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NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

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526th MEETING

+ + + + +

FRIDAY,

OCTOBER 7, 2005

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ROCKVILLE, MARYLAND

The committee met at the Nuclear Regulatory Commission, Two White Flint North, Room T2B3, 11545 Rockville Pike, at 8:30 a.m., William J. Shack, Vice Chairman, presiding.

COMMITTEE MEMBERS:

WILLIAM J. SHACK, Vice Chairman

GEORGE E. APOSTOLAKIS, Member

MARIO V. BONACA, Member

RICHARD S. DENNING, Member

THOMAS S. KRESS, Member

DANA A. POWERS, Member

VICTOR H. RANSOM, Member

JOHN D. SIEBER, Member-at-Large

ALSO PRESENT:

SAM DURAISWAMY, Designated Federal Official

ASHOK C. THADANI, Deputy Executive Director

JENNY M. GALLO, Staff

MICHAEL L. SCOTT, Staff

ERIC THORNSBURY, Staff

I-N-D-E-X

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

(8:33 a.m.)

VICE CHAIRMAN SHACK: The meeting will now come to order. This is the second day of the 526th meeting of the Advisory Committee on Reactor Safeguards.

During today's meeting the committee will consider the following: licensee responses to the bulletin on emergency preparedness and response action for security-based events, NRC staff's responses to the ACRS letter on the proposed Revision 4 to Regulatory Guide 1.82 entitled "Water Sources for Long-Term Recirculation Cooling Following a Loss of Coolant Accident," format and content of the NRC Safety Research Program report to the Commission, future ACRS activities, and report of the Planning and Procedures Subcommittee, reconciliation of ACRS comments and recommendations, subcommittee reports, and preparation of ACRS reports.

A portion of this meeting may be closed to discuss safeguards and security information. This meeting is being conducted in accordance with the provisions of the Federal Advisory Committee Act. Mr. Sam Duraiswamy is the Designed Federal Official for the initial portion of the meeting.

We have received no written comments from members of the public. We have received a request from a representative of the State of Vermont for an opportunity to make oral statements regarding Regulatory Guide 1.82.

A transcript of portions 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 they can be readily heard.

And our first topic this morning is licensee responses to the bulletin on emergency preparedness, and Mario is going to be leading us through that.

MEMBER BONACA: Yes, thank you. Good morning. During the 523rd meeting of the ACRS, which was on June 1st through 3rd of this year, the committee considered a bulletin -- a proposed bulletin on emergency preparedness and response actions for security-based events.

At that time, we decided not to comment on that. We decided that we would wait for responses to come in and hear a presentation regarding those responses. And the presentation is here now, I believe the bulletin has been issued, responses have

been gathered and classified.

Most of the responses have to do -- or the bulletin, too -- with the inclusion of security-related terminology and nomenclature into the emergency action levels. And essentially this falls on the part of the licensee to request for notifications and things of that kind.

So now that we have the information, we have -- we are happy to have Mr. Weiss here to give us an overview of the responses we gathered from the licensees.

Mr. Weiss?

MR. WEISS: Yes. Good morning. Before we begin, Nader Mamish, the Director of the Emergency Preparedness Directorate, has a few opening remarks.

MR. MAMISH: Thank you. Good morning, everyone. We're pleased to have the opportunity to brief the ACRS today.

We'll be providing you with a brief summary, an overall summary of the responses, followed by specifics regarding the five areas that were addressed in the bulletin and the path forward for the staff. We'll be happy to take any questions at the end.

And I apologize, I do have to leave at

9:30 for prior commitments. But the staff will be here to address any issues that you may have.

Thank you.

MEMBER BONACA: Now, just a question regarding the -- the meeting is being held in an unclassified -- at an unclassified level. Should there be a need for classified information, is this the location where we can have it, if we --

MR. THORNSBURY: Yes. As long -- I don't think it would go up to a full classified. But if it's sensitive or even up to safeguards, we'll hold those questions to the end, and then we can dismiss any members of the public to ask or answer any sensitive questions.

MEMBER BONACA: So you will give us guidance when --

MR. THORNSBURY: Yes. Once they're done with their formal presentation, if there's anything that needs to be, then we can close it. Otherwise, you know, I'm sure Eric will mention it, but the bulletin is public, and most of their discussion is at a public level.

MEMBER BONACA: Okay. Very good.

MR. WEISS: Before I begin, let me introduce Mr. Gregory Casto, who is a senior member of

the emergency preparedness staff. He was responsible for reviewing the details of the bulletin responses and was instrumental in writing it, and he's here to help us answer certain questions in detail.

In general, when we answer your questions, we're going to be speaking in generalities. If we get to a discussion on a specific licensee, that's when I would ask that we consider closing the meeting.

Following the events of September 11, 2001, the staff evaluated the emergency preparedness planning basis, issued orders with compensatory measures for nuclear security and safety, and observed licensee performance during security-based EP drills and exercises, and security force-on-force exercise evaluations.

Additionally, the staff reviewed current public radiological protective action guidance. The staff also discussed security-based EP issues with numerous stakeholders, including licensees, state, local, and federal government officials.

Licensees have reviewed and improved their programs in response to: 1) orders issued on February 25, 2002; secondly, information provided in regulatory issue summary, RIS 2000-415; thirdly, lessons learned from force-on-force exercises; and, lastly,

information provided in regional outreach meetings and other forums.

Although many licensees have improved their programs, additional security-based EP actions may be necessary. Consequently, on July 18, 2005, the staff issued Bulletin 2000-502 titled "Emergency Preparedness and Response Actions for Security-Based Events."

Licensees were required to respond within 30 days. The staff requested answers to questions in five specific areas regarding security-based emergency preparedness. First, emergency classification levels and emergency action levels; second, prompt notification of security events to the NRC; third, licensee onsite protective actions for plant personnel; fourth, emergency response organization staff augmentation practices; and, fifth, security-based event inclusion in the emergency preparedness drill and exercise program.

Information in this bulletin does not indicate that additional or earlier radiological protective actions are required to ensure dose avoidance, but this bulletin recognizes that a security-based event may not progress in the same way as events for which licensees and offsite response

organizations typically plan and train.

All licensees responded to the bulletin within the 30-day timeframe. All licensees provided answers consistent to the information in the bulletin with few exceptions in the area of staff augmentation/enhancements, which we'll discuss later.

As we go through each of the areas, I'll provide additional details. No single licensee had all of the provisions discussed in the bulletin in place, but many licensees had implemented some enhancements to various levels. Licensees responded that they plan to implement all of the enhancements discussed in the bulletin, with a few minor exceptions and some general conditions that I will discuss shortly.

Additionally, NEI, the Nuclear Energy Institute, has issued a white paper to the industry, which contains similar information to that information provided in the bulletin. The industry, through the NEI emergency preparedness and security working group, agreed to adopt the enhancements in the white paper and are in the process of making changes to their program.

The bulletin discussed slight changes to the definition of emergency classification levels,

ECLs, which included reference to security-related events. In addition, specific security-based emergency action levels, or EALs, provided more details to assist the licensee in classifying certain security-based events.

In general, the changes included additional classification criteria, which takes advantage of available preoccurrence information such as taking control of a commercial airliner and heading it towards a plant site. The changes also generally escalate the classification level -- one level higher than the EALs currently in place at nuclear powerplants.

So an event that currently would be classified as an alert may be classified as a site area emergency in the new EALs.

Reasons for the appropriateness to escalate classifications for security events include the following: first, taking advantage of advance warning from enhanced federal agency threat assessment processes such as NORAD; second, providing anticipatory notification to state and local response organization of events which could have eventual public action considerations; and, third, demonstrating actions which will maintain public

confidence by keeping onsite and offsite emergency response organizations in front of public actions, possibly taken in response to perceived threats from information delivered by the media.

MEMBER POWERS: Let me -- maybe I misread things when I read it, but I got the impression that a general emergency was declared when the site had been taken over.

MR. WEISS: Yes, when you lose control.

MEMBER POWERS: And it struck me that that was -- was too late. Which -- I mean, I agree with you. Everything else seemed to be a little earlier. But that general emergency seemed to be later than I would have thought. I would have thought that general emergency would be when a site takeover was imminent.

MR. CASTO: All right. The way the classifications currently lead you to the path, to general emergency, your statement in part is correct, is takeover of the plant control room. But it's also takeover of other vital areas.

MEMBER POWERS: Right, right.

MR. CASTO: So that the control room still may, in effect, have some control over the plant, but certain safety equipment and systems may have already been lost due to the adversary activity. So it's not

quite a complete takeover of the plant when you're in a general emergency, but in some cases --

MEMBER POWERS: Well, be that as it may, didn't it strike you as a -- a little late. I mean, shouldn't you -- shouldn't -- when these things are happening -- imminence of these things be sufficient to declare a general emergency?

MR. CASTO: Well, I think we can agree with the general thesis that things need to happen sooner when they're evolving like this. But under the current scheme, you don't declare a general emergency just because you lost the control room. It's because you've lost control of the plant. You know, that would include loss of the remote shutdown panel.

The general emergency wasn't changed as a result of the bulletin. Everything else was moved up one notice.

MEMBER POWERS: Yes. But, I mean, see, that's -- and I agree that everything else looks like it has moved up a little bit, except this general emergency. And it just struck me -- I mean, that's what I marked all in red when I got to that part.

MR. CASTO: In the bulletin, we -- I guess we discussed the general characteristics of that a little bit, and what -- based on our review of the

emergency planning basis that was done prior to the issue of the bulletin, and what we discussed in the bulletin, is the consequences of the event still occur in the same progression that they always do. In other words, getting into a core melt sequence, starting to lose your fission product barriers due to initially loss of the fuel cladding barrier because of fuel heatup and all of that.

That progresses the way that currently our emergency planning basis looks at that. So when we reviewed that, we felt that specific for the general emergency, because those events continue to occur in the same process and along the same timeframe that the general emergency classification, it wasn't warranted to step that up -- say, for instance, an earlier adversarial progression where they may be inside the power block. We didn't feel that was appropriate. Maybe that helps answer your question.

MEMBER DENNING: Is the reason for the difference in logic here -- I mean, I agree with Dana. I mean, that concern -- but is the difference in logic -- I tend to think of one of the things of general emergency is that it also triggers a response, an external military response to add protection -- you know, to recapture the plant.

And, obviously, if that's going to be effective, it has to happen very early. If its only objective is to -- is to alert the public for evacuation purposes, then the progression is probably, you know, the same -- that is, you know, perhaps they have time, then, to -- is that the difference in logic?

MR. CASTO: I think, generally speaking, that's a good way to put it. Because the actions -- the security-based actions or the mitigation of threat actions are going to progress down a separate path. They're not based on classification.

Upon awareness, early notification starts to those local law enforcement agencies and those other organizations to start addressing the threat.

MEMBER BONACA: But right now the -- I mean, before security events, the general emergency, as you were pointing out, had a very specific limitation, which means you had lost two barriers typically. I mean, that's when the Director of Operations at the site will make a decision. You have lost two barriers and your imminent loss of the third barrier. Okay?

So you are on the verge of releases, and so I can understand now the logic -- the plant -- even

if that hasn't happened, if you lose control of the plant, you may get into a situation and you are -- that's how you are going that way on --

MR. WEISS: Yes. The EAL scheme was conceived of as a mechanism to protect the public from a radiological release, which is certainly still in play in a terrorist event. But I think you have to balance that against other considerations.

There may not be a need to evacuate people for every terrorist event. No doubt that a terrorist attack would be an event of national significance, and that comes into play in another scheme. But what we're looking at here is the response of the plant and their recommendation to the offsite response organizations to implement protective actions.

It may be counterproductive, for example, to immediately jump to a general emergency -- evacuate Harrisburg -- when it turns out that the plane never gets near the plant. It was only a threat.

MEMBER POWERS: But that's not the issue we're confronting here. When you're in a general emergency, something has already happened. There is no escape from something already happening. I mean, any level on general emergency is going to be -- something has already happened.

MR. CASTO: I think in some cases that is true, but, again, going back to the accident and the consequence progression, when a general emergency by the current classifications is declared, there is still damage to occur before -- for instance, you're in a fuel melt sequence. There is still time to issue protective actions to the public or to local government officials who then, in turn, determine what protective actions to implement.

So there is some time built into the emergency planning basis currently for general emergency that -- that we're relying on.

MEMBER POWERS: Well, I think I agree with that, but I think that's my point as well. By the time you have this -- this takeover, you were essentially guaranteed something is -- there's not going to be a mitigated response capability if you wait until takeover has occurred, because I can put the plant in a configuration to -- that would lead to core meltdown in a very short period of time.

MR. CASTO: And I think that's still within the planning basis.

MEMBER BONACA: Yes. But the point I'm making is that that's really what -- at the site currently, the general emergency means you have lost

two barriers, and you are in -- you are on the verge of losing a third. That's why you declare a general emergency, which means shelter, evacuate, move, so it's the ultimate action that you can take.

You almost are relinquishing the control of -- to the standard authorities to remove the people, to shelter, to evacuate.

So now, in this case, in fact, we may not have any of those things happened yet. But since you have lost control of the site, then it's a conservative way to say, okay, we declare the general emergency anyway, because it may very well happen that we could lose -- you know, they may -- may do this, may make it happen anyway.

So I really don't view -- I think I view it pretty coherent with what is being done today at the sites.

MR. MAMISH: I think you've hit it right on the nail. I think you have to think about whether terrorists in the power block or within the control area -- on a controlled area, you know, which is lesser than, you know, vital area, whether that really means loss of two fission barriers and imminent release.

And you have to balance that with, you

know, unnecessarily -- you know, taking certain actions to evacuate the public, and so forth, and balance it with the definition of -- of general emergency.

MEMBER BONACA: Well, if you have lost control, I mean, you better assume that they are likely to try, as a minimum, to have failed all three barriers and have releases. I mean, that's the intent of those. So --

MR. MAMISH: Well, the expectation would be that the conditional probability of an early release would be much higher. A conditional probability of an early release I would think would be much higher. The timeframe could be much shorter if -- if your objective of -- of emergency response is evacuation ahead of an advancing plume. I would have an expectation that conditionally it would be -- the timeframes may be short, and the conditional probability of -- of --

MEMBER BONACA: Well, why short? I mean, core --

MR. MAMISH: I don't think we want to --

MEMBER BONACA: You have lost two barriers, and you're on the verge of losing the third one, so already in the current state of emergency, as

a classification, as an EAL, you have an impending release, I mean, because you -- you are already there.

So I don't understand why the attack -- takeover of the site where no barrier has been failed yet is likely to have an early release. I don't understand.

MEMBER DENNING: I think we ought to save this discussion.

MEMBER BONACA: Yes.

MEMBER DENNING: We could talk more about the planning basis after this if -- if that would help.

MR. WEISS: Shall I go on? As you see from the slide, all licensees plan to make changes in their classification levels and EALs over the next half-year. These changes, if revised consistent with the bulletin information, can be performed without NRC approval using the 10 CFR 50.54(q) criteria.

Licensees currently have provisions in place to implement prompt notification to local law enforcement agencies, LLEAs, per 10 CFR 73.55, which requires a constantly-manned center capable of promptly calling LLEAs and requesting assistance. 10 CFR 73.71 requires licensees to notify the NRC immediately of specific security-related events,

including hostile acts.

Likewise, a licensee is required to notify the NRC immediately following state and local emergency management notification of emergency plan classified events per 10 CFR 50.72. In both cases, the definition of "immediate" is within one hour.

In the staff's opinion, and validated by the Commission SRM to the SECY 05-010, notification of a security event to the NRC should be much sooner than an hour. Prompt notification of NRC is particularly important during a security event to support subsequent notifications made by the NRC to other licensees regarding a potential security threat and to inform other federal agencies in accordance with a national response plan.

MEMBER APOSTOLAKIS: Who is in charge in these cases? Who decides these things? Somebody must be in charge.

MR. WEISS: Are you referring to the national response plan?

MEMBER APOSTOLAKIS: No. I'm referring to the events you just described. You know, the licensee will notify, you said, the local authorities?

MR. WEISS: Yes.

MEMBER APOSTOLAKIS: And then, the NRC?

MR. WEISS: Well, we have a backup slide that will help illustrate some of these points. But, in summary, there is a notification made by the licensee's alarm station --

MEMBER APOSTOLAKIS: Well, if it's backup, can we see it now? I mean, is there any --

MR. WEISS: Yes. Can you --

MEMBER APOSTOLAKIS: There is no backup presentation.

MR. WEISS: Okay. You can see -- you can see the situation on the top before the bulletin and the situation after the bulletin on the bottom. The alarm station -- that the licensee would notify the local law enforcement agencies immediately. That's the first notification that would be made under any circumstance.

And what I was speaking of just before the question involved other notifications. There's a requirement that those of us in emergency preparedness are very familiar with that -- it's 10 CFR 50.72 that requires licensees to notify us after they have notified the emergency response organizations. That call comes over the ENS to us per 50.72, but that -- that could be an hour later.

And as a result of the bulletin, we have

inserted a -- what we call an immediate or abbreviated notification early on, so that we get an early warning.

There was a delicate balancing act here. That 50.72 notification is the classic notification I think most of you are familiar with that would occur in a radiological event. It involves a lot of detailed information -- you know, wind speed, direction, stability factor, status of safety systems, and it's a fairly lengthy notification.

It's the kinds of things that an emergency response organization needs to know in order to make an informed decision about a protective action decision.

MEMBER APOSTOLAKIS: Good.

MR. WEISS: But that's time-consuming, and we needed to know right away, because the modus operandi of a terrorist is to conduct a coordinated attack.

We also have this large federal family, part of the national response plan, the HSOC and others, that need to know right away if the -- the NRC needs to get that information to the Federal Government right away. It needs to get it to other licensees right away.

And for that reason, the bulletin asks for this abbreviated notification. It wouldn't interfere with the operation of the plant, wouldn't involve this time-consuming 50.72 notification, but at the same time doesn't eliminate it either. That 50.72 notification would be made in the same timeframe as it always has, for the same reasons.

MEMBER APOSTOLAKIS: The question, really, in my mind is: who makes the decisions and for how long? Is it the plant people that make the decisions throughout -- after the notification. In other words, I mean, you have notified --

MEMBER BONACA: Director of Emergency Operations at the site.

MEMBER APOSTOLAKIS: All this stuff, yes.

MEMBER BONACA: All these things.

MEMBER APOSTOLAKIS: Who decides these?

MEMBER POWERS: There is one person that possibly would be in charge, and that's the plant people.

MEMBER APOSTOLAKIS: And that's the --

MEMBER BONACA: The plant people.

MEMBER APOSTOLAKIS: -- the plant people are in charge throughout the event?

MR. MAMISH: Yes.

MEMBER APOSTOLAKIS: Even if there is a national response? Are you guys sure about that?

MR. MAMISH: I would say once an incident of national significance -- it's been determined that the event constitutes an incidence of national significance, I would think that the Department of Homeland Security would be in charge.

MEMBER POWERS: No, they would not be in charge of this plant.

MR. MAMISH: In charge of the response.

MEMBER POWERS: Oh, that's fine. But here we're talking about the plant.

MR. MAMISH: Oh, absolutely. The licensee is in charge of the safety of the plant.

MEMBER POWERS: Always.

MR. MAMISH: Always. But --

MEMBER BONACA: And he has a responsibility for communicating releases and all of the information that the people, in fact --

MEMBER APOSTOLAKIS: Is this decisionmaking process coordinated in some way? I mean, do you have some people -- it's very strictly -- in fact, I mean, it's very strictly according to these tables that they have, the emergency action levels, what kind of level are you declaring, etcetera.

In fact, I mean, they are tested, okay, and they are rated for performance, and that's a very important and challenging issue for the site. But they have to handle that.

But the only question I have here is: now, isn't it true, however, that in a security event one may not be able to provide you with 50.72 notification, insofar as a lot of information there?

MR. WEISS: There's a lot of information there, but it occurs -- the transmission of that information occurs later.

MEMBER APOSTOLAKIS: Yes.

MR. WEISS: Yes. And the abbreviated notification -- the yellow box down here is -- is before the 50.72 notification.

MEMBER BONACA: I understand --

MR. CASTO: This is still required within the law.

MEMBER BONACA: I understand it is required. That's why I had the question. What I mean is that, today, if you have an accident at the plant, okay, the licensee has high confidence that he can put together a list of parameters for you and communicate them, and so on and so forth.

If you have, you know, a plant takeover

you are not going to have that communication very likely within an hour. I mean, I --

MR. CASTO: I think there are some scenarios we can go over, especially with some of the other elements in the bulletin that help address that.

MEMBER BONACA: Okay.

MR. CASTO: But as far as the proposed and what's being implemented right now, this is the new scheme -- the LLEA notification still required right away, typically done by security people in their command center at the site. Immediately following that, or in concurrence with this out of the control room, is that very abbreviated notification requirement.

The event classification still required, the notification of offsite response organization still required within 15 minutes of classification, the NRC notification of the emergency event still required per 50.72 within an hour after classification.

MR. WEISS: I might point out that --

MEMBER BONACA: In the current situation, you have also the 10 CFR 73.71. What's that?

MR. CASTO: Correct. This -- the new notification --

MEMBER BONACA: Oh, I see. I see, okay.

MR. CASTO: -- is satisfying the 73.71.

MEMBER BONACA: Okay. The notice up here. It is just moved. All right.

MR. WEISS: I might point out that we didn't come to this entirely independently. The ACRS has a letter on record back in late 2003 recommending this. Rulemaking is being considered to change the regulation 73.71 notification time to 15 minutes.

In the meantime, the bulletin provided information to licensees to consider making changes to their program to notify NRC within 15 minutes of occurrence of a security event.

Some licensees have already changed their procedures to notify the NRC with a prompt, accelerated notification. Other licensees plan to change procedures to adhere to a goal of NRC notification within approximately 15 minutes from initiation of a security event.

Additional information or details could be provided in the 50.72 notification for emergency classification, which remains unchanged. The 50.72 notification is required after the state and local emergency response classification -- excuse me, after the state and local emergency classification

notification and within one hour following classification of the event.

Onsite protective actions are intended to maximize site personnel safety during emergency conditions. An alert or higher emergency declaration is generally accompanied by procedurally described actions for site assembly, accountability measures, site evacuation, activation of emergency response facilities, and other actions.

Although these actions are appropriate for some emergencies, they may be counterproductive when an attack is imminent or an attack is in process. Licensees have made onsite protective action changes through modification of page announcements and emergency response organization augmentation instructions, but certain security-based scenarios could challenge the effectiveness of current practices.

Information in the bulletin discussed more specific actions which could be employed by licensees to provide a higher level of protection for onsite employees. Included were items such as specifically designating assembly locations away from possible targeted equipment, developing strategies for quickly alerting and moving employees, and developing methods

to promptly account for site personnel following a security event.

All licensees responded that they would incorporate the information in the bulletin to improve their onsite protective action methodologies. Many licensees stated that they would consider development of a tool which could be used to aid the decisionmaker in rapidly deciding on and implementing an onsite protective action.

The emergency response organization is expected to be staged in a manner that supports rapid response to limit or mitigate site damage or the potential for an offsite radiological release. Some licensees have chosen not to activate elements of the emergency response organization during a security-based event until a site is secured.

It is prudent to fully activate emergency response organization members for off-normal hour events to promptly staff alternate facilities. This will minimize delay in overall site response.

During normal working hours, licensees should consider deployment of an onsite emergency response organization personnel to an alternate facility near the site.

MEMBER DENNING: I'm sorry. Could you

stop just a second? Because some things that you said were a little too quick for me to fully understand. It sounded like some of the sites were deciding not to -- I'm not even sure exactly what it was, but it was -- I don't know if you can go back about five or six sentences in what you were reading.

MR. WEISS: Some licensees have chosen not to activate elements of emergency response organizations during a security-based even until the site is secured?

MEMBER DENNING: Yes. Now, are you saying that that's an acceptable position?

MR. WEISS: Yes.

MR. CASTO: That was the current situation prior to the issue of the information in this bulletin. And what licensees are in the process of changing is addressing that area. In the bulletin -- the information in the bulletin stated that it's prudent to staff up your emergency response organization at an alternate facility, and that's what licensees are in the process of implementing at this time.

MR. WEISS: And, again, I'd point out this is not something the staff came to entirely independently. The ACRS had a letter in the summer of

2004 that made this very point -- made the point that the emergency response organization staff was key to making the plant safe following the attack, to recover the plant.

During normal working hours, we -- we ask that licensees consider deployment of an onsite emergency response organization personnel to an alternate facility. Is it appropriate? It is appropriate for such alternative facilities to have equipment to support emergency response functions.

Many licensees have completed action in this area to various degrees. The bulletin information is serving to provide standardization among the industry, and most licensees are working toward that end. The staff did contact some licensees to clarify their responses and ensure that there was a clear understanding of the provisions in place or planned.

We are discussing currently with some licensees the difference between their plans and the rest of the industry. In recent discussion, the licensees understanding -- understand the differences in their response and are in the process of reviewing additional enhancements.

Based on the outcome of those discussions,

we will report the results to the Commission and any recommendations for additional regulatory actions.

MEMBER DENNING: Now, do you have any guidance that says that you should or shouldn't have an alternative location, or something like that? I mean, I -- where control would be taken over? It sounded like there are different -- different ways that the utilities would address that.

MR. CASTO: Right. And we -- we discuss this in the bulletin. One of the provisions in the 2002 orders addressed emergency response personnel activating alternate facilities. In this bulletin, we provided additional information to promote consistency throughout the industry as far as what that order could be looked at to mean.

And all licensees -- and if you see up here, we're down to basically one licensee that we're in discussion with. And they're working toward the enhancements consistent with the bulletin, too, but it's -- I think it's safe to say that all licensees are now consistently activating their emergency response organizations to report to an alternate facility. If that answers your question.

MEMBER DENNING: Yes.

MR. CASTO: Okay.

MR. WEISS: In Bulletin 05-02, the NRC requested information on whether the industry intended to integrate security-based scenarios into the routine nuclear powerplant drill and exercise programs.

The Nuclear Energy Institute convened a working group in late 2004. The group has made considerable progress in organizing the implementation of a security-based drill and exercise program. Industry, with staff oversight, is currently working on integration and demonstration of emergency response to terrorist events, including preparation and conduct of integrated drills, exercising ERO's response to a range of terrorist events.

The staff expects the licensees to enhance key skills through the drilling on the response to security events. To briefly describe the program involvement -- improvement schedule, first and in progress at this time, a series of pilot tabletop drills are being conducted to better understand the differences between the current and enhanced drill scenarios, and onsite and offsite emergency responder interfaces. This phase lasts through March 2006.

Secondly, the NRC-observed drills will be conducted at every plant site over a three-year period, from 2006 to 2009. And, thirdly, the

security-based scenarios will become part of the regular six-year cycle for licensee emergency plan major element demonstration with an NRC exercise evaluated and performed during the six-year cycle.

MEMBER DENNING: Are these exercises performed within the scope of a design basis threat, or, as we do in accident analysis, do they go beyond design basis?

MR. CASTO: They could go beyond. Typical right now with emergency preparedness scenarios, they go to extreme ends and various levels of hypothetical occurrence. And it's to test the organizations, and that's what we would continue to do with this program.

MEMBER SIEBER: I think that you tried to design the exercise so that you test all of the classifications, which automatically takes you outside the design basis.

MR. WEISS: Plus, there are a number of complicated factors that one wouldn't ordinarily see in a non-security-based event. There will be casualties, large areas of the plant that are no longer there. You can contemplate larger fires, and so forth and so on, explosions that wouldn't otherwise occur.

And so there will also be issues of site

access, getting the responders onsite, so forth and so on. And we've had -- I guess I should go back to the script, but as I -- as I am about to explain, we've learned a lot already, and we're learning more.

A successful tabletop drill was, in fact, conducted at Diablo Canyon this past July, and another tabletop is scheduled in November for the Duane Arnold plant. The Diablo Canyon drill was effective at identifying lessons learned, and the staff expects that future exercises will be beneficial in identifying both site-specific and generic issues.

The next phase is to perform the NRC-observed non-evaluated pilot drills at all sites within three years. The staff notes that the first such drill is scheduled for March 1st at Calloway. The staff intends to observe these drills to ensure that the pilot drill program results in appropriate changes to routine drill and exercise scenarios.

Response to Bulletin 05-02 indicates that most licensees desire DHS endorsement of the program before they will commit to implementing it. This also will mean revision of the FEMA exercise manual guidance used by offsite program evaluators to inspect state, local, tribal program objectives.

The staff is currently working with DHS to

develop exercise objectives, and will address the response differences from the traditional radiological event drills, and is working to obtain DHS endorsement prior to program implementation.

The staff actions will be ongoing for several years to come. Some of the milestones include: 1) issue a Commission paper providing the results of licensee responses and recommend regulatory actions. This SECY is in concurrence process at this time. Two, continue dialogue with licensees that do not have provisions in place or planned consistent with the bulletin and the rest of the industry.

The staff is engaging those licensees, as is NEI, to consider a more consistent alignment with their counterparts. At this point, we feel that the outlying licensees will further enhance provisions. But if we do not feel that we have alignment, then we are prepared to recommend further regulatory actions to the Commission to address specific licensee scenarios.

Thirdly, further reports provided to the Commission on the progress of activities, including alignment of licensees with the information in the bulletin, and progress with DHS/FEMA regarding improvements to the drill and exercise program

guidance.

At this time, we feel we've come a long way in a short time to initiate the prompt enhancement of security-related emergency preparedness issues. Our coordinated activities with the industry, through NEI, and our work with DHS/FEMA, appear to be paying off in the form of a continuing improvement and consistently-implemented program.

We plan to continue to drive the industry and DHS/FEMA toward meeting the high level of emergency preparedness that we should all expect to ensure the public health and safety.

That concludes my formal presentation.

MEMBER BONACA: I had a question. You referenced a couple of memos that were -- or letters that we wrote on this issue. And now this bulletin, and the responses to it, document the, you know, inclusion of emergency -- of the security issue to the emergency action levels, and then the communications, and so on and so forth. And that's quite responsive.

But, you know, in part clearly we were concerned also about the ability of the sites to stage -- to be able to cope with events or situations which really are not right now considered, or were not considered by the sites -- for example, fire engulfing

certain areas and making other areas inaccessible, and things of that kind.

So I imagine that below this level of notification there are also actions being taken by the sites to deal with these issues. If I remember, it was a guidance letter that you were developing and issuing to the sites to deal with these issues.

MR. WEISS: Yes. I might point out that we're not all of NRC -- the security folks are doing a lot. Clay Johnson from DNS is with us today. He's in the back of the room, and perhaps he can speak to some of the issues that are being addressed by the Division of Nuclear Safety within NSIR.

The organization that I represent, the Emergency Preparedness Directorate, tends to focus on emergency preparedness as opposed to security. There are some issues that tend to cross boundaries. You alluded to one, which is fire.

You know, the Division of Nuclear Safety issued an advisory regarding jet fuel fire. I think that's what you're referring to. That's a much larger fire, a different type of fire, than what you would typically expect. What we're attempting to focus on is the integration of the emergency response organizations and EP, in general, with -- with what's

going on in the security side of the house.

I don't intend to address all of that. I think Clay and others would -- could better address that.

But one way to look at it, one way that I've spoken to the issue a number of times is that you're familiar, I think, with force-on-force exercises, and the fact that there is an EP component to that. And the force-on-force exercises have a high degree of fidelity regarding what would happen from a security aspect.

EP is only about five percent of that exercise. It's a tabletop portion. What we've contemplated here in our drill and exercise program is sort of the mirror image of that. It has a security component to it, but it's a small part. It sort of poses to the emergency response organizations the climate or the atmosphere that they have to deal with that they haven't had to deal with in the past.

And now you've got -- well, the force on force was like 95 percent security, 5 percent EP. Now what we've got is something that's 5 percent security, 95 percent EP. And together they complement one another, and -- and it -- this has a number of advantages.

I'm sure it has occurred to the committee that so much of what goes on in the security area must remain out of the public view and can't be communicated explicitly for fear of revealing information to a terrorist organization about the vulnerabilities of a plant.

But, conversely, you want to be able to exercise the fire department, the offsite security people, that may not have clearances, and get the staff -- the plant staff, specifically the EP folks, to work with them to iron out all of the details that -- that otherwise they wouldn't have a chance to exercise.

So this isn't the whole answer, but I use this example to show you how what DNS does is complemented by what the Emergency Preparedness Directorate does. And we're working towards a common goal, which is an integrated response that deals both with the security and emergency preparedness.

MR. MAMISH: What I would add to that is, as Eric articulated, we're going to be engaging the industry on a continuous basis with this drills and exercise program. I would anticipate there's going to be many, many lessons learned that will come out, you know, as a result of the drills and exercise program.

Some will be site-specific. Some will be generic -- that will have generic implications. And we'll be in continuous dialogue with the industry to communicate those generic-type lessons learned to them, so that we continue to improve the emergency preparedness programs throughout the nation.

MEMBER BONACA: Now, I know there has been some debate between the industry and the Commission regarding -- how do they call it -- available resources versus added resources. I mean, licensees have taken a position that they are not going to invest beyond whatever equipment they have onsite for some staging, and so on and so forth. Could you comment on that?

I understand the Commission has taken an interpretation that if it is a reasonable cost, consideration should be given to those. And most of all, I'm asking that question in the context of, you know, there may be some equipment that you need to deal with large fire, on the site, for example, and, you know, would that be considered, if it is a necessity there, that it's a reasonable cost to invest in it? And is there an issue there with the licensees?

MR. WEISS: Well, I'm at least passingly familiar with what you're referring to, but I believe it was in response -- the issue arose in response to an advisory that was issued by Division of Nuclear Safety and wasn't organizationally under our control.

I'm not really accustomed to doing this, but I must say that the industry, from an emergency preparedness point of view, has been very responsive. I think this program for -- the drill and exercise program has been -- has been nothing short of outstanding. It's been implemented rapidly, and it has been very responsive.

So from an EP point of view, I think we're -- we're making great progress. I think the security folks have had the advantage of being a little bit out in front of us on a number of these issues, and now we're playing catchup, but we're -- we're doing great things right now, I think.

MEMBER BONACA: Okay.

MEMBER DENNING: I was wondering, can we have a brief discussion in a closed forum at this point? I'd like to explore a little bit the interplay between security and EP, and I don't think we ought to do that openly.

MEMBER BONACA: Well, we have a

subcommittee meeting scheduled for the first week in December, I believe, which also some of the issues from the security standpoint --

MR. THORNSBURY: Yes. That will get more to the security side of it.

MEMBER BONACA: Right. But we have the time and the location here to discuss those issues.

MR. THORNSBURY: Yes. I think if we want to get to Dr. Denning's questions, I think, yes, now would probably be a good time to close it for the next 20 or 30 minutes.

MEMBER POWERS: The argument is made that it parallels emergency -- declaration of a general emergency for accidents, because the -- the contention is made we do it for accidents when we've lost two barriers, and you are in imminent loss of three.

It seems to me that parallelism will not break down here, because you have a deliberate ability to wipe out the effectiveness of your most conservative barriers.

MEMBER DENNING: Why don't we close the discussion. I think it's important -- I think it's a really important discussion, but I don't see any reason why we don't go closed on it. Is there any reason you want to keep it open?

MEMBER POWERS: I mean, I didn't -- I couldn't give less of a damn.

MR. THORNSBURY: Yes. I think to get to the answer to Dr. Powers' question, I think gets into the same questions Dr. Denning was asking, which will get into the timing issues and things like that.

So, okay, why don't we ask any members of the public, and even NRC I guess without the need to know, should probably step out.

(Whereupon, the proceedings in the foregoing matter went off the record at 9:26 a.m. and went back on the record at 10:17 a.m.)

VICE CHAIRMAN SHACK: I'd like to come back into session.

Our next topic is staff response to the ACRS letter on the proposed Revision 4 to Reg. Guide 1.82 on water sources for long-term recirculation cooling following a loss of coolant accident.

And Vic is going to lead us through this discussion.

MEMBER RANSOM: Right. At the last meeting, the 525th meeting, we took up the Revision 2 to Reg. Guide 1.82, and recommended that it not be

issued for public comment, and also recommended that containment overpressure credit to ensure sufficient NPSH for emergency core cooling and heat removal system pump should only be selectively granted. And that was pretty much consistent with the position the ACRS had taken in the past.

And so Brian, I think, has some discussion for us on response to that.

MR. SHERON: Yes, thank you. I'm Brian Sheron. I'm the Associate Director for Project Licensing and Technical Analysis in NRR. I wanted to take this opportunity to discuss with the committee our approach for, you know, how we would like to proceed on this issue generically.

This is an issue that came about sometime ago, and I -- I'm sorry, let me just skip, because you just -- I'm kind of repeating what was in the letter. I think Vic just described that.

First of all, the no-practical-alternative criterion that I think was mentioned was developed during the resolution of the BWR sump issue back in the mid-1990s. And at that point, basically what you had is as-built plants. The sump issue was raised. Licensees had to take certain corrective actions. And when they did the analyses, recognized that in order

to meet NPSH requirements with the analysis models they were using at the time, did in fact have to take some credit for the overpressure.

I would probably like to characterize it as that when we -- when we granted the selective use of overpressure, namely, you know, I think we used terms like we would only use it to the minimum extent practicable, or whatever.

And, you know, I mean, some plants, for example, would calculate they maybe had nine pounds of overpressure, and, you know, we said, "Well, you only need six, so we'll only grant you six." And I'll be quite honest, from a regulatory standpoint, that really didn't make a lot of sense to me, and I wasn't involved back at the time.

But, you know, first off, as regulators, you know, our job is to determine either the plant is safe or it's not, from the standpoint of saying we should only grant it when there is no practical alternative.

You know, I don't really think that's preferred regulatory approach for something. I mean, if it's needed for safety, we should require it. That's been the Commission's approach. I think if you read the backfit rule, and the like, if it's needed

for adequate protection, if it's needed for compliance, then cost is not an issue.

And so from the standpoint of saying, you know, I should only grant it when there's no practical alternative, I think what we really need to do is -- is to rethink, you know, how we approach this.

And, you know, I wanted to point out that we have approved numerous requests from both BWRs and PWRs in the past for containment accident pressure credit. I think a lot of the approvals were perhaps not even consistent with the most recent guidance in the ACRS letter, in the sense that, for example, overpressure credit was given for large drys, which, you know, don't have an inerted containment, and the like.

MEMBER POWERS: It seems to me that at least in one of those instances that I can distinctly remember where we went along with overpressure it was done because the staff insisted that there was this revision -- revised Reg. Guide that would make this all clear to us.

MR. SHERON: Okay. And there still will be one, I hope.

(Laughter.)

But I think the recent power uprates that

we have been dealing with, and I guess the one that's in front of us right now for Vermont Yankee, have prompted us to reexamine the issue. And what we want to do -- what I've asked the staff to do is we need to develop a consistent regulatory approach for allowing credit.

In other words, you know -- you know, if a plant comes in and says, "Well, I really only need three pounds, but I have nine." And we say, "Okay. Well, you only need three, so we'll give you credit for three," whereas the sister plant comes in or something and says, "I need credit for six," and we go, "Well, you've got nine, but we'll only give you six." I mean, that's not really a consistent I think defensible regulatory approach.

We've got 25 plants right now that credit some amount of containment accident pressure to meet NPSH requirements, and, therefore, the long-term cooling requirements of 50.46. You know, in an ACRS letter back in '77, you agreed that containment accident pressure credit should consider a broad range of accident sequences, such as typically found in a PRA.

These three BWRs -- Dresden, Quad, and Duane Arnold -- and, I'm sorry, four -- and Brunswick

-- had extended power uprates and credited containment accident pressure. I think Quad actually used up to nine pounds, and all received favorable ACRS letters.

And what we'd like to -- what we're proposing here is basically to better quantify a risk-informed approach. I have -- I was not at the previous ACRS meetings, the subcommittee or the full committees and the like, so I'm not sure to what extent the staff conveyed the intent that, you know, we did look at this in a risk-informed approach.

There is a RIS that's out on the street, you may remember, and I think it was backed up by some Commission papers, which all emanated out of Calloway some time ago. I think it was around 2000.

Calloway had come in with electro-sleeving, and we had determined that the electro-sleeving met all of the deterministic regulations, but under a severe accident condition this material basically melted at a much lower temperature than any other repair material, so it would essentially lead to the steam generators. Any cracks that were repaired would now become direct path to the environment.

And so the conclusion was is that while this electro-sleeving met all of the Commission's rules and regulations, the deterministic ones and the

like, the ASME Code, and so forth, when we looked at it from a risk standpoint it -- it raised questions about whether there was undue risk, which led to us thinking about, you know, when the staff makes a finding of adequate protection, there are two criteria that have to be met.

One is the presumption that, you know, if you meet the Commission's rules and regulations, there is adequate protection. But the second piece of it is no undue risk. And typically we don't focus as much on that, because the thought is is that if you demonstrate you meet the Commission's rules and regulations, you have demonstrated adequate protection.

But notwithstanding that, we always have to keep in mind that we have to look at the risk aspect. And so from the standpoint of how to give credit for overpressure, we believe that we should take a risk-informed approach to determining whether or not credit for overpressure is acceptable or not from a regulatory standpoint, because this will also, you know, it'll meet that same type of criteria, namely that you've met the Commission's rules and regulations and you've demonstrated no undue risk.

Now, how do you do that? Well, our

proposal is is that we believe that if you can demonstrate you meet the five key principles of Reg. Guide 1.174, for risk-informed license amendments, which is what basically, for example, a power uprate is, that that would be an appropriate way to go forward.

Just a refresher, the five key principles from 1.174. As I just said, one is you -- obviously, you continue to meet the Commission's rules and regulations. Whatever the proposal is it needs to be consistent with the Commission's defense-in-depth philosophy.

MEMBER POWERS: What do you see that philosophy being?

MR. SHERON: I'm sorry?

MEMBER POWERS: What do you see the Commission's -- the current Commission's defense-in-depth philosophy to be?

MR. SHERON: Well, I mean, I would describe it as that, you know, there needs to be, for example, possibly multiple barriers, or there has to be sufficient margins available. I have always sort of personally interpreted it as that, you know, I'm not putting all my eggs in one basket from the standpoint of reliance on any one component or system

that keeps me from disaster.

MEMBER POWERS: In the recent years, your staff has come forward to us and said, gee, they interpreted it more in terms of a balance between accident prevention and accident mitigation.

MR. SHERON: That's also part of defense-in-depth.

MEMBER POWERS: Trying to get away from the concept of barriers, and especially geometric barriers or physical barriers. There does look to me to be different spins on what you called defense-in-depth.

MR. SHERON: No. I think it's a combination, actually. Obviously, you don't want to put all of your eggs in the prevention basket, because if that fails you don't want to have a disaster. So, yes, there should be some -- some emphasis on mitigation. All right?

I mean, the whole defense-in-depth was predicated on first coming up with a very highly reliable design. Okay? High quality. In other words, the intent was prevent failures from occurring in the first place.

The second level of defense-in-depth was recognize that even though you do everything you can

to prevent the failures, they can still occur. And, therefore, you prevent -- you design in ways to mitigate those, and that's why we have protection systems.

Okay. And the third level is to protect against unforeseen events by putting in additional margin, which is why we have large containments, which is why we have -- you know, we add buffering agents, for example, to containment sprays and so forth.

MEMBER POWERS: Do we put them in the sprays anymore?

MR. SHERON: What?

MEMBER POWERS: Do we put them in the sprays anymore?

MR. SHERON: Sodium hydroxide, yes.

MEMBER POWERS: Well, I thought we took sodium hydroxide out.

MR. SHERON: No, no, we don't. Not yet. We're -- we'll probably be down to you on that one soon, but --

MEMBER POWERS: Probably ought to. It's a waste of time.

MR. SHERON: And then, as I said, the other part of defense-in-depth, in my mind, is also making sure that you're not relying on any one system

or component between you and, you know, a very serious accident. You want to make sure you have margin in there.

Again, maintain sufficient safety margins. Again, you shouldn't be designing things right up to the ragged edge. You need to show that any increases in core damage frequency or risk or offsite release, for example, should be small and consistent with the Commission's safety goal policy statement -- namely, that whatever you are proposing to change you need to demonstrate from a risk standpoint that it's acceptable.

And then, the impact of your proposed change should be monitored using performance measurement strategies.

MEMBER SIEBER: Yes. Before you leave the five principles, it seems to me that what impresses me the most is the concept of defense-in-depth and the barriers. And I personally think that one barrier should not be dependent on the integrity of another barrier.

For example, the barriers are the fuel clad RCS piping and then the containment. In order to protect the fuel clad from oxidation, or what have you, you have mitigating systems which go all the way

down to recirculation, where you recirculate containment sump water into the plant.

In order -- if you take credit for containment overpressure for the pump to have sufficient NPSH, that means the containment integrity must be maintained. If you lose that third barrier somehow or other, then you can't recirculate water to the core. And if you can't recirculate water to the core, the conditions are set up so that you lose another barrier. That makes two -- one barrier dependent on the integrity of another one.

MR. SHERON: Right.

MEMBER SIEBER: And to me, that -- that sort of rubs against the concept of maintaining barriers that are independent from one another.

MR. SHERON: Yes. But -- and I'm going to address that in a couple of slides here.

MEMBER SIEBER: Okay.

MEMBER POWERS: But it also seems to run contrary to the concept of margin as well, because you're designing a pump right up to the ragged edge here, and that seems to run contrary there to the second one on sufficient safety margins.

MEMBER SIEBER: Well, I don't -- I don't think the initial designs were such that you lacked

margin, and the designer didn't contemplate having to have -- need overpressure for NPS -- adequate NPSH at the -- at the day he put his pencil to paper.

The circumstances that have evolved since then, for example --

MEMBER POWERS: Yes. Usually, it's a power uprate.

MEMBER SIEBER: -- power uprates, sump clogging, and what have you, that says the head loss through various levels of debris require me to get more NPSH from someplace. And the only place I can get it from is to take credit for containment pressure.

So that sort of happened by happenstance. The question is, then, you know, if you're dealing with a problem like sump debris, and you've done everything you can to mitigate that, and you can't fix the pump so that it will pump better or more with the NPSH that's available to it, what do you allow?

If somebody wants a power uprate, you know, do you say, okay, I'll just give you more credit, and, therefore, you have a greater capability to keep the core cool under accident conditions.

MR. SHERON: Yes, I mean, I do want to -- you know, I mean, we have granted overpressure credit

to 25 plants.

MEMBER SIEBER: Right. For one reason or another.

MR. SHERON: Right. And what I'm trying to do here is to say, you know, I think we need to come up with a more consistent basis upon which we will grant that overpressure protection, at least in the future. Okay? And that's really the whole premise of what I'm driving at here.

So if you -- and I think I'll try to address some of the issues that you've raised, because we've raised those ourselves.

MEMBER RANSOM: One that's kind of disturbing is when there are practical alternatives or -- and whether or not these have been considered, such as in extended power uprates, to the granting of credit.

MR. SHERON: Yes. And, really, the whole question comes up to is a practical alternative. In other words, this gets into the question of, you know, well, what's practical and what's not? And that's like, you know, beauty is in the eyes of the beholder.

What's practical for you or me may be not practical in the eyes of a licensee or something, because of the cost and the like. It may not be

practical in the eyes of people that live near the plant. Okay?

So, I mean, I don't like to get into that debate. That's --

MEMBER RANSOM: Because like power uprate, it's an option that is a benefit to the licensee. But it may not be necessary.

MR. SHERON: Right. But I'm -- again, I'm trying to divorce myself from that question of, how much money should I spend, or something, to make the plant safer, you might say. All right? As opposed to, "I need to define when the plant is safe enough to meet regulatory requirements." Okay? And if that requires the licensee, for example, to make an alternative -- to put -- you know, for example, put in different pumps or something, then so be it.

And if they don't want to spend the money because it doesn't make sense to them, then they don't get the power uprate. But I -- I don't like getting into this debate on what's practical and what's not, because it's -- it's something that's just -- you know, you -- everyone has a different opinion, and you really can't come up with any definitive criteria.

What we're proposing is we're going to revise 1.82. We've already started to do that. Okay?

To clearly describe the elements of a risk-informed approach for crediting containment accident pressure. And these are some ideas that I've put down.

I mean, obviously, we could debate these, but for defense-in-depth licensee should probably show, under realistic conditions, that credit is either not needed or maybe only needed for a relatively short time. The more I --

MEMBER POWERS: I guess that addresses defense-in-depth.

MR. SHERON: I'm sorry?

MEMBER POWERS: I guess I don't quite understand why that addresses defense-in-depth.

MR. SHERON: Well, because if this whole thing is an artificiality of a very conservative analysis method, which I think it is, quite honestly, my understanding is a lot of this is --

MEMBER POWERS: Very often it is.

MR. SHERON: Yes, and the like. And as a matter of fact, you'll see we intend to engage the BWR owner's group fairly soon about reducing some of what I would call maybe unnecessary conservatisms in their analysis models.

MEMBER POWERS: It seems to me that -- that showing that it's not necessary based on

realistic calculations is kind of a going-in to this list that you've got here.

MR. SHERON: I'm sorry? Is --

MEMBER POWERS: Is kind of a going-in criterion for this list. What you've said up there, "Licensees show that realistic credit is either not needed or only needed for a relatively short time," a few minutes -- 11 minutes sticks in my mind as one that -- where an applicant came in, made a really nice argument that said, "It is only because of the artificiality of the calculation that I need it." And, in fact, even in that artificial realm, I only need it for 11 minutes.

MR. SHERON: Right.

MEMBER POWERS: And, you know, it's very persuasive. This was several years ago that this was done. It was a nice piece of work that he came in, made that argument.

It seems to me that argument gets you into, okay, we're going to consider this. I don't think it addresses the issue of defense-in-depth, though.

MR. SHERON: Well, I mean, this -- you know --

MEMBER APOSTOLAKIS: There is a related

thing that confuses me. The risk-informed approach of Regulatory Guide 1.174 applies to changes in the licensing basis, which in this case I would guess is the power uprate. But I think that Brian is trying to apply this to an individual element of the analysis.

I mean, when you say licensee must submit PRA results demonstrating they meet the numerical risk acceptance guidelines, what does that mean now in terms of this particular containment overpressure issue? I mean, are you -- is the licensee going to demonstrate that you meet the risk guidelines for the power uprate?

MR. SHERON: Yes.

MEMBER APOSTOLAKIS: The whole thing, not just this particular --

MEMBER DENNING: The pressure credit, or is it affect associated with just the pressure --

MEMBER APOSTOLAKIS: See, that's the confusing thing. Are you applying the risk-informed approach to the pressure credit or to the power uprate?

MR. SHERON: In this case, it's just the pressure credit.

MEMBER APOSTOLAKIS: And that's a very novel application.

MEMBER DENNING: Well, I mean, the risk -- but recognize it's one thing to say that it's a small thing for -- for the power uprate. But then, when you parse it down into little pieces of it like, well, here's the pressure credit piece of it, then you would think maybe I ought to be more restrictive in my 1.174.

I mean, it's different from the normal application, and I think that the -- you know, so the answer is different as to whether you apply it to the total power uprate with all of the --

MEMBER APOSTOLAKIS: That's why I am confused.

MEMBER DENNING: -- versus some little piece of it, which is --

MEMBER APOSTOLAKIS: So I don't know what Brian is trying to do.

MR. SHERON: Well, in reality, though, I mean, if you think about it, if -- you know, if you're trying to argue that the risk increase, okay, because of overpressure, all right, in reality if they don't need the overpressure, and you do a realistic risk assessment, a realistic analysis would say, "I don't need the overpressure condition. My pumps will not cavitate under these conditions." You know,

essentially I haven't changed the risk.

MEMBER DENNING: Actually, you know -- I'm sorry. Go ahead, George.

MEMBER APOSTOLAKIS: In the small risk increase, do you envision the licensee doing an analysis with the credit and without, and comparing the risks? Is that really what we're talking about? What is the delta CDF in this case? With and without, or is it a power uprate, the big picture?

MR. SHERON: It basically is, what is -- what is the risk from a loss of coolant accident, okay, under these uprated conditions?

MEMBER APOSTOLAKIS: Right.

MR. SHERON: Okay? Now, if the risk assessment, which is a realistic analysis, okay, says that, you know, under power uprate conditions, okay, do I get -- what is the likelihood I will get pump cavitation, and then pump failure, let's say?

All right. Well, then, you bring into account, for example, what is the likelihood that I lose containment overpressure? An operator opens a valve or something, okay, and I don't get the overpressure. And so the containment pressure disappears. Does the pump cavitate? Okay.

From a risk standpoint, that would be the

question is, okay, now, if the probability of an operator, for example, opening and losing containment is some number, and it produces a core melt, then I have to take that into consideration and say, "What did that increase because I -- I required that overpressure?"

Where if, in reality, the plant says, "I don't care if the operator fails open" -- I mean, yes, it's going to have an offsite release or something, but if I lose containment overpressure, for whatever reason, in a realistic risk assessment I can demonstrate that: a) the pumps are going to continue to operate, they're not going to cavitate, and I've -- you know, the answer is I haven't changed the risk.

MEMBER APOSTOLAKIS: So, again, when I go to delta CDF, I can calculate delta CDF taking credit, right, and then by not taking credit. And you are saying you have to somehow consider the probability that the containment integrity will be maintained.

MR. SHERON: No. It's not a matter of taking credit/not taking credit. It's saying is that when I run a risk assessment, I'm -- what I'm trying to do is understand is -- what is the risk of relying on overpressure? All right. In a realistic scenario, okay, risk assessment, so they -- you would say, "What

is the likelihood that if I lose containment pressure, the overpressure that I'm relying on here in this conservative analysis, if I lost that in a risk -- from a risk assessment standpoint, what does that do to core melt?" Okay?

And the assumption would be is that the licensee would come in and say, "I haven't significantly increased my core melt frequency if, for whatever reason, I lost containment overpressure." And the reason would be is because in real life, under a realistic scenario, the operators would throttle back the pumps fairly quick. They wouldn't need that high containment pressure, the overpressure. And even if they lost containment overpressure, you would not predict that the core would go to melt.

Therefore, you would argue and say that, therefore, the risk change is either negligible or nothing.

MEMBER APOSTOLAKIS: So you are applying, then, 1.174 to that particular issue.

MR. SHERON: Yes.

MEMBER APOSTOLAKIS: Not to the overall power uprate.

MR. SHERON: No. Unless we see a need to do that. Okay? If you remember, 2000-102, which is

the RIS on this issue, said that if we believe that the deterministic regulations alone are not sufficient, then we can ask the licensee to submit risk information.

Now, we don't have anything right now that says we believe that the overall risk from a power uprate, okay, is not understood enough that we need a complete risk-informed submittal. But we have that option.

VICE CHAIRMAN SHACK: Let me look at it another way, Brian. Suppose I come in and I'm going to do an EPU, and I need the credit in order to meet my deterministic design basis calculation.

MR. SHERON: Right.

VICE CHAIRMAN SHACK: As I understand this, what you're going to say is in those cases he must also submit a risk-informed calculation that -- an EPU in that case must be a risk-informed -- EPUs don't have to be risk-informed if the guy doesn't need credit.

MR. SHERON: Right.

VICE CHAIRMAN SHACK: If he needs credit to meet his design basis, then you're going to also ask him to do a risk-informed application. Is that --

MR. SHERON: That's correct.

MEMBER DENNING: See, the problem that I have is it gets into elements of PRA that aren't handled very well. I would think that the typical engineer that goes about doing your analysis says, okay, now what's the probability I don't have the containment pressure? You know, what's loss of isolation failure?

Then, he does a realistic analysis, and he says, okay, it didn't matter. Okay? And so he has no change in risk. But the real problem as I see it is a phenomenological uncertainty. That is, if you don't have the pressure, there is some uncertainty as to whether the pumps will go into cavitation, and, if they go into cavitation, whether they'll survive that cavitation.

So I think that's where the real element of change in risk really is is this phenomenological uncertainty. At least that's what --

MR. SHERON: But you have to marry that with the other pieces of it. For example, if you lose containment overpressure, which mostly likely will occur because either something fails to open or an operator opens something --

MEMBER DENNING: Right, right. And the best estimate says --

MR. SHERON: From a deterministic standpoint, if you want to assume that as a single failure, then from a deterministic standpoint you would assume you would have both trains available, which means you wouldn't need overpressure.

If -- and also, you would also say that in a realistic scenario, okay, which we don't give credit for now, okay, operators typically shortly after the accident will throttle back the pumps.

MEMBER DENNING: In your little PRA analysis you're going to take credit for that.

MR. SHERON: Well, yes, as opposed to when a conservative deterministic analysis, licensees pile on conservatism. For example, they sit there and they say, "I'm going to let these pumps run out completely." Okay? In other words, I'll assume there's no throttling, even though in reality operators would do that fairly quickly. Okay?

I'm going to let these pumps run out, all right, and the like. And I'm going to -- and then, I'm going to look and I'm going to say, "What kind of net positive suction head do I need under those conditions?" And, yes, I need overpressure. And that's --

MEMBER APOSTOLAKIS: Has anybody done

this?

MR. SHERON: When you say "done this," do you mean --

MEMBER APOSTOLAKIS: This kind of analysis with the uncertainty.

MR. SHERON: I've got to -- I don't know whether Marty or, you know --

MEMBER DENNING: Let me complete the point I was --

MR. RUBIN: Do you mean a detailed risk calculation? Do you mean thermal hydraulics? Well, we in-house have done the scoping calculation that we presented at the last meeting. For a plant-specific detailed risk calculation, DOI has been asked, and they have voluntarily agreed to do a detailed calculation, look at all of the failure modes Brian has indicated of loss of containment integrity. And so we're going to get a plant-specific impact calc.

MEMBER APOSTOLAKIS: And they will do a rigorous uncertainty analysis.

MEMBER DENNING: That was the point that -- well, I was saying -- now, Brian has a slightly different version, but I was seeing the heart of the issue as being if the pumps go into cavitation, you know, they -- will they deliver the water, and this

kind of stuff.

And that type of assessment -- so that there is some probability that the best estimate is not -- I mean, our best engineering judgment, we believe they are going to survive. But there is some probability they won't survive due to this phenomenological uncertainty, and that's what people don't do a good job of analyzing in PRA.

MEMBER APOSTOLAKIS: And that's why I'm asking whether there will --

MR. RUBIN: Yes. And would they consider that and --

MEMBER APOSTOLAKIS: Would they do that?

MR. RUBIN: -- and my feeling is, you know, I doubt they really would.

MEMBER APOSTOLAKIS: This gentleman wants to --

MR. LOBEL: This is Richard Lobel from NRR. Let me just comment not on the risk part but on the realistic analysis. Licensees have submitted sensitivity studies and studies that have shown that with just reducing one or several of the conservative assumptions that go into the analysis they can show that containment pressure isn't necessary.

For example, there is always an assumption

of the worst single failure. If you don't have that worst single failure, that alone may mean that you don't need credit for containment pressure.

The other thing that I talked to the committee about before that I think it's important to keep in mind is that not only are you saying that these assumptions are conservative for these various things, but they're all acting simultaneously. You have the worst single failure at the worst time that all the phenomena are in the most adverse direction, that everything is at its -- everything that's tech spec'd is at its tech spec limit. All those kinds of things are considered.

For some plants, they may operate close to a tech spec limit. For other plants, they may be very far away, say, from a service water temperature limit. Some plants never get close, within 10 degrees of their service water temperature. But we assume -- or they assume that all these things are occurring, and that they're occurring simultaneously.

So there have been analyses that have been done, not in all cases complete analyses and not in all cases Appendix B type analyses, but with methods that the licensees are very capable of using that show that it doesn't take a whole lot for the BWRs to get

to the point where they don't need this credit.

So you don't have to go to a completely realistic calculation. You can go to a calculation where you've just relaxed some conservatisms, or you -- I think what you could show also is that if you just treated the conservatisms in a different way, say a statistical manner instead of just adding each bounding conservatism onto the analysis, that you probably wouldn't need this credit, too.

So in a way, we put ourselves in this -- and the industry has put themselves into this box.

VICE CHAIRMAN SHACK: But you've built that route into the Reg. Guide now. He's got to -- if he does the realistic calculation and he computes the uncertainties --

MR. LOBEL: Right.

VICE CHAIRMAN SHACK: -- he's got a way out. So, I mean, he can do that one, whether -- even if he included all of the restrictions that we recommended in our letter, he still has that out, because he then no longer needs containment overpressure credit.

MR. LOBEL: That's right. Yes. Nobody has done that yet, but it seems like a viable option.

MEMBER APOSTOLAKIS: This is very

confusing, to me at least. What you just described is not a risk-informed approach.

MR. LOBEL: Right.

MR. SHERON: I said that.

MEMBER APOSTOLAKIS: Well, how does that --

MR. SHERON: That's a different approach. That's an approach that's in the current Rev 4 before -- before they get through modifying it, that current Rev 4 already has that approach.

MR. LOBEL: No. But the difference is that what I'm describing is what's done for design basis accidents.

MEMBER APOSTOLAKIS: Right.

MR. LOBEL: And which is typically the LOCA. The LOCA is the limiting case for this. So what we're saying, I think consistently with what was written in your letters, is we're not only going to look at the design basis accident, we're going to go beyond that and look at every possible mechanism that could affect this issue.

VICE CHAIRMAN SHACK: So you're going to take that route of the revised Reg. Guide.

MR. LOBEL: No, it'll stay in there. But we'll add more guidance on considering the overall

picture, the broader perspective. So we're not just looking at LOCA, we're looking at other scenarios.

MEMBER APOSTOLAKIS: Oh, let's come back to what Mr. Rubin said. You've asked Vermont Yankee to do an analysis. That's not the kind of analysis you asked them to do.

MR. RUBIN: They've already done that.

MEMBER APOSTOLAKIS: They've already done that. So they're going to do a risk assessment.

MR. RUBIN: They're going to do a risk assessment. The risk assessment will be based on the typical success criteria approach used in PRAs. If the pump needs elevated pressure -- NPSH -- you will develop -- they will develop the action sequences that can lead to a loss of the required overpressure that will lead to pump failure.

That can include human actions to vent, it can include failures of the line, it can include failures of penetrations, anything that can reduce that overpressure that's needed for pump success will quantified. The delta CDF and delta LERF will be calculated and compared to the acceptance criteria in 1.174.

MEMBER APOSTOLAKIS: It seems to me, then, that --

MEMBER POWERS: Let me ask this question. Suppose you did that. Suppose you came in and delta CDF is zero. Absolutely zero. It seems to me you're still running up in 1.174 against the consistency with defense-in-depth philosophy, and all the calculations in the world aren't going to get you out of that conundrum. That is, the defense consistently -- consistent with the defense-in-depth philosophy, trumped the risk analysis.

MR. RUBIN: No, it doesn't. Even though --

MEMBER POWERS: Well, would the risk analysis trump be consistent with defense-in-depth philosophy?

MR. RUBIN: Even though us risk analysts like to think we know everything and can do all of the evaluations needed, that clearly is not the case. We do the risk contribution part. The traditional system analysts will make the call on the defense-in-depth and the loss of margins.

We're often involved in discussions with them on it, but I will defer to Mr. Lobel for the defense-in-depth issue.

(Laughter.)

MR. SHERON: I'm sorry. Let me say Rich

here a second, and point out that one of the premises of a risk-informed approach is there is five elements here. Okay? Obviously, one or two of them are kind of deterministic. I mean, you know, obviously, meet the regulations and you can come up with performance monitoring.

But when you look at things like defense-in-depth, safety margin, small increases in risk, etcetera, there is a judgment that goes into that. And you take all three of those and you have to kind of weigh them and balance them. Okay? And the way I would describe it is that if you -- if your risk assessment is small, okay, if you look at safety margins, and you have a lot of safety margins and stuff, then maybe you don't have to push as hard and say, "I really need a lot of defense-in-depth, because I've got this other stuff here."

MEMBER APOSTOLAKIS: So you're talking about the integrated decisionmaking process.

MR. SHERON: Exactly. It's an integrated decisionmaking process, and we did that -- you know, I don't like to bring up Davis-Besse. But when we were debating that issue with -- you know, prior to, you know, whether they shut down on December 31st or not, okay, it was that integrated type of approach,

and we looked at all of the pieces of the puzzle.

MEMBER POWERS: Are you telling me that it doesn't work?

MR. SHERON: What?

MEMBER POWERS: Are you telling me that the integrated decision process doesn't work?

MR. SHERON: It did work. Okay? It did work. What they found -- I don't want to digress on this, but what they found at Davis-Besse when they took a look on February 16th, whatever, when they shut down, was totally consistent with the staff's assessment. The only thing that was different was the fact that the licensee had left a whole pile of boron on the head and basically didn't tell the staff about it.

MEMBER APOSTOLAKIS: There is one thing, though, that --

MR. SHERON: All of the cracking that was found in that penetration, which is what we were worried about at the time, was consistent with the staff's assessment of why it was okay. There was nothing new, nothing different, and I tell people today that if we had the same information in front of us we would make the same decision.

MEMBER POWERS: I mean, what the issue is

is I think this is what Dr. Denning is worrying about, is that there are things that are beyond the current knowledge base that aren't taken into account in calculations, aren't taken account in risk assessments, to be really sure that this meets the other criteria. And that's not inconsistent with what you're saying under Davis-Besse -- is that --

MR. SHERON: It's not inconsistent with what -- what Mark said. You know, he's not --

MEMBER POWERS: I'm worried about --

MR. SHERON: No. We look at the risk, we look at defense-in-depth, we look at the margins that are in the deterministic calculation, and we put them together and we make a judgment and say, "Is that sufficient to allow this plant, for example, to take this" --

MEMBER APOSTOLAKIS: But in light of the uncertainties we have here, if you have point estimate risk values, I don't know how valuable they will be. I mean, you know, what Dr. Denning said earlier, I mean, made a very clear case that there are large uncertainties there, you know, whether the pumps cavitate or not, and so on.

And I think Mr. Rubin said that he is not sure that the licensee will actually do an uncertainty

analysis.

Now, 1.174 is very clear about it. It requires an uncertainty analysis. If we don't do it here, we might as well revise the guide and say, "Don't do it."

VICE CHAIRMAN SHACK: No, no. But he will do an uncertainty. He's going to -- his success criteria will be conservative enough that he will bound those kinds of uncertainties.

MEMBER APOSTOLAKIS: But it's not an uncertainty analysis. We are --

MR. RUBIN: If I could --

MEMBER APOSTOLAKIS: It is bounded. This is different. We're not bound. I mean, either we do it or we don't.

MR. RUBIN: I would say -- but what I said before is appropriate consideration of uncertainty, and that I would agree with the comment that if we choose a success criteria with enough conservatism to have high confidence that that will get them success, then we're treating uncertainty appropriate in that narrow area.

Now, there are other areas of uncertainty that do need to be treated.

MEMBER APOSTOLAKIS: Now, you mentioned

operator actions, right? That there may be a possibility that you will have operators doing this during the sequence.

MR. RUBIN: There could be a number of operator actions in the sequence, including inadvertent venting or inappropriate venting.

MEMBER APOSTOLAKIS: So if they come to you and say, "We use the EPRI calculator," you will say, "Yes, that's fine." And it seems to me that's a mistake, because that's an area where there are large uncertainties. It's not just the pumps.

MR. RUBIN: And we may ask --

MEMBER APOSTOLAKIS: It's about accident conditions, and so on and so on. I mean --

MR. RUBIN: Those are uncertainties you have to address.

MEMBER APOSTOLAKIS: There are large uncertainties. I mean, you cannot escape -- I mean, some things you can -- you may be able to handle conservatively, but others you may not be.

MR. RUBIN: And we very much agree with you in the area of the HRA analysis, and, if necessary, we'll ask for sensitivity studies and look at the possible contributions.

MEMBER APOSTOLAKIS: Now, we don't get to

review these things, do we? This is -- Mr. Chairman, do we get to review cases like that? Or is it the specific licensee action?

VICE CHAIRMAN SHACK: I can't imagine you wanting to very often.

MEMBER APOSTOLAKIS: Say again?

VICE CHAIRMAN SHACK: I can't imagine you wanting to.

MEMBER POWERS: No. The staff reviews licensee actions.

MEMBER APOSTOLAKIS: So my point is we'll never get to see this.

MR. LOBEL: This is Richard Lobel. This is going to be done for Vermont Yankee, and you're going to review the Vermont Yankee power uprate.

MEMBER POWERS: Let me ask a question again on this. In doing the PRA where you set your success criteria to be bounding enough to accommodate your phenomenological uncertainties, how do you do that? How do you know?

It seems to me I can imagine you putting in a very restrictive success criteria and making a plausibility argument to me that that was big enough, in hopes that by just wearing me down that I'd buy -- I would buy into it.

But if you're uncertain about the phenomenology, how in the world do you go about --

MEMBER KRESS: Bounding it.

MEMBER POWERS: -- defining the success criteria?

MEMBER KRESS: Good question.

MEMBER POWERS: I mean, maybe it can be done in specific instances, but I can't imagine writing a prescription very effectively, I don't think.

MR. RUBIN: This is Mark Rubin again. We will be very interested in looking at what we get from the licensee. You're raising a number of very important questions here, and we had a lot of takeaways from this meeting, and we appreciate it.

We'll be looking at the case they make for the success criteria. I mean, pumps have head curves, and they have -- there are vendor tests, and there are performance tests, surveillance tests they do on these pumps. They're not under typical accident conditions. We have to be very aware of that.

But we'll be looking at what case the licensee makes. We're be referring it to our great system experts whether it is a reasonable success criteria. And PRAs are based on -- as realistic as

you can reasonably achieve, are realistically conservative in the area of success criteria based on thermal hydraulic analysis. We -- you know, we do the best we can, and we probe so we have high confidence in the decisions that are made.

MEMBER POWERS: George, there is nothing that prevents you from reviewing this stuff. I think that was your question.

MEMBER KRESS: I have a more mundane question about the use of 1.174. That is, it generally calls for a look at the change in LERF. Now, these scenarios we're talking about with the net positive suction head is not going to affect LERF. It's going to affect late containment failure.

And it seems to me like that should be an important element, and rather than stick strictly to the 1.174 guidelines, I would add a requirement that looks at late containment failure and show that the increment -- incremental increase in that is small also.

MEMBER DENNING: Can I make one more -- I realize we have to move on here. But as I look at that viewgraph, although we've commented on the PRA elements of it, I think that the one thing that really fails there is the defense-in-depth. I think that

argument they've got there I don't think is adequate.

I think there are adequate arguments you can make, but I don't think that one is -- you know, this going to realistic conditions. I don't think that says we -- we still have defense-in-depth.

MR. SHERON: Well, I mean, I think there is a conservativeness in the calculations as well as there is other conservatisms -- for example, as I said, you know, if this licensee or a licensee came in and just said, "We're going to take credit for operator action in 10 minutes," which we've given in the past to licensees for other things -- if you remember, we're still giving, I think, B&W plants credit for operator action in three minutes to turn off their pumps in a LOCA.

If we give them credit to throttle the pumps back, okay, we probably might not even be sitting here, because they would probably come in and say, "I don't need credit for overpressure." And if the staff accepted that, then we'd say, you know, everything is fine, but --

MEMBER DENNING: Yes. And then, I think the argument is that loss of containment integrity does not tie -- you know, there is sufficient margin there that loss of containment is not as --

MEMBER APOSTOLAKIS: Yes. I think the integrated process, though, I mean, takes care of that. I mean, you can't really have rigid boundaries and say, "Each of the principles have to -- has criteria." That's why they all feed into an integrated process.

MR. SHERON: Yes.

MEMBER APOSTOLAKIS: Now, of course, it's a matter of judgment, did you balance it correctly or appropriately.

MR. SHERON: Right.

MEMBER APOSTOLAKIS: But one thing I want to finally understand -- the risk-informed approach will be applied to the EPU, and this thing with the credit will be a sensitivity analysis on that.

MR. SHERON: No, we're not applying risk-informed to the entire EPU.

MEMBER APOSTOLAKIS: I must say I don't quite understand how you can apply it to a particular issue, because this is not a change in the licensing basis, is it?

MR. RUBIN: This will be a change in the -- correct me if I misstate, because I am not an authority on Reg. Guide -- Safety Guide Number 1. But this Reg. Guide change will specifically require them

to do a risk-informed assessment of taking credit for containment overpressure where it's needed for pump success, and the risk contribution of that, looking at the accident sequences that could result in the loss of that containment overpressure. And it will be compared to the Reg. Guide 1.174 safety guidelines.

MEMBER APOSTOLAKIS: Okay. This, then, would be a very interesting case to review when the time comes.

MR. RUBIN: Well, I should add that even though the risk -- even though the power uprates are not technically risk-informed applications, they are all coming in with very complete power uprate risk assessments. It's being done voluntarily. We're reviewing them for adequate protection rather than specifically against the Reg. Guide 1.174 guidelines, but everyone is meeting the 1.174 guidelines without any problems at all.

MEMBER POWERS: I don't think they've made any of them meet the guidelines. None of them. Zero. With respect to the risk. They're all point estimates.

MEMBER APOSTOLAKIS: And what's worse, in some cases, Mark, this thing about voluntary -- voluntarily submitting analysis from the -- my limited

experience, but I have seen some of the actual decisions, it's -- it really gives you a way out. I mean, I've seen cases where the reviewer says, "Okay. They gave me this number. I don't quite believe it. They may have to do something else to make it more rigorous."

But, after all, this is a voluntary submission, so I shouldn't really pursue the issue. So either you use it or you don't. I mean, this voluntariness leaves you --

MR. SHERON: No, no. It's not -- this isn't voluntary, George. Okay? What we said --

MEMBER APOSTOLAKIS: Isn't that what I just said?

MR. SHERON: For a power uprate in which a licensee comes in and says, "I meet your deterministic rules and regulations, and I'm not taking credit for overpressure," all right, then we would not ask the licensee to make a risk-informed submittal.

MEMBER APOSTOLAKIS: Okay. I -- yes.

MR. SHERON: If a licensee comes in and says, "I would like approval for a power uprate, and I want credit for overpressure," what we are saying is that because of the concerns that have been raised

here by the committee, okay, we believe an appropriate approach to deal with that, to determine whether it's acceptable or not, is to move to a risk-informed assessment a la 1.174, which is to look at those five elements, try and understand what each one means, okay, what kind of defense-in-depth they have, what kind of margins they have, how this affects risk, etcetera, and we will make a considered judgment. Okay?

The whole idea, again, is to put this on a more consistent basis, because, like I said, we've been approving these things in the past.

MEMBER POWERS: And you are being explicit here. You're not saying the risk analysis does not trump either safety margins and defense-in-depth ipso facto.

MR. SHERON: No. It's one piece of the equation, and we'll probably be down here with other plants that take this, and discussing it with you and getting your input on whether you think we've got the right balance.

MEMBER POWERS: I mean, it sounds like you're --

MR. SHERON: There's an approach that we're trying to take that makes it -- puts everything

on a consistent basis. Rather than just saying, you know -- the one I worry about is I've got two identical plants..

MEMBER POWERS: I know exactly what you're worried about.

MR. SHERON: They both have the same risk assessment, and they both want a power uprate, and one of them has a small containment hatch, and one has a big containment hatch. Okay? And one of them says, you know, "Gee, is it practical to change the pumps? Yes, because I can get the pumps through the hatch."

The other one says, "No, I've got to cut a big hole in my containment. It's going to cost me gillions of dollars. It's not." Do I say, fine, the plant that can -- that has the big, open hatch, okay, you have to put the pumps in, and the other one doesn't. You have to be safer than that one, for whatever reason, only because of that one. But that's not the way we regulate, okay?

If it's needed for safety, we make them do it whether they have to cut a hole in the containment or not, and that's what I want to get away from is that no practical alternative type of thing.

MEMBER APOSTOLAKIS: We've exhausted, I think, the usefulness of this debate --

MR. SHERON: Yes.

MEMBER APOSTOLAKIS: -- at this level. The next level will be to actually see a modification.

MR. SHERON: Good. I'm glad you said that.

(Laughter.)

The next steps. We're revising, as we told you, the appropriate sections in Reg. Guide 1.82 to clarify the requirements, describe licensee expectations for submitting a risk-informed license amendment, to credit containment accident pressure, if that's what they are proposing.

We would propose to provide the ACRS with this revision to the Reg. Guide. One of the questions I was telling Bill is that I'd like to understand, does the subcommittee, would they like to see this and discuss it with the staff first, or is this just something that the committee can deal with?

That will determine a little bit what schedule we're able to do things on, and the like. For example, if just the committee wanted to see it, I think we could try to get something down here by the week before Thanksgiving, which would -- then, hopefully we could get it on the December agenda.

If the subcommittee wants to see it, then

we'll have to just find out what the best schedule is to do it.

MEMBER APOSTOLAKIS: We have the chairman of the subcommittee here.

MEMBER RANSOM: I don't know. I think the concerns are really at the committee level.

VICE CHAIRMAN SHACK: Yes, we can discuss that this afternoon at the --

MR. SHERON: Yes. I don't need an answer now. I would just -- we would like to know, how would you like to proceed on this?

MEMBER POWERS: But, I mean, the basic strategy is not one that's orthogonal to our letter. It says, you know, that they should be considered much more on a case-by-case basis, and in light of all of this information that you're going to take in.

I mean, I -- it does not sound like it's orthogonal to our letter at all, or our position in the past.

MR. SHERON: But as I said, I want to put it on a more --

MEMBER POWERS: You want it articulated.

MEMBER APOSTOLAKIS: Are you looking at the first bullet there?

MEMBER POWERS: No, no, no. I'm just

saying that -- that this -- it may not require reconsideration of the --

MEMBER APOSTOLAKIS: That's what I'm saying.

MEMBER POWERS: I think he's just trying to -- he's volunteering to put this down on a piece of paper where he gives us some idea, nothing -- no one piece of information trumps the other.

MEMBER KRESS: We had this stuff about practical alternatives in there, you know?

MR. SHERON: Well, I guess I am taking -- the no practical alternative, really, is -- I'm saying is I think that's a very low priority on our part. And we would like to focus it more on the safety and risk elements of 1.174 --

MEMBER POWERS: That's a good point.

MR. SHERON: -- as the decisionmaker.

MEMBER POWERS: I think that's a good point.

MEMBER APOSTOLAKIS: So you're asking us to write a letter that says we were wrong.

MR. SHERON: No. What I'm saying is that the staff is proposing that, based on your concerns that you raised, okay, we understand. And what we're saying is we are proposing a more integral, holistic

approach to dealing with this, and so we're asking you to reconsider our approach and then judge it on its merits, and the like.

MEMBER POWERS: The committee has been pretty consistent in saying credit for NPSH -- for overpressure in NPSH should be safe, available, and rare.

MR. SHERON: Well, I can't argue with the -- it's the rare part I can't -- like I said, if a licensee comes in and they meet all of the criteria that we lay out, then we would approve it. Okay? And that's what I'm really trying to -- I can't tell a licensee, "You can't use it," or the like.

MEMBER POWERS: Oh, I understand.

MR. SHERON: What I have tell them is what are the bounds under which I will find it acceptable, and that's what I'm trying to define here.

MEMBER KRESS: Since we can't fix 1.174, I would suggest you write into the Reg. Guide you're talking about here about the late containment failure.

MR. SHERON: The Reg. Guide does have a consideration of it. It just doesn't have a numerical --

MEMBER KRESS: Well, yes, I think we need one.

MR. SHERON: If I remember correctly, the committee raised that when we were down here on 50.46.

MEMBER KRESS: Yes, we've raised it before.

MR. SHERON: And we said that that would be something that we would revisit when we do revisit --

MEMBER KRESS: When you revisit the 1.174.

MR. SHERON: Yes.

MEMBER KRESS: But, you know, I don't know which is going to come first.

MR. SHERON: So, anyway, and we also -- like I said before, we are going to continue to work with the industry to explore options to develop realistically conservative NPSH calculations, in a sense. A lot of this we think is, you know, kind of the industry brought it on themselves with these very, very conservative analyses.

And as I've told people, I said, you know, the staff has a tendency to review what's put in front of it. Okay? That's really what we have to do. And, you know, if a licensee comes in with something that's horribly conservative --

MEMBER POWERS: You don't come back to him and say, "Try some of these conservatisms."

MR. SHERON: Exactly, yes.

(Laughter.)

It's kind of hard to do that, so we would like to encourage them to rethink this a little bit in light of some of the concerns that have been raised. So that's where we are.

Conclusions. You know, as I said, we believe using a risk-informed approach is consistent with Commission policy. We've proposed to go forward with this approach, and, again, we'll -- if you give us guidance on how you want us to come back to you with this, we're ready to do that.

And with that, I'm finished.

MEMBER RANSOM: One thing that I don't understand is why a lot of these questions couldn't be answered by a non-parametric statistical approach folded into a PRA where you have uncertainties in the different point estimates, rather than just a point PRA-type analysis.

MEMBER APOSTOLAKIS: That's what we've been complaining about. We don't want to see a point estimate.

MEMBER KRESS: Yes, it could be done that way.

MEMBER APOSTOLAKIS: Yes.

MEMBER KRESS: You know, or you could use --

MEMBER APOSTOLAKIS: It will involve a lot of expert judgment, but, you know, so be it.

MEMBER RANSOM: But even the questions of defense-in-depth and safety margin, all of these seem to be just one part. You know, they're folded into that sort of --

MEMBER APOSTOLAKIS: I'm not so sure.

MEMBER RANSOM: -- analysis.

VICE CHAIRMAN SHACK: We have rationalists and structuralists, so --

(Laughter.)

MEMBER APOSTOLAKIS: No, no, no. that's not true.

MEMBER RANSOM: Containment overpressure is just -- it's a fact of life. I mean, in some --

MEMBER POWERS: The problem is it's not a fact of life ipso facto.

MEMBER RANSOM: I mean, not overpressure credit, but overpressure itself is just a feature of the operation of the plant -- the system.

MEMBER POWERS: Not if the containment is open.

MEMBER RANSOM: In some situations you

will have --

MEMBER POWERS: Not if the containment is open. If you leave the containment open, it's not a fact of life.

MEMBER RANSOM: Well, then, you need to deal with the probability of containment failure. I mean --

MEMBER APOSTOLAKIS: And that's what they're going to do, right?

MEMBER RANSOM: -- associated with that.

MEMBER APOSTOLAKIS: That's what their probabilistic analysis will consider.

Are we done?

MEMBER POWERS: Are there any more questions or comments? One of the questions that maybe I'll just toss out here -- it's not really pertinent to this, but it is the Appendix J test on containment leak rates, and what not, and what you're forecasting in that particular area. Brian, do you have any views or comments in that area?

MR. SHERON: No, I haven't really thought about it, but it's something we can consider.

MEMBER POWERS: I mean, it's coming along here. We've been about 10 years since Appendix J, so those things are coming up.

MR. SHERON: Yes.

MEMBER POWERS: And --

MR. SHERON: All right. Well, let us go back and --

MEMBER RANSOM: There was one point in the letter that indicated I guess we wanted to see whether -- a positive means for indication of containment integrity. And that I guess would be part of the --

MR. SHERON: That would be a question we would ask -- hope the licensee would address as part of their risk-informed submittal. And that's part of that -- that last one is the monitoring part, which would be a piece of it, and that is that -- that gets into the question of, if you are coming up with a probability of, for example, loss of containment integrity, what is the basis for that?

You know, and are there things that you can -- are there actions you can take, for example, like improving procedures, improving training, so operators don't, you know, inadvertently do something during an accident?

MEMBER RANSOM: As I recall the discussion, the thought that went into that was more to favor like sub-atmospheric containments or inerted containments, ones where there are positive ways of --

MR. SHERON: But, I mean, the fact is we have approved a number of these -- the credit for overpressure and large drives that don't have --

VICE CHAIRMAN SHACK: Thank you very much, Brian. We'll get back to you on how we want to proceed with the reconsideration of Reg. Guide 1.82.

Our next topic is an internal one -- format and content of the NRC Safety Research Program for the Commission.

Bill? We have a member of the public that would like to comment on this.

MR. SHERMAN: I'm Bill Sherman from the State of Vermont, and I've appeared before the subcommittee and the committee before. I only wanted to say that I have no comment, appreciate the opportunity to comment.

Also, from the State of Vermont's perspective, we appreciate very much the committee's consideration, and the staff's consideration. It does seem to be a hard issue, but from a stakeholder perspective, we are getting, as a stakeholder, what we had hoped for. And we are very appreciative of the consideration and believe that in the end we'll come to the right conclusion.

VICE CHAIRMAN SHACK: Thank you. And

we're off the record at this point.

(Whereupon, at 11:21 a.m., the proceedings in the foregoing matter went off the record.)