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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

AP1000 REACTOR SUBCOMMITTEE MEETING

OPEN SESSION

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THURSDAY

DECEMBER 16, 2010

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ROCKVILLE, MARYLAND

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The Advisory Committee met at the Nuclear Regulatory Commission, Two White Flint North, Room T2B1, 11545 Rockville Pike, at 8:30 a.m., Harold B. Ray, Chairman, presiding.

COMMITTEE MEMBERS:

HAROLD B. RAY, Chairman

J. SAM ARMIJO, Member

SANJOY BANERJEE, Member

DENNIS C. BLEY, Member

MARIO V. BONACA, Member

CHARLES H. BROWN, JR., Member

COMMITTEE MEMBERS: (cont'd)

MICHAEL T. RYAN, Member

WILLIAM J. SHACK, Member

ACRS CONSULTANTS PRESENT:

THOMAS S. KRESS

GRAHAM B. WALLIS

NRC STAFF PRESENT:

FRANK AKSTULEWICZ, NRO/DNRL

WAYNE CHALK, NSIR

JOE DONOGHUE, NRO/DSRA/SRSB

CRAIG ERLANGER, NSIR/DSP

DONALD HABIB, NRO/DNRC/NWEI

MICHELLE HART, NRO/DSER/RSAC

RAVINDRA JOSHI, NRO/DNRL

TANIA MARTINEZ NAVEDO

DENISE McGOVERN, NRO/DNRL

EILEEN McKENNA, NRO/DNRC

TONY NAKANISHI, NRR

ROBERT PRATO, NRO/DCIP

JOHN RYCYNA, NSIR/DSP/ISCPB

TIM SHAW, NSIR/DSP/ISCPB

TANYA SIMMS, NRO

BRET TEGELER, NRO/DE/SEB1

NRC STAFF PRESENT: (cont'd)

LARRY WHEELER, NRO/DSRA/SBP

WEIDONG WANG, Designated Federal Official

ALSO PRESENT:

TED AMUNDSON, Southern Nuclear Company

AMY AUGHTMAN, Southern Nuclear Company

GARY BECKER, Southern Nuclear Company

DWAYNE BROCK, Southern Nuclear Company*

CHUCK BROCKHOFF, Westinghouse

CHRIS CUMMINS, Westinghouse*

ED CUMMINS, Westinghouse

MARK DEMAGLIO, Westinghouse*

MATTHEW EVANS, Westinghouse

JAMES FLOWERS, Southern Nuclear Company

EDDIE GRANT, NuStart

NEIL HAGGERTY, NuStart

BOB HIRMANPOUR, NuStart

BOBBY JONES, Southern Nuclear Company*

DON LINDGREN, Westinghouse

THOMAS RAY, Westinghouse

JASON REDD, Southern Nuclear Company

TOM SIMS, Southern Nuclear Company*

MIKE SNYDERMAN, Westinghouse

WES SPARKMAN, Southern Nuclear Company

ALSO PRESENT: (cont'd)

LEE TUNON-SANJUR, Westinghouse*

RON WESSEL, Westinghouse

*Present via telephone

TABLE OF CONTENTS

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

(8:32 a.m.)

CHAIRMAN RAY: This meeting will now come to order. This is the second day of a meeting of the AP1000 Reactor Subcommittee, a standing committee of the Advisory Committee on Reactor Safeguards.

I am Harold Ray, Chairman of the Subcommittee. ACRS members in attendance are Sanjoy Banerjee, Sam Armijo, Dennis Bley, Bill Shack, Charles Brown. And we expect some other members may join us here shortly. Tom Kress and Graham Wallis, consultants to the ACRS, are also present.

We will continue the review that we began yesterday. There is an agenda for the meeting that I will comment on in a minute available to everybody in the room.

And I will forego some of the rhetoric that I went through yesterday morning as unnecessary. We will have a closed session this -- what I expect to be this afternoon, although you never know. It could be sooner.

We are joined by Member Ryan.

And there is a transcript of the meeting that is being kept and will be made available as stated in the Federal Register Notice. Therefore, we request participants in this meeting use the microphones located throughout the meeting room. When addressing the Subcommittee, participants should first identify themselves and speak with sufficient clarity and volume, so that they may be readily heard.

We will proceed with the meeting after I make comment that we will start as shown on the agenda made available yesterday, and I assume still available in the back. We will begin with the completion of the staff presentation on Chapter 13.

And then, to try and manage the time and the work in an optimal way, we will proceed -- if it is suitable to Vogtle, we will proceed with the Chapter 15 rather than Chapter 8 as shown. And we will do that, likely then we'll have a break and proceed in accordance with the agenda with Chapters 8 and 9. So we would be just moving Chapter 15 forward. Is that all right, Ed, with you guys?

MR. ED CUMMINS: Yes.

CHAIRMAN RAY: Okay. Then, we will have resolution of action items and a discussion of further

interactions with the ACRS in this -- regard to this application. And then, finally, we will have a closed discussion on the subject of aircraft impact. And we will proceed as promptly as we can, but make full use of the time that is available to us here now.

That having been said, Eileen, is there anything you want to say?

MS. McKENNA: No. Again, just -- it's Eileen McKenna. I am sitting in this morning until Jeff Cruz arrives shortly and will replace me, and then I will be back later, of course, for the aircraft impact discussion with Westinghouse.

CHAIRMAN RAY: All right.

MS. McKENNA: We will turn it over to the staff for Chapter 13 now.

CHAIRMAN RAY: Thank you. So we will ask the staff to come forward, and we will basically continue the discussion of Chapter 13 that we had part of yesterday.

(Pause)

MS. McGOVERN: Good morning.

CHAIRMAN RAY: Good morning.

MS. McGOVERN: Again, my name is Denise McGovern. I'm the Chapter 13 project manager for AP1000 COLs. To my right is Wayne Chalk. He will be

briefing you on fitness for duty. This is a first-of-a-kind review. All of the other COL applicants have followed suit, so you probably won't be briefed on this same exact material again.

Then, we will go to cyber security. We've got John Rycyna, who is the lead tech reviewer, and Tim Shaw, who is a support contractor.

Go ahead.

MR. CHALK: Good morning. I'm Wayne Chalk from the Office of Nuclear Security and Incident Response, and I'm the lead technical reviewer for fitness for duty.

Next slide, please.

I would just also like to mention that Paul Harris is our senior program manager.

This morning I would like to discuss the background information, the application standards, the technical review, and, finally, the conclusion that we came to during our review.

Background information. Fitness for duty is governed by 10 CFR Part 26, which is entitled Fitness for Duty Programs. The publication date of the rule is fairly recent. It was March 31st of 2008. The effective date of the rule was April 30, 2008. The purpose of Part 26 is to strengthen licensees' FFD

programs, enhance consistency with the access authorization program, which is found in 10 CFR 73.56, to ensure against worker fatigue, and to ensure workers are fit for duty, trustworthy, and reliable.

Another important feature of Part 26 is that it provides reasonable assurance that individuals are not under the influence of any substance, legal or illegal, or mentally or physically impaired from any cause which in any way may adversely affect their ability to safely and competently perform their duties.

There are two phases at a construction site -- operations and construction. The full program, otherwise known as the operations phase, applies to select personnel prior to the start of construction and runs in parallel with the construction program. Personnel that fall into that select group are fitness for duty and access authorization personnel, management and oversight personnel, security, QA, QC, and ITAAC personnel.

The full program, which is governed by 10 CFR Part 26 A through H, and in O, is implemented upon the establishment of a protected area, upon the completion of a 52.103(g) finding, or before the arrival of fuel assemblies onsite -- a little bit

different than some other security rules that say it applies when fuel comes into the protected area. Part 26 says that it is just onsite whenever it is onsite.

The construction phase begins prior to the beginning of construction. The construction activities are defined as any task for the building and construction of a nuclear powerplant on the location where it is being built. It applies to any individual who works or directs the construction of any safety and security-related SSCs. And they are subject to a program governed by 10 CFR Part 26, Subpart K.

Next, slide, please.

Our application stands. The acceptance criteria for fitness for duty is found in 10 CFR Part 26. For the full operational program, again, it is in Subparts A through H, and in O. For construction it is Subpart K.

Additionally, 10 CFR 52.79(a)(44) calls for a description of the FFD program required by 10 CFR Part 26 and its implementation. The requirements and the areas of review for fitness for duty, as listed in Part 26, are administrative provisions, program elements, granting and maintaining

authorization, management actions and sanctions, collecting specimens for testing, licensee testing facilities, labs certified by the Department of Health and Human Services, recordkeeping and reporting requirements, and inspections violations and penalties.

The reference that I have listed is a guidance document that the licensee -- that, I'm sorry, the applicants have been referencing, and that is NEI 06-06, Revision 5, published in August 2009. And it is entitled Fitness for Duty Program for New Nuclear Powerplant Construction Sites.

Its purpose is to establish program-level consistency in FFD programs for new plant construction. And it is also to further define implementation criteria for new plant construction throughout the nuclear power industry and the implementation of 10 CFR Part 26, Subpart K.

The applicant has stated their construction program is consistent with NEI 06-06, Revision 5.

Next slide, please.

The technical review consisted of the areas covered, which were construction and operations, as I had stated before. The applicant's milestones

consist of program elements, requirement sources, implementation milestones, which are events, and implementation requirements.

There is one license condition which is a post-license activity, and that is that the licensee shall develop a schedule, support planning for, and conduct of NRC inspections of the operational program. The schedule must be available to the NRC staff no later than 12 months after the issuance of the COL.

Next slide, please.

The conclusion of our FFD review was that there are no outstanding items or information. There was one confirmatory item, as I stated before, which is the implementation of the schedule that supports planning for and conduct of NRC inspections of the operational programs. We have found that the FSAR is acceptable and it conforms to regulatory requirements.

That concludes my presentation. Thank you very much for your time.

CHAIRMAN RAY: Thank you. Any questions, fitness for duty?

(No response)

All right. Thank you.

MR. CHALK: Thank you very much.

MS. McKENNA: John?

MR. RYCYNA: Good morning. My name is John Rycyna. I'm the lead reviewer for cyber security plans for new reactors on the NSIR cyber security team. I am accompanied by Tim Shaw, and I am a contractor consultant to the NRC. A lot of experience in industrial process control and cyber security.

Specific topics we thought would be of interest to the Committee are that the Vogtle cyber security plan is based on the template from Reg Guide 5.71, which you reviewed and approved last autumn. It commits to follow the reg guide with minor site-specific modifications that the staff found acceptable. The defensive architecture in the cyber security plan follows the guidance in the reg guide.

Next slide, please.

Other elements of the CSP do follow the reg guide guidance and commit to elements described in the reg guide, including establishing a cyber security team, identifying critical digital assets, application of security controls, which are contained in the reg guide appendices, that include configuration management processes and include an ongoing assessment of security measures for effectiveness.

DR. WALLIS: Do you have some sort of response to things that go wrong like accident

analysis in this process?

MR. RYCYNA: Yes. There is a --

DR. WALLIS: But do you have sort of things that are specified as design basis events or anything like that --

MR. RYCYNA: No, we don't have --

DR. WALLIS: -- could go wrong? Nothing can go wrong with this system?

MR. RYCYNA: No, that's not what I'm saying. We don't have design basis events per se.

DR. WALLIS: So then it would seem that you could have some awareness of how you respond when something happens that --

MR. RYCYNA: There is an incident response process described in the cyber security plan.

DR. WALLIS: And this looks at things that are likely or possible or --

MR. RYCYNA: No. It provides --

DR. WALLIS: -- conceivable or --

MR. RYCYNA: It describes actions that the plant staff would take in the event of a cyber attack.

MR. ERLANGER: Good morning, sir. My name is Craig Erlanger. I'm the branch chief responsible for cyber security. I think fundamental to your question is how we approach the problem for the entire

NRC. The scope of what we looked at was from Part 73, what a malicious actor was capable of. The digital I&C and the safety analysis, that type of stuff, we did not look at at all.

What Mr. Rycyna is referring to up on that side, those are the programmatic elements that we looked at in the scope of our review. There is not -- we don't look at design sequences. We don't look at analyses for individual -- in the licensing it is the commitments they are going to make to address these following things.

DR. WALLIS: I just don't want them to be helpless when something goes wrong.

MR. ERLANGER: Not at all. And what you will see in the document is that there are three families of security controls -- technical, operational, and management. A lot of the -- to use your words -- "to be helpless" are taken care of in the policies, procedures, and procedures that will be developed onsite to address those. And those were not looked at in the scope of this review.

MR. RYCYNA: Next slide, please.

MEMBER BROWN: Can I ask a question before we leave?

MR. RYCYNA: Certainly.

MEMBER BROWN: When I went and looked at -- is there anything in the FSAR for this? I looked for a Section 3.8 on cyber security similar to what this was, and there is no section in the FSAR for Section --

MR. RYCYNA: There is no section in the FSAR for it. There is --

MEMBER BROWN: Well, so you say -- I mean, you've commented in here that you reviewed their program. I was trying to figure out where to go look at the program.

MS. McGOVERN: It was submitted -- Part 11?

MR. JOSHI: This is Ravi Joshi. Whether or not it is in the FSAR, it is still a part of -- I think it is Part 11. And then, because of the security information it goes in a better information section. I believe it's Part 9 or 7? 9, Part 9. If you go to Part 9 of the application, you will see the entire program.

MEMBER BROWN: Okay.

MR. JOSHI: Okay?

MEMBER BROWN: No wonder I couldn't find it.

MEMBER BLEY: Well, 13.6 in the FSAR.

MS. McGOVERN: It's incorporated by reference for an action item 13.6.5, I believe.

MEMBER BROWN: I totally missed that.

MR. JOSHI: But I think you -- if you don't have a copy of the application, let us know.

MEMBER BROWN: No, I've got the application. I just couldn't find it. So I couldn't --

MS. McGOVERN: There is no corresponding --

MEMBER BROWN: -- so I haven't looked at the -- I haven't had a chance to look at what they've done and try to get an idea of what it looked like relative to the 5.71, which we did approve about a year ago. So, I mean, I -- and there was a question raised yesterday, I mean, how far out in terms of the architecture approach do you look? Is it just within the plant?

Or, I mean, we talked about the technical support facility, the TSC yesterday, and it turns out that the way they -- at least the way it was stated they processed data from when they have four plants eventually. All of it goes onto the business network before it goes to the TSC, which is not in -- if you'll look at the way the business network appears,

that is outside the boundaries of all the layers that we talked about, at least from my memory, in RG 5.71.

So I was trying to relate that part of the communications when you have an emergency situation or a casualty situation, yet I have got a network that is a business network with all kinds of stuff on it, and all kinds of access, which seems to fall outside. So I -- that was where my question was going to be, but I was unable to find anything. So --

MR. RYCYNA: The business network would be in one of the lower levels of the defensive architecture.

MEMBER BROWN: By "lower," do you mean not well protected?

MR. RYCYNA: Not as well protected as --

MEMBER BROWN: Now, and that's the concern. We've got all this plant data, you know, coming through that business network, and now into the technical support building.

MR. ERLANGER: And, sir, what I would offer is, again, where the scope of the rulemaking is to protect safety, security, EP functions that will lead to a design basis threat in 73.1, a cyber attack, radiological sabotage. So there is reasons why the architecture was approved that if that can take us to

core damage in a rad sab scenario, it would have been in a different part of the architecture. So it is the scope of the rulemaking and what we looked at from a malicious actor standpoint.

MEMBER BROWN: Okay. So if the malicious actor totally obliterates all your data in the technical support facility --

MEMBER BLEY: Or corrupts it.

MEMBER BROWN: -- or corrupts it all, then that is not of interest?

MR. ERLANGER: It is very much of interest, and the architecture, it allows -- we are not saying it is not protected. There are different -- there is deterministic and non-deterministic devices put in place to ensure data flow. So depending where it falls there is a rationale and a reasoning, depending on where it takes you and the significance. And we did look at the architecture and how they set it up.

MEMBER BROWN: For the business network?

MR. ERLANGER: No, sir. It is, again, not in the scope of -- we are not looking at business networks.

MEMBER BROWN: Where all of this data is coming from.

MR. ERLANGER: To lead us to radiological sabotage.

MEMBER BROWN: Well, I'm not sure -- I guess I don't understand why that couldn't result in a problem if it led to actions or corrupted information that resulted in the wrong type of information being passed on to operators.

MR. ERLANGER: And I'm not saying that it can't. There is a defense in depth architecture. This isn't one layer of defense. There is other -- all of the security controls, when you look at them in the aggregate, give you that level of protection that the staff found was adequate. And that's the premise of what the reg guide is built on.

Tim, is there anything you can add from your --

MR. SHAW: Yes. I mean, I think it's important to note that at this point in time in the review they have committed to follow the dictates of the reg guide, and that says that when it comes to actual implementation, if there is a network, for example, portions of the corporate network, that are going to be involved in any kind of information that is necessary for safety, security, emergency preparedness functions, they are obliged by complying

to the reg guide to protect those portions of the network.

So whether that means that they have got to make a separate isolated subsection within their corporate network, or do whatever is necessary to isolate it to meet the requirements of the reg guide, they are going to have to do that.

So, to address your point, if there is information traversing the corporate network, they are going to have to make some changes where it won't actually meet what the requirements are. So come inspection time, it wouldn't be considered acceptable.

MEMBER RYAN: And that's one of the requirements in the reg guide, is that what you said?

MR. SHAW: Well, the reg guide follows the rule, and the rule says that if you've got computer systems or networks, right, that are required for a safety, security, or emergency preparedness functions, they have to be protected at a high level of assurance.

And, you know, just to say, "Well, we are going to drop that information onto a generic corporate network," let it traverse, not worry about what other bad actors could be on the networks, would not be acceptable and would not actually pass muster

against the reg guide.

So the reg guide actually calls out a requirement for them to secure such networks. And so I don't know what the meeting yesterday was all about. I can say that in the review of their plan the details didn't get down to that level, but the plan basically was acceptable to us, because they made a commitment to meet the statements of the reg guide. And in the reg guide you can't have a network portion that is part of SSEP functionality that is not adequately protected. Period.

CHAIRMAN RAY: Charlie, it sounds to me like this may be something we ought to take note of.

MEMBER BROWN: Yes, I just -- I'm not going to -- we've got the answer we're going to get. It is different than what we looked at. In my memory, when we looked at the reg guide and were approving it, we really focused primarily -- and, Dennis, correct me. I think you were there. Correct me if I'm wrong. But we focused more on the plant layers and the ability to get into the plant systems. We did not really think about the technical support center and the support facility there.

MEMBER BLEY: And the breadth of threats we talked about. It just seems, from what we heard

yesterday, that this is an area where the moving of the tech support center was looked at in some ways but maybe not in this way. And I think you're right, we've got to --

CHAIRMAN RAY: I don't that it has to do with the moving of it so much as my guess is that it would be not a universally agreed-upon requirement, what we just heard Tim state. And, therefore, I guess I'm motivated to say that does reflect the staff position. Is that correct?

MR. ERLANGER: Yes, sir.

CHAIRMAN RAY: Say something.

MR. ERLANGER: Yes, sir, it does.

CHAIRMAN RAY: Thank you. So given that, probably we just want to note that that was stated to be the staff position. I must say -- and I'm not expert in this -- but it -- I'm a little surprised by it, but, anyway, that's fine with me.

MEMBER BLEY: I suspect -- and it would be nice to hear later at some point -- that the tech support center isn't considered -- you know, because it's -- it's considered outside the scope somehow, and maybe that's something we'd want to talk about.

CHAIRMAN RAY: Well, the issue is whether or not corrupted information in the tech support

center is a site safety --

MEMBER BLEY: Yes.

CHAIRMAN RAY: -- affects safety. That's the issue.

MEMBER BROWN: Fundamentally, yes.

CHAIRMAN RAY: And, you know, what we've heard is that it could, and the rule requires that it be protected. That's what we've heard. All right? And that's -- I just think we should take note of that and probably move on in the sense that, as you say, Charlie, we are not going to get any more information.

MEMBER BROWN: Well, we're not going to get any more now. I just -- after our discussion yesterday -- and I think Southern Nuclear maybe would like to say something. I see her up at the microphone, so --

CHAIRMAN RAY: Okay. Amy?

MS. AUGHTMAN: Yes. I just wanted to ask, Mr. Chairman -- this is Amy from Southern -- whether we could either provide some input at this point, or if you'd like to wait and we can discuss it with both our EP and our cyber security --

CHAIRMAN RAY: Yes, I think that would be wise. We have time, either later today or we do have another Subcommittee meeting before the January full

Committee meeting, at which we can take information and process it. So it probably would be best, given the circumstances, if you wanted to just clarify something, I would be glad to do it, but after these guys are done.

MS. AUGHTMAN: Okay.

MEMBER BROWN: Could I make a suggestion, Harold?

CHAIRMAN RAY: Sure.

MEMBER BROWN: It would really be nice, instead of having an off the cuff, if we -- at the next -- we've got some more meetings. Don't we have another meeting in January?

CHAIRMAN RAY: We do, but I'm not sure -- I think Southern would like to finish today if they can.

(Laughter)

MEMBER BROWN: Well, I --

CHAIRMAN RAY: I take that for granted.

MEMBER BROWN: I was just interested to hear a little bit more depth on what the ideas are and what --

CHAIRMAN RAY: Right.

MEMBER BROWN: -- the approach, because there is no -- it's not like the -- you know, the

digital I&C and everything else where you get this nice functional diagram.

CHAIRMAN RAY: They will be motivated to talk to us later today, I'm sure, but whether that will finish it or not I don't know.

MR. RYCYNA: I think it's important to note that there is boundary devices between the levels that control the flow of traffic either in one direction or both directions, and also look at the attributes of the traffic going through.

CHAIRMAN RAY: Yes. Well, you're over my head at this point, but --

MEMBER BROWN: Well, the business network, I mean, what -- you've got stuff coming in from all the plants, and you've got information going out. So you're back and forth. So I understand the boundary discussions.

MR. RYCYNA: Well, there's back and forth communication into the plant and out of the plant at the business network level. However, boundary devices between that and the next higher level prevent the incoming traffic from advancing higher into the --

CHAIRMAN RAY: John, let's -- the issue is whether corrupted information in the tech support center -- forget about the plant -- is a safety issue

and whether there are rules that apply to that. Okay? That's the issue. It's not a question of it could get from there into the plant and cause the plant to do something bad. I mean, I think it's well understood that is not the case.

MEMBER BROWN: At least we hope that's the case.

CHAIRMAN RAY: I take it for granted that that's the case.

MEMBER BROWN: I never take anything from granted --

CHAIRMAN RAY: I do.

MEMBER BROWN: -- at this point.

CHAIRMAN RAY: Sir?

MR. RYCYNA: Corruption or failure of safety components in the digital I&C equipment is within the scope of the review in Chapter 7 and is not within the items considered in the cyber security plan or program.

CHAIRMAN RAY: I don't know that we're communicating.

MEMBER ARMIJO: That's not comforting.

CHAIRMAN RAY: All I was trying to point out was that the information displayed in the tech support center -- I believe is what we're talking

about -- take for granted that you guys protect against things that would come from there and affect the plant or from any other outside source and affect the plant.

The only issue is I think what is the integrity of the data within the -- that is delivered to and used in the tech support center.

MR. RYCYNA: That's a function of the performance of the safety-related components, is it not?

CHAIRMAN RAY: Not to my knowledge, but I may be wrong. I don't think it's got anything to do with anything other than what is the integrity of the data that is delivered to and used by the tech support center. And that's what we were talking about a few minutes ago.

MR. RYCYNA: If the equipment at the tech support center has been designated as important to safety, or one of the SSEP functions, then that equipment and the communication connectivity data equipment under the terms of the reg guide and the rule, and it has to be given adequate assurance as a protection.

So, as I said earlier, you know, a network connection from the plant out to a site like that that

is carrying that kind of information would have to be considered to be, you know, as the reg guide would call it, a Level 4 level of assurance. And that says --

MEMBER BROWN: I'm not worried about plant going in -- plant data coming out. That's backstopped. I understand that relative to your Level 4 and 3, etcetera, etcetera.

MR. RYCYNA: No, I'm not even talking about going back to the plant. I'm saying that if those systems have to communicate, and both of those systems are declared as Level 4 systems, then the communication network that ties them has to be treated as a Level 4 and has to be basically -- it can't just be the general corporate network in that case. It has to have higher levels of assurance.

MEMBER BROWN: Okay. But if the information coming from any place coming in there gets corrupted, if the folks in the technical support center draw some conclusions that may be different from what the actual circumstances are, they pass that on orally, verbally, whatever their support function is.

Now actions get taken which aren't consistent with taking action, with whatever

circumstance or situation is going on in the plant. Now you could start something that you didn't intend to start, if the information is not valid.

CHAIRMAN RAY: Well, Charlie, I'm not sure whether you're disagreeing with the Level 4 or not.

MEMBER BROWN: No, no, I'm not. I'm saying if the information they get via these networks, the business network, is not -- is corrupted, now they draw conclusion that the --

CHAIRMAN RAY: No, I --

MEMBER BROWN: -- this is outside the plant. Now, they talk to people --

CHAIRMAN RAY: No, no. We understand that. We understand that.

MEMBER BROWN: That's all I'm talking about.

CHAIRMAN RAY: Okay. I think he's trying to make a point, then, that we're not hearing.

MR. SHAW: Yes, or maybe a misunderstanding. If the question is source of corruption, that is one point. If the question is that data in transition across a network can be corrupted because a network itself is insecure, that's a different issue. I am addressing the -- they have to provide a protected connection between these sites.

MEMBER BROWN: I'm not -- between the plant and the place that's a protected connection.

MR. SHAW: Now, the corruption that occurs at the site, bad information goes out for control decisions, you know, somebody sees a number that is wrong, and, therefore, decides to press a button or do something, then the question is, how did the corruption get into the data initially? And that is a matter of protections placed on those actual systems themselves.

MEMBER BROWN: In the support center.

MR. SHAW: Yes. Well, in the support center, but also --

MEMBER BROWN: Network or whatever.

MR. SHAW: -- from where the data is coming from, the plant computer or whatever is supplying that information. Again, the reg guide calls out a great number of controls and protections.

MEMBER BROWN: Whatever is back in the plant, draw a barrier.

CHAIRMAN RAY: We're not communicating here.

MR. SHAW: You're concerned that the transition --

MEMBER BROWN: No, I'm not worried about

the data coming from the plant there. It gets corrupted when it gets there via the business network, because that's how it is getting in there.

MR. SHAW: And that's what I'm saying. see, you're saying that as the information transitions across the corporate network it is modified.

MEMBER BROWN: Somehow.

MR. SHAW: Okay. And that is why my earlier point was that if that communication connection between those two, if you've got a CDA at this end and a CDA at that end, just the rule alone says that the networks that are connecting these things have to be adequately protected.

So, you know, the requirement would be that that network connectivity be given a Level 4 level of assurance, which says it is not just a matter of encryption, you've got to have authentication, you may have reliability issues. It may be that they can't just use the corporate network and, in fact, meet the requirements they have complied to by accepting the reg guide.

MEMBER BROWN: That's what it sounded like yesterday. So we can wait for them -- wait for the Southern Nuclear to say something.

CHAIRMAN RAY: Okay. All right. Have we

confused you enough? Are you done? Do you want to say something more?

MS. McGOVERN: Can I ask a clarifying question? Do I need to have the EP people come back? Because I'm not sure that the moving of the TSC --

CHAIRMAN RAY: This has got nothing to do with moving the TSC.

MS. McGOVERN: Okay. I just wanted to make sure I heard -- I heard something said about EP people, so I just wanted to make sure I didn't need to get them back in the room.

CHAIRMAN RAY: It could be on the moon, it could be in the room next to the control room. It doesn't matter. That issue is --

MS. McGOVERN: I just wanted to make sure that you didn't want to talk to the EP people. Okay.

CHAIRMAN RAY: So any further questions for the -- Dennis, are you satisfied?

MEMBER BLEY: Pretty well. You said there were minor exceptions --

CHAIRMAN RAY: Oh, yes.

MEMBER BLEY: -- in applying the reg guide. Are they truly really minor, like clerical things, or something that you really had to evaluate and --

MR. RYCYNA: Some of them were clerical. Some of them required significant evaluation and analysis.

MEMBER BLEY: Do you say anything about them in here, about the ones that required some careful looking? What led you to -- what they were and what led you to accept them as is?

MR. RYCYNA: Yes. There were a number that took an exception to specific guidance in the reg guide. We analyzed those and found that while they didn't do things exactly as the reg guide guidance suggested they be done, that they did accomplish some same goals as was intended by the --

MEMBER BLEY: Through another approach, okay. Thanks.

CHAIRMAN RAY: To get any further depth, I guess we would have to have a closed --

MEMBER BLEY: Yes, and I don't think that's necessary.

CHAIRMAN RAY: All right. Okay. Thank you very much.

All right. Now, as I said earlier, we'll proceed with Chapter 15. However, let me ask, before you guys -- Denise, before your guys leave the room, maybe this would be a good time, if you guys are

ready, Amy, to have your discussion in response to what you have heard, we can do it. If you're not ready, that's fine.

MS. AUGHTMAN: Yes, I think we'd like just a few minutes.

CHAIRMAN RAY: All right. Okay, fine. Let's go ahead, then, with -- sorry, I thought maybe you'd get to hear what they had to say with Chapter 15 from Southern Nuclear.

MR. GRANT: Good morning, gentlemen. We appreciate the opportunity again to be in front of you. Certainly, Amy Aughtman with Southern is here, as well as myself, Eddie Grant, with NuStart, and we have Matt Evans somewhere in the audience with Westinghouse, who can help support us as the subject matter expert.

Chapter 15 covers seven different sections, basically the accident analysis across the board. We have a couple of open items that we are going to address related to 15.0, the accident analysis in general, and 15.4. We covered the previous information or the rest of the information in previous presentations.

One of the items is related to documentation of plant calorimetric uncertainty

methodology, and the second item is related to Generic Letter 85-05, inadvertent boron dilution events, and some of the emergency procedures activities related to that.

The major open item certainly is the one on documentation of calorimetric uncertainty. We discussed this briefly at the previous meeting, only at that time to identify that it -- or to note that it had been identified. WEC had -- or Westinghouse had identified an additional COL information item. They did that via an RAI response on the DCD review.

And it included a statement that basically indicated that the applicant then would address in our -- would address the documentation of the calorimetric uncertainty methodology, and that we would be using an NRC acceptable method and confirm that the safety analysis, primarily power calorimetric uncertainty, was bounded by the calculated values in the accident analysis done by Westinghouse and shown in Chapter 15.

DR. WALLIS: But they're not going to test this measurement. They are going to rely on testing presumably at some other location, because it would -- you can't test accuracy of something which is more accurate than the other things you have to check it with.

MR. GRANT: That's correct. This is all calculations and based on methodology and --

DR. WALLIS: What we can do is check that it's installed properly.

MR. GRANT: Yes.

MEMBER BANERJEE: Where is it installed?

MR. GRANT: Oh, that I will have to ask my --

MEMBER BANERJEE: Because one of the greatest uncertainties of course in these is that the velocity profile is complex after any bends, which makes these methods very difficult to calibrate, unless you have calibrated them exactly in that --

MR. GRANT: All right. Let me call on Matt Evans with Westinghouse to help with that.

MR. EVANS: This is Matt Evans with Westinghouse. The location of the instruments in the plant are in the turbine building. They're in the main feedwater headers in the turbine building, one per main feed line to each steam generator. As far as the velocity profile concerns, the units are calibrated in hydrodynamically or hydraulically similar geometries in calibration facilities, in accordance with the assumptions made in the SERs.

MEMBER BANERJEE: So are they near bends?

MR. EVANS: In this case, they are located downstream of a header, so it's a T intersection, it's not a bend.

MEMBER BANERJEE: So you are going to calibrate them or have them calibrated in that situation?

MR. EVANS: That's correct.

MEMBER BANERJEE: And how are you going to calibrate them?

MR. EVANS: They are calibrated at a certified laboratory, in this case similar to -- an example would be the Alden Laboratories using a weight tank method.

MEMBER BANERJEE: And within -- you calibrate them over a range of flows and things like this?

MR. EVANS: The details on the calibration process and how the calibration is certified in place are -- can be argued in the SER. So specifically the technology of Cameron has made those arguments in their SER as far as --

MEMBER BANERJEE: One percent uncertainty is quite a low uncertainty on an ultrasonic flow meter.

MR. EVANS: Well, actually, the device

that is being chosen for Vogtle actually has a published accuracy of I believe four-tenths of a percent. The AP1000 standard design is actually only using one percent in our application at this point.

MEMBER BANERJEE: And it is insensitive to velocity profile?

MR. EVANS: Not to say it's insensitive to velocity profile, but, once again, the effects of velocity profile are specific to the technology and are an important part of the technical argument supporting the use of that --

MEMBER BANERJEE: I wonder what the magic here is. I would like to see this report. Has NRC -- I know that they were doing some CFD analysis and things of these flow meters, and they had very, very mixed opinions of such --

MR. GRANT: If I might jump in here, one of the reasons that we have chosen the Caldon CheckPlus Leading Edge flow meter and are going to use it is that it has been reviewed by the NRC quite extensively, and they have -- he mentioned the SER on that particular instrument. Not only that, but they have recently provided a supplemental SER on it to review some additional items that they had identified on that. So it has been thoroughly reviewed by the

staff.

DR. WALLIS: ACRS reviewed it perhaps before your time.

MEMBER BANERJEE: With Caldon?

DR. WALLIS: Yes, I think so.

MR. GRANT: Yes, it's been used in a number of power uprate amendments, and I would be surprised if you guys hadn't seen at least some of those.

MR. DONOGHUE: Yes, this is Joe Donoghue of the staff. The same instrument by the same manufacturer has been the basis for measurement uncertainty uprates that have been approved for I think about a decade or so.

MEMBER BANERJEE: With a one percent uncertainty.

MR. DONOGHUE: Yes.

MR. EVANS: It is actually considerably higher in some applications. Also, there is experience with more than one percent.

MR. DONOGHUE: So the discussion you are going to hear from the staff --

MEMBER BANERJEE: So if the ACRS has approved it, I guess it has been --

DR. WALLIS: So the real question is

whether or not it is installed exactly as it was calibrated. So that's the check, I think, that the instrument is --

MR. GRANT: That's correct. And as you see towards the bottom, we have an ITAAC to confirm that we have done the --

DR. WALLIS: Changes in the piping can make a big difference, so you get it installed exactly right.

MR. GRANT: That's correct.

DR. WALLIS: That's the important thing.

MR. GRANT: Part of the ITAAC is to confirm that we have met the methodology that has been approved.

MEMBER BANERJEE: Okay. If it has been blessed, it has been blessed. I am very suspicious of one percent uncertainty in any measurement, but --

MR. GRANT: Well, and, in fact, that was -- the basis for the entire COL item was to confirm how you are going to make sure that you get this one percent. And the way that we are going to do that is we are going to use something that has already been reviewed and approved as being able to meet that one percent. We are going to use the Caldon meters that do have SERs that the staff has looked at already.

Our option was to go out and do our own methodology. And it might take a while to get that approved, so we opted not to do that.

MEMBER BANERJEE: There is no in situ way of calibrating this, like time of flight or any other way.

MR. GRANT: I am not a calibration expert. Matt, can you --

MR. EVANS: I can only say that the details of in situ calibration and how it is calibrated and compare it from the laboratory calibration to the field installation was included in and has been reviewed in the SER for this specific technology. It is one of the aspects that has been reviewed for that technology.

MR. GRANT: And it certainly is part of our as-built to verify that we are meeting the installation criteria and the methodology.

MEMBER BANERJEE: So, Graham, this was reviewed before my time and --

DR. WALLIS: I think so, yes.

MEMBER BANERJEE: -- and you passed it?

DR. WALLIS: You can always --

(Laughter)

You can always get your Committee to look

at it again.

MR. GRANT: We certainly can get you the references for these SERs on the LEFM, and I'd be glad to provide you those references.

MEMBER BANERJEE: I trust my illustrious predecessors.

(Laughter)

MR. GRANT: Well, actually, the SERs written by the staff did have a number of action items in them to confirm that you are going to do a list of things in order to be able to use these instruments. And we did address each one of those in responses to staff RAIs when we indicated we were going to use the Caldon.

And they have reviewed those, found those to be acceptable. Part of that, again, was an ITAAC to confirm that we have installed the instrument, that we have done the as-built calculation, and then the final confirmation that indeed our final calorimetric uncertainty is within the one percent that we have assumed.

As Matt indicated, since the instrument is capable of much better, we certainly don't expect that to be a problem.

MEMBER BANERJEE: Please, don't go there.

(Laughter)

MR. GRANT: We've just got to meet the one percent.

MEMBER BANERJEE: Yes, right.

MR. GRANT: And we will do that.

MEMBER BANERJEE: Okay.

MR. GRANT: All right? The second open item, I would consider this basically an administrative open item. Generic Letter 85-05 on inadvertent boron dilution events makes reference to procedures. And the staff asked that we provide a cross-reference in our Chapter 1. We have a table that addresses all generic communications that are applicable to our plant.

Generic Letter 85-05 wasn't listed in that table, but we did of course have some information in 13.5 on procedures with regard to emergency procedures. So they asked us to list that generic letter and provide that cross-reference as an administrative item. We put that in the table, and the staff found that to be acceptable at that point.

I was reminded by looking at the staff slides that we also had one Vogtle COL item, a Vogtle-specific COL item, that is not in our slides. That item was basically to confirm that the chi over qs

atmospheric dispersion coefficients that were used by Westinghouse in their accident analyses for offsite doses were bounding with regard to the site-specific accident analyses.

We did that. We actually provided that information in Chapter 2 and had just a simple cross-reference in our Chapter 15. And they were bounded. You'll hear from -- more about that from the staff.

And that's it for Chapter 15. Thank you very much.

CHAIRMAN RAY: Thank you.

(Pause)

MR. HABIB: Good morning. My name is Don Habib. This is a presentation from the staff on Chapter 15, accident analysis. And with me today from the technical staff is Tony Nakanishi from the Reactor Systems Nuclear Performance and Code Review Branch, and Michelle Hart from the Siting and Accident Consequences Branch.

Next slide.

This is an overview of the SER. It identifies particular sections and which sections are standard, which ones are IBR, and which ones have plant-specific information in them. We are going to cover three items, the same ones that the applicant

covered, and so I will turn it over for the first item to Tony Nakanishi.

MR. NAKANISHI: Good morning. My name is Tony Nakanishi, and I'm with the Reactor Systems Nuclear Performance and Code Review Branch. I will be discussing the COL information, Item 15.0-1, on plant calorimetric methodology.

I wanted to start with a little background. Some of this was discussed in the applicant's presentation, but the Rev 15 of the design control document had assumed a two percent uncertainty throughout the Chapter 15 analysis. And when the staff was reviewing the DCD, Rev 17, staff noted that for large break LOCA and containment mass and energy release analyses, one percent power uncertainty was assumed.

So in terms -- in addressing that particular item, the applicant chose to include a COL information item, and that is obviously the purpose of this discussion. So, really, the purpose of the staff review was to find reasonable assurance that the applicant will be able to meet the one percent calorimetric uncertainty that is assumed in the analysis.

And based on a review of the applicant's

response, we find that the approach is basically consistent with what the staff has been approving in the NRR side. You know, a lot of this -- some of these points were already made. There were -- I don't have the exact number, but there is a slew of MUR uprates that have credited this approach.

And I will note that, you know, the applicant is pursuing a one percent uncertainty in this case, but NRR has been seeing, actually, uncertainties as low as .3 percent for MUR uprate of -- 1.7 percent power uprate.

So from that standpoint, the applicant isn't pushing as further -- as we have seen. And in terms of --

DR. WALLIS: Excuse me. You have actually accepted .3 percent in --

MR. NAKANISHI: I believe --

DR. WALLIS: -- uncertainty in that power uprate?

MR. NAKANISHI: I believe -- I think Vogtle Units 3 and 4 -- or Units 1 and 2, actually, correct me if I'm wrong, but have been approved for 1.7 percent.

DR. WALLIS: Is that down from two percent to .3?

MR. NAKANISHI: And, again, the approach is based on the Caldon Cameron methodology that the applicant is proposing here. It is based on these two main topical reports, ER-80P and ER-157P. As the applicant noted, there is some conditions as part of the approval of those topical reports, and the staff finds that the applicant has addressed those acceptably.

They were primarily around properly describing the calibration procedures, some contingency when these things go out of service, maintenance issues, those kinds of things. And, you know, we were discussing earlier about the -- you know, the testing aspect, what we have seen in the past, and what we expect here is testing at a certified facility. Alden Labs has been used in the past, and they are consistent with the NIST --

MEMBER BANERJEE: This is full scale?

MR. NAKANISHI: I believe so. It is basically, you know, the test has to be set up such that it is -- it is obviously, you know, representative or actually really, you know, the matching configuration to the actual configuration.

MEMBER ARMIJO: Could you tell me what the backup is to this system? Let's assume that it was

drifting. At what -- what other instruments would detect that instead of being one percent it is two percent?

MR. NAKANISHI: Right. It's --

MEMBER ARMIJO: Where do you start depicting it in the rest of the plant?

MR. NAKANISHI: It's typically -- you would I guess -- if you declared this inoperable, you would be backing up to a -- say a Venturi type of flow meter, and --

MEMBER ARMIJO: No, I'm just saying, let's say you didn't declare it. You thought it was running just fine, but, in fact, it wasn't. Where else would you detect that it is -- something was wrong?

MR. NAKANISHI: Right. And I personally wasn't involved in the specific -- you know, the technology, but my understanding is there is some mechanism where it allows for some real-time feedback that allows you to detect those deviations, if you will.

MR. DONOGHUE: Tony, this is Joe Donoghue again, with staff. What I recall is the topical report that describes the instrument includes a discussion of the systems in the software itself that are used to self-check. There is a self-check

feature. As Tony said, it is real time, so that there will be indications if it's having problems. But, again, this is, you know, used for calorimetric.

And, again, the SER I think itself has a discussion about if the -- to clear out a service -- I know that's not your question, but --

MEMBER ARMIJO: Yes. I'm just saying, you know, some other --

MR. DONOGHUE: -- you're sure it's going operational.

MEMBER ARMIJO: A coarser plant diagnostic or symptom that says, "Hey, you know, we think it's -- we are relying on this system, but it -- if it wasn't working right, you know, what it -- when would we detect it?" And that's really --

MR. NAKANISHI: Right.

MEMBER ARMIJO: I'm not familiar at all with this kind of stuff, so --

MR. NAKANISHI: Right, right. My understanding is the operators would detect that right away, if there is some deviation in this.

MEMBER BANERJEE: So this is calibrated at the temperature full scale? I'd like to see these topical reports.

MR. NAKANISHI: I can't get into the

details. We'll be happy to provide that to you.

MEMBER BANERJEE: I'm trying to understand this. It seems really -- I mean, in the lab I can't get that accuracy, and I'm pretty good at this stuff. This is quite a surprise.

DR. WALLIS: Maybe it's an illusion.

(Laughter)

MEMBER BANERJEE: I'm just surprised that you can correct for temperature and velocity profile. But we'll take a look at this.

MR. NAKANISHI: I would be happy to provide that information.

So moving forward, you know, this is something that is going to be -- there is some information that the staff needs to confirm, and we have put in place a couple of mechanisms to accomplish that. ITAAC is one, for example, to ensure that the applicant has indeed installed the approved device and has implemented the methodology that will support overall power uncertainty of one percent or less.

And, finally, a license condition is also in place that will inform the staff when some of this documentation information is available or which will allow the staff to go and inspect their process.

So, in conclusion, based on these points,

the staff finds that the applicant has acceptably addressed the open item. And that concludes my piece. If there is any questions?

(No response)

CHAIRMAN RAY: Thank you. Hearing none, no further.

This next item was brought up by the applicant, mostly an administrative item, Generic Letter 85-05 involving the boron dilution and protection against that. That was actually resolved in the DCD through a COL information item. It was DCD Rev 15.

And the applicant complied with that, and all we were looking for was that this was identified in Chapter 1 on a list of bulletins and generic letters. They provided that change, and that is now a confirmatory item. That's strictly administrative.

MS. HART: My name is Michelle Hart. I'm with the Siting and Accident Consequences Branch. And Vogtle does have an ESP, but instead of relying on the previous analysis done for that they said, "Well, we will compare this to the DCD for the AP1000." And there was a permit condition, actually, in the ESP saying that that was an acceptable way to do things, if you were going to refer to a certified design.

And so the issue here is they -- in Chapter 15 they incorporate the AP1000 analyses by reference for the DBA dose analysis, and so we just needed to verify that they did in fact incorporate those by reference correctly, and thereby show compliance with the offsite dose criteria and the control room dose criteria in GDC 19.

As you heard yesterday, there was a site-specific technical support center, so that is not discussed in Chapter 15 of the SER. It is discussed in Chapter 13.

As the applicant has said, in Chapter 2 of their FSAR they had shown that their site characteristic short-term atmospheric dispersion factors are bounded by the values used by Westinghouse in the AP1000 DCD as site parameters. And since those are the only values that are related to the site, everything else in the dose analysis is the same and is related to the design.

And since the Vogtle chi over qs were less than the AP1000 chi over qs, therefore, the doses are less than the AP1000 doses, which met the criteria that -- the siting criteria offsite and for the control room. So, therefore, Vogtle has shown that they meet the applicable siting criteria and control

room habitability criteria.

Do you have any questions?

(No response)

CHAIRMAN RAY: Hearing none, thank you, Michelle.

MS. HART: And that's it for us.

MR. HABIB: That concludes our presentation.

CHAIRMAN RAY: Fine. Thank you.

All right. So you guys got done before lunch. That's a good thing.

(Laughter)

We have Chapter 8 part of Vogtle next, and I think we will go ahead and take that before we take our morning break. And maybe we'll do the staff as well. So Chapter 8.

(Pause)

MS. AUGHTMAN: Okay. While we are getting the -- we had to make some adjustments to our slides. While we're waiting for those to come up, I did want to let the people in the control room know that we are expecting people on the phone, and we may need them to help address questions.

CHAIRMAN RAY: All right. Is the line open, Weidong?

MS. AUGHTMAN: The phone is on. I just want to make sure they are able to speak if called upon.

CHAIRMAN RAY: Yes. Well, that was --

(Pause)

MS. AUGHTMAN: Okay. Amy Aughtman, again, from Southern with Bob Hirmanpour, NuStart; Gary Becker from Southern; and on the phone we have Dwayne Brock from Southern, as well as Tom Sims and Bobby Jones. And I believe we should also have Mark Demaglio from Westinghouse on the line. And we also have Mike Snyderman from Bechtel.

So for Chapter 8 this is the contents, and we wanted to give just a little bit of an overview for what was in Chapter 8. I don't believe we have presented this material before.

The DCD is incorporated by reference. There is one standard departure that has been taken. There are four COL information items that are addressed. The SER with open items that was issued did not have any open items that were standard, and so there is -- there were none that we -- Vogtle needed to address for the R-COLA.

We have also got some supplemental information that will give an overview on some of our

site-specific aspects.

CHAIRMAN RAY: Okay. Now, Amy just -- no standard open items that you have to address for the R-COLA. What other open items are there?

MS. AUGHTMAN: I believe Bellafonte did have one site-specific open item.

CHAIRMAN RAY: I see.

MS. AUGHTMAN: So the first information item is on offsite electrical power, and those were -- we described our design of the power transmission system and the testing and inspection plans. We do have three switchyard areas for Units 1, 2, and 3. Those share a 230 and 500 kV switchyard. Unit 4 goes into the 500 kV switchyard. And then, there's a 230 kV switchyard that has the reserve auxiliary transformer for Units 3 and 4.

For the testing and inspection plans that includes maintenance, testing, calibration, inspection practices that comply with the NERC reliability standards.

The next item --

CHAIRMAN RAY: Who operates the transmission system?

MS. AUGHTMAN: Southern Company Transmission.

So then the next COL item is technical interfaces, and that is where there is an interface with the DCD that we needed to demonstrate from an offsite perspective, the analysis that shows that we meet the protective devices of the plant.

So we performed a grid stability analysis to show that with no system failures the grid would remain stable, and the RCP bus voltage would remain above the voltage required to maintain the flow assumed in Chapter 15 for a minimum of three seconds following a turbine trip. And so our Southern Company Transmission planning group performed that analysis.

Next is grounding and lightning protection. We added a description of the grounding system grid, or, excuse me, grid system. The ground grid conductor size was determined using the methodology outlined in IEEE 80. A grid configuration for the site was created and modeled in conjunction with the soil model. The resulting step and touch potentials are within acceptable limits.

Then, in accordance with IEEE 665, a lighting protection risk assessment for the buildings was performed based on the methodology of NFPA 780. And the tolerable lightning frequency for each of the buildings was determined to be less than the expected

lightning frequency. Therefore, we did determine lightning protection is required.

Did we miss one? Yes, so then the next COL item, and the last one, is on the onsite electrical powerplant procedures. We provided a description of the procedures that implement periodic testing of protective devices that provide penetration overcurrent protection.

And we also gave a description of the procedures for inspection and maintenance of the Class 1E and non-Class 1E batteries. And those are maintenance -- those are maintained and tested in conformance with -- and I do believe we have a typo on this slide. That's per Reg Guide 1.129, which is maintenance testing and replacement of lead acid batteries.

So then we have some supplemental information. We provided site-specific information describing the transformer area located to the turbine building -- located next to the turbine building, and which contains the generator step-up transformer, the unit auxiliary transformer, and the reserve auxiliary transformer.

Did I get something out of order? Okay.

Okay. And so then along with that we have

also provided a description regarding the Southern Company transmission responsibility for maintaining our system reliably and conducting planning studies on an ongoing basis, and demonstrating that our protocols remain cognizant of grid vulnerabilities in order to make informed decisions regarding maintenance activities that are critical to the electric system.

We also demonstrate site-specific conditions are bounded by the standard conditions in the DCD for rating the diesel generator. We have implementation -- or we have provided a discussion on implementation of procedures for periodic verification out of the capability for automatic and manual transfer from the preferred power supply to maintenance power supply, and vice versa, to satisfy GDC 18. There are no site-specific non-Class 1E DC loads connected to the Class 1E DC system.

Okay. So, then, the next two items are the ones that I guess we have had more recent interactions with the staff on. We received an RAI asking for some more information in the FSAR as it relates to Generic Letter 2007-01, which is on a submerged and inaccessible electrical cable.

And the text that is shown here is what we added to the FSAR in Section 17.6, which is where we

describe maintenance rule program. So what we're saying is that that program would be treated as part of the maintenance rule.

And, finally, Westinghouse did have a -- it was a revised COL information item for periodic testing of the battery chargers and voltage-regulating transformers. So we added some more information to address that, to include establishment of procedures for periodic testing of the Class 1E battery chargers and voltage-regulating transformers in accordance with manufacturer recommendations.

Those procedures will include circuit breaker testing, fuse and fuse holder inspection, and verifying current-limiting characteristic of Class 1E battery chargers. And this is where the departure is that we had to take since the regulating transformers don't -- do not have current-limiting capability.

And then -- I'm sorry, I forgot -- we do have one more slide that just lets you know that we did have an ITAAC.

CHAIRMAN RAY: Well, can someone expand on this departure a little bit?

MS. AUGHTMAN: All right. Gary, can you do that?

MR. BECKER: Well, the DCD has a statement

in it that the battery chargers and the voltage-regulating transformers have current-limiting devices. And when we were asked to include in our FSAR that we would test those capabilities, we determined from Westinghouse that the voltage-regulating transformers are basically a passive device. And the only current-limiting capability is the impedance of the transformer.

So it was basically, if you will, a misstatement in the DCD in that the transformers themselves don't have active current-limiting devices. So we discussed the -- our options that were available. There is going to be fuses and breakers that can limit the current through that electrical flow path, but the transformers themselves don't have that capability built in within them.

So we had to correct that language in the DCD, and the way to do that we chose was a departure from that language.

CHAIRMAN RAY: Okay. I guess I understand. It seems awkward that you would be doing that simultaneous with submitting a revision to the DCD, but --

MS. AUGHTMAN: It was a function of timing for when this came up.

And so, then, the last item was just to note that we do have an ITAAC associated with the offsite power system, and that includes the minimum number of transmission lines, their capacity, fault protection, and the ability to power the reactor coolant pumps for a minimum of three seconds following a turbine trip.

MEMBER BLEY: Mr. Chairman, since Electric Power is here, this is probably a good time for me to just take a second, a minute --

CHAIRMAN RAY: Go ahead.

MEMBER BLEY: -- to talk about the discussion we had yesterday about the COL PRA. And staff has provided me with a number of pointers to documents we have and to documents we haven't seen, and the bottom line is I am pretty happy with regard to all the things I raised yesterday. But I will take a minute to say why.

One thing I hadn't quite noticed is in the DCD, Chapter 19, in the tables of results, there is kind of words in there that say, "Don't do a COL PRA," but for good reason. Westinghouse has asked all of the COLs -- well, not asked them, they have provided them with detailed information about what are the key things, site-specific, they need to worry about and

asked them to respond and identify that, indeed, they know what they have to do to make these systems appropriate, and they will do that.

And almost many other aspects of the site-specific PRA can't be done until much later in this process. So the COL PRA itself wouldn't add much utility, and I think I agree with that. So I think they have covered their bases pretty well.

CHAIRMAN RAY: You are differentiating a COL PRA from a site-specific PRA?

MEMBER BLEY: Yes, I am. The COL PRA was intended to update -- to make the PRA a little more site-specific with the information available at COL time. That is a small part of the site-specific information. Most of that will be available over the next couple of years and will be included in the real site-specific PRA that will be done before startup. And I think that is the key one.

The only other thing I'd say is, as a PRA guy, I really like the approach Westinghouse took to use in the PRA to help in the design and design-out of the things that appear to be important contributors from existing PRAs.

But they add in passive systems that have some delicacy to them. They have identified and

discussed those in the PRA, but as we mentioned a couple of things yesterday, they haven't really yet worked into the PRA the chance that some of these things don't happen the way they are assumed to happen.

We have administrative controls on debris-producing material going into containment, but no chance that that is exceeded built into the model. I think some of that would be nice to see in that final PRA, but it's not there.

That said, I think the things I raised yesterday have been addressed in a reasonable way, and I would have to say also that staff had asked questions about most of those and did receive answers, some of which we hadn't seen until now.

CHAIRMAN RAY: Well, if it were thought important by the ACRS for, just to use an example, for debris uncertainty to be included in their site-specific PRA, setting aside the COL PRA, where would we strive to see that achieved if not in the COL, at the time of the COL I mean?

MEMBER BLEY: We would have strived to see it back when the actual PRA was done and submitted as part of the design cert, but we didn't --

CHAIRMAN RAY: No, I mean, the -- what I'm

asking is, can it -- is it foreseeable that we could get it into the site-specific PRA?

MEMBER BLEY: I think yes.

CHAIRMAN RAY: You're answering, I think, well, if you were going to put it in a site-specific PRA, it would have had to be in the DCD PRA as well. Is that what you --

MEMBER BLEY: No, that's not what I'm saying. I think we're asking when we should have raised that issue. I think it was back then.

CHAIRMAN RAY: Well, I'm going to do that now. I'm going to do that next, though. Since we didn't do it before, then, when is the right time, given that it is -- I mean, hypothesize it is an issue that we would like to see addressed, when would you do it, if not now?

MEMBER BLEY: Well, I think you would do it with the PRA that is completed before startup, because that is the point in time when the PRA is supposed to be completely plant-specific and include all of the uncertainties, and some of the uncertainties haven't been fully addressed as yet either.

CHAIRMAN RAY: Absolutely.

MEMBER BLEY: Unless it is a matter of

uncertainty, really. They have done a good job of showing why all these things ought to work, but I don't think there is anything in the models to account for the chances that they might not or the mechanisms by which they might not.

CHAIRMAN RAY: I want to try it this way. Do you think there is anything we should do to try and ensure that it is addressed in the site-specific PRA?

MEMBER BLEY: Yes. I think we ought to write into our letter that there is --

CHAIRMAN RAY: This letter.

MEMBER BLEY: This letter that when staff reviews the -- or when the site-specific PRA is done that it include those things.

CHAIRMAN RAY: That's all I'm trying to get at.

MEMBER BLEY: Yes. I'd like to put that in.

CHAIRMAN RAY: So you have volunteered to write me something.

MEMBER BLEY: Yes.

CHAIRMAN RAY: All right.

MR. HIRMANPOUR: May I interject?

CHAIRMAN RAY: Of course.

MR. HIRMANPOUR: This is Bob Hirmanpour. As you mentioned, we are going to do an as-built PRA, which is site-specific, and that it mentioned the FSAR, also license condition. And for the purpose of the design changes we actually went back and revised the wording and included the design work -- the design changes and departures in there.

So the as-built one was just based on the walkdowns. You may possibly have to go back with that every design change that was made since last PRA and make sure all of those get in there. So it is important --

CHAIRMAN RAY: That seems straightforward enough. What I'm sensing, though, is that there may be categories of things not included within the uncertainties addressed, not design changes but things like debris, and that they ought to be included in the site-specific PRA.

DR. WALLIS: Can I comment on that, Harold?

CHAIRMAN RAY: Yes.

DR. WALLIS: I don't think we have an analytical procedure for calculating the effects of uncertainties in the debris on the core damage frequency. I don't think --

CHAIRMAN RAY: Well --

DR. WALLIS: You are going to put it on the utility to develop this method?

CHAIRMAN RAY: Well, I don't -- that is a different question, Graham, than should --

DR. WALLIS: Sorry.

CHAIRMAN RAY: The question I was trying to get at is, should it be included? And, if so, should we say something about it now? That is the limit of what I was trying to do.

You are raising the question, well, if you do require it, is it feasible to do?

DR. WALLIS: And who should do it?

CHAIRMAN RAY: Well, that's a --

DR. WALLIS: It seems you are going to put it on the utility if you put it through the site-specific PRA.

CHAIRMAN RAY: The utility is the source of the funding for all that goes on, and they have contractors that include Westinghouse. We don't need to worry about whether they do it or they have Westinghouse do it. That's not our concern.

MEMBER SHACK: It's their responsibility, let's say.

CHAIRMAN RAY: That's right. But, still,

getting back -- I mean, I think you raise a good point, which is, can you call for an uncertainty on something that you have reason to think can't be -- can't be quantified in terms of its effect? And I don't know.

MEMBER BANERJEE: You call for it, and you will get an answer probably. But whether the answer will mean anything is a separate issue.

MEMBER BLEY: Well, the conservative thing people usually do, and they've done it for seal LOCAs, is have a criteria below which you are sure you are good, or reasonably sure you are good like the criteria we have, and calculate the chance that you don't meet that. And the first assumption is, if you don't, then you fail that function. And that has been done. On seal LOCAs there were other models for seal LOCA that involve --

MEMBER BANERJEE: Westinghouse --

MEMBER BLEY: -- multiple mechanisms and address the probability of each. And they backed away from those, because they weren't as essential.

MEMBER BANERJEE: Westinghouse did provide sort of an analysis of --

MEMBER SHACK: Sensitivity analysis.

MEMBER BANERJEE: -- sensitivity -- well,

it was a statistical analysis, you know, taking that data, doing the best they could with the data they had at that point. So, and there were some issues related to this, which Dana brought up. But if we accept that, you have some measure of that.

CHAIRMAN RAY: All right. So you wouldn't exclude it on the basis that it is infeasible to --

MEMBER BANERJEE: I don't think so. But, you know, it was based on a pretty limited set of data. So how much credence you can give to it is a different matter.

CHAIRMAN RAY: Well, I will leave it to Dennis to draft up something and the full Committee to consider it.

MEMBER BANERJEE: Actually, they didn't rely on that. They had a bounding sort of situation.

CHAIRMAN RAY: Right. I guess I'm just trying to say it -- we're not asking for something that is inherently impossible to do.

MEMBER BANERJEE: Yes. Well, Graham's point is that every time you do another experiment you get another surprise. So this is what the inherent uncertainty is on this, but --

MEMBER SHACK: We can always do an expert elicitation.

(Laughter)

MEMBER BANERJEE: Yes.

CHAIRMAN RAY: Okay. Enough on that. Anything else, Amy?

MS. AUGHTMAN: So I'm going to check with our folks and see if we might have any input to offer on that subject.

CHAIRMAN RAY: All right. We are always happy to receive your input on anything. But at this point in time, in the event, as you have heard, there is some thought that we might seek to have an explicit provision for uncertainty, I think of this as just an example. I don't believe it is the only example, but maybe it is.

MEMBER BLEY: No.

CHAIRMAN RAY: Thank you.

All right. We will now go to Chapter 8 for the staff. And, let's see, it's 10:00. I think we can still complete this before we take a break and maintain our momentum, if possible.

MEMBER BROWN: Break is not until 10:35, so we've got 35 minutes.

CHAIRMAN RAY: The break is when I say it is.

(Laughter)

MEMBER BROWN: I heartily agree with that. I'm just saying, per the schedule, that's when it is.

CHAIRMAN RAY: I know. Thank you.

MS. SIMMS: Good morning.

CHAIRMAN RAY: Good morning.

MS. SIMMS: My name is Tanya Simms, and this is Ms. Tania Martinez Navedo. She is the technical reviewer for Chapter 8 that we are presenting.

You have already been given a general overview, and I will just highlight a few things as we go through the presentation, and then Ms. Tania Navedo -- you can go to the next one -- will provide you with a staff review summary.

For this chapter, you have already basically heard that it provides a functional adequacy of the offsite power system and the safety-related information on the onsite electrical power systems. And Section 8.1 -- in Section 8.1, as you previously heard, there were supplemental items that were provided that just gave the applicant's description of the offsite power system with regards to the interrelationship between the nuclear unit, the utility grids, and the interconnecting grids.

Next slide.

For Section 8.2, there were two COL items and six supplemental information items. You have already heard the information based on the two COL items, and all of that just covered the review of the transmission systems, the history of the offsite power line systems, through the setting of the protected devices controlling a switchyard and the interface requirement that was already discussed with you.

Next slide.

For Section 8.2(a), this was developed by the staff specifically to address the site-specific ITAAC that the applicant proposed related to the offsite power systems that is necessary, and sufficient to provide the reasonable assurance that the facility has been constructed and will operate in conformance with the COL, the provisions of the Atomic Energy Act, and the NRC regulations.

Next slide.

For Section 8.3.1, we discussed that it is related to the grounding system and the lightning protection, as well as testing of the protection devices and the electrical and emergency diesel generator ratings based on site conditions. For the diesel generator sets, they are used as a standby power source for the onsite AC power systems.

Next slide.

For Section 8.3.2, the standard departure that was discussed previously will be provided with more information by Ms. Martinez Navedo, and also the discussion from that section was related to the regulating transformer, periodic testing and inspection of the maintenance of the Class 1E batteries.

Now I turn it over to Ms. Tania Martinez to give you the staff's review summary for what was discussed in this chapter.

MS. MARTINEZ NAVEDO: Good morning.

CHAIRMAN RAY: Good morning.

MS. MARTINEZ NAVEDO: In regards to Section 8.1, we looked at supplementary item 8.1-1, and we found that it was properly addressed by the applicants, and as it had a detailed description on the interconnection of the Vogtle Units 3 and 4, the proposed interconnection, with a transmission system.

And for supplementary item 8.1-2, we found that it properly identified all of the additional information and the regulatory guidance that is stated in the SRP.

Next slide, please.

For Section 8.2, for COL item 8.2-1

involving the design of the plant switchyard, we found that it was properly addressed, because it provided us with a detailed description and the analysis of transmission line crossings in the site's boundaries, and it provided us with a conclusion stating that at least one of the offsite power supplies remain available to both Units 3 and 4.

We had a couple of confirmatory items. The first one, we have a commitment from Vogtle stating that they follow the NERC standards in terms of the switchyard maintenance and testing. And they will implement a condition monitoring program for inaccessible cables within their maintenance rule program.

Next slide, please.

For supplementary item 8.2-1 through 8.2-6, details of the FMEA, as well as stability studies, testing and inspection of the switchyard components and failure modes in general were adequate per the NRC regulations and regulatory guidance.

MEMBER BLEY: Let me ask you a question. On that last slide, are the requirements that they are going to meet equivalent to the requirements that have -- that are now being applied to the license renewal cases, which is inspect all medium voltage cables, and

think low voltage cables, whether they are powered or not?

MS. MARTINEZ NAVEDO: Yes. The guidance that you are specifically mentioning, it is -- it was put together by license renewal for plants that have been operating for over 40 years. We looked at the information with NRR, but found that it was not applicable since these plans are going to be starting from the zero years, and no degradation is going to be observed in the cables. However, when the plan reaches that age, the guidance is going to be looked at at that point in time.

MEMBER BLEY: We are not consistent across all design centers on this one. I think you guys ought to start talking to each other a bit. This came up in another one a couple of weeks ago. So what cables are they going to -- are going to be included in this one?

MS. MARTINEZ NAVEDO: In this one? This particular generic letter includes all power cables for all voltage levels, no control cables, just power cables. But it includes both the 125, for example, 120-volt AC, through -- all the way through the --

MEMBER BLEY: Of what component?

MS. MARTINEZ NAVEDO: Yes. The generic

letter is -- if it's a power cable, it is included within that -- that specific program.

MEMBER BLEY: Whether it's powered or not.

MS. MARTINEZ NAVEDO: That's my understanding.

MEMBER BLEY: That is even more broad than the other one. I'm a little confused now.

MEMBER BROWN: I am, too. I mean, are they -- you said something about 40 years, they will start doing it later. But are they going to really start monitoring -- it sounds like they are going to be monitoring now according to the program you just talked about.

MS. MARTINEZ NAVEDO: Well, the monitoring for -- that is based on the findings of Generic Letter 07-01 looks after, for example, moisture in the mudholes to see if the cables are degrading, but it is only pertaining to power cables. And that is the reason -- I mean, that is the specific guidance we followed.

My understanding is license renewals guidance is still in development, and it was specifically drafted to observe certain other criteria, that it's not applicable to new plans, because they haven't observed degradation.

MEMBER BROWN: I've still lost the bubble. Did you --

MEMBER BLEY: I have, too. I thought it was simple, but now it has gotten confusing for me. Go back to your last slide, the one that points to reg guidance. You talked about very -- underground and accessible cables. Just, once again, tell me what they are going to do from day one, and what they are going to do later.

MS. MARTINEZ NAVEDO: Under this criteria on 07-01, all of the power cables are included within the program.

MEMBER BLEY: All of them.

MS. MARTINEZ NAVEDO: All levels.

MEMBER BLEY: Regardless of voltage.

MEMBER SHACK: That are within scope of 50.65.

MEMBER BLEY: Yes.

MS. MARTINEZ NAVEDO: Correct. And then, the -- I believe that the criteria being developed by license renewal will include I&C cables of all voltage levels and power cables.

MEMBER BLEY: Oh, okay.

MS. MARTINEZ NAVEDO: It is more -- it is broader.

MEMBER BROWN: By "low voltage," you mean --

MS. MARTINEZ NAVEDO: 07-01.

MEMBER BROWN: -- less than 450 or --

MS. MARTINEZ NAVEDO: Correct.

MEMBER BROWN: -- 480 volts, or something like that.

MS. MARTINEZ NAVEDO: Correct.

MEMBER BROWN: Okay. But -- --

MEMBER BLEY: I think I got what you're doing and I think I'm okay.

MEMBER BROWN: I'm still -- I'm not clear on whether it's, what are you doing from day one? Is that -- so they're going to be monitoring cables from day one.

MS. MARTINEZ NAVEDO: Correct.

MEMBER BROWN: Okay.

MEMBER BLEY: Including looking at --

MS. MARTINEZ NAVEDO: Right.

MEMBER BROWN: That's fine. I understand that part.

MEMBER BLEY: Okay. That's --

MEMBER BROWN: I just got the impression it was what -- we are going to wait for 40 years before we look at them, or 35 or -- which didn't make

sense. Okay. Thank you.

MEMBER BLEY: Go ahead.

MS. MARTINEZ NAVEDO: Under Section 8.2(a), that is the section where we reviewed the interface requirement, and the applicant has addressed this properly because they have an ITAAC for the offsite power system. And that can be found on Part 10 on Table 2.6.12-1.

Next slide, please.

For Section 8.3.1(a)(c), power systems, the staff reviewed all of the information involving the interface between the transmission system and the onsite power system specific to the plant. We looked at the grounding grid system, design and lining partition, and we found that both of them were designed per IEEE 80 and 665, and they are in agreement with the industry practice.

For the EDG inspection and maintenance, including the preventive, corrective, and predictive maintenance, they also follow the industry standards, and they were properly addressed. And the periodic testing of protective devices that provide overcurrent protection to the penetrations, they followed Reg Guide 1.63 adequately.

Next slide.

For Section 8.3.2, as the applicant mentioned, they described the departure in which they clarify that breakers and fuses are going to be the current limiting devices that are going to protect or provide the isolation function for the Class 1E battery chargers and/or the voltage-regulating transformers.

Any questions?

CHAIRMAN RAY: Any other questions?

(No response)

Thank you very much.

MS. MARTINEZ NAVEDO: Thank you.

CHAIRMAN RAY: All right. Now, we have the applicant on Chapter -- no, excuse me, I -- that finishes Chapter 9. Chapter 8. Now we are going to go to Chapter 9.

I am admonished by Charlie that we are not to 10:35 yet. So we've got 20 minutes. Does the applicant want to go forward with Chapter 9, or do we want to not?

MS. AUGHTMAN: I'm sorry. What?

CHAIRMAN RAY: Amy, do you want to do Chapter 9 or not? Do you want to wait?

MS. AUGHTMAN: Are we at a break point?

CHAIRMAN RAY: We can do it either way?

Huh?

MS. AUGHTMAN: Are we at a break point?

(Laughter)

MEMBER BLEY: Are we at a break point?

CHAIRMAN RAY: We can be, yes. And we will be happy to take a break now.

MS. AUGHTMAN: Yes, we would like to take a break.

CHAIRMAN RAY: All right. Fifteen minutes to 10:25.

(Whereupon, the proceedings in the foregoing matter went off the record at 10:08 a.m. and went back on the record at 10:25 a.m.)

CHAIRMAN RAY: We may begin.

MR. SPARKMAN: All right. Thank you, once again, for having us here. Chris Cummins, are you on the phone?

(No response)

CHAIRMAN RAY: Do we have to open the phone line so they can talk?

MR. WANG: It's up to -- do you want to --

CHAIRMAN RAY: Yes, he's trying to talk to Ed. He's trying to summon a voice from the --

MR. CHRIS CUMMINS: Yes. Yes, I'm here.

CHAIRMAN RAY: Oh, here we go.

MR. SPARKMAN: Great. All right. Just wanted to make sure you were available if questions come up.

We have discussed Chapter 9 once before. I believe it was in February of this year. And so I am going to cover some items that were not covered at that time. One of the items that is not actually in this presentation but I will just briefly discuss is the departure in Chapter 9, which is departure 9.2-1. Amy discussed the fact that I would talk about it.

It is not a significant departure. The DCD talks about the potable water system, says that we will have a filtrated water source. For Vogtle site, the potable water system source is from the well water system, and so it is sufficiently clear and clean that you do not have to have filtration. So the departure says our source is not filtrated, and that -- so that's basically it.

We did talk about the standard information in February, and so we are going to focus in on primarily the raw water system in terms of systems today.

SER open items that were closed in the AFSER. Open item 9.1-1 on metamic monitoring program. I've got another slide. I'll talk about that next.

I don't have any additional slides on 9.1-2, -3, or -4, because for the light load handling system and overhead heavy load handling system basically the only thing that was required in those open items was a commitment for implementation and inspection of these two programs. And we put those commitments into our FSAR, and that was satisfactory to the staff to close those open items.

The metamic monitoring program. The staff did request some additional information. We had some information in the FSAR, but they wanted some additional information, which we revised to include -- which included verification of continued presence of on beyond -- via neutron attenuation measurement, monitoring for unacceptable swelling, and then monitoring for degradation, such things as bubbling, blistering, cracking, weight loss measurements and/or visual examination.

And then, COLA Part 10 was also revised to include license condition 2, item 9.1-7, for implementation of this program prior to commercial operation.

Water systems. Like I said, the one system that we would like to discuss briefly today is the raw water system. The raw water system is made up

of two subsystems, river water and well water. The river water subsystem is -- the source of that system is the Savannah River, which is right next to the site there, and it provides makeup water that circulates in the water system, cooling tower basins, and dilution for Units 3 and 4 blowdown sump.

It is not a potential flow path for radioactive fluids. There is a fairly detailed discussion of that in the FSAR. It provides alternate source of dilution for rad waste discharge when CWS is not in use.

The well water subsystem includes features to ensure redundancy and reliability as a source of makeup to the service water cooling towers and also provides makeup water for the fire protection system.

CHAIRMAN RAY: What does the phrase "not a potential flow path for radioactive fluids," what does that mean?

MR. SPARKMAN: Basically, that there is not a connection to a system where radioactive fluids could get into a system, is the bottom line.

CHAIRMAN RAY: Speaking of the subsystem, river water subsystem.

MR. SPARKMAN: That's correct.

The RWS serves no safety-related function,

and, therefore, has no nuclear safety design basis. Additional information was requested and responded to to discuss the failures that will not adversely affect SSCs that are safety-related or designated RTNSS.

The RWS was designed to be a highly reliable and robust system capable of operating during loss of normal alternating current, provide RWS makeup flow under normal and abnormal conditions. There are redundancy in pumps and valves and piping, such that it is highly reliable, but it is not RTNSS nor safety-related.

Okay. And, again, it was -- the RWS system was evaluated per WCAP-15985, and it was evaluated that it does not, again, provide any RTNSS systems. And this, to address your question, is contamination of the RWS piping is not credible based on the RWS design, and the configuration relative to potential sources of contamination. So there are no unique design provisions or other features that are required for RWS to comply with 10 CFR 20.1406.

And that is all I had on Chapter 9. Are there any questions?

MEMBER ARMIJO: Just a technical question, and maybe Westinghouse can answer. What is a volume fraction of loading of boron carbide in your metamic

plates?

MR. SPARKMAN: If you could repeat that question. Chris Cummins is on the phone. I think he --

MEMBER ARMIJO: Yes. What is the volume fraction of boron carbide in the metamic material?

MR. CHRIS CUMMINS: It is specified, actually, by weight percent. And the weight percent of boron carbide is approximately 32 percent by weight, and then the remainder would be aluminum.

MEMBER ARMIJO: By weight, okay. So is -- are all these -- are all the particles surrounded by a continuous aluminum phase?

MR. CHRIS CUMMINS: Yes.

MEMBER ARMIJO: Okay. And this is a -- all right. That's a bigger loading than I thought, but anyway, so the -- so just trying to make sure that -- you don't have porosity in this material, as I understand it.

MR. CHRIS CUMMINS: It has got a very low porosity, correct.

MEMBER ARMIJO: Okay. All right. And, yes, I reviewed the program, but it is a pretty comprehensive monitoring program, and other people are doing it, using this material. By the time you are

operating there will be a lot of experience with it, so --

MR. CHRIS CUMMINS: Yes. Metamic is in use currently in the existing fleet of reactors.

MEMBER ARMIJO: Yes.

MR. CHRIS CUMMINS: In the spent fuel pool.

MEMBER ARMIJO: Okay. Yes, that's all I had. Thank you.

MEMBER BLEY: Just to refresh my memory, raw water is essentially used to fill and top off important systems, but it is not needed during operation. Is that --

MR. SPARKMAN: Well, it is needed during operation in terms of for that purpose, but it is not required to --

MEMBER BLEY: In the short term.

MR. SPARKMAN: In the short term, yes.

CHAIRMAN RAY: Thank you.

MR. SPARKMAN: Okay. And there was a question about cyber security and the TSCD. Do you want to cover that now, or do you want to wait until after the staff presents Chapter 9, or --

CHAIRMAN RAY: Well, I think because of -- we are going to wait until after staff presents

Chapter 9, Wes, and be done, then, with all of the chapters, because there is cyber security and perhaps other things we can then move into.

MR. SPARKMAN: Okay.

CHAIRMAN RAY: I don't want to leave it dangling out there. Let's go ahead and finish Chapter 9 with the staff, and then we will talk about cyber security and anything else you want to address at this time.

MR. SPARKMAN: All right.

(Pause)

MS. SIMMS: Hi again.

CHAIRMAN RAY: Hello.

MS. SIMMS: For the Chapter 9 Vogtle COL application, this chapter was a collaboration of nine chapters and 20-some reviewers. Today we will have Mr. Larry Wheeler provide you with the site-specific information for the Vogtle Chapter 9 section.

When Chapter 9 -- you can go to the next one -- was previously presented to the ACRS, it was under Bellafonte as the reference COLA, and there were four open items, which you have already basically seen from the applicant that was addressed. And today I am just going to provide you with a resolution for those four open items.

For the metamic monitoring -- for the monitoring program, the applicant just needed to provide the staff with more information to give us some assurety about the information that they are going to have inspected for this program. And they provided a license condition to ensure that the monitoring program information will be available to the staff prior to the plant operation.

Next item.

For open item 9.1-2 on the in-service inspection and light load handling system, we just needed more detailed information about what procedures they were going to follow. And they provided clarity in that through the commitment that is currently inside of their FSAR. That will be -- that is available -- that their inspection will take place prior to the receipt of the fuel onsite.

Next one.

For open items 9.1-3 and 9.1-4, I just sort of put those together as dealing with the plant inspection program and the overhead heavy load handling system, and the commitment was still the same that was necessary for both of them, what detailed information that you are going to provide for the procedures and the system inspections that you are

going to do for those programs. And they have made the commitment, which is currently in the FSAR, that will be implemented prior to receipt of the fuel onsite.

For -- you can go to the next one -- the raw water prescription portion, that will be provided to you by Mr. Larry Wheeler for the staff's review.

MR. WHEELER: Good morning. Parts of this slide were previously described by the applicant. But to emphasize, raw water system is non-safety-related, is non-seismic. Raw water system provides makeup to the service water cooling towers.

Availability controls, 2.4, exists for the service water system for modes 5 and 6. Raw water system consists of a shared well water system for Units 3 and 4. It includes two deep well makeup pumps, underground HDPE piping, 300,000-gallon storage tank, four well water transfer pumps, the well water pumphouse. Diesel supports the well water makeup pumps and the transfer pumps.

Well water subsystem has redundancy, 300,000-gallon storage tank. Pumps are diesel backed. The well water subsystem pumps well exceed the service water basin makeup requirements. There are -- the well water pump -- makeup pumps are at 1,500 gpm,

and the well water transfer pumps are -- four at 750 gpm.

Reliable materials are being considered a system with industry good practices. Well water is non-radioactive. Contamination is not credible due to its configuration relative to the potential sources of contamination.

The staff's review summary. GDC 2 and 4 have been satisfied. Failure of the raw water system and its components will not affect the ability of any risk-significant system to perform their intended safety function. Failure of raw water components will not affect any RTNSS systems. Staff concludes that raw water system meets all applicable regulations and is considered highly reliable to support cold shutdown.

And for show and tell I did bring a piece of HDPE for the members who have not seen this material for -- to be proposed for the raw water system. If you want, I can just pass this around.

CHAIRMAN RAY: Sure.

MEMBER BLEY: That's piping material?

MR. WHEELER: This is the HDPE, which is being proposed for the raw water system.

MEMBER SHACK: And the diameter and

thickness of that is?

MR. WHEELER: What is being proposed for the raw water system I believe is eight inch, six inch, and two inch of underground HDPE. This is a relatively large piece of pipe, probably around 48 inch in diameter with a wall thickness of about an inch and a half, inch and three-quarters.

As you can see, what that piece really represents is two pieces of HDPE that are fused together in a bead on the outside as part of that fusing process. And if you look very closely, or try to look very closely, at the fuse joint, it is fused together. You can't really see, you know, the two pieces that were joined together.

MEMBER BROWN: While they're looking, can I ask you an information question?

MR. WHEELER: Yes.

MEMBER BROWN: How often is it expected to have the makeup system, the makeup water have to make -- how often are you going to have to use this to make up water in the circulating CWS system? If that's what it's used for, so --

MR. WHEELER: Could you repeat the question? Are you talking about the makeup to circ water, or are you talking about the makeup to service

water?

MEMBER BROWN: I don't know. I'm not even sure which one I'm asking about. But how often do you have to use it? You said it's reliable, but it's --

MR. WHEELER: This would be continuously in service.

MEMBER BROWN: Oh, okay.

MR. WHEELER: At least for the service water. I can't really talk about the circ water, but for service water we are in the neighborhood of about 500 to 1,000 gpm makeup --

MEMBER BROWN: Okay. So it's continuous.

MR. WHEELER: -- that would be required during a unit trip.

MEMBER BROWN: Okay.

MR. WHEELER: If both units were to trip, you would need about 1,500, 1,600 gpm to support the service water systems for both units. So this would be continuously in service, and that is why, from a reliability standpoint, diesel-backed components were desirable.

MEMBER BLEY: Well, I think it would help Mr. Brown if you told him that -- if you have a shutdown event, and you have no more raw water for a while, how long the service water pond lasts.

MEMBER BROWN: Yes, that was relatively --

MEMBER BLEY: That's his question. I think that's what your --

MEMBER BROWN: Yes. How long -- how long --

MR. WHEELER: As part of the DCD, the AP1000, there is a built-in water supply in the basins of the service water towers themselves. That, coupled with the fire protection tank, gives you about 24 hours of reliable water for the service water system for shutdown condition.

Now, past 24 hours, the raw water system should be available to supply that makeup system, but that was part of the DCD, to make sure there was about 24 hours of water supply outside of what the COL has to supply.

MEMBER BROWN: And the wells have enough capacity to -- I mean, in terms of --

MR. WHEELER: The well pumps, I think I said they were 1,500 gpm.

MEMBER BROWN: I don't remember. One was 750, and the other one was 1,500.

MR. WHEELER: The 750s were the transfers and the wells are 1,500.

MEMBER BROWN: Okay.

MR. WHEELER: So, yes, you just -- you would just need one --

MEMBER BROWN: Not a problem with water underground to being able to bring it up at that flow rate.

MR. WHEELER: That is outside my expertise. That would be --

MEMBER BROWN: I presume it is okay. That's --

MR. WHEELER: That would be something that would be evaluated in Chapter 2.

MEMBER BROWN: Pardon? In Chapter 2, okay. All right. That's it. That just was information for me. That's all.

MEMBER BLEY: We came up with a question, but I think in one of the license renewals we saw some pictures of how they actually fused this. And, as I recall, there is some large machine that actually heats it and clamps it and --

MR. WHEELER: I went to a one-week presentation at EPRI on HDPE, and they essentially have a machine for what the applicant would use for an eight-inch pipe. It would be on a small cart about half the size of this desk, and what they would do is they would bring in one of the pieces of pipe from one

side one of the pieces from the other side. It would bring those together, and there would be a heating plate that would actually heat the ends of -- both ends.

The would pull the heating plate out, then bring the two pieces together, and then they would apply pressure from both ends, and after about two minutes that joint would be fused together and you would release the pressure and you would have a fused joint.

MEMBER BLEY: All the fusing we see here happens from heat that is stored in there from this pipe before they are shoved together.

MR. WHEELER: That's correct.

MEMBER BLEY: That's interesting.

MS. SIMMS: Are there any other questions?

MEMBER ARMIJO: Yes, I had -- I would like to ask the staff the same question I asked the applicant. On the volume fraction of boron carbide in the metamic, they told me there is 32 weight percent boron carbide in this aluminum matrix, so that is a very large volume fraction. Surprisingly high.

And the question I would like to ask the staff, is there a limit on the amount of boron carbide loading that is --

MS. SIMMS: The reviewer for that section is not present today. I would have to get with staff and have them get you an answer for that at a later time.

MEMBER ARMIJO: Yes, I would just like to know that. Or if there is a document that the staff has approved on the -- on metamic, if you could just give me a copy of that. This is more of a generic question, not related directly to --

MS. SIMMS: Well, I will contact that branch.

MEMBER ARMIJO: Thank you.

MS. SIMMS: Another question?

MEMBER BROWN: Yes, I had one other. After they do the fusing, can it be inspected? Is there an NDE, non-destructive test procedure that allows you to determine that you had complete fusing throughout the circumference and --

MR. WHEELER: For a non-safety application, and I did -- in part of the EPRI seminar that I went to, there is what they call a data logger. The data logger would actually be running the entire time that you are doing the fusing process. So it is going to be looking at the heat of this plate to make sure it is within its requirement or range, and they

are going to be looking at the amount of pressure that is being applied from both ends.

And the only NDE is really a visual examination, and that is looking at the outside of the beads to make sure that they are properly contoured.

MEMBER BROWN: So it's a process control issue there.

MR. WHEELER: Yes, it's a process control. And I'm not sure to what extent the applicant is planning on using -- using the data logger for non-safety application.

There is a code case that is presently being reviewed for safety-related applications, and the NDE is much more extant for safety-related applications, and that is still being reviewed.

MEMBER BROWN: Thank you.

CHAIRMAN RAY: All right. Hearing nothing else, thank you very much.

MS. SIMMS: Thank you.

CHAIRMAN RAY: All right. Now, I think we have concluded, then, review of all of the SER chapters, now characterized as the AFSER. And we are prepared to proceed with closure or follow-up items. And we will do that for the COL, because at the end of our agenda we will transition back away from the COL

to a discussion that pertains to the DCD having to do with aircraft impact, because we have not yet written the letter on aircraft impact.

And so we are basically talking about two different separate things here today. One is the COL letter for Vogtle, and the R-COLA letter, and the other one will be on aircraft impact. So I want to make a distinct separation between those two things.

And with that in mind, then, we will invite Southern Nuclear to respond with any of the items that we left for further discussion, in whatever order they want to, except that staff has asked, because of their other requirements, that we take up cyber security first.

MR. SPARKMAN: All right. Just a couple of things I want to discuss about cyber with relationship to the TSC. Hopefully, this will address your concerns.

The first thing to discuss is the reality, the fact that the cyber security plan is what has been submitted to the NRC staff, not the program. The plan is required by the rule, and it has been submitted to the staff. We have an advance final SER on that, and then we will develop a program in the future based on that plan.

CHAIRMAN RAY: What is the scope that it covers?

MR. SPARKMAN: The rule is only required to cover systems that -- digital systems that are important for safety, security, or emergency preparedness.

CHAIRMAN RAY: Okay. And that set of things doesn't have a fixed --

MEMBER BROWN: What was that again, Harold? That --

CHAIRMAN RAY: It doesn't have a fixed definition. What he just said isn't a defined set, except as it is defined by --

MR. SPARKMAN: By the rule.

CHAIRMAN RAY: Defined by the rule?

MR. SPARKMAN: Well, it is stated in the rule.

CHAIRMAN RAY: I know. But my point is what then is required to be included is something that you have to interpret.

MR. SPARKMAN: That is correct. Now, there are definitions of safety-related components that are in the regulations.

CHAIRMAN RAY: That's right.

MR. SPARKMAN: Security and those kind of

things. So but, yes, part of the plan was -- and that was one of the items that we discussed yesterday with respect to using the licensing basis as a foundational starting point to define those systems and those components.

MEMBER BLEY: Going further on Harold's question, I can see logical technical reasons to call the TSC something important to safety or even security. I can see legal arguments to say it is not. Is it? Does it fall under the rules we are talking about here, in your opinion?

MR. SPARKMAN: The TSC does fall under the rules with respect to emergency planning.

MEMBER BLEY: Okay.

MR. SPARKMAN: But not safety nor security.

MEMBER BLEY: But emergency planning is one of the things flagged in the --

MR. SPARKMAN: In the rule, that's correct.

MEMBER BLEY: -- in the rule.

CHAIRMAN RAY: Okay. But now let's, then, distinguish here -- and I say this for primarily Charlie -- emergency planning does not include plant operation.

MR. SPARKMAN: That's correct.

CHAIRMAN RAY: Emergency procedure implementation is not part of emergency planning, and I'm saying that as in the form -- intending it as in the form of a question. I believe that to be true.

MR. SPARKMAN: That is true.

CHAIRMAN RAY: All right. So when we talk about emergency planning, then, we are talking about something that doesn't have to do with how the plant is operated. That falls under emergency procedures.

MR. SPARKMAN: That is correct.

CHAIRMAN RAY: All right.

MR. SPARKMAN: Okay? Again, so this program will be developed in the future based on this plan. As part of the plan, we did do an initial binning or determination of certain systems, and the TSC was one of those systems.

Something that was discussed yesterday about I think a business network --

MEMBER BROWN: Yes, that was just -- somebody brought it up after we finished and were discussing it, and they told me that. I didn't --

MR. SPARKMAN: Right.

MEMBER BROWN: -- invent this.

MR. SPARKMAN: I know. I know.

MEMBER BROWN: I'm capable of doing that, but I --

(Laughter)

-- didn't in this circumstance.

MR. SPARKMAN: In this case, you did not do that.

MEMBER BROWN: No, no.

MR. SPARKMAN: Okay. One of the things we wanted to talk about was just as a point of clarification. Within the plan, there are four levels of security that are identified, with Level 4 being the highest level, Level 1 being the lowest level within the plan of those critical digital assets that are covered by the plan.

The TSC has been binned as being in Level 2, which is not the lowest level but one up from that in terms of protection. And one of the things we want -- and that is with respect to TSC data like the screens, things that would be up on the screens.

One of the things we want to talk about with respect to the TSC is kind of what the function is. You know, you talked about safety or security and emergency preparedness. Basically, the TSC, once the responsibility is turned over from the control room to the TSC, they are responsible for notifications to

offsite agencies, providing protective action, recommendations, determination of emergency classifications, and assistance to the plant staff for technical issues.

Now, no decisions are actually made in the TSC without prior consultation with the control room, and also with the EOF if the EOF is operational at that point. And at some point, a lot of the things that the TSC is doing in the EOF takes over.

But those were a couple of items that I just wanted to make sure that were understood, that in the data that is transferred it is protected at a higher level than just out in the world. And the data that is received and viewed at the TSC and the EOF, we would not utilize that data to make a unilateral decision based on that data alone.

Anything that we would see there we would confirm with the site or the EOF, and there would be consultation to make sure that what we were seeing they were seeing, they agree with what our recommendations were, and I hope that that addresses some of your concerns.

CHAIRMAN RAY: Well, let me intervene here. I think what you say is certainly true. But in listening -- that's why I said I was a little

surprised in what the consultant to the staff was saying. I was running a plant at the time of TMI, and afterward, too. So I know something about what the TSC does and doesn't do.

But the implication was that the TSC could give information to the control room that they would act upon, which was flawed, contaminated, wrong, because of the lack of cyber security in the TSC itself. That is the implication, right?

MR. SPARKMAN: That's the implication.

CHAIRMAN RAY: But what you have just said is, no, that nobody is going to, in the TSC, tell the control room what to do based on information the TSC has. But it is sort of nuanced, you have to admit, because you said they would consult, and so on and so forth.

So the real issue I think at hand here is, what does this Level 2 do in terms of what level -- what concern should we have that it might be compromised in terms of the information that it has, because it is better not to get into a debate over whether the control room is going to do what the TSC recommends or not. That, as I say, is sort of a nuanced issue. The TSC was created in order to assist the control room, as you said.

MR. SPARKMAN: Right.

CHAIRMAN RAY: And, well, what does "assist" mean, and what if they are relying on bum data, and so on. That is a discussion that God knows how it will ever get resolved. But it would be better if we were comfortable with the idea that the TSC isn't going to have bad data to start with.

So can we -- I don't know whether in this session we can or can't get a better idea of what Level 2 does.

MR. SPARKMAN: Well, in terms of technical details of Level 2, like I said, we have a plan. We don't have a program of all of the details established yet, and so I am not prepared to discuss significant details going much further than what I have just discussed.

CHAIRMAN RAY: What does Level 2 -- what is the definition of it? Is there a simple statement that describes Level 2 in your plan or in an industry document or something?

MR. SPARKMAN: Well, we have our plan, which describes -- well, actually, that doesn't describe the levels.

CHAIRMAN RAY: Does it even say what Level 2 means, or is that all it -- just Level 2,

period, that's it?

(Laughter)

Nothing more?

MR. FLOWERS: This is James Flowers from Southern Nuclear. The reg guide actually describes the four levels and --

CHAIRMAN RAY: Yes. That's what I thought.

MR. FLOWERS: -- and so the reg guide is what we are following in that particular case. And Level 2 is not an unprotected network. It does have -- it does have cyber security protection on it. It is just not to the level that is for a Level 3 or a Level 4 system.

So, again, if you go back and look at the levels, Level 2 does have protections on it, and it is a fairly reliable network. We are not going to go say it is highly reliable, because then experts will say, "Well, it is not as high as Level 3 or Level 4." It is certainly not the internet, and it is certainly not a private home network. It is a very reliable and protected network used within the company.

CHAIRMAN RAY: Well, we heard said reference to things like encryption and validation and all that kind of stuff, as if those were attributes

that you could associate with some levels and not with others. Can you add to -- can you use any of those words when you apply it to Level 2?

MR. FLOWERS: I don't think we can use that at this point, again, because what we have been asked to do is provide a plan that had the programmatic elements in it, just like the NRC staff has stated, that we have to provide the programmatic elements at this point, and then we can go define all of the specific technical issues or technical controls at this point.

Until we do that, we cannot say that it does have the encryption on it or it will not have -- or it will or it will not have encryption on it.

CHAIRMAN RAY: All right. Wes, go ahead with whatever you wanted to -- complete whatever you wanted to say.

MR. SPARKMAN: Well, I think that does complete the presentation or the discussion that I had in mind, unless there are other questions that you have.

CHAIRMAN RAY: Well, I think that -- you know, I would just summarize it, again, to say that the problem that we are going to wrassle with here -- I don't know how much we are going to wrassle with it

-- but we are going to wrassle with is the one that is implicit in your description of what the TSC does relative to the control room.

And I'm not sure that anybody has really tried to parse that before. That is to say that maybe they have in this reg guide, but what we heard here this morning from staff was sort of perplexing in terms of what conclusion you would draw from it.

MR. SPARKMAN: Right. It was somewhat perplexing to us as well. I think the takeaway that I received from the staff was more a matter of the rules and regulations require certain evaluations to be done. And if through that evaluation process you determine that a particular -- that from point A to point B you've got a certain level, then you want to make sure that it maintains that throughout.

And I think that there were some things that were started earlier that could be interpreted to say it has been defined at a particular level, and I think that that was -- that it was more of a -- and I can allow the staff to speak to this, but my interpretation of that was it was more of a generic statement.

If you determine that this is the level, then you protected this, not specifically saying the

TSC will be at that level.

MEMBER BROWN: The reg guide doesn't talk about the TSC.

MEMBER BLEY: What the reg guide says -- I just pulled it up -- just for everybody for a real simple view -- Level 3 and Level 4 do not receive from any level lower than themselves. Level 2, which is corporate owner control, does in fact receive from both Level 3 and 4, and it receives from the corporate level, which is the level above it.

So the big difference between 2 and 3 and 4 is 2 can receive incoming communications from less protected networks.

MEMBER BROWN: From Level 1.

MEMBER BLEY: Level 2 -- Level 1 and Level 0, yes. Well, through Level 1.

CHAIRMAN RAY: Well, just now on what you said, I -- as I said the first time around, take for granted that the TSC can't send bad data to the plant.

MEMBER BLEY: By design and by the definition.

CHAIRMAN RAY: Absolutely. I mean, it -- Charlie said, well, maybe we shouldn't take it for granted, but I take it for granted that that --

MEMBER BROWN: Well, it's set up that way.

I didn't mean to imply otherwise.

CHAIRMAN RAY: But the issue at hand is whether the input that they give orally, or by whatever -- e-mail, whatever means they have to communicate with the control room, whether that is somehow another way to get Level 2 information into -- and I appreciate the reg guide doesn't deal with this issue, okay?

So it boils down to, well, if the -- if the control room gets input from the tech support center which is based on bum data, can they recognize it and tell the TSC to go pound sound if they are not going to do it? And I honestly haven't a clue. I don't know.

MR. SPARKMAN: The information that is in the control room should be the same as the information that is seen in the TSC and in the EOF. And if there is a discrepancy when you are having that conversation, that would be --

CHAIRMAN RAY: Yes. That's what I meant by, can the control room discern that there is a discrepancy? Are they going to check orally the way you do -- the way the computer does when it does self-checking? I don't know.

In any event, I don't want to continue

this too long beyond what is necessary just to define what we are talking about, because it seems to me that the issue at hand is -- goes to the understanding of what is the role of the TSC, and what if it has contaminated information as a result of this potential that one could gain access to a Level 2 system and contaminate the system somehow from the outside, from a Level 0 or a Level 1 system and thereby cause the TSC to give bad information to the control room.

I have never heard anybody talk about that in my years at this business. So it sounds like sort of a philosophical question that I don't want to try and pursue. But as soon as I heard what I heard this morning from the staff, I thought this doesn't sound like anything I heard before. And so that's what I was concerned about.

MEMBER BROWN: One point on that is that, you know, if you do have the contaminated data and the TSC thinks they are seeing good stuff, and the other one they're consulting, as you said, they are talking to each other, but that delays decisions and could delay critical decisions if -- while they sort it out if nothing else.

And so there is -- you're right. That is why you would like to have the reliability level of

the data that the TSC is looking at to be similar to what you have in the plant.

CHAIRMAN RAY: Well, but the problem with that is, Charlie, that as he enumerated the functions of the TSC, three out of the four of them have to do with dealing with the outside world, not with the control room.

MEMBER BROWN: I understand that. I mean, I --

CHAIRMAN RAY: Well, if you understood it, let me say it anyway.

(Laughter)

And, therefore -- well, Charlie, goodness, gracious.

MEMBER BROWN: I'm listening, I'm listening, I'm listening.

CHAIRMAN RAY: Because the TSC has to communicate with the outside world, it inherently has a problem with protecting the data in the TSC to the level that the control room data is protected, because it has a -- it gets information and sends it on to the EOF and other places.

MEMBER BROWN: Okay. The point being is that you can have data going from every place else, from the plant data information come in separately

from those communications, from the TSC to the outside world. They don't have to be on the same network for one thing. That separates that problem and gets rid of it.

We had the same problem on the carriers when we got a central control station and a propulsion plant watch off -- I mean, an enclosed operating station. And we dealt with that in two different ways. One, they can fight with each other, or you vest the final decisions in the enclosed operating station, because they're in the plant.

So I'm just -- all I'm doing is just raising the point that there are ways to deal with it. They have identified it at Level 2, which allows them to go on the business network. There is a way not to do that by having the critical data be on a separate network separate from the -- you know, for the plant information, and then still have a communications network that -- to go out to the outside world. They don't have to be tied together in NICs. That's the point. I'll stop right there.

CHAIRMAN RAY: Yes. No, I understand it. So we will end the discussion here now, because I do think the understanding is as much as it needs to be.

Okay. Now, we had other things to talk

about. Do you want to take them up now?

MR. SPARKMAN: Yes. Eddie, do you want to go ahead and talk about squib valves?

MR. GRANT: Yes.

(Pause)

CHAIRMAN RAY: Okay. Now I'm going to ask you to do one thing for me. Okay? I want to try and separate the discussion of qualification from in-service inspection and IST. Now, what makes that a little tough is that in the context of discussing qualification we were also informed about some things in the DCD context that would be part of ISI, and so that makes the picture a little muddy in that regard. But with that foundation, let's allow you to proceed.

MS. AUGHTMAN: Maybe while he is passing those out, with that list I guess of -- so I will just go through the order of the actions we are planning to present.

CHAIRMAN RAY: Go through the order of what, Amy?

MS. AUGHTMAN: The list of actions we are planning to present.

CHAIRMAN RAY: Okay. Sure.

MS. AUGHTMAN: We've got several. So the first one we are actually planning to cover is action

item number 64 on the hydrogen truck.

CHAIRMAN RAY: Yes, the hydrogen trucks, correct.

MS. AUGHTMAN: And then we were going to do squib valves.

CHAIRMAN RAY: All right.

MS. AUGHTMAN: And then address the gas accumulation actions in the COLA, and then debris limits as it relates to tech specs, and then, finally, the last COLA action would be the shield building inspections for the coatings on the shield building.

CHAIRMAN RAY: Okay.

MS. AUGHTMAN: And then we would turn it over to Westinghouse to come back and address the screens on the weir from yesterday.

CHAIRMAN RAY: Yes. All right. Now, understand we have -- the screens on the weir is part of the design certification. That is gone. The only issue for a COL is, given that there are screens there, what are the implications? That is at least where I am coming from. And I have another question for the staff, which is, did you guys review the existence of the screens? But, you know, I just -- I don't want to go back and revisit something that has been done.

All right. Fine, proceed.

MR. GRANT: All right. We would like to, as she indicated -- Eddie Grant with NuStart. And as Amy indicated, we would like to start with the existing action, number 64, which was a question about whether there was an additional explosive hazard during the delivery of hydrogen onsite.

And what we would refer you to there is that this is -- is one of many administrative controls that would take place onsite or would be established onsite to control numerous evaluations and discussions of things within the FSAR that have been identified.

So we would have administrative controls to limit the amount of hydrogen that would come onsite and the pathway that it would follow, so that it wouldn't get any closer to the safety-related structures, systems, and components than the evaluated explosion, and also administrative controls to assure that the delivery would not be of an amount that would be greater than.

And with simple administrative controls, we can make sure that the explosive force, should it occur during a delivery, would not be greater than what we have analyzed. And so that would be our --

CHAIRMAN RAY: Do you know, Eddie, what

existing practice is for --

MR. GRANT: I do not know what the existing practice is. I think for -- in general I would say that this typically does not come up and is probably not well addressed on most operating plants.

CHAIRMAN RAY: Okay. I would agree.

All right. Sam, I think this is a question you had.

MEMBER ARMIJO: Yes. I think you had actually said that before in some of the earlier meetings, maybe not as crisply, but --

MR. GRANT: Not as explicitly, yes.

MEMBER ARMIJO: I think that -- I'm trying to remember why I asked the question. I think it was along the lines of, was there anything unusual about the AP1000 that would require more hydrogen deliveries than a conventional PWR?

MR. GRANT: No. There's nothing -- it is unusual, different.

MEMBER ARMIJO: Quantities, quantities, locations --

MR. GRANT: We do have this large tank that is set off at a distance of course.

MEMBER ARMIJO: Yes.

MR. GRANT: And in many of the operating

plants I would say that what hydrogen has provided is maybe in smaller cylinders and comes in an individual cylinder and gets hooked up, whereas we are going to have these deliveries with trucks and refilling a large tank.

I don't know the details for all of the operating plants, so I can't say that that is for sure different from all of the operating plants, and there aren't any out there like that. But that would be a general difference I would -- I guess I would say.

MR. ED CUMMINS: Ed Cummins. The dominant user is the generator. So everybody has that --

CHAIRMAN RAY: That's right. But I think Eddie is right, Ed, that most people have a bottled --

MR. ED CUMMINS: Yes.

CHAIRMAN RAY: -- cylinder delivered.

MR. ED CUMMINS: Yes.

MR. GRANT: And one thing we are looking at is possibly -- there is some guidance in Reg Guide 191 about probabilities and being able to show that the explosion rate would not exceed what you have analyzed. And if you did that, you wouldn't necessarily have to address it and might not have to even have the administrative controls.

We are looking into that, to see where

that would go, but we don't know how that is going to turn out just yet.

CHAIRMAN RAY: Okay. Sam, are you satisfied?

MEMBER ARMIJO: Yes.

CHAIRMAN RAY: Okay. All right. We've gotten the information on -- don't have anything further to say at this point.

MR. GRANT: All right. The second item we would like to address is the squib valves. There was a question yesterday about us in particular providing information on the squib valve testing. We have addressed that in our FSAR, and so we have got -- we have put together a couple of slides here. I don't have them where I can project them, but I did provide some handouts.

CHAIRMAN RAY: Yes, we have the hard copies on --

MR. GRANT: All right. So you have requested this information on development of in-service testing surveillance activities for the squib valves. And the staff bullet from yesterday indicated that Westinghouse and Southern Nuclear will develop in-service test surveillance activities for squib valves based on the final design and lessons learned

from qualification process.

One of the questions was, do we agree with that? And absolutely, we think it is perfectly stated, and we will be pursuing that.

We have addressed this. It is in our FSAR currently in 396-22. It addresses the commitment to do exactly what they have said in their bullet, and we do plan to do that.

The background is -- on the second page -- we got an RAI letter sometime back, RAI 396-1. It asks -- or it indicated that, indeed, improved surveillance activities were being considered by the industry and asked us to include in the FSAR a commitment to incorporate lessons learned, and those lessons learned would come from two sources, from either the design completion process or from the qualification process.

We indicated in our response that we would do that, and provided that FSAR revision in August of 2010. And the bottom there is exactly the words out of 36-22 that includes what we do intend to do, and the key words there is that the IST program for squib valves incorporates lessons learned from design and qualification process for these valves.

Now, it is in present tense. We haven't

done that yet. We haven't written that yet. All of our FSAR is in present tense. So these are, again, commitments of things that we are planning to do.

MEMBER BLEY: Eddie, we heard about the new ASME program work going on. Are you folks participating in that directly?

MR. GRANT: We monitor ASME activities and keep up with those across the board, not just specifically for this, but certainly across the board for in-service tests and how that might be changing, and are aware of that and evaluate all of those changes, yes, sir.

MEMBER BLEY: Is that hitting a point where there are some conclusions coming out of it that you can talk about?

MR. GRANT: I don't think so. Not at this point. As we indicated, the main things that are going to be inputs to that we believe are the completion of the design process and then the final qualification of those valves, neither of which are complete yet.

So we were asked yesterday, when will we be done? And how will we know? And so we've got to complete those two processes. We've got to look at what the lessons learned are out of those. We expect

that it is possible there could be a considerable list of things that would come out of that.

We would need to evaluate each one of those items, do cost-benefit studies possibly on those, and, you know, some of them may get thrown out, some of them may be determined to be worthwhile and appropriate. Some of them may not have anything to do with in-service testing, so they certainly wouldn't go in.

But the ones that are appropriate for in-service testing, that do provide a cost-benefit, and that would provide some improved surveillance, then we certainly will consider those. And we would think that would provide some key inputs to the ASME code folks as well.

CHAIRMAN RAY: You would agree this is a somewhat unusual circumstance here, these words that are in the FSAR now.

MR. GRANT: It's different, yes.

CHAIRMAN RAY: So you wouldn't be surprised, I wouldn't think, if you found that we sought to have some visibility and involvement to this down the road as it emerges, because otherwise it is very hard to tell what this industry and regulatory guidance is going to lead to at this stage of the

game.

MR. GRANT: I would say that my expectation would be that if the ASME code does come up with some recommendations, then they will propose revisions. The staff will ultimately look at that ASME code and propose an endorsement or additional requirements via guidance documents of some sort. And you would see those and would have some --

CHAIRMAN RAY: Yes, that's right. It -- but at this point we're talking about the COL, and it is conceivable at least that this is all going to be implemented through the R-COLA if the process that you just described takes long than we would wish, you know.

MR. GRANT: Well, we certainly -- we were also asked when we would be done. So our expectations are that Westinghouse is going to complete their designs, and then they will do the qualification and we will see those lessons learned well before we start up, because they have to complete the --

CHAIRMAN RAY: I would say that, too. I think you are going to be done before -- one way or another, before you start up.

MR. GRANT: Yes. And we would expect to be able to incorporate those appropriate lessons

learned in our initial in-service test program. So we think we will be done before startup.

CHAIRMAN RAY: Yes. Well, I just -- I think we --

MR. GRANT: Will you have seen it by that time, I can't say, because --

CHAIRMAN RAY: I understand.

MR. GRANT: -- I would think that the process --

CHAIRMAN RAY: It's not yours to worry about.

MR. GRANT: -- would take longer.

CHAIRMAN RAY: I'm just putting you on notice that, given the circumstance, we may decide that we need to have some briefing on this, too. But that's not going to --

MR. GRANT: It would not be a surprise.

CHAIRMAN RAY: A problem, I wouldn't think.

Okay. Fine. Now, questions for --

MEMBER ARMIJO: Yes, I have a question. Let's just assume that you go through your qualification program and everything else, and you conclude that other than the testing that you have already identified of the charges, periodic testing of

the charges and periodic testing of the bolts that are supposed to break, that there is really nothing --

MR. GRANT: It is a possible outcome.

MEMBER ARMIJO: Is a squib valve still okay? And I guess that applies to the staff. You know, it says here this -- this commitment -- it sort of says there is something missing here, that the squib valves aren't okay unless some new technology or new in-service test is developed.

And that is troubling to me, because it may not be possible, unless you've already got an idea of there is an inspection that would really be -- that is on the horizon that might work out to give you assurance that the valve will work.

MR. GRANT: I can't say that we do. I guess I would read that a little bit differently. Yes, this is a new application, but, really, the only difference is it is just a bigger valve.

MEMBER ARMIJO: Yes, I understand that. That's why I'm just wondering. This is a good thing to do. I'm not opposing it, but it leaves the feeling that something else has to be done in order for this thing to be satisfactory, and I just don't see it because --

CHAIRMAN RAY: Well, Sam, I think our

reaction has to be somewhere along the lines of what I suggested, which is because nobody can foresee it now, it would be our recommendation that we have a chance to look at it at the same time that it is -- that some conclusion is reached.

MEMBER BANERJEE: That's great. But one of the things is that, as we were discussing yesterday, if we have a way to know that the clearances and the other components there are maintaining the -- you know, the size or whatever they are, and they are not corroding or things are not in them, it is not an easy measurement to make. That is really the problem -- how do you make these measurements?

But without that, there is not very much that can be added, right? I just think that they are testing the charges, maybe testing the -- I don't know, but what does that matter? I mean, if they can't do those measurements, then they can write a very good paper trail on something. But the reality is not going to change. It is all about reality, measuring these things.

CHAIRMAN RAY: Yes. I mean, I'm sure these thoughts are going through everybody's mind who is involved in it. I think we are limited at this

point to simply saying, well, this is important enough that we would like to see how it is resolved before it is implemented, or at the time it is implemented.

MEMBER BANERJEE: It sounds like you would have to develop new technology or, I mean, this is a long-term thing.

CHAIRMAN RAY: I don't know. But --

MEMBER BANERJEE: I can't think of anything.

CHAIRMAN RAY: -- it is what it is, and I don't think we could ask for more than what they have committed to do. At least I can't think of anything we can ask. This is as comprehensive --

MEMBER BANERJEE: The design is going on still to some extent.

CHAIRMAN RAY: Yes. I mean, they could say --

MEMBER BANERJEE: You could suggest that the design be such that it makes possible the inspection of these clearances and things like that.

CHAIRMAN RAY: Understood.

MEMBER BANERJEE: I don't know how you would do it, but --

CHAIRMAN RAY: But the point is, though, still, they could have said something much less

responsive than they have. As far as I can tell, they have indicated both industry and regulatory guidance is going to be considered, and I guess we are simply going to seek to see what the outcome of that is.

MR. GRANT: It is a work in progress.

CHAIRMAN RAY: Okay. I would say again to Wes, and I spoke to him this morning, so I know he understands it, this is important enough that it should have been I think in your presentation, because it is a big responsibility that you have. That's why I made the comment I made yesterday. It is a big deal.

MR. GRANT: My apologies. I put those together, so I was --

CHAIRMAN RAY: Okay. Yes, Charlie.

MEMBER BROWN: Can I just give you a perspective that I had? This has nothing to do with the qualification issue. This is just a perspective on the in-service standpoint.

Number one, the way I see it, and Westinghouse can correct me if I'm wrong, is that literally the valve is being developed iteratively. In other words, you design it, you test it, see if it works the way you expect it to work. If it doesn't, you tweak it. Test it again until you get the design

to do what you want it to do, and then you -- hopefully you test more than one to say that it is repeatable.

But now you've got to design the drawings, the clearances, the amount of stuff in the charge, size of the bodies, the welding, whatever you do on the valve it is all defined, the procedures there, to manufacture it. Then, you go manufacture it in the factory, and -- but you can't test it afterwards. You are depending upon your process of the design to make sure it gets assembled and bolted and torqued and whatever is supposed to be done to make it consistent with the tested -- you know, the devices you tested.

So you can't production test it after you have manufactured them. Once you get it in service, put it in, you can't operationally test it either, because you just lost the benefit of any, you know, operational. You can't do it in the plant. That has already been stated -- you can't do that.

What triggered me yesterday was the proposal to start taking the valve apart in some way, shape, or form, as part of the discussion by the staff. If you disassembled part of it and looked inside, in the field, and now you come back and you put it back together in the field, not in the same

conditions that you did when it was in the factory, unencumbered with plenty of space, and all of the other type things you may run into, and you do this after some period of time it has been in service and pressurized, will it get reassembled in a manner that is the same as before?

And so, in other words, if taking -- my concern is taking it apart in the field and then putting it back together and expecting to have a good outcome is not a good idea. So it -- to me, I am very interested in your approach, let's wait and see what they come up with.

But if somebody wants to put little ports in where they are going to stick stuff down inside of it and look at it, how do you know they didn't leave something behind or something didn't ship? I mean, you just don't know that, and --

MEMBER BANERJEE: Well, the ports are better than disassembly.

MEMBER BROWN: Well, you've still got to -- you've got to take something -- I agree. It is just -- I agree with you. I mean, the only thing you -- to me it looks like you can do, you can go to the end of this pipe where the water is going to come out, and you want to depressurize it. And look at the

diaphragm or the shear cap or whatever that -- you know, that barrier is and see that it is not cracking or that it is not distorted. But that is about it.

So, anyway, it is just the perspective of taking a piece apart. And my past experience is stuff that I can't test very well is to never take it apart, in other words just operate it, find a way, you know, if you can operationally prove that it's okay, this time you can't, so you've got to trust your process. And that's kind of -- that was my perspective.

CHAIRMAN RAY: Well, that's similar to what Sanjoy is saying I think, which is we can't really see what they are going to come up with. Now we are skeptical about how we would solve it ourselves, but I think the best thing is for us to just try and ensure that we get a chance to look at the solution when you --

MEMBER BROWN: I agree with that. Appreciate it. Thanks for letting me speak my piece.

CHAIRMAN RAY: All right.

MR. ED CUMMINS: This is Ed Cummins. Just one bit of clarification to your description of our development process.

MEMBER BROWN: It wasn't meant to be pejorative, Ed.

(Laughter)

I thought it --

MR. ED CUMMINS: Once we'd get the -- once we have the final design, we qualify the final design, including operating it. So the production units are tested. The production units are tested, and if they're not --

MEMBER BROWN: Do you mean you blow up the charge and have the shear cap --

MR. ED CUMMINS: Yes.

MEMBER BROWN: -- and then you replace the pieces.

MR. ED CUMMINS: And then replace the --

MEMBER BROWN: Oh, okay. All right. That wasn't clear from the earlier discussions. At least I didn't understand that. Thank you.

MEMBER BANERJEE: Ed, how many -- will there be a statistically significant number that you test?

MR. ED CUMMINS: I mean, I would say no. I mean, the PRA-type philosophy is that the charge -- there has been huge numbers of -- so statistically for the charge, but after that you do mechanics to show that you open, and then you check to make sure that you didn't lose the qualification by the -- in the

production model.

MEMBER BANERJEE: So let me give it back to you in what I understood, then. You can always test the charges, and you have clarified how you are going to do that.

MR. ED CUMMINS: Yes.

MEMBER BANERJEE: That's clear. With regard to the -- let's say the robustness of this in terms of earthquake shaking, etcetera, you have done detailed finite element analysis, and so on, showing everything is in the elastic range under the worst conceivable conditions. So you expect that there will be no plastic deformations of any sort.

Then, you are going to test these out after you put them into production, but you will actually test them where they will slam open. And you will do a few tests of these, and most likely you will find some variability in the performance that is assumed that you do.

The question is: will you test a sufficient number to be able to give some degree of certainty that this will operate when called upon to? I mean, if you test two or three, this may or may not be sufficient. I haven't worked at -- looked at the statistics. So how many will you test? It will be a

small number, right? It's expensive to test.

MR. ED CUMMINS: Yes. Ed Cummins of Westinghouse. You can see some of the -- our thought process in the tests we have already run. You test for the variability of the explosive loading, and you have acceptance criteria that between 80 and -- I don't know the numbers, 80 and 120 percent, and it has to operate at 80 and 120, or close to that, so that you feel comfortable that the production units all will work. And that is where we want to be.

But it is not a statistical assessment of -- because you would have to do hundreds of tests --

MEMBER BANERJEE: Right.

MR. ED CUMMINS: -- in order to get a statistical sample. But it is -- if you had a failure of your production model in the range you thought was acceptable, you would have to start over. I mean, you would have to say, "Uh oh, that's not really my production model anymore. I have to figure out what went wrong and have a new fix for this."

MEMBER BANERJEE: But there is also some variability related to the bolts and the part that shears off and all of those things, right? There is bound to be.

MR. ED CUMMINS: Yes.

MEMBER BANERJEE: So with regard to the charge, I think what you are trying to do is you separate the charge out as being -- as saying that is the most variable of the components there, and so you can test those. But there is some variability associated with the mechanical construction of this as well, and there are key components which have to shear off, break, all sorts of things. So, you know, how do you handle that variability?

MR. ED CUMMINS: I believe that our answer is we deal with variability in the design. That is, if the strength of the rod is going to be between X and Y, we want it to work at both X and Y. And so we tried to deal with the variability of all of the things which are key to the performance and say that we bounded all of them in our production models.

DW*: And that was shown in the production testing. It was done in the design of the -- design conceptual that they did all of the minimum and maximum tolerances, the 80 percent, 120 percent loads, and they did that all in the development of the design. So --

MEMBER BANERJEE: Yes, I think that's a good answer, but now once you have got this production model, there will be some variability in each of these

valves that you assemble, which will be presumably within the tolerances that you want, right?

MR. ED CUMMINS: Yes. Because if it was a production model, you would say it is within the tolerance. If you had a failure, that would be a significant event. You would have to redesign it. You couldn't any longer say that was an acceptable design.

MEMBER ARMIJO: Ed, I just want to make sure I heard you right. Each production squib valve will be tested?

MR. ED CUMMINS: No.

MEMBER ARMIJO: Okay. I didn't hear you right.

MR. ED CUMMINS: No.

MEMBER BANERJEE: How could you?

CHAIRMAN RAY: He said the production valves would be tested.

MR. ED CUMMINS: Yes.

CHAIRMAN RAY: But then Sanjoy asked him what the statistics were, and he said it would be a few. I think what you guys should be hearing from us is areas of interest and concern that hopefully will be answerable when we look at this at the end of the development period.

MEMBER BANERJEE: Well, they have sort of an on/off test. If it ever doesn't work, then that is a very significant effect.

MEMBER BLEY: But the other part that seems important -- and I haven't seen a test report, I don't know if there is something available -- is it sounds like they have actually tested at the extreme ranges under which they think manufacturing will be controlled. Did I get that right, or am I --

MR. ED CUMMINS: Yes. We haven't tested the production model, because we are trying to create the production model --

MEMBER BLEY: Right, right. They will do that.

MR. ED CUMMINS: -- and selecting data to do that. But, yes, we have -- we would -- the production model will be designed within the range of what we have learned from our test program, and we would expect that after we have a production they will all work. If they don't, then we don't know what we are doing, and we have to rethink. So --

MEMBER BROWN: Can I ask just -- to understand your answer to Sam? Because I changed when I -- the actual valves that are going to be ordered for delivery to a plant, those are now -- that is what

I call production valves, not a production design but production valves.

MEMBER BANERJEE: Some of those will e tested.

MEMBER BROWN: No. He just -- I'm not sure what he said.

MEMBER BANERJEE: Oh.

MEMBER BROWN: Are those --

MR. ED CUMMINS: Our plan is to test actual production models, and the plan is in the --

MEMBER BROWN: I want the ones that are shipped for installation.

MR. ED CUMMINS: The ones that will be shipped. You test them -- the ones that will be shipped can be tested in a test facility to show that they operate.

MEMBER BROWN: Fully, the shear cap break. So all production -- okay. So all production --

MR. ED CUMMINS: For each of the separate designs, there is two different eight-inch designs and a 14-inch design, all will be tested in the production model.

MEMBER BROWN: Okay. So if somebody orders eight -- eight-inch squib valves for putting in their plant, you will manufacture those, test them.

MR. ED CUMMINS: No. All of the production models for the whole fleet are the same, so the ones that go to China are the same as the ones to go to Vogtle. And they will have some variability, and we have designed them to -- so that even with all of the variability that we have allowed, they always work.

MEMBER BROWN: So you are not going to test the production when it is sent to a plant.

CHAIRMAN RAY: Correct. Some of --

MR. ED CUMMINS: The ones that we test will be sent to a plant.

CHAIRMAN RAY: Yes, some of them, but not all of them.

MR. ED CUMMINS: Some will be sent to a plant.

CHAIRMAN RAY: They're not going to test a valve and throw it away. They will test some of --

MEMBER BROWN: Harold, the last time I asked that question, the first time he said, "No, we test them, replace the internals."

MR. ED CUMMINS: Well, you have to replace the shear cap that you --

CHAIRMAN RAY: You added the word "all," Charlie.

MEMBER SHACK: He is testing from a production run. But he is not going to test all the valves that he ever produces.

CHAIRMAN RAY: That's right. You stuck in the word "all," and that's all I'm --

(Laughter)

MEMBER BROWN: Yes, I did that on purpose.

CHAIRMAN RAY: I know you did, but I'm just trying to say he didn't say "all."

MEMBER BANERJEE: A small number.

CHAIRMAN RAY: He said the production model would be tested.

MEMBER BROWN: Okay. So if you build eight, you test -- assume you test one, and it works, which you expect it would, then you would replace the pieces and ship that one off along with the -- maybe part of the eight, the other seven.

MR. ED CUMMINS: That's correct.

MEMBER BROWN: Got it. Thank you.

MR. ED CUMMINS: Good.

MEMBER BROWN: A sampling test for program.

MEMBER BANERJEE: Yes, but not even statistically significant --

MEMBER BROWN: No, absolutely not.

MEMBER BANERJEE: -- to be clear.

CHAIRMAN RAY: Okay. But, again, there is a crossover here between the qualification test program, what you are talking about --

MR. ED CUMMINS: Yes.

CHAIRMAN RAY: -- and the in-service inspection and test program, which the COL applicant is talking about.

MR. ED CUMMINS: Yes.

CHAIRMAN RAY: There is a -- we can't entirely separately those two things. And so that is why we are having this discussion here now or why I am letting it go on is because the two things inevitably are linked together. But, again, I want to say I think you should hear from us areas of concern -- you heard them -- and expect to at some point down the road that you will be able to respond to them, and we will --

MEMBER BANERJEE: Well, the area of concern, though, to make it even clearer, is does the design -- and we don't know the design in detail -- allow for some sort of in-service inspection to at least follow the effects of corrosion, aging, whatever might happen to the various clearances? Is there some way that you can get information? Is that part of the

design, to allow some in-service testing?

MR. ED CUMMINS: So I think that is what the COL item is addressing, and I think our answer is to some degree, yes, and to what degree is yet to be determined. So there are still some things that we are learning as we design that provide opportunities for some inspection of things that are over and above what exists in the requirements.

MEMBER BANERJEE: And when do you --

MR. ED CUMMINS: And whether those opportunities are -- have a cost-benefit or -- those things still have to be determined, and that is what the COL open item really says, that the licensee will look at this and make an assessment of what ones on the whole list are valuable.

MEMBER BANERJEE: So you are saying that some in-service inspection will be possible by design. The way you are designing the valve will allow some degree of in-service inspection of things like clearances, and so on.

MR. ED CUMMINS: Yes.

CHAIRMAN RAY: Okay? Excellent.

(Laughter)

MR. GRANT: Thank you.

CHAIRMAN RAY: Well, this turned out to be

a little easier than I thought it might be, even as difficult as it was.

MR. GRANT: It helps that we have addressed it.

CHAIRMAN RAY: That's right. If you hadn't addressed it, we would be here until after lunch. Anyway, what is next?

MR. GRANT: The next item is -- there was a question yesterday about gas accumulation and whether or not there were any leftover items from the gas accumulation for the COL applicant. And basically the staff has issued interim guidance, 19 in this case, on the criteria for gas accumulation and what to do with those. And I could go through those, but the short version is the DCD has addressed all of those.

MEMBER BANERJEE: All of them.

MR. GRANT: Including procedures. They have identified the procedures that are necessary for prevention and maintenance and venting, and all of those are already identified in the DCD in Section 6.3.6.3. And so actually, no, other than fulfillment of what we have been committed to --

MEMBER BANERJEE: That's a separate issue.

MR. GRANT: -- there are no other additional actions to be addressed by the COL

applicants. All right?

CHAIRMAN RAY: Yes.

MR. GRANT: And the final item I would like to address was a question yesterday about the debris limits and whether or not those should be a tech spec.

MS. AUGHTMAN: Let me ask, do we need Mr. Bonaca for this?

CHAIRMAN RAY: I don't know if Mario is available for us, but I think we understand, the others of us here, what the issue was enough that we can take your answer and discuss it with him.

MR. GRANT: And you heard a quick answer yesterday from the staff that was their summary basically that said while it doesn't meet their criteria in 50.36 for tech specs, and we concur with that, we believe it does not meet those criteria. We can run through the four criteria, if you'd like. Three of them are very simple and straightforward.

The first criteria is whether or not it is installed instrumentation, which a debris limit clearly is not. And, of course, there are some criteria that follow that for not all installed instrumentation shows up in the tech specs, but it doesn't meet that.

The third and fourth criteria also start out with a structure, system, or component that does these things. Well, clearly, a debris limit is not any of those.

So the second criterion is a process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of the fission product barrier.

So we've got three items in the beginning of this criterion -- a process variable, it is not one of those; a design feature, it is not really a design feature; operating restriction, that might fit. It sounds like an operating restriction. We should have no more than a certain number of pounds of debris that are provided. So there's an operating restriction. It might fit. Let's see how it goes with the rest of it.

That is an initial condition of a design basis accident or transient analysis. Now, typically the way that that is interpreted throughout the industry is, is it an explicit item identified in Chapter 15 for one of those accident analyses or transient analyses?

Well, this is a discussion of design information in Chapter 6 and really isn't called out as an explicit beginning point for any of the Chapter 15.

Now, yes, one could argue it is of course a beginning point for one of those. But, again, the industry perspective and the way that it has been applied throughout the industry is, is it explicitly identified as one of those initial items in Chapter 15? Are you talking about beginning the containment at a one-pound pressure and the -- you know, the transient begins with the fuel at a certain temperature or --

CHAIRMAN RAY: Okay. Eddie, I'll interrupt you here now.

MR. GRANT: -- those kinds of things. So --

CHAIRMAN RAY: Tell me the difference between a one pound pressure beginning the transient in the containment and 6.6 pounds of fiber. What is the difference?

MR. GRANT: The difference is that when you go look in Chapter 15 --

CHAIRMAN RAY: Okay. If that's the difference -- that's all the difference you can come

up with?

MR. GRANT: That is pretty much the difference. That is -- I mean, that is the criteria that is applied throughout the industry.

CHAIRMAN RAY: All right. You don't need to agree with me, but I will assert anyway that that is a -- that is a difference without a distinction, or a distinction without a difference I guess I should say. It does seem as if it is not significantly different in terms of what we are concerned about.

Amy, you wanted to say something?

MS. AUGHTMAN: Yes, just one other data point I think that we -- we are not aware at least of any of the current plants that have this type of --

MR. GRANT: We'll get you a tech spec.

CHAIRMAN RAY: That's fair enough. All right.

MR. GRANT: They certainly all have limits as well.

CHAIRMAN RAY: That's fair.

MEMBER ARMIJO: I can understand the arguments on the tech spec. But the reason I brought it up earlier is why this number wasn't at least a Tier 2*, as compared to a Tier 2, because in our letter I think we made the point that even though

there was margin demonstrated in the testing program, in the analysis of the available test data, that we believe that margin was all taken up -- was acceptable because of the 6.6 pound limit, and that we were either implied or explicitly looking for more experimental work before anybody started taking advantage of what might be viewed as margin.

So that being the case, I thought it would be -- require a staff approval or at least staff review before that 6.6 pounds was changed. And that was really kind of my thinking behind that, and not that people here today would ignore the issue or -- but in time memories fade and somebody would say, "Gee, this thing is a real nuisance, and let's do a 50.59 and change that number." And --

CHAIRMAN RAY: By taking advantage of what they construed to be margin.

MEMBER ARMIJO: Yes, right. That was kind of my concern.

CHAIRMAN RAY: Let me try and parse this. So do you see that as being -- that concern being addressed by inclusion in the tech specs? I guess the answer is yes, because you can't change the tech specs yourself.

MEMBER ARMIJO: Right, right. But I see

it more like a Tier 2* kind of issue rather than a --

CHAIRMAN RAY: Okay.

MEMBER ARMIJO: -- tech spec issue.

CHAIRMAN RAY: At the time we had that exchange, I said, having written 50.59s a good deal, that I couldn't see how you could change it because you would be affecting the safety that was -- that had been licensed. In other words, you would have an impact on safety even though you could argue that there was margin to some limit that existed.

I didn't see how you could do it. But we can at least discuss that further and --

MEMBER ARMIJO: Yes. If you think about it, you know, maybe that's right.

MR. GRANT: Can I add one thing?

CHAIRMAN RAY: Yes.

MR. GRANT: I would tend to agree with your assessment on the 50.59. Although in this case it is in the DCD, and so it is 50.59-like, it is essentially the same questions.

CHAIRMAN RAY: Yes.

MR. GRANT: The one major difference, though, is that because it is in the DCD, it would be identified as a departure, and it would get identified in a departure report to the staff on a fairly quick

basis. Even if we could somehow come to the conclusions that you are concerned about and change it on our own, we would then have to notify the staff --

CHAIRMAN RAY: Yes.

MR. GRANT: -- I think it is at least within a year, annually, on those changes, so they would know about it fairly quickly and have an opportunity to review that and call into question our decision.

CHAIRMAN RAY: Well, as you can tell from our letter, we are concerned that this margin, which we believe is important to resolving the uncertainties that are there, could be applied to changing the debris assumption, for example, or the debris limit instead, and without having reduced the uncertainties to allow that to be done.

So, okay, we hear you. I guess on the issue of the tech specs, which is not exactly Sam's issue, but it does -- it would resolve it if we include it in the tech specs. I hear the argument -- probably the best argument I hear from you is, "Well, nobody else does it, so it would be inappropriate for us to have to do it, because it would be different than" -- and, you know, that basically means we have to decide if we think you should do it, why are you

different, and it is as simple as that.

But it doesn't violate the standard tech spec rules, as I would see them. And I think you have done a good job of identifying how you would rationalize doing it if all you were looking at was the tech spec criteria.

MR. GRANT: Given the choice of a tech spec or a Tier 2*, we would probably rather see the Tier 2*.

CHAIRMAN RAY: Yes. Well, it's got its set of rules, too, but anyway.

MR. GRANT: But they are basically rules we would --

CHAIRMAN RAY: Probably we won't make that decision, would be my guess. But we could maybe identify a concern and let somebody else figure out how to deal with it. Anything else for us?

MR. GRANT: That's it for me. We did have one other item that Jason is going to address.

CHAIRMAN RAY: Okay. Well, wait. Before you do, let me say that if it has to do with the screens on the weir vents --

MR. GRANT: No.

CHAIRMAN RAY: -- weir inlets --

MR. GRANT: That's a separate item.

CHAIRMAN RAY: Well, let me mention that anyhow. I take that -- in case you want to discuss it, I take it as a given that there are screens on the weir inlets. And the real issue then becomes, well, is the COL program going to ensure that conditions don't exist which would result in the clogging of those screens? Because, obviously, the screens have a plus and a minus, the plus being that they would prevent clogging of the weir inlet, the minus being that there could be accumulation of particulate matter that could clog a screen or more screens.

We really don't know anything much about the screens, just having heard about them. And so I just wanted to say, because Amy had made a comment to me, that I don't think we see this as just a DCD issue, because at the end of the day, well, maybe you should have screens. But now are you sure you've got a program to avoid accumulation of material that would clog the screens? And if a screen is clogged, what difference does it make? Would the water just run over the top anyway? I don't know. It is --

MR. ED CUMMINS: Ed Cummins. I think maybe it would be helpful if you just wait to see what the screens look like and then --

CHAIRMAN RAY: All right.

MR. ED CUMMINS: -- see if you can --

CHAIRMAN RAY: I'll do that.

MR. ED CUMMINS: Yes.

CHAIRMAN RAY: Okay. Let's have Jason, then.

MS. AUGHTMAN: So, again, Jason is going to speak to the inspections on the coatings on the shield building.

CHAIRMAN RAY: Yes, appreciate that.

MR. REDD: Chairman Ray, members of the Committee, it is a pleasure to address you all again. Today we are hear to answer the question posed yesterday about the coatings inspection for the shield building.

The coatings on the shield building are an epoxy coating on the inside and outside surfaces of the shield building, those areas that are constructed of the steel-concrete sandwich construction. That epoxy coating is placed on the shield building to provide corrosion protection of the steel for the life of the plant.

MEMBER ARMIJO: Jason?

MR. REDD: Yes, sir?

MEMBER ARMIJO: Before you go too far, previously I got the impression -- and maybe it is

wrong -- that the steel was protected by inorganic zinc, just like the containment. Is that correct or incorrect?

MR. REDD: The information I received from Westinghouse yesterday is that an epoxy coating system is being applied.

MEMBER ARMIJO: And no inorganic zinc?

MEMBER BANERJEE: I thought that was above the -- on top of the inorganic zinc.

MEMBER SHACK: This is the shield building now, not the containment.

MR. REDD: I would defer to someone else to --

MR. ED CUMMINS: Ed Cummins. We asked the expert, got the design document, and then he is correct that it is epoxy coating.

MEMBER SHACK: With no inorganics in primer.

MR. ED CUMMINS: Yes. I think our paint spec actually permits an inorganic zinc primer, but discourages it a little bit, just because of difficulties you can have with inorganic zinc and epoxy cover.

MR. REDD: If I may speak to Mr. Shack's question. The coating specification for the shield

building includes a number of systems that are available as options. The option that has been currently chosen by Westinghouse is an epoxy system.

I would like to emphasize, however, as the licensee, that we will perform the coatings inspections in accordance with whatever system is applied in an appropriate manner. But if -- does that answer your initial question, sir?

MEMBER ARMIJO: Yes. Unfortunately, it is not the answer I was hoping for, but --

(Laughter)

Because, you know, I -- my worry is, you know, you've got all this structural material --

MR. REDD: Yes, sir.

MEMBER ARMIJO: -- on the inside and then the outside -- outside more exposed to the elements than the inside, but --

MR. REDD: Yes, sir.

MEMBER ARMIJO: -- and the inorganic zinc does have this galvanic protection feature --

MR. REDD: Yes, sir.

MEMBER ARMIJO: -- that protects you even if it is flawed, even if it is scratched and everything else, which I am not sure -- an epoxy is just a coating. It doesn't have any other protection

features. So I just thought it was very similar to the -- what you needed to do with it to protect the containment. But you're telling me that you've got -- you're going to use just an epoxy paint, which may be okay -- I'm just not familiar with this --

MR. REDD: The epoxy coating system -- I'm sorry, go ahead.

MEMBER ARMIJO: I'm not as familiar with it, but you -- at least I understand what you are going to do now. You are going to just use the epoxy-based paint on the inside and outside and just do the same kind of inspection that you -- frequency, visual inspection, that sort of stuff.

MR. REDD: The epoxy coating is a barrier coating. To answer your previous question, it provides a barrier between the outside environment and the protected surface. The mechanisms that we would look for for visual indications would be blistering, flaking, peeling, that are discussed in our ASTM standards as items to look for. So we would apply those.

The frequency for the inspection will be set by the licensee in accordance with good engineering practice and industry guidance documents. For the inspections, we perform them visually. I

will highlight the inspectability of the shield building. As we discussed yesterday from talking about the air baffles, there are two manned baskets that are provided inside the annulus area, which provide immediate visual access to the protected steel on the inside of the shield building.

We may also use visual methods, whether that's binoculars, telescopes, or robotics. The lower portions of the shield building are immediately visible from the walkways that circle the shield building. Additionally, the exterior of the shield building is obviously extremely visible from the surrounding grade, surrounding rooftops.

The industry has extensive experience in inspections of such large structures through our -- through the ASME Section 11 IWL program for concrete containments. So we have well developed methods for standoff distance telescopes and mapping.

The experience is there in the industry to perform those inspections to ensure that if there is any coatings degradation it will be visible. If it is found, it will be entered into our corrective action program, and dispositioned and corrected as necessary, sir.

MEMBER ARMIJO: Okay.

CHAIRMAN RAY: So it's just the structural --

MEMBER ARMIJO: So another way of doing it --

CHAIRMAN RAY: -- structural steel protection coating.

MR. REDD: Right. That is correct, sir.

CHAIRMAN RAY: Okay. Anything more?

MR. REDD: That's all.

CHAIRMAN RAY: Thank you.

MR. REDD: Thank you, sir.

CHAIRMAN RAY: Thank you.

Okay. Now, as I said, I would like to wrap up the COL here and make sure we don't have any loose ends. I think you wanted to, Ed, talk about in this context as opposed to this afternoon, or do you want to -- not part of AIA --

MR. ED CUMMINS: No, we will do what you want. I mean, I think maybe given your comment that you might want to ask the COL as part of it, we are happy to do it now.

CHAIRMAN RAY: Yes. I think now would be best. Thank you.

MR. ED CUMMINS: Okay.

CHAIRMAN RAY: Because I'd like to try and

summarize, and those in the COL community who don't need to be around, or don't have a requirement otherwise to be here, I would like them to be released.

(Pause)

MR. LINDGREN: Okay. Don Lindgren from Westinghouse electric, along with Chuck Brockhoff, to talk about the screens on the collection dams, troughs, on the top of the containment to -- that distributes the water from the PCS tanks.

And our first couple of slides are to address some of the questions that you had yesterday. These screens are included in design drawings. The screens were incorporated as a result of our -- the AP1000 design review process. The screens provide a layer of defense in the FME program to prevent inadvertent introduction of FME to the water channels.

MEMBER BANERJEE: What is FME?

MR. LINDGREN: Foreign matter exclusion.

CHAIRMAN RAY: In other words, it is not stuff that is brought in, I take it, by the airflow, but --

MR. LINDGREN: It is not brought in by the airflow. It is brought in by people with two legs.

MR. BROCKHOFF: Because we walk above the

containment vessel to get to the PCS valve room, for example, to do maintenance, there is a possibility -- the utilities have a program to control what goes in and goes out. They do a closeout inspection. So this is really a third layer of its protection.

CHAIRMAN RAY: I understand.

MEMBER BANERJEE: But why only FME? I mean, if something was brought in by the air, it would protect you, too, wouldn't it?

MR. BROCKHOFF: Yes. But it is -- this mesh is bigger. It is a trash rack compared to the small screens at the inlet and outlet that keep debris from coming in.

MR. LINDGREN: We have screens both on the front of the air inlets, on the side, and also around the -- what we refer to as the chimney in the middle. Both --

CHAIRMAN RAY: They're very small.

MR. LINDGREN: -- very small screens.

Okay. As I said, this is to prevent inadvertent introduction into the water channels and aid in the identification and retrieval during the FME walkdown.

MEMBER BANERJEE: So it would be like a piece of cloth or something.

MR. LINDGREN: Cloth glove --

MEMBER BANERJEE: Glove.

MR. LINDGREN: -- that kind of thing. Screens will not impede the PCS performance. The design finalization details of this level are typically not included in the DCD, and this detailed design of the screen is in excess of what is included in the DCD description of the collection dams and weirs, and that is in Section 6.2.2.2.3.

CHAIRMAN RAY: Okay. The detailed design, but the existence of the screen is explicit in the DCD?

MR. LINDGREN: No, it is not.

CHAIRMAN RAY: Okay. So --

MR. LINDGREN: There is a paragraph that describes the whole system, the whole collection and troughs and bucket and all of that kind of stuff. There is about a paragraph that describes that, and it just says there are collection dams. And it doesn't describe, you know, what they look like or how they function, just that they are there. It just gives them the details as to the size or the size of the holes or --

MEMBER ARMIJO: Were the screens kind of a late -- later adjustment to the design?

MR. LINDGREN: They did not -- they were included in the design at the time of the final design review. They were carried forward from the intermediate design review, and that has recently happened.

MEMBER ARMIJO: Okay.

MR. BROCKHOFF: As we finished the detailed design drawings, we implemented this, it was a design review comment. It was an operating experience review and a good engineering practice.

MEMBER ARMIJO: They may not have been there at the time you wrote the Rev 17 of the DCD, because it is not mentioned. They are not mentioned in the --

MR. LINDGREN: They were not officially in the design at that point.

MEMBER ARMIJO: Yes, okay.

MR. LINDGREN: Although, you know, people were working on it.

A little bit of information on the details of the design. The screen is number two mesh material, which has two openings for linear inch for a total of four openings per square inch. The core screen size will stop large debris washed down to the dam, but allow smaller debris to float through the

collection tube.

So if you did have any particulate that came through the first sets of screens, they would not be impeded by this. It will also permit visual inspection of the small CV surface and the dam areas behind the screen.

MEMBER BANERJEE: What is CV?

MR. LINDGREN: Containment vessel.

MEMBER BANERJEE: Oh.

MR. LINDGREN: Each collection tube is protected by a single screen about 10 feet in length, about six and a half feet in height.

CHAIRMAN RAY: Inches.

MR. LINDGREN: Inches.

(Laughter)

I knew I'd do that.

For a surface area greater than five square feet of -- per screen. The collection tubes measures two by eight for the upper weir and two and a half by two and a half by the lower weir.

DR. WALLIS: Is this attached to the containment shell in some way?

MR. LINDGREN: I will show you next.

DR. WALLIS: Okay.

MR. LINDGREN: Okay. So we have this five

square feet of area protecting, in the one case, a little over four square inches or about there. We figure the flow area through the screens is more than 500 square inches, so we've got to -- we've got two orders of magnitude difference.

And this is a picture from the top side of the collection screen. The cross-hatch is the screen, the -- and then the more solid line on the bottom is the actual dam. It actually sets at kind of an angle between the top of the dam down to the surface of the containment vessel.

MEMBER BANERJEE: Is it fastened at those points with the little dots that you are showing or what?

MR. LINDGREN: It has -- those are brackets that held hold it down.

DR. WALLIS: So this -- I don't understand. This is folded back so you can see it or something? I don't --

MEMBER BANERJEE: You can see it from the top.

MR. BROCKHOFF: It's laying like this. This is the collection dam, and the screen is on --

DR. WALLIS: Well, it's laying at an angle on the --

MR. BROCKHOFF: And it's fastened to here to hold it in place under the collection dam.

MEMBER ARMIJO: But it's not bonded -- it is not bonded to the top of the containment vessel. It has got some sort of clearance there.

MR. LINDGREN: Yes. Since all you are trying to stop is stuff that is bigger than half an inch, you don't need to seal it against the containment vessel.

DR. WALLIS: So it's a fence, really.

MR. LINDGREN: Well, a trash rack I thought was a good description.

DR. WALLIS: Well, you don't expect much to be there, just one or two isolated --

MR. LINDGREN: Yes.

DR. WALLIS: -- if anything.

MR. LINDGREN: This is not -- these are not gutters. These are not going to fill up with leaves like your gutters do, because those have been stopped already. So this is for the odd errant piece of cloth of --

MR. BROCKHOFF: If there were human performance error as part of the foreign material exclusion program, that was not captured either by tracking or closeout inspection, this would give you a

defense against that.

DR. WALLIS: And if anything else gets there, you want to know what it is and why.

MR. BROCKHOFF: Yes, sir.

DR. WALLIS: All right.

MR. BROCKHOFF: It also allows you to have visibility during your closeout to see into the inspection tube as well. So it's not a real close mesh that you can see into.

MR. ED CUMMINS: This is Ed Cummins. I think that is what we have to say, and you may or may not want to interact with the COL.

PARTICIPANT: Oops, we lost our chairman.

MEMBER BLEY: Yes. He just slipped out. He'll be back Monday.

(Laughter)

PARTICIPANT: We probably ought to go to lunch, right?

(Laughter)

MEMBER BLEY: Let's decide the COL is in good shape. We can go to lunch.

(Laughter)

MEMBER BANERJEE: Quickly took us into recess.

MR. ED CUMMINS: We decided that we were

at the point where you might want to ask the COLs something.

MEMBER BANERJEE: Did you see that, Harold? Did you see the picture of the screen?

CHAIRMAN RAY: I did. I don't have any further questions about the screen. I think it is --

MEMBER SHACK: Just a question. Is there a 50.59-like process for design details that you --

(Laughter)

-- go through? And, you know, does this design detail really change something?

MR. ED CUMMINS: I'll answer that.

MR. LINDGREN: You're going to answer that? Okay.

MR. ED CUMMINS: No. The answer to -- the pure answer is no. But there are all kinds of requirements to assess whether you impacted other people with your design change, and so other disciplines or other people outside of your tiny little organization. And the more you impact other people, the more requirements there are to process the change formally. And if you affect the DCD, you know, you get to --

CHAIRMAN RAY: Okay. There are two items on our agenda today, one of which I would like to

finish, if I can, before we adjourn for lunch, because it may, as they say, mean that some people don't have to hang around until -- for an hour and a half or so, and that is the resolution of ACRS action items.

If we can establish that we are -- that we have ticked off all the items that have to do with the COL, then we can achieve closure on that subject. And also, as part of it, we would need to see if there is anything that constitutes an action item for the COL now as a result of these two days of meetings, or day and a half of meetings.

We talked about squib valves. I expect to see some comment in our letter and a recommendation having to do with what we talked about on that. I don't think we need to repeat it.

I don't believe there is anything else on the screens that we just saw -- talked about. I'm just going down a list here that I have myself.

We may conclude that there is something we want to recommend on the issue of the tech specs and debris limitation or the 2* status of the debris limitation, but I think we can discuss that later. If so, there is no action item further, I don't believe.

In the area of PRA, I think, Dennis, you have all of the input that you need, is that correct?

MEMBER BLEY: Yes. And it's not -- yes.

CHAIRMAN RAY: We responded to the venting of lines. Sanjoy, are you satisfied on that?

We heard about the coatings on the shield building just now and the -- Sam has an outstanding question on the volume percent I guess it is on the metamic --

MEMBER ARMIJO: Yes, it's of the staff and the -- that is really a staffing question.

CHAIRMAN RAY: And then, in the area of cyber security, I think we need to --

MR. JOSHI: Excuse me. What was -- can you repeat that question?

CHAIRMAN RAY: Yes. Let him do it.

MEMBER ARMIJO: Yes. The question is: what is the volume fraction of boron carbide in the metamic material that -- the maximum that is allowed by the --

MR. JOSHI: We are trying to get hold of somebody from the staff and try to get information probably today, or maybe we can provide that at a later date?

CHAIRMAN RAY: Yes, certainly. I think that that will be fine.

And then, the area of cyber security, I

think we have lots of input, or all the input that we need at this point. But we need to come to some conclusion about whether there is something that we want to say about the situation. But, again, I don't think there is anything more we can ask for in the way of input.

Now, that is just my take on things. Weidong, have I left out something before I go around the table here? Sanjoy, do you have anything --

MEMBER BANERJEE: I can't think of anything.

CHAIRMAN RAY: -- that I have left out? Sam? Dennis?

MEMBER BLEY: No.

CHAIRMAN RAY: Mike?

MEMBER RYAN: No. Thank you.

CHAIRMAN RAY: Bill? Charlie?

MEMBER SHACK: The metamic site, Sam says it has got 15 to 40 percent B(4)(c) loading.

MEMBER ARMIJO: That's weight percent. But then you turn that into volume percent, that is an awful lot of --

MEMBER SHACK: You've got distributions of the particles and the distances and separations.

MEMBER ARMIJO: They are tiny particles.

They have to be or else it is -- you know, the idea is to keep every particle surrounded by aluminum matrix, or else it is -- comes with porous material.

CHAIRMAN RAY: Okay. That sounds -- go ahead, Ed.

MR. ED CUMMINS: I just got some clarification of Mike's statement. I didn't mean to say we don't use a 50.59-like process. For example, in our design change proposals, we have the same questions. So somebody doing design finalization might be able to have changed something slightly. But if you get into a design change, we have a 50.59-like process that asks those same questions, and we fill them out and do the same kind of process.

CHAIRMAN RAY: Okay. So I think, then, that we have closure on action items associated with the COL. Okay? There is nothing more to be presented by the applicant, correct?

MS. AUGHTMAN: Only unless -- this is Amy Aughtman -- if you had a question about the inspection on the screen on the weir.

CHAIRMAN RAY: No.

MS. AUGHTMAN: Okay.

CHAIRMAN RAY: I mean, it's --

MS. AUGHTMAN: We will inspect, is the

short answer.

CHAIRMAN RAY: It's a trash rack, as was characterized accurately I think, and which is different than it might have been. And -- but having looked at what the design is, I think Ed is correct that there is no need for further discussion.

I think Bill's question is, what if somebody decided they wanted to put in a fine mesh screen. Is there some way to prevent that from happening? And so we heard Ed's answer on that.

Perhaps I can also tick off Item 11 on our agenda, which is upcoming ACRS interactions. I believe -- and I am excluding aircraft impact again here. That's not what I'm talking about. I believe the -- there would not be a further interaction with the staff pending our writing a letter and taking it to the full Committee in January.

We will of course be looking for the COL applicant to make presentations at the January full Committee meeting. I don't have any particular guidance for you other than don't leave out the doggone squib valve --

(Laughter)

-- service testing discussion.

MS. AUGHTMAN: Yesterday I believe you

also asked for a more -- a better overview of the coatings inspection. Would you still like that, or are you saying that, no, that does not need to be --

CHAIRMAN RAY: Well, we had some discussion because, unfortunately, Sanjoy wasn't able to see your presentation earlier yesterday of the fineness of the screens. I think on the issue of the coating inspection there is a question of accessibility and the amount of inspection that you are going to do. Those should be addressed, because the coating integrity is really important in this case, and it is a new circumstance.

But also, I think other members not part of the Subcommittee here would want to know, is there any possibility of material accumulating in between your inspections that could affect the performance of the system. And I think the screen discussion is a valuable part of answering that, both the inlet in the normal flow path and the screens at the chimney which prevent ingress of debris in a backflow direction.

And so you should be sure to point that out and talk about it, so that people understand what the size limits are on --

MEMBER SHACK: Can she do that without diagrams?

CHAIRMAN RAY: Well, without -- yes, try and come up with a diagram that isn't security-related, will you?

Anything else that members think the full Committee should be sure and hear about in the COL context? Anything occur to you?

MEMBER BANERJEE: Well, inspection in the regions which are hard to see.

CHAIRMAN RAY: Yes, that's what I say. The accessibility for inspection is critical. There is interest on the part of all of us about the performance of this containment exterior surface, and I think there was good material presented on that yesterday.

Most of the discussion, as I say, came about as a result of the fact that we had part of the discussion separated from the part that I'm referring to here now, which has to do with what are the -- what limits the accumulation of debris of all kinds on the containment surface.

MEMBER BANERJEE: Did they discuss also the procedures for debris -- latent debris in containment inspection?

CHAIRMAN RAY: Well, we -- not yesterday. We did refer to it, the sampling, how the sampling is

conducted, and so on. But they earlier on, I forget which meeting it was, did have a presentation in which the way that the samples are --

MEMBER BANERJEE: Well, if you are going to write a letter --

CHAIRMAN RAY: Excuse me.

MEMBER BANERJEE: So if you are going to write a letter, probably the full Committee should hear that.

CHAIRMAN RAY: Okay. This is our GSI-191 input here. Want to hear about how we are sure that Dennis never has to worry about the probability of exceeding the examination limits assumed. But we have done the long-term cooling letter, don't get me wrong. We are in the COL context now.

MEMBER BANERJEE: This is the COL context.

CHAIRMAN RAY: That's right.

MEMBER BANERJEE: It's different.

CHAIRMAN RAY: That's right. And so let's hear about that, too, then, because that will be of interest. How do you make sure there is only the assumed -- not more than the assumed amount of debris latent on the containment when the plant is in operation? We have had that at the Subcommittee. I do not believe, Amy, we have had it at the full

Committee.

MS. AUGHTMAN: Right.

CHAIRMAN RAY: Okay. So you've got to have the guy talk about his stickie tape, and so on.

MEMBER SHACK: It might be helpful if you talk -- if you could get some information on limits that you do, for example, for your current plants, or if other plants have strict limits. That might make it more convincing to people that you really can do this.

DR. WALLIS: I think the staff has presented that.

MEMBER SHACK: Yes, I just -- you know, industry people I would assume have access perhaps to --

MS. AUGHTMAN: I think we can do that.

CHAIRMAN RAY: All right. Anything else?

(No response)

Okay. Anything more on the subject of interactions? Excuse me, Frank. Anything else on the subject of interactions?

MR. JOSHI: The only thing we just wanted to point out, how much time we have and which -- what sort of a date that we are going to have that.

CHAIRMAN RAY: I'm sorry. Say that again?

MR. JOSHI: The date of the full Committee meeting and how much time is allotted for applicant, staff, and just want to make sure that we can come up with an adequate presentation.

CHAIRMAN RAY: Well, in terms of the time, I have to talk to the Chairman or Weidong has to work with -- to see what else is on the agenda, because this is an important thing, and we should give it -- we will have two related issues, related in the sense that they are important to the critical path for Vogtle -- that is, the COL and the AIA.

And we have yet to hear about AIA. That will be this afternoon here at the Subcommittee level. So it is hard for me to say. But we will for sure go forward in the January meeting with letters I believe on both subjects, at least on the COL for sure.

Is there anything else that you want to talk about now on that subject?

(No response)

All right. So that completes through Item 11. This afternoon we will have a closed meeting after lunch break. We will talk about aircraft impact. I don't think we have any idea how long that discussion will go, but it will be as long as it takes. And that will, then, end this Subcommittee

meeting sometime this afternoon, maybe shortly after lunch, maybe some longer period after lunch.

So with that, and in the interest of everybody wanting to get done as soon as we can, I will ask you to be back here ready to go at 1:25.

MS. AUGHTMAN: If I could add one more thing before you --

CHAIRMAN RAY: Sure.

(Laughter)

MS. AUGHTMAN: If you're still considering a discussion on PRA with respect to debris limits, I would want to work with Weidong I think on if there might be an opportunity to provide some input for that.

CHAIRMAN RAY: To provide some what?

MS. AUGHTMAN: Input.

CHAIRMAN RAY: Yes. I mean, we're going to have a Subcommittee meeting in January before the full Committee meeting, and so you can certainly do it then, because it is not something that we couldn't take into consideration in the drafting of the letter that goes to the full Committee.

MEMBER BANERJEE: So the January meeting will focus on Summer, right?

CHAIRMAN RAY: That's my guess.

MR. AKSTULEWICZ: That's correct.

MEMBER BANERJEE: Yes.

CHAIRMAN RAY: Okay? And remember, everybody, Summer doesn't have an ESP. Vogtle did. And so there is a different mind-set that we have to take into the Summer meetings to -- for that reason.

Okay. So we will recess for an hour lunch. Back at 1:25. And maybe we'll get out of here early.

(Whereupon, at 12:24 p.m., the proceedings in the foregoing matter recessed for lunch.)

U.S.NRC

United States Nuclear Regulatory Commission

Protecting People and the Environment

Presentation to the ACRS Subcommittee

Vogtle Units 3 and 4 – COL Application Review

ASE Section 13.3
Emergency Planning

December 16, 2010

U.S.NRC
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Emergency Planning

- COLA incorporates by references ESP-004 & AP1000
- VEGP ESP Application (ESP-004)
  - Complete & integrated emergency plan
    - NRC: onsite E-plan, ITAAC, and ETE
    - FEMA: offsite E-plans (State & local)
- Limited scope of EP review for COLA

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Technical Evaluation

- Staff addressed resolution of:
  - ESP Variance (VEGP VAR 1.2-1)
  - 7 ESP Permit Conditions (PCs 2-8)
  - AP1000 Departure (VEGP DEP 18.8-1)
  - AP1000 COL Information Items (STD COL)
  - Exception (basis for EP ITAAC)

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ESP-004 Permit Conditions

- VEGP ESP PC 2 through PC 7
  - Emergency Action Levels (EALs)
    - Reflect NEI 07-01
    - Reflect completed AP1000 design
    - Based on in-plant conditions/State & local review
- VEGP ESP PC 8
  - ESP common TSC (Units 1-4)
  - AP1000 TSC location (VEGP DEP 18.8-1)

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ACRS Action Item 67 & EP ITAAC

- COLA added 2 Unit 3 EP ITAAC
  - AC 5.1.8 (Unit 3 ITAAC, TSC habitability)
  - AC 8.1.1.D.2.d (Unit 3 ITAAC exercise objective)
    - NUREG-0696/NUREG-0737(Supp. 1) – TSC & EOF design shall incorporate good human factors engineering (HFE) principles
    - *"Demonstrate the capability of TSC and EOF equipment and data displays to clearly identify and reflect the affected unit."*
- AP1000 DCD Tier 1 Table 3.1-1
- ESP-004 (Appendix E)
  - VEGP Units 3 & 4 EP ITAAC

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EP Confirmatory Items

- Verified in future FSAR revision
  - 13.3-1 – VEGP VAR 1.2-1
    - Update TSC location description & figures
  - 13.3-2 – VEGP DEP 18.8-1 (TSC in CSC)
    - Change AP1000 departure from Tier 2* to Tier 2
  - 13.3-3 – STD COL 13.3-1
    - Revise to incorporate VEGP SUP 13.3-1

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Post-COL Activities

- License conditions, implementation milestones, and ITAAC
  - Submit EALs & EIPs at least 180 days prior to fuel load
  - Submit EP program implementation schedule
  - Full participation exercise within 2 years of fuel load
  - Onsite exercise within 1 year of fuel load
  - EP ITAAC completed prior to fuel load

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Emergency Planning

- Conclusions
  - Complete & integrated E-plans are adequate, and there is reasonable assurance that the plans can be implemented
  - There is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency at the VEGP site, in support of full-power operations at VEGP Units 3 & 4

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Protecting People and the Environment

Presentation to the ACRS Subcommittee

Vogtle Units 3 and 4 COL Application Review

Chapter 13.7
Fitness for Duty

December 16, 2010

Staff Review Team

- Fitness for Duty, Lead Technical Reviewer
  - Wayne Chalk
- Fitness for Duty, Senior Program Manager
  - Paul Harris

Overview

- Background Information
- Application Standards
- Technical Review
- Conclusion

Background Information

- 10 CFR Part 26
  - Publication Date: March 31, 2008
  - Effective Date: April 30, 2008
  - Purpose
- Phases
  - Operations
  - Construction

Application Standards

- Acceptance Criteria
  - 10 CFR Part 26
  - 10 CFR 52.79(a)(44)

- References
  - NEI 06-06, Revision 5

Technical Review

- Areas Covered
  - Adequacy of Construction Phase
  - Adequacy of Operations Phase
- Milestones
  - Table 13.4-201 Operational Programs Required by NRC Regulations
- License Condition
  - Implementation Schedule

Conclusion

- No Outstanding Information
- One Confirmatory Item
- VEGP COL FSAR is Acceptable
- Conforms to Regulatory Requirements

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Protecting People and the Environment

Presentation to the ACRS Subcommittee

Vogtle Units 3 and 4 COL Application Review

AFSER Section 13.8
Cyber Security

December 16, 2010

Staff Review Team

- Technical Staff
  - Mike Shin, ISCPB
  - Tim Shaw, ISCPB
  - Eric Lee, ISCPB
  - John Rycyna, ISCPB
- Project Manager
  - Denise McGovern

Overview

- Site-Specific Topics of Interest
  - Vogtle cyber security plan (CSP) based on CSP template from RG 5.71
  - Commits to follow RG 5.71 with minor and acceptable site specific modifications
- Technical Topics of Interest
  - Defensive architecture follows guidance in RG 5.71

Elements of CSP

- Follows RG 5.71 guidance and commits to all elements including:
  - Establishing a cyber security team
  - Identifying critical digital assets
  - Application of security controls
  - Security controls in RG 5.71 appendixes
  - Configuration management process
  - Ongoing assessment of security measures for effectiveness

Defensive Architecture

- Follows RG 5.71 guidance
  - Multiple levels
  - Increasing security as levels increase
  - Control and isolation of communication between levels
- Staff found architecture acceptable

AP1000 Reference Combined License Application Presentation to ACRS Chapter 15

December 15-16, 2010

Presenters: Amy Aughtman, Eddie Grant

R-COLA Chapter 15:

Accident Analyses

15.0 Accident Analyses

15.1 Increase in Heat Removal from the Primary System

15.2 Decrease in Heat Removal by the Secondary System

15.3 Decrease in Reactor Coolant System Flow Rate

15.4 Reactivity and Power Distribution Anomalies

15.5 Increase in Reactor Coolant Inventory

15.6 Decrease in Reactor Coolant Inventory

15.7 Radioactive Release from a Subsystem or Component

R-COLA Chapter 15: SER Open Items

SER Open Items (closed in AFSER)

OI 15.0-1 - *Documentation of Plant Calorimetric Uncertainty*

OI 15.4-1: *Generic Letter 85-05 "Inadvertent Boron Dilution Events"*

R-COLA Chapter 15: SER Open Items

OI 15.0-1: Documentation of Calorimetric Uncertainty

WEC added additional information item via an RAI response.

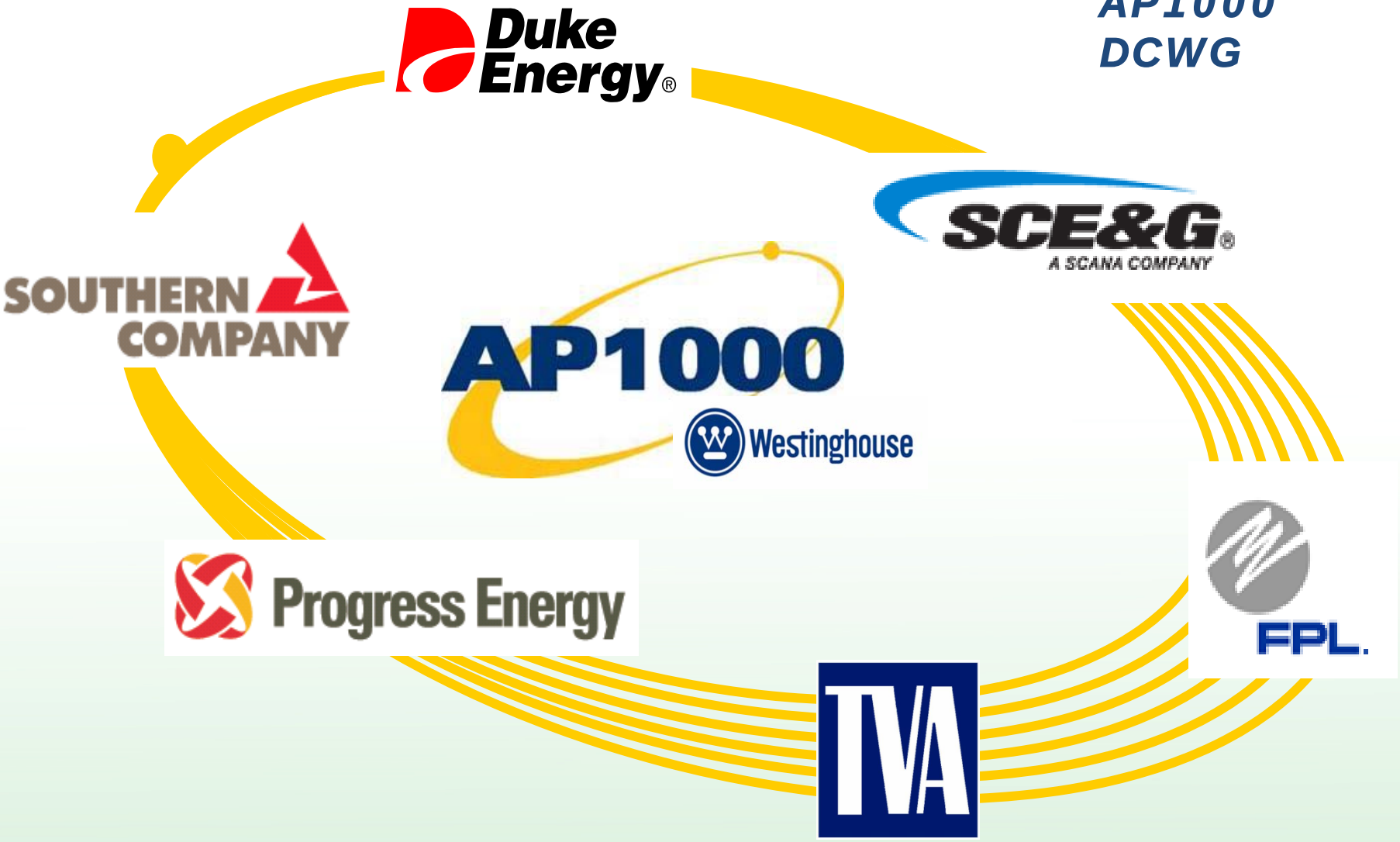
STD COL 15.0-1 information was provided:

- Some analyses assume one percent uncertainty
- Caldon CheckPlus™ Leading Edge Flow Meter (LEFM) ultrasonic flow measurement (UFM) instrumentation is used for feedwater flow to support 1% power uncertainty
- Addressed action items from Caldon SER and Supplemental SER for approved methodology, including procedures
- ITAAC to confirm by inspection the instrumentation installed for feedwater flow measurement and its associated power calorimetric uncertainty calculation, and the calculated calorimetric values

R-COLA Chapter 15: SER Open Items

OI 15.4-1: Generic Letter 85-05

- The Staff requested that GL 85-05, "Inadvertent Boron Dilution Events" be included in FSAR Table 1.9-204 with cross reference to FSAR Section 13.5 where associated procedures are addressed.
- In a January 22, 2010, letter, the applicant proposed to include the item in FSAR.
- The staff found the response acceptable and concluded that open item has been satisfactorily resolved.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Presentation to the ACRS Subcommittee

Vogtle Units 3 and 4 COL Application Review

ASE Chapter 15
Accident Analysis

December 15-16, 2010

Staff Review Team

- Technical Staff
  - Tony Nakanishi, Reactor Systems, Nuclear Performance & Code Review
  - Michelle Hart, Siting & Accident Consequences
- Project Management
  - Donald Habib, Project Manager

Overview

Section	Content	Resolved Open Items & Topics of Interest
15.0 Accident Analysis	Standard	• COL Information Item 15.0-1, Plant Calorimetric Uncertainty Methodology
15.1 Increase in Heat Removal from Primary System	IBR	
15.2 Decrease in Heat Removal by the Secondary System	IBR	
15.3 Decrease in Reactor Coolant System Flow Rate	IBR	
15.4 Reactivity and Power Distribution Anomalies	Standard	• Open Item 15.4-1, GL 85-05 (resolved)
15.5 Increase in Reactor Coolant Inventory	IBR	
15.6 Decrease in Reactor Coolant Inventory	IBR	
15.7 Radioactive Release from a Subsystem or Component	Plant-Specific	
15.8 Anticipated Transients without Scram	IBR	
15A Evaluation Models and Parameters for Analysis of Radiological Consequences of Accidents	Plant-Specific	• DBA Radiological Consequences Analyses
15B Removal of Airborne Activity from the Containment Atmosphere Following a LOCA	IBR	

COL Information Item 15.0-1
Plant Calorimetric Uncertainty Methodology

- **Background**
  - AP1000 DCD Rev.15 assumed a 2 percent power uncertainty for large break LOCA
  - However, DCD Rev.17 assumed a 1 percent power uncertainty for large break LOCA, as allowed by 10 CFR Part 50, Appendix K
  - COL information item 15.0-1 was added to DCD that called for COL applicant to determine a power uncertainty bounded by safety analysis.

- **Issue**
  - Staff needed reasonable assurance that the applicant installs an NRC acceptable feedwater flow instrumentation and demonstrates a power uncertainty of 1 percent or lower using an NRC acceptable method.

- **Resolution**
  - Applicant proposed the Caldon CheckPlus™ flow meter design and referenced topical reports ER-80P and ER-157P in the FSAR.
  - Applicant acceptably addressed all conditions for using approved ER-80P and ER-157P.
  - ITAAC will confirm that the applicant installed the CheckPlus™ design and demonstrated a power uncertainty of 1 percent or lower.
  - License condition for applicant to notify staff when 1) documentation of instrument uncertainties is available and 2) documentation of administrative controls implementing CheckPlus™ maintenance and contingency is available.
  - The proposed FSAR changes are now **Confirmatory Item 15.0-1**.

Open Item 15.4-1 (Resolved)
Generic Letter 85-05

- **Background**
  - GL 85-05 urges each licensee to ensure its plants have adequate protection against boron dilution events.
  - GL 85-05 was resolved in DCD Rev.15 (NUREG-1793, DCD SER) .
  - COL Information Item 13.5-1 requires development of emergency operating procedures.
  - In COL FSAR Rev. 0, GL 85-05 was included in Table 1.9-204, “Generic Communications Assessment,” listing of Bulletins and GLs
- **Issue**
  - GL 85-05 was removed from Table 1.9-204 in FSAR Rev. 1.
  - Staff identified **Open Item 15.4-1.**
- **Resolution**
  - Applicant proposed to reinsert reference to GL 85-05 in Table 1.9-204 to provide a cross reference to COL Information Item 13.5-1.
  - This FSAR change is now **Confirmatory Item 15.4-1.**

DBA Radiological Consequences Analyses

- **Issue**
  - Appropriate incorporation by reference of the DBA dose analyses from the AP1000 DCD to thereby show compliance with the offsite dose factors in 10 CFR 52.79(a)(1) and the control room dose criterion in GDC 19.
    - VEGP DEP 18.8-1 site-specific TSC (SER 13.3)

- **Resolution**
  - Vogtle site characteristic short-term atmospheric dispersion (χ/Q) values are bounded by the values given in AP1000 DCD as site parameters. (SER 2.3)
    - Site characteristic χ/Q values are the only site-related DBA dose analysis inputs
    - Dose is directly proportional to the χ/Q values for each time period
    - Vogtle χ/Qs < AP1000 χ/Qs
    - Vogtle DBA doses < AP1000 DBA doses
  - AP1000 DCD showed compliance with the offsite and control room dose factors for all DBAs, therefore Vogtle also complies.

AP1000 Reference Combined License Application Presentation to ACRS

Chapter 8 Electrical Power

December 15-16, 2010

Presenters: Amy Aughtman, Bob Hirmanpour

R-COLA Chapter 8 – Content

Electrical Power

8.1 Introduction

8.2 Offsite Power Systems

8.3 Onsite Power Systems

R-COLA Chapter 8: Major Topics

DCD incorporated by reference

- **One Standard Departure taken (STD DEP 8.3-1)**

- **Four COL information items**

- **SER w/ Open Items contained no Standard Open Items**

- **Chapter 8 includes supplemental information**

- **Chapter 8 includes VEGP Site Specific Items**

R-COLA Chapter 8: COL Items

VEGP COL 8.2-1 Offsite Electrical Power

- Design of the ac power transmission system and testing and inspection plan.
  - Units 1, 2 and 3, 230/500 kV switchyard
  - Unit 4, 500 kV switchyard
  - Units 3 and 4, Reserve Auxiliary Transformer (RAT) supply, 230 kV Switchyard
  - Switchyard Control Building

VEGP COL 8.2-2 Technical Interfaces

- ac power requirements from offsite and the analysis of the offsite transmission system and the setting of protective devices.
- Performed a grid stability analysis to show:
  - With no electrical system failures, the grid will remain stable and the reactor coolant pump bus voltage will remain above the voltage required to maintain the flow assumed in the Chapter 15 analyses for a minimum of 3 seconds following a turbine trip.

R-COLA Chapter 8: COL Items

VEGP COL 8.3-1 Grounding and Lightning Protection

- Added description of grounding grid system, design per methodology outlined in IEEE 80, “IEEE Guide for Safety in AC Substation Grounding.”
- Lightning protection required for VEGP (risk assessment performed per IEEE 665, "IEEE Standard for Generating Station Grounding“).

STD COL 8.3-2 Onsite Electrical Power Plant Procedures

- Provided a description of procedures implementing periodic testing of protective devices that provide penetration overcurrent protection and inspection and maintenance of Class 1E and non-Class 1E batteries (Per RG 1.29 and IEEE 450)

R-COLA Chapter 8: Supplemental Information

- Provided site-specific information describing the transformer area location and Southern Company Transmission's (SCT) responsibility for maintaining transmission system reliability and conducting planning studies.
- Demonstrated site-specific conditions are bounded by the standard site conditions in the AP1000 DCD for rating the diesel generator.
- Indicated implementation of procedures for periodic verification of capability for automatic and manual transfer from the preferred power supply to maintenance power supply and vice-versa to satisfy the requirements of GDC 18.
- Indicated no site-specific non-Class 1E dc loads connected to the Class 1E dc system.

R-COLA Chapter 8: Additional Changes

- In response to an RAI, a revision to the FSAR was made to include condition monitoring of Submerged/Inaccessible Electrical Cables:

  Condition monitoring of underground or inaccessible cables is incorporated into the maintenance rule program. The cable condition monitoring program incorporates lessons learned from industry operating experience, addresses regulatory guidance, and utilizes information from detailed design and procurement documents to determine the appropriate inspections, tests and monitoring criteria for underground and inaccessible cables within the scope of the maintenance rule (i.e., 10 CFR 50.65). The program takes into consideration Generic Letter 2007-01.

R-COLA Chapter 8: Additional Changes

- Westinghouse proposed a new COL Item for periodic testing of the battery chargers and voltage regulating transformers.
  - FSAR Subsection 8.3.2.1.4, Maintenance and Testing, will be revised to include establishment of procedures for periodic testing of the Class 1E battery chargers and voltage regulating transformers in accordance with the manufacturer recommendations. The procedures will include circuit breaker testing, fuse/fuse holder inspection, and verifying current limiting characteristic of Class 1E Battery chargers.
  - The FSAR revision included a Departure from DCD Subsection 8.3.2.2 since regulating transformers do not have current limiting capability (STD DEP 8.3-1)

R-COLA Chapter 8: Additional Changes

- Provided ITAACs for offsite power system.
  - ITAACs included minimum number of transmission lines, capacity, fault protection, and powering reactor coolant pumps for a minimum of 3 seconds following a turbine trip.


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Presentation to the ACRS Subcommittee

Vogtle Units 3 and 4 COL Application Review

ASE Chapter 8

Electric Power

December 15-16, 2010

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Staff Review Team

- Technical Staff
  - **Tania Martinez Navedo,** Electrical Engineer
- Project Manager
  - **Tanya Simms**, Vogtle COLA Review

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Presentation Outline

- Overview of Vogtle COL Chapter 8
- Staff Review Summary

Overview of Vogtle COL Chapter 8 - Electric Power

- FSAR Chapter 8 incorporates by reference the AP1000 DCD Chapter 8.
  - Supplemental information and COL information items are provided in Sections 8.1, 8.2, 8.3.1, and 8.3.2.

COL Section		Summary of Content
8.1	Introduction	-VEGP SUP 8.1-1 – Vogtle Units 3 and 4 connection to the utility grid -VEGP SUP 8.1-2 - Additional information on regulatory guidelines and standards

Overview of Vogtle COL Chapter 8 - Electric Power

COL Section		Summary of Content
8.2	Offsite Power System	-VEGP COL 8.2-1 – Transmission system description, and its testing and inspection plan -VEGP COL 8.2-2 –Switchyard description and protection relaying -VEGP SUP 8.2-1 –FMEA of the switchyard -VEGP SUP 8.2-2 – Transmission system requirements and studies -VEGP SUP 8.2-3 – Transmission system planning -VEGP SUP 8.2-4 – Stability and reliability of the offsite transmission power system -VEGP SUP 8.2-5 – History of the offsite power lines reliability -VEGP SUP 8.2-6 – Setting of the protective devices controlling the switchyard -Interface Requirements

Overview of Vogtle COL Chapter 8 - Electric Power

- Section 8.2.A specifically addresses the site-specific inspections, tests, analyses and acceptance criteria (SS-ITAAC), that the applicant proposed related to the offsite power system that are necessary and sufficient to provide reasonable assurance that the facility has been constructed and will operate in conformance with the COL, the provisions of the Atomic Energy Act, and NRC regulations.

Standard Section		Summary of Content
8.2.A	Site-Specific ITAAC for Offsite Power Systems	-STD SUP 14.3-1 - supplemental information related to the offsite power system

Overview of Vogtle COL Chapter 8 - Electric Power

Standard Section		Summary of Content
8.3.1	AC Power Systems (Onsite)	- VEGP COL 8.3-1 – Grounding system and lightning protection -STD COL 8.3-2 – Testing of penetration protective devices -VEGP SUP 8.3-1 – EDG rating based on site conditions -VEGP SUP 8.3-2 - Switchyard and power transformer voltage -VEGP SUP 8.3-4 - Periodic verification of onsite ac power system's capability to transfer between preferred and maintenance power supply

Overview of Vogtle COL Chapter 8 - Electric Power

Standard Section		Summary of Content
8.3.2	DC Power Systems (Onsite)	-STD DEP 8.3-1 – Class 1E voltage regulating transformer periodic testing -STD COL 8.3-2 – Inspection and maintenance of Class 1E batteries - STD SUP 8.3-3 Class 1E DC system

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Staff Review Summary

- **Section 8.1 – Introduction**
  - Applicant has adequately addressed VEGP SUP 8.1-1 regarding Vogtle 3 and 4 Units' connection to the SBAA transmission system.
  - The applicant has adequately addressed VEGP SUP 8.1-2 regarding additional information for regulatory guidelines and standards.

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Staff Review Summary

- **Section 8.2 – Offsite Power System**
  - The staff finds COL information items VEGP COL 8.2-1 involving the design details of the plant site switchyard and its interface with the local transmission grid adequately addressed pending closure of Confirmatory Item 8.2-1 and 8.2-2**.**
  - The staff concludes that the applicant's condition monitoring program for underground or inaccessible cables satisfies the recommendations of GL 2007-01,and the guidance in NUREG/CR-7000 and NUREG-0800 pending closure of Confirmatory Item 8.2-3

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Staff Review Summary

- **Section 8.2 – Offsite Power System**
  - The applicant has adequately addressed VEGP SUP 8.2-1 thru 8.2-6 involving the offsite power system adequacy and availability, testing and inspection of switchyard components and failure modes and effects analysis.
  - The applicant provided sufficient information regarding the interfaces for standard design from the generic AP1000 DCD, Table 1.8-1, Items 8.1, 8.2, and 8.3.

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Staff Review Summary

- **Section 8.2.A – Site-Specific ITAAC for Offsite Power Systems**
  - The applicant has adequately addressed STD SUP 14.3-1, involving site-specific ITAAC for the offsite power system pending closure of Confirmatory Item 8.2A-1 f
  - The ITAAC associated with the offsite power system are shown in VEGP COL Part 10, Appendix B, Table 2.6.12-1. Table 8.2A-1 of the SER reflects this table.

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Staff Review Summary

- **Section 8.3.1 – AC Power System (Onsite)**
  - The applicant has adequately addressed the VEGP supplemental information involving the transmission system and its electrical connection to the onsite AC power system.
  - The applicant has adequately addressed VEGP COL 8.3-1 related to the grounding grid system design and lightning protection.
  - The applicant has adequately addressed VEGP SUP 8.3-1 involving the site-specific conditions bounded by the standard site conditions in the AP1000 DCD for rating the diesel generator.
  - The applicant has adequately addressed VEGP SUP 8.3-4 regarding the periodic verification and proper operation of the offsite power system capability for automatic and manual transfer from the preferred power supply to maintenance power supply and vice-versa. The staff concludes that GDC 18 is satisfied for this item.

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Staff Review Summary

- **Section 8.3.2 – DC System (Onsite)**
  - The applicant has adequately addressed STD DEP 8.3-1 and Revised STD COL 8.3-2 related periodic testing of battery chargers and voltage regulating transformers pending closure of Confirmatory Item 8.3.2-2.

AP1000 Reference Combined License Application Presentation to ACRS Chapter 9

December 15-16, 2010

Presenters: Wes Sparkman, Bob Hirmanpour

R-COLA Chapter 9: Auxiliary Systems

9.1 Fuel Storage and Handling

9.2 Water Systems (Plant Specific)

- **Raw water system (Section 9.2.11) covered in this presentation as a major topic. Other sections included only minor supplemental information or departure.**

9.3 Process Auxiliaries

9.4 Air-Conditioning, Heating, Cooling, and Ventilation System (Primarily Standard)

9.5 Other Auxiliary Systems (Primarily Standard)

App 9A Fire Protection Analysis (Primarily Standard)

R-COLA Chapter 9: SER Open Items

SER Open Items (closed in AFSER)

OI 9.1-1: Metamic monitoring program (see next slide)

OI 9.1-2: LLHS program implementation (LLHS program to be implemented and inspection to be performed prior to receipt of fuel onsite.)

OI 9.1-3: OHLHS program implementation (OHLHS program to be implemented prior to receipt of fuel onsite.)

OI 9.1-4 : OHLHS inspection implementation (OHLHS inspection to be performed prior to receipt of fuel onsite.)

R-COLA Chapter 9: Recent Revisions

OI 9.1-1 - Metamic monitoring program

Staff requested additional information regarding Metamic monitoring program.

STD COL 9.1-7, Metamic coupon monitoring program, was revised to include:

- Verification of continued presence of the boron via neutron attenuation measurement.
- Monitoring for unacceptable swelling.
- Monitoring for degradation. This includes tests to monitor bubbling, blistering, cracking, or flaking; and a test to monitor for corrosion, such as weight loss measurements and/or visual examination.

COLA Part 10 was revised to include License Condition 2, Item 9.1-7 for implementation of the Metamic coupon monitoring program prior to Commercial operation.

R-COLA Chapter 9: Plant Specific

9.2 Water Systems

9.2.11 Raw Water System (RWS)

- Two RWS subsystems – river water and well water
- River water subsystem
  - The source of water for the river water subsystem of the RWS is the Savannah River.
  - Provides makeup water to the circulating water system (CWS) cooling tower basins and dilution for Units 3 and 4 blowdown sump.
  - Not a potential flow path for radioactive fluids
  - Provides alternate source of dilution for radwaste discharge when the CWS is not in use.
- Well water subsystem
  - Design includes features to ensure redundancy and reliability as a source of makeup to the service water cooling towers.
  - Also provides makeup water for fire protection systems.

R-COLA Chapter 9: Plant Specific

9.2.11 Raw Water System (RWS) – Safety Design Basis

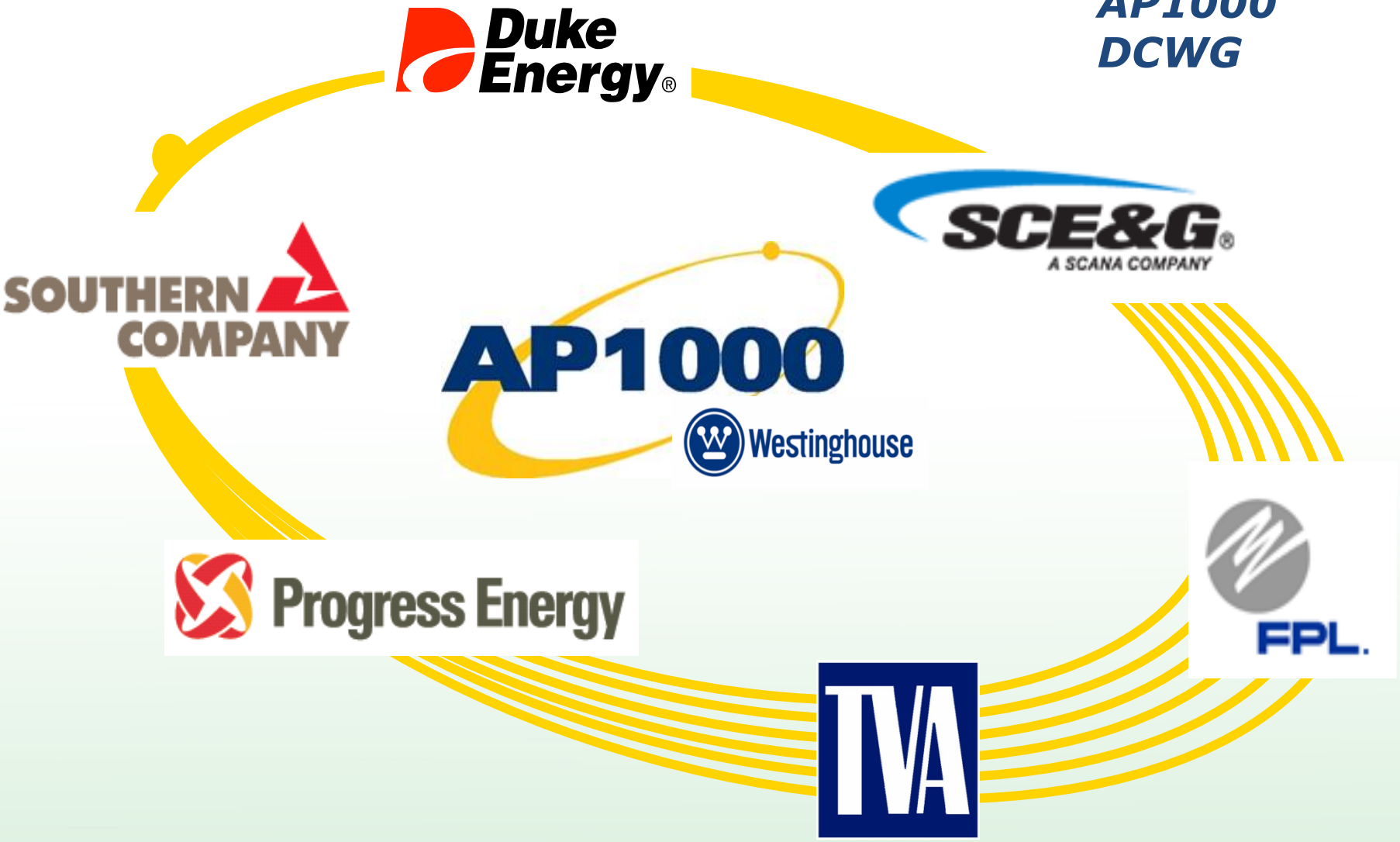
- The RWS serves no safety-related function, and therefore, has no nuclear safety design basis.

- In response to staff requests, additional information was provided to show:
  - RWS failures will not adversely affect SSCs that are safety-related or designated for RTNSS.
  - RWS was designed to be a "highly reliable and robust system" capable of operating during a loss of normal alternating current power to provide RWS makeup flow under normal and abnormal conditions.

R-COLA Chapter 9: Plant Specific

9.2.11 Raw Water System (RWS) – Safety Design Basis

- RWS does not provide any RTNSS functions as documented in WCAP-15985, "AP1000 Implementation of the Regulatory Treatment of Nonsafety-Related System Process."
- Contamination of the RWS piping is not credible based on the RWS design and the configuration relative to potential sources of contamination. No unique design provisions or other features are required for RWS to comply with 10 CFR 20.1406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Presentation to the ACRS Subcommittee

Vogtle Units 3 and 4 COL Application Review

ASE Chapter 9

Auxiliary Systems

December 15-16, 2010

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Staff Review Team

- Technical Staff

– **Nan Chien**	**Tze-Jer (Jerry) Chuang**
– **Gordon Curran**	**Thinh Dinh**
– **Tanya Ford**	**Raul Hernandez**
– **Charles Hinson**	**Yi Hsii (Gene)**
– **Chang Li**	**Gregory Makar**
– **Wendell Morton**	**Amar Pal**
– **Jeffrey Poehler**	**Robert Radlinski**
– **Edward Roach**	**Eduardo Sastre**
– **Steven Schaffer**	**Angelo Stubbs**
– **James Tatum**	**Christopher Vanwert**
– **Larry Wheeler**	**Joshua Wilson**

- Project Manager
  - **Tanya Simms**, AP1000

Overview of AP1000 Chapter 9 - Auxiliary Systems

Standard Section		Summary of Content
9.1	Fuel Storage and Handling	-**Metamic Monitoring Program** -**Light Load Handling System** -**Overhead Heavy Load Handling Systems**
9.2	Water Systems	-**Plant Specific**
9.3	Process Auxiliaries	-Air Systems
9.4	Air Conditioning, Heating, Cooling, and Ventilation System	-Inspections and Testing
9.5	Other Auxiliary Systems	-Fire Protection Program -Diesel Generator Fuel Oil System

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Resolution of Standard Content Open Items

- **Open Item 9.1-1(Metamic Coupon Monitoring Program)**
  - **Issue** - Metamic Monitoring Program – STD COL 9.1-7 specifies coupon surveillance program for SFP neutron absorbing material due to limited service experience with material. The applicant did not provide sufficient details.
  - **Resolution** - The commitment provided by the applicant proposed a License Condition to ensure the appropriate information is available for the staff's inspection of the details of the Metamic Monitoring Program prior to the start of plant operation.

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Resolution of Standard Content Open Items

- **Open Item 9.1-2 (Implementation of Inservice Inspection of the Light load handling system (LLHS))**
  - **Issue** - Inspection & Testing Program – STD COL 9.1-5 specifies a program for in-service inspection (ISI) of LLHS. The applicant did not provide sufficient details.
  - **Resolution** - The commitment provided by the applicant will ensure that the procedures to clarify that the LLHS, including system inspections, is implemented prior to receipt of fuel onsite.

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Resolution of Standard Content Open Items

- **Open Items 9.1-3 and 9.1-4 (implementation of Inservice Inspection of Overhead Heavy-Load Handling System (OHLHS) and The Plant Inspection Program)**
  - **Issue** - Inspection & Testing Program – STD COL 9.1-5 specifies a program for ISI of OHLHS and a schedule milestone for developing the plant inspection program for the handling systems. The applicant did not provide sufficient details.
  - **Resolution** - The commitment provided by the applicant will ensure that the procedures to clarify that the OHLHS, including system inspections and the plant inspection program, will be implemented prior to receipt of fuel onsite

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RWS Description

- **RWS is nonsafety-related and non-seismic**
- **Two subsystems, river water subsystem and well water subsystem**
  (some equipment is shared between Units 3 & 4)
  - **River water subsystem (Savannah River) supplies**
    - CWS natural draft cooling towers
    - Water for blowdown sumps
  - **Well water subsystem (2 deep wells) supplies**
    - SWS cooling towers (RTNSS and cold shutdown support)
    - Potable water
    - Fire protection
    - Demineralized water treatment
    - Cooling to CWS pumps

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RWS Description

- **Shared well water subsystem for the Unit 3 & 4**
  - 2 Deep well makeup pumps
  - Underground HDPE piping
  - 300,000 gal storage tank
  - 4 Well water transfer pumps
  - Well water pump house diesel generator supports
    - well water makeup pumps
    - transfer pumps

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Staff Review Summary

- **Well water subsystem has redundancy, a 300,000 gallon storage tank, and pumps are diesel backed**
- **Well water subsystem pumps well exceed the SWS basin makeup requirements**
  - Well water makeup pumps ~ (2) at 1500 gpm
  - Well water transfer pumps ~ (4) 750 gpm
- **Reliable materials are being utilized consistent with industry good practices**
- **RWS is non radioactive and contamination is not credible due to its configuration relative to potential sources of contamination**

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Staff Review Summary

- **GDC 2 and GDC 4 have been satisfied**
  - Failure of the RWS/components will not affect the ability of any risk-significant systems to perform their intended safety functions
  - Failure of the RWS/components will not affect any RTNSS
- **Staff concludes that RWS:**
  - Meets all applicable regulations
  - Considered highly reliable to support CSD

R-COLA: Action #64

"Additional" Explosive Hazards During Delivery

ACRS requested information addressing an "additional hazard" when a truck is onsite to replenish the stored hydrogen volume

Administrative controls limit amount and route of deliveries of explosive hazard materials

- Limit distance and volume such that impact to pertinent SSCs is no greater than stationary evaluation results

R-COLA: Squib Valves Action

AP1000 Squib Valve Testing

ACRS requested information addressing the development of inservice testing surveillance activities for the squib valves.

Staff Bullet from 12-15-2010

- Westinghouse and SNC will develop IST surveillance activities for squib valves based on final design and lessons learned from qualification process

COL 3.9-4 – Develop Inservice Testing Program

- FSAR 3.9.6.2.2 currently addresses this commitment

R-COLA: Squib Valves Action

AP1000 Squib Valve Testing (cont'd)

VEGP RAI Letter 56 – RAI 3.9.6-1

- Improved surveillance activities being considered by industry
- Include FSAR commitment to incorporate lessons learned
  - from design completion process
  - from qualification process

VEGP Response dated May 27, 2010

- Included in FSAR Revision 3 in August 2010

VEGP COLA FSAR 3.9.6.2.2

Industry and regulatory guidance is considered in development of IST program for squib valves. In addition, the IST program for squib valves incorporates lessons learned from the design and qualification process for these valves such that surveillance activities provide reasonable assurance of the operational readiness of squib valves to perform their safety functions.