Official Transcript of Proceedings

NUCLEAR REGULATORY COMMISSION

Title: Advisory Committee on Reactor Safeguards
Subcommittee on Fermi 3: Open Session

Docket Number: (n/a)

Location: Rockville, Maryland

Date: Friday, October 21, 2011

Work Order No.: NRC-1219 Pages 1-197

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

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

+ + + + +

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

SUBCOMMITTEE ON FERMI 3

+ + + + +

OPEN SESSION

+ + + + +

FRIDAY

OCTOBER 21, 2011

+ + + + +

ROCKVILLE, MARYLAND

+ + + + +

The Subcommittee met at the Nuclear Regulatory Commission, Two White Flint North, Room T2B1, 11545 Rockville Pike, at 8:30 a.m., Michael Corradini, Chairman, presiding.

SUBCOMMITTEE MEMBERS PRESENT:

MICHAEL CORRADINI, Chairman

SAID ABDEL-KHALIK

J. SAM ARMIJO

CHARLES H. BROWN, JR.

GORDON R. SKILLMAN

JOHN W. STETKAR

CONSULTANTS TO THE SUBCOMMITTEE PRESENT:

THOMAS S. KRESS

GRAHAM B. WALLIS

NRC STAFF PRESENT:

CHRISTOPHER BROWN, Designated Federal Official

ADRIAN MUNIZ

JERRY HALE

TIM STEINGASS

JOEL JENKINS

CRAIG HARBUCK

RAJ ANAND

SYED HAIDER

GREG MAKAR

JOHN McKIRGAN

STEVEN DOWNEY

TODD HILSMEIER

GEORGE LIPSCOMB

MARK CARUSO

JIM XU

ALSO PRESENT:

PETER SMITH

STEVE THOMAS

DAVE HARWOOD

RYAN PRATT

GARY MILLER

ALAN BEARD

MICHAEL BRANDON

WALTER SCHUMTISCH

NICK LATZY

T-A-B-L-E O-F C-O-N-T-E-N-T-S

P R O C E E D I N G S

8:28 a.m.

CHAIR CORRADINI: The meeting will come to order.

This is a meeting of the Advisory Committee on Reactor Safeguards and it's Subcommittee on Fermi Unit 3, the Reference COLA.

My name is Mike Corradini, I'm Chair of the Subcommittee. The Subcommittee members in attendance are Dr. Said Abdel-Khalik, Dr. Sam Armijo, Mr. John Stetkar, Mr. Dick Skillman, Mr. Charlie Brown and our consultants Dr. Tom Kress and Graham Wallis.

The purpose of this meeting is to discuss SERs for Chapters 5 the Reactor Coolant System, Chapter 6 the Engineered Safety Features, Chapter 16 Technical Specs, Chapter 17 Quality Assurance and Chapter 19 the PRA and the Loss of Large Areas Associated with the Fermi 3 COLA.

The Subcommittee will hear presentations by and hold discussions with representatives of the NRC staff and the Applicant, the Detroit Edison Company, regarding these matters.

The Subcommittee will gather information, analyze relevant issues and facts and formulate proposed positions and actions as appropriate for

deliberation by the full Committee.

Christopher Brown is our Designated Federal Official for this meeting.

The rules for participation in today's meeting have been announced as part of the notice of this meeting previously published in the *Federal Register* on October 11, 2011. And as noted in the *Federal Register* notice, a portion of this meeting will be closed to discuss security-related information. At the time Mr. Brown will check the room to ensure that only designated NRC and DTE personnel are present.

A transcript of the meeting is being kept and will be made available as stated in the *Federal Register* notice.

It's requested that speakers first identify themselves and speak with sufficient clarity and volume so that they can be readily heard.

Also, be silence all iPhones, iPads, other things and other personal devices so no jigging or wiggling or dangling occurs.

We have not received any requests from members of the public to make oral statements or written comments at this time. And there is a bridge line setup for Detroit Edison personnel to call in if

the DTE folks in the room want to get advice or information from their colleagues.

We have the bridge line setup, is that correct, Chris?

DESIGNATED FEDERAL OFFICIAL BROWN: That is correct.

CHAIR CORRADINI: So the only thing I wanted to mention in terms of reminding everybody that just due to scheduling and how things have evolved, we're going to have a series of meetings. We've had the first one in late May, I think it was May 25th, where we covered a series of four chapters primarily were incorporated by reference chapters. A large portion of the day is going to be similarly that. We're going to start off with Detroit Edison telling us about some issues or questions that we had raised, and they're going to inform us more about certain things from the May meeting.

We're going to have another meeting on November 30th, again with a number of chapters, it'll have a number of things incorporated by reference. And then we're planning a meeting sometime in early 2012 which will pick up the chapters where there's a number of deviations from the standard DCD or specific additions because of the site. And that has yet to be

precisely scheduled, but we'll get back to everybody about that and those details.

So, I'd like to now proceed and call on Mark. Are you going to be our kickoff or is Adrian going to do it? So I'll call on Adrian Muniz as the Lead Project Manager for Fermi 3 to start us off.

Adrian?

MR. MUNIZ: Good morning.

My name is Adrian Muniz, NRC Lead Project Manager for the Fermi COLA.

And I would like to thank the Committee for the opportunity for the staff to discuss their findings as documented in the Safety Evaluation Report with no open items.

As Dr. Corradini mentioned, there were several questions raised by the ACRS Members on the May 26th ACRS meeting and Detroit Edison has prepared a presentation to address those questions.

Just a point of clarification on Chapter 11 which is going to be presented on November 30th, that chapter contains a departure, that's being characterized as a departure not requiring prior approval. And that's the sole departure as of right now that is contained in the COLA.

So with that, I would like to turn it over

to Detroit Edison for their presentation.

CHAIR CORRADINI: So their first presentation will be given by Detroit Edison basically answering questions that we've raised from our May meeting. And, Peter, are you going to kick us off?

MR. SMITH: Yes, I am.

CHAIR CORRADINI: Okay. I was looking for you there. I'm sorry.

MR. SMITH: I moved.

CHAIR CORRADINI: Yes. I knew you were there a second ago. All right. Go ahead. I'm sorry.

MR. SMITH: I saw you move.

CHAIR CORRADINI: Yes, we tend to shift around so you can't find us easily.

MR. SMITH: Anyway, my name is Peter Smith from Detroit Edison and I've been the COLA Lead since the inception of our project.

Last time I went through an extensive set of introductions of people. We have the same cast as we had previously, plus one other that I'll add here. That's Stan Stasek who is our Director of Quality Management from a previous meeting.

Anyways, so the first thing I wanted to do was I wanted to go through what we distilled down to two items from our Chapter 8 review from the May

meeting. And the first question relates to whether or not the switchyard breakers have one or two closing coils. And the second question related to the description of the overall off-site transmission system an d it related to the fact that Fermi 2 and Fermi 3 share the same transmission corridor for a period and I was not able to adequately describe it, so I've brought some pictures this time that I think will help.

So, next slide, please.

So the first thing is related to the switchyard breaker closing coils. The breakers have single closing coils. We have yet to find someone who manufacturers breaks with more then one, and I'm convinced them we will.

MEMBER STETKAR: Good luck.

MR. SMITH: Yes. So anyways, but what we did take away from the meeting was the need to be able to optimally restore off-site power following a loss of off-site power event. And so we went off and we investigated what our practices were in Detroit Edison and we actually owned the transmission system and what ITC has subsequently continued to do, and also through our engineering firm B&V and others that they support. And what we have found in our system and in ITC's is

that in the switchyard they use a single battery for restoration of all the breakers, which is not an optimal scheme, and so I was going to talk about that.

So, we have a breaker and a half configuration of our switchyard. So in our particular configuration you could reach success by closing a single breaker if you have the right off-site line --

MEMBER STETKAR: Right. Excellent.

MR. SMITH: -- incoming line and the right alternate preferred power source or normal preferred power source aligned to that breaker. And then the numbers of breakers you have to close go up from there.

MEMBER STETKAR: Depending on -- yes.

MR. SMITH: So we are committed to IEEE 765 which in general talks about preferred power supply reliability. And we also recognize that the switchyard configuration, and often when we're configuring two batteries because we will have two batteries --

MEMBER STETKAR: Yes. The good news is you have two batteries out there.

MR. SMITH: Yes.

MEMBER STETKAR: So in principle you just need to figure out --

MR. SMITH: We just need to figure what the right --

MEMBER STETKAR: --and thinking about at which battery supplies which set of breakers so you have, you know a reasonable chance of getting one line back if you do have a battery dead.

MR. SMITH: So what we're doing to address this is right now in our relationship with ITC we have an interconnect agreement that has a stop point in it and we have to give a go ahead when we actually decide to build a plant, and that will kickoff the detailed design. And at that time when we get into that contract we're going to put in these requirements relative to performing an evaluation to optimally configure our switchyard.

MEMBER STETKAR: Good.

MR. SMITH: And utilizing the two batteries for restoration.

MEMBER STETKAR: Good.

MR. SMITH: And we've got that tracked in our commitment management system associated with a milestone for kicking off that interaction with ITC.

MEMBER STETKAR: Thank you.

MR. SMITH: Next slide.

So the second question related again to

the description of the Fermi 2 and Fermi 3 transmission corridor. And then there was also a related question regarding a physical separation between circuits from Fermi 2 and Fermi 3 since the circuits are strung on the same towers.

So next slide, please.

So just as a recap from our last meeting, the Fermi 2 transmission system; Fermi 2 is supplied by 345 kV and 120 kV from the ITC transmission system.

There's two 345 kV circuits that are on separate towers and three 120 kV circuit that service the plant that provides a second course of off-site power. When leaving the plant these circuit are all in a common right of way and they're spaced sufficiently such that the collapse of either of the 345 kV towers would not interrupt the other 345 line, and that's a statement out of the Firma Unit 2 FSAR.

In Fermi 3 we have three 345 kV lines leaving our site. They're in a common right of way and share that common right of way with the Fermi 2 transmission system for a portion. Ultimately, Firma 2's 345 kV goes through a Brownstown Station, and I'll point that out when we get to the next slide and Firma 3 goes to the Milan Station. And again we have sufficient spacing such that any one 345 kV tower or

pole failure, and I'll explain that in a minute, can at most disrupt and cause the loss of that line or the adjacent circuit, but not all three.

MEMBER STETKAR: Not all three?

MR. SMITH: Not all three, correct.

MEMBER STETKAR: You can get the two?

MR. SMITH: Yes, you can get two.

So, next slide.

So, I'm going to see if I can drive the mouse here so I can point this out.

So, this is just the overall diagram. Fermi 3 is located where the mouse pointer is. And the transmission corridor leaves the site and proceeds down this red and green, and this break point here where the green turns over the Fermi 2 345 kV circuit, that's approximately Interstate 75. And the Fermi 2 lines then proceed up by I-75 corridor up to the Brownstone Station which is located to the north and east.

The Fermi 3 corridor continues out a developed corridor up to the Sumter area and then proceeds west toward Milan. Now as the developed corridor ends here and there's about 11 miles at the end that are undeveloped at this point in time, although we planned 40 years ago to support the

original Fermi 3 that we had a construction permit for.

Next slide.

CHAIR CORRADINI: Just so I understand, so the solid red ends with a dashed red and it ends there because there's a substation or ends there because there's been just simply no development to this date?

MR. SMITH: No, there's not a substation there, but I believe the route to those lines continues in a different path. So we only showed the only path to that point.

CHAIR CORRADINI: Okay. Thank you.

MEMBER STETKAR: Peter, I was just trying to find my notes.

The co-located red/green path --

MR. SMITH: Yes?

MEMBER STETKAR: -- what's that distance? It's a few miles.

MR. SMITH: It's about 3½ miles.

MEMBER STETKAR: Three and a half miles?

MR. SMITH: I think.

MEMBER STETKAR: I couldn't find it in my notes, but I thought it was something like that.

MR. THOMAS: If you look at the scale on the bottom of the figure --

MEMBER STETKAR: Oh. That would be too easy.

MR. THOMAS: -- it's about 3½ miles.

MR. SMITH: I need better glasses to see the scale at the bottom.

MEMBER STETKAR: I'm too used to asking simple questions, so --

CONSULTANT WALLIS: So an airplane could take out all the lines?

MR. SMITH: Yes, conceivably.

CONSULTANT WALLIS: So that sort of common failure would take out everything?

MR. SMITH: Yes.

So here's the configuration of the corridor --

CHAIR CORRADINI: So Graham asked that question, can we go back?

MR. SMITH: Certainly.

CHAIR CORRADINI: So where's the Detroit Airport? I was trying to understand this because whenever I fly to Detroit I look for Fermi.

MR. SMITH: Oh. So, the Detroit Metro Airport is about -- I want to say --

CHAIR CORRADINI: It's to the northwest, I know, but I'm trying to figure out where it is in

relationship to this.

MR. SMITH: It's about 20 miles.

CHAIR CORRADINI: Okay.

MEMBER STETKAR: We haven't talked about aircraft crashes. Twenty miles is one thing. Where the air traffic control corridor is and are you on either a take off -- whatever?

CHAIR CORRADINI: They don't fly over at all.

MEMBER STETKAR: Okay.

CHAIR CORRADINI: After five wonderful years coming to and from Washington for this joyful experience, I've never seen it get close to it.

MEMBER STETKAR: I mean, they tend to route them around.

CHAIR CORRADINI: There's Fermi and then there's also a fossil plant up north and a small airfield to the east of that. And essentially all the aircraft routing from Detroit DTW avoids all three of those empirically.

MEMBER STETKAR: Okay.

MR. SMITH: And we'll talk about that in Chapter 2. We've updated that analysis for Fermi 3.

So, here's the configuration of the corridor. So on the outside are the two 345 kV towers

that are currently existing. The outside arms have one circuit of 345 kV on this tower for Fermi 2. The other has one circuit of 345 kV for Fermi 2.

These arms are currently not strung. They were originally planned, as I said, for the original Fermi 3.

And then in the center of the corridor are three circuits on wooden H towers for the 120 kV to supply Fermi 3. And the distances are all on the bottom.

MEMBER STETKAR: Those are wooden?

MR. SMITH: The center ones are wooden, yes. We'll show you in the next figure, though, that's slowly being changed.

CHAIR CORRADINI: And the center ones are for local distribution? I don't think I appreciate the difference. I'm sorry.

MR. SMITH: Okay.

CHAIR CORRADINI: The purpose of those?

MR. SMITH: So the 120 kV -- Fermi 2 has two off-site sources. One is the 345 kV system, the second off-site storage system, the 120 kV system which actually predates Fermi 2. It was associated with the original Fermi 1 plant.

MEMBER STETKAR: Ahh.

MR. SMITH: And then we have a series of speakers that were installed on the site in the early '60s.

MEMBER STETKAR: Right. You had said that early on. I forgot.

MR. SMITH: Okay. And then the third circuit for Fermi 3 will be on a pole tower that will be installed somewhere in the center of the 120 kV corridor.

MEMBER STETKAR: Details. Go on. Thanks.

CONSULTANT WALLIS: It's a long way to the other towers, it's in the middle.

MR. SMITH: It is. When you --

CONSULTANT WALLIS: So the likelihood of it taking out the other towers is pretty small?

MR. SMITH: So, the next --

CHAIR CORRADINI: The answer is yes.

CONSULTANT WALLIS: But it says here, it says "could at most disrupt one adjacent line." Okay.

MR. SMITH: So on the next slide, I have a couple of photographs. And so that really gives you kind of the real perspective of it.

So, this next slide is on an uncharacteristically sunny day --

CHAIR CORRADINI: This is the way Michigan

always is, isn't it?

MR. SMITH: If you wait long enough it is.

CHAIR CORRADINI: This was taken on July 3rd, 1063.

MR. SMITH: So you can see the configuration as was described in the drawing previously. And so the pole towers on the outside that have the 345 kV circuits, the unhung on the pole towers and then you can see the wooden Hs for the 120 kV system.

And then you'll notice this pole that's right close to us, that's a recently replaced H tower. So ITC has been going through a program where they've had to replace the H wooden towers they've gone to metal pole towers.

CONSULTANT WALLIS: Out of curiosity, do you have any de-icing on these, or does the power line de-ice itself?

MEMBER STETKAR: Ice gets heavy enough it falls off.

CONSULTANT WALLIS: Just curious.

MR. HARWOOD: No, there's no de-ice.

CHAIR CORRADINI: If you say anything, you have to come up to a microphone. Identify yourself and speak with sufficient clarity. Sorry. It's

transcript problems.

MR. HARWOOD: That's okay. Dave Harwood, Project Manager for Firma 3.

There is no de-icing.

CONSULTANT WALLIS: So another cause of common failure would be a major ice storm? Could be?

MR. SMITH: Could be.

Next slide.

And so this then is the opposite way of looking into the sun on the sunny day toward the Fermi plant, and you can see the little towers in the background, but it's basically the same configuration.

CONSULTANT WALLIS: But a breeze, too with plumes like that?

MR. SMITH: I'm sorry?

CONSULTANT WALLIS: There's quite a breeze with the plumes are horizontal like that.

MR. SMITH: Yes.

MEMBER ARMIJO: Just to follow-up on Professor Wallis' question, have you ever had failures of transmission lines due to heavy icing into the Fermi plants?

MR. SMITH: I don't know of an instance of icing. But we have had lines disrupted by tornado. We had a tornado --

MEMBER STETKAR: June 6th.

MEMBER ARMIJO: Thank you.

MR. SMITH: And then the final portion of the question related to the configuration of the off-site power was related to how far apart the conductors are between the Fermi 2 and Fermi 3 sites. It depends on which arm. They're 30 feet, the minimum of 45 between conductor to conductor.

CONSULTANT KRESS: All these common cause things, you account for those in your historical frequencies and loss of off-site power --

MR. SMITH: Yes. Correct.

CONSULTANT KRESS: -- in your PRA?

MR. SMITH: Yes.

MEMBER STETKAR: We'll talk about that when we get to Chapter 19 today.

MR. SMITH: Yes.

CONSULTANT KRESS: Okay. Okay.

MEMBER STETKAR: That's why I knew about June 6th.

MR. SMITH: All right. Any other questions?

CHAIR CORRADINI: No. Keep on going, you're doing fine.

MR. SMITH: That was the last slide on

this. So, this concludes the follow-ups that we did from the last meeting.

CHAIR CORRADINI: Okay. Okay. Any questions about the Subcommittee members?

MEMBER STETKAR: No. I think that answers the basic information. The takeaway is that a tower failure can take out -- not including much about how you're actually going to reconfigure the 120 and 345 down the center. But at most you can take out two of the 345 Unit 3, one of the 345 Unit 2 and some 120 --

MEMBER BROWN: One or two of them.

MEMBER STETKAR: -- Unit 2.

MEMBER BROWN: A shared right of way.

MEMBER STETKAR: I mean a couple. So, you could -- you know a tower failure, you still have at least one circuit for each unit and probably a 120 for Unit 2 also.

MEMBER BROWN: And an aircraft could take all of them out if it came --

CHAIR CORRADINI: There's a number of common causes.

MEMBER STETKAR: I mean, there are a number of things that -- whenever you have a shared right of way like this, you know that's --

CHAIR CORRADINI: Other questions? Okay.

Thank you.

MR. SMITH: Thank you.

CHAIR CORRADINI: So we can proceed I think with today's discussion of Chapter 5 I assume is what you guys are going to start with?

MR. SMITH: Yes. So I'm going to turn this over to Ryan Pratt, who is an engineer who works in my organization and he's going to go through Chapter 5.

CHAIR CORRADINI: Okay. Thank you.

MR. PRATT: Good morning. As Peter said, my name is Ryan Pratt. I'm a licensing engineer for Detroit Edison. Today I'll be discussing Chapter 5, Reactor Coolant System and Connected Systems.

As we've done with our previous presentations on the secure side here, we list the chapters where we added additional information to the COLA. And this chapter information was added to three sections:

Section 5.2 Integrity of Reactor Coolant Pressure Boundary;

Section 5.3 Reactor Vessel; and

Section 5.4 Component and Subsystem Design.

And also of note, all of the COL items in

this chapter are standard items, and all the standard items were included in the previous ESBWR R-COLA.

Next slide.

Starting with Section 5.2 Integrity of Reactor Coolant Pressure Boundary, the first standard supplemental item identifies ASME codes that are applicable to preservice and inservice inspection and testing programs. And the FSAR identifies these same code additions as those that are identified in the DCD.

The next COL item identifies that all Class 1 austenitic or dissimilar metal welds are included in the referenced certified design.

And the third COL item provides descriptions of the preservice and inservice inspection and testing programs and implementation milestones. The PSI program is to be completed prior to plant startup and the ISI program is to be implemented prior to commercial service.

We also state that the ISI program incorporates the latest addition and addenda of ASME codes approved in 10 CFR 50.55(a) 12 months prior to fuel load.

Next slide.

Continuing with Section 5.2, we describe

the processes that we've preserved: Accessibility to piping systems to enable nondestructive examination of Class 1 welds. But accessibility to these systems is incorporated into the plant design and the licensee's responsibility is to ensure that that accessibility is maintained.

And finally, the last final standard COL item in Section 5.2 describes the procedures that will be used for leak detection monitoring.

Section 5.3 Reactor Vessel. This section also incorporates the DCD by reference with additional standard information.

We describe our commitment to develop the pressure-temperature curves in accordance with the PTLR, Pressure Temperature Limit Report and our commitment is to update the pressure-temperature curves prior to fuel load to reflect the plant's specific material properties, if required.

CONSULTANT KRESS: You have samples inside your vessel to measure the neutron fluence?

MR. PRATT: Yes, that's right. We have in accordance with the Reactor Vessel Material Surveillance Program we have four sets of samples.

CONSULTANT KRESS: How many samples does that include?

MR. PRATT: There's four different sets, four different --

CONSULTANT KRESS: You take them out and look at them about every two years or so?

MR. PRATT: The first set is after six full-power years.

CONSULTANT KRESS: Six years?

MR. PRATT: And then 20 full-power years, and then the third set comes out prior to the 60 full-power years. And the last set is based upon the three previous sets.

CONSULTANT KRESS: And based on those you may adjust your pressure-temperature limits?

MR. PRATT: Right.

CONSULTANT KRESS: Okay.

MR. PRATT: And as I said, the next standard COL item describes the Reactor Vessel Material Surveillance Program.

And lastly, we state that the plant operating procedures will be developed to implement the pressure-temperature curves.

Next slide.

Section 5.4 Component and Subsystem Design. Section 5.4 contains one standard supplemental item which describes the operating

procedures by which water hammer will be precluded. And these procedures will be developed to be similar to current BWR procedures.

CONSULTANT WALLIS: Does the DCD address water hammer?

MR. PRATT: It does.

CONSULTANT WALLIS: It does?

MR. PRATT: And water hammer preclusion is incorporated into the design.

CONSULTANT WALLIS: I just wondered who has the expertise to know what to do to preclude water hammer? Is it you or GEH?

CHAIR CORRADINI: You're talking operating procedures, I assume.

CONSULTANT WALLIS: I just wondered who knows how to write those procedures. Do you have your own piping that's different from the DCD?

MR. SMITH: No.

MR. PRATT: No, but the principles and concepts will be similar to BWR procedures. Some of the details may be different.

CONSULTANT WALLIS: So it's a standard thing? It's not something that's different about your plant?

MR. PRATT: Right.

CONSULTANT WALLIS: That's what I'm trying to get at.

MR. SMITH: Correct. So the COL item is really -- the DCD addresses design.

CONSULTANT WALLIS: Yes.

MR. SMITH: And the development of procedures to preclude has made a COL item that we --

CONSULTANT WALLIS: You had different piping and some reason?

MR. SMITH: No, no. So we would have a discussion --

CHAIR CORRADINI: But there will be difference with piping of isolation condensers, for example.

MR. SMITH: Yes.

CHAIR CORRADINI: And that's somewhere that you might worry about it.

Can I rephrase Graham's question a different way? So you'll potentially have to consult back with GEH in terms of the piping --

MR. SMITH: Analysis --

CHAIR CORRADINI: -- runs are different.

MR. SMITH: Yes.

CHAIR CORRADINI: Okay. To essentially inform your procedure?

CONSULTANT WALLIS: Well details matter, and sometimes the slope of a pipe matters; all kinds of little things matter when you're dealing with water hammers.

MR. SMITH: We've had considerable industry experience, so --

CONSULTANT WALLIS: Yes, I know. I was involved in some of that. Some of it is really interesting.

MR. PRATT: The last item addressed in Chapter 5 is Reactor Coolant System Vents and the human factors analysis of the control room displays for the RCS vents is included in DCD Chapter 18.

And the operating procedures will be developed prior to fuel load to govern those vents.

CONSULTANT WALLIS: Which means opening them occasionally when you have to? When the gases build up in some sort of a place where, unfortunately, you collect them and then you let them out; that's what the procedures are? There's no automatic venting, it has to be done by the operator?

CHAIR CORRADINI: You know, I think when we reviewed I don't think that was the case. I don't think that was the case.

CONSULTANT WALLIS: I'm trying to

remember. Right.

MEMBER STETKAR: The reactor vessels never have --

CONSULTANT WALLIS: But there's a sensor. There is a sensor. There has to be a sensor in there.

CHAIR CORRADINI: Can we get some information from GEH?

MR. SMITH: Gary Miller.

MR. MILLER: This is Gary Miller, GE Hitachi.

Could you repeat the question, please?

CONSULTANT WALLIS: Well, it says "operating procedures," and I was trying to figure out would the operator get some kind of a signal which says something about the level of the noncondensibles in the pipe or something? What is it that the operator gets in this procedure?

MR. MILLER: This is in relation to the isolation condenser system?

CONSULTANT WALLIS: Well, whatever. It just says "vents." There are several vents, aren't there?

CHAIR CORRADINI: I was going to say, a number.

CONSULTANT WALLIS: Yes.

MR. BEARD: Alan Beard, GE Hitachi.

The answer is for the reactor pressure vessel itself we're continuously venting the top head.

CONSULTANT WALLIS: Continuously?

MR. BEARD: Yes. We have a differential pressure that's established between the vessel and then just downstream of the immediate flow element, you know the venturi that we have. It's about a 45 pound differential pressure there so we continuously have that driving that.

And then on the isolation condensers we're continuously venting those as well using that same differential pressure to make sure that we don't accumulate noncondensible gases in either of those places.

CONSULTANT WALLIS: There are also vents in emergency cooling, aren't there?

CHAIR CORRADINI: I think Graham is thinking general, he's not thinking -- I think you've answered it for isolation of the vessel, but I guess you're thinking like the GDCS; is that what you're thinking?

CONSULTANT WALLIS: Well, for the main system it's done all the time.

CHAIR CORRADINI: Yes.

CONSULTANT WALLIS: So the operator doesn't have to do anything.

CHAIR CORRADINI: Right.

CONSULTANT WALLIS: But there are things like ECC systems, which are not used a lot --

CHAIR CORRADINI: Well, in this case then I think you're thinking the GDCS, for example.

CONSULTANT WALLIS: Yes, something like that.

CHAIR CORRADINI: Okay.

CONSULTANT WALLIS: Yes. Absolutely.

CHAIR CORRADINI: So in those cases is it a set of procedures that's going to be developed so that you would go on a periodic basis to make sure? I don't think there are sensors. As I remember the DCD there are not sensors.

CONSULTANT WALLIS: There are no sensors. So how do you know when to vent?

MR. BEARD: Well, the systems are continuously filled and kept solid. There wouldn't be the ability to accumulate noncondensible gases there.

CONSULTANT WALLIS: Ah.

CHAIR CORRADINI: I was hoping you'd answer that differently.

CONSULTANT WALLIS: So there's no

procedure for that either? I'm just wondering what these procedures are that he's talking about.

CHAIR CORRADINI: I think where Professor Wallis is going is that given that you've determined once you fill the system it's solid, you're going to have to go on some sort of periodic basis to verify, reverify that things are solid up to some sort of sampling point. And -- go ahead. Am I on the right page?

CONSULTANT WALLIS: That's right. Yes, I'm trying to figure out what these procedures are based on and all I've heard here is that either you don't need to do it or it's done all the time. That doesn't sound like an operating procedure.

MR. SMITH: So having not developed these procedures yet but going back to our existing plant experience and the examples that you've addressed such as an example in operating plants today, technical specifications require periodic venting as part the use of surveillance --

CONSULTANT WALLIS: Do require periodic venting?

MR. SMITH: Yes. So you would have operating procedures --

CONSULTANT WALLIS: Even though you think

it's solid, you still have a --

MR. SMITH: Right, to verify that the lines are solid. I don't -- but we can look --

MR. BEARD: This is Alan Beard again.

I'd like to point out that we did make design commitments on the pitch of those GDCS lines such that from the isolation point they pitch positively up in both directions.

CONSULTANT WALLIS: Yes, I remember that.

MR. BEARD: So they come down to a low point, and then we have positive pitch going back to the GDCS pool and positive pitch going back to the reactor pressure vessel.

CONSULTANT WALLIS: That's all very good. There is still some procedure to check, right?

MR. SMITH: Correct. So any procedure would have the controls and the procedure for opening and the storing and --

MR. PRATT: That concludes my presentation. Any further questions?

CHAIR CORRADINI: Any member of the Committee? Okay.

So I want to ask now will staff come up?

MR. SMITH: Yes.

CHAIR CORRADINI: Okay.

(Whereupon, at 8:59 a.m. off the record until 9:00 a.m.)

CHAIR CORRADINI: So who is going to start us off? Jerry, are you going to start us off?

MR. HALE: Well, good morning. Jerry Hale, Project Manager in Fermi Application.

We're here to present the SER for Chapter 5 with no open items of the reactor coolant system and connected systems.

Section 5.1 was a summary description, it was IBR.

Section 5.2 Integrity of Reactor Coolant Pressure Boundary included Sections 5.2.1, 5.2.2, 5.2.3 and 5.2.5. These are all IBR sections.

I'd like to move now into the sections of plant-specific starting with Section 5.2.4 Preservice and Inservice Inspection and Testing. Tim Steingass will present on that. He was the technical reviewer of that section.

MR. STEINGASS: Good morning, Mr. Chairman and ACRS members.

It says here my name is Tim Steingrass, but that's not correct. It's Steingass as in gasoline, okay?

I'm the lead technical reviewer for all

the ISI and PSI programs for Section 5.2.4 and 6.6. So I'll have the pleasure of coming up in sitting for you again for Section 6.6.

Let's see, next slide please.

I took a look at the COL and information and supplemental items. COL item 5.2-1-A involved PSI and ISI programs for the reactor coolant and pressure boundary.

COL item 5.2-3-A involved accessibility. We asked the Applicant for additional information to assure that accessibility with all the valves and components would be maintained throughout the course of construction. And the Applicant provided additional information to satisfy us that that would be maintained so that the regulations involving accessibility to perform PSI and ISI examinations that are required by ASME code can be conducted throughout the course of construction and during operation.

Supplemental item 5.2-1 involved system leakage and hydrostatic pressure testing. The COL Applicant provided the additional information that we required to meet the Standard Review Plan on that, and we had no further issues with that.

Post combined license activities involving PSI and ISI, there were commitments made by the

Applicant that assured us that a series of schedule information would be provided to the NRC so that we could perform inspections throughout the construction such that if any issues were identified real time, they would be identified immediately and corrected throughout the course of construction rather than waiting until just before fuel load and then finding that there's a major issue to have to be dealt with.

So, basically I came to the conclusion that the Applicant has adequately addressed the COL and supplemental information regarding Fermi 3 COL FSAR, and I had no issues.

Are there any additional questions?

MEMBER STETKAR: Tim, I had one, one that I kind of stumbled over and maybe it's just because I don't understand. There's a statement in -- it's a COL item 5.2-3-A, I guess. It says "During construction phase of the project anomalies in construction issues are addressed using the change-control procedures. Procedures that require changes to approved design documents including field changes and modifications are subject to the same review and approval process as the original design."

How does the staff get involved in that? What I'm concerned about is fuel changes that subtly

affect things back from the DCD that you need to go reverify. I mean, the folks who did the original certified design thought about an awful lot of things, and we have some experience from construction projects where people make field changes that seemed like a good idea to address the specific problem that they're facing during actual construction, but that may indeed affect other issues that they weren't thinking about necessarily: Pipe stresses, you know hanger locations or, you know supports. How does that process really work and that statement about "will receive the same review and approval as the original design" is what caught my attention.

Well, I mean it's nice if they've got the hook in there saying they're going to look at it, you know --

MR. STEINGASS: Yes.

MEMBER STETKAR: -- that they're going to pay attention to field changes. And I didn't ask Detroit Edison. You know, I wanted to ask you guys because the word "review" is in there.

MR. STEINGASS: Sure. Well, there's a variety of controls that are in place. One, of course, is the regulations that involved exemptions and things of that nature.

MEMBER STETKAR: Yes.

MR. STEINGASS: Okay. So we're got the regulations behind us to make certain that if these folks are going to change anything, they have to request an exemption; anything that has to do with the design so to speak.

MEMBER STETKAR: Yes.

MR. STEINGASS: Okay? So, you've got the exemption process. But one of the things that I've been involved in is writing or assisting the construction inspection program people with some of the guidance that they're going to need while they're doing the inspections during construction.

What I did was I put tags that go from some of the important things that I'm really concerned about, such as accessibility.

MEMBER STETKAR: Yes.

MR. STEINGASS: The ability to be able to get at dissimilar metal welds and be able to perform ultrasonics on them. And all those tags are actually written into the construction inspectors' guidance. So --

CHAIR CORRADINI: So what you're saying is you use your judgment to inform the inspectors in some manner so they look for things that you have, shall I

say, issues that you always are looking at if you were there?

MR. STEINGASS: And my judgment is based on the lessons learned from --

CHAIR CORRADINI: Right. Right. Yes.

MR. STEINGASS: -- from all the issues that we've had to deal with over the years.

MEMBER STETKAR: Okay.

MEMBER ABDEL-KHALIK: How detailed is the SRP guidance on accessibility?

MR. STEINGASS: I'm sorry, I didn't hear you.

MEMBER ABDEL-KHALIK: How detailed is the SRP guidance on accessibility?

MR. STEINGASS: Well, to be honest with you, the SRP talks about the ASME code for accessibility. And the ASME code for accessibility, frankly, is inadequate. It talks about the ability to get into areas by erecting scaffolding and things of that nature, and lighting. But when we're talking about accessibility what's more important is as the regulation say, that the plant needs to be designed and construction such that accessibility to enable the performance of preservice and inservice inspections is maintained. So, I guess that's why I'm here.

MEMBER ABDEL-KHALIK: Well, I'm trying to get to the underlying question is: What's involved in your review of Section 5.2-3-A?

MR. STEINGASS: Okay. And since you brought up the words "accessibility," I want to make sure that they can actually do the preservice and inservice inspections that are required by the ASME code. My major concern, as I've said before, is the dissimilar metal welds, austenitic welds; welds that are susceptible to ICSCC.

With my background as an NDE Level 3 in ultrasonics I know that there are certain distances that need to be maintained such both physical and in the design and selection of materials so that the ultrasonic examination can be performed.

There's also guidance in the regulations under the modifications sections that tell us and that tell the applicants that they have to be able to prove that they can actually perform an ultrasonic examination by demonstrating that they can do a UT from one side and find a similar type of defect.

So, what's involved is, frankly, knowledge of the regulations, experience and the fact that we do need to update the SRP to be more definitive on accessibility.

CONSULTANT KRESS: Do you review all the piping drawings and --

MR. STEINGASS: Well you see, that's why I asked for the Applicant to give us added assurance that they would maintain accessibility and also there are in some of the DCDs, and I can't remember everyone of them because I've looked at all of them, there are keys in there that say you're going to meet this regulation, or we intend, or we make a commitment to meet this regulations and that that regulation is in the modification section that says, as I said before, you have to prove that you can find a defect, a similar defect from one side. You have to actually demonstrate the adequacy of it. And if you don't, then you have to look at it from two sides. And if you're going to look at it from two sides, then you have to design for access on two sides.

MEMBER STETKAR: I don't remember because I get lost with all of the different designs we look at.

MR. STEINGASS: So do I. So do I.

MEMBER STETKAR: But is the final piping design covered on DAC for this plant? I'll ask Detroit.

MR. STEINGASS: Well, first of all, I

don't think I answered your question. I don't have any design.

MEMBER STETKAR: That's the reason I brought up the DAC issue is --

MR. STEINGASS: I don't have any. So what I look for are commitments to meet certain requirements and regulations, and that's the best I can do.

MEMBER STETKAR: I mean, that's a bit of the problem at this stage because at the COL stage you don't have a detailed design --

CONSULTANT KRESS: Well, then the DAC will take care of looking at that is what I was thinking.

MEMBER STETKAR: The DAC and the inspection process; that's why the construction inspection process -- you know, why you had to rely on construction inspection to address these design issues.

MR. STEINGASS: That's exactly why we're so adamant about a milestone schedule that comes within six months of getting the license so that we can schedule the inspections and do the inspections real time as the drawings and the systems are being put together and constructed and welded and nondestructive examinations are performed.

MEMBER ABDEL-KHALIK: So the review of item 5.2-3-A is essentially a review of the commitments made as to maintain accessibility?

MR. STEINGASS: Yes, sir. Yes, sir. Yes. I asked for additional wordage from these folks to assure me that extra effort would be put into the design and during the construction such that accessibility to perform the NDE would be there.

MEMBER STETKAR: And what's what the second half of the paragraph I quoted from says: "Control of accessibility for inspectability and testing during licensee design activities affecting Class 1 components is provided via procedures for design control and plant modification." So I think that that's the assurance that Tim was looking for, at least at the COL, saying that they would have procedures which I guess in this process is about all the staff can do.

MR. STEINGASS: At this point, yes sir.

CHAIR CORRADINI: Any other questions?

MEMBER ARMIJO: I have a question. You mentioned IGSCC as one of the reasons why you want accessibility of the welds so you can inspect them. This system, I believe, in the DCD does not have a built-in hydrogen water chemistry system as part of

the cert by design. Now, I don't recall whether Detroit Edison intends to have such a system, so that would be outside of the DCD. So this may not be the right chapter, but when will we review what you folks are going to do about that issue?

CHAIR CORRADINI: You're talking back to DTE?

MEMBER ARMIJO: Right. Detroit Edison, yes.

MR. SMITH: So this is Peter Smith. And I'll give you my recollection and then I'm going to do a lookup for you.

MEMBER ARMIJO: Okay.

MR. SMITH: I believe what the Design Center Working Group agreed upon was that we were going to implement noble chem as part and parcel of the standard COL and that hydrogen water chemistry, I believe our experience was is that everyone has added it under a changed process, such as 50.59. And that's what we would intend to do.

Now we also are participating in the EPRI New Plant Chemistry Guidelines Working Group. And that is a recommendation within the current state of that.

MEMBER ARMIJO: So in the case for Detroit

Edison for this plant would you make those changes in the course of building the plant? Is that going to be part of the R-COLA or would you build the plant and then do a 50.59 change afterwards?

MR. SMITH: It would a post-license change, not necessarily after the plant is built. Because in the --

CHAIR CORRADINI: It's during the construction I think.

MR. SMITH: Right. So the other thing I wanted to point out here too, is that the change control process for new plants once the COL is issued is different than it was during plants that were built with construction permits and subsequent operating licenses. So field changes are significantly more controlled to the same degree as what are done to changes done by licensees of operating plants. And there is industry guidance being developed by NEI with the staff on change control process.

CHAIR CORRADINI: I think you have help.

MR. SMITH: Okay. Thank you.

MR. THOMAS: My name is Steve Thomas. I work for Black & Veatch. And we do have a hydrogen water chemistry system that is described in Chapter 9. And we'll get to that. I think that's scheduled for

the November 30th meeting. But we do have a hydrogen water chemistry system.

MEMBER ARMIJO: Okay. That is part of it, but it's not in the DCD.

MR. THOMAS: It's an option in the DCD that we're implementing.

MEMBER ARMIJO: It is an option?

MR. THOMAS: Yes.

MEMBER STETKAR: Oh, yes. They have an option.

CHAIR CORRADINI: But they've chosen to exercise that option.

MR. THOMAS: Correct.

MEMBER ARMIJO: Okay. Thank you. I'll just wait until we get to Chapter 9 then.

CHAIR CORRADINI: Anything else for Tim?

MR. STEINGASS: Thank you.

MR. HALE: Joel Jenkins will present the technical review starting with Section 5.3-1 Reactor Vessel Materials.

MR. JENKINS: Yes. My name is Joel Jenkins. I'm a Materials Engineer on the staff with the Office of New Reactors. And I reviewed Section 5.3.

Starting with Section 5.3.1 Reactor Vessel

Materials. Fermi incorporates by reference ESBWR DCD Section 5.3.1 with the following departures and supplements that are listed on this slide:

Section 5.3.6 of the DCD describes the reactor vessel surveillance program, sometimes abbreviated as RVSP, but in the ESBWR DCD this is a short and a very generic description of the program. Certain specifics such as specimen preparation, lead factors and quantity of specimens are not provided in great detail, or at all, in the ESBWR DCD.

So the first bullet, COL item 5.3-2-A provides this level of detail for the RVSP. And it's provided as a supplement to the generic requirements of the ESBWR DCD.

The second bulleted item, COL 16.01-1-A 5.6.4-A, which is actually a COL item from the tech specs, is mentioned in subsection 5.3.1.5 which discusses compliance with the fracture toughness requirements of 10 CFR Appendix G. Now this COL item deals with the topic of pressure-temperature limits, and I will discuss this topic in the next slide.

A post combined license activity associated with the first COL item states that if fracture toughness test results indicate that change in the technical specs is required, the expected date

for the submittal of the revised technical specs will be provided with the Summary Technical Report. And the Summary Technical Report is that report which is required to be submitted after capsules are pulled.

The Applicant also identified the following license condition: The complete reactor vessel surveillance program will be developed prior to fuel load.

In conclusion: The Applicant has adequately addressed COL and Supplemental Information regarding the Fermi 3 COL FSAR.

And that concludes my presentation on this slide.

CHAIR CORRADINI: Questions?

MR. JENKINS: Okay. Section 5.3.2 deals with Pressure-Temperature Limits. Fermi incorporates by reference ESBWR DCD Section 5.2 which provides representative pressure-temperature limit curves. Now the first bullet to item on this slide, COL item 16.0-1-A 5.6.4-1 which I mentioned in the previous slide, says that the pressure-temperature limit curves are developed in accordance with the Pressure-Temperature Limits Report, and this report is sometimes termed the PTLR. And this is a technical report which is submitted by the Applicant. This report has been

submitted and reviewed. The staff has reviewed the PTLR and finds it conforms to the technical criteria Generic Letter 96-93 and is compatible with the technical specs. But, it should be noted that PTLR provides generic not plant-specific heat up and cooldown pressure-temperature curves based on bounding material properties and projected fluence.

To address the submittal of plant-specific pressure-temperature limits, the COL Applicant has provided the following commitment, and this commitment stated on the slide that prior to fuel load, the pressure-temperature limit curves will be updated to reflect plant-specific material properties, if required.

In conclusion, the Applicant has adequately addressed COL and Supplemental Information regarding Fermi 3 COL FSAR.

MEMBER SKILLMAN: I'm Dick Skillman. I'd like to ask a question, please, Joel.

MR. JENKINS: Yes. Sure.

MEMBER SKILLMAN: Please explain that little phrase "if required." What does that mean? What would be the basis for requiring the curves to be updated, please? This is pretty important. This is what sets the whole map for heat up and cooldown in

the control room.

MR. JENKINS: Right.

MEMBER SKILLMAN: So what is it that would be a change to which one would respond if required, please?

MR. JENKINS: I'm not really sure if I know the best way to answer that.

MEMBER BROWN: Well, you just said that all you got was a generic.

MR. JENKINS: Well, it's --

MEMBER BROWN: So it's not right now--

MR. JENKINS: We don't know that a plant-specific --

MEMBER ARMIJO: Well, the material properties are the vessel properties and there's generic information on what those properties should be.

MR. JENKINS: Right.

MEMBER ARMIJO: And when this the vessel for this particular plant is built and the properties measured if they're within that boundary --

MR. JENKINS: Well, if they're within the bounds, then there's no adjustment.

MEMBER ARMIJO: But if you had something unusual about that material that --

CHAIR CORRADINI: You mean something out of spec?

MEMBER ARMIJO: Well, just didn't have the fracture toughness you expected --

CHAIR CORRADINI: From the testing?

MEMBER ARMIJO: Yes. Then you'd have to do something, or that's the way I interpret this commitment.

MEMBER SKILLMAN: Well, I do too. I wanted to hear that from NRO.

MEMBER ARMIJO: Yes.

MEMBER SKILLMAN: That's what I was hoping to hear.

MEMBER BROWN: Who makes the decision, though, that it's within the bounds? I mean, does Detroit Edison? Are they supposed to submit something that says hey, these are the material properties and we consider these within the boundaries of the generic PTLR --

MR. JENKINS: That's their -- no, that's their commitment. They would need to submit that, but we would review that and we would determine.

MR. HALE: I'll help you out on this one. It is the Applicant's responsibility to determine and to clearly state what the material properties are of

the actual material that's being used for construction. At that point they would need to make a decision is it within the bounding analysis that's in the generic PTLR. If it is, you know, then they're within that analysis. If it's not for some material, then they're going to have to recalculate the curves and they're going to have to notify us based on this commitment of what those changes are.

MEMBER BROWN: Their conclusion it's within the boundaries, boundaries of the generic curve, do they have to submit those to the NRC for confirmation?

MR. JENKINS: Yes.

MEMBER BROWN: So you all can see those? In other words, they just don't make the decision and you all not in the loop? In other words, they have to tell you, yes, we consider these okay. Here's the values and this is the limits that we have to deal with and therefore we consider them okay; do you approve?

MR. HALE: I think that's the expectation is that --

MEMBER BROWN: Do you have to formally respond in an agreement or do you just get the piece of paper and if not answer comes out --

CHAIR CORRADINI: From a process standpoint, I guess I personally don't -- as long as you guys know and are comfortable with it.

MEMBER BROWN: Well, I don't know about that, Mike. I mean, the P-T curves are the most important set of curves you operate with.

MR. HALE: Well, remember --

MEMBER BROWN: Sending it into a black hole just seems kind of meaningless.

MR. HALE: Remember we reviewed and accepted a generic PTLR. And if they're going to either acknowledge that the values that are in that report are correct actual material or they're going to acknowledge that the values outside those bounds and need to be updated, then I think the assumption is that they report it and we acknowledge that either: (a) there is no change it's within the bounds or (b) we acknowledge that, yes, they're outside the bounds, we've looked at it, we've reviewed it and we verified the fact that the calculations are appropriate and acceptable.

MEMBER BROWN: The key word is "acknowledge," and that's what I was looking for. Do you formally acknowledge that you got them and you agree with the conclusion or not. And you said you

do, so I'm taking you at your word.

MR. HALE: We would need to review what they submit to ensure that --

MEMBER BROWN: And answer.

MR. HALE: -- it does in fact meet the requirements, regardless of whether it's within the bounds of the original generic report or outside the bounds.

MEMBER BROWN: Okay. So you acknowledge back to them either way?

MR. MUNIZ: This is Adrian Muniz.

We'll take that as an action item and we'll get back to you as to the right process that we use, whether the letter contains saying they're bounded or not bounded. But we'll respond to that question.

MEMBER BROWN: Okay. Thank you. Thank you.

MR. MUNIZ: Sure.

CHAIR CORRADINI: Okay. Go ahead, or are you done?

MR. JENKINS: I can't remember if I mentioned the staff conclusion.

CHAIR CORRADINI: I thought you did, but go ahead and repeat it.

MR. JENKINS: I'll repeat it again and one final request for questions before we move on to the next group.

In conclusion, the Applicant has adequately addressed COL and Supplemental Information regarding Fermi 3 COL FSAR.

Any other questions?

Okay. I have one more slide. Section 5.3.3 Reactor Vessel Integrity. Fermi incorporates by reference ESBWR DCD Section 5.3.3. Included in this section of the DCD is a discussion of operating conditions. And in the discussion of operating conditions is a requirement that procedural controls are implemented to hold thermal stress within acceptable ranges and to meet pressure-temperature limits. In this context SUP item 5.3-1 states that development of plant procedures is addressed in Section 13.5 and these procedures requires compliance with the technical specifications. This ensures that the pressure-temperature limits identified in Section 5.3.2 are not exceeded during normal operating conditions and anticipated plant transients.

In conclusion, the Applicant has adequately addressed COL and Supplemental Information regarding Fermi 3 COL FSAR.

That concludes my presentation.

CHAIR CORRADINI: Questions from the Committee?

Okay. Let's move on. So we're on to Chapter 16.

Just for everybody, for the Committee, because of just staff flowing in and out we're going to do Chapter 6 after 16 and do 17 after lunch, all right?

Do DTE is back up.

CHAIR CORRADINI: You can g.

MR. SMITH: Okay. So Michael Brandon, my Licensing Manager is going to do the Chapter 16 presentation.

MR. BRANDON: Okay. Thanks, Peter.

As Peter said, my name is Michael Brandon. I'm the Licensing Manager on the project. I've been with the project for about seven months. And I appreciate the opportunity to come here today and talk about Chapter 16, which is the Fermi 3 tech specs.

As I'm sure you guys know, the Fermi 3 tech specs were developed based on the generic tech specs that were established in the ESBWR DCD. Those generic tech specs were modeled primarily after NUREG-1434, which is the BWR/6 Tech Spec Rev. 3, which is

the current standard with modifications made to address the design differences between the BWR/6 and the ESBWR.

The generic tech specs did include a number of standard COL items and a few site-specific items, and those items were addressed in accordance with the Interim Staff Guidance 8.

The next slide.

Just as an overview, there were 52 total COL items that address 23 topics. Of these 23, there were basically three that we consider site-specific. And the next couple of slides I will present will cover those 23 different topics.

Next slide.

Really, this slide and the next slide I just have a bulleted list of the 23 different topics that were standard COL items. The Fermi 3 plan was pretty straightforward. None of the approaches we took were controversial or particularly noteworthy. In my slides I just provided the list of the 23 between this slide and the next slide. I don't really provide a detailed breakdown of each of these items, so we'll be address any questions you might have. I will address the three specific items in some detail towards the end of the presentation.

On this particular slide there are two site-specific. One is the hazardous chemicals and one is the plant location.

The next slide.

This is just the balance of the 23 items. On this page the one point specific is the multi-unit reporting item. And like I said, I'll be talking about those three site-specific items in the following slide.

Next slide.

These are the three site-specific items that we addressed as part of our application. The first one deals with hazardous chemicals. We did do a site-specific evaluation for hazardous chemicals. That evaluation determined that there were no toxic chemical hazards that would require us to have any type of safety-related instrumentation to monitor for those toxic hazards. Nick is going to talk in some detail about that evaluation in his presentation on Chapter 6 which will be later on today.

So from a tech spec perspective, the implication of that is we don't have any type of safety-related instrument in the tech spec in the instruction section that addresses toxic chemical hazard.

CHAIR CORRADINI: And where will this be discussed? And you said it and I didn't --

MR. BRANDON: Oh, Chapter 6 which Nick will be talking about that.

CHAIR CORRADINI: Okay. Fine. Okay. Because I guess then just as a preview what I'm trying to understand is the logic is to at what boundary -- at what distance what do you stop worrying about in terms of distance away in terms of activities near the plant? But we'll wait for 6.

MR. BRANDON: Okay. That's fine.

It is worth probably noting that for the confirmed boundary and protection to the operators, the Rev 3 of 1434, which is the basis for our tech specs, did not incorporate TSTF-448 which is a TSTF that was written in response to Generic Letter 2003-01 that talked about basically maintaining a confirmed boundary consistent with this licensing basis. The Firma 3 tech specs have incorporated TSTF-448. There is a program in Chapter 5 of the tech spec that was the standard program for ensuring the confirmed boundary maintains its integrity, requires the tracer gas test and so it will ensure that confirm in its design is maintained consistent with the licensing basis.

The last two items are the plant's location. The plant is located in Frenchtown Township in Monroe County, Michigan.

And the third plant-specific item deals with a couple of different requirements for annual or radiological requirements. And basically the option there is we can make a single report for two units and we opted to pursue that particular option.

MEMBER ABDEL-KHALIK: Are there any tech spec limits on vacuum breaker leaks?

MR. BRANDON: Yes.

MEMBER ABDEL-KHALIK: And where are these?

MR. BRANDON: They're in Chapter -- let's see. This is between the special pull on the --

MEMBER ABDEL-KHALIK: Yes.

MR. BRANDON: Chapter 6. They are generic.

MEMBER ABDEL-KHALIK: So what are you doing to ensure compliance with those tech spec when it's --

MR. BRANDON: It's Spec 3616. And there are some items requirements that drive periodic monitoring on those.

MR. SMITH: Is your question from the standpoint of maintenance?

MEMBER ABDEL-KHALIK: Well, my question is really adequacy of those surveillance requirements.

CHAIR CORRADINI: So you catch it if it's leaking more than the spec, I think is what --

MR. BRANDON: That's correct. There's surveillance for functional testing them, there's surveillance for verifying the leak rate, which is basically an integrated leak rate test.

CONSULTANT WALLIS: Well, by a device yet to be designed and proven?

CHAIR CORRADINI: That's a comment. Keep on going.

MR. BRANDON: It's no different than a -- well, it is similar to the BWR/6 design.

CONSULTANT WALLIS: Well, this is an issue that's still in the air, isn't it?

CHAIR CORRADINI: They have a commitment from the DCD and construction in terms of a set of testing that they're going to do relative to what I think, if I remember back to the fun of last year, the temperature sensors and all the associated logic, right, Graham? Is that right --

CONSULTANT WALLIS: So you're dependent on GEH for this really?

MR. BRANDON: Yes.

MEMBER STETKAR: Actually, I'm looking at 3616 and I don't immediately find a surveillance requirement if you find a leakage.

MR. BRANDON: There is a surveillance --

MEMBER STETKAR: I see an opening fracture.

MR. BRANDON: Right.

MEMBER STETKAR: I see the fact that they are closed, which I guess might imply no leakage depending on what you define as closed. "Verify each vacuum breaker is closed." I can look at lights, but--

MR. SCHUMITSCH: I think it's 3.6.1.1.3.

MEMBER STETKAR: 6.1.1 -- I'm sorry.

MR. SCHUMITSCH: 3.6 --

CHAIR CORRADINI: Identify yourself, please.

MR. SCHUMITSCH: This is Skip Schumitsch from GE Hitachi.

3.6.1.1.3 I believe is what you're looking for.

MEMBER STETKAR: And, indeed, you're correct.

MR. BRANDON: That's the CIV.

MEMBER STETKAR: Vacuum breaker leakage is

less then or equal to 15 percent of design basis over square root of K.

MR. BRANDON: Whatever that means.

MEMBER STETKAR: Yes.

MR. BRANDON: We know what that means.

CONSULTANT WALLIS: How do you measure a hole size? A vacuum break, it's a rather weird -- and that K is the measure of the hole size at the leak. So that's a strange thing to measure. You've really got to measure something -- and then it has to be converted, I suppose. Because it depends on the pressures and all kinds of things.

Anyway, this is a thing we're going to do at another time.

CHAIR CORRADINI: I don't want to misrepresent. They have a commitment to the staff to clear this up relative to testing so that this then locks into a numerical value based on their testing.

So, go ahead and finish.

MEMBER ABDEL-KHALIK: So the surveillance are yet to be determined, the surveillance techniques, methodologies?

MR. BRANDON: The details.

MEMBER ABDEL-KHALIK: The criteria?

MR. BRANDON: I can't tell you. I did look

at Grand Gulf a number of years ago in the BWR/6 design. And the way they did the tests there was an integrated leak rate test where they would pressurize the --

CHAIR CORRADINI: They put, like, a hood over it and do a pressurization test?

MR. BRANDON: Right. Basically you wouldn't necessarily know which valve may be leaking, but you would have an acceptance criteria or an integrated acceptance criteria if you had some leakage where you failed that thing and you'd have to go through and do individual repairs for individual valves.

CHAIR CORRADINI: And this is during refueling?

MR. BRANDON: Yes, sir. That's a 24-month surveillance.

CHAIR CORRADINI: Okay. That at least helps. But details to be determined is what I think we're still hearing, right?

MR. BRANDON: Right. That will be a surveillance or a surveillance procedure that will drive the performance of this test.

That was all that I had.

CHAIR CORRADINI: Are we done then?

MR. BRANDON: We're done, yes.

CHAIR CORRADINI: Okay. Questions by any members?

All right. Let's move on to the staff.

MR. HALE: Okay. This will be a presentation of Chapter 16 SER with no open items technical specifications. And Craig Harbuck will present the staff's review of the plant-specific portions including COLA Part 4.

MR. HARBUCK: And I'm Craig Harbuck in the Technical Specifications Branch of NRO.

And the presentation is going to essentially follow the structure of the Safety Evaluation. And some of the material will be repetitive of what you've already heard. And I'll just start right in on it.

The DCD Chapter 16 for ESBWR is unique in terms of how it handles the technical specification COL items. They provide a table in the introductory part of the Chapter to define what those items are and to provide instructions on how to complete them for an applicant. In other design centers you may or may not have specific enumeration of the items and there may or may not be a reviewer's note within the body of the tech specs or basis that tells you what to do. So

this is a good approach for the ESBWR.

Well, before I move to the next slide, I just want to point out that the site-specific information to complete the tech specs were supported by these other review grantees listed on the second bullet.

Okay. Next slide.

Most items were resolved by just providing the information that was the correct site-specific information. And this was done in a variety of ways.

There were a number of items that were essentially bracketed options that would if the Applicant had an analysis to support adopting that option, they could do it. Fermi has not adopted any of those so there's those that we call operational flexibility not adopted.

Then there's a number of items where the information didn't apply in this instance. And the one on hazard chemicals, that affects the tech specs primarily in some language in an actual requirement for the control room boundary and in the program for maintaining the control room boundary it covers the governance of testing, that sort of thing.

They don't have any unprotected outdoor liquid rad-waste tanks. And since they didn't adopt

any of the second sub-bullet items related to taking an MCPR penalty, there were no additional LCOCs under the COLR administrative control. Had no exceptions from their containment leak rate test program, exceptions to RG 1.163.

And Firma is going to be a stand-alone ESBWR unit so they're not going to share staff with the other unit. And so there was no need to use part of the notes relating to the staffing issue in the administrative control specification.

Okay. For a good part of the review of the design cert GEH had been pursuing using a valve-regulated lead-acid battery. But I think around Rev 6 they switched back to the more familiar standard vented acid battery and they provided then a large number of bracketed items related to those parameters were put into the DCD and they have satisfied and completed on those.

And the other ones you've heard about from the other presentations.

MEMBER ABDEL-KHALIK: I just have a question about the previous slide. Why are the provisions for hazardous chemicals not applicable for this site?

MR. HARBUCK: I would have to defer to the

analysis in the FSAR that addressed that. There was an open item, I'll mention that later about this -- well not an open item, but an RAI that staff asked. And basically the conclusion was that there was no need to provide any automatic capability to isolate the control room based on toxic gas.

CHAIR CORRADINI: Is that because of what -- I mean, this kind of follows up. That's on-site and as well as off-site possibilities?

MR. HARBUCK: I'm not familiar with the details.

CHAIR CORRADINI: But maybe we can turn to--

MR. THOMAS: Once again, my name is Steve Thomas.

And, yes, that includes both on-site and off-site within a five mile radius consistent with RG 1.78.

MEMBER ABDEL-KHALIK: So how far is I-75?

MR. THOMAS: I-75 is within that five mile radius. So we looked at potential transportation accidents on I-75.

MEMBER ABDEL-KHALIK: And based on that you just concluded that these were not --

MR. THOMAS: Based on that we did not need

it, no. Correct. We did not need the toxic gas monitoring.

CONSULTANT KRESS: What is the status of Fermi 1 on-site? Does it still have sodium in it?

MR. THOMAS: No.

CONSULTANT KRESS: It's being removed off-site? Okay.

MEMBER STETKAR: Those analyses documented in Chapter 2 of the FSAR?

MR. THOMAS: Correct. Chapter 2 contains the list of all the chemicals that were considered both on-site and off-site and the transportation events.

MEMBER ARMIJO: You did address nitrogen and C/O_2 as asphyxiants --

MR. THOMAS: Right.

MEMBER ARMIJO: -- in your analysis and concluded that wouldn't affect the control room?

MR. THOMAS: Correct. We concluded that the control room would still be habitable, or that the carbon dioxide issue, that the carbon dioxide concentration would be below the limits. And for the nitrogen that it would not reduce the -- because nitrogen, that was not a toxic gas it's an asphyxiant. So you're concerned about reducing the oxygen level.

And it would not reduce the oxygen level sufficiently to be a hazard to the operators.

MEMBER ARMIJO: Okay.

MEMBER ABDEL-KHALIK: Roughly when do we expect to review Chapter 2?

CHAIR CORRADINI: Let's ask that of Adrian.

MR. HALE: Yes, I'll leave that to Adrian to answer that.

CHAIR CORRADINI: Is that a fair question for you at this point?

MR. MUNIZ: We've issued the schedule alert to affirm the approximate time when the full Chapter 2 will be around August time frame of next year. But we may -- we're available to possibly come meet with ACRS and there's the other parts not related to the SSI in Chapter 2 before then.

CHAIR CORRADINI: For the Committee, it was a decision by staff they wanted to complete Chapter 2. There was some issues relative to soils and testing that has delayed this. So, we can take that offline. But I think that was the reason. Originally it was going to be like January time frame, but just because of what's there versus the standard reference it's been pushed back.

MEMBER ABDEL-KHALIK: I'm asking, obviously, because discussion about hazardous chemicals.

CHAIR CORRADINI: Okay. We have great memories. We'll remember all of this when we'll see you again.

MEMBER SKILLMAN: This is Dick Skillman. I'd like to ask a question, please.

This question of hazardous chemicals has come up several times here in the last 45 minutes. And what I believe I heard is that there will not be a safety-grade device or alarm in the control room to warn the operators that there is a hazardous chemical release or that there is something that is hazardous penetrating the control room boundary. I believe that's what I heard.

Taking the safety issue aside, is DTE going to have something in that control room that tells the operators heads up there's something in the air that you should be aware of? Just from a practical perspective, as I see this, this is maybe a $7 billion plant. You've got 25/30 people involved in operations. You have a lot of people involved in security. You got a lot of people involved in the admin. So it's 2:00 in the morning, 4:00 in the

morning and something happens I-75 and while it's all been analyzed and DTE is comfy, isn't there something that tells the operators heads up team there's something going on that you should be aware of, safety-grade or not safety-grade?

MR. SMITH: So I don't have an answer for you right at the moment.

MEMBER SKILLMAN: Okay. Thank you. I just raise the issue because I've spent a lot of time in control rooms and a lot of time in hazardous chemical areas. It just seems that for a .25 cent trinket there could be a way to preserve life and to land the plant safely.

Thank you.

CHAIR CORRADINI: Don't take that as a thought process to come back to. We'll see them again.

MEMBER SKILLMAN: Thank you. Thank you.

MR. HARBUCK: Okay. We'll go to the next slide.

There were a number of items which were addressed using the bounding value or information approach. The one that has the most information on this slide is the P-T limits. As we heard before from Chapter 5 presentation the methodology that's been

approved that was submitted by Firma was based on, I guess, whatever the limits are on material properties that would be judged to be the bounding case, they expect that the material that they'll actually put into the plant will have better properties then that, I presume, so that the bounding curves are adequate for operation. They may end up being conservative. And if that is shown to be the case and if they wanted to modify their report, that would be at their discretion. But they wouldn't have to in order to operate the plant. Therefore, we can conclude that they provided useable bounding information relative to the PTLR.

As just a matter of convention, all the COL items related to the PTLR and the DCD, all of those COL items were just judged to be part of this bounding as just as a way of not trying to split it up. Just made it easier for discussion.

Are there any questions about the PTLR resolution? Okay.

CONSULTANT KRESS: I have maybe one.

MR. HARBUCK: Okay.

CONSULTANT KRESS: There's concern about the copper/nickel content of material. How do you know what it is when you get it and get ready to put

it in the vessel and put your welds in the right place? Do you have some way to actually measure that content or do you get it as a spec from the place that provides you the materials? Just how do you know what your material is?

MR. SMITH: Do you guys want to speak to that at all or --

CHAIR CORRADINI: So repeat your question, Tom. I'm sorry.

CONSULTANT KRESS: You know, for these pressurized pressure-temperature limits you're concerned about the copper/nickel content. And, you know you go and get this material, it's showed up and you're going to put it in the vessel and weld it together. I just wondered how you knew what it was.

CHAIR CORRADINI: You mean the pedigree of what arrives on site?

CONSULTANT KRESS: Yes, the pedigree of what the material is. How do you go about knowing or how does NRC know what it has in it, how do they inspect it? Just the whole question of how do you assure that you got the right materials?

MR. HALE: We can take that item.

MR. SMITH: Yes, let's take that item.

MEMBER ARMIJO: You've addressed that in

the DCD. This vessel doesn't have axial welds.

CONSULTANT KRESS: Right.

MEMBER ARMIJO: That's one of the things. And --

CONSULTANT KRESS: That would help.

MEMBER ARMIJO: That helps in the modern steel making steel making practice and low -- you know the issue of carbon contamination of the welds. I mean, copper that's all been addressed and it's in the--

CONSULTANT KRESS: It's addressed in the DCD.

MEMBER ARMIJO: At least I recall it being--

CHAIR CORRADINI: So you're thinking about -- you're talking from a QA standpoint of what arise on site that they can verify what --

CONSULTANT KRESS: That was my question, yes.

CHAIR CORRADINI: -- that it's within the scope of --

CONSULTANT KRESS: But basically it's addressed in the DCD.

MEMBER ARMIJO: Yes, on the vessel acceptance would be the place where you'd make that

decision. If you found a problem at that point --

MEMBER STETKAR: You've got to accept the vessel.

CONSULTANT KRESS: You've got a big problem.

MEMBER ARMIJO: But you know the risk is pretty low that that's going to happen. But, you know, these aren't the old vessel making techniques that they're using.

CONSULTANT KRESS: That's the ones out of Toledo?

MEMBER ARMIJO: Yes.

MEMBER ABDEL-KHALIK: The staff will follow-up.

CHAIR CORRADINI: All right.

MR. HARBUCK: There was a COL item on the ones that attached to your battery charger. And the test duration is eight hours and that is judged to be sufficient to meet the manufacturer's requirement that having enough time to reach a steady state temperature and condition and maintain that for two hours. That all being acceptable, of course. And I think we have any -- we got some documentation from the vendor that supports that.

And then the last is the control rod scram

accumulator and minimum pressure limit. There's a couple of places where that value is used. And what Fermi's done is they took the value from the ABWR and provided a discussion, the basis of the tech specs that explains why that number is acceptable and bounding to what they anticipate the number would be once the system is installed and after testing, determined what the appropriate pressure, minimum pressure would need to be. However, I should point out that normally the pressure in those accumulators are maintained above that number. The tech spec is just a minimum. And so that's -- do we have anything to add to that?

All right. And for all the items on this slide they were handled with bounding information. The Reactor Systems Branch and the Electrical Engineering Branch were totally involved and concur in that conclusion. They were acceptable.

MEMBER STETKAR: Craig?

MR. HARBUCK: Yes.

MEMBER STETKAR: And this may be for Detroit. I'm not a boiling water reactor guy, so I'm not quite sure how things are done there. But do you do scram-time tests for BWRs?

MR. SMITH: Yes.

MEMBER STETKAR: Do you do those at minimum pressure in the scram accumulators? I mean, that's one way of making sure that the minimum pressure doesn't --

MR. HARBUCK: I don't know the answer to your question. That's an operational thing. I just don't know.

MEMBER STETKAR: Okay. Thanks.

MR. HARBUCK: I don't what the basis--

MEMBER STETKAR: Yes. I should have the arguments about well, you know, we took it from the ABWR and these rods are lighter --

MR. HARBUCK: Yes, but your question is a little bit -- is just asking how do you -- during the testing that may be discussed in the basis in the specification that discusses --

MEMBER STETKAR: Well, I didn't look at that. But it's just one of these things of assurance for the actual as-built/as-operated plant. If you can meet the scram-time tests with that pressure in there, one would pressure that that's some sort of verification that that limit is okay.

MR. HARBUCK: And should they determine that a minimum pressure or a lower value is acceptable, it's up to them to propose an amendment to

get that --

MEMBER STETKAR: Right. Right. I'm just more concerned about is that value -- you know, if it actually gets down to that value are you still okay since it's sort of -- I don't want to use the term "inferred" because it's stronger then that, but it's a derived value, I guess.

MR. HARBUCK: Okay. The last slide had to do with the Option 3. Now this ISG-08 was developed during the design cert reviews and COL reviews for South Texas and the ESBWR. And so that the items in the tech specs that potentially needed to be resolved using Option 3 were resolved within the context of the design cert. So Fermi did not need to use the Option 3, however I just have listed what those items that were fixed are and have to do with the status of the two programs that are incorporated by reference in the DCD. And those were the Setpoint Control Program and then the Post-Accident Monitoring Instrumentation Program.

It turns out when we wrote RG 1.98 Rev 4, we wrote it in such a way that you have to have the plant up and operating and already have taken the procedures anyways for operating in order to -- for abnormal procedures, emergency procedures in order to

determine what your Type A, B and C variable are as defined in this new version. So in lieu of doing that we said, well the RG itself which references an industry document provides the methodology for determining what those things are. So as long as the actual requirements appropriate, we don't need to include a list of instruments in the tech spec. We can maintain them in accordance with this administrative program. So that's how we handled the post-accident monitoring on Fermi. And then on the ESBWR

And then the Setpoint Control Program, there is a COL item related to that, but it's handled using Option 1 because it's just a reference to the approved methodology. And so that's listed there under the second bullet.

Okay. Last slide. Just briefly to mention there were not very many RAIs on Chapter 16, but these were the main ones. I believe some of these were mentioned, some were not. But essentially I think the key one is the one that's labeled #2. There was a question about whether 30 amps is an indication of full charge on float current was an appropriate value since it was greater than what we've normally seen. And so there was a response that demonstrated that

this value was an appropriate one. And do you have anything to elaborate on that?

MR. SMITH: No, other than it was based on vendor-supplied data.

MR. HARBUCK: Right. And Branch staff looked at that, and actually it was their question.

Okay.

CHAIR CORRADINI: Can I ask about the fourth bullet?

MR. HARBUCK: Yes. Sure.

CHAIR CORRADINI: So is this more control room related or is this just -- I'm trying to understand. Is this just inventory on site? What is the 2.2.3-5 again? I don't remember from the --

MR. HARBUCK: I think this was a question for more information concerning the Applicant's conclusion about the need for --

CHAIR CORRADINI: Okay. So it's back to--

MR. HARBUCK: Yes, it's the same issue before. Right.

CHAIR CORRADINI: -- that Dick had brought up.

MR. HARBUCK: And it came up in the write-up for this Chapter because there are some bracketed items related to hazardous chemical protection.

And let's see --

CHAIR CORRADINI: So, to put it a different way, it may not rise to a safety issue but it may rise to good practice?

MR. HARBUCK: Right. I mean, there certainly would need to be some means of responding to any kind of an airborne --

CHAIR CORRADINI: That's fine. I just wanted to make sure the two were linked. That's what I was trying to --

MR. HARBUCK: Yes. And again, it's the FSAR Section 6.4.5 has the evaluation description for this issue.

There's one confirmatory item, just to make sure we get in the next revision to the application, just to make sure that the correct revisions for these two typical reports are included. The one for the setpoint methodology is correct. I think the one for the P-T limits there was an update right at the time of the latest revision, so that still needs to be updated.

Okay. So conclusions and findings. We find that the generic tech specs and bases have been added, properly incorporated by reference. That the COL items have been resolved in a described manner and

they're acceptable. And therefore, this Chapter of the Fermi FSAR the tech specs and bases, plant-specific tech specs and bases are acceptable and complete for use in the operation of the unit.

And we also conclude it meets all of the regulations that are applicable to the tech specs.

Questions?

CHAIR CORRADINI: Other questions from the Committee? Charlie, John, any questions?

MEMBER STETKAR: No.

CHAIR CORRADINI: You guys are all right?

Okay. Thank you.

Why don't we take our break now and we'll come back to Chapter 6. Is that correct, Adrian?

MR. MUNIZ: Yes.

CHAIR CORRADINI: Okay. Good. So we'll take a short break until 10:30 a.m.

(Whereupon, at 10:11 a.m. off the record until 10:27 a.m.)

CHAIR CORRADINI: Okay. Why don't we get started and talk about Chapter 6.

MR. SMITH: Nick Latzy my Licensing Supervisor is going to go through the Chapter 6 presentation.

MR. LATZY: Thank you, Peter. My name is

Nick Latzy. I'm the Engineering Supervisor for the Fermi 3 project and today I'm going to be presenting the Chapter 6 engineering and safety features.

On the first slide we'll se the sectional breakdown of the Chapter. 6.4 and 6.6 contain standard and site-specific COL information. Sections 6.1 and 6.2, 6.3 and 6.5 were all incorporated by reference.

Next slide, please.

Section 6.4 on the Control Room Habitability, the first COL item the procedures and training for the control room habitability they address the applicable aspects of NRC Generic Letter 2003-01 and are consistent are with the intent of Generic Issue 83.

The implementation milestones for the training and procedures. Training programs are to be implemented 18 months prior to fuel load and procedures are developed six months prior to fuel load.

For the next item, the Supplemental Information site-specific we evaluated the impact of a postulated design bases accident on Fermi 2 on the Fermi 3 control room. We performed that evaluation by using conservatively calculated atmospheric dispersion

factors at the Fermi 3 main control room intakes. We performed a review of the Fermi 2 LOCA as described in the Fermi 2 FSAR. And based on this evaluation and review the resulting control room operator dose is bounded by the Fermi 3 DBA.

The final bullet on that page for the COL we performed a toxic gas analysis, as previously stated, to confirm that the external release of hazardous chemicals do not impact the control room habitability. An off-site evaluation of potentially hazardous off-site chemicals was performed in accordance with RG 1.178, and that would be at a distance of 8 kilometers or five miles from the Fermi 3 site. And this evaluation determined that there were no significant impact to the Fermi 3 control room from a postulated release of hazardous chemicals stored or used off-site.

An on-site evaluation of potentially hazardous chemicals was also performed with accordance with RG 1.178. That habit analysis for nitrogen and carbon dioxide shows a max concentration within the control would pose no hazard for controlling habitability.

Therefore, as previously stated and discussed here, no Seismic Category 1 safety-related

toxic gas monitoring instrumentation was required.

MEMBER STETKAR: Nick, before you go to the next slide, there's a statement in the FSAR that says "calculations performed to evaluate the habitability of the control room for accidental releases of hydrogen or oxygen in the hydrogen water chemistry system indicate control room personnel are not subject to hazard or breathing air with insufficient oxygen inside the control room due to a release of hydrogen." That tells me that you've determined that I can live in whatever environment is created if I have a release of hydrogen from the hydrogen water chemistry system. Did you look at flammable or detonable concentrations of hydrogen in either the control room or any of the surrounding areas around the control room envelope that contain all of the digital I&C equipment both safety-related and nonsafety-related stuff?

MR. LATZY: Steve?

MR. THOMAS: This is Steve Thomas Black & Veatch.

And as described in Section 6.4 we're looking at, the explosion or the detonation or the explosion at the storage facilities, and those are located sufficiently far away so that it's not going

to impact --

MEMBER STETKAR: I understand that. I'm talking about a leak from the stuff that's inside the plant getting up to the control room.

MR. THOMAS: We did not -- I'll have to get back to you on that one.

MEMBER STETKAR: And it's not your fire hazards analysis --

MR. THOMAS: Right.

MEMBER STETKAR: -- because fire hazardous analysis is generic for the DCD and it doesn't include that whole system.

CHAIR CORRADINI: What sort of inventory do you have within the plant?

MEMBER STETKAR: It's a hydrogen water chemistry system, so it's a constant feed.

MEMBER ABDEL-KHALIK: That's probably a lot more hydrogen for the generator coolers.

MEMBER STETKAR: Yes, but that's up in the control room --

MEMBER ARMIJO: It depends what you put it in where it's stored.

MR. SMITH: Alan or Gary, can you speak to the hydrogen question?

CHAIR CORRADINI: You can get back to us

if you want, but I do think that it would be good that we get a clarification on this.

MEMBER ARMIJO: When you do that, just kind of give us an idea of where the system is, how much hydrogen --

MEMBER STETKAR: I mean, I'm assuming because the way the system is carefully worded that it, indeed, the hydrogen can get from the system to the control room because --

MEMBER ARMIJO: Not supposed to, but --

MEMBER STETKAR: Well, but it didn't say it's -- in other cases they've sort of dismissed it saying it can't get there basically. This one it says you can't get a concentration that's enough to essentially kill somebody because of respiratory problems.

CONSULTANT WALLIS: But if it's enough to displace the oxygen, it's probably enough for a bang.

MEMBER STETKAR: Huh?

CONSULTANT WALLIS: It seems to me that if it's enough to diminish the oxygen so you can't breath--

MEMBER STETKAR: No. They conclude you can't get that amount, but at some smaller concentration it could get warm in there --

CONSULTANT WALLIS: Yes, at some smaller concentration --

MEMBER STETKAR: -- for a short period of time.

CONSULTANT WALLIS: You might have an ignition source in the control room.

MEMBER STETKAR: And, you know there are sources of sparks and things.

MEMBER ARMIJO: Right, even before it got there.

MEMBER STETKAR: And the key is that it's not analyzed in their fire hazardous analysis because it's an optional system that's installed plant-specific. So the fire hazardous analysis, at least the quick check I did, you know --

MEMBER ARMIJO: Isn't what it should have been.

MR. SMITH: Well, we'll follow up.

MEMBER STETKAR: Okay. Thanks.

MR. LATZY: Next slide, please.

In Section 6.6 Preservice and Inservice Inspection and Testing of Class 2 and Class 3 Components and Piping, the first COL item there's a description of the PSI/ISI program description for Class 3 and 3 components as provided in the DCD

Section 6.6. And the implementation milestones for the PSI program are to be completed prior to initial plant startup. And the ISI program is to be implemented prior to commercial service.

The ISI program incorporates the latest addition and addenda of the ASME code and 10 CFR 50.55(a) 12 months prior to fuel load.

Additionally, the flow accelerated corrosion program description in provided in FSAR 6.7. Can you go back to those? Thank you.

The FAC program is based on the EPRI Guidelines of NSAC-202L recommendations for an effective flow accelerated corrosion program.

The second bullet for the standard COL item, the accessibility for non-destructive examination of Class 2 and 3 austenitic and dissimilar welds. As previously discussed this will be maintained through procedures for design control and plant modifications. These procedures will include provisions to assure accessibility for inspections and testing and ultrasonic techniques will be the preferred NDE method for all PSI and ISI volumetric examinations.

Is there any questions before moving on?

CHAIR CORRADINI: Other questions?

MR. LATZY: Next slide, please.

And the last slide on Class 2 and 3 components and piping the COL item was on system leakage and hydrostatic pressure tests. These will meet all requirements of ASME code for Class 2 and Class 3 components including the limitations of 10 CFR 50.55(a).

And that concludes my presentation for Chapter 6.

CHAIR CORRADINI: Any other questions from the Committee? Okay.

MR. LATZY: Thank you very much.

CHAIR CORRADINI: Staff will join us up front.

MR. ANAND: Good morning. My name is Raj Anand. I'm one of the project managers working on the Fermi 2 COL application. I thank Detroit Edison for making their presentation on Chapter VI. The Staff agrees with Detroit Edison's presentation.

I had planned to discuss with you Chapter VI engineere safety features of the Fermi 3 COL application. This SER has no open items. Section 6.1, Section 6.2, Section 6.3 and 6.5 are IBR sections, which incorporate by reference with no departure or supplement of the ESBWR DCD, Rev. 9.

Rulemaking for ESBWR DCD is in progress. The topics of interest are Section 6.4, the control room habitability, and Section 6.6, pre-service and in-service instruction and testing of Class II and Class III components and piping.

With this, I turn it over to Syed to go to the next slide of control room habitability, Section 6.4.

MR. HAIDER: Thanks, Raj. Good morning, my name is Syed Haider. I am a technical reviewer in the containment and ventilation branch. I will present the safety findings for Section 6.4 on control room habitability systems, as documented by the staff in the Fermi 3 FSAR.

The Fermi 3 FSAR incorporates Section 6.4 of the referenced ESBWR DCD, with the exception of two COL items that I will present. A Section 6.4 related supplemental item will be covered by David Brown from the Siting and Accident Consequences Branch. Next slide, please?

The standard COL item 6.4-1-A directs the applicant to address the procedures and training on control room habitability area. As required by the DCD, the applicant has stated in the FSAR that the operators are provided with training and procedures

for control room habitability that address the applicable aspects of NRC Generic Letter 2003-01 and are consistent with the intent of Generic Issue 83.

Training and procedures are developed and implementd in accordance with Sections 13.2 and 13.5. As discussed in FSAR Sections 13.4 and 13.5, the applicant has identified both COL activities to track three implementation milestones for operator training and procedures for control room habitability.

These milestones include the development of non-licensed plant staff training programs, reactor operator training programs, and operator procedures. The applicant has made commitments to achieve these milestones at least six to eighteen months prior to the scheduled fuel loading.

The staff concludes that the information provided by the applicant for the standard COL item 6.4-1-A is acceptable.

MEMBER ABDEL-KHALIK: Now, in reviewing this part of Chapter 6, did you as a reviewer know that the applicant has opted to select the hydrogen water chemistry option?

MR. HAIDER: Yes, I was. I was aware of that. And in the Containment and Ventilation Branch, we did not review the flammability aspects of hydrogen

for the control room habitability. Because our focus was on inside the control room, while Chapter II reviewers reviewed the dispersion and modeling, and the phenomena that occurred outside the control room. And inside the control room, the concentration never went to the flammability -- never went high enough to invoke toxicity or asphyxiation, that we were concerned about.

MEMBER ABDEL-KHALIK: But not detonation?

MR. HAIDER: Not detonation.

MEMBER ARMIJO: What kind of levels of hydrogen would be considered toxic if they got in there? How much percent, or parts per million or what's the toxic concentration that would concern you?

MR. HAIDER: I know that the general asphyxiation limit for any gas is somewhere between 16,000 ppm percent or 16,000 -- depending on the source that you draw this information from. But I know --

CHAIR CORRADINI: What's the value again? I'm sorry.

MR. HAIDER: 60,000 ppm to 76,000 ppm depending on --

CHAIR CORRADINI: So 60,000-ish? So almost any sort of gas?

MR. HAIDER: Yes, any gas. This is asphyxiation. Because if you look at the OSHA definition of asphyxiation, the standards define that if the oxygen concentration in a space drops from 20.95 percent to 19.5 percent, then it's an oxygen deficient environment. And that translates into roughly seven percent of any gas.

CHAIR CORRADINI: So that's about six percent by weight?

CONSULTANT WALLIS: Yes.

MR. HAIDER: By volume. By volume.

CONSULTANT WALLIS: Very strange.

CHAIR CORRADINI: By volume or by --

MR. HAIDER: Yes, by volume.

CHAIR CORRADINI: Oh, by volume? You said -- I'm sorry. When you said ppm, I was guessing weight ppm. It's not.

MR. HAIDER: No, no. No, ppms in this context are really defined to the best of my knowledge on volumetric basis.

CHAIR CORRADINI: Okay. So that's very close to a flammability limit. Not that it matters for what we're talking about, but I just wanted to make sure I understood. So 60,000 in terms of by volume.

MR. HAIDER: 60,000 in terms of volume. That was the figure that was quoted by North Anna. But if you look at what the Applicant's test quoted, it's about 87.7 milligram per meter cubed. It translates into about 76,000 ppm. I mean, I'm not really --

CHAIR CORRADINI: I understand that.

MR. HAIDER: But that's the range.

CHAIR CORRADINI: So that's the limit and then --

MR. HAIDER: Asphyxiation.

CHAIR CORRADINI: Excuse me. Okay. Right. So then just to follow on Professor Abdel-Khalik's question, so then were there calculations done to show that they're well within that limit? What I'm trying to understand is that's the limit so what was the value that you compared to?

MR. HAIDER: You mean for hydrogen?

CHAIR CORRADINI: Yes.

MR. HAIDER: That what we screened out at the Chapter 2 stage. We ran the analysis only for nitrogen and carbon dioxide that whose concentration exceeded the control room intake. So, in other words--

CHAIR CORRADINI: So, I don't understand

when you say that was screened out. Can you kind of explain a bit more about that?

MR. HAIDER: Yes.

MR. BROWN: David Brown. I'm with the Siting and Accident Consequences Branches.

One of the responsibilities of my branch to do that screening in Chapter 2.

CHAIR CORRADINI: Okay. Okay.

MR. BROWN: Our reviewer for Chapter 2 is not here today.

CHAIR CORRADINI: Okay. So we can come and return back to that?

MR. BROWN: Yes.

CHAIR CORRADINI: But can you at least give us sort of a preview so we're clear what's --

MR. BROWN: The process is we would look at hazards within five miles including on-site hazards. I don't know precisely whether this system was considered, I'd have to refer to the reviewer, to see if the immediately dangerous to life and health values are exceeded at the intake. If they are, then we refer that to the Containment and Ventilation Systems Branch, they could further analyze that.

CHAIR CORRADINI: Okay. So this is what you mean by screened out? You guys did some sort of

analysis on both on-site and off-site --

MR. BROWN: Yes.

CHAIR CORRADINI: -- and this fell within the bounds that they didn't have to pass it on?

MR. BROWN: Right. It may have, I'd have to refer to the --

CHAIR CORRADINI: I get the main part now. We'll remember that part.

MEMBER BROWN: Can I just make sure I understand on what you just said?

CHAIR CORRADINI: Sure.

MEMBER BROWN: The hydrogen storage facility is listed in the FSAR as to being 750 feet away from the main control room. So you evaluate that to screen that whether he needs to look at it, is that correct?

MR. BROWN: Right.

MEMBER BROWN: I mean, you release the entire thing and the wind blows it all up the intake.

MR. BROWN: Right.

MEMBER BROWN: Then you determine whether the concentration is suitable for the Ventilation Branch to have to evaluate that?

MR. BROWN: Right. We would look at the explosion --

MEMBER BROWN: Yes, the explosion and/or--

MR. BROWN: --flammable gas type hazards and asphyxiation or toxicity hazard all from the same chemical, assuming the chemical posed all three hazards we would look at all of those.

CHAIR CORRADINI: So let me actually follow-up because Charlie asked the question that I was thinking, which is the details of how the hydrogen water chemistry thing is going to be physically placed and designed for this plant is to be determined or has been set? I assume it's more to be determined, turning back to DTE?

MR. SMITH: I believe it's to be determined.

CHAIR CORRADINI: Okay.

MEMBER BROWN: Well, the FSAR says "in excess of 750 feet from the control room" both hydrogen and oxygen storage facilities.

MEMBER STETKAR: That is the bulk storage tank?

CHAIR CORRADINI: That's the bulk storage.

MEMBER BROWN: Yes, the bulk storage tank.

CHAIR CORRADINI: But I think what John's point is that's not necessarily where the hydrogen water chemistry would be taken from necessarily. It

depends on the --

MEMBER BROWN: I understand that part.

CHAIR CORRADINI: Okay.

MEMBER BROWN: I mean, I was just looking at from the total release of all the stuff in the tank for some reason. That's two football fields away. Not a big, big distance.

CHAIR CORRADINI: Okay. I think we understand now. We'll remember it.

MEMBER BROWN: Okay. For Chapter 2.

MEMBER STETKAR: Yes, they've looked at the big storage tank. They've not looked at the piping and releases within the pipe welds.

CHAIR CORRADINI: Right. Right. And that's where John's question came from, right? Okay.

Keep on going.

MR. HAIDER: The second COL item 6.4.020A directs the Applicant to identify and analyze potential on-site and off-site toxic gas sources within five miles of the plant to confirm that any extended release of hazardous chemicals would not impact the control room habitability.

The Applicant provide the site-specific toxic gas information and evaluation to meet the requirements of GDC 19 and the TMI Action Plan. The

Applicant used the RG 1.78 screening and analysis criteria on various hazardous chemical sources that will look at it on the off-site industrial facilities and transportation routes, and on the Fermi 2 and Fermi 3 sites.

Going through an RAI round with the staff the Applicant identified a Fermi 2 cryogenic nitrogen tank and a Fermi 3 carbon dioxide tank as potentially hazardous. The Applicant's evaluation showed that the concentrations of nitrogen or carbon dioxide outside the control room at the control room habitability area intake would exceed their asphyxiation or toxicity limit allowed in RG 1.78. However, their concentrations inside the control room will be significantly lower than their allowable safety limits.

The staff --

CONSULTANT KRESS: What is that?

MR. HAIDER: I'll explain that.

The staff reviewed the list of all hazardous chemicals and their detailed evaluations provided in the FSAR Section 2.2.3 and the related RAI response and found the Applicant's conclusions to be acceptable even though the Applicant used the HABIT code to conduct the toxic gas analysis. The staff ran

the confirmatory analyses using both HABIT and ALOHA codes and also considered the heavy gas effects. All the HABIT and ALOHA ones were made with the extremely conservative assumption that nitrogen and carbon dioxide are instantaneously released as a vapor cloud due to tank rupture.

The staff found that the safety margins inside the control room habitability area were enormous for both nitrogen and carbon dioxide concentrations for all distances.

Investigator: "The maximum concentrations of nitrogen and carbon dioxide predicted by both HABIT and ALOHA codes inside the control room were much lower than their asphyxiation or toxicity limits. This finding is primarily due to the short residence time for when the chemical cloud would be at its peak concentration at the control room intake. Therefore, the nitrogen and carbon dioxide release does not pose any threat to the control room operators."

The staff concludes that the information provided by the Applicant in the COL item is acceptable and there are no significant control room habitability impacts due to potential sources within five miles of the plant. As a result, no Seismic Category 1 safety-related toxic gas monitoring

instrumentation is required.

CONSULTANT KRESS: How do you determine the residence time? Is it the wind speed?

MR. HAIDER: Actually we ran a sensitivity analysis that changed wind speed -- changed the temperature from minus 19 to 32 degrees celsius.

CONSULTANT KRESS: So you did a sensitivity analysis?

MR. HAIDER: Yes. And also --

CONSULTANT KRESS: It's the worst end of it?

MR. HAIDER: Exactly. And we also considered a range of -- and everywhere the concentration was somewhere from 100 -- but if you look at the toxicity limit of carbon dioxide it is 40,000 ppm and the typical asphyxiation limit, which is about 60,000 ppms to 75,000 ppms, everything by order of magnitude smaller. So carbon dioxide and nitrogen they are not threats.

So this finished my slide.

CONSULTANT KRESS: Under the second bullet, the second sub-bullet it should say something like for a short period of time. I mean, we would see it long enough to make any difference.

MR. HAIDER: Yes, but technically it did

exceed and it did raise the red flag that the Section 2 review was supposed to come into to us.

CONSULTANT KRESS: Okay.

MR. BROWN: That is true.

CONSULTANT KRESS: You kind of lose that when you read it.

MR. HAIDER: So that finishes my presentation.

CHAIR CORRADINI: Any questions? Any questions of Mr. Haider before we pass it on?

MR. HAIDER: No, I don't.

CHAIR CORRADINI: Questions? Okay.

MR. BROWN: I'm David Brown. I'm a License Reviewer in the Siting and Accident Consequences Branch. I'll talk briefly about the consideration of radiological habitability in the Unit 3 control room, which has mainly two parts, first of which is to ensure that the site metrology was bounded by the metrology that was assumed for the DCD. And it is. And so the control room does use that as reported in the DCD are bounded for this site.

The Applicant also provided Supplemental Information about the potential for a design bases accidents at Unit 2 and its potential effects on habitability at Unit 3. The staff evaluated that

concluding the chi over qs, the atmospheric diversions that were calculated from Unit 2 to Unit 3. Agree with the Applicant's conclusion that the design basis accidents at Unit 2 are essentially bounded by those at Unit 3. So the habitability criteria in GDC 19 continue to be met.

That's what I have on the radiological aspects of 6.4. And that concludes our presentation on 6.4 unless you have any questions.

CONSULTANT KRESS: What design basis source term did you use?

MR. BROWN: Source terms that were considered for the Supplemental Information were the LOCA and at Unit 2.

CONSULTANT KRESS: However, it's been thought the release over a longer period of time in the second?

MR. BROWN: Right. This is essentially a dose that can be incurred over 30 days.

CONSULTANT KRESS: Thirty days?

CHAIR CORRADINI: That's the integrated time, but it's essentially a LOCA source term?

MR. BROWN: It's a LOCA source term.

CONSULTANT KRESS: Yes.

CHAIR CORRADINI: Other questions?

MR. BROWN: Thank you.

MR. ANAND: I would request him to come over.

CHAIR CORRADINI: Okay. I was trying to understand. So somebody's going to have to change out.

MR. BROWN: Well, I'll change out.

CHAIR CORRADINI: All right. Got it.

You look familiar.

MR. STEINGASS: Good morning, gentlemen, again.

I'm going to talk about Section 6.6 of the Fermi 3 COL FSAR. This section incorporates by reference Section 6.6 of the ESBWR DCD Tier 2, Revision 9 and provides additional information on the following COL item.

I just want you to understand that this is just a continuation of Section 5.2.4. Section 6.6 covers Class 2 and 3 components under the ASME Section 11. And 5.2.4 was Class 1. So this is a continuation of the PSI/ISI program.

Next slide, please.

Similarly -- yes, sir?

CHAIR CORRADINI: No. I was just going to say watch out for the microphone.

MR. STEINGASS: To continue, COL 5.2-1-A is a continuation of the COL information item that was involved with the Class 1 components. So additional information was provided by the COL Applicant for the Class 2 and 3 components involving the ASME code and the limitations under 10 CFR 50.55(a).

I've concluded that the additional information agrees with the limitations for pressure testing of Class 1, 2 and 3 components within 10 CFR 50.55(a), and therefore is acceptable.

Next slide.

Augmented Inservice Inspection. Additional information was provided in Section 6.6.2, provided a more detailed description of the PSI and the ISI programs under Section 5.2.4.

Milestones for the program are added under Section 13.4. That milestones involves a license condition that states something to the effect that these folks will provide to us within six months after receiving their license, a detailed schedule that indicates how the plant is going to be built for Class 1, 2 and 3 systems so that we can schedule our inspections.

Let's see. And that's consistent with all the other COL applicants that it's a license condition

to provide us a detailed schedule so that we can look at all these systems as they're being built real time.

Finally, in Section 6.6.7.1 the Applicant addresses the flow accelerated corrosion program. Typically that's done in another area of the FSAR, but since it's an augmented ISI program we've moved it under Section 6.6. I did not evaluate the flow accelerated corrosion program, but if you have any questions about the flow accelerated corrosion program, Dr. Greg Makar is here to address any of those questions.

Next slide, please.

So, the commitment was made that under the conclusion section of Section 6.6 that the ISI and the PSI programs would be implemented or in fact generated, so to speak, prior to plant startup. And the staff concludes that the PSI and the ISI and the flow accelerated programs, or more accurately stated their program description meet the SRP guidance provided at Section 6.6 of NUREG-0800 and is therefore acceptable.

MEMBER SKILLMAN: Tim, my name is Dick Skillman. I would like to ask a question.

MR. STEINGASS: Yes, sir.

MEMBER SKILLMAN: You communicated that

you did not review the FAC program description.

MR. STEINGASS: That's correct.

MEMBER SKILLMAN: Did I believe you? Again, if I did, another gentleman did.

MR. STEINGASS: Yes.

MEMBER SKILLMAN: Is that an accurate characterization?

MR. STEINGASS: Yes. There's the man.

MEMBER SKILLMAN: Thank you. I just wanted to ensure --

CHAIR CORRADINI: Did you have a question to the gentleman?

MEMBER SKILLMAN: No, I don't. I wanted to make sure that it had been reviewed.

MR. STEINGASS: No. I reviewed Sections 6.6. And, Greg, which section is the flow accelerated corrosion program under?

CHAIR CORRADINI: You got to come to a microphone, please.

MR. MAKAR: I'm Greg Makar from the Office of New Reactors Component Integrity Performance and Testing Branch.

There's staff guidance and acceptance criteria in both 10.3.6 and 6.6 of the SRP. And in some cases we review the FAC program under 10.3.6.

And as Tim said, it's appropriate in this case to do it under 6.6. It wasn't a COL item as augmented inspection program for this DCD and was described in this COL application in that section.

MEMBER SKILLMAN: Thank you.

CHAIR CORRADINI: Thank you.

MR. STEINGASS: Yes, sir.

Where are we at here? Thank you.

Similarly, with the Section 5.2.4 that it was a continuation for Class 2 and Class 3 to ask these folks to provide discussion about preserving accessibility for the welds to meet the ASME code requirements and the e-coverage requirements. So therefore it makes sense that Section 6.6 apps that they do the same for the Class 2 and 3 stuff.

The additional information discusses the use of radiography to obtain the examination coverage and basically it expounds on the fact that ultrasonic examination is the approved method. But if coverage cannot be obtained by ultrasonic examination, then radiography will be used. The point being that the staff wanted to make sure that the regulations are met and that a 100 percent of the coverage is obtained as required by the code because for this new fleet of plants we are not going to accept relief requests from

the code requirements due to design and accessibility.

Is the one for everybody, Raj? Okay.

So we concluded -- or I concluded that the additional information met the SRP guidance provided in Section 6.6 of NUREG-0800 and is therefore acceptable. Okay.

So, I'm going to conclude for all respectfully Section 6.6. just so that we don't have too many of the staff members getting out of their chairs and running up here. Conclusion: The staff's finding related to information provided by reference is in NUREG-1966.

We reviewed the COL information items and the additional information provided by the Applicant in Chapter 6 of the COL FSAR and found those items to be acceptable.

And finally, there are no open items involved with our review of Chapter 6.

Are there any additional questions?

MEMBER SKILLMAN: Yes, I do. Dick Skillman again.

MR. STEINGASS: Yes, sir.

MEMBER SKILLMAN: So, you've made a very strong comment that for this new fleet there will be no relief requests granted?

MR. STEINGASS: No, sir. For the initial ISI interval. Okay?

MEMBER SKILLMAN: So can you tell us, please, where is that codified on record, where is that promulgated to the applicants, please?

MR. STEINGASS: The regulations state that the plant will be designed and provided with access to enable the performance of the ISI examinations. And then the regulations also state something to the effect that you're going to design the plant to the latest addition and addenda of the code in effect endorsed 12 months prior to fuel load. So if the regulations say you're going to design to enable the performance of an inservice inspection, why on earth would I or anyone grant relief from the examinations? You can't.

Now, for the second ten year interval because the design's locked in, say for instance in the next ten year interval the regulations change or the ASME code requirements change and for a complainant that's developed some kind of a new failure mechanism but it's not designed to perform a specific type of NDE that needs to be applied to that component, well the regulations exclude for second, third, fourth interval, or whatever, the designing for

access because it's locked in.

I mean, for the first interval it's locked it. You know ahead of time. You know what the requirements are. You know what you got to design that plant to in order to enable the performance of the examinations. But ten years down the road don't know and the regulations recognize that requirements may change.

MEMBER SKILLMAN: Okay. If I can respond. What I heard you say is is --

MR. STEINGASS: So -- well, let me finish. I forgot to follow through.

So for the first ten year interval we won't grant any relief period from a code requirement. But later on for the second, third and forth we may. They would be within their rights to ask for that, granting relief.

MEMBER SKILLMAN: Is the regulation clear that no waivers will be granted? That's a very strong statement. I understand what it means from a practical perspective if we've already poured the concrete and the target is at eight feet in either direction from a boundary, I find cutting out concrete may be is what you're communicating.

MR. STEINGASS: I hear what you're saying.

I hear what you're saying.

MEMBER SKILLMAN: I think this carries over to the previous discussion an hour ago when we were asking about accessibility during the construction process. And so it brings up a whole agenda of --

MR. STEINGASS: Sure.

MEMBER SKILLMAN: -- ensuring that those welds by golly are available for inspection.

MR. STEINGASS: To answer your question, looking at the broad spectrum of the design centers, some of the design centers say there will be no requests for relief. And I like to see that.

Some of the design centers know that my strong statements aren't supported by the regulation and they have said we will make every effort to design the plant to enable the performance of ISI, but there may be unforeseen circumstances where we may request rlief, and I've had to accept that.

What we have done is at public meetings and conferences senior management has made the strong statements that we will be hard-pressed to entertain granting of relief, but we all understand that there may be limited instances where one may ask for it. But part of that request for relief would have to show

us that they've made every effort to try and design the limitation due to materials or type of NDE, or construction and they don't want us for that.

So, the answer is it's not supported by a regulation that we will not grant relief, but we've made a pretty strong case throughout the industry and in all the DCDs that you better design it to enable the performance of ISI to meet the regulations. And frankly, they can request exemption from any regulation. You know, that's in there too.

MEMBER SKILLMAN: Thank you.

MR. STEINGASS: Yes, sir.

CHAIR CORRADINI: Other questions from the Committee?

MEMBER ABDEL-KHALIK: Will the Applicant promise to follow-up with Chapter 6 regarding the possible from a control room habitability standpoint detonation of hydrogen? Will the staff make the same follow-up.

MR. McKIRGAN: This is John McKirgan, Ventilation Branch.

Yes, the staff will follow-up on that as well.

MEMBER ABDEL-KHALIK: Thank you.

CHAIR CORRADINI: Other questions?

Okay. At this point I'll thank the Chapter 6 group and turn to Adrian. We're a bit ahead of schedule. Given just who is coming, who is going, is this lunchtime or is this start Chapter 17?

MR. MUNIZ: No. I think we want to delay 17 for after lunch. However, the staff would like to address your previous questions, if possible.

CHAIR CORRADINI: Good. Okay. Good. All right. So whoever needs to get up front, please do.

MR. ANAND: Thank you very much.

CHAIR CORRADINI: Thank you very much, Raj. Thank you. You'll hang out, right?

MR. ANAND: Yes.

CHAIR CORRADINI: As their lone representative?

Okay. Jerry?

MR. HALE: Okay. I think Joel has some further information.

CHAIR CORRADINI: We're talking about the materials spec question?

MR. HALE: Yes, Section 5.3.2. We're going to try to pull the slide up if possible.

CHAIR CORRADINI: Okay. Just for a few minutes ahead of schedule if we can clear this one up or other ones, this is a good time to do it.

MR. JENKINS: Yes. I believe Member Skillman had a question on the post combined license activities. But before I start, I'd like to recognize a colleague out in the audience who worked with me on this section, Pressure-Temperature Limits. Mr. Steven Downey heavily involved in the review. I would like to answer Mr. Skillman's question, but Steve feel free to jump at anytime if you would like.

CHAIR CORRADINI: He can come up, too. We have a seat.

MR. JENKINS: I'll leave that up to him.

Let me read the post-combined license activity again. "Prior to fuel load the pressure-temperature limit curves will be updated to reflect plant-specific material properties if required." And the question hinged on what does the "if required" mean.

Well, I want to start off with the way that the pressure-temperature limit curves are calculated. They're calculated from using a certain methodology and based on material spec chemistries.

Now we know that the reactor vessel is going to be constructed from ASME SA508 forgings and ASME SA533 plates. And those specs have certain limiting chemistries. And these limiting chemistries

are used along with the methodology to derive limiting pressure-temperature curves. But at this time we don't know what the actual chemistry from the procured material is going to be.

So, for instance, the spec may give a maximum of one percent nickel. But when they purchase the material, it might be .5 percent nickel. So when the Applicant purchases the material if they plug the actual chemistries into the methodology that's been approved, they're going to get different curves. And so that's -- and it says "if required." On the off chance that the material chemistries match exactly the limiting spec chemistries, then your results are going to be the same and you don't need to recalculate. But the probabilities of that happening are very low.

And when the Applicant does the recalculation they will let us know through a letter and they will update the PTLR. As long as they don't change their methodology we're not required to reapprove the PTLR. If they change their methodology, we're required to reapprove the Pressure-Temperature Limits Report.

CHAIR CORRADINI: Does that help you?

MEMBER SKILLMAN: Maybe. I understand you to say if they change their methodology, then you

review it. What if they find the material properties are scandalously different?

MR. JENKINS: Scandalously different from the spec?

MEMBER SKILLMAN: Yes.

CHAIR CORRADINI: I sure hope they don't accept the vessel for installation.

MR. JENKINS: I would hope they're not using out of spec material.

MEMBER SKILLMAN: I would hope so, too, and that's why I asked about the "if required" hook that's in that statement.

MR. JENKINS: Well, regardless of whether the material is within spec or without of spec, if it's different from the limits they absolutely have to recalculate.

MEMBER SKILLMAN: Thank you.

MR. JENKINS: But I mean if they're out of spec, that raises different questions.

MEMBER SKILLMAN: Yes, I assure you I understand this very, very thoroughly.

MR. JENKINS: Right.

MEMBER SKILLMAN: I understand what it means in terms of building the vessel and having the pressure-temperature limits for the specific vessel.

MR. JENKINS: Right.

MEMBER SKILLMAN: But the phrase "if required" triggered in my mind what would drive that action? What is it that drives the action? And you've answered it, and I thank you.

MR. JENKINS: Okay.

MEMBER SKILLMAN: But I assure you I am very familiar with this. I'm curious how the staff was going to handle the "if required" hook that is in that phrase, hence my question.

MR. JENKINS: All right.

MEMBER SKILLMAN: Thank you.

MR. JENKINS: That's all I have.

MEMBER BROWN: You said "if they follow the methodology." I'm going to bounce back. In other words, you said it's a slim, very, very slim that they won't have to recalculate if they will meet the definitions within the DCD exactly or within whatever the narrow band is?

MR. JENKINS: Yes.

MEMBER BROWN: And the comment or statement was then that they then have to recalculate and they submit that result and report back to NRC.

MR. JENKINS: Right.

MEMBER BROWN: But as long as they say we

used the same method you don't even have to look at it. If they used the same method, you get the report -- this is not a nasty comment.

MR. JENKINS: No, I know.

MEMBER BROWN: It's just a regulatory you're not required to and you're not required to answer them. In other words, you don't have to--

MR. JENKINS: We're not required to answer them, that's correct.

MEMBER BROWN: And you may not even check that they applied the methodology correctly since they didn't do it, is that correct also? I mean, they just say they followed the method that's --

MR. JENKINS: I think my colleagues have some comments.

MR. DOWNEY: This is Steve Downey.

Yes, if they update their pressure-temperature limits with the plant-specific materials from the procured vessel, we don't have to review the Pressure-Temperature Report, write a safety evaluation or what have you. But when they submit that updated information, we will check to make sure that the methodology has not changed that would not trigger a review.

MEMBER BROWN: I understand the

methodology issue. But I mean you don't even check to see that the numbers that they plugged in and the methodology they used you end up getting the same results and nobody checks it. Whereas, when you were doing the DCD you actually went through, or at least--

CHAIR CORRADINI: They audited it. They didn't check every calculation. Let's be clear.

MEMBER BROWN: And here he didn't even say they were audited. So I'm just -- you know, it was audited at one time. It's just a matter of the numbers changed and nobody outside DTE looks at it, has to look at it or audit it or anything else unless they change the methodology.

So, you answered my question.

MR. JENKINS: Okay.

MEMBER BROWN: I didn't say I agreed with it; just you answered my question. Okay? Thank you.

MR. HALE: Any further questions?

CHAIR CORRADINI: Nothing for you guys. So let me turn back to Adrian.

Those other things that you were going to get, or I have nothing immediate that you were going to get back to us on. There are some other things that are going to take longer. But does GEH or anybody have any other things that they want to mention at

this point or are we going to stop for the moment?

MR. MUNIZ: I think we are going to stop for the moment.

CHAIR CORRADINI: Okay. So we'll get back together after lunch at 12:30. So we'll take a lunch break. Be back at 12:30. Thanks.

(Whereupon, at 11:20 a.m. a lunch recess until 12:28 p.m.)

A-F-T-E-R-N-O-O-N S-E-S-S-I-O-N

12:28 p.m.

CHAIR CORRADINI: Okay. Why don't we get started? We're going to start off with Chapter 17 from Detroit Edison.

MR. SMITH: Next page.

As we've done in other sections, these are the sections that we had COL items. The rest of them were Supplemental Information of Chapter 17. So next one, and I'll go through each one.

So Section 17.1 the Quality Assurance During Design. It ends up referring to Chapter 17.5, which is the Quality Assurance Program applied during the COLA preparation and site-specific design activities. And that ultimately ends up referring to the Quality Assurance Program description that's in 17.88.

Next slide, please.

Quality Assurance During Construction and Operations. Again, also refers to 17.5 or the QA Program. And that also refers to the 17.5 for the QA Program applied to design activities required to adopt the certified design deferment for a specific plant implementation.

Everything's governed by the same Quality

Assurance Program description is, I think, the bottom line here.

17.3, which is the Quality Assurance Program description, it refers to Section 17.5 again to provide a Quality Assurance Program description describing the overall project or assurance program.

So in 17.4, this is where we get into Reliability Assurance Program during the design phase. And we addressed an RAI associated with this and we had a standard COL item that basically said we had no site-specific structure systems or components that would be within the scope of the Reliability Assurance Program beyond those that are already included within the scope of the DCD.

We had a description of the Operational Reliability Assurance Program that referenced other programs. There was an issue identified with the standard COL item as far as its implementation date for the Design Reliability Assurance Program in that it had an original implementation milestone of prior to fuel load, which when you look at it in retrospect doesn't make any sense. But I think my predecessor also had had that same foible in it. So we went through the round of RAIs and the ultimate resolution, again, was that there are no site-specific structure

systems and components beyond the scope of the DCD that should be in the Design Reliability Assurance Program.

MEMBER STETKAR: There is a silence here. Okay. I just wanted to make sure everybody stopped talking.

I'm going to hold off. I have an opinion on the site-specific issue of that. I've got a different question, though. It's my understanding, I went back and I looked a Revision 9 of the DCD last night just to make sure I didn't misspeak.

It's my understanding that the DCD process to populate the RTNSS list, essentially the scope of things that we're talking about here, used numerical screening criteria from the risk assessment and the values of those screening criteria were Fussell-Vesely importance greater than or equal to 0.01 or a Risk Achievement Worth greater than five. And that's documented in DCD Rev 5, Rev 9 Section 17.4.26. So those were the numerical values that they used.

We questioned GEH about those numerical values. We questioned the staff about those numerical values to some extent during our review of the DCD, and I don't need to go into details of those discussions.

The question is that not all, because I'm aware of one that I believe with the exception of ESBWR and perhaps one other is one center, everybody else in the design certification process is using screening criteria of Fussell-Vesely importance of .005, a factor of two lower and a Risk Achievement Worth of two, a factor of 2½ lower. Meaning that if they apply those criteria in principle to your RTNSS list or the population of equipment, you're controlling them to the Reliability Assurance Program would be larger -- could be larger -- might be larger. We don't know, you know because we haven't actually seen those numerical values or how they were done. There's also qualitative input from a group, so we didn't go and investigate that process.

Now the question I have is you committed to the Maintenance Rule Program, obviously.

MR. SMITH: Yes.

MEMBER STETKAR: You've committed to an NEI document basically that describes the template for the Maintenance Rule Program. To my knowledge everybody who has applied the Maintenance Rule Program uses the screening criteria .005 and 2.0. The question is when you transition from this list of things that you've included from the DCD by reference,

incorporated by reference, to a Maintenance Rule Program will you have different screening criteria and what implications does that have about this transition of the reliability assurance from the generic DCD to a plant-specific operating Reliability Assurance Program? That's sort of the generic concern.

Now a specific question that you may have to go back what screening criteria is Unit 2 using?

MR. SMITH: I don't know offhand. Sorry.

MEMBER STETKAR: Okay. I'd be really curious because --

CHAIR CORRADINI: You're not just look for a value, you're looking for consistency?

MEMBER STETKAR: Both, indeed, yes. Yes. Because if something is important, you know it's a relative importance measure. If something has this relative importance of .005 to risk at Unit 2 and that's deemed as important, why should something that is of equal relative importance on Unit 3 not be deemed also risk-significant regardless of what your absolute measure is? So I'm looking for this relative thing, because I'm aware that most -- I can't say everybody because I obviously haven't looked at everybody in the Maintenance Rule Programs. But every time I see those numbers, they're the .005 Fussell-

Vesely and 2.0 for Risk Achievement Worth. So that's sort of my question that, you know moving from this point forward do we run into inconsistencies perhaps?

MR. SMITH: Do you have a comment?

MR. MILLER: Okay. You know, we did discuss this at pretty good length during the DCD discussions, right? And I believe at that point we mentioned that if you use the standard values with a new plant with very low core damage frequency, then at one half of one percent of the importance gets you down to where essentially everything that's in the PRA model is now risk-significant. And the concern there was, which is a valid concern for the Maintenance Rule, is you want to differentiate low risk and high risk. If you have everything in the high risk, then your resource allocations are not necessarily --

MEMBER STETKAR: And the Maintenance Rule tends to throw everything into the high risk category.

MR. MILLER: Yes.

MEMBER STETKAR: Because it's just easy enough to do that.

MR. MILLER: Yes. So because PRA is one part of the Maintenance Rule, right, and that there are other criteria deterministic that all get wrapped up by the expert panel, then it's really the expert

panel with the NEI guidance is the final deciding factor on it.

MEMBER STETKAR: Yes, I understand that. And I think where we left on the DCD is we took a look at the list of things that are cited in, I think, it's 19A of the DCD, and that list at least qualitatively seemed reasonable and since we weren't making any progress on the numerical screening values. So, sort of the reasonableness of that list I think was the basis for our coming to a conclusion that it was probably okay for the DCD. But I'm now a little bit more concerned. You know, there's this whole issue of D-RAP versus -- D- versus O-RAP versus Maintenance Rule. So this transition process going forward I want to understand a little bit more because it is in the context of sort of a couple of different parts of Chapter 17, but it is addressed in Chapter 17.

MEMBER ABDEL-KHALIK: John, I'm sort of curious as to your concern about consistency with Unit 2 given that both units will have totally different risk profiles.

MEMBER STETKAR: I don't care what the risk profile is. I care about if something is deemed to be risk-significant -- let me go away from the absolute numbers so when we talk about numbers we

understand.

If something contributes ten percent of the risk of my plant and I determine that that is risk-significant, then if something that is ten percent of the risk at my plant, something is ten percent of the risk at your plant. You got a PWR, I got a BWR. It doesn't make any difference; it's a determination that something that accounts for ten percent of the risk is determined to be risk-significant regardless of the absolute value, whether it's ten to the minus two core damage frequency or ten to the minus 20 core damage frequency --

MEMBER ABDEL-KHALIK: And I'm not sure I agree with that.

MEMBER STETKAR: Okay. But there are differences of opinion and that gets into the whole risk method --

CHAIR CORRADINI: That's where we had our fun discussion previously.

MEMBER STETKAR: That's right. That's right. I mean, they understand, and it's honestly a little bit more of a concern for me in terms of transitioning from the DCD RTNSS list and what criteria were applied to populate that list. And if you're wholesale adopting the Maintenance Rule Program

which has a lot of history now in terms of consistency of application and programmatic backing, if there are differences in those selection criteria, you know in principle you could get into the Maintenance Rule and say "Oh, my God, you know we have to either change the population of the equipment that's under the Maintenance Rule or do something about categorizing things in high risk or low risk categories, or something. So I'm curious about how that's going to be done so that we avoid this notion of, you know a step change, for example from the certified design RTNSS list versus the eventual Reliability Assurance list.

MR. MILLER: So I understand you, is that the question?

MEMBER STETKAR: The question is how will that list of equipment, what criteria will be used going forward, numerical criteria? Because there's some bullets in there that says, you know obviously the risk importance measures, they're not cited in the FSAR. It's simply a goal if it says if it's one of the attributes that you use, and it is. It's only one of the attributes. But it's the only numerical. How will they be used at Firma Unit 3 going forward when you transition from the DCD RTNSS list that you've

incorporated by reference at least for the COL going forward into the Operating Reliability Assurance Program or, you know the Maintenance Rule.

MR. MILLER: Okay. Well if I can just state, that whole process of course is directed by 10 CFR 50.65, right? So that it would be subject to inspection by that. And there they recommend you follow a certain guidance. The decisions at that point would be made by DTE and their expert panel. And they have the ability through their guys as to what they decide on what is high and low risk-significant.

MEMBER STETKAR: I mean, you know obviously floating around here in the background is suppose that panel when they do that determines that it is, I'll use the word "prudent" to double the size of the list of equipment that's in the Maintenance Rule Program? What implications are there then looking back? Should there have been some sort of quality assurance placed on all of your nonsafety Quality Assurance Program in terms of procurement of those components at this stage of the game? You know, which is the whole reason why the staff wanted these claims about do you have any site-specific items at the COL stage so that they could be tracked.

MR. MILLER: Okay. So what you're talking about is --

MEMBER STETKAR: I just want to make sure that there's going to be a consistent approach going forward and that people have thought about that.

MR. MILLER: All right.

MEMBER STETKAR: And how you're going to wrestle with that. Because, as you said, in principle if you do apply the numerical values that I cited, the RTNSS list as it exists now could be -- I don't know how much larger it would be. I honestly don't.

MR. MILLER: The D-RAP list includes RTNSS and risk-significant, just for verification.

MEMBER STETKAR: Okay.

MR. MILLER: Yes, I know what you're talking about. Okay.

CHAIR CORRADINI: Okay? Let's move on.

MEMBER STETKAR: I don't think we're going to go through it today.

CHAIR CORRADINI: We should move on.

MEMBER STETKAR: As long as they understand the kind of concern, we got it. So, thanks.

MR. SMITH: All right. Next slide.

So 17.5 Quality Assurance Program

description during design certification, Early Site Permits and new license applicants. So we report to the DCD Section 17.1 for the Quality Assurance for the design certification activities. And we've provided a summary of quality assurance applied during the preparation of the Fermi pre-COLA and the QAPD for the plant-specific implementation -- plant-specific implementation, construction and operations follows the NEI template on Quality Assurance Program description.

And then finally the Maintenance Rule Program which we've touched on a little bit. Again, we've incorporated the generic NEI template for new plants and we've described them as supplements, the relationships with other programs and we also have a reference to the Cable Monitoring Program that we talked about when we talked about Chapter 8 in the last meeting.

And that's all I have in Quality Assurance in Chapter 17.

CHAIR CORRADINI: Questions by other members? Okay.

Let's move on to the staff. Jerry, are you going to kick us off.

MR. HALE: We're here to present SER

Chapter 17 with no open items, Quality Assurance. I'm here with George Lipscomb and Todd Hilsmeirs. They'll be presenting the site-specific portions of this.

Section 17.0 Introduction. 17.1 Quality Assurance During Design. 17.2 Quality Assurance During Construction and Operations. 17.3 Quality Assurance Program Description. These sections were all IBR. Some of this will also be discussed later as we move into the 17.5, the Quality Assurance Program Description.

So, moving right along to 17.4 the Reliability Assurance Program with Todd Hilsmeier.

MR. HILSMEIER: Thank you, Jerry.

FSAR Section 17.4 incorporated by reference Section 17.4 the ESBWR DCD and also addressed the two COL items, which will be discussed in the next two slides.

Section 17.4 of the SER has no open items and one notable confirmatory item related to COL item 17.4-1-A on the site-specific list of risk-significant SSCs.

Next slide.

This slide presents the staff's review of COL item 17.4-1-A. Under this COL item the list of risk-significant SSCs in the DCD or the RAP list

should be updated for the site plant-specific information and design features. And in the FSAR the Applicant specified a commitment to address the COL item prior to initial fuel load. However, this should be addressed prior to the detailed design in construction phases of the plant because the nonsafety-related RAP SSCs are subjected to the Quality Assurance controls in accordance with SRP Section 17.5 Part D.

Therefore the staff proposed an RAI requesting the Applicant to update the RAP list for site and plant-specific information and design features. And in response to the RAI the Applicant stated that the Fermi RAP list is incorporated by reference to the DCD and that new additional RAP SSCs were identified because the ESBWR PRA bounds the Fermi's site and plant-specific information and design features. And this was confirmed under the Chapter 19 review.

Furthermore, no departures from the DCD impacted the PRA or RAP list.

And lastly, the RAP SSCs are subjected to the Quality Assurance controls in accordance with the Quality Assurance Program description. And then the staff found Applicant's response was acceptable and

the FSAR would be revised accordingly, which is Confirmatory item 17.04-2.

MEMBER STETKAR: Todd, when I read through the section of the FSAR I think there was also a mention that there's a -- and I think it was repeated in the SER during the discussion. I don't have it right here in front of me. But something to the effect that the list of risk-significant SSCs will be confirmed via ITAAC. The quote actually is in your SER.

MR. HILSMEIER: Right.

MEMBER STETKAR: What does that mean "will be confirmed via ITAAC"? That means after the COL before fuel load somebody goes out and confirms the list of risk-significant SSCs.

MR. HILSMEIER: Right.

MEMBER STETKAR: That sort of feeds into a little bit of what I was just talking about, that at some point between the COL and fuel load somebody will confirm, whatever that means, the list of risk-significant SSCs. The Applicant, or at that time the Licensee, will then transition into a Maintenance Rule Program that has a list of things that are monitored under the Maintenance Rule.

MR. HILSMEIER: Right.

MEMBER STETKAR: So I'm curious about what that word "confirm" means and how that transition process works, and more importantly from the staff perspective. I was just mentioning suppose during either that confirmation, whatever that means, or during the implementation of the Maintenance Rule Program the list gets bigger?

MR. HILSMEIER: Right.

MEMBER STETKAR: What implications are there to the staff? Is that a concern?

MR. HILSMEIER: As we discussed in many previous ACRS meetings, that RAP list --

CHAIR CORRADINI: Nice going, but the Detroit people weren't here to hear it, so they can hear it.

MR. HILSMEIER: Yes. It's a live list, so as updates are made to the PRA or design changes made to the plant, the RAP list needs to be updated. And that's part of D-RAP process. And the D-RAP ITAAC the main purpose is to ensure that the RAP SSCs are subjected to the D-RAP activities. And if we inspect that D-RAP ITAAC, we would also be ensuring that the D-RAP list is kept up to date since it is a live list. And that's what I interpret as the confirmed.

MEMBER STETKAR: I think the original

process envisioned that the list would start out this big because there is a lot of uncertainties in simplified PRA.

MR. HILSMEIER: Right.

MEMBER STETKAR: And as you got more into the design, more design details, more refined PRA that the inference was that perhaps the population of equipment in that list would reduce such that, you know you might be conservatively applying QA requirements during the initial phases of procurement that perhaps you could lax later.

MR. HILSMEIER: Yes.

MEMBER STETKAR: I don't think the process originally envisioned that it might start out small and get bigger.

MR. HILSMEIER: That can happen, and for some design centers it most likely will happen because the design certification developed a very conservative list of risk-significant SSCs.

CHAIR CORRADINI: Does "conservative" mean smaller than it might be or does "conservative" mean larger than it should be?

MR. HILSMEIER: Certainly that the design certification list is larger than it most likely could be. And for the very early design center, one of the

first ones, the list is smaller than what it is expected to be. And so --

CHAIR CORRADINI: And not just this design center?

MR. HILSMEIER: No, not this design center. I don't know if I should say the design center.

CHAIR CORRADINI: No, no, no, no.

MEMBER STETKAR: We sort of know which one it is.

CHAIR CORRADINI: Yes, we're aware.

MR. HILSMEIER: However, the COL that's referencing that design center has a process to update the list, which will make it bigger. For the ESBWR I expect the list to stay relatively the same, not change too much.

CHAIR CORRADINI: But John's question, I mean this is a whole realm that I don't get. But John's question is if something wasn't on the list but falls into the list by this analysis, just a thing --

MR. HILSMEIER: Right.

CHAIR CORRADINI: -- then how do you kind of back out the QA relative to what wasn't there and now it --

MR. HILSMEIER: The Applicant, or at this

time the Licensee, would need to ensure that the quality assurance controls are met for any new RAP SSCs added.

CHAIR CORRADINI: And back in time, right?

MR. HILSMEIER: Right. They would need to make sure that -- an analogy would be similar to like the commercial dedication process. Taking a commercial piece of equipment and ensuring that it meets quality assurance controls. A similar process to that.

CHAIR CORRADINI: Okay.

MR. HILSMEIER: You raised a point during the Applicant's presentation about Maintenance Rule using risk-important criteria as different from the ESBWR. And that was in my mind when we reviewed the ESBWR. And it's on my mind, I mean it's not just applicable to Maintenance Rule and RAP.

In PRA-land there's different methodologies for identifying risk-significant components for different applications. Like the 10 CFR 56.09 process has one methodology for identifying risk-significant SSCs. The Maintenance Rule has another process. So there's a lot of inconsistencies.

CHAIR CORRADINI: Okay.

MR. HILSMEIER: Office of New Reactors has

an ongoing effort to update our endorsements of NUMARC 93-01 and 10 CFR 50.69 for new reactors to address these issues like the different risk-important measures that are used between new reactors and operating reactors. That's an ongoing effort. And so it's possible that for NUMARC 93-01 it may be updated.

MEMBER STETKAR: But at the moment, I mean they've essentially incorporated because they've incorporated any 7-A, or whatever it is, which incorporates NUMARC 93-01, it references it.

MR. HILSMEIER: Right. Right.

CHAIR CORRADINI: And so right now Detroit is tied into whatever is in those documents.

MR. HILSMEIER: Right.

CHAIR CORRADINI: Because that's basically what they characterize their Maintenance Rule Program as.

MR. HILSMEIER: Yes. And it shouldn't interfere with the Maintenance Rule process because basically the SSCs in scope of Maintenance Rule would be the RAP SSCs which uses a RAW of 5 and a Fussell-Vesely of .001. But then it would also include SSCs based on NUMARC 93-01 which is a RAW of 2 and a Fussell-Vesely .005.

MEMBER STETKAR: Right. And then -- well,

you've said enough. You've at least given me some confidence. The staff is obviously aware of the issue.

MR. HILSMEIER: Yes.

MEMBER STETKAR: And it's evolving, apparently.

MR. HILSMEIER: The next slide presents the staff's review of COL item 71.4-2-A. And under this COL item the Applicant should describe a process for integrating RAP into the operational programs to maintain their reliability, the availability of the RAP SSCs during plant operation. And the Applicant proposed to integrate RAP into the Maintenance Rule Program consistent with RG 1.160 which endorses NUMARC 93-01. And also the Applicant proposed to integrated RAP into the Quality Assurance Program in accordance with the Quality Assurance Program description. And also integrate RAP into inservice inspection, inservice testing, surveillance testing and maintenance programs. And the staff found this process to be acceptable and meets recommendations contained in the RAP guidance.

And the next section is Section 17.5 that will be presented by George.

MR. HALE: Are there any questions on the

Reliability Assurance Program?

CHAIR CORRADINI: I think we're okay.

MR. LIPSCOMB: I'm George Lipscomb, Office of New Reactors in the Quality and Vendor Branch.

I was asked to talk for just a few minutes to try to answer a question from earlier. Do you want to go ahead and do that first before I go onto 17.5?

My understanding of the question, I wasn't here when it was asked, but my understanding of the question had to do with what types of steps is the NRC taking, what kind of a plan down the road for how we're going to look at receipt of safety-critical items. And I think the example I was given was like a reactor pressure vessel. And so that's my understanding of the question, so hopefully --

CHAIR CORRADINI: Anybody want to hone that question? I think you got it approximately right.

MR. LIPSCOMB: Approximately right?

CHAIR CORRADINI: Yes.

MR. LIPSCOMB: Sound good?

CHAIR CORRADINI: Yes.

MR. LIPSCOMB: Okay. So basically it's going to be a combination of inspection activities from the NRC perspective, because there will be

regional folks, residents that will be site. What we'll be using is a inspection manual chapters. There's primarily going to be the ITAAC procedure, which falls under inspection manual chapter 2503. But then there's also the program part of it with the Quality Program which falls under 2504.

Primarily, if you're looking at the receipt of something, that would be under a quality program, an Appendix B program. We would be looking at in the ITAAC matrix. And to give you an example of how we would be doing that from a reactor pressure vessel example if you look at inspection procedure 65-001 there's a lot of attachments to that. It's a fairly big matrix, if you want to think of it that way, where there's about 20 different areas that get into the design, those kinds of things. And then the other part of the matrix has to do with how you're going to look at things: The verification, the receipt if you will.

So, these attachments within 65-001 have to do with the specific inspections.

So to give you an example for like a pressure vessel if you were to pull the inspection procedure for that and take a look at the various areas under ITAAC, you'd be looking at verifying that:

The purchased RPV and internal components were in accordance with the design, that's one area;

That the RPV was properly stored and handled in accordance with approved procedures;

The install was within accordance with design drawings;

That the procedures for protecting the installed vessel were being followed.

So those are kind of examples along with the documentation and identification of problems that would go with that. So that would be kind of an example of how we as the NRC would be providing that oversight. Of course, then the Licensee or the Applicant -- the Licensee at that point would have the primary responsibility under Appendix B with our oversight.

Does that kind of answer the question?

CHAIR CORRADINI: It does for me.

MEMBER ARMIJO: Pretty straightforward.

CHAIR CORRADINI: Yes.

MR. LIPSCOMB: Okay. For 17.5 I just want to take a couple of minutes and talk about the contents of the application, go into what we did for review and then the conclusions that we drew from that review.

As far as the contents, by reference the ESBWR DCD Section 17.5 is incorporated. There are three COL informational items. They basically all have to do with putting together a program for the various different phases whether it's design or construction and operations. And then there is a supplemental information, Supplement 17.5-2 which provides quite a bit of amplifying Quality Assurance Program information and the time period that that information is supplied by the Applicant for us from the beginning of the project in January of 2007 through December of 2009.

One important item of note is that the QAPD that was supplied is based on the NEI template, NEI 06-14A, Revision 7. And that particular revision the staff determined that was acceptable format and adequate guidance for a QA Program to meet the requirements of Appendix B. And that's documented by a staff SER.

Next slide.

So far as the review if you want to think about we kind of looked at two different areas, if you will. One is the QAPD itself and since it's based on the NEI template, if there was deviations from that approved template that the staff had looked at.

And then the second area had to do with some areas that were kind of outside the scope of that QAPD. These might be, like, preapplication activities. And to give you an example it would be, like, did it meet the intent of RG 1.206, which I'll go over in a few minutes, and also do we have adequate assurance that Appendix B was met. So we used a combination of both licensing RAIs and inspection activity to take a look at those two main areas.

So, to give you an example of the first couple of bullets, first like three bullets on here, have to do with the QAPD. We compared the QAPD to the NEI template, looked for deviations from the template. As part of that we were confirming that the COL items have been addressed and the ESBWR DCD was further addressed by the Applicant. And that it had adequate program guidance.

So, those three areas were handled kind of in the review of the QAPD. And of the RAIs we issued, probably about half of them were issued in that particular area.

The other two bullets have to do with the other areas kind of outside, if you will. One of them was meeting the intent of RG 1.206, specifically Regulatory Position C.1.17.5.3 which has to do with

oversight and control of contractor activities. Specifically it says that the FSAR will delineate the QA functions delegated to other organizations. In addition, it must describe how the Applicant will retain responsibility for and maintain control over portions of the QA Program delegated to other organizations.

So, when we looked at that in the case of the Fermi application, we wanted to see that there was that control, and that would be both pre-application and post-application. And we wanted to ensure that the appropriate Appendix B criteria had been met.

So we used a combination of RAIs in this area to get additional information and inspection activity. We concluded an inspection in August of 2009. And then we resolved those inspection violations that were issued as a result of that inspection through the inspection process. So there was a combination of RAIs and inspection.

Next.

As a result of considering all the information both in the licensing and the inspection realm, we determined that:

The FSAR met the regulatory requirements;

That the oversight activities had met the

intent of RG 1.206, Regulatory Position C.1.17.5.3;

They addressed the COL items;

And that the inspection violations were appropriately closed; and

There were no open or confirmatory items in 17.5

MR. HALE: Any questions on the QAPD?

CHAIR CORRADINI: Okay.

MR. HALE: If not, move onto 7.6 Maintenance Rule. Todd?

MR. HILSMEIER: Yes. FSAR Section 17.6 is incorporated by reference to the generic template in NEI 07-02A, which is a generic template for Section 17.6 in a COL application. And NEI 07-02A meets the requirements of FSAR 17.6 and has been approved by NRC.

And there's no open items or confirmatory items associated with this section.

MR. HALE: Any question on the Maintenance Rule?

CHAIR CORRADINI: Committee members? No.

Let's move on.

MR. HALE: Thank you. That concludes the staff presentation of Chapter 17.

CHAIR CORRADINI: So we'll move on to 19.

First we'll do everything but the Appendix in open session. So the Detroit DTE people are back up.

What we'll probably do is we'll go through the open session, take a break so we can close the session for addressing the Appendix. Okay?

MR. SMITH: Okay. So we're going to now talk about Chapter 19 Probability Risk Assessment and Severe Accidents. And this is a list of Chapter topics. I'm not going to read through the list.

Go to the next page.

Section 19.2 PRA Results and Insights. The first one was related to the as-built such as the systems and components, seismic margin capability. And we have a comparison analysis that we've committed to do prior to fuel load in the as-built configuration.

Next slide.

And then summary of the plant-specific PRA review. As a supplemental item we looked at a number of things that we compared with the ESBWR PRA:

Loss of preferred power frequency;

Loss of service water frequency;

Seismic fragilities;

Other known site-specific issues such as unique off-site consequences; and

Internal flooding associated with the Yard Area.

And our review concluded that the risk ESBWR PRA provides a reasonable representation of the Fermi 3 site parameters and conditions.

Next slide, please.

So our conclusions. We have no departures from the DCD that affect the ESBWR PRA. The only departure we have is related to the configuration of the low level of the radwaste building to expand below over radwaste storage capacity.

And our plant-specific review is summarized in Appendix 19AA of the FSAR.

MEMBER STETKAR: Okay. If you could go back to -- this is going to take a while.

MR. SMITH: Okay.

MEMBER STETKAR: You're going to go back to slide 4.

MR. SMITH: Right.

MEMBER STETKAR: Let's talk about the first bullet: Loss of preferred power frequency. How many times has Firma Unit 2 lost off-site power from any cause during its operation?

MR. SMITH: During its total operation life?

MEMBER STETKAR: Yes.

MR. SMITH: I don't know the total.

MEMBER STETKAR: I'd be interested. I know you lost it at least once during the Northeast Blackout.

MR. SMITH: Yes.

MEMBER STETKAR: It was characterized as a partial lost during the tornadoes. I didn't go all the way back to '8 to find out.

MR. SMITH: Yes.

MEMBER STETKAR: And just one event in the years of its operation gives you a mean frequency that is somewhat higher than the frequency that's used in the DCD PRA. That one event gives you a somewhat higher frequency. If you've had two events, you'll be more than twice as high and from a different mix of causes.

MR. SMITH: Yes.

MEMBER STETKAR: So I'm really interested from the actual operating experience how many times you've lost off-site power. That's just a question to kind of give --

MR. SMITH: Okay.

MEMBER STETKAR: Because you said you did a frequency comparison, but I don't have any numbers

or anything.

MR. SMITH: Can you speak to that or do we need to take this back?

MEMBER STETKAR: And I know where all your numbers came from.

MR. SMITH: Yes.

MEMBER STETKAR: I know where the DCD numbers --

MR. MILLER: That's right. You know where the DCD numbers came from.

Let me just go over the process. Of course, we look at it generically. The DTE PRA staff assessed their plant-specific history and compared it against that of --

MEMBER STETKAR: Yes. That's what I'm asking about is I'd like to see what that comparison is.

MR. MILLER: Okay. Well, that would be within the DTE staff. I would just like to add, though, that the requirement for a plant-specific PRA prior to fuel load would incorporate any new operating experience, it would incorporate any new loss of off-site power events.

MEMBER STETKAR: I guess, and I'm going to ask the staff when they come up, I'm troubled by this

notion of this thing is being called a plant-specific PRA. It is not a plant-specific PRA. It has nothing to do whatsoever with a plant-specific PRA. It is the design certification PRA accepted by this COL Applicant.

MR. MILLER: Purely.

MEMBER STETKAR: They will have a plant-specific PRA before fuel load when indeed they meet all of the requirements to do a real PRA.

MR. MILLER: That's the one I'm referring to.

MEMBER STETKAR: Yes. Okay. Well, they're calling this a plant-specific PRA, the thing that is right now is called in the COL FSAR a plant-specific PRA. The term is "incorporation of DCD Chapter --" this is in the COL FSAR. "Incorporation of DCD Chapter 18 into the FSAR satisfies the requirement of 10 CFR 52.79(a)(46) for a description of the plant-specific PRA and its results." So this is being characterized as the plant-specific PRA and its results. I don't believe that, but those are just words.

What I want to do is examine whether or not what level of reviews of both the plant information that I can glean, how that information was

indeed compared with the DCD PRA to form the basis for the conclusions, at least on three of the five bullets that are on the slide in front of us. So I've asked about the loss of off-site power. I'd like to see that comparison.

The second one is the loss of service water frequency. I'm not so much concerned about the loss of service water initiating event frequency. I'm concerned about the fact that the DCD PRA has absolutely no relevance to the actual configuration and operation of the plant service water system as I understand the way it will be operated. In fact, there are qualitative statements in the FSAR that say "Well, we're probably more reliable than the DCD PRA because we normally cool through the normal cooling tower." I don't know if that's true, but there's a statement that says you do that.

The DCD PRA does not model that line. It does not model the status of the valves in the line that connect the return flow either to the normal cooling tower basin or to the mechanical draft cooling tower fans. So I ask you, are you going to keep the PSWS aligned to the mechanical draft cooling towers during normal operation or not? If the answer is no, then the DCD PRA is completely wrong because it

assumes that one mechanical draft cooling tower is always running. You know, it doesn't have start failures for those fans. It assumes that all of the valves and all of the cross-tie lines are always normally open. Those valves are modeled at all. They can't all be normally open if you're going to the normal cooling tower, which there's a statement in the FSAR that says that you will normally be aligned to the normal cooling tower.

So it's not at all clear. And I can glean this from looking at what's written. I don't actually know how you're going to operate the system, but it's pretty clear that the DCD PRA model for that system is inconsistent with at least information I can glean from both the DCD and your Chapter 9 information on the PSWS in the FSAR.

MR. MILLER: Okay.

MEMBER STETKAR: Now, do I believe that the differences affect the use of that DCD PRA to give me some general assurance that the level of risk from the plant is much lower than the level of risk of currently operating plants? No, I don't think the differences would affect that generic conclusion.

If I wanted to get really precise about how different it is, then it would affect that generic

conclusion and I can't say that the DCD PRA is necessarily conservative because I have no idea of what the stuff that is not modeled or the different configurations might contribute. And that's a bit of my concern about characterizing this thing as a plant-specific PRA because if it doesn't model the alignments that seem to be documented in the FSAR, then it's not even a design-specific PRA.

So that's an area of concern that I think you need to look at, in particular for the PSWS. Not the loss of service water frequency. I didn't some back of the envelope calculations and they're about right. They're okay.

CHAIR CORRADINI: So, John, can I -- I assume that DTE stipulates what the characterization is, that this is still the generic DCD PRA until they--

MEMBER STETKAR: Well, they characterize it as a plant-specific PRA.

CHAIR CORRADINI: But it's not. It can't be.

MEMBER STETKAR: No, it's not. It can't be.

CHAIR CORRADINI: You guys agree?

MEMBER STETKAR: And it's the result of a plant-specific PRA, and that there's nothing from any

specific features of their design that would change the conclusions on the DCD PRA.

MR. MILLER: So the intent of what they performed here was a review of the plant-specific features that may be different than what is in the generic certified PRA, okay?

And just for clarification, another thing I'd like to clarify is that the DCD, you've characterized the modeling of the service water in the DCD as inadequate. And I believe you mean with respect to the plant-specific features at Fermi 3.

MEMBER STETKAR: No. It's inadequate with respect to the design features that I can look at at the DCD deadline. Cross-tie valves are not modeled at all.

MR. MILLER: Yes. But the problem is because it is a design certification PRA. Every plant has a unique service water design. That is up to the plant owner, okay? We cannot possibly model all of those, so we develop a general model.

MEMBER STETKAR: I'm sorry, Gary. I'm staring at identical drawings in the DCD Chapter 9 and the FSAR Chapter 9. They are precisely identical with the exception that in the DCD Chapter 9 there's a little bubbly thing around the part that doesn't have

the bubbly thing around it. They're absolutely identical. So there was no need in the DCD PRA to say we don't know what the done design is going to look like, because you could have at least modeled the design that was in the bubbly thing.

MR. MILLER: I'm not sure I understand. I mean, this is representing every plant. This is the design certification for every ESBWR.

MEMBER STETKAR: I understand that. The design certificate PRA models the plant service water system, a plant service water system, the design certification plant service water system. But it is not a complete model of that system.

MR. MILLER: Okay.

MEMBER STETKAR: Because it does not include a number of valves in that system. Now, you know if Detroit Edison had decided to reconfigure that system, then they would have needed to go look at their actual configuration. If they wanted to put in 12 pumps and 800 valves or two pumps and no valves, that obviously would have been a departure. There is actually no departure from the certified design in the configuration of the plant service water system in terms of numbers of pumps, numbers of valves, configuration of piping, numbers of cooling towers.

There's no difference. What there seems to be, though, is a difference in the actual operating configuration of that system --

MR. MILLER: Okay.

MEMBER STETKAR: -- as it's characterized in the FSAR compared to the assumptions about the operating configuration of that system that are made in the DCD PRA. There's some very, very explicit assumptions about this.

MR. MILLER: Yes, there will be differences. So --

MEMBER STETKAR: And the question is do the differences make a different? I don't know.

MR. MILLER: Well, I think you hinted earlier that you didn't think they did, but --

MEMBER STETKAR: You know, it's my own personal opinion and it's certainly not ACRS, certainly not anyone on the Subcommittee. For the purpose of the DCD PRA to give the staff, to give the ACRS, to give the public confidence that the level of safety for the ESBWR is significantly improved from current operating plants. And I didn't say a factor of 101.23. I just said significantly improved.

MR. MILLER: Yes.

MEMBER STETKAR: I don't personally

believe that the differences in this particular system would affect that conclusion.

MR. MILLER: Yes.

MEMBER STETKAR: Numerically I do believe the difference, you could measure the differences between 101.23 versus 85.62.

MR. MILLER: Okay.

MEMBER STETKAR: But that's a difference.

MR. MILLER: Right.

MEMBER STETKAR: Whether it's significant, you know that's somebody else's. My argument about characterizing this as a plant-specific PRA and that there is no difference is a bit of a concern, given the nature of the DCD PRA.

So, I guess what I'm asking Detroit is in the same sense of the loss of off-site power, the LOPP, loss of preferred power frequency I'd like to see how you did that comparison. I'd like a little bit more confidence about how you compared the operating configuration, at least as I understand from the system that you're planning to install compared to the assumptions that are built into the design certification PRA, and how you did that.

MR. MILLER: Okay.

MEMBER STETKAR: Because all I can read in

the FSAR is some pretty high level qualitative stuff.

Now, the third one that I have to be honest is a little bit more concern. This is something I can point to --

CHAIR CORRADINI: So, John, I'm trying to capture this because you guys went back and forth and I was there, and then I digressed.

MEMBER STETKAR: The concern is that Detroit Edison has made an assertion that there are no significant differences.

CHAIR CORRADINI: And you want to see the analysis that shows it?

MEMBER STETKAR: I want to see what's the basis for that conclusion.

CHAIR CORRADINI: Right. Okay.

MEMBER STETKAR: It would be more obvious if the actual configuration, you know the number of pumps were different were the actual configuration of the system were different. But even within this context the normal alignments seem to be different. And the normal alignments being different could introduce drastically different failure modes, drastically different success criteria even compared to what's applied in the DCD PRA.

MR. MILLER: Drastically different?

MEMBER STETKAR: Yes, yes. Because the DCD PRA basically says the success criteria are any two pumps to any one cooling tower which presumes that both the discharge cross-tie valves are always open and can never be closed and the return cross-tied valves between the cooling towers are always open and cannot never be closed. Otherwise, the success criteria don't match up. You get combinations of pumps that don't line up with cooling load. The Train A pumps can be successful, but they're isolated from the Train B cooling loads, you don't have cooling to Train B.

MR. MILLER: Right.

MEMBER STETKAR: And vice versa on the return trip.

MR. MILLER: Again, but it was the intent for the plant-specific or the design certification PRA--

CHAIR CORRADINI: For the GEH DCD one to match any particular site.

MR. MILLER: Yes. Right.

CHAIR CORRADINI: Just so I capture it, your point is that you want to see the basis by which there's not a concern?

MEMBER STETKAR: I want to see the basis

for -- right. I want to see what evaluation Detroit Edison made --

CHAIR CORRADINI: Right.

MEMBER STETKAR: -- now that they've adopted this flow path picture and they've made statements about how that system will be normally configured that is the only way it can work consistently with their statements is it leads to inconsistencies in the PRA model.

CHAIR CORRADINI: Right.

MEMBER STETKAR: Or, you know, the applicability of the DCD PRA model to that normal alignment.

MR. MILLER: But you had another one?

MEMBER STETKAR: I do. On what's characterized as internal flooding associated with the Yard Area, I will characterize that as external flooding.

The DCD PRA explicitly does not model external flooding, doesn't quantify external flooding. There's a statement that says "external flooding events are reasonably precluded from the ESBWR Probabilisitic Flood analysis based on adherence to the design conditions set forth in the envelope of ESBWR Standard Plant Site Parameters of DCD Tier 2.

CHAIR CORRADINI: Chapter 2.

MEMBER STETKAR: They didn't quantify external flooding.

The discussion of Yard flooding in the FSAR says: "Consideration of site-specific external flooding would have no impact on the PRA results and conclusions."

CHAIR CORRADINI: Yard flooding means between the switchyard and the plant?

MEMBER STETKAR: Think of Lake Erie making the site look like a big Lake Erie.

CHAIR CORRADINI: Got it.

MEMBER STETKAR: I mean, it's characterized as the Yard because the Yard is a site-specific feature. But it's --

CHAIR CORRADINI: Whether it's off-site or on-site, your point is it's a controlled area but it's flooded.

MEMBER STETKAR: The Yard is outside, and they said the Yard is outside.

CHAIR CORRADINI: Okay.

MEMBER STETKAR: Now, the qualitative arguments that are made in the FSAR are that the only things that might be affected in the Yard are a couple of stand pipes for the fire protection system and

they're above design basis flood level and plant grade is above design basis flood level. Well, PRA doesn't care about design basis flood level. PRA cares about a flooding hazard curve: What is the frequency of flooding up to a certain elevation and at some point the water spills over into buildings. Now, if that frequency is ten to the minus 200, that's fine. But that's a site-specific analysis. It depends on your flooding hazard sources, it depends on metrology, it depends on whether you've got the world's worst biggest dam next to your site, which you don't.

And I'm interested here, too, in seeing what type of an evaluation was done of the site-specific flooding hazard to reach the conclusion that essentially it's impossible to have a flood at the site that can flow water into buildings that contain any equipment in the PRA. And I will tell you that the condensate and feedwater systems are in the PRA, and they're in the turbine building. So it's not related to only safety-related buildings. It's kind of flood damage anything that's in the PRA.

And if there's some measurable frequency of that occurring, then I'm not sure about the conclusion that consideration of external flooding can have no impact on the PRA results. So I'm curious,

again, you know it's sort of the same thing of what technical analysis were performed to look at the site-specific flooding characteristics at the Fermi site to draw that conclusion that there was no need to add external flooding into the DCD PRA.

MR. SMITH: Understand. Thanks.

CHAIR CORRADINI: So, can I just interject? So in all three cases we're going to have to see something you're going to have to go off and gather or at least get to us so that we understand better.

MEMBER STETKAR: Right.

CHAIR CORRADINI: Okay. Do you have more?

MEMBER STETKAR: No, I'm done.

CHAIR CORRADINI: Other questions? Okay.

MEMBER STETKAR: Oh --

CHAIR CORRADINI: That's why I waited with baited breathe here.

MEMBER STETKAR: No, I don't think I do. Hold on just a second. It's a good thing about taking notes is I don't forget. The bad thing is -- no, I do not have any more. Thank you.

CHAIR CORRADINI: Okay. Staff will be coming up and have their turn.

Is Steve -- not Steve. Is Raj going to

start us off? Who is going to start us off?

MR. ANAND: Me.

CHAIR CORRADINI: Okay.

MR. ANAND: My name is Raj Anand. I'm one of the Project Managers working on the Fermi 3 COL application.

Today we plan to discuss Fermi Chapter 19, the PRA Results and Severe Accidents Evaluation and LOLA SER Review.

These SERs have no open items.

Chapter 19 provides the Fermi PRA and a severe accident evaluation and corresponding regulatory requirements.

Attachment 19-A to Chapter 19 SER is loss of large area of the plant due to explosion or fire is in a public domain.

Attachment 19-B LOLA SER is a non-public as well as some of the documents which are referenced in Attachment 19-A includes security-related information. The staff plans to discuss the non-public portion of the LOLA SER after the break in a closed-door meeting.

The technical review of the Chapter 19 PRA and severe accident is Mark Caruso and Jim Xu is an expert on seismic is also joining us on the table.

Now I would turn it over to Mark to discuss Chapter 19 PRA and the severe accident evaluation.

MR. CARUSO: Thank you, Raj.

Do you want to go to the next slide?

The first slide here is a summary of the pertinent regulations that apply. The only one I really want to talk about here is the second one, 52.79(d) where it basically says that if the COL is referencing a design certification, then at COL licensing time he's required to start with the DCD design PRA and update to address site and design specific parameters and features.

The other area requirements -- so that's really been the focus of this review is on the -- those specific parameters and features that are -- those features and parameters that are site/design-specific. The other requirements here are addressed by the Applicant by way of incorporating a ESBWR DCD by reference.

The next slide summarizes the guidance. I think you're all familiar with Interim Staff Guidance COL/DC-ISG-03. I think we've discussed that with you in the past. It supplements the guidance that's in the SRP and Regulatory Guide 1.206.

What we're showing for the site that margins evaluation, we have values for application COL-DC-ISG-20, and Jim Xu joins me and we'll be taking about the seismic margins analysis in a little bit.

MEMBER STETKAR: Mark, Detroit Edison will do a quantitative seismic PRA before fuel load, is that correct? Because, you know it's required basically under 50.71(h)(1).

MR. CARUSO: If there's a consensus standard.

MEMBER STETKAR: And there is for seismic.

MR. CARUSO: Then there will be.

MEMBER STETKAR: Okay.

MR. CARUSO: It's required.

MEMBER STETKAR: For the seismic margins discussion, I mean it's something they have to do because it's required, but that's this interim stopgap comparison until the seismic people perform some type of--

MR. CARUSO: I think that's going on.

MEMBER STETKAR: Okay.

MR. CARUSO: So this slide is a summary, basically sort of in review. The Applicant incorporated a Certified Design PRA and Severe Accident Evaluation by reference. And in their

application they initially indicated that -- they cite site-specific parameters and design features were enveloped out by a Certified Design PRA. But there were no detail at all on that, they issued RAIs to obtain supporting site-specific evaluation. And the Applicant provided a discussion of what those parameters were and features and their reasons for concluding that they were bounded by a Certified Design PRA.

And we looked at those bases. Now these are the plant-specific parameters and features that we were just talking about with the Applicant. Well, they describe their bases.

And they looked at this loss of off-site power frequency for Unit 2 and they compared it with was in the DCD, and found that it was lower and concluded that it was bounding. Now they didn't provide us the numbers --

MEMBER STETKAR: You just said they found it was lower. It can't be lower. The value that's used in the DCD is 3.59 times ten to the minus two per year from all causes. If I just take one event, the great Northeast Blackout in August 14, 2003 and divide it -- I'll even give them that they've operated through 2011; in 23 years of operating experience that

comes out to be 4.35 times ten to the minus two, which is larger than 3.59. So if they're indicating -- and that's from only grid-related events. I don't want to get into the four different categories.

So if their comparison concluded that it's smaller, I'm even more interested to think-- to see what that comparison was. Because that event alone, had there been no other events.

MR. CARUSO: Well, I agree. I didn't ask them. I didn't probe that.

MEMBER STETKAR: Okay.

MR. CARUSO: I felt that they were probable capable of figuring out what their loss of off-site power frequency was and it didn't occur to me to dig deep into that.

MEMBER STETKAR: Anyway, you've gone through it.

MR. CARUSO: And, I mean the idea that well what if it was a little bit higher, would I care? Right. I would care, but how much would I care? So, you know I considered how important it was the loss of off-site power in ESBWR. And, of course, this plant is a passive plant and so it's not so important as it is in other plants.

MEMBER STETKAR: Exactly.

MR. CARUSO: And for all these parameters, my focus was do I have, you know reasonable confidence that they're not way far off. Because to me the review at this point in time is really about is there something really different about this plant compared to the ESBWR design that I would be concerned about. And that tempered the depth of our review.

And I also considered, you know the particular planning that we're talking about, you know in the scheme of things in terms of risk, how important is it? How important is service water failure? When does it come in? Basically it comes into the FAPCS. The FAPCS needs service water to run because FAPCS runs on the diesels and stuff.

The thing about service water is that it's running out of time, so it's not a system where you --

MEMBER STETKAR: It is, but if it has to be reconfigured for certain events, you get valve failures in there that are modeled at all in PRA. And we don't need to take up the Subcommittee's time on certain discussions of members. I think that's kind of pointless. But the question is that I heard then comparisons that were done to draw certain conclusions. And I guess what I'm doing is challenging a bit about the level of depth that went

into those comparisons and to support those conclusions. You know, do I believe that the unavailability of plant service water is going to increase by a factor of a 1,000 or could it change same? It probably would -- you know would it be higher? I don't know. But that's the --

MR. CARUSO: I felt their description of their system in terms of arguments about the attributes of their liabilities were good ones, were strong ones compared to what's out there, which was basically modeled --

MEMBER STETKAR: But again, that's comparisons of absolute, it's not necessarily relatively in the context of this particular PRA.

MR. CARUSO: The other thing is that we don't -- you know, in this particular review we don't -- you know we're not reviewing the PRA. It's not our charter to --

MEMBER STETKAR: I understand.

MR. CARUSO: -- dig in and say did they get the exact right number for the loss of off-site power frequency

MEMBER STETKAR: Understood.

MR. CARUSO: So I guess I'm trying to give you a sense of the area we're coming from in terms of

our review and what our objectives are and what drives us. And not that I -- you know, I mean I value that you're challenging these things, too. I mean, I don't think they provided us all that much. They certainly didn't provide us with vigorous technical analysis to--

MEMBER STETKAR: Well, honestly, Mark, in terms of the three things that raised I'm personally a bit more interested in the last one about external flooding --

MR. CARUSO: Okay.

MEMBER STETKAR: -- that could have -- I don't know. I have to be careful about what I hypothesized, but of the three issues the external flooding could conceivable have a large numerical impact on the overall assessed risk. You know, I'm not inferring that it would challenge the notion that the plant is much safer than currently operating designs, but in terms of site-specific issues that could affect your understanding of the results of the design certification risk assessment and the contributors to that risk, the external flooding to me is -- I'm not going to talk about seismic stuff because we're all well aware of the seismic issues. But that is the one area where numerically it could be

different.

MR. CARUSO: Well, and we looked into Chapter 2 to the design of the plant and the flooding evaluation that was there and considered that in terms of likelihood of expectation of something, some flooding condition quite drastic that would be pouring into buildings and that sort of thing. And I think our feeling was that their discussion of the flood zones and what they expected in the flood zones was reasonable. And there's nothing out there, like you say. The issue is not what's in the Yard, because there's nothing in the Yard that has any power.

MEMBER STETKAR: There's nothing in the Yard. That's right.

MR. CARUSO: It's is it going to go to buildings and what it's going to take out. And, again, you start to think about ESBWR and you think about how it's designed.

We spent a fair amount of time considering right after Fukushima what flooding issues there might be with the ESBWR in particular batteries, that sort of thing. And if you look at the overall design, again you find that they're very well protected against flooding.

MR. TONACCI: Mr. Chairman --

MR. CARUSO: And so --

MR. TONACCI: Can we have IOU to come to back on these topics?

MEMBER STETKAR: We don't need to belabor the issues.

MR. CARUSO: Okay. Fine.

CHAIR CORRADINI: You guys were having a discussion. We will let it go on for a minute or more. Okay. Let's keep on going.

MR. CARUSO: All right. So the seismic margins evaluation Jim was the reviewer on that and he's going to present.

MR. XU: I think there's confusion about this type of plant-specific PRA. I think that the scope for COL was to satisfy 52.79(d)(1) which is actually the DCD PRA to incorporate the site-specific features.

MEMBER STETKAR: The terminology is --

MR. XU: I know, but they're not required to do PRA per 50.79(h)(1) you know before fuel.

MEMBER STETKAR: That's right. And that will be a plant-specific --

MR. XU: That will be a plant-specific PRA. This is just the gap we need to fill, you know between the --

MEMBER STETKAR: There's one applicant that characterizes this thing as the COL PRA.

MR. XU: Yes. That's probably not the--

MEMBER STETKAR: That's actually the term that they use.

MR. XU: Right. So for seismic margins, the scope of the COL is to accurately achieve a PRA base to estimate and to incorporate the site-specific features. In this case the Fermi site is hard rock which is very simple and meaningful one. And the GMLS for Fermi is fully enveloped by the CSDRS per the ESBWR DC. So in this case their seismic margins is covered by the extended design and geotechnical characteristic for the site are also falling into the generic site profile of the DC.

So, you know based on that -- you know, according to our guidance, the ISG-20, that satisfies the steps that need to be taken to operate the DC -- to bring the DC towards the zero state. So that's how we conclude their analysis, although it's very minimal, is satisfactory. Although the HCLPF values for all the structure systems components and the sequences will have to be confirmed prior to fuel load. That activity the Licensee will have fulfill.

MEMBER STETKAR: Well, I mean, they'll

have to have fragility curves and they're have to have hazard curves --

MR. XU: Yes. They will have to develop fragility curves and other things.

MEMBER STETKAR: That's down the line.

MR. XU: And do a rock bound.

So that's pretty much discussed for seismic margins.

MR. CARUSO: We talked about flooding the Yard. The plant-specific surface water flooding. In the ESBWR they assume that there's just one flood zone and all the pumps are failed, which needs to be bounded.

So the conclusions are the Applicant has addressed the required information related to PRA results and insights, and Severe Accidents evaluation. And we concluded the Chapter 19 is acceptable, it confirms to regulatory requirements.

CHAIR CORRADINI: Other questions by the Committee?

MEMBER BROWN: Yes.

CHAIR CORRADINI: Charlie?

MEMBER BROWN: It's not a question.

CHAIR CORRADINI: Go ahead.

MEMBER BROWN: It's an observation.

CHAIR CORRADINI: I asked for questions, not observations.

MEMBER BROWN: It's a concern. A concern. Okay. And I'm going to roll it back to a discussion that we had from yesterday. And I've listened to the interchange on the PRAs and the fact, you know the unrelated number that was used apparently didn't reflect --

MEMBER STETKAR: Well, be careful.

MEMBER BROWN: Well, I mean it's a small number, but I mean it's a number. The number was higher than it was in the DCD or whatever the quoted number was. And yet and here's "the site-specific PRA" coming around and they used the process that the numbers were wrong, at least for that one particular piece.

So if they're using the process, then we don't have to check to make sure that it's okay that it was applied properly and that the numbers and the inputs and the assumptions are valid based on the actual plant-specific, it's not checked.

The same thing applied I heard earlier on the PTLR report that as long as they use the method and they do their plant-specific PTLR curves, hazardous material characteristics, but as long as

they use the method we don't have to look at them, and we don't because it's assumed that they got the values.

Now I'm going to step back into the sort of discussion that we had yesterday on this plant, the Detroit plant using this or at least they proposed this as the risk-informed issues under tech specs. And one of the arguments there is if they get into a potential system out of service or maintenance, whatever they have to do with it and they can't complete it in time, as long as it's within a certain period of time they do an analysis based on the PRA that they have for the systems, that they can extend that completion time up to a certain other time.

So the PRAs are being used for decision processes. I don't know how many circumstances, but at least in that circumstance but yet nobody has checked to see that the PRA that was initially inspected with has actually used the proper assumptions, the numbers were plugged in correctly, et cetera, et cetera, or even audited. Now they can be, but it doesn't mean that they have been. And the story was that as long as you use the method or as long as they use the process they're not checked.

So consistent with our concern and

observation about how these things are being used --

CHAIR CORRADINI: So just to move --

MEMBER BROWN: It's not an action item, Mike.

CHAIR CORRADINI: I understand.

MEMBER BROWN: I'm just making that at an observation.

CHAIR CORRADINI: But I mean this is observation, correct?

MR. CARUSO: Well, for risk-informed tech specs, I mean any risk-informed application we will look at the PRA for that.

Now I think if you're talking about -- this is not newly -- this is not Firma --

MEMBER STETKAR: Yes, I was going to say this discussion is --

CHAIR CORRADINI: I don't know if it's germane to this.

MEMBER BROWN: It's a new reactor.

CHAIR CORRADINI: Okay. But I don't want to --

MR. CARUSO: I think your other examples are right on the money. But that one I'm not --

MEMBER BROWN: Look, all these vast realm of methods, processes and regulations, have been on

the Committee for a little over three years, so I don't pretend to know all those nuances. I hear process. I hear methods and all the rest of it and decisions are being made with that, yet I don't get a lot of comfort out of how much that the applicants or doing, or the licensees is then having their changes from the design basis checked after the fact. I just don't hear a lot about that. It's a concern to me.

IT may not be a concern to the other members, but it is to.

Mike, that's the observation I had over the last two days and after listening to the discussion today on at least two technical subjects.

CHAIR CORRADINI: Okay. Point taken.

Other members comments or questions?

All right. Before we go to break, I was just informed that we have members of the public on line that may have questions, comments.

MR. BROWN: It's open.

CHAIR CORRADINI: It's open? I'm sorry. I didn't hear the beep.

So is there a member of the public that needs to make a statement? Okay.

MEMBER STETKAR: Ask if there's anybody out there.

CHAIR CORRADINI: Is there anybody out there?

MEMBER STETKAR: If there's anybody on the line, just say something, make some noise so we know the line is actually open.

CHAIR CORRADINI: Okay. So nobody's out there either.

MEMBER STETKAR: Well, maybe but the line may be closed.

CHAIR CORRADINI: It is open.

MR. BROWN: You can hear the noise. Yes.

CHAIR CORRADINI: All right. There are no comments. There is nobody out there.

At this point we'll take a break until 2:15 in closed session.

(Whereupon, a 1:55 p.m. a recess to resume at 2:11 p.m. in Closed Session until 3:21 p.m.)

CHAIR CORRADINI: So we're in open session.

So, here's what I've got. In terms of Chapter 5 -- let me just -- well, while I compare notes, let me take notes and let me go around the room first with the Committee and see if there's additional things that either amplify what I've written down or review things that I've missed. Can we start with Tom

and we'll just go around.

CONSULTANT KRESS: You don't want general comments now, you just want to know --

CHAIR CORRADINI: No, I want general comments, specific things that you're concerned about, anything that's on your mind.

CONSULTANT KRESS: Oh, okay. Well, I can do that.

CHAIR CORRADINI: Well, then I'd welcome it.

CONSULTANT KRESS: Okay. Well, my first comment is I think we were little hard on staff. I think they did a good job of knowing what the regulations are and what the guidance on these for COLAs are, and that they did a pretty good job of actually reviewing the things and showing the appropriate things we're doing. So, I didn't want to leave the impression that the staff had not done a good job.

One of the issues that I was particularly interested in following up on is the hydrogen problem, particularly burning and how much hydrogen gets to the control room. And I'd like to know more about how it's calculated, what are the chi over q values for hydrogen.

CHAIR CORRADINI: Tom, this is in general. Just for clarification, this is in general or particularly because of the issue we raised with the hydrogen water chemistry system?

CONSULTANT KRESS: It's in general.

CHAIR CORRADINI: General. Okay.

CONSULTANT KRESS: And then the hydrogen water chemistry is probable high on my list.

CHAIR CORRADINI: Okay. That's fine. Thank you.

CONSULTANT KRESS: I think I agree with John Stetkar on the question of consistency and use of importance factor to determine RTNSS and SSCs. I think I'd like to see that consistency.

And I agree with him on the concept of you're interested in preserving relative risk and not absolute.

I don't have much to say about LOLAs. I didn't want to say too much. But one of the things that I don't know if it exists or not, I think there should be some general sense of requirements that are not specific but such things as, you know they're okay to have a defense-in-depth requirement. You need to have a list of things, like you need to be able to possibly restore power and you need to be able to get

water on-site and pump it. You need to be able to have a communication with the various responders. You need to have a designated leader in case you have a catastrophic event. You need to have the off-site ability to track events, which may have to do with having portable measurement equipment to know what's happening.

CHAIR CORRADINI: These are things that may or may not be NEI guidance?

CONSULTANT KRESS: No. I don't know what's in NEI guidance.

CHAIR CORRADINI: That's what I was trying to get at.

CONSULTANT KRESS: These are a list of general things. I think such list needs to exist, but I haven't seen it.

Let's see if I have anymore things. I think that's about all I have.

CHAIR CORRADINI: Graham?

CONSULTANT WALLIS: Well, I thought until we got to the LOLA, everything was pretty straightforward really. I mean, I don't think we gave the staff a hard time.

CHAIR CORRADINI: Okay.

CONSULTANT WALLIS: I think we gave them

an easier time than usual.

CONSULTANT KRESS: Oh, okay.

CONSULTANT WALLIS: Because everything was sort of straightforward, really. There was very little--

CHAIR CORRADINI: Tom's getting soft. He thought you were being too --

CONSULTANT WALLIS: Nothing of any concern until we got to the closed session.

CHAIR CORRADINI: Okay. Sorry, did you have more?

CONSULTANT WALLIS: That's it, no.

CHAIR CORRADINI: Sam?

MEMBER ARMIJO: I agree with Graham. I think the idea of an incorporation by reference is the right way -- you know it's worked here. We forgot. We started asking question that we had already asked previously on the design certification work. It's okay to raise them again, but those are settled, particularly things like the vessel and embrittlement and things like that. It's all in the DCD, so we just got to look at them again.

Except for the Chapter 19, which is pretty murky to me and it will probably always stay murky. The best I can say there is you put together a list of

equipment and actions that will be nice to do, good to have in the event of some event that you can't predict and you got to be flexible. And that's the best I can say from that. You're probably going to see more of that with response for Fukushima. But that's it.

CHAIR CORRADINI: Okay. Said?

MEMBER ABDEL-KHALIK: I have no additional comments.

CHAIR CORRADINI: Nothing.

MEMBER STETKAR: Nothing.

MEMBER STETKAR: Nothing more. I'm not going to say what I've already said three times a fourth time.

CHAIR CORRADINI: Charlie?

MEMBER BROWN: Nothing more.

CHAIR CORRADINI: Okay. So let me tell you what I've got down here.

On Chapter 5 I did not have anything that either DTE or staff were going to come back to us. It's just notes to myself about things such they've committed to the hydrogen water chemistry.

In Chapter 16 what I heard was that there are tech specs and surveillance for vacuum breakers, but they're going to be determined by testing that has been committed to by GEH. So it's nothing to come

back to us, I just want to keep that on the burner as we come back when our next Subcommittee meeting will be on, I think, Chapter 9 and 3 will be there. I'm looking at Adrian. I can't remember what's on November 30th.

MR. MUNIZ: Chapter 9, 11, 12 and 13.

CHAIR CORRADINI: Okay. So not 3? Three is still to come. So everyone remind themselves in 2012 they'll have the fun of Chapter 3.

Hazardous gases, Dick had to depart, but he wanted to make sure the comment wa that even though staff feels that given the analyses in terms of hydrogen transport and associated control room habitability issues are set, even though it may not even be safety-grade, it may make good sense and good practice to have some sort of monitoring of that. Again, noting that comes out of that.

Material specs we talked about.

And they hydrogen water chemistry system and hydrogen transport, just to generalize what Tom said, I think we are owed something there. And what I've written down, I think I've captured it, was that we want to some something relative to analysis of the hydrogen water chemistry, it's impact in terms of release whether it be due to habitability which they

say is not a problem, but potential combustion. All right? And what I heard and DTE can correct me if I misheard, was that a lot of this is still roughly designed, generally designed so details are yet to be determined. But we would like to hear more about that, particularly in terms of combustion.

For Chapter 17 I wrote down the kV and risk-importance measures and I put it as a comment. I didn't hear as anything they have to come back and talk about.

MEMBER STETKAR: Well, I'd like to hear how they've thought through that process of transitioning from --

CHAIR CORRADINI: In terms of?

MEMBER STETKAR: -- the existing D-RAP list that's incorporated by reference at this stage to the Maintenance Program --

CHAIR CORRADINI: Okay.

MEMBER STETKAR: -- which they have a firm commitment. I mean, they've made references to NEI guidance and documents that are in turn endorsed by that guidance that indeed have different numerical criteria, at least as they're applied. I mean, how they're going to make the transition --

CHAIR CORRADINI: I'm sorry, you're right.

MEMBER STETKAR: -- is something I'd like to hear about.

And then finally in Chapter 19 I think the biggest set of things is we wanted to hear a little bit more about the justification, the bases by which loss of off-site power, loss of service water and particularly flooding. I don't know whether it's internal or external. Let's say flooding on the property are not a concern.

CHAIR CORRADINI: We want to see more of the technical basis.

MEMBER STETKAR:

You know, decisions were reached. We want to know what were the actual basis for that conclusion.

CHAIR CORRADINI: Right.

MEMBER STETKAR: And some of them were more detailed than the quite qualitative arguments that are at least present in the FSAR and echoed in the SER.

CHAIR CORRADINI: Okay. So in terms of Chapter 6 with hydrogen and in terms of Chapter 19 about that, I think those are the two things that are kind of open to hear back from DTE when they're ready to discuss it with us.

Other than that, I want to thank Detroit

Edison and the staff again. I think it went pretty well. And I don't have any other issues or questions.

Our next Subcommittee meeting is November 30th. As Adrian said, we're going over 9, 11, 12 and 13 and that's on the morning of the 30th.

I just want to remind everybody that sounds like a light load, but Chapter 9 is cats, dogs; it's a lot of stuff. Okay. So please, it's going to be a large thing to look through and be ready.

We have it arranged so that we can actually go a little bit into the afternoon before we start the Thermal Hydraulics Subcommittee. All right?

Other then that, thank you all. Meeting is adjourned.

(Whereupon, at 3:32 the Subcommittee meeting was adjourned.)

DTE Energy®

Fermi 3 COLA
Presentation to ACRS Subcommittee
Resolution to Chapter 8
Open ACRS Questions

DTE Energy

Chapter 8 Open ACRS Questions

- *Do the switchyard breakers have one or two closing coils?*
- *Provide description of off-site transmission system, including the following:*
  - *Describe the routing where Fermi 2 and Fermi 3 share a common transmission corridor.*
  - *Identify the physical separation between the Fermi 2 and the Fermi 3 transmission lines where the lines share common transmission towers.*

Chapter 8, Electrical, Open ACRS Questions

DTE Energy

Do the switchyard breakers have one or two closing coils?

- Each switchyard breaker has a single closing coil.

Considerations for restoring off-site power

- Switchyard is arranged in a breaker and a half configuration.
- Design of the Switchyard minimizes probability of single incidence of equipment failure causing the simultaneous or subsequent loss of both preferred power circuits (PPS) – IEEE 765-2002, “IEEE Standard for Preferred Power Supply (PPS).”
  - The design process will include detailed evaluations of system restoration.
  - Evaluations will include considerations of the ability to restore off-site power from at least one transmission line to the unit.

Chapter 8, Electrical, Open ACRS Questions

Provide description of off-site transmission system, including the following:

- *Describe the routing where Fermi 2 and Fermi 3 share a common transmission corridor. Include figure(s) that show locations, spacing and orientation.*
- *Identify the physical separation between the Fermi 2 and the Fermi 3 transmission lines where the lines share common transmission towers.*

Chapter 8, Electrical, Open ACRS Questions

DTE Energy

Fermi 2 Transmission System

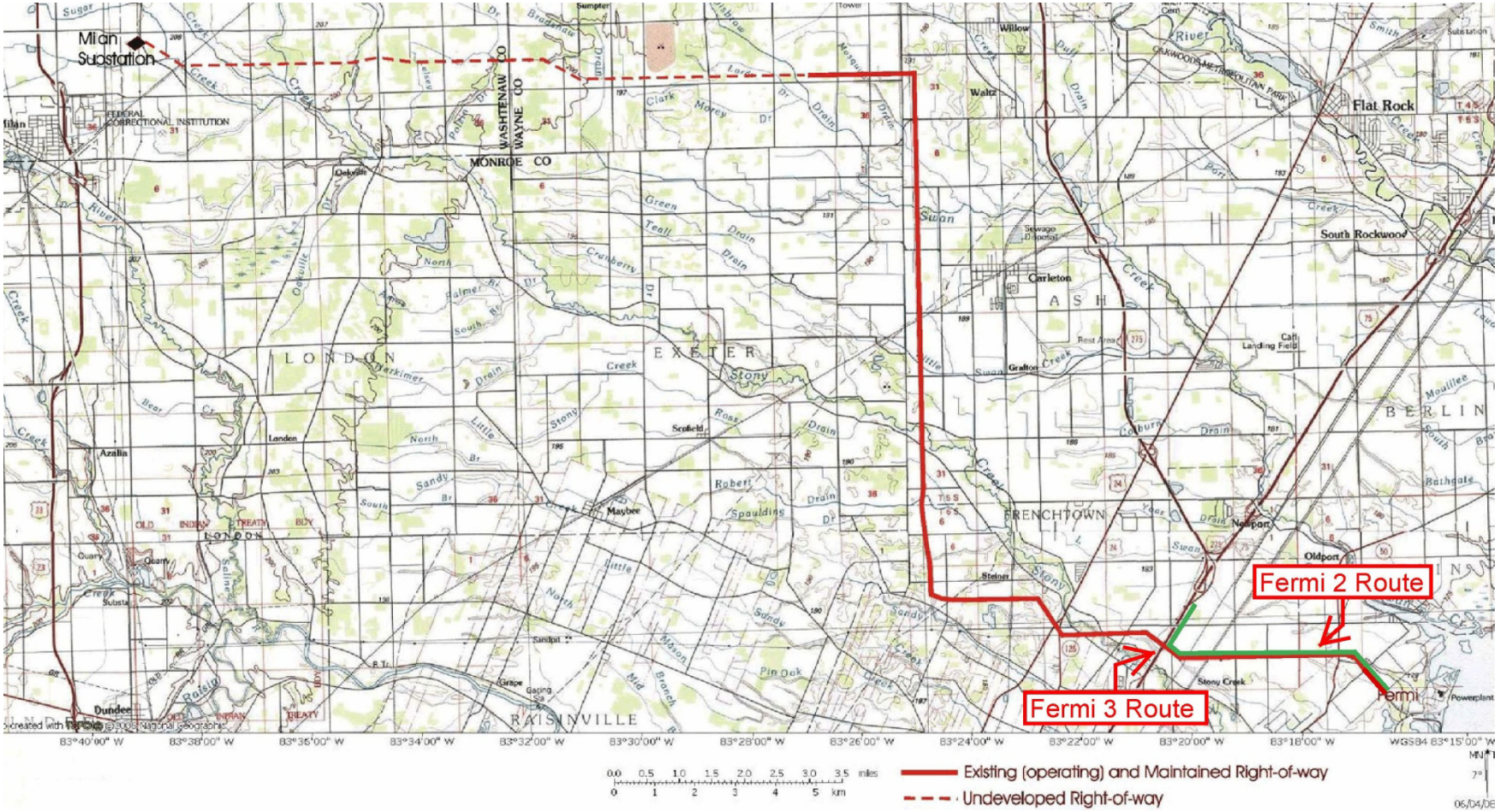
- 345 kV Transmission System
- 120 kV Transmission System
- Common Right of Way
- Sufficient spacing of the lines such that collapse of either of the 345 kV towers would not interrupt the other 345 kV line

Fermi 3 Transmission System

- 345 kV Transmission System
- Common Right of Way
- Sufficient spacing such that failure of any one 345 kV tower or pole due to structural failure can at most disrupt and cause loss of power distribution to itself and an adjacent line

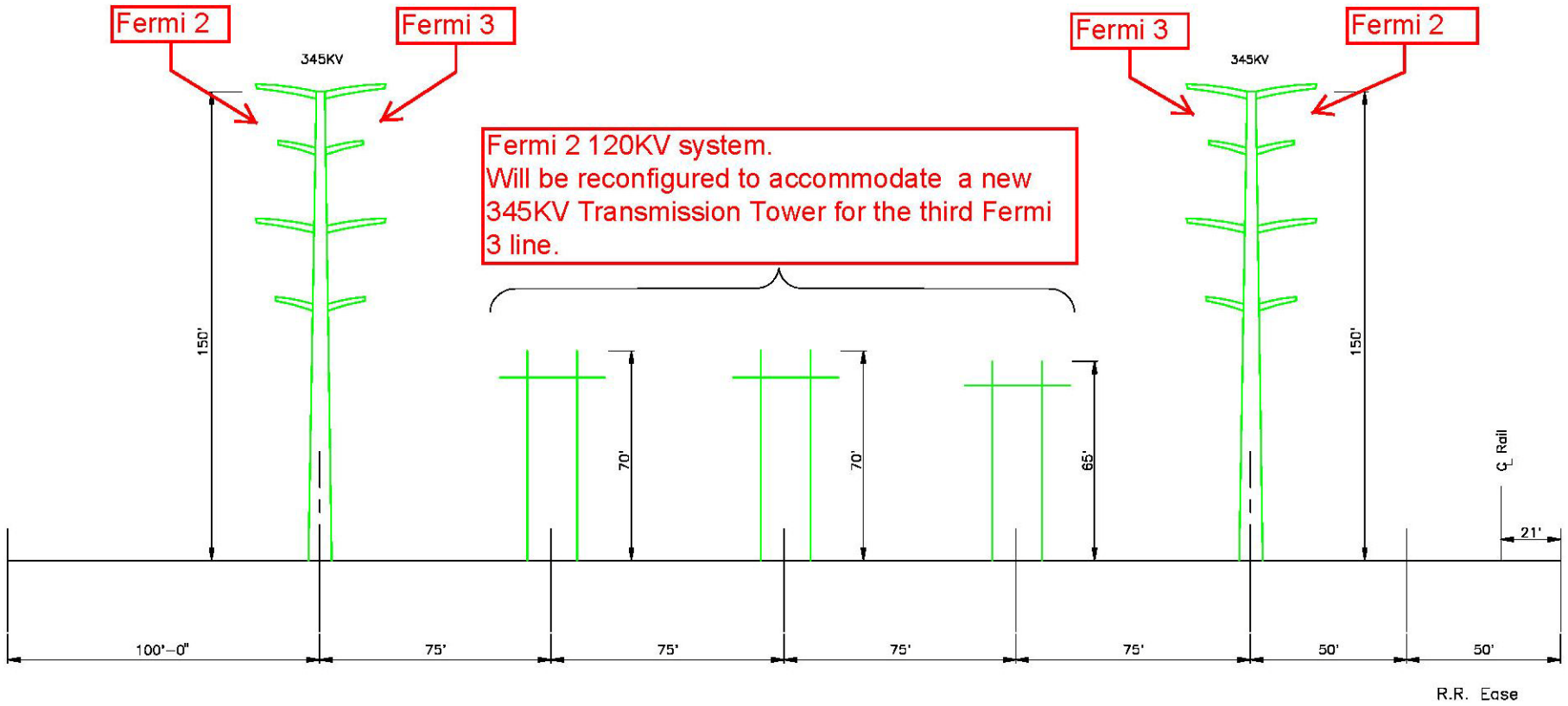
Chapter 8, Electrical, Open ACRS Questions

Transmission System Routing (345 kV Lines)



DTE Energy

Fermi 2 and 3 Common Corridor Tower Spacing



Chapter 8, Electrical, Open ACRS Questions

DTE Energy

Fermi 2 and 3 Common Corridor – Looking West

Chapter 8, Electrical, Open ACRS Questions

DTE Energy

Fermi 2 and 3 Common Corridor – Looking East

Chapter 8, Electrical, Open ACRS Questions

DTE Energy

Fermi 2 and Fermi 3 Common Transmission Tower

- Fermi 2 and Fermi 3 Lines are Hung on Opposite Sides of 345 kV Transmission Tower.
- Separation between Fermi 2 and Fermi 3 345 kV transmission lines on common transmission tower are either 30 (shortest arms) or 45 feet (longer arms).
- Separation meets National Electrical Safety Code and ITC*Transmission* requirements.

DTE Energy®

Fermi 3 COLA
Presentation to ACRS Subcommittee
Chapter 5

Chapter 5, Reactor Coolant System and Connected Systems
Chapter Topics

DTE Energy

Addresses the following sections (Incorporates the DCD by Reference with Standard COL Items and Standard Supplemental Information).

5.2 Integrity of Reactor Coolant Pressure Boundary

5.3 Reactor Vessel

5.4 Component and Subsystem Design

DTE Energy

5.2 Integrity of Reactor Coolant Pressure Boundary

STD SUP Identifies ASME Codes applicable to preservice and inservice inspection and testing programs. Same Code Editions as specified in the DCD.

STD COL Identifies that all Class 1 austenitic or dissimilar metal welds are included in the referenced certified design.

STD COL Provides preservice and inservice inspection and testing program descriptions and implementation milestones.

DTE Energy

5.2 Integrity of Reactor Coolant Pressure Boundary (continued)

STD COL Describes processes to preserve accessibility to piping systems to enable nondestructive examination (NDE) of ASME Code Class 1 austenitic and dissimilar metal welds during inservice inspection.

STD COL Describes procedures that will be used for leak detection monitoring.

DTE Energy

5.3 Reactor Vessel

STD COL The pressure-temperature curves are developed in accordance with the Pressure Temperature Limit Report (PTLR). Commitment to update pressure-temperature curves prior to fuel load to reflect the plant specific material properties, if required.

STD COL Describes the reactor vessel material surveillance program.

STD SUP Plant operating procedures will be developed to implement the pressure-temperature curves.

DTE Energy

5.4 Component and Subsystem Design

STD SUP Descriptions included for:

- Operating procedures will provide guidance to preclude water hammer in Reactor Water Cleanup/Shutdown Cooling System.
- Reactor Coolant System (RCS) Vents.
  - Human factors analysis of the control room displays for the RCS vents is included in DCD Chapter 18.
  - Operating procedures will be developed to govern use of the vents.

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Presentation to the ACRS Subcommittee

Fermi Unit 3 COL Application Review

SER Chapter 5 with No Open Items
"Reactor Coolant System and Connected Systems"

October 21, 2011

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Summary of Technical Discussion Points for Fermi 3 COL Chapter 5

	FSAR Section	Summary of Supplemental Information
5.1	Summary Description	J. Hale (IBR Section)
5.2	Integrity of Reactor Coolant Pressure Boundary	J. Hale (IBR Sections 5.2.1, 5.2.2, 5.2.3, & 5.2.5)
5.2.4	Preservice & Inservice Inspection & Testing of Reactor Coolant Pressure Boundary	T. Steingass (Site-Specific)
5.3.1	Reactor Vessel Materials	J. Jenkins (Site-Specific)
5.3.2	Pressure-Temperature Limits	J. Jenkins (Site-Specific)
5.3.3	Operating Conditions	J. Jenkins (Site-Specific)
5.4	Reactor Coolant System Component & Subsystem Design	J. Hale (IBR Section)

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Section 5.2.4 – Integrity of Reactor Coolant Pressure Boundary

- **Staff's Review of COL & Supplemental Items:**
  - COL Item 5.2-1-A: Preservice and Inservice Inspection and Testing of Reactor Coolant Pressure Boundary
  - COL Item 5.2-3-A: Accessibility
  - SUP Item 5.2-1: System Leakage & Hydrostatic Pressure Tests
  - Post Combined License Activities:
    - ISI – Implemented prior to commercial service (COM 13.4-024)
    - PSI – Completion prior to initial plant startup (COM 13.4-026)
  - Staff Conclusion:
    - The applicant has adequately addressed COL and Supplemental information regarding Fermi 3 COL FSAR.

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Section 5.3.1 – Reactor Vessel Materials

- **Staff's Review of COL & Supplemental Items:**
  - **COL Item 5.3-2-A: Supplemented RVSP Description**
  - **COL Item 16.01-1-A 5.6.4-1: Pressure-Temperature Limit Curves.**
  - **Post Combined License Activity:**
    - **If the test (RVSP) results indicate a change in the Technical Specifications is required, the expected date for submittal of the revised Technical Specification will be provided with the (Summary Technical) report. (COM 5.3.001)**
  - **The applicant identified the following license condition:**
    - **A complete reactor vessel material surveillance program will be developed prior to fuel load.**
  - **Staff Conclusion:**
    - **The applicant has adequately addressed COL and Supplemental information regarding Fermi 3 COL FSAR.**

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Section 5.3.2 – Pressure-Temperature Limits

- **Staff's Review of COL & Supplemental Items:**
  - COL Item 16.0-1-A 5.6.4-1: Pressure-Temperature Limit Curves
  - Pressure-Temperature Limit Report (Technical Report) submitted by the applicant.
  - Post Combined License Activities:
    - Prior to fuel load, the pressure-temperature limit curves will be updated to reflect plant-specific material properties, if required (COM 5.03-002).
  - Staff Conclusion:
    - The applicant has adequately addressed COL and Supplemental information regarding Fermi 3 COL FSAR.

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Section 5.3.3 – Reactor Vessel Integrity

- **Staff's Review of COL & Supplemental Items:**
  - SUP Item 5.3-1: Operating Conditions
    - Development of plant procedures is addressed in Section 13.5, "Plant Procedures", and requires compliance with Technical Specifications to ensure that P-T limits are not exceeded.
  - Staff Conclusion:
    - The applicant has adequately addressed COL and Supplemental information regarding Fermi 3 COL FSAR.

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Chapter 5 – Conclusions

In conclusion, with the exception of the confirmatory items identified, the staff has confirmed that the applicant has addressed the relevant information as specified in the referenced ESBWR DCD. In addition, the staff concludes that the applicant has met the applicable regulations and is in conformance with applicable guidance with respect to Reactor Coolant Pressure Boundary, Reactor Vessel Materials, Pressure-Temperature Limits, and Reactor Coolant System Components and Subsystems.

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

SER with No Open Items
Chapter 5.0

Questions/Comments

DTE Energy®

Fermi 3 COLA
Presentation to ACRS Subcommittee
Chapter 16

Chapter 16, Technical Specifications

Fermi 3 Technical Specifications implement the generic technical specifications (GTS) in the ESBWR Design Certification.

Fermi 3 addresses the COL items in the GTS consistent with the guidance of Interim Staff Guidance (ISG) DC/COL-ISG-08, “Necessary Content of Plant-Specific Technical Specifications When a Combined License is Issued.”

Chapter 16, Technical Specifications

DTE Energy

COL Items Addressed in Fermi 3 Technical Specifications

- Fifty-two (52) total COL Items that address twenty-three (23) topics.
- Of the 23 topics, three (3) are considered site-specific.
- Remaining topics are addressed as standard COL items.

Chapter 16, Technical Specifications

DTE Energy

Topics Addressed in Fermi 3 Technical Specifications COL Items

- Flexibility for Slow Control Rod Scram Times
- Concentration of Sodium Pentaborate
- Hazardous Chemicals
- Pressure and Temperature Limits Report (PTLR)
- Minimum Critical Power Ratio – Main Turbine Bypass System
- Main Turbine Bypass Valve
- Minimum Critical Power Ratio – SCRRI/SRI
- Plant Location
- Non-licensed Operators for Two Units
- Minimum Qualification Standards for Unit Staff
- Guidance Documents for Procedures

Chapter 16, Technical Specifications

DTE Energy

Topics Addressed in Fermi 3 Technical Specifications COL Items (continued)

- Temporary Outdoor Liquid Storage Tanks
- Exemptions for Regulatory Guide 1.163
- Multi-Unit Site Reporting Options
- Annual Radiological Environmental Operating Report Format
- Additional Core Operating Limits for COLR
- Response Time Testing
- Minimum and Nominal Control Rod Scram Accumulator Pressure
- Acceptance Criteria for Battery Charger Testing
- Acceptance Criteria for Verification for Fully Charged Battery
- Battery Cell Parameters
- Battery Margin for Aging Factor and State of Charge Uncertainty
- Setpoint Control Program Methodology and Implementation

Chapter 16, Technical Specifications

DTE Energy

Site-Specific COL Items

- Hazardous Chemicals – Based on site-specific analyses Fermi 3 does not require safety-related instrumentation to monitor the control room for toxic hazards.
- Plant Location – The location of Fermi 3 is provided.
- Multi-Unit Site Reporting Options – Allows for a single submittal for a multiple-unit station for the annual radiological environmental operating report and radioactive effluent release report.

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Presentation to the ACRS Subcommittee

(PM SLIDE)

Fermi Unit 3 COL Application Review

Chapter 16.0 SER with no Open Items "Technical Specifications"

October 21, 2011

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Discussion Points for Technical Specifications (TS) Fermi Unit 3

Topic	Presenter
COLA Part 2 — FSAR Section 16.0 (IBR Section) • Supplemental information (STD SUP)	J. Hale
COLA Part 4 — Plant-specific TS (PTS) & bases • COL Information Item 16.0-1-A ➢ STD COL Items and EF3 COL Items • Use of site-specific information • Use of bounding information • Use of NRC-approved methodology and administrative program specification	C. Harbuck
Requests for Additional Information (RAIs)	C. Harbuck
Conclusions	C. Harbuck

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

COL Information Item 16.0-1-A

- DCD Table 16.0-1-A, "COL Applicant Open Items"
  - Lists 52 sets of bracketed site-specific information covering 23 topics
  - Provides guidance (Reviewer's Notes) for completing each set of site-specific bracketed information
- Staff review of PTS focused on acceptability of site-specific information; contributing branches:
  - DE: EEB, ICE2, EMB2
  - DSRA: SRSB, SBCV, SBPB
  - DCIP: CTSB, CHPB, CQVB

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

COL Item Resolution with Site Specific Information
Option 1 of DC/COL-ISG-08

- Operational flexibility not adopted - bracketed info. omitted
  - Removal of response time testing for specified components
  - Apply MCPR penalty as alternate means to meet LCO
  - Relaxed action or surveillance requirements
- Non-applicable bracketed placeholders omitted
  - Provisions for hazardous chemicals
  - Provisions for unprotected outdoor liquid rad-waste storage tanks
  - Reference to additional COLR-related LCOs
  - Exceptions to RG 1.163 in containment leakage rate test program
  - Minimum non-licensed staff for two units

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

COL Item Resolution with Site Specific Information
Option 1 of DC/COL-ISG-08 (continued)

- Battery cell parameters
- Battery margin and aging factor for state of charge uncertainty
- Plant location description
- Administrative Controls
  - Minimum qualification standards for unit staff
  - Guidance documents for procedures
  - Annual radiological environmental operating report format for multiple unit site
  - Radioactive effluent release report format for multiple unit site

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

COL Item Resolution with Useable Bounding Information
Option 2 of DC/COL-ISG-08

- RCS Pressure-Temperature (P-T) Limits
  - Definition of P-T limits report (PTLR) – PTS 1.1 and PTS 3.4.4
  - RCS temperature at or below which SR 3.4.4.4 and SR 3.4.4.5 require verifying reactor vessel flange and head flange temperatures are within limits in MODE 5
  - PTLR administrative control – PTS 5.6.4
  - Reference to NRC-approved P-T limits methodology NEDC-33441P, Rev 5 – PTS 5.6.4.b and PTS 3.4.4 bases
    - Confirmatory Item 16-1 to update citations from Rev 4 to Rev 5
- Battery charger test minimum duration – PTS 3.8.1
- Control rod scram accumulator minimum pressure limit – PTS 3.1.5 and PTS 3.9.5

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

COL Item Resolution with NRC Approved Methodology
Option 3 of DC/COL-ISG-08

- Site-specific (or COL) information identified during DC review as candidates for resolution using Option 3
  - Limiting Safety System Settings (e.g., allowable [as-found actuation settings] values)
  - List of instrumentation functions for post-accident monitoring (PAM) variables (Type A, B, and C variables as defined in RG 1.97, Rev 4)
- Generic TS specify the following administrative control programs, which reference NRC approved methodologies
  - GTS 5.5.11, "Setpoint Control Program" includes a bracketed reference to be confirmed by the COL applicant —using Option 1
    - NEDE-33304P-A,"GEH ESBWR Setpoint Methodology," Rev 4 dated May 2010
  - GTS 5.5.14, "Post-accident Monitoring Instrumentation Program"

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

COL Item Resolution
Requests for Additional Information

- **RAI 16-1** (ICE2) – Incorporate by reference PAM specifications (GTS 3.3.3.2, "PAM," GTS 5.5.14, "PAM Instrumentation Program," and GTS 5.6.5, "PAM Report"
- **RAI 16-2** (EEB) – Provide supporting documentation for battery float current value of 30 amps as indication of full charge
- **RAI 16-4** (CTSB) – Provide correct revision of
  - NEDE-33304P-A,"GEH ESBWR Setpoint Methodology" in GTS 5.5.11, "Setpoint Control Program" – Rev 4 dated May 2010
  - NEDC-33441P-A, "GE Hitachi Nuclear Energy Methodology for the Development of ESBWR Reactor Pressure Vessel Pressure-Temperature Curves," – Rev 5 dated February 2011
- **RAI 2.2.3-5** (SBPB) – Justify not including technical specification provisions for protecting against hazardous chemicals

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

CONCLUSIONS AND FINDINGS
Fermi 3 FSAR Chapters 16 & 16B Plant-specific TS and Bases

- The Staff finds that Fermi 3 FSAR Chapters 16 and 16B
  - Correctly incorporate by reference ESBWR generic DCD Chapters 16 and 16B;
  - Include acceptable site-specific TS and bases to resolve COL Information Item 16.0-1-A; and
  - Provide acceptable and complete plant-specific TS and bases.
- The Staff finds that the Fermi 3 plant-specific TS and bases are adequate for use in the operation of EF3.
- The Staff concludes that the Fermi 3 plant-specific TS and bases satisfy 50.36, 50.36a, 52.79(a)(30), and Section IV.A.2, paragraphs c and e, of the draft ESBWR DC rule appendix to 10 CFR Part 52.

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

SER with No Open Items
Chapter 16.0

Questions/Comments

DTE Energy®

Fermi 3 COLA
Presentation to ACRS Subcommittee
Chapter 17

Chapter 17, Quality Assurance, Chapter Topics

DTE Energy

17.1 Quality Assurance During Design

17.2 Quality Assurance During Construction and Operations

17.3 Quality Assurance Program Description

17.4 Reliability Assurance During Design Phase

17.5 Quality Assurance Program Description – Design Certification, Early Site Permits and New License Applicants

17.6 Maintenance Rule Program

Chapter 17, Quality Assurance

17.1 Quality Assurance During Design

EF3 SUP Refers to Section 17.5 for Quality Assurance (QA) program applied during COLA preparation and site specific design activities.

Chapter 17, Quality Assurance

17.2 Quality Assurance During Construction and Operation

EF3 COL Refers to Section 17.5 for QA program applied during construction and operations phases.

EF3 COL Refers to Section 17.5 for QA program applied to design activities required to adapt the certified plant design to Fermi 3 plant-specific implementation.

DTE Energy

17.3 Quality Assurance Program Description

EF3 COL Refers to Section 17.5 to provide a Quality Assurance Program Description (QAPD) describing the overall project QA program.

DTE Energy

17.4 Reliability Assurance Program During Design Phase

STD COL There are no site-specific SSCs within the scope of the Reliability Assurance Program (RAP) and the quality elements for all SSCs within the scope of the Design-RAP (D-RAP) are in accordance with the QAPD.

STD COL Provides a description of operational reliability assurance activities. Objectives are integrated into QA, maintenance, and other operational programs (e.g., ISI/IST).

DTE Energy

17.5 Quality Assurance Program Description - Design Certification, Early Site Permits, and New License Applicants

EF3 COL Refers to DCD Section 17.1 for the Quality Assurance for Design Certification activities.

EF3 SUP Provides a summary of Quality Assurance applied during preparation of the Fermi 3 COLA.

EF3 COL The QAPD for plant specific implementation, construction and operations is based on NEI 06-14A, “Quality Assurance Program Description.”

DTE Energy

17.6 Maintenance Rule Program

STD COL Describes the Maintenance Rule Program by incorporating by reference NEI 07-02A, “Generic FSAR Template Guidance for Maintenance Rule Program Description for Plants Licensed Under 10 CFR Part 52.”

STD SUP Describes the relationship of the Maintenance Rule Program with reliability assurance activities.

STD SUP Describes the condition monitoring program for underground cables.

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Presentation to the ACRS Subcommittee

Fermi Unit 3 COL Application Review

SER Chapter 17 with No Open Items
"Quality Assurance"

October 21, 2011

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Summary of Technical Discussion Points for Fermi 3 COL Chapter 17

	FSAR Section	Summary of Supplemental Information
17.0	Introduction	J. Hale (IBR Section)
17.1	Quality Assurance During Design	J. Hale (IBR Section)
17.2	Quality Assurance During Construction & Operations	J. Hale (IBR Section)
17.3	Quality Assurance Program Description	J. Hale (IBR Section)
17.4	Reliability Assurance Program During Design Phase	T. Hilsmeier (Site-Specific)
17.5	Quality Assurance Program Description – Design Certification, Early Site Permits, & New License Applicants	G. Lipscomb (Site Specific)
17.6	Maintenance Rule Program	T. Hilsmeier (IBR Section to NEI 07-02A)

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Section 17.4 – Reliability Assurance Program During Design Phase

- **Summary of FSAR Section 17.4:**
  - Incorporated by reference ESBWR DCD, Section 17.4
  - Addressed COL information items:
    - COL Item 17.4-1-A
    - COL Item 17.4-2-A
- **Status of SER Section 17.4:**
  - No open items
  - One notable confirmatory item (17.04-2)

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Section 17.4 – Reliability Assurance Program During Design Phase

- **Staff's Review of COL Item 17.4-1-A:**
  - COL Item 17.4-1-A: Identify site-specific RAP SSCs
  - FSAR specified Commitment 17.4-001 to identify the site-specific RAP SSCs prior to initial fuel load
  - RAI 17.04-2: Site-specific RAP SSCs are subjected to QA controls and should be identified in COL application
  - Applicant's response (May 25, 2011):
    - FSAR incorporates by reference the list of RAP SSCs in ESBWR DCD, Section 17.4
    - No additional RAP SSCs identified due to the bounding nature of ESBWR PRA and no departures impacting PRA
    - RAP SSCs subjected to QA controls in accordance with QAPD
    - FSAR text to be revised accordingly (Confirmatory Item 17.04-2)

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Section 17.4 – Reliability Assurance Program During Design Phase

- **Staff's Review of COL Item 17.4-2-A:**
  - COL Item 17.4-2-A: Describe process for integrating RAP into operational programs for the operations phase of the plant
  - FSAR states that the RAP will be integrated into the following operational programs:
    - Maintenance Rule Program consistent with RG 1.160
    - QA Program for safety-related SSCs established through Appendix B to 10 CFR Part 50 requirements
    - QA controls for non-safety-related RAP SSCs established in accordance with Part V of SRP Section 17.5
    - Inservice inspection, inservice testing, surveillance testing, and maintenance programs

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Section 17.5 – Quality Assurance Program

- **COL Application Contains:**
  - ESBWR DCD Section 17.5 (IBR)
  - COL Information Items:
    - COL 17.2-1-A: QA Program for the Construction and Operations Phases
    - COL 17.2-2-A: QA Program for Design Activities
    - COL 17.3-1-A: QA Program Document (QAPD)
  - Supplemental Information:
    - SUP 17.5-2: amplifying QA program information January 2007 – December 2009
  - QAPD based on NEI 06-14A, Revision 7

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Section 17.5 – Quality Assurance Program Description – Design Certification, Early Site Permits, & New License Applications

- **COL Review Included:**
  - Comparison of QAPD to NEI 06-14A, Revision 7
  - Confirmation that all COL Information Items identified in the ESBWR DCD are addressed
  - Assessment of adequate QA program guidance contained in the Fermi Unit 3 COL FSAR
  - Assessment of meeting the intent of RG 1.206, Regulatory Position C.I.17.5.3 (oversight and control of contractor activities)
  - Resolution of inspection violations (inspection conducted in August 2009)

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Section 17.5 – Quality Assurance Program Description – Design Certification, Early Site Permits, & New License Applications

- **Conclusions and status of SER Section 17.5:**
  - FSAR met regulatory requirements
  - Oversight activities met the intent of RG 1.206, Regulatory Position C.I.17.5.3
  - Addressed COL items
  - Closed inspection violations
  - No open or confirmatory items

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Section 17.6 – Maintenance Rule Program

- **Applicant Submitted FSAR Section 17.6**
  - Incorporated by reference NEI 07-02A, "Generic FSAR Template Guidance for Maintenance Rule Program Description for Plants Licensed Under 10 CFR Part 52"
  - No open items or confirmatory items

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Chapter 17 – Conclusions

In conclusion, with the exception of the confirmatory items identified, the staff has confirmed that the applicant has addressed the relevant information as specified in the referenced ESBWR DCD. In addition, the staff concludes that the applicant has met the applicable regulations and is in conformance with applicable guidance with respect to the QA Programs, the RAP, QAPD and Maintenance Rule Programs.

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

SER with No Open Items
Chapter 17.0

Questions/Comments

DTE Energy®

Fermi 3 COLA
Presentation to ACRS Subcommittee
Chapter 6

Chapter 6, Engineered Safety Features: Chapter Topics

Incorporates the DCD by Reference with Standard and Site Specific COL Items – denoted with * in the following List of Sections

- 6.1 Design Bases Accident Engineered Safety Feature Materials
- 6.2 Containment Systems
- 6.3 Emergency Core Cooling Systems
- 6.4 Control Room Habitability Systems*
- 6.5 Atmosphere Cleanup Systems
- 6.6 Preservice and Inservice Inspection and Testing of Class 2 and 3 Components and Piping*

Chapter 6, Engineered Safety Features: Supplemental Information

DTE Energy

6.4 Control Room Habitability Systems:

STD COL Procedures and training for control room habitability address NRC GL 2003-01, “Control Room Habitability.”

EF3 SUP Evaluated impact of Fermi 2 Design Bases Accident to the Fermi 3 Control Room personnel.

EF3 COL Performed toxic gas analysis of potentially hazardous chemicals and concluded that safety-related toxic gas monitoring is not required.

Chapter 6, Engineered Safety Features: Supplemental Information

DTE Energy

6.6 Preservice and Inservice Inspection and Testing of Class 2 and 3 Components and Piping

STD COL Describes PSI/ISI programs and Flow Accelerated Corrosion (FAC) monitoring program, including implementation milestones.

STD COL Describes plan for maintaining accessibility for PSI/ISI Non-Destructive Examination (NDE) of Class 2 and 3 austenitic and dissimilar metal welds, including the preferred NDE method.

DTE Energy

6.6 Preservice and Inservice Inspection and Testing of Class 2 and 3 Components and Piping (continued)

STD COL System leakage and hydrostatic pressure tests will meet applicable requirements of ASME Code for Class 2 and Class 3 Components.

U.S.NRC

United States Nuclear Regulatory Commission

Protecting People and the Environment

Fermi 3 COL FSAR

Chapter 6 Engineered Safety Features

October 21, 2011

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Overview of Chapter 6 Review

- **6.1 Design Basis Accident Engineered Safety Feature Materials (IBR)**
- **6.2 Containment Systems and related Appendices (IBR)**
- **6.3 Emergency Core Cooling Systems (IBR)**
- **6.4 Control Room Habitability Systems**
- **6.5 Atmosphere Cleanup Systems (IBR)**
- **6.6 Preservice and Inservice Inspection and Testing of Class 2 and 3 Components and Piping**

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

STD COL 6.4-1-A:

Control Room Habitability Area (CRHA) Procedures and Training

- Generic Letter 2003-01 and Generic Issue 83
  - COM 13.4-028 Non-Licensed plant staff training program
  - COM 13.4-016 Reactor operator training program
  - COM 13.5-002 Operating Procedures
- Applicant's Information Acceptable

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

EF3 COL 6.4-2-A: Toxic Gas Analysis

- GDC 19, TMI Action Plan III.D.3.4, Reg Guide 1.78
- COL FSAR Information
  - N_2 (Fermi 2) and CO_2 (Fermi 3) identified (Section 2.2)
  - Concentrations at CRHA intake exceed the limits (RG 1.78)
  - CRHA concentrations significantly lower than the limits
- Staff Review
  - RAI 02.02.03-5 (ML092750405)
  - List of all toxic chemicals
  - Details of toxic gas evaluations
- Applicant's Conclusions Acceptable
  - N_2 and CO_2 release do not pose any threat to the CR operators
  - No Seismic Category I safety-related toxic gas monitors required

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Section 6.4 - Radiological Control Room Habitability

EF3 SUP 6.4-1

Impact of Unit 2 DBA on Unit 3 Control Room

- Fermi 3 control room doses from Fermi 2 DBAs are less than the doses from Fermi 3 DBAs.
- The Fermi 3 control room meets GDC-19.

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

ASME CLASS 2 AND 3 PSI/ISI

- **Section 6.6 of the Fermi 3 COL FSAR addresses Preservice and Inservice Inspection and Testing of Class 2 and 3 components and piping.**

- **This section incorporates by reference (Section 6.6 of the ESBWR DCD, Tier 2, Revision 9) and provides additional information on the following COL items**

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

STD COL 5.2-1-A
System Pressure Tests

- **The additional information states that the system leakage and hydrostatic tests will meet all requirements of the ASME Code and the limitations under 10 CFR 50.55a**

- **The staff concludes that the additional information agrees with the limitations for pressure testing of Class 1, 2, and 3 components in 10 CFR 50.55a and is acceptable to the staff**

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

STD COL 6.6-1-A
Augmented Inservice Inspection

- **Additional information is provided in Section 6.6 to address a full description of the PSI/ISI programs and augmented programs under Section 5.2.4**

- **Milestones for the program are added under Section 13.4 – Operational Programs Required by NRC Regulations**

- **In Section 6.6.7.1 of the FSAR, the applicant addresses FAC Program Description**

STD COL 6.6-1-A
Augmented Inservice Inspection (cont.)

- **ISI - Implemented prior to commercial service (COM 13.4-024)**
- **PSI – Completion prior to plant startup (COM 13.4-026)**
- **Staff concludes that the PSI/ISI and FAC programs meets SRP guidance provided in Section 6.6 of NUREG-0800, and is therefore acceptable**

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

STD COL 6.6-2-A
PSI/ISI Accessibility

- The applicant provided a discussion about preserving accessibility of welds to meet ASME Code nondestructive examination coverage requirements
- The additional information discusses the use of radiography to obtain the examination coverage
- Staff concludes that the additional information meets SRP guidance provided in Section 6.6 of NUREG-0800 and is therefore acceptable

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Conclusion

- **Staff's finding related to information incorporated by reference is in NUREG-1966 (ESBWR FSER)**
- **Staff reviewed the COL information items and additional information provided by the applicant in Chapter 6 of the COL FSAR and found them to be acceptable**
- **There are no open items in the staff's review of COL FSAR Chapter 6**

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Questions/Comments

DTE Energy®

Fermi 3 COLA
Presentation to ACRS Subcommittee
Chapter 19

Chapter 19, Probabilistic Risk Assessment and Severe Accidents

DTE Energy

Chapter Topics:

- PRA Results and Insights
- Severe Accident Evaluations
- PRA Maintenance
- Conclusions
- Regulatory Treatment of Non-Safety Systems
- Availability Controls Manual
- Deterministic Analysis for Containment Pressure Capability
- Probabilistic Analysis for Containment Pressure Fragility
- Assessment of Malovent Aircraft Impact
- Summary of Plant-Specific PRA Review

Chapter 19, Probabilistic Risk Assessment and Severe Accidents

DTE Energy

19.2 PRA Results and Insights

STD COL Commitment to compare as-built SSC High Confidence Low Probability of Failures (HCLPFs) to those assumed in the ESBWR seismic margin analysis.

- DCD seismic margin for HCLPF is 1.67 times the Certified Seismic Design Response Spectra.
- Comparison and analyses will be completed prior to fuel load.

Chapter 19, Probabilistic Risk Assessment and Severe Accidents

DTE Energy

19AA Summary of Plant-Specific PRA Review

EF3 SUP

Site-specific PRA attributes were compared to the ESBWR PRA:

- Loss of Preferred Power frequency
- Loss of Service Water frequency
- Seismic Fragilities
- Other known site-specific issues such as unique offsite consequence issues (terrain, meteorological)
- Internal flooding associated with the Yard Area.

The review concluded that the ESBWR PRA provides a reasonable representation of the Fermi 3 site parameters and conditions.

Chapter 19, Probabilistic Risk Assessment and Severe Accidents

DTE Energy

19.5 Conclusions

EF3 SUP No departures are taken from the DCD that affect the ESBWR PRA.

Plant specific review is summarized in Appendix 19AA.

Incorporation of DCD Chapter 19 into the FSAR satisfies the requirement for a description of the plant-specific PRA.

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Presentation to the ACRS Subcommittee

Fermi Unit 3 COL Application Review

Chapter 19

PRA Results and Severe Accidents Evaluation

October 21, 2011

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Staff Review Team

- **Project Managers**
  - **Adrian Muniz, Lead PM, DNRL/BWR**
  - **Raj Anand, Chapter PM, DNRL/BWR**
- **Technical Staff**
  - **Mark Caruso, Sr. Reliability & Risk Engineer, DSRA/SPRA**
  - **Jim Xu, Sr. Structural Engineer, DE/SEB2**

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Regulations and Review Guidance

- 10 CFR 52.79(a)(46)
  – describe plant-specific PRA and results
- 10CFR 52.79(d)(1)
  - may reference design cert PRA and update to reflect site/design specific parameters and features
- 10 CFR 52.79(a)(17)
  – show compliance with relevant TMI requirements
- 10 CFR 50.34(f)(i) – TMI Requirement
  - Do a plant/site specific PRA to seek improvements in reliability of core and containment cooling capability
- NUREG-0800 Section 19.0 (SRP)

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Regulations and Review Guidance (continued)

- Interim Staff Guidance COL/DC-ISG-03 (PRA)
- Interim Staff Guidance COL/DC-ISG-20 (Seismic Margins)
- Regulatory Guide 1.206

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Discussion of Technical Review

- Plant Specific PRA & Severe Accident Evaluations

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Plant Specific PRA & Severe Accidents Evaluation

- Application incorporated Certified Design PRA and Severe Accident Evaluation by reference and stated site-specific and plant-specific design features and design parameters were enveloped in Certified Design PRA.
- RAIs issued to obtain supporting site-specific evaluation.
- Applicant provided its site-specific evaluation and included results into FSAR.
- Staff reviewed applicant's site-specific evaluation and agrees with conclusion.

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Plant Specific PRA – Review Issues

- loss of preferred power (LOPP) frequency
  - bounded by frequency in Certified Design PRA
- loss of service water frequency
  - bounded by frequency in Certified Design PRA
- site-specific terrain and meteorological data
  - high winds analysis in Certified Design PRA is bounding

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Plant Specific PRA – Review Issues

- Seismic Margins
  - site ground motion response spectra and foundation input response spectra enveloped by ESBWR CSDRS
  - geotechnical profiles are characterized as a hard rock site
  - site characteristics are bounded by the ESBWR site parameters
  - Certified design Seismic Margins Analysis bounding
  - Fermi must confirm plant-specific HCLPF values bounded by values in Certified Design analysis prior to fuel load

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Plant Specific PRA – Review Issues

- **Plant-specific flooding of the yard**
  - yard flood zone includes all outside areas of the site
  - components in yard that support a safety function are manual fire hose connections for refilling ICS/PCCS pools; connections not credited in PRA
  - Certified Design PRA flooding analysis bounding

- **Plant-specific service water (SW) building flooding**
  - Certified Design PRA treats SW building as one flood zone
  - all SW pumps assumed to fail for any flooding in zone
  - Certified Design PRA flooding analysis is bounding

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Conclusions

- The applicant has addressed the required information relating to PRA results and insights, and Severe Accidents evaluation.

- The staff concludes that Fermi 3 FSAR Chapter 19 is acceptable and conform to regulatory requirements.

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Questions/Comments