the agenda is the status of early site permit reviews. I'd ask my esteemed colleague Tom Kress to guide us through that please.

MEMBER KRESS: Thank you, Mr. Temporary Chairman.

(Laughter.)

MEMBER KRESS: I refresh your memory that several are planning on taking advantage of rules that allow them to come in and essentially bank a site for a new reactor of unspecified design and concept.

And in order to do the site suitability assessments that have to be done before we can approve a site, they're using a concept that you remember as a plant parameter envelope which tends to take a

number of reactor types and designs that they know of and use the various elements of that that effect the site suitability criteria and use bounding values from this matrix of plants and so that the final result would allow you to use any of these particular designs on the site because they've already assessed the site suitability based on the bounding values.

We wrote a letter on this and approved or agreed with that as an appropriate way to do a site suitability evaluation. And I think now the staff has received at least three applications for such early site permits.

And today they're going to -- and they've also developed, I think, a review standard on how to go about reviewing these.

So today they're going to give us a status report on where they stand on this process and on these three applications. And I don't think we're -- this is a briefing and a status report. We're not due to have a letter unless somebody has a burning desire to have one.

So with that, I'll call on Laura Dudes of NRR to introduce us to this.

MS. DUDES: Thank you. Good morning. I'm Laura Dudes, Section Chief from New Reactors.

Good introduction. I was going to say similar in that this is our first foray into actually using our Part 52 ESP process.

We're about a year into this technical review. We're identifying issues, working through those. And I think we've had a pretty good year. And I know the staff is going to give a status.

A couple high level things to keep in the back of your mind as we're going through this that have struck me over the past year.

First and foremost, these ESPs have a mandatory hearing associated with them. This is the first time we're actually going through a mandatory hearing for a Part 52-related product.

In addition, just for everyone's information as I'm going to reiterate or be the news service for today, something we've been waiting for or looking out for in New Reactors in quite awhile, a press release was released yesterday from the Department of Energy indicating that they're going to fund two potential COL applications coming out soon. So these ESPs and the reviews are very important.

With that, I'm going to turn it back over to Mike Scott.

MR. SCOTT: Good morning. Can everybody

hear me okay? Okay, great.

As Laura said, I'm Mike Scott. I am one of three Project Managers at the NRC for review of early site permit applications. I am the Project Manager for the North Anna Dominion application.

To my left is Raj Anand. Raj is the Project Manager for the Grand Gulf ESP application.

And to my right is Nan Gilles who is the Project Manager for the Clinton Early Site Permit application.

As you're probably aware, all three of the ESP applications that we have are for sites that are adjacent to existing operating reactors.

Next slide. The purpose of the presentation this morning, as was referred to already, is to brief the Committee on the status of the application reviews.

As Laura mentioned, we are in a new process and some interesting issues have arisen as a result of the reviews. And we are going to discuss three of those, the three that perhaps have gotten more staff time recently than the assorted myriad questions that have come up during the reviews.

We're also going to discuss with you the future milestones for the reviews, including Committee

involvement, and that now is very near term. We'll talk to you about that.

Of course, we'll answer your questions and comments. As also was stated earlier, we are not seeking a letter from the Committee at this time. We're only a few months away from being in that position but this is, at least from our perspective, is a status update only.

Next slide. We plan to talk about, as I mentioned here, review status issues, milestones, and then answer your questions. And here's what we assume would be a good time allotment for that.

As I mentioned, we have received three applications. We received two of them on the same day, September 25th of 2003. And Grand Gulf came in about three weeks later on October 17th, '03.

Because of resource constraints, the staff informed the applicants at that time that we were going to stagger our reviews, that is we would do North Anna first because they had basically provided us the information as to when they were going to come in and came in on that date.

And then we were going to do the Clinton review two months later. And the Grand Gulf review two months after that.

So all the review products essentially would follow two months from the first one and then two months to the final review.

We are now nearing completion of the draft safety evaluation report for the North Anna ESP application. As you can see on the slide, we are scheduled to provide that document to the applicant on December 20th of this year and we are on schedule to do that.

Next slide. We have identified some issues, as I mentioned earlier.

MEMBER KRESS: On that draft SER --

MR. SCOTT: Yes?

MEMBER KRESS: -- is that the next item on our list to review?

MR. SCOTT: Yes, it is.

MEMBER KRESS: And we'll review it in this December time frame?

MR. SCOTT: No, a little later than that. And I will -- I'll have the dates here in the slide show as we go through. We're actually planning -- we will issue the document to the applicant on December 20th.

And there will be a 14-day hold period for proprietary review by them. And then we will issue it

publically and we will get the document to you. And then about a month later, we'll ask for a Subcommittee review and then a full Committee review.

MEMBER KRESS: Okay.

MR. SCOTT: The issues that we'd like to talk to you about this morning involve tornado wind speeds, seismic analysis, and emergency planning.

Next slide. We do have a review standard at RS-002, which we have briefed the Committee on. We issued it final in May of 2004.

And one of the subjects that it addresses is tornado wind speed. And we found some let's say different guidance out there regarding how to handle tornado wind speed analyses for siting.

Regulatory Guide 1.76, which is a fairly old document, calls for a 360-mile-an-hour design wind speed, tornado wind speed east of the Rockies.

VICE CHAIRMAN WALLIS: Is that the speed of the wind or is that the speed of missiles that are propelled by the wind?

MR. SCOTT: I believe that's the rotational speed of the wind but I can get -- Brad's nodding yes. Okay.

VICE CHAIRMAN WALLIS: It's just the wind. So if you have a missile propelled by the wind, you

have to compute its speed somehow or other?

MR. SCOTT: Brad would you step forward? You're going to plumb the depth of my knowledge quickly so I've got Brad Harvey who is our reviewer for tornado wind speed today.

MR. HARVEY: Yes, I'm Brad Harvey, NRR.

The missiles. I believe, are assumed to be a certain percent of the wind speed.

VICE CHAIRMAN WALLIS: A certain percent is?

MR. HARVEY: Seventy percent.

VICE CHAIRMAN WALLIS: Seventy percent?

MR. HARVEY: Yes.

VICE CHAIRMAN WALLIS: Okay.

MR. SCOTT: Okay? Thank you, Brad.

As I mentioned, Reg Guide 1.76 has one figure. We have a 1988 Interim Staff Position on the same subject that had either 300 or 330 miles an hour east of the Rockies, depending on the specific location. Basically the eastern United States was divided into several regions. And depending on where your region was, you'd have either 300 or 330 miles an hour.

And, of course, RS-002 says that the applicant can provide any tornado wind speed that it

can justify that is based on site-specific analysis.

There is other information out there, however, SECY-93-087, which was a SECY related to advanced reactor design, accepted use of 300 miles per hour for a design of advanced reactors.

So we had several different numbers out there. Of course, all of the applicants that we have now are east of the Rockies so they would all fall under the Interim Staff Position, either in the 300- or the 330-mile-an-hour range. However, as was mentioned here, we have the design document, design-related document SECY-93-087, which accepted use of 300 miles an hour.

So we got into a discussion about what the right guidance should be. The staff here -- next slide -- developed a SECY paper in response to Commission direction that said that the staff would reevaluate maximum tornado wind speed based on new information.

And the staff also recommended to the Commission development of a risk-informed approach for tornado wind speed analysis. That SECY is now in Commission review.

When the results of the re-analysis are available, they will be information to be used in the

early site permit reviews.

VICE CHAIRMAN WALLIS: How do you risk inform a wind speed? Do you have a spectrum of wind speeds and probabilities and things like that? Or what?

MR. SCOTT: That's correct. Cliff -- or Brad, can you give us some more remarks on that?

MR. HARVEY: Brad Harvey here once again. Risk informed is not exactly my specialty but you are right, a certain probability of a certain wind. And you look at that effect on the plant. And at particular structures and components. And if they were to fail, what the consequences would be to the systems -- to the reactor.

MEMBER KRESS: You assume the probability of one that the tornado will hit the plant?

MR. HARVEY: No, there's a certain strike probability based on historic data for the region -- site region.

MEMBER KRESS: At the site?

MR. HARVEY: So we would look at a maybe two degree latitude/longitude square centered on the site in question and look at the history of tornado occurrence within that and come up with a strike probability.

MEMBER KRESS: Are tornados like lightening? They don't strike twice at the same location? I was being facetious. Just ignore me.

(Laughter.)

VICE CHAIRMAN WALLIS: Is there a -- when you talk about 300 -- between 300 and 360 miles per hour, which has been talked about, what is the sensitivity of -- presuming delta CDF, if that's the ultimate metric, what is the sensitivity to that range in miles per hour?

MR. HARVEY: Well, I think you're looking at the kinetic energy of the missile that is being propelled and that's, I believe, a function of velocity squared.

VICE CHAIRMAN WALLIS: Okay.

MR. HARVEY: So it is quite sensitive to small changes because you are looking at the velocity squared.

VICE CHAIRMAN WALLIS: Well, the real point is presuming there is a damage threshold. And it may be that 300 is below the damage threshold, 360 is above --

MR. HARVEY: Yes.

VICE CHAIRMAN WALLIS: -- in which case it's a cliff rather than a continuum.

MR. SCOTT: What -- if you look at this from a licensing perspective, what the concern from the applicant's perspective is they would like to cite one of these standard designs on their site. And they would like to say well if the design tornado wind speed for the site is 290 and the plant is designed for 300, then we're good to go.

So when it is the other way around, when they design the plant for 300, when the vendor has designed the plant for 300, but the design tornado wind speed of the site is 360, then additional analysis is needed in order to certify that or to determine that the site is acceptable for that design.

And so clearly the applicant's interest is that the design number bound the site number. And depending on how the issue is ultimately resolved by the Commission, hopefully this will not turn out to be a major issue at ESP stage.

VICE CHAIRMAN WALLIS: This is of a detail but when you say maximum speed, is that very conservative because this is the maximum speed ever recorded anywhere? Or is it a --

MR. SCOTT: There is a confidence -- I'm sorry -- there is a confidence level on it. Brad can --

VICE CHAIRMAN WALLIS: So it is a percentile of some sort?

MR. SCOTT: Yes.

MR. HARVEY: We're looking at like ten to the minus seven per year probability. So it's actually beyond what the maximum recorded wind speed because you've got maybe 50 years of historic data but you're looking at ten to the minus seven.

VICE CHAIRMAN WALLIS: So it's very conservative?

MR. HARVEY: Yes.

MR. SCOTT: Any other questions on that subject before we move on?

(No response.)

MR. SCOTT: Okay. The next subject we'd like to talk to you about is seismic analysis. Two of the three applicants, that is North Anna and Clinton, advanced what they've referred to as a performance-based approach for determining the safe shut down earthquake for the site.

The goal of that approach is that the mean annual frequency -- is to have a mean annual frequency of ten to the minus fifth of unacceptable performance of SSEs as the result of seismically-initiated events.

This methodology, which is new to the NRC,

is described in a draft ASCE standard.

Next slide. The problem that we have with it is that, of course, we have not reviewed the acceptability of this new approach. We have informed the applicants, the two involved applicants, that additional review time would be needed to discuss this approach. And I'm going to ask Cliff Munson to step up in a minute and give you a few details about what the approach involves.

After we informed the applicants that this new approach would require additional review time and would have potential schedule consequences, one of them, North Anna, was subsequently revised to use the staff-approved method that's already available in our regulatory guides.

The impact on the Clinton review schedule is still under discussion because Clinton, at this point, has informed us that they intend -- or Excelon has informed us that they intend to continue with the performance-based approach.

Cliff, are you here? Would you please step up and give us a thumbnail on the performance-based approach?

MR. MUNSON: The performance-based approach is basically -- after you've already

completed the seismic hazard analysis, which characterizes all the seismic sources, it's a method to determine the SSE, the final SSE for the site.

So once you've completed about 90 percent of all the work, then the last 10 percent is this performance-based approach which differs from our current approved method, which is a hazard-consistent approach. This performance-based approach instead targets a performance goal.

And they have set a performance goal of fives times ten to the minus five, the onset of inelastic deformation. So --

MEMBER KRESS: Or for SS?

MR. MUNSON: Or for the SSE.

MEMBER KRESS: Or for safety systems --

MR. MUNSON: Right. Right. So --

MEMBER KRESS: For a given design that is already certified, have they identified all the SSEs in the certification?

PARTICIPANT: Speak into the mike, Tom.

MEMBER KRESS: Do we know what all the SSEs are for a design that is certified? As part of the certification?

MR. MUNSON: The safety-related SSEs are in the design cert, yes.

MEMBER KRESS: Okay. So you know what they are applying this criteria to?

MR. BAGCHI: Not necessarily. My name is Goutam Bagchi.

MEMBER KRESS: Could you use the microphone please?

MR. BAGCHI: My name is Goutam Bagchi. I'm with the Division Engineering, Mechanical and Civil Engineering Branch. The applicants for ESP have not defined which plant they are going to build nor have they defined whether or not the future plant yet not certified will be considered for the site. Therefore, we don't know the structures.

MEMBER KRESS: Yes, it could be any number of them depending on what they actually decide on.

MR. SCOTT: That's right. So what they are doing now is they're defining the SSE for later comparison --

MEMBER KRESS: I see. So this is something that would have to be confirmed later, right?

MR. SCOTT: The site SSE does not need to be confirmed later but it needs to be compared with the design SSE at the combined license stage.

MR. BAGCHI: One thing to keep in mind is

that the standard, the SSE standard that has proposed this performance-based approach uses generic acceptance criteria for the design of structure systems and components. So they're based on acceptance criteria related to the yield strength and allowable stresses in consensus standards out there.

Therefore, when they say that onset of elastic deformation, that is the generic set of discussions. And any new design that is going to follow from the certified process or a brand new design that is reviewed under Part 50, they're going to have to use those criteria. So it's not unknown factor.

MEMBER KRESS: I thought elastic deformations were a continuum. What do you mean by the onset of it?

MR. BAGCHI: Onset means at the class event, it has not gone beyond yield. There is no permanent set. It's within the elastic range.

MEMBER DENNING: I think he misspoke.

MEMBER KRESS: Oh, it's still --

MR. BAGCHI: It's still within there.

MEMBER KRESS: -- within the onset of the elastic?

MEMBER DENNING: Yes, he meant inelastic

onset.

MR. BAGCHI: Yes, inelastic.

MEMBER KRESS: Inelastic, okay. I just misheard probably.

MEMBER DENNING: No, I think he -- you really did mean the onset of inelastic --

MR. BAGCHI: Yes, sir.

MEMBER KRESS: Okay, okay. I understand then. So what we will have is a given site will have some probability of having a seismic event of a certain magnitude and a design certification that will have a design-basis earthquake. And if the two are the same, you're okay?

MR. BAGCHI: Or the design bounds the site.

MEMBER KRESS: Yes. Now does that assume that the design that is certified has used this inelastic criteria?

MR. BAGCHI: Certified designs have used the standard review plan acceptance criteria. We have reviewed that in some detail. Piping design, of course, has been postponed to date but we know the acceptance criteria for that. Otherwise, the structures -- all the major structures have been designed. Their capability beyond the SSE has also

been examined.

MR. SCOTT: To clarify one point, while a COL applicant may come in referencing and ESP and referencing a design cert, they don't have to come in referencing either or both.

So what we might see is an ESP applicant who comes in with a COL, not having a certified design. They may have one that has been submitted to the NRC or even not submitted. Conversely, they can come in with a certified design without having gone the ESP route.

So there are all kinds of forks in the roads and options here they may use.

MR. MUNSON: I just want to clarify one thing. I think I misspoke and said five times. It's one times ten to the minus five is the depth.

MR. SCOTT: It was on the slide.

MR. MUNSON: Right.

MR. SCOTT: Right.

Any other questions on the performance-based approach? When you're in the review process, under the current way things are going, you will see that in the Clinton application.

And you will see it in the North Anna application also as an additional piece of

information. But the staff will be stating in its SER that we have not reviewed that approach because North Anna is relying on the Reg Guide 1.165 approach that the staff has approved.

MEMBER KRESS: Does the ten to the minus five ever come from an expected core damage frequency that is better than ten to the minus five for new plants?

MR. MUNSON: I'm not aware of that. Do you have -- that one times ten to the minus -- that's the --

MR. BAGCHI: The background for that -- again, my name is Goutam Bagchi. I'm the staff member, Division of Engineering, Mechanical Engineering Branch -- that ten to the minus five really came from consensus standard, ANS standard, the hazard, and the performance had been discussed in those standards. And that's where we derived these numbers, target numbers from. And it is not inconsistent with the Commission's safety goals.

MEMBER KRESS: Yes.

PARTICIPANT: I'd also like to mention that it's used in DOE Standard 1020 for all DOE facilities, this performance-based approach so they've already approved it. So we're a little bit behind

them in that sense.

MEMBER KRESS: I guess if one assumed that you exceeded the elastic limit on some of these safety components, that you could assume a conditional probability of one that you're going to go to core damage?

MR. BAGCHI: No, sir.

MEMBER KRESS: No.

MR. BAGCHI: No.

MEMBER KRESS: It's less then?

MR. BAGCHI: No.

MEMBER KRESS: Well, even if you did assume that, you'd still have a CDF of ten to the minus five.

MR. BAGCHI: Yes, sir.

MEMBER KRESS: But just for seismic events.

MR. BAGCHI: Right.

MEMBER KRESS: So, you know, I was trying -- if you have a conditional core damage of .1, then you're probably in the range that is consistent with the safety goals.

MR. BAGCHI: I think it is close to .1 because if you -- these are elastic ductal behaving structures.

MEMBER KRESS: Yes.

MR. BAGCHI: And even reinforced concrete code require ductal detailing and so on. Therefore, there is a significant range beyond the elastic limit that these structure systems and components can go. And nothing is going to happen.

My personal experience has been that it is at least .1.

MEMBER KRESS: Okay.

MR. BAGCHI: But there may be some components, more fragile components, that may have some specific limit. But that's the plant consideration, not normal robust structural elements or mechanical elements.

MEMBER KRESS: Thank you.

MR. SCOTT: One other aspect of the seismic analysis that we'd like to bring to your attention is discussed on Slide 10. The safe shutdown earthquake at rock sites may exceed the certified plant design safe shutdown earthquake at high frequencies because rock sites effectively transmit high frequency ground motion.

And applicants for a combined license will need to deal with this issue. If you flip the page to Slide 11, you'll see a typical presentation of

spectral acceleration versus frequency at a rock site. And the black line would be the design number, Reg Guide 1.160 number. And the red line that you see there would be a typical rock site SSE. And you can see the high frequency exceedance there.

VICE CHAIRMAN WALLIS: Very strange unit of acceleration.

MR. MUNSON: Sorry about that. It should be G, sorry.

MR. SCOTT: Thank you.

So we have this issue at this point. It's not something that we see being resolved in ESP space. The SSE for the site, we view is what it is. And the ESP will be issued stating that the applicant, assuming the applicant has satisfactorily defined the SSE, the ESP will be issued on that basis.

But as you can see, there remains the issue here of the fact that the design does not bound at high frequencies, the SSE. Now the question is is what consequence is that. That's an issue that needs to be resolved at COL.

Cliff, can you speak anything else to that?

MR. MUNSON: The red line, the SSE, would be what we're calling the demand right now. So we're

defining the demand based on the seismic source characterization for the ESP site. At COL, they'll have to show that they have capacity at that high frequency to handle that demand.

So generally the only structures -- system structures or components are electrical relays or contacts that might have natural frequencies as high as say 20 hertz or so. Most other -- all other structures will be well below between one and ten hertz.

So we generally are most concerned between one and ten hertz. And there are a few components, as I mentioned, that have higher natural frequencies that might be effected by these high ground motions.

MEMBER DENNING: Excuse me. Does that mean that then the applicant would have to satisfy the maximum in both regions? That is the Reg Guide in a lower frequency region and then the higher -- or does it mean -- or does it mean you would adopt the whole red curve?

MR. SCOTT: It means that where they have an exceedance, they're going to have to demonstrate that the equipment can withstand that.

MEMBER DENNING: Exceedance of the Reg Guide?

MR. BAGCHI: Can I address that? My name is Goutam Bagchi again.

The response factor for the site is the response factor that the combined operating license will have to be issued to. At that point, the certified design, or if it is a new reactor design, has no validity. What applies to that application is the ground SSE. That's the response factor that you see in red. It is not a question of enveloping both of them.

MR. SCOTT: Another way -- again, you can look at this from a licensing perspective. It would be ideal from the applicant's perspective if the black line completely enveloped the red line.

And then the analysis at the COL stage would show that the certified design, as is, meets the site or is compatible with the site. The fact that the black line does not completely envelope the red line means that additional analysis is needed at the COL stage.

One of the objectives at the ESP stage, of course, for the applicant is to resolve as many questions now as they can and achieve finality on them.

So an issue that needs to be further

addressed at COL is clearly not their preference. But in this case, for a rock site, we view it at ESP stage as something that needs to be resolved at the COL stage.

MR. MUNSON: And I want to just stress that this is for hard rock sites only along the eastern coast. For say sites in the Gulf region or in the Midwest that are covered by soil, we won't see this type of high frequency ground motion.

MR. SCOTT: Any other questions on seismic before we move on?

MEMBER KRESS: Are any of the three sites considered rock sites?

MR. SCOTT: Yes, North Anna is a rock. I believe Clinton -- no?

MR. MUNSON: No.

MR. SCOTT: Clinton not.

MR. MUNSON: Clinton and Grand Gulf are soil sites.

MR. SCOTT: Okay.

Any other questions?

PARTICIPANT: Just how much of the certification does this bring into question? We had this issue the other day that, you know, you change something and everything was then open to litigation.

Does this open the whole design certification up if you do this or it's a very limited, narrow scope of things you have to demonstrate?

MR. SCOTT: The latter is correct. I mean the specific subject at hand is what is opened up. It's issue by issue, item by item.

MEMBER RANSOM: How is vulcanic rock treated? Is it considered rock?

MR. SCOTT: I would assume so. Do we --

PARTICIPANT: What was the question?

MR. SCOTT: Vulcanic rock, how is vulcanic rock treated as a rock site?

MR. MUNSON: Well, this is from North Anna basically. This is a gneiss, which is a metamorphic rock. I don't know of any sites that are sited on vulcanic rock.

MEMBER RANSOM: They're generally layers, I guess. I don't know.

MR. SCOTT: I don't know either. I guess we don't have another response to that. It certainly doesn't apply to the three that are out there now, three ESP applications.

Any other questions?

(No response.)

MR. SCOTT: Okay. The third and final

issue that we'd like to talk to you about this morning is emergency planning. All three applicants have sought what is called a major features review.

And just to give you a little background, Part 51 allows several options regarding emergency planning. An ESP applicant can come in and demonstrate that there are no significant impediments to development of emergency plans. That's, if you will, the minimal approach. They also have to provide some other information.

But for purposes this morning, they can either demonstrate there are no significant impediments -- the top level approach is they can come in with complete and integrated emergency plans at the ESP stage.

And the rule allows for what we would refer to as a middle approach of defining major features and seeking NRC acceptance of those major features.

All three applicants, as stated here, are seeking acceptance of major features. The rule, although it discusses major features, it does not define the term. The term is defined in a draft guidance document that the NRC and FEMA developed for review of emergency planning information at the early

site permit stage. That document is Supplement 2 to NUREG-0654. And we refer to it as just Supplement 2.

There have been concerns in the industry regarding the finality associated with acceptance of major features. Again, finality is an overriding objective for an ESP applicant. They are attempting to resolve as many issues as they can at the ESP stage so that those issues are not subject to additional review and litigation potentially at the COL stage.

So the question has arisen, well, what kind of finality do we get for a major feature. A major feature is basically a higher level description of the major aspects of emergency planning. There are not necessarily complete details underneath that broad subject.

The industry also has had concerns with the level of detail in the staff's review relating to major features, particularly with our review of previously-filed information.

Finally, there has been concern expressed regarding the staff's review of state and local plans, which are not directly within the control of the applicant.

MEMBER ROSEN: Excuse me. When you say they've had concerns with the level of detail, do you

mean too much or too little?

MR. SCOTT: There has been concern that we're asking too many questions, too many RAIs.

Next slide. As a matter of fact, we are in the process now -- the staff is in the process of developing a -- the final process, hopefully, of developing a letter to the industry to discuss this issue. And we are meeting with the industry next week to discuss our position on the issue.

What you see before you reflects where we're planning to go with this letter at this point. NRC and FEMA, as I mentioned, have established Supplement 2 as the review standard applicable for major features of the emergency plan. And the staff believes it needs a review standard in order to accomplish a consistent, thorough review.

The ESP applicant, we believe, can obtain finality on the description of the major feature. But here again, you have to bear in mind that although they'll have a finality on that major feature, for example, they may get a major feature that the acceptable method for informing individuals in the area of an emergency is sirens. And if the staff could accept that sirens are an acceptable method, then that would be final.

However, the review at the ESP stage might not get into the details of the sirens, how many you're going to have, how powerful they would be, what the power supply would be, the myriad of details. And the finality at the ESP stage on the description would not mean finality of the many details of implementation underneath that description.

So the staff's view on this is that there can be finality but that the value is limited because of the fact that the details have yet to be provided and reviewed.

MEMBER KRESS: You're just kind of defining what you mean by finality in a sense.

MR. SCOTT: What we're up against here is this is a fairly unusual subject. If you think about it, when we evaluate seismic, for example, we get the full site seismic analysis. And we review it and we find it acceptable or not what the applicant has done.

In the case of emergency planning where the major features approach is used, we're not getting the final information to complete our review. So we're getting a partial level, a mid-level detail if you will. And so that --

MEMBER KRESS: But these sites already have plants on them and an emergency plan in place.

And I would have thought that had all the detail in it.

MR. SCOTT: That's correct. Which brings us to the other point -- let's see, where is this? If you look at Slide 14 --

MS. GILLES: If I may make one point. That may be true but these applicants did not choose to submit complete and integrated emergency plans for the ESP sites. That was an option to them.

MEMBER KRESS: I see.

MR. SCOTT: So to expand on what Nan was saying, if you look on Slide 14, it says consistent with Commission policy, previously filed information will generally not be reviewed in detail. Now that's if the applicant clearly invokes that previously-filed information.

MEMBER KRESS: Yes, okay.

MR. SCOTT: And the bullet that you see there on Slide 14 is consistent with Commission guidance to the staff as a result of their review of RS-002, the early site permit review standard.

So the staff will generally not review such information in detail. The staff will use its discretion regarding the need for additional review. If we look at something and our top-level look finds

a problem, then we would look into the details of it.

This has been, quite frankly, a sticking point with the industry regarding the reviews that we've done so far because we have sent out a number of requests for additional information, some of which relate to the existing plans.

MEMBER ROSEN: Can you tell us -- maybe you don't know but can you tell us why the industry would be reluctant to provide you with the details of an existing plan or to simply reference an existing plan for the site, which the Agency knows everything about there is to know?

MR. SCOTT: One of the applicants did reference -- Dominion did reference their existing plan. I could not speak to the motivations of the other two. I'll look at my colleagues and ask if you would like to remark on that.

MS. GILLES: Again, I would just be -- this would just be conjecture but I think that it's not simply a matter of submitting the current plan because the current plan, of course, only addresses the current reactor. And the current plan would not address a new reactor for which they have not chosen a design for which, of course, there will need to be changes to the existing emergency plan.

So I can, you know, I'm guessing that perhaps they did not to do the work at this time to go through updating those plans to include a new reactor for which a design has not be chosen.

MEMBER KRESS: Is there anything lurking in the background about the concept that some of the new designs probably don't need an emergency plan?

MR. SCOTT: That's not on the table at this point.

MEMBER KRESS: That's not part of it?

MR. SCOTT: No. And the question is whether you provide the existing plan or whether you come up with basically the same type of information from another source.

In either event, the applicant still needs to show how the existing information, the existing emergency plan would be adapted to the presence, as Nan was referring to, of additional reactors on site. The information needs to be up to date. It needs to be applicable to the new site as well.

And we've determined that they don't need to rev up the old plan solely for that purpose, for, if you will, a hypothetical reactor at this point. What they can do is provide us additional information to show that the existing plan could be/would be

adapted to the new plant.

This is an ongoing issue right now, as I mentioned. We're attempting to reach closure on it at this point but the staff is still working, as I mentioned, to get a letter out to the industry to state our position on this.

The final bullet on page 14, the state and local plans will be reviewed when the applicant seeks approval of major features. This sounds fairly obvious if you look at it.

In order to approve something, we have to review it. If they send in an application, if the applicant sends in an application that seeks major features related to offsite aspects of emergency planning, clearly the staff has to review those offsite features in order to approve that -- to accept that major feature.

It's a challenge for the applicants in the sense that they then need, if there is an RAI related to an offsite plan, they need to work with the municipalities involved to get the issue addressed. And so they have parties who are not, let's say, as motivated as they are to expeditiously address concerns. And so that, perhaps, is part of the reason for this being discussed.

MEMBER KRESS: Is this likely to put the emergency plans associated with the existing plants on the side in some sort of jeopardy? You know if they come in with a new look at the thing and find that conditions have changed since the earlier plants put in their plan --

MR. SCOTT: I think our emergency planning staff would tell you that right now the reviews have not identified problems per se with the emergency plans. They have identified questions.

And should the questions turn out to be problems, then they staff would need to work with the licensed plants to correct whatever discrepancies were found. We are not at that stage at this point.

Any other questions on emergency planning before we move on?

(No response.)

MR. SCOTT: Okay. Coming milestones, I promised we'd talk to you about where we're going with this and where we are going to be seeking Committee involvement. As I mentioned to you, all safety site reviews are on schedule.

And here before you on Slide 15 are the expected dates when we anticipate coming in to the Committee asking for a Subcommittee review, followed

by a full Committee review, followed by an Interim Letter to the Commission based on the review of the Draft Safety Evaluation Reports for the three applications.

MEMBER KRESS: So we're going to see quite a bit of you guys in the next three or four months?

MR. SCOTT: Yes, sir, you are. And this isn't the end of it. If you flip to Slide 16, then we'll be back five or six months later seeking review and the final Committee Letter to the Commission based on its review of the final safety evaluation reports.

I didn't put details on this slide but you can see basically the second half of the year, we're going to be coming in for the other ones.

Now I do need to mention that -- as I mentioned a few minutes ago, for the Clinton review, depending on how the seismic issue plays out, we may have to change that scheduled date for the final SER. We don't anticipate that that will change the date for your review of the draft safety evaluation report. Those are fairly solid dates at this point.

So to conclude, Slide 17, safety reviews are on schedule, on track. They've been challenging. We've exercised a new process. We've exercised a rule that we hadn't used before or let's say a subpart to

a rule that we hadn't used before.

We've exercised review guidance based on that regulation for the first time, the review standard. And we have identified some interesting challenges.

One of the most interesting things we're having to address is this is a part-way there review. You have some issues resolved, others not.

Sometimes you have site-related issues that because there is no specific design, as was referred to the plant parameter envelope, some of those issues need to be deferred to the combined license.

So what you will see when you get these draft safety evaluation reports are, similar to design certifications, you'll see COL action items, items that we could not take on now because the information to resolve them is not available now. And so they have been deferred to the COL.

You'll see other things, we'll have permit conditions. We anticipate having permit conditions that will be mentioned in the safety evaluation reports that the staff will propose be included in the permit.

So we're moving ahead with these things.

And we're having a lot of fun doing it. And having a lot of challenges.

We think that there are a lot of lessons learned here that will be useful to future applicants. Whether someone comes in for an ESP or not, if they come in for a COL with or without an ESP, these ESPs will have been valuable to identify and resolve siting issues that, of course, the Agency has not gone through in a long time.

MEMBER KRESS: How will you disposition these lessons learned? Put them in the review standard or have an addendum to it?

MR. SCOTT: Some of them will result in changes to the review guidance. Others are more process oriented that may or may not fall within the scope. We're writing things down and keeping track.

MEMBER KRESS: Writing them down right now and decide what to do with them later.

MR. SCOTT: That's right. That's correct.

MEMBER KRESS: That sounds like an ACRS approach.

MEMBER FORD: Are all of these early site permits for a single reactor unit?

MR. SCOTT: No. I'll use Dominion as an example. Dominion is seeking approval for a certain

megawatts thermal to be put on the site. They talk in terms of two units. And a unit might be one fairly large reactor, like an AP1000. It might be two ACR700s. And it might be a larger number of gas-cooled reactors.

As was mentioned earlier, they come in with a PPE that says well we could possibly put one of the following designs there, and there are like seven of them, or something entirely different that hasn't even been thought of yet.

MEMBER FORD: Well, like the emergency planning, is it a function of the number of units that they might put on a site? Or just the total megawatts on the site? Or --

MR. SCOTT: Well, the emergency plan, my take on that is that it is not strongly dependent on whether you have five reactors or four reactors on the site. The measures that would be taken would be essentially the same.

MEMBER KRESS: Just assume they're independent basically.

MR. SCOTT: You would assume, I guess you would assume --

MEMBER KRESS: You assume one of them is going to go. You don't assume all of them are going

to go.

MR. SCOTT: I believe that would be correct.

MEMBER ROSEN: I'm sorry but I missed the beginning of this but does an early site permit only apply to use with a certified design or can you use an ESP separate?

MR. SCOTT: An ESP, think of an ESP as a preliminary stage to get to a COL. And there are many ways to get to a COL. You can get there with an ESP. You can get there without an ESP. If you come in without an ESP, then all site issues are open to be resolved at the COL.

You can come in with a certified design or not, an ESP-certified design, either, or both, or none. So there are just all different options.

The ESP is one first stage, one possible first stage to get to COL. As Laura Dudes mentioned, perhaps, or certainly the DOE has just awarded cost sharing to two consortia who are planning to develop combined license. We don't know whether those combined license applications will reference an ESP or not.

One of the --

MEMBER ROSEN: That's the opposite of the

question I asked.

MR. SCOTT: I'm sorry?

MEMBER ROSEN: That's the reverse of the question I asked.

MR. SCOTT: Okay. Maybe --

MEMBER ROSEN: But it is an interesting answer nevertheless. You said that people could come in with a COL application --

MR. SCOTT: Right.

MEMBER ROSEN: -- without an ESP.

MR. SCOTT: Correct.

MEMBER ROSEN: And that's the case, I think, you just talked about for the --

MR. SCOTT: That's one case.

MEMBER ROSEN: -- consortia.

MR. SCOTT: Right. Well, now let me clarify. There are two consortia that have received these DOE awards. One of them is Dominion --

MEMBER ROSEN: Yes.

MR. SCOTT: -- for North Anna. Presumably they would come in and reference the ESP. The other is NuStart Energy, which is a consortium of a large number of utilities. And we don't know what site they have in mind or whether it would be a site that would have an ESP. So we just don't know the answer to

that.

There's certainly no requirement that they come at COL with an ESP. But I guess I didn't answer your question, which was --

MEMBER ROSEN: Which was if you do come in for an ESP, do you then have to use a certified design?

MR. SCOTT: No, no you do not.

MEMBER ROSEN: Okay.

MEMBER KRESS: Let me ask you what might be a weird question. As I recall, one of the plant parameter envelope items is a source term.

MR. SCOTT: Correct.

MEMBER KRESS: And now I can envision one that was a suitable site for an AP1000 or a current 1,000 megawatt Lefco plant of ladder design which is a fairly healthy source term.

Then I can envision an applicant wanting to put something like a gas-cooled reactor -- modular gas-cooled reactor that has say the power level was such that would take ten such modules to achieve the source terms that you're talking about.

But they might argue I'm going to put 20 modules on because they don't all go at the same time. And I'm looking at the source terms for one module

only. And it's well within this plant parameter envelope.

Is that an issue that is likely to arise? Or have you dealt with that?

MR. SCOTT: There's a couple of things actually tied up in your question. The one is well, what's the use of a PPE. Well, as you mentioned, the applicant comes in with the source term.

And we evaluate that source term looking at the site atmospheric dispersion characteristics and reach a conclusion regarding whether the LPZ and the EAB are appropriate.

If they come in at COL with a plant that has a higher source term, then it has to be looked at again. If they come in with a lower source term, then it doesn't.

MEMBER KRESS: I don't know whether modular -- that plant has a lower or a higher source term.

MR. SCOTT: Well, I know. But here's the other point you raised was multiple units and risks posed by multiple units.

And that is an issue that is being addressed by the staff. And I'm not well versed on what the status of that is.

I mean in general, risk space that is being addressed. We are not addressing it per se in the ESP.

MEMBER KRESS: It hasn't come up in ESP yet.

MR. SCOTT: Not directly.

MEMBER KRESS: It might be if somebody that comes in with a modular plant to put on the site. You might have to look at it and decide then.

MR. SCOTT: Right. But because -- the other thing to bear in mind about this PPE, and I mentioned it a couple minutes ago, is although they cite, for example, Dominion cited seven or so designs, they're not saying we're restricting ourselves to these seven designs. They're saying these are representative designs and we derived our reasonable PPE from these designs.

And the staff has said that the only criteria we'll apply to review of those PPEs is are they reasonable.

MEMBER KRESS: Yes.

MR. SCOTT: So the applicant said I can come in with something entirely different that's not even in my PPE now.

And our response to that is is that's

true. If it's bounded by your PPE, you're fine. And if it's not --

MEMBER KRESS: You have to do another.

MR. SCOTT: It's open to review and analysis and so on.

MEMBER KRESS: Yes, that's the only logical way to approach it.

MR. SCOTT: Right.

MEMBER KRESS: Okay. Are there any other questions?

(No response.)

MEMBER KRESS: If not, thank you for the briefing. It's very helpful.

MR. SCOTT: Thank you.

MEMBER KRESS: And we expect to have more fun with you in the near future.

MR. SCOTT: We're looking forward to it.

MEMBER KRESS: And we are, too. Thank you very much.

I'll turn it back to you, Mr. Chairman.

VICE CHAIRMAN WALLIS: Now, we're way ahead of time. Way ahead of time. I'm not going to allow a break for almost an hour. It seems to me that we could have sort of a work --

MEMBER KRESS: Have a look-see at some of

the letters maybe?

VICE CHAIRMAN WALLIS: I was going to -- yes, I was going to address your letter on AP-1000.

MEMBER KRESS: Okay.

VICE CHAIRMAN WALLIS: We can dispense with the transcript now. We don't need the transcript any more.

MEMBER KRESS: Just for a little while. We'll need them back, don't we?

VICE CHAIRMAN WALLIS: No, we don't need them back. We're going to be working on producing reports.

PARTICIPANT: We are done.

VICE CHAIRMAN WALLIS: We're done with the transcript.

MEMBER KRESS: We're done, okay.

VICE CHAIRMAN WALLIS: What I propose is we take sort of a five-minute working break and that during that break you look at this letter, this letter that has been prepared. And anything else you need to do.

And that we try to give him enough input so that we essentially have a finished letter by ten o'clock.

So we'll take this break and we'll come

back at 9:30 and we will work with Tom to try to have a finished letter by ten o'clock. Then we'll take a real break. Having got that far, we'll consider how long the second break needs to be.

Anyway, we will take this short break and we'll dispense with the transcript.

(Whereupon, the above-entitled meeting was concluded at 9:12 a.m.)