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NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

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FERMI 3 SUBCOMMITTEE

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MONDAY

JULY 7, 2014

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ROCKVILLE, MARYLAND

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The Subcommittee met at the Nuclear Regulatory Commission, Two White Flint North, Room T2B1, 11545 Rockville Pike, at 1:00 p.m., Michael L. Corradini, Chairman, presiding.

COMMITTEE MEMBERS:

MICHAEL L. CORRADINI, Subcommittee Chairman

RONALD G. BALLINGER, Member

CHARLES H. BROWN, JR. Member

STEPHEN P. SCHULTZ, Member

JOHN W. STETKAR, Member

ACRS CONSULTANT:

WILLIAM HINZE

DESIGNATED FEDERAL OFFICIAL:

CHRISTOPHER L. BROWN

ALSO PRESENT:

DAN BARSS, NSIR

JULIE BESTE-WALZ, DTE Electric

DANA BORSH, Dominion*

MICHAEL BRANDON, DTE Electric

RORY BUCKING, NRO

ALEXANDRA BURJA, NRO

SKIP BUTLER, GEH

BOB CALDWELL, NRO

PATRICIA CAMPBELL, GEH

ANTONIO DIAZ, NRO

MICHAEL DUSANIWSKYJ, NRR

ROBERT FITZPATRICK, NRR

TEKIA GOVAN, NRO

PETE HABLEHORST, NMSS

RAUL HERNANDEZ, NRO*

DAVID HINDS, GEH

KEVIN KAMPS, Beyond Nuclear; Don't Waste Michigan

MICHAEL KEEGAN, Don't Waste Michigan*

NADIM KHAN, NRR

NICHOLAS LATZY, DTE Electric

CHANG LI, NRO

Y.C. LI, NRO

ROY MATHEW, NRR

RON MAY, DTE Electric

JOHN MCKIRGAN, NRO

ADRIAN MUNIZ, NRO

DAN PAPPONE, GEH

NORM PETERSON, DTE Electric

SHEILA RAY, NRR

JAMES ROBINSON, GEH

THOMAS SCARBROUGH, NRO

DAVID SCHONBERGER*

PETER SMITH, DTE Electric

GLENN TUTTLE, NMSS

JESSICA UMANA, NRO

MICHAEL WADLEY, Black & Veatch

LYNNEA WILKINS, NRO

YUKEN WONG, NRO

*Present via telephone

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

(12:59 p.m.)

CHAIRMAN CORRADINI: Okay. Why don't we have the meeting come to order. This is a meeting of the Advisory Committee on Reactor Safeguards, the Subcommittee on Fermi Unit 3 COLA.

My name is Mike Corradini. I'm Chairman of the subcommittee. Subcommittee members in attendance today are Steve Schultz, Bill Hinze our consultant, Charles Brown, Ron Ballinger and soon to be John Stetkar.

Our designated federal official is Christopher Brown. The purpose of this meeting is to discuss the SER for Fukushima Recommendations 4.2, 7.1 and 9.3 as well as Chapter 1, changes to Chapter 8, which is Section 8.2 to address both in 2012-01 and Chapter 3, Section 3.9.

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

The subcommittee will gather the information, analyze relevant issues and facts and formally propose positions and actions as appropriate

for deliberation by the full committee.

Rules for the participation in today's meeting have been announced as part of the notice of this meeting's previously published in Federal Register on June 18, 2014.

A transcript of the meeting is being kept and will be made available as stated in the Federal Register Notice. It's requested the speakers first identify themselves and speak with sufficient clarity and volume so that they can be readily heard.

Also, please silence all your various phones and appliances and personal devices, so beeping and bopping doesn't occur. We've not received any requests from members of the public to make oral statements or written comments.

But there is a bridge line set up. The bridge line will be put in listen-in mode initially. And I ask all the people on the bridge line to put their various devices in mute.

And, but to the ending we'll open up the lines to take any public comments. We also have Staff Person Raul Hernandez in as a standby to support Chapter 20. And I'll assume he's there.

We'll open up the lines once we begin with

Chapter 20, and he can identify himself at that time. And the line will remain open through Chapter 20 to allow Raul to provide input as necessary.

Okay. Let me know give a couple of extemporaneous comments. So we haven't been together for awhile, but you all look very familiar. We've had subcommittee meetings in 2010, two in 2011, one early in 2012.

And then we kind of went on hiatus. So we're coming back together to discuss primarily things related to the site and pick up Fukushima action items, et cetera.

So just as a reminder, our last scheduled meeting on Fermi is August 22, 2014. At that time we will continue finishing up items. Staff and DTE plan to present Chapter 2, Section 2.5, which includes evaluations of Fukushima Recommendation 2.1 as well as Chapter 3, Sections 3.7 and 3.8, which are soil structure interactions analysis, which we've long been waiting for.

The full community is tentatively set for November 4, 2014. So we'll proceed with the meeting, and I'll call upon Adrian Muniz, the lead project manager of Fermi 3 to kick us off. Adrian.

MR. MUNIZ: Thank you. Good afternoon. My name is Adrian Muniz, and as he stated I'm the NRC lead project manager for the review of the Fermi 3 COL application.

He basically stated most of my opening remarks. The only thing that I have to add is that as part of our presentation that we talk at 3:00, we will be discussing an ACRS action item leading back to the ACRS subcommittee on August 2012 regarding squib valves.

Other than that, basically everything the has stated we are on target to complete and present to you. So therefore, that concludes my opening remarks.

CHAIRMAN CORRADINI: Okay. Thank you, Adrian. So we'll turn to DTE and start off with Chapter 20. May I ask Theron to open up the bridge line so that we can verify that Raul is there in case we need his -- Raul, you there? I hear clicking and clacking. Raul Hernandez, if you're out there say something. Okay. Well, we'll continue without him until necessary. Pete, are you going to kick us off --

(Simultaneous speaking)

MR. SMITH: Yes. So my name is Peter Smith

from DTE Energy, DTE Electric. Before we get started with Chapter 20, I just want to quickly introduce people from my team that are with us today.

First of all is Ron May who's the executive vice president of DTE Energy responsible for major enterprise projects. Sitting to his right is Judy Beste-Welz, who is responsible for my FSAR updates, co-application updates.

Norm Peterson's a consultant for me. To Ron's left is Mike Wadley from Black & Veatch. At the table with me I have Nick Latzy, who will be presenting Chapter 20, Mike Brandon who's the licensing manager for the Fermi 3 project, David Hines from GE-Hitachi.

As well I have Skip Butler from GE-Hitachi, Patricia Campbell, Dan Pappone and James Robinson. I think I've got everybody. So with that, I'll turn this over to Nick, who will go through our presentation on Chapter 20.

And I understand that you'd like a little bit of discussion about the ESBWR.

CHAIRMAN CORRADINI: Yes. My feeling was, just so the subcommittee knows, I asked that, if DTE could at least talk a bit about the machine in general because some of the members weren't here when

we had our fun from 2006 on.

So in either regard, we'll go through the presentation, and I think if there's questions that were not covered, please ask, because we brought the full team. Thank you.

MR. LATZY: Thank you, Peter. My name is Nick Latzy. I'm a principal engineer on the Fermi 3 licensing for DTE Energy, and I'll be presenting Chapter 20 on the Fukushima Near-Term Task Force Recommendations.

This slide, this presentation will discuss the Fukushima Near-Term Task Force Recommendations, applicable to ESBWR. The applicable recommendations are the mitigation strategies, 4.2, the spent fuel pool instrumentation recommendation, 7.1, and emergency preparedness staffing and communications, 9.3.

The recommendation 2.1 on the seismic hazards will be discussed during the August ACRS meeting when we present Chapter 2.5.

This slide represents, provides a table of a breakdown of the five RAIs, which DTE Electric received pertaining to the applicable recommendations as well as the disposition location within the COLA for each of those recommendations.

FSAR Section 1.5.1.1.1 provides standard supplemental information regarding the implementation of Recommendation 4.2.

This SR section describes how the ESBWR design features for mitigating beyond-design-basis external events meet the intent of the guidance as specified in Order 12-049 for the three-phase approach being initial phase, transition phase and final phase.

DTE Electric follows the implementation guidance as applied to the passive ESBWR design provided in ISG-12-01 and NEI 12-06. The next several slides will present the ESBWR mitigation strategies for coping with extended loss of AC power involving the three-phase approach.

DTE's response to the NRC request for additional information provided the following. For the initial phase, the requirement is to use installed plan equipment to maintain or restore core, containment and spent fuel pool cooling without any AC power or make-up to the ultimate heat sink.

For the ESBWR, this phase is covered by the existing licensing basis, which includes 72-hour batteries for passive cooling for the core, or excuse me, 72-hour batteries and passive cooling for the core

containment and spent fuel storage pools.

For the transition phase, the requirement is to provide core and spent fuel pool cooling and maintain containment functions through the use of portable and consumable equipment.

For the ESBWR, following the 72-hour passive system coping time, non-safety related systems are used to replenish the passive systems, i.e. the IC/PCCS pools or to perform these functions directly.

Post-72 hours, RTNSS equipment, or Regulatory Treatment of Non-Safety Systems, type equipment provides core, containment and spent fuel storage pool cooling functions.

And on-site portable equipment provides make-up water to the fire protection system and spent fuel storage pools.

CHAIRMAN CORRADINI: Can we stop here?

MR. LATZY: Absolutely.

CHAIRMAN CORRADINI: I guess I want to understand for the transition phase. So I want to understand the boundary conditions of this for the ESBWR since it's a bit different.

So in the original design and dealing with design-basis acts and after 72 hours then the assumption

is AC power is available. And then there is essentially, now I can't remember the name of the exact type of equipment.

But there's essentially a fan that is used inside containment that allows for what I'll call a modesty pressurization of the containment pressure down from within 90 percent of the design pressure down to more like about halfway up the design pressure.

In this transition phase, that's assumed not to function. And so we're still in an extended blackout, and we're hovering at about, a little bit below 90 percent of design pressure. Is that the condition for this transition phase?

MR. HINDS: This is David Hinds from GEH. You're correct that there is a passive containment cooling system vent fan.

CHAIRMAN CORRADINI: Vent fan. Thank you very much. I couldn't remember to call it.

MR. HINDS: And that fan is really there for the purpose of improving the efficiency of the passive containment cooling system heat exchangers by removing of non-condensables.

In our design-basis analysis we did not assume that it was in service until post-72 hours as

you described. And it's there primarily for the purpose of, as you said, of reduction of containment pressure from where it is in the design-basis acts at the conclusion of the 72-hour period.

And it is powered, I'm sorry. It is powered also from the ancillary diesel generator. So it is a RTNSS regulatory treatment of non-safety system power source. So therefore, it's assumed to functional during the three to seven day period.

CHAIRMAN CORRADINI: Oh it is. Okay. When I was reading the mitigation strategy somehow in my mind I thought that the vent fan would not be functional. We'd be at the higher pressure through this first seven days.

MR. HINDS: It's assumed in the design basis that it would be functional post-72 hours, and so therefore we had a higher reliability power source, meaning the regulatory treatment of non-safety system power source.

But you have below the containment design --

(Simultaneous speaking)

CHAIRMAN CORRADINI: Yes, I knew that. I just didn't know where. Okay. All right, so it's

part of the RTNSS, and it would, at least under this set of assumptions is assumed to be functional.

MR. HINDS: Yes, and it's primarily for the purpose as you stated of turning or reducing pressure. That's its primary function.

CHAIRMAN CORRADINI: Okay. Thank you.

MEMBER STETKAR: When you, now did your post-Fukushima analyses, how did you put in there post net performance in the control room after the non-safety related batteries die and all of the non-safety related displays and instrumentation go away after two hours or however long you can extend it with shutting loads but something that's certainly less than 72 hours?

Did you look at that? Did you evaluate how that would affect personal performance?

MR. HINDS: So in our standard analysis, it's assumed that the ancillary diesel generator power source that I was just speaking of is available for the control room.

Basic habitability requirements that you were talking about --

MEMBER STETKAR: I'm asking in the period from zero to 72 hours when it gets dark for all of the non-safety related displays and instrumentation. In

the design-basis analysis you assume that the ancillary diesel, I believe, is available after one hour.

MR. HINDS: Yes. The ancillary diesel generator --

MEMBER STETKAR: Here it's not.

MR. HINDS: The ancillary diesel generator was only credited as a RTNSS power source which is typically the 72-hour --

(Simultaneous speaking)

MEMBER STETKAR: What I'm asking you is in the period from zero where all AC power goes away and batteries start to supply everything to 72 hours, which is right past the two hour rated lives of the non-safety related batteries.

How did your evaluation account for human performance in the control room after loss of all of those non-safety related displays and instrumentation?

MR. HINDS: I think the most basic answer there is that there are no human actions relied upon during that period. That's at least the assumptions for the analytic, the safety of the power plant is that there's no human actions relied upon in that period.

MEMBER STETKAR: Okay. Thank you.

CHAIRMAN CORRADINI: He has a better

memory than I do, so just for the sake of me and maybe the other members of the subcommittee, remind me the conditions because I do agree that because of the passive safety features, they don't have to do anything.

But I remember we had quite an extended discussion about habitability in those first three days, temperatures when things are hot or when things are extremely cold and also lighting and various, so remind me of the conditions of the control room during that time just so, to illuminate me again.

MR. HINDS: Yes, there was an analysis done for passive cooling in the control room during that period of time. So that's really the control room habitability and minimum lighting available.

CHAIRMAN CORRADINI: So if I were to tell it in a story fashion, the operators are there. They're either slightly warm or slightly cold, but they don't need to do anything?

MR. HINDS: Correct.

CHAIRMAN CORRADINI: Okay.

MEMBER STETKAR: And it works if they don't.

CHAIRMAN CORRADINI: Well, I'm not going to do that, but yes, okay.

MEMBER BROWN: What was slightly?

CHAIRMAN CORRADINI: Well if you remember if you did the thing we were asking on the two extremes.

MEMBER BROWN: Your memory's much better than mine.

CHAIRMAN CORRADINI: We were asking the two extremes relative to the site characteristics, whether a very hot and humid or very cold. And we wanted to make sure that there's enough ability to keep it within habitable ranges in terms of --

MEMBER BROWN: I'm just trying to remember what the passive, was it just opening it up. I can't remember how you dealt with the passive once we lost all power. You don't have AC.

You don't have fans, whatever. How do you, I've forgotten how you'd handle the passive aspect of the cooling.

MR. HINDS: It's basically heat loss through the walls of the structure.

MEMBER BROWN: So there is no venting or anything like that?

CHAIRMAN CORRADINI: There's a small fan if, yes John and I --

(Simultaneous speaking)

MR. HINDS: We've got an AC powered fan there that can keep some circulation.

MEMBER STETKAR: It comes through one area, and there's some sort, if my memory serves me right, some sort of damper that opens up.

(Simultaneous speaking)

MR. HINDS: Unit is --

(Simultaneous speaking)

MEMBER STETKAR: It would give you some flow through for, you need the CO2 monitoring, so you can just recirc it, or CO2 controls. There is some small flow through.

MR. HINDS: There is some amount of fresh air exchange there and circulation through the emergency filtering unit, but the heat removal capability is non-passive, yes.

MEMBER BROWN: And it keeps it below human?

MR. HINDS: Yes, it was evaluated for occupancy requirements. I'd have to look up the standard that we used for that.

CHAIRMAN CORRADINI: We've beat this one to death, but it's slightly toasty or slightly cool, but it's habitable.

MEMBER BROWN: I just didn't remember what

slightly meant. I mean is that 110 degrees and 32, or is it --

CHAIRMAN CORRADINI: No. If memory serves me --

MEMBER BROWN: 35 and 58 or something like that?

CHAIRMAN CORRADINI: I think it was something a little below 90 degrees and 90 percent humidity, something of that order.

MR. HINDS: In that range. If you need the exact numbers, we can look them up.

MEMBER BROWN: Oh, it's like a day at the pool around here.

MR. HINDS: We pulled them from an industry standard.

CHAIRMAN CORRADINI: Okay.

MEMBER STETKAR: Did you, Nicholas, also kind of following on on this, excuse me, because I can't remember more than about yesterday or maybe this morning I did go back and look at my notes.

We were discussing some of the scenarios back in my notes, date back to October 2007. So if you remember that, you're a good person.

We had some questions at that time about

whether the no AC condition would provide adequate core cooling during all configurations for plant shut down.

People call it plant operating states, but for the full transition from power operation through shut down and all of the modes there.

And I understand you take credit for the GDCS to provide make-up. And the tech specs do require at least two trains of GDCS to be available, so there's assurance that at least GDCS will be available.

But my notes from that time said that there might be some configurations during shut down that do not satisfy 72-hour cooling criteria and without AC power and that GE was going to examine whether or not they could be covered.

Those are my notes. So the question is are there any conditions where, I'm not so worried about when the system is open. I understand people can boil water, and people can put water in and get a boil off.

More concerned about transition phases more in the early part of the outage where the primary system is still intact, but you may not have full injection or make-up capability.

And not clear about what you do about venting. You follow me? So from the time you shut

down until the time you actually take the head off the vessel and flood up, are there any conditions in there where GCDS doesn't do it for you?

MR. HINDS: I'm not certain of the condition you're driving for.

MEMBER STETKAR: Because well, it would be somewhere, I don't know when you take the isolation condensers out of service.

MR. HINDS: The GCDS is, well first the GCDS is required to be operable until you flood up.

MEMBER STETKAR: Right.

MR. HINDS: So that's answered a part of your question there.

MEMBER STETKAR: Right.

MR. HINDS: And so once you're flooded up, then there's significant --

MEMBER STETKAR: No. I'm not worried about after you're flooded up. I'm worried about in a transition phase from the time you shut down --

MR. HINDS: Right.

MEMBER STETKAR: -- and go below Mode 1, so two, three, four, something like that, to the time you actually open up and flood up. So the primary system's intact.

MR. HINDS: Okay.

MEMBER STETKAR: GCDS is available.

MR. HINDS: GCDS is operable.

MEMBER STETKAR: Operable.

MR. HINDS: Correct.

MEMBER STETKAR: Isolation condensers may or may not be available. I don't know when you tag them out of, when they're taken out of service. I didn't look those up.

MR. HINDS: So we can look it up to verify, but my memory is that the isolation condensers are needed until the disassembly. So basically --

MEMBER STETKAR: Okay. If that's the case, then I'm okay.

MR. HINDS: And the GCDS is needed all the way to flood up.

MEMBER STETKAR: I've got that.

CHAIRMAN CORRADINI: Repeat the first part. Just repeat the first part because I wasn't --

MEMBER STETKAR: I'm mostly concerned about if you can confirm that indeed the isolation condensers are available through Mode 4.

MR. HINDS: Okay. I can check that very quickly, and I believe that's correct. But I'll check

that very quickly.

CHAIRMAN CORRADINI: If you could, that'd be good. Okay. Keep on going.

MR. LATZY: All right, now we move into the final phase.

CHAIRMAN CORRADINI: That shows you when you stop for three years.

MR. LATZY: That's right. Three.

CHAIRMAN CORRADINI: Two, three, whatever.

MR. LATZY: So for the final phase the requirement is to provide indefinite sustainment of the passive cooling functions using offsite resources.

This requirement is accomplished through the replenishment of diesel fuel for the ancillary diesel generator and diesel fire pump in order to extend the cooling time for the IC and PCCS pools and spent fuel storage pools due to water boil off.

Additionally, plant conditions can be monitored to ensure stable conditions exist for the reactor, spent fuel pool and containment.

And finally, prior to initial fuel load procedures, guidance training and acquisition staging or installation of equipment to maintain core

containment and spent fuel storage pools, cooling will be implemented.

So just to summarize, the ancillary diesel generator allows you to take things back up to, with selected equipment, up to feeding, for example, the vent fans.

And then in the final phase, besides the ancillary diesel generator functioning, it's basically water make-up to the PCCS pools, the spent fuel pools, et cetera.

CHAIRMAN CORRADINI: That's correct.

(Simultaneous speaking)

MR. LATZY: License condition, or the proposed license condition 3.8.2 requires the development of strategies and guidance capable of mitigating a simultaneous loss of all AC power from both onsite and offsite power systems, maintaining a cooling of the core containment and spent fuel pool for a Fermi 3 following a vent, affecting both Fermi units.

That would be Unit 2 and Unit 3 and be implemented in all plant modes. These strategies and guidance will be fully implemented before initial fuel load. Also Section 1.5.1.1.2 provides standard

supplemental information regarding the implementation of Recommendation 7.1.

The SR section provides information on how the ESBWR design features are reliable, or features for reliable spent fuel pool and buffer pool level instrumentation meet the intent of the guidance as specified in order 12-051.

DTE follows the implementation guidance as applied to the passive ESBWR design provided in ISG-13-02 and NEI 12-02. The ESBWR design provides reliable indication of water levels in the spent fuel pool and deep pit buffer pool.

CHAIRMAN CORRADINI: So prior to, just so I remember, prior to the Fukushima concerns there was wide range level indication. Is that correct? And you just made it work with higher resolution? I'm trying to understand the words here.

MR. HINDS: Yes, we already had safety-related level indication for the fuel pool prior to Fukushima.

CHAIRMAN CORRADINI: Did you change the design specs on it in terms of a wider range, or everything remained essentially the same? That's what I was trying to understand.

MR. HINDS: We have not, to my knowledge, we have not changed the --

CHAIRMAN CORRADINI: Okay.

MR. HINDS: -- specs. We've been looking more closely at power supplies and things of that nature.

CHAIRMAN CORRADINI: Okay.

MEMBER BROWN: So one foot with one foot. I mean the accuracy for the level is one foot before it with one foot afterwards? I think that's one of the points you were asking. It's trial specific that's all.

CONSULTANT HINZE: Mike, could I ask a question?

CHAIRMAN CORRADINI: Just did somebody nod over there? Is there a response?

AUDIENCE PARTICIPANT: It's one foot was one foot, hasn't changed.

CHAIRMAN CORRADINI: Okay. I'm sorry. Bill, go ahead.

CONSULTANT HINZE: Mike, if I might, in view of the fact that you really wanted to monitor the stability of the spent fuel pools, it would intuitively seem important to look at the rate of the change then

of the level of the pool.

Is that done by instrumentation, or is this, excuse me, done by calculation? Is this done by observation? How is this done? How does one monitor the rate, which I think is really a very critical element to this?

MR. HINDS: So we have a level instrument, and we could watch that instrument over time. Now we have not detailed out the indication at this point in the design approach as to whether it would be indicative or indicated on a chart plot which would show a rate.

But I would anticipate that it would be something of that nature.

MEMBER BROWN: You mean a strip chart type thing where you could see --

MR. HINDS: Or a higher tech strip chart. Right. Yes. Correct.

MEMBER BROWN: I'm an old.

MR. HINDS: I've been there, too. I understand.

MEMBER STETKAR: But those transmitters do provide a continuous read out so you can provide that --

(Simultaneous speaking)

CONSULTANT HINZE: It's easy to do that.

MEMBER STETKAR: It is, but we've had discussions with other suppliers who said no, all we're going to do is provide three alarms.

CONSULTANT HINZE: That's right.

MEMBER STETKAR: But under the one foot, with the one foot calibration tolerance the third bit might be below the top of fuel.

CONSULTANT HINZE: Well, that depends upon how you define monitor, whether it's continue monitor or a step wise.

MEMBER STETKAR: As long as they say it's continuous they can theoretically bring it up and trend it on something.

CONSULTANT HINZE: Well I guess another question would be with one foot accuracy, what kind of accuracies do you get in the rate.

(Simultaneous speaking)

MEMBER STETKAR: The range is important for the, as an operator I'm more concerned how fast it's heading in a certain direction at a given snapshot in time than I am precisely where it is.

CONSULTANT HINZE: Okay.

MR. HINDS: It's very significant water

coverage to begin with.

CHAIRMAN CORRADINI: Yes, that's what I think what Bill is getting at. What is the pool depth about the spent fuel? I can't remember.

MR. HINDS: It's, above the spent fuel is an excess of ten meters, and I can again look up the exact numbers. It's approximately 10.5 meters.

CHAIRMAN CORRADINI: Okay.

MEMBER BROWN: Can I ask another question?

CHAIRMAN CORRADINI: No. Sorry, joking. Go ahead.

MEMBER BROWN: I was going to ignore you. That's okay. When we talk about continuous my version of continuous, this is what I think, is that I have some indicator, whatever it is.

And I can just see it going down. Forget about whether you're calculating rate. You can eyeball a continuous movement. It's now down at 33 feet. The next thing I see is 30 feet.

And the next thing I see is 27 feet. It's not a discrete number that gets shown. You see intermediate values along the way. Continuous has different meanings for different people.

MR. HINDS: You're defining, I think

describing a difference between a switch type of concept versus an indication.

MEMBER BROWN: Yes, well, people will call a switch type an indication as well. I mean you have an indication that goes 33, 32, 31, 30 or whatever it is or do you actually see it move between 33 and 32.

That's what my definition of continuous is, a meter or a digital readout of some kind that goes down with some, it might not, you argue about the accuracy.

MR. HINDS: Correct.

MEMBER BROWN: I'm just saying but you will see the indication go down in a continuous manner, not in a step change at some increment, one, two or three feet.

MR. HINDS: I agree with your description. That continuous indication is what we describe here.

MEMBER BROWN: Okay.

CHAIRMAN CORRADINI: Let's keep on going. Sorry, Charles.

MEMBER BROWN: Well, I'm not finished with my --

CHAIRMAN CORRADINI: Oh, I'm sorry. I thought you were done.

MEMBER BROWN: -- stuff yet. Maybe I am because we're on the instrumentation.

MR. BRANDON: I advanced one slide.

MEMBER BROWN: Oh okay. I'll wait until the next slide. Then I'll argue about it, or then I'll ask the question.

MR. LATZY: Okay.

MEMBER BROWN: I'm not going to argue about anything.

MR. LATZY: Continuing with the spent fuel pool instrumentation, DTE's response to NRC's request for additional information provided the following, that safety-related Seismic Category 1 level instrumentation is installed in both pools to detect a low water level, that each pool has two wide range safety-related level transmitters which alarm in the main control room for high and low level indications.

And alarm set points are located at the following elevations, just below normal water level, at an adequate shielding level and at the top of active fuel in accordance with NRC guidance.

This slide provides a list of spent fuel pool design provisions outlined in the DCD. These provisions include the following. Instrumentation

channels provide for power connections from sources independent of the plant power distribution systems.

Normal and onsite alternative power is available using onsite resources from 72 hours to seven days. Connections are available for power from portable generator or replacement batteries.

Instrumentation has a minimum accuracy of plus or minus 300 meters or one foot. I'm sorry --

(Simultaneous speaking)

MR. LATZY: Plus or minus 300 millimeters.

MEMBER STETKAR: That's my concern.

MR. LATZY: 300 millimeters, pardon me, which equates to about one foot, instrumentation designed to maintain accuracy following a power interruption without recalibration.

Technical specifications specify periodic surveillance of fuel pool's water level during movement of irradiated fuel assemblies, and DCD Section's 13.2 and 13.6 provide a description of the operating, testing and calibration of level instrumentation as well as training programs and procedures.

MEMBER BROWN: Before you switch pages, you didn't say anything about what are the environmental qualification or performance requirements that would

be, this is beyond.

It's supposed to work beyond-design-basis. So I mean we know we've got water. The sensors, I presume, are in the water of some type. Electronics, I presume, is outside the water.

And now you have the potential for higher temperatures and obviously humidity and obviously a much, much, much higher radiation levels that it has to withstand particularly at, so my question is are those defined.

I don't remember seeing those a long time ago, and I do not know. I haven't seen anything, so maybe I missed it. That's my question.

CHAIRMAN CORRADINI: You're looking for the qualification environmental conditions?

MEMBER BROWN: Yes.

CHAIRMAN CORRADINI: So I guess I'm going to broaden the question. If you don't know, we're going to ask the staff this because I think we want to at least understand what the qualification conditions are, right?

MEMBER BROWN: Yes.

CHAIRMAN CORRADINI: Okay. You guys want to take a crack at it?

MEMBER BROWN: Is that awkward silence? Is that what it is? Okay.

MR. HINDS: We may have to look that one up.

CHAIRMAN CORRADINI: Okay.

MR. HINDS: But it's, currently you get qualified for normal or design-basis conditions, but the beyond-design-basis, we would have to do some research on that one, unless you're --

MEMBER STETKAR: If you're going to say something, you have to identify yourself and speak with sufficient clarity and volume to be readily heard, he said.

MS. CAMPBELL: Okay. This is Patricia Campbell.

MEMBER STETKAR: Louder. Speak up.

MS. CAMPBELL: Item Number 1.1 on that table.

CHAIRMAN CORRADINI: I think you're going to have to speak louder, Patricia.

MS. CAMPBELL: Okay. So David, would you look at that table of the instrumentation, Section 1.1?

MR. HINDS: You're referring to the table within --

MS. CAMPBELL: The extended table. Yes.

MR. HINDS: The table within which document?

MS. CAMPBELL: The one that I gave you a paper.

MR. HINDS: Okay.

CHAIRMAN CORRADINI: I guess what we're looking for is a temperature, pressure and/or radiation level.

MEMBER BROWN: And humidity levels for the electronics outside the water.

CHAIRMAN CORRADINI: Thank you.

MR. HINDS: So one commitment in here is that it's qualified for IEEE 603-1991.

MEMBER BROWN: That says nothing by the way.

MR. HINDS: And furthermore, I'm reading from the table from REI 01.05-6. And the DCD says the spent fuel pool level instruments is operational in environmental conditions consistent with boiling down to 30.5 centimeters or one foot above this stored spent fuel.

MEMBER BROWN: So that's 212 degrees?

MR. HINDS: I have a temperature, 212

degrees, high humidity, steamy environment, loss of shielding and high radiation doses.

MEMBER BROWN: Any comment on how they developed the radiation doses?

MR. HINDS: At this time, no.

CHAIRMAN CORRADINI: I would assume it's just one foot shielding, Charlie, off --

(Simultaneous speaking)

MEMBER BROWN: No. I think you have to consider more than just the one foot off the fuel. I mean if you had a major beyond-depth-design-basis circumstance in the plant, you may have a much higher radiation level where that electronics exists other than just that being sent off from the fuel.

I don't know. I'm not a RADCON engineer to calculate, but it just seems it's more than just the radiation coming up with the fuel one foot above the, water one foot above the fuel.

I'm just interested in how we come up with a radiation --

(Simultaneous speaking)

CHAIRMAN CORRADINI: I think they've answered your question. Whether or not we're happy with the standard or not is a different question. But

they're following essentially the, why don't we come back to the staff and ask about this because it's generic.

I mean all plants are going to have to deal with this for all intents and purposes, whether it be these guys are current operating plants. All right, so we'll return. Okay?

MEMBER BROWN: You're asking me to --

(Simultaneous speaking)

CHAIRMAN CORRADINI: Thank you.

MR. LATZY: In addition to the information contained in Chapter 1 Part 10 of the Fermi 3 code contains proposed license condition 3.8.3 regarding spent fuel pool, buffer pool level instrumentation.

This slide provides the license condition requiring the spent fuel pool and buffer pool instrumentation being maintained, available and reliable through a training program.

Moving on to Recommendation 9.3, for the implementation of Recommendation 9.3 the emergency preparedness, COLA Part 10 includes proposed license condition 3.8.1, emergency planning actions.

This slide provides a summary of this proposed license condition related to staffing and

summary two years prior to the scheduled initial fuel load. DTE Electric will perform an assessment of the onsite and augmented staffing capabilities in accordance with NEI 12-01.

Any corrective actions identified during this assessment will be incorporated into a revised Fermi 3 emergency plan. Additionally, DTE will identify how the augmented staff will be notified, given degraded communication capabilities.

Related to communications, in summary, two years prior to scheduled initial fuel load, DTE Electric will perform an assessment of the onsite and offsite communication systems and equipment in accordance with NEI 12-01.

180 days prior to scheduled initial fuel load, DTE Electric shall implement any corrective actions identified during the communications assessment.

In conclusion, the ESBWR passive safety and design features described in the DCD and proposed license conditions are in accordance with industry documents and staff guidance.

And the Fukushima Near-Term Task Force Recommendations 4.2, 7.1 and 9.3 are adequately, are

fully implemented. Thank you. Any questions.

MR. HINDS: There's a question that I deferred a minute ago.

CHAIRMAN CORRADINI: You found it?

MR. HINDS: Is it okay if I get back to that?

MEMBER STETKAR: This is the IC? I just wanted to --

(Simultaneous speaking)

MR. HINDS: Operability under Tech Spec 3.5.5 requiring that two trains operable up until Mode 5, inclusive of Mode 5, so when entering Mode 6 meaning detensioning, that's when they're no longer required to be operable.

MEMBER STETKAR: Thanks, and that I think provides adequate coverage. The questions we had earlier kind of pointed to these interim phases when the system could still pressurize.

But we weren't sure, I think, at that time about the operability requirements for the isolation condensers, and I think that covers B

MR. HINDS: And it's covered in Tech Spec 3.5.4 for operating and 3.5.5. for shut down, and so your question was related to 3.5.5..

MEMBER STETKAR: Thank you very much.

MR. LATZY: Would you like to continue with Chapter 1?

CHAIRMAN CORRADINI: Well, that's what I wanted to ask staff. Do you guys want to flip, switch out and have the staff come in on Chapter 20? I think that's what you wanted.

MR. MUNIZ: Yes.

CHAIRMAN CORRADINI: Okay. So we're going to have a change of the guard. Up goes the red team. Then comes the blue team.

(Off microphone comments)

MS. GOVAN: Good afternoon. My name is Tekia Govan, and I'm the project manager for the review of the Fermi combined license application, Chapter 20, entitled Requirements: Developing the Fukushima Near-Term Task Force Recommendations.

This chapter addresses the requirements resulting from the Near-Term, the Fukushima Near-Term Task Force recommendations that are applicable to the Fermi 3 COLA application.

The applicable requirements or recommendations address four topics, a reevaluation of seismic hazard related to Recommendation 2.1,

mitigation strategies for beyond-design-basis external events related to Recommendation 4.2, spent fuel pool instrumentation related to Recommendation 7.1 and emergency preparedness staffing and communication related to Recommendation 9.3.

As already mentioned, all of these topics will be discussed as a part of this presentation with the exception of Recommendation 2.1. Recommendation 2.1 was evaluated as part of Chapter 2.5 and we'll be presenting that on August 22, 2014.

The applicant, DTE, as well as GEH has provided an overview of the ESBWR design and its existing capabilities to address the Fukushima recommendation.

The staff's presentation will discuss the various license conditions that will be imposed on the applicant to ensure that the Fukushima recommendations are addressed in accordance with orders that were issued for operating reactors.

MEMBER STETKAR: Tekia, before you go on, I understand we're going to talk about seismic stuff in August, so I'll wait to hear about that. But I had a question about external flooding because the other part of 2.1 was reevaluation of the external flooding

hazard.

In the SER, it says the applicant evaluated the flood hazard using current guidance and methodologies. The staff thus determined that the applicant has already addressed the flood reevaluation portion of Recommendation 2.1.

Therefore, no additional requirements left to address Recommendation 2.1 for flooding reevaluations are applicable to Fermi 3 COL application. Did Fermi Unit 2 reevaluate the site flooding hazard as part of the response to the Fukushima letters?

MS. GOVAN: I think the answer is yes.

MEMBER STETKAR: Okay.

MS. GOVAN: But I think we should let technical staff answer that.

MEMBER STETKAR: It's a two-part question. I'm assuming it's yes because everybody was supposed to do that. My question is what were the results of that evaluation.

And are they consistent with the flooding hazard evaluation that's actually presented in Section 2.4 of the Unit 3 COL FSAR because if they're different, I'm curious why they're different.

CHAIRMAN CORRADINI: Can we turn at least to the applicant to see if they were supposed to have done something.

MR. SMITH: This is Peter Smith, and yes we have done the Fermi 2 reevaluation, and they're virtually identical, the results of the two.

MEMBER STETKAR: Identical to what's published in the COL FSAR Section?

MR. SMITH: Yes, that's correct.

MEMBER STETKAR: Okay.

MR. SMITH: Yes, so the starting place for the Fermi 2 evaluation was the COL work, and it was duplicated essentially.

MEMBER STETKAR: Okay. Has, all right, I guess we'll follow up on, maybe we won't.

(Simultaneous speaking)

MEMBER STETKAR: The staff has essentially signed off on the Fermi 2 flooding evaluation because if they don't accept that, then it throws into question the Unit 3 flooding.

MS. GOVAN: And again, I think the answer is yes. And I think there was some write up in the safety evaluation regarding that, but I have written it down. But we can talk about it during --

MEMBER STETKAR: I was looking for it.

MS. GOVAN: Okay.

MEMBER STETKAR: At least the vision of circ evaluation that we received in preparation for this meeting. It simply had that paragraph that I quoted.

MS. GOVAN: Okay.

MEMBER STETKAR: It just says they did it according to current methodology, and therefore the staff is happy with it, doesn't make any reference to anything else that was done for Unit 2 or for anything else.

MS. GOVAN: So we'll make sure to cover that during the August 22nd meeting.

MEMBER STETKAR: Okay. All right, thanks.

CHAIRMAN CORRADINI: Okay.

MS. GOVAN: So for these reviewed, the staff review team included Antonio Dias, Branch Chief, Angelo Stubbs, Technical Reviewer, Raul Hernandez, Technical Reviewer, Chang Li, Technical Reviewer, Dan Barss, Technical Team Lead and Charles Murray, Technical Reviewer as well as myself as the Project Manager.

At this time, Mr. Chang Li will provide the presentation on the status review of the applicant's response to Fukushima Recommendation 4.2 and 7.1. This staff's full evaluation of these items are documented in Sections 20.2 and 20.3 of Chapter 20's safety evaluation. Chang?

MR. LI: My name is Chang Li, a Senior Systems Engineer in the Balance of Plant Systems branch. I'm here today on behalf of the reviewers, Angelo Stubbs and Raul Hernandez, who wrote SER Section 20.2 and 20.3.

They are on vacation. I'm going to present the slides that the reviewers prepared and explained to me before they left. So I have a good understanding of the review to make this presentation.

By the way, Raul is supposed to be on the line. Is he there?

MR. BROWN: Yes, he's here.

MS. GOVAN: He is.

MR. LI: He is?

MS. GOVAN: Yes.

MR. LI: Raul, are you there?

MR. HERNANDEZ: Yes. Can you hear me now?

MR. LI: Yes, we can hear you now.

MR. HERNANDEZ: I was trying to answer the previous question, but somehow I was mute apparently.

MR. LI: Okay. You will have an opportunity when it gets to 7.1.

MR. HERNANDEZ: Okay. Thank you.

MR. LI: With that, I will start my presentation on Recommendation 4.2, mitigation strategies. As you know, NRC Order 12-049 requires the nuclear facilities to implement mitigation strategies for beyond-design-basis events using a three-phased approach.

The initial phase uses installed equipment and resources. The transition phase use onsite equipment and consumables. And final phases uses offsite resources.

And mitigation strategies are required to maintain or restore three important functions, core cooling, containment function and spent fuel pool cooling, assuming an expanded loss of AC power.

Fermi 3 uses ESBWR standard design. ESBWR standard design includes passive design features that provides core cooling, containment integrity and spent fuel pool cooling for 72 hours without reliance on AC power.

Therefore, it has an inherent 72 hour coping capability as part of the design basis. The staff evaluation evaluated information in RAI responses and FSAR Section 1.5.1.1.1.

The FSAR section states that DCD information is incorporated by reference. And this FSAR section summarize the Fermi response to the order.

The mitigation strategies for the initial phase and a transition phase are accomplished using installed equipment, such as safety-related isolation condenser, passive contaminant cooling systems, gravity driven cooling systems and water inventory in the spent fuel pool to maintain and restore the three functions, core cooling, containment integrity and spent fuel pool cooling for 72 hours without AC power.

Therefore, the mitigation strategy for initial and transition phase for 72 hours accepted based on the ESBWR passive design features. The mitigation strategies for the final phase were addressed post-72 hour coping capability.

Offsite resource requirements and programmatic controls, such as procedures, guidance, training and so forth. The staff imposed the License Condition 20.2-1 to ensure that the required strategy

and guidance will be developed and implemented for the final phase.

License Condition 20.2-1, which is the same as applicant proposed License Condition 3.8.2 with one exception. The exception is an additional milestone one year before ITAAC completion date.

DTE shall complete the development of strategies and guidance. The rest of the license condition was discussed earlier by the applicant's presentation. This concludes my presentation on Recommendation 4.2.

MEMBER STETKAR: Chang, I have a question. I guess you can tell me it's okay to postpone this to the August discussion, but I want to make sure that people are aware of this.

In the FSAR you note that RTNSS equipment have augmented, it says has augmented design requirements that provide reasonable assurance that they will function when needed.

This section also states that they have redundancy for active components. They are designed to the appropriate seismic design standards, and they are protected from high winds and flooding hazards.

Now since these requirements specifically

apply for beyond-design-basis external events, that means that the staff has reasonable assurance that this RTNSS equipment, which is non-safety related will survive after a beyond-design-basis seismic event.

And I'm curious about how you have achieved that reasonable assurance finding because, in particular I'm curious whether or not the applicant has performed a seismic fragility analysis for all of the required RTNSS equipment.

And in particular what the high confidence of low probability of failure or so-called hit cliff capacity is for each of those components and what the limiting hit cliff capacity is because the margin between the design-basis seismic acceleration and the hit cliff, most limiting hit cliff capacity can be used to at least give you some of that confidence.

You don't necessarily need to answer that now, but I'd like an answer for that in August.

MR. LI: I'd like to respond that our evaluation, as I presented, at first 72 hours covers both initial phase and the transition phase because it covers up to 72 hours period.

So we are not, in accordance to the applicant's approach, taking that RTNSS period from

72 hours to seven days.

MEMBER STETKAR: I thought I heard them say they're taking credit for the ancillary diesel generators to provide AC power between three days and seven days. Is that what you've heard Dr. Corradini?

CHAIRMAN CORRADINI: Yes.

MEMBER STETKAR: The ancillary diesel generators are non-safety RTNSS equipment. So it sounds like they're taking credit for RTNSS equipment between the period of three days and 72 hours.

If that's the case, I'm asking how the staff has reasonable assurance that RTNSS equipment and whatever else is required will survive a beyond-design-basis seismic event.

MR. LI: Okay. The staff evaluation for 4.2 was covered, well initial phase and a transition phase, which is 72 hours.

CHAIRMAN CORRADINI: I think we're not communicating though. That's --

MR. LI: We're not evaluate RTNSS into the additional --

(Simultaneous speaking)

MEMBER STETKAR: I'm sorry, SER doesn't, it does evaluate the long-term phase.

MR. LI: The long-term phase is based on the license condition, which covers starting from 72 hours. So the license condition when we evaluate that will cover that RTNSS time period, three days to seven days.

CHAIRMAN CORRADINI: I think we're still not communicating, so let me say it back to you like what I thought I heard. So your evaluation was for the first three days only?

MR. LI: On 72 hours, that covers initial and a transition phase.

CHAIRMAN CORRADINI: But the statement you just made isn't consistent. The transition phase is three to seven days, not zero to three days.

MR. LI: We have zero to 72 hours that covers both phases. 72 hours is long enough for the applicant's for the licensee to get ready for the offsite equipment resources.

CHAIRMAN CORRADINI: Oh.

MR. LI: So 72 hours meet the NEI guidance, which only requires 24 hours. We do not count that three days to seven days into this transition phase even though the applicant's proposed that transition phase three to seven days.

In our evaluation's acceptability, we accepted initial and a transition phase based on the 72 hours.

(Simultaneous speaking)

CHAIRMAN CORRADINI: Okay. Can I say it back to you in a different way just so we're communicating? So based on what you just said, unless I misunderstand, is that you're comfortable up to 72 hours.

The applicant is comfortable up to seven days, but you didn't evaluate that. You're only saying you're comfortable up to three days.

MR. LI: Right.

CHAIRMAN CORRADINI: Okay.

MR. LI: The rest of the, rest of between after 72 hours is covered by the license condition because right now we don't have evaluation yet. In our safety evaluation report, if you read that Section 20.2 we evaluate up to 72 hours.

CHAIRMAN CORRADINI: Okay.

MR. LI: So after that --

CHAIRMAN CORRADINI: So let me ask the question slightly differently. So if they're claiming the ancillary diesel generator works and they can use

the vent fans and all this stuff occurs at three to seven days, at this point you have no opinion on that.

MR. LI: Yes, except the reason that we accept 4.2 in our evaluation we have that 72 hours --

CHAIRMAN CORRADINI: Okay. I'm with you.

MR. LI: -- and post 72 hours is license condition, so that's --

CHAIRMAN CORRADINI: And license condition is what? I apologize, just --

MR. LI: Okay. So this is the license condition, which they will have to address that mitigation capability post-72 hours. So that RTNSS function capability will have to be addressed there.

CHAIRMAN CORRADINI: Okay. So, okay. All right, so to put it a different way, they have a hanging issue that is yet to be determined.

MR. LI: In a license condition.

CHAIRMAN CORRADINI: Okay.

MR. LI: And I go to that license condition. The reason that we add that additional milestone, which is one year before the end of ITAAC, which gives us that one year time frame that which we're able to inspect their programs.

So their original propose is the

completion, is implementation phase, which is prior to fuel load. We don't have time to do inspection. So we add that one year before the ITAAC completion date so that we will have opportunity if we decide we can inspect.

So that RTNSS question will be addressed during that time.

MEMBER BROWN: They have to submit it to you before a year. At a year they have to have that to you, a year before --

MR. LI: The year before.

MEMBER BROWN: The completion of these things they have to have that assessment to you.

MR. LI: Right. They should have the completed their strategies. The documentation should be ready, but prior to field they should be implemented.

For example, the trainings, they would have to have operated a training. But the training program should be ready one year before.

CHAIRMAN CORRADINI: Okay. All right, now I get it. I didn't get it before, but I think I get it. Okay.

MR. MUNIZ: This is Adrian. Does that answer the question from John Stetkar, or are we --

(Simultaneous speaking)

MEMBER STETKAR: I mean he answered it in a sense that the question gets punted to a time that we don't have any interaction anymore because we, the ACRS, are not involved in any ITAAC resolution. So my question isn't answered, and it won't be.

MR. LI: That should be in --

MEMBER STETKAR: Hopefully the inspection team will ask the question.

MR. LI: That should be in Chapter 19 with respect to RTNSS systems.

MEMBER STETKAR: There are many statements in Chapter 19 in the DCD already, and I quoted one them that used terms like reasonable assurance that they will function the needed appropriate seismic design standards.

I'm asking how the staff will develop reasonable assurance that that equipment will function when needed because if it's only designed to meet the design-basis seismic acceleration, I'm not sure what extra margin it is.

MR. LI: Now we, as a review with respect to 4.2, even though right now we're not reviewing it, but we were relying on the acceptability within Chapter

19 about RTNSS.

CHAIRMAN CORRADINI: I had you there until you said the last thing. You lost me at the end. Can I just say it back to you so we're at least ending this on the same page?

So what I'm hearing is that the applicant has come in and said that certain systems will be operable between three and seven days. You have, well zero to 72 hours in some set of conditions and three days to seven days another set of conditions, one being the ancillary diesel generator.

You've said that you're okay with things up to three days. From three to seven days you're not okay. You're putting a license condition on. It's going to be in ITAAC.

It'll be resolved later, but how it's resolved and how you determine reasonable assurance is to be determined until they give you something to evaluate.

MR. LI: Right. And that we can point to Chapter 19. We are not regenerating a review of RTNSS for --

MEMBER STETKAR: And I'm saying Chapter 19 is silent. It just has words. I read the words.

The words say reasonable assurance and designed according to appropriate seismic standards. That doesn't tell me anything about actual margins. It doesn't tell me anything.

MR. LI: That's a good question for when we do the inspection.

MEMBER STETKAR: Yes. And that's all I'm saying, that since we, I hope the inspectors ask what are those margins. How is that reasonable assurance determination from the staff's perspective because the staff has to have reasonable assurance?

How is that reasonable assurance determination made? In other words, what analyses, what supporting analyses are available to actually quantify the margins for survivability of whatever equipment they're taking credit for in a beyond-design-basis seismic event?

One way to quantify that is a measure of the hit cliff capacity of the weakest piece of equipment that they're taking credit for compared to at least the design-basis seismic acceleration. That's a measure of margin.

MR. LI: Yes. Provide us the questions when we do the inspection.

CHAIRMAN CORRADINI: Okay. Keep on going.

MR. LI: Moving to Recommendation 7.1 --

(Off microphone comments)

MR. LI: -- and as the Order 12-051 specified requirements on the reliable spent fuel pool instruments, and ISG provides the staff review guidance. Next slide.

The staff evaluated the information in RAI responses and FSAR Section 1.5.1.1.2. These FSAR sections summarize the response to the order and states that DCD information is incorporated by reference.

The Fermi 3 states that spent fuel pool level instrument meets all the design requirements in the order.

FSAR Tier 2 Section 13.5 describes the development of procedures under the plant operating procedures, which address the procedures, testing and the calibration requirements of installed equipment channels.

The proposed license condition ensures personnel will be trained in the provision to establish alternate power connections to the level instrument.

The staff found the Fermi 3 spent fuel pool

level instrument meets all the design requirements described in order and ISG because ESBWR design of the safety-related level instrument already addressed most of these features.

Fermi 3 FSAR Section 1.5.1.1.2 explained the level instrument design description to address the equipment power supply and accuracy. The staff found the Fermi 3 spent fuel pool level instrument meets all the programmatic requirements described in the order.

Level instruments are permanently installed and therefore, the development of procedures, tasking and calibration requirements is within the scope of FSAR Section 13.5.

And license condition that address the development and the implementation of a training program to ensure the personnel will be trained in the provision to establish alternate power connection to the level instrument.

I don't think I need to repeat those license condition on next slide because it's already exactly the same as that applicant presented. I think if you have a question about the question, Raul may be able to address something.

CHAIRMAN CORRADINI: Charlie?

MEMBER BROWN: I'm sorry. I was thinking of something else and got lost in the seismic --

(Simultaneous speaking)

MEMBER BROWN: Are we back to the 7.1?

CHAIRMAN CORRADINI: Yes.

MEMBER BROWN: Okay. We shifted. I'm sorry.

CHAIRMAN CORRADINI: Raul I think can potentially answer your question.

MEMBER BROWN: That's fine. Have at it. I will listen.

MR. LI: Raul, are you there?

MR. HERNANDEZ: Yes. I think that when the applicant was giving his presentation you asked about the conditions that the instruments are expected to provide.

MEMBER BROWN: Yes, for the beyond-design-basis circumstance.

MR. HERNANDEZ: Well, the ESBWR spent fuel pool is a boiling pool, so the instrument was already designed to withstand the maximum temperature of a boiling pool and the radiation and the conditions expected when the water will drop on top of the fuel.

So it was already designed with those

requirements.

(Simultaneous speaking)

MEMBER STETKAR: Raul, for the record, below the top of the fuel or within a foot of the top of the fuel?

MR. HERNANDEZ: One foot --

MEMBER STETKAR: Above?

MR. HERNANDEZ: Yes.

MEMBER STETKAR: Below the top of the fuel implies that it might be capable of withstanding --

MR. HERNANDEZ: It was designed to one foot --

MEMBER STETKAR: Thank you.

MR. HERNANDEZ: -- if it remained covered.

MEMBER BROWN: Okay. I got boiling. I got a temperature out of that. I got humidity out of that. What I didn't get out of that was the one foot above the fuel does establish a radiation condition based on the activity of the fuel. It's in there. Whatever the condition to various types of, that have been pulled out.

However, in a beyond-design-basis circumstance where you have something similar to Fukushima where you have pretty much heavy duty

radiation coming from other sources right next door, the electronics that may be exposed to that would need some type of condition or qualification above that which you would expect to see with still one foot of water above the fuel.

So I was questioning what, how did you differentiate between just having one source being the spent fuel pool activity but also the radiation coming from another, from beyond-design-basis where you may have actual core stuff all over the stuff or radiation or materials that have been ejected or whatever the case may be.

CHAIRMAN CORRADINI: I think, let me interject before Raul takes a shot at that. My impression is they're looking at radiation only from the pool. They're not assuming degradation somewhere else in the plant.

MEMBER BROWN: Absolutely. I got that.

CHAIRMAN CORRADINI: Okay.

MEMBER BROWN: I'm asking, but that's not what happened. That's not my thought of beyond-design-basis. That reckon toward the TMI or the Fukushima beyond-design-basis whether we have another source impinging on those electronics which

could be considerably higher.

CHAIRMAN CORRADINI: Raul, it's yours.

MR. HERNANDEZ: I don't have an answer for you at this moment because additional radiation sources were not specifically considered at this moment.

MEMBER BROWN: Okay. All right, that's an answer.

CHAIRMAN CORRADINI: I guess if I were Raul I would say there's no way to bound that. You can't assume that you'd have a Fukushima event. Nor could you assume you have a TMI event.

TMI didn't have any secondary radiation releases that would affect any of this. So you have to --

(Simultaneous speaking)

MEMBER BROWN: I understand that's not the boundary it didn't, but if that radiation inside the reactor compartment and an adjacent structure --

MEMBER STETKAR: The buffer pool here is inside the reactor building, right? This is why we're kind of asking for a refresher on what this machine looks like because most of us don't remember.

But the fuel, the storage pool is not, it's not inside the drywell. Is that right? Well, where

is the storage pool on this plant? There's a buffer pool that you move fuel into and out of when you're refueling, right?

MR. HINDS: Correct. This is David Hinds with GEH. Yes, you're correct. There is a buffer pool that's up in the upper evaluation of the reactor building. It's for the purpose of refueling operations for only temporary storage of fuel.

The long-term storage of spent fuel is in the fuel pool, as you stated, in a separate building adjacent within --

(Simultaneous speaking)

MEMBER STETKAR: With in kind fuel transfer. That's what I sort of remembered. So the buffer pool is subject to those higher, because it's in the same place basically as the reactor.

MEMBER BROWN: But you never keep it in the buffer pool. I mean once you move the fuel out of that, I mean you don't operate with spent fuel in the buffer pool.

MEMBER STETKAR: During your shielding there's --

(Simultaneous speaking)

MEMBER BROWN: But I mean once you finish

the refueling there's nothing in the buffer pool, right?

MR. HINDS: That's correct.

MEMBER BROWN: It's off in the other building.

MR. HINDS: That's correct. The buffer pool is there for only temporary storage as needed during a refueling outage and not for long-term storage during operation.

MEMBER BROWN: Okay. Let me go back. I understand that. Let me go back. Building's adjacent still if you have a Fukushima type, we had one example of what radiation levels are like in a Fukushima type act.

CHAIRMAN CORRADINI: If I were GEH I'd say well, I won't say that.

MEMBER BROWN: You're not.

(Simultaneous speaking)

MEMBER BROWN: My question is fundamentally what is the basis for saying that and that alone is a satisfactory basis for beyond-design-basis. That's the only purpose of my question.

If somebody can come up with a reasonable answer as to why I live in a tree, I'm happy to hear

the reason. That's fundamentally the purpose of my question since I am interested in this instrumentation specifically.

The electronics is vulnerable to high radiation, particularly solid state stuff. And the hardened stuff is much more difficult to deal with.

MEMBER STETKAR: That's a good point. Are these local sensors hardwired stuff? I mean --

MEMBER BROWN: We don't know what the design is. All we know is there's specific --

MEMBER STETKAR: Somebody does.

(Off microphone comments)

CHAIRMAN CORRADINI: Does the applicant or their helpers want to answer that?

MEMBER BROWN: I'm not as worried about the sensors as I am about the electronics that are outside. I can design a system that would be impervious to this for the most part. If you can make it very hammer and tongs in blacksmith technology --

CHAIRMAN CORRADINI: That's not what we're asking.

MEMBER BROWN: That's not what people have talked about when we have these conversations on spent fuel pool. It's been a mixed bag.

CHAIRMAN CORRADINI: Does anybody want to have a comment at this point?

MR. HINDS: So there's, this is David Hinds. There's NEI guidance that was followed related to this qualification of these sensors. And I believe we were --

MEMBER BROWN: And the electronics, not just, sensors are in the --

MR. HINDS: The instrumentation.

MEMBER BROWN: The combination, sensors to tech spec, they'd have to send information off to electronics with processes.

MR. HINDS: Sure.

MEMBER BROWN: Sensors are probably in the pool, I hope, or you have some type of ultrasonic thing going down in there. And therefore, that's subject to something else. I mean there's all kinds of things this stuff could look like.

MR. HINDS: Yes, and again, we've followed the NEI guidance and as we stated that it's qualified for boiling down to one foot above --

MEMBER BROWN: Yes, I got that. My question remains.

CHAIRMAN CORRADINI: So let me summarize

what I hear, which is they assumed radiation sources from the spent fuel. They did not assume other radiation sources, and NEI guidance was used in the instrumentation development.

MR. HINDS: Correct.

CHAIRMAN CORRADINI: Okay. That may not satisfy you, but those are the facts as they sit.

MEMBER BROWN: Like I say, we can move on.

CHAIRMAN CORRADINI: Let's move on.

MEMBER BROWN: The answer is still open.

CHAIRMAN CORRADINI: Let's move on to the next recommendation. Dan?

MR. BARSS: Yes, I'm Dan Barss. I'm Team Leader in the Office of Nuclear Security and Instant Response, the New Reactor Licensing Branch. And it truly is a team effort with multiple individuals.

And they're off on other assignments, so as a team lead I get the job of presenting to you folks today. As we've learned and discussed at length today, and I think you already know, as a result of Fukushima we did learn a few things.

One is that we need to start, this is about staffing for a multi-unit event and also looking at the communication equipment capabilities and

considering the extended loss of AC power, how that would impact our communication capabilities.

As a result in the SECY-12-0025, there was recommendations made in there that the staff also asked questions of the applicants, not just the operating, for the applicants for COLs, how they would deal with these things.

As a result to that, we issued an RAI, 01.05-2 was issued to all applicants and this applicant responded with a proposed license condition. The staff looked at that license condition and has made a few minor modifications to that and found those modifications, of course, to be acceptable.

Next slide. On the communication, the license condition as it's been modified basically says the quality, denoting the fuel, that we asked that the licensee, no longer an applicant, but the licensee then would do an assessment using NEI Document 12-01, which is guidance for assessing beyond-design-basis accident response staff communication capabilities.

And we specified what we observed with that document. We asked them two years before they load fuel that they do that assessment and then 180 days before they load fuel that they would complete any

modifications or corrections that would be needed to their emergency plan and their procedures and of course any training that would be needed there.

Just a brief explanation of the modification that the staff made I believe when the applicant submitted their license condition, they referenced simply prior to initial load, or prior to loading fuel.

And the staff looked at that and thought we ought to be able to tie that to something more definitive. So working with OGC we came up with the requirement that it is 10 CFR 52.99(a) and also for the 180 day requirement in 10 CFR 52.103(a) to give more definition to specifically what those time frames are.

Those two regulatory requirements basically tell the applicant when they have to submit to us various schedules and things and then report when they're going to meet those schedules.

And that's going to be a better way of doing this for a license that's going to be issued, but it could be a number of years depending on licensee's, I guess, business decision to build that plant.

So that's really the modification the staff

made, is just to actually stem, set the hearing at the initial fuel. We put in the regulatory requirements that would drive the schedules and drive them to provide that information to us.

On the staffing model, pretty much the same thing. Two years before they're going to load that fuel, we ask them to do a staffing analysis for us.

And then again, once they've completed that staffing analysis that they make any adjustments that are necessary to the emergency plan to the emergency planning procedures.

Tell people and also identify how people are going to be notified considering the degraded communication capabilities they could be facing at this time.

I would also mention that this staffing, this assessment, the staffing assessment is not the same as but similar to and uses information that comes from the staffing assessment, which is done in accordance with NEI 10-05, which is another NEI document that we've endorsed.

And that staffing analysis is tied to the EP rulemaking, which I guess was done just, I'm trying to remember. Was it 2011 I think we finished that

directive that they do an analysis that looked at their shift staffing to make sure they actually had enough people to do what they needed to do for conditions as they were at that time?

This 12-01, of course, takes that to the beyond-design-basis event in the multi-unit staffing. So they're done in parallel I guess. One is done already for the operating unit, and both of them to be done for this.

So the conclusion basically we found that as the SECY paper indicated, we requested that they address the issues that we were in there. In Recommendation 9.3 the applicant has addressed them.

They've indicated they will follow the guidance in NEI 12-01 and the results of those assessments that require changes to the plans and implementing procedures will be accomplished by now the licensee at that point in time and incorporated into their program.

That completes my presentation. Any questions?

CHAIRMAN CORRADINI: Subcommittee members? Okay.

MS. GOVAN: Okay. If there are no

questions, I went over a couple things that we got a little hung up on right out the gate at the title page. Dr. Stetkar asked a question relating to the flooding analysis for Fermi 2 and how these results were evaluated in relation to Fermi 3.

And we'll take that as an option --

(Simultaneous speaking)

MS. GOVAN: -- to get back --

MEMBER STETKAR: Yes, that's, I got from Fermi the fact that at least the levels from the two evaluations are essentially the same. My question now to the staff is has the staff evaluated the Fermi flooding reevaluation and do you have any problems with it.

MS. GOVAN: So I'll take that as an action. We'll include that in the presentation on August 22nd.

MEMBER STETKAR: Thanks.

MS. GOVAN: The second, I was trying to capture it the best I could, but I think you're looking for, Dr. Stetkar, the acceptability criteria that we used to provide reasonable assurance for RTNSS beyond-design-basis.

CHAIRMAN CORRADINI: Can I broaden it just because I've been trying to write notes to myself about

this? What I'm hearing is the applicant's coming in saying they don't need outside assistance three to seven days.

The staff is coming back saying maybe, maybe not. But we'll give you one year before the ITAACs are evaluated to show us that you don't. But current plans we have to have outside assistance at three days.

So what I'm struggling with is there's, the two parties are talking like this at each other. And for us to look at it, we're out of the loop once we turn it into an ITAAC with one year ahead of time to discuss. That's my simple way of hearing it.

MEMBER SCHULTZ: This is our opportunity to provide guidance to the staff.

MEMBER STETKAR: Yes, and my understanding is this now, and I'm going back now. We read the words in the SER because I now know how to interpret the words in the SER after this exchange and now what the SER is saying.

I guess I didn't quite understand it before, but the SER literally, I believe, says that the staff has reasonable assurance that they can cope with a loss of all AC power up to 72 hours.

And anything past, this is strictly for Fermi, anything past 72 hours is thrown into the license condition and will be inspected as part of the ITAAC process, which as Dr. Corradini mentioned, the ACRS doesn't have an opportunity to examine.

MS. GOVAN: Okay, so --

MEMBER STETKAR: So I'm, I understand the process. I'm not necessarily happy with it, but I understand it.

MS. GOVAN: So then we will not take that as an action item.

MEMBER STETKAR: That's simply the way it is if my understanding is now correct.

MS. GOVAN: Okay.

CHAIRMAN CORRADINI: And then so I'll go further. My further interpretation is that if I take the basic design we've learned about from ESBWR on this site, the claim is that they can go longer.

But unless I misunderstand the staff's inference, they haven't been convinced. So they want to see something brought to them but later. And that gives us no chance to at least evaluate what it is other than what we've been presented.

And my only comment is that the words that

are written in Chapter 19, we had discussions here that said well, we'll rely on Chapter 19. Those are simply words. They say we're going to design stuff.

And I'm saying how does the staff, the staff can't relay on just words saying we're going to design stuff good for beyond-design-basis events.

How does the staff, in those inspections now, develop that reasonable assurance that the equipment that Fermi now in particular may be correcting for the three to seven day period, is survivable in a beyond-design-basis event?

MS. GOVAN: And that will be part of the acceptance criteria for --

(Simultaneous speaking)

MEMBER STETKAR: That's right. That's exactly right.

MS. GOVAN: Okay.

MEMBER STETKAR: We can't rely on just words in Chapter 19 --

MS. GOVAN: I understand.

MEMBER STETKAR: -- because it's just words.

MS. GOVAN: And then there was one other item from Dr. Brown related to qualification and

environmental conditions for beyond-design --

MEMBER BROWN: I'd just like to, yes, just what says that the conditions they've established is the only condition. I mean I agreed we don't have a wealth of stuff about beyond-design-basis conditions and sources.

But we do have at least one example, reasonably, to at least calibrate you to a boundary condition. That's all, the difference between one foot above and the Fukushima boundary condition is just something to talk about. Find out if that's reasonable or not.

MS. GOVAN: And we can come back to you August 22nd --

MEMBER BROWN: And that's what I'd appreciate hearing from you all on.

MS. GOVAN: -- with that.

MEMBER BROWN: Thank you.

MS. GOVAN: Thank you. If no more questions, we're done.

CHAIRMAN CORRADINI: You're done with 20. Now we jump back to Chapter 1. Per the agreement, we're still going to go forward for another half and hour. Then we'll break. Hang in there, another sip

of coffee. Let's go. Back to the red team. Okay.

MR. SMITH: Nick Latzy is going to be presenting.

MR. LATZY: Once again, my name is Nick Latzy, and I'll be presenting Chapter 1 for the DTE Energy Fermi 3 COLA. The first slide here there's a pictorial representation of the Fermi 3 site as it would sit on the current Fermi 2 site.

The cooling tower in the lower left hand corner is the Fermi 3 cooling tower. The Fermi Unit 2 is up in the middle of the page with the associated cooling towers on the upper portion of the page. And Lake Erie is to the right on the page.

CHAIRMAN CORRADINI: Where's Fermi 1 in that picture?

MR. SMITH: It's not in the picture.

CHAIRMAN CORRADINI: But I look up, do I look down by where the intake rooms are?

MR. SMITH: Where those two groins --

CHAIRMAN CORRADINI: Going into the lake, that's where Fermi 1 sits is just, oh, that's where it was, the two buildings there. Okay. I was looking left. Okay. Thank you.

MR. LATZY: Okay. Next slide. The ESBWR

DCD Revision 10 is incorporated by reference. Standard material was incorporated into the Fermi 3 COLA as well as supplemental information and one departure.

That one departure was the radwaste building reconfiguration departure, which was discussed during the November 30, 2011 ACRS.

CHAIRMAN CORRADINI: And that is the only departure, correct?

MR. LATZY: That is the only departure, yes.

CHAIRMAN CORRADINI: Okay.

MR. LATZY: Section 1.2 contains information regarding the radwaste building reconfiguration departure as previously mentioned. Section 1.4 identifies our company's recent name change to DTE Electric Company.

Section 1.5 provides supplemental information describing the Post-Fukushima Near-Term Task Force Recommendations which we just discussed in Chapter 20.

Section 1.8 provides a table which identifies the locations where the radwaste building reconfiguration departure is discussed within the COLA application.

And finally, Section 1.12 provides supplemental information on the managerial and administrative controls for the Fermi 3 construction activity impacts on the Fermi 2 site.

This information was provided in accordance with ISG-22. And that is my presentation of Chapter 1. Are there any questions?

CHAIRMAN CORRADINI: Questions, subcommittee?

MR. LATZY: Thank you very much.

CHAIRMAN CORRADINI: So is there a staff presentation on this? I'm sorry. I forgot.

MR. MUNIZ: There is.

CHAIRMAN CORRADINI: Okay. Off with the red. On with the blue. Sorry. I didn't see it. A new face joins us. Minimize the whole folder. Ms. Wilkins, are you the speaker of the day?

MS. WILKINS: I am.

CHAIRMAN CORRADINI: Okay.

MS. WILKINS: Just me. Good afternoon. I'm Lynnea Wilkins. I'm a Project Manager at NRO Licensing Branch 3. And I'll be presenting Chapter 1, Introduction and Interfaces of the Fermi 3 application.

For the purposes of today's presentation, we had technical staff from NRR, Andrea Kock, Branch Chief and Mike Dusaniwkyj from NRR as Technical Reviewer. From NSIR we had Bill Gott and Al Tardiff.

And both Mike and Al are here in case you have any questions. As you know, Chapter 1 of the Fermi 3 FSER is an overview of the Fermi 3 application.

Today we will be discussing the impact of construction of new nuclear power plant units on operating units at multi-unit sites, departures and exemptions, financial and technical qualifications review and the special nuclear material control and accounting program.

There's also a backup slide included, but I will not be discussing it unless needed. The requirements of 10 CFR 52.79(a)(31) can be viewed as having two sub-parts.

The COL applicant must evaluate the potential hazards from constructing new plants on SSCs important to safety for existing operating plants that are located at the site.

And the COL applicant must evaluate the potential hazards from constructing new plants on SSCs importance to safety for newly constructed plants that

begin operation at the site.

COL ISG-22 was created to assist NRC staff with the evaluation of COL applicant's compliance with the requirements of the regulation. On July 7, 2011, the staff issued RAI 01-05 requesting the applicant to address the requirements of 10 CFR 52.79(a)(31).

The applicant responded on July 13, 2011. The NRC staff's evaluation found that the applicant's supplemental information, EF SUP 1.12-1, and FSAR Section 1.12 is acceptable and is consistent with the six program elements of the regulation as expressed in COL ISG-22.

As the applicant stated earlier, there is one departure in Chapter 1, which is contained in Part 7 of the Fermi 3 FSAR regarding waste management. The staff evaluated and reviewed this departure in SER Chapter 11, which was presented to ACRS in November of 2011.

Part 7 also includes requests for exemptions from Part 70 and 74 regarding the special nuclear material, material control and accounting program. The staff evaluated these exemptions in Subsection 1.5.4 of this SER chapter and will be discussed on a later slide.

The technical qualification review in accordance with 10 CFR 52.97(a)(1)(iv) is what we used to evaluation the section of financial and technical qualifications review.

The staff evaluated financial resources to build, operate and eventually decommission a nuclear facility in accordance with the regulation.

The staff's evaluation concludes that there is a reasonable assurance that the applicant is financially qualified to engage in the proposed activities regarding Fermi 3 and that there are no problematic decommissioning funding assurance issues, foreign ownership issues or nuclear insurance and indemnity issues. In accordance with --

MEMBER BROWN: Before you go on, you didn't make any comment about the technical qualification. Or maybe I misunderstood it. There's two pieces.

When you say technical qualification review, I don't totally understand what that means relative to this chapter. I mean you're looking at how they qualify operators or the technical, the engineering staff or their vendors that they bring. What does that encompass?

MS. WILKINS: I can have Mike clarify that

for you. Mike?

CHAIRMAN CORRADINI: Mike come up.

MR. BROWN: And identify yourself, right there.

MR. DUSANIWSKYJ: My name is Michael Dusaniwskyj, and I'm the economist of NRR. I do the financial qualifications either myself or via the team, the branch.

I'm not exactly sure what your technical qualifications questions is all about, but the only thing I can answer are the financial qualifications. And if you have none there, I'm not sure what else I can do to help you on that subject.

MEMBER BROWN: Well, when you say technical, do we mean technical relative to financial capabilities?

MR. DUSANIWSKYJ: No, the financial qualifications are self-explanatory. There's nothing else associated with that term.

CHAIRMAN CORRADINI: I think he's confused by the title of the slide.

MEMBER BROWN: That's right, financial and technical qualifications review. I got the financial part. You say it's okay from whatever basis. But

nothing was said about the technical part.

MS. WILKINS: My understanding is we are evaluating the financial qualifications.

CHAIRMAN CORRADINI: In this portion of the review.

MS. WILKINS: Yes.

MEMBER BROWN: So then these economists and CPAs and the people who know how to crank numbers and add up columns and numbers.

(Simultaneous speaking)

CHAIRMAN CORRADINI: Don't be that way.

MEMBER BROWN: I'm being a little facetious.

CHAIRMAN CORRADINI: A little.

MEMBER BROWN: But if that was technical in an economic world, I mean it's the people who are qualified. That's what I'm trying to get. Is it just relative to the financial aspects that you've mentioned secondly, and they have the technical qualification to do those assessments?

MS. WILKINS: Correct.

MEMBER BROWN: So if that's what it is, I'm, unless it's engineers and staff operators and that kind of stuff, nobody else is trying to answer that

question. So this is --

MS. WILKINS: Purely financial.

MEMBER BROWN: Applicant know what that is?

CHAIRMAN CORRADINI: Can I rephrase your question?

MEMBER BROWN: Yes.

CHAIRMAN CORRADINI: Could it just simply say financial qualifications review?

MS. WILKINS: It could.

CHAIRMAN CORRADINI: Okay. Good.

MEMBER BROWN: Okay. That solved the first bullet.

MS. WILKINS: Yes.

MEMBER SCHULTZ: That's right. We can look up the reference citation.

MEMBER BROWN: I guess I'm going to have to. I'm not getting an answer.

MS. WILKINS: It's the same reference on the first and second bullet.

CHAIRMAN CORRADINI: Okay. Yes, it is. Keep on going.

MS. WILKINS: Thanks. In accordance with 10 CFR 74 Parts A and B, the SNM MC&A program will be

developed for control and accounting of SNM and will be consistent with ANSI 15.8-2009.

The SNM MC&A program meets reporting and recording requirements of 10 CFR 74.11, 13, 15 and 19. The physical security plan will be implemented prior to receipt of fuel onsite in accordance with 10 CFR 73.55.

The program will be implemented prior to receipt of SNM at the plant site, and based on the above considerations, the staff finds the program acceptable.

As stated earlier, there's an exemption associated with the SNM MC&A. The provisions of 10 CFR 70.22(b) requires an application for a license for SNM to complete a full description of the applicant's program for MC&A of SNM under 10 CFR 74.31, 74.33, 74.41 and 74.51.

Nuclear reactors licensed under Part 50 are explicitly accepted from 10 CFR 70.22(b), 70.328, 74.31, 74.41 and 74.51. The applicant requested an exemption from the requirements of those regulations.

The NRC staff reviewed the exemption, which will allow the applicant to have a similar exception for the COL under 10 CFR Part 52, such that the same regulations will be applied to SNM MC&A program as

nuclear reactors licensed under 10 CFR Part 50.

The NRC staff evaluation concluded that this requested exemption will not present an undue risk to public health and safety and is otherwise in the public interest.

In addition, this exemption is consistent with the Atomic Energy Act or any other statute and is therefore authorized by law. Granting this exemption will not adversely affect the common defense and security.

Vogtle received a similar exemption, which was presented to the ACRS December of 2010. And that concludes my presentation. Any questions?

CONSULTANT HINZE: A brief one, Mike, if I might. As I recall, the construction of the new site called for moving of the meteorological station, and as I recall, perhaps cutting down some trees that are near the site.

I assume that in your evaluation you have found that this does not affect in any way the quality of the information needed for the safety of Fermi 2.

MS. WILKINS: I did not remember that from Chapter 1. Does anyone DC have any information on that? I don't recall seeing that in Chapter 1.

CONSULTANT HINZE: Well, we have previously reviewed Chapter 2, which the meteorological aspects are discussed.

And one of the things that I recall that we heard was that the meteorological station was going to be moved to near the lake and that there was going to be some trees cut down.

And we were, at least I was pleased to hear that there was going to be a year overlap between the two sites by taking data at the two sites. I assume that you have reviewed this in terms of the impact of the construction on Fermi 2.

CHAIRMAN CORRADINI: Let's verify what you remember, but I'm not sure that this review group would look into what you're worried about. But let's at least review, let's just at least summarize. Peter, can you?

MR. SMITH: Yes, this is Peter Smith. I was just going to relate about the overlap between to make sure there was concordance between the two meteorological stations.

Yes, so that's part and parcel of this, and of course as, we're obligated as part of, that's a design change for Fermi 2 as well as for implementing Fermi 3. So it will have to be evaluated at the time

it's done for Fermi 2 under the 50.59 requirements for, applicable to the other license.

CONSULTANT HINZE: Well, and the staff should record the need for that kind of review someplace.

MR. SMITH: Right. So what we have proposed was again the overlap to make sure they were in concordance.

CONSULTANT HINZE: Sure.

MR. SMITH: And then what I'm going to have to demonstrate in order to be able to do this for Fermi 2 is that they are in fact in accordance with one another before I can disable the Fermi 2 tower. And if they're not, then I have a Fermi 2 licensing action to deal with.

CONSULTANT HINZE: Right on.

MR. SMITH: Okay. Thanks.

CHAIRMAN CORRADINI: I think that's what you were looking for.

CONSULTANT HINZE: Right.

CHAIRMAN CORRADINI: Okay.

CONSULTANT HINZE: That's what we need. Right.

CHAIRMAN CORRADINI: Okay. All right,

any other questions? Okay. We're right on time. Let's take a break for a 3 o'clock.

(Whereupon, the above-entitled matter went off the record at 2:41 p.m. and resumed at 3:00 p.m.)

MR. SMITH: So Mike Brandon, FSAR Section 8.2.

MR. BRANDON: My name's Mike Brandon. I'm the licensing manager for the Fermi 3 project. I'm going to present the topic of FSAR Section 8.2.1.2.2, which is basically the response to the Bulletin 12-01 on the loss of a circuit event.

So the discussion topics, just to start off with the note that's on the bottom of this page, Chapter 8 was presented on May 26, 2011. And the scope of this presentation is to address the Bulletin 12-01 actions and response.

Next slide. We did receive one RAI on this topic. That was RAI 08.02-18. I give a little bit of history so this all fits together, but the bulletin was issued in July of 2012.

The director staff put together an RAI for the new plant's applicants, and they issued one to us in November of 2012. We provided a response in December of 2012.

There were several meetings of 2013 between us, project staff, the tech staff and GEH. NRC issued a new RAI to GEH in July of 2013, and then we provided a supplementary response to our original December 2012 response in December 2013.

But the bottom line is all those meetings was the technical information how we complied with the bulletin was to be provided in the DCD. And then we incorporated that information by reference, which is what the slide shows on another page.

Next page. The response that we provided to the RAI was the information that was included or added to the Rev 10 of the ESBWR DCD. It was incorporated by reference.

And then there were basically three administrative procedural type commitments we made in response to the RAI. One was to commit to developing operating procedures, including off-normal operating procedures associated with this monitoring system.

The second commitment was to develop maintenance and testing procedures, including various aspects for setting up these systems and maintaining them.

The third commitment was to provide control

room operator and maintenance technician training on how to operate and maintain the systems.

And then on the last slide, the conclusion, the ESBWR design features that we'll incorporate in Rev 10 of the DCD address the aspects and requirements and expectations of the Bulletin 12-01.

The DCD has ITAAC acceptance criteria to verify the as-built design. FSAR provides commitments, procedures and maintenance training. The money shot is the, it follows the ESBWR DCD and the design of the system for finding that monitoring capability.

MEMBER STETKAR: Mike, I only have DCD Rev 9, so I couldn't look at Rev 10. But I don't think that'll make much difference.

As I understand it, you're basically relying on the individual phase monitoring capability to provide an alarm in the main control room and then relying on operator response to trip circuits or reconfigure things if you had a single phase full, right?

MR. BRANDON: Right. There's a distributor control and information system, a DCIS, that provides monitoring of these various lines. It

provides alarms that go out.

MEMBER STETKAR: And you mentioned the commitments to provide procedures and training for the operators and all that good stuff.

MR. BRANDON: Correct.

MEMBER STETKAR: What kind of human factors engineering are you going to do on that, in particular, feasibility and reliability of these operator actions?

And I don't know what the two of those are because I don't know any single phase faults occur, what kind of time I have available before I start running into problems with degrading voltage on the buses or degraded equipment performance.

But I'm assuming there's some time window. How much time is available for the operators to take the necessary actions, and how do you assess whether or not the operators can actually perform those actions in that time period?

In particular, under conditions like severe storms that might introduce not only single phase faults out in the switch yard or on transformers, but a lot of other things that the operators have to cope with.

So I'm curious to see whether you have, what kind of commitments you have in terms of developing those what we typically call feasibility and reliability evaluations to support those operator actions you're not taking credit for.

MR. BRANDON: First place, being a passive plant we don't credit these offsite power sources for providing any safety-related function.

So the difference between us and an active plant is the alarms that we would receive or the actions response to this type of condition is basically an alarm.

And you've got procedures that would drive the operators to take manual actions after reviewing and assessing the situation. I don't know what, that the time frames would be --

MEMBER STETKAR: Well, but I mean the committee is part of the FSAR to develop those procedures and training, so that's a licensing commitment.

I'm asking as part of that licensing commitment how do I have assurance that the people can actually do what you're asking them to do by procedure and theoretically training them to do in a classroom

setting reliably within the times that are available.

I can write procedures to do anything. I could require the operators to respond in a millisecond. Most people can't respond that fast. Follow me?

Part of typical human factors engineering, whether it's for this commitment, for these procedures or for design of the main control room where the associated emergency operating procedures, if you want to talk safety-related stuff, is a feasibility and reliability assessment.

And reliability here I'm not talking about PRA trying to quantify some miracle value. Reliability in this sense is some measure of assurance that you have margin. So I'm asking what type of assessment will be done for these --

(Simultaneous speaking)

MR. SMITH: The time frame for these actions is being defined. I think that's what Mike said again, is that I'm not sure that we can, it's not like --

MEMBER STETKAR: So why are we writing procedures and training people if they don't have to do anything? They must have to do something, and

therefore, there must be a time that they have to do something. Otherwise, it's not clear why I care.

MR. HINDS: So, this is Dave Hinds just reiterating that the safety of the power plant does not rely upon these power sources.

And so as far as time frames for actions, like you mentioned EOPs a minute ago, actions that would be necessary in a short time frame to ensure safety of the power plant, it would be not applicable because the power sources are not relied upon for the safety of the power plant.

It's more of power generation type of monitoring for awareness of power supplies, again, for commercial or power generation reasons. But safety of the power plant is not dependent upon it.

MEMBER STETKAR: I think I hear what you're saying. I'll ask the staff when they come up. Thanks.

CHAIRMAN CORRADINI: But can I just ask because this is an area that I don't really feel expert to ask? But there must be some feeling whether we're talking a minute, an hour, hours.

I mean do you have any feeling for what's the response time required? You must have some feeling to how it's --

MR. HINDS: So if there's, are we referring to --

CHAIRMAN CORRADINI: I think that's how John's at least starting with.

MR. HINDS: So if consider when we've lost power, but if the plant's online it's necessary of course to have the UAT. The UAT would normally be in service, and there'd normally be voltage and current flow.

And that is necessary for normal power generating on the grid and for the normal power generating house loads.

But if we are, loss of that power on the UAT, then the normal response would be that it would automatically switch over to the alternate power source, the RAT, or reserve auxiliary transformer.

If the power loss is on the other source, the RAT that's not in service, it's of no consequence. This information, there is no urgent action meaning there's no immediate consequences. There's no urgent action. So again, there's automatic features there to transfer over to --

MEMBER STETKAR: Except the bulletin identified, the problem with the single phase faults

is that the protection staff equipment doesn't recognize that there's a power failure.

That's the thing that happened at Byron. That power was degraded, but the automatic switching mod that would normally transfer you didn't know the power was degraded because it was at two of three phases or three of three phases, not one of three phases.

That's the whole thing with precipitated, the lever. So yes, indeed. If everything goes clearly away, all those automatic things work.

If things don't go away as cleanly, which is this situation, when you do have degraded voltage on one and only one phase, then you need to rely on operators to recognize that condition and either manually initiate the transfer or isolate the fault, wherever it is, those types of things. But we are in a degraded condition.

MR. HINDS: The ESBWR design, it monitors the three phases.

MEMBER STETKAR: Monitors, but you didn't say initiates automatic actions when you have a fault on only one.

MR. HINDS: Skip, would you like to, Skip Butler?

MR. BUTLER: Yes, this is Skip Butler with GEH. So yes, we monitor and enunciate in the control room, and we leave it up to the operator to take action. But all three phases are monitored on the high side.

All three phases are monitored on the medium voltage side, and every piece of equipment, including the UPS are individually protected for all three phases, so there's a defense in that all the way through.

MEMBER STETKAR: All three phases were for individual phase faults.

MR. BUTLER: All three phases are monitored so we can hear differential --

MEMBER STETKAR: All three phases are monitored, but if we have a single phase fault, depends on how your differential relays.

MR. BUTLER: We're looking for the open phase problem or situation.

MEMBER BROWN: We're not talking about a fault here. I mean a fault is a short of something.

(Simultaneous speaking)

MR. BUTLER: I was using it as a generic response.

MEMBER BROWN: I was about to ask if I was

missing something.

MEMBER STETKAR: No, it's, this event if you looked at Byron it's one of those smart things that happened, but discovered. If you monitor each phase, the relaying can detect it.

But none of the automatic protection systems responded to it.

MEMBER BROWN: I read the report.

MEMBER STETKAR: I understand your answer.

MR. HINDS: And again, it's not safety aspect. We're talking power generation and continuity of generation.

MEMBER STETKAR: I understand that also.

MR. BRANDON: And that's the end of this presentation.

CHAIRMAN CORRADINI: We'll keep on switching.

MR. MUNIZ: While they assemble, this is Adrian Muniz, a point made back on Tucker 1 on Page 52 of 97 A 1.4, there is a technical publication review portion of it that goes along with it.

And we're currently looking at the Chapter 1 SE to make sure that we are documenting that review or not. And if not, we'll make a revision to the SE

document why we find that the applicant technically qualified.

CHAIRMAN CORRADINI: Besides without the applicant, you don't know.

MR. MUNIZ: That would be part of the reason.

(Off microphone comments)

CHAIRMAN CORRADINI: Just checking.

MR. MUNIZ: I just want to make that clarification.

CHAIRMAN CORRADINI: Good. Thank you. Okay. Is it Jessica's going to start.

MS. UMANA: Yes. Okay. I'm Jessica Umana. I'm the Project Manager for Chapter 8, and this is Bob Fitzpatrick, the Technical Reviewer. He's going to be discussing the staff's review of the applicant's changes to Section 8.2.

As DTE stated, Chapter 8 was last presented to the ACRS in May 2011. So before we start I just want to make a note that the changes that have taken place in 8.2 do not impact the rest of Chapter 8. So with that, I'm going to turn it over to Bob.

MR. FITZPATRICK: Thank you, Jessica. I'm Bob Fitzpatrick. I'm with the Electrical Branch

of NRR and after the consolidation of Electrical Branch from NRO. Our branch handles both the operating fleet and the reactors.

I thought we'd start out with just a couple highlights of the Byron event itself, the background. It occurred on January 30, 2012 and affected Byron Unit 2. A key element in that was that it wasn't immediately detected.

And it left both onsite and offsite electrical power systems not able to perform their intended safety function. So this presented a potential common cause failure event because of a degraded grid condition.

Under the normal operating conditions, the entire, all safety trains would see that. Therefore, it really needed to be addressed across the entire reactor fleet.

Next slide. Some of the major staff actions that occurred following the event, we had a special inspection at Byron, trying to get to the bottom of exactly what happened and why.

We put out an information notice to all the stakeholders, especially the operating fleet so that they would know what happened and thinking about

how the plant would react to that and what they might be able to do.

Following that, we put together a bulletin, 2012-01, which actually asks the operating fleet for descriptions of how each plant would handle an event. Would it detect it? How would it react, et cetera?

And during that phase we had a lot of industry participation, especially NEI. They put together a task force, and they were quite interactive and helpful along the way.

We then put out a summary report, which includes our recommended actions. And finally, in terms of actions, we also issued RAI 08.02-18 to Fermi 3 asking them specifically how Fermi 3 would react to this. The NRC requirements for passive plants is basically these four bullets.

We want the plants to provide a detection of single or double loss of phase events with or without a high impedance fault across all operating modes of the plant by adding the full power, shut down, start up, all the modes to make sure that we get the various, we're assured that at the various transformer loadings we can still detect this loss of phase event.

We want the detection to be located on a

high voltage side of the transformers that feed offsite power into the plant's electrical distribution system.

So we want to monitor at the source. We required an alarm in the control room dedicated to this to let the operator know that this situation exists.

And we've also required plant personnel, which is operations and maintenance staff, to be provided with training procedures so they can not only react to the alarm in the control room but maintain this equipment throughout the licensing life of plant. Next part.

MEMBER STETKAR: Before you get to the ESBWR specific, let me ask you the generic question because it's relevant to the last bullet on this slide.

Again, now I ask the staff, provide plant personnel, operations and maintenance, with training and procedures. How does the staff develop reasonable assurance that the personnel or that those training procedures can actually accomplish the necessary actions given whatever the available time is?

Do you request these types of feasibility analyses because the staff has ample guidance to show how those things should be done?

MR. FITZPATRICK: We have not asked for

a specific.

MEMBER STETKAR: You have not. Okay. Thanks you.

MEMBER SCHULTZ: Bob, how do these requirements differ from the general fleet of plants? You have special requirements for passive.

MR. FITZPATRICK: There's one more bullet for the active plants, and that bullet is to automatically isolate from the degraded source.

MEMBER STETKAR: Oh, so the active plants have automatic isolation requirements?

MR. FITZPATRICK: Yes, they do.

MEMBER STETKAR: It's a different ball game. I could ask why that is, but it's a different topic. This is not on the active plants, so we should keep on focus on ESBWR.

MR. FITZPATRICK: Okay. The ESBWR DCD Rev 10 formalized the ESBWR design approach, which we accepted and includes the following.

It identified, ESBWR identified existing relays within their Distributed Control and Instrumentation System, their DCIS, that can detect loss of phase events with and without high impedance faults.

These relays are located on the high voltage side of the Unit Auxiliary Transformers and the Reserve Auxiliary Transformers. Next part.

The design utilizes these programmable digital relays to monitor both current and potential transformers outputs, per phase, on each of the three phases.

The DCD also includes ITAAC to demonstrate that proper set points have been developed and requiring testing to demonstrate full functionality of the design.

The DCD also includes interface requirements for the COLAs to establish training and procedures per the staff's position. And how Fermi fits into this, they're a design-specific solution.

In COLA Rev 6, they documented the following, which they just presented to you. The ESBWR design solution is incorporated by reference, which includes the DCIS plus the ITAAC.

And I made three commitments, which I just talked about. The plant operating procedures, including off-normal, associated with the monitoring system will be completed at least six months prior to fuel load.

The second commitment that maintenance and testing procedures for the calibration set point determination, troubleshooting, et cetera, will be developed prior to fuel loading.

And the third commitment control of operator maintenance technical training associated with the operation and maintenance of the monitoring system will be developed and will be ready prior to fuel loading.

So in summary, we require the passive designs to provide detection and alarm for a single or double loss of phase event, with attendant procedures and training of plant personnel.

Fermi 3 has incorporated the ESBWR design solution by reference and has committed to developing the procedures and testing and training. And we find this acceptable. Questions?

CHAIRMAN CORRADINI: Any questions? Did you have a question?

MEMBER STETKAR: No. I don't. I'm always curious when the staff finds procedures and training acceptable, but they don't follow available staff guidance in terms of evaluating the feasibility of performing the actions that are included in the

procedures and instructed by the training.

We've had this discussion for different issues. This is just another example of it. They are NUREGs, NUREG-1852 if you want to look it up.

It happens to use the word fire, but it's a general feasibility assessment where you look at time lines and assessment of human performance and available tide margins.

It's elaborated in NUREG-1921, which again has the word fire in it, but it's generic guidance on how to perform one of these feasibility assessments. I'm kind of disappointed that the staff doesn't really follow their own guidance. They don't.

And in a sense requiring someone to write procedures and training for something that can't be feasibly done within a reasonable time period is just an additional burden on requiring people to write, also provide training, which doesn't make any sense.

CHAIRMAN CORRADINI: All right, we'll move on. So noted.

MEMBER STETKAR: You asked.

CHAIRMAN CORRADINI: I know. Let's move on to 3.9. So this is not only discussing 3.9 but also responding to an open item that we had discussed prior

relative to the squib valves. Correct? I gave you instrumentation for the spent fuel pool. That's all you get.

MEMBER BROWN: It's an opportunity, Mike, I may not be able to pass up.

CHAIRMAN CORRADINI: Mike is going to take the lead on this.

MR. BRANDON: Again, my name is Mike Brandon. I'll be talking about Chapter 3.9 as it pertains to the ESBWR steam dryer. The first slide, similar to my last presentation, this section was previously presented to the ACRS in this case in August of 2012.

So the focus of this presentation will be limited to the steam dryer for the ESBWR. Plus I just got the question the staff had on the squib valve. Slide 3.

The DTE follows the ESBWR DCD with no departure or deviations in this regard. FSAR Section 3.9.2.4 addresses the DCD COL Information Item 3.9.9-1-A. And it lists the applicable GEH reports for the team dryer.

And those three reports are the Steam Dryer Structural Evaluation Report, the Plant-Based Load

Evaluation Methodology Report, and the Steam Dryer Acoustic Load Definition Report.

Those reports are all integral to the DCD. In addition to that, in FSAR Section 3.9.2.4, we stated the steam dryer would be treated as prototype, which will include on-dryer instrumentation during initial power ascension for monitoring flow-induced vibration.

That testing regime was based on the guidance from Reg 1.20. Next page. This is just a graphical representation that provides an overview of the process for ensuring steam dryer structural integration.

And it's sort of laid out here in I'll say four phases. But the first phase here on the left hand side is basically where we're at now. It's the prefabrication stage of the Fermi 3 steam dryer.

We have the evaluation methodologies that are provided in the DCD. And then there's an example of an as-designed steam dryer that has been through start of testing and that example, and the most current example of that is the Grand Gulf steam dryer that was recently testing in the power of three license amendment that Grand Gulf did a couple of years ago.

The next section talks about really at the

point where the steam dryer's been designed and fabricated. And at that point in time a detailed design will be in existence for the steam dryer and predictive analyses will be performed based on that detailed design.

And there's also a number of ITAAC in the DCD that will verify that steam dryer is designed, as-built and as-designed. The third phase here is the power ascension testing, which are dictated by a set of Fermi 3 license conditions, which I'll talk about more in subsequent slides.

And then lastly, once the plant is up and operational and running, there's some requirements for periodic inspection during future outages of the steam dryer to verify its integrity.

Next slide. The FSAR incorporates the four elements of the Steam Dryer Comprehensive Vibration Assessment Program described in Section 10.2 of the GEH report, which is the ESBWR steam dryer structural evaluation.

The four elements of that are the Steam Dryer Comprehensive Vibration Assessment Program follows the ESBWR DCD and reference reports, which include a monitoring plan to be submitted to the NRC

90 days prior to start up.

Detailed design follows approved methodology in DCD and the referenced reports I referred to earlier. The startup program and license conditions include hold points, interactions with NRC and stress analysis reporting requirements.

And then lastly, periodic inspections during subsequent refueling outages are also prescribed in the license conditions. And then, once again, we followed the DCD without any departures.

Next slide lays out the license conditions that are included in the Part 10 of the Fermi 3 COLA. A summary and overview of those is we will consider a steam dryer monitoring plan, which will be submitted 90 days before startup.

Prepare power ascension test procedures, which has various hold points and activities that will be monitored and acceptance criteria identified. The plant will be allowed to startup to 75 percent power, which is where the initial hold point kicks in.

There will be basically subsequent hold points at approximately 5 percent intervals to test and verify performance. We will be monitoring flow-induced resonances during that power ascension.

We'll modify limit curves necessary, basically if the actual performance doesn't, as we compare the actual performance against the predictive analysis and if there's any need to adjust, we'll do that during that power ascension.

We'll continue to monitor performance of expected operating conditions, and at the end we'll analyze the results up to full power, verify the acceptance and prepare a report and submit to the NRC post-startup.

That'll operate for a cycle. And the first and second refueling outage, just we're committed to do a visual inspection of the steam dryer. And then following the second refueling outage we'll provide a new plan for future inspections and submit it to the NRC for their review and approval.

And the last slide is the conclusion slide, a comprehensive program to provide assurance that the steam dryer structural integrity has been maintained as provided. The elements of the CVAP are subject to a comprehensive vibration assessment program for addressing flow induced vibrations.

The steam dryer will be treated, tested as a prototype and will be actively monitored during

power ascension and the last bullet is the ESBWR DCD and GEH reports provide the elements of the vibration assessment program design and evaluation methodologies and startup testing.

And, once again, this is something that we incorporated by reference in all of the DCD without any departures.

CHAIRMAN CORRADINI: Questions by the subcommittee? Okay. Thank you very much. Our final presentation by the staff.

MS. GOVAN: Good afternoon. Again, my name is Tekia Govan, and I'm the Project Manager of the Review of the Fermi Combined License Application for Section 3.9 entitled Mechanical Systems and Components.

Chapter 3, entitled Our Design for Structures Components, Equipment and Systems was presented to the subcommittee on August 16, 2012. That presentation discussed the staff's evaluation of Chapter 3, with the exceptions of Sections 3.7, 3.8 and 3.9.

From that meeting there was an ACRS action item to the staff requesting additional discussion on a license condition for acceptability in the area of

squib valves.

Today, the NRC staff will be making a presentation on Section 3.9 that covers the staff's review of reactor internals, including the review of steam dryers for Fermi Unit 3.

And we'll be discussing the license condition that was developed to demonstrate acceptable testing for the squib valves as requested by ACRS during that August 2012 meeting.

Sections 3.7 and 3.8 will be presented to the ACRS subcommittee on August 22, 2014. The staff review team consists of myself, Tekia Govan, as the Project Manager, Theresa Clark, Branch Chief, Thomas Scarbrough as Technical Reviewer and also Yuken Wong who's at the table with us, Technical Reviewer.

And at this time I'll turn it over to Tom Scarbrough who will begin the technical presentation.

MR. SCARBROUGH: Good afternoon. As a summary of our review, the Fermi 3 Combined Final Safety Analysis Report, Revision 6 incorporates by reference ESBWR Design Control Document, DCD, Revision 10.

And the FSAR for Fermi 3 in Section 3.9 includes sort of three areas that I'll talk about. One there's four COL information items they had to

address. There are six commitments they make in the FSAR.

And there's three supplemental items, which are big I'm just going to tell you what they are right now. There was Supplement Item Number 1, which indicated that there was no code relief requested by Fermi.

Supplement Item Number 2 was there was no risk-informed in-service testing program proposed, and three, no risk-informed in-service inspection proposed.

Okay. Now moving to the COL information items, there are four. And I'm going to talk about Item Number 1 and Number 3 in more detail, but let me just tell you what they are in general.

Item Number 1 is the Reactor Internals Vibration Analysis, Measurement and Inspection Program. Item Number 2 is a COL Item related to stress reports for ASME Class 2 or 3 or Quality Group D Components with 60-Year Design Life.

And there's two commitments in the FSAR on these. Commitment 002 indicates that the stress reports will be completed six months following the ITAAC completion.

And Commitment 4 is the FSAR will be revised to include those stress analysis results. And that was a pretty straightforward simple commitment they made on that one.

The In-Service Testing Program included the squib valves. I'll talk about that in a little bit more detail in future slides. And then the last one there is Item Number 4. And that's the Snubber Inspection and Test Program.

There's two commitments here, but basically the FSAR in 393 includes sort of the general description of the pre-service examination and inspection and testing program for snubbers.

It has a couple of commitments related to updating the snubber table, that once they know exactly what the snubber is, where they're going to be, and also including information in the FSAR for snubbers.

So basically those are the four items. Now I'm going to talk about two of them in more detail. Item Number 1 is the Reactor Internals Vibration Program. And there's two sections to this.

One is the reactor internals other than the steam dryer, and the other one is the steam dryer. The reactor internals other than the steam dryer is

covered by the Comprehensive Vibration Assessment Program, CVAP.

And it's described in the DCD and Appendix 3 and NEDE, the General Electric Hitachi Engineering Report 33259P. And what that indicates is that the Fermi 3 reactor internals other than the steam dryer will be classified as a prototype if there are no prior ESBWR plants.

Now for the steam dryer CVAP program, it's described in detail in DCD Appendix 3L, NEDE-33312, 33313 and 33408. And in those documents, it specifies that the Fermi 3 steam dryer will be classified as a prototype regardless of whether or not they're any other ESBWR plants.

Okay. So moving on to more detail regarding that item, that information item, for reactor internals other than the steam dryer, in addition to referencing the DCD and the NEDE-33259, the FSAR specifies two commitments.

First is they indicate that the CVAP program will be developed and implemented as described in DCD with no departures and that the vibration in the spectrum program will comply with Regulatory Guide 1.20, Revision 3.

And the summary will be submitted six months prior to implementation. And the other commitment is that the preliminary and final vibration reports will be submitted 60 and 180 days, respectively, following program completion.

So that was a pretty straightforward acceptance of what's in Reg Guide 1.20. Now for the steam dryer itself, as you saw previously, there are four areas of this information item regarding the steam dryer.

So in addition to referencing the steam dryer provisions in the DCD, the FSAR responds to those four aspects of information item. First that the steam dryer CVAP is described in DCD and 33313 with the Steam Dryer Monitoring Plan to be submitted 90 days prior to startup.

And in those documents, as you all recall from our detailed discussions around ESBWR, there's an as-design report described. It's all Tier 2. It all has to be followed.

So there's quite a bit of discussion that has to take place in evaluation of the steam dryer before they get to an as-built state.

The second part of that information item

is that the detailed steam dryer design will follow the methodology in the DCD and GEH reports with an example application provided in 33408.

And the follows the Reg Guide 1.206 process where there's an information item that cannot be completely resolved because the detailed design of the dryer is not complete at this time.

They follow an example, which is the Grand Gulf, and that's described in detail. And we've gone over that before where it was determined that the methodology successfully predicted the analysis in Grand Gulf during their startup with a few tweaks.

But basically, it was acceptable with some understanding that there's going to be a minimum altering stress ratio of 2.0 for the steam dryer. And that was all the uncertainties we had with that.

The third area is the startup program and license conditions. I have some more slides to give you more detail on that. And last is the period steam dryer inspection. And I have more slides on that.

So basically, that's the four areas of the steam dryer. Now going to Item Number 3, which is the in-service testing program, and as it was mentioned, we briefed the ACRS on this on August 16, 2012.

So I'll just give you kind of high level of what we talked about then. So in addition to referencing the IST provisions in the DCD, Section 3.9.6, the FSR includes these areas, the valve pre-service testing provisions.

And there's a number of those, valve exercise testing provisions, the squib valve, which I'll talk about a little bit more on the next slide, the power-operated valve, POV, periodic verification provisions.

Basically these are air operated valves because there are no safety-related load operating valves in the ESBWR design. The check valve testing provisions making sure that the operator movement is observed.

And then reference values make sure that we determine reference values there consistent with the plan to test valve at operating conditions or conditions that would be applicable to IST.

So those are high level areas that we talked about with in-service testing. Now for the squib valves, in response to a RAI, Fermi included in the FSAR these provisions.

The industry and regulatory guidance is

considered in development of in-service testing program for squib valves and that the in-service testing program for squib valves incorporates lessons learned from squib valve design and qualification processes, such that surveillance activities provide reasonable assurance of the operational readiness of squib valves to perform their safety functions.

And as we've sort of learned as the squib valve qualification process is ongoing, for another plant we know that there are a lot of lessons learned that could be applied here. So this is going to provide us that opportunity.

In addition, there's a license condition, which I'll talk about in a later slide. So in closing out the review of Section 3.9.6, these were the basic findings that we had.

One is that the Fermi COL applicant adopted RAI responses from the previous ESBWR R-COLA, which was Dominion from North Anna 3. And so there were a number of RAIs we had in that, AOVs and different things.

The DCD specifies the use of ASME Standard QME-1-2007, which is accepted by Revision 3, the Reg Guide 1.100. We audited the ESBWR design specifications in July 2009 at the GEH office in

Wilmington, North Carolina.

And one of the things we were looking for was did the design specifications specify use of the QME-1 standard, and it did. And we had some other areas that we asked them to update.

And then we had a follow up audit in March of 2010, which verified that they had incorporated those changes into the design specs. We also found that the ESBWER DCD and the FSAR specified the use of ASME OM Code 2001 Edition through 2003 Addenda.

But, however, there is a 50.55(a) requirement that the latest addition 12 months before fuel load be applied. So we'll have to update, but the version they were using was acceptable for the COL license application.

And then lastly there, the FSAR has supplemental provisions that are consistent with the ASME OM Code requirements in areas such as pre-service testing, exercising and reference values and check valves.

So that's how we closed out Section 3.9.6. Okay. Next are the license conditions. There's one.

This is the general license condition or operation of program schedules where FSAR Table

13.4-201 lists the operational programs, the regulatory basis, the implementation milestones and application FSAR section, including the in-service testing, operational program pre-service testing program.

The licensee will submit a schedule that supports the planning and conducting the NRC inspections.

The schedule must be submitted 12 months after COL issuance and updated every six months until 12 months before fuel loading and then every month thereafter until full implemented or the plant enters commercial operation.

That's a standard license condition for operational programs for all the plants we have. The squib valve, squib valves is, the license condition on squib valves is very similar to the license condition that was placed on Vogtle Units 3 and 4 and D.C. Summer Units 2 and 3.

Before initial fuel load, the licensee shall implement a surveillance program for squib valves in the Gravity Driven Cooling System, GDCS and Automatic Depressurization System, ADS, with specific provisions in addition to the OM Code, incorporated by reference 50.55(a) as summarized on the following slides.

The reason why we picked the Gravity Driven Cooling System and ADS system, the ADS system has eight, eight inch depressurization valves, squib valves, and the GCDS system has eight six inch injection valves, eight six inch equalization valves and then 12, two inch deluge valves.

There are some small squib valves in the SLIC system, Standby Liquid Control System, but based on our experience with Standby Liquid Control System operating plants we didn't think we'd need to do this.

And then there's a couple of backup valves, squib valves in the isolation condenser system where they use it to provide extra water to the isolated condition condenser pool from the equipment pool if they have a problem.

So we didn't consider those to be necessarily part of this license condition. Okay. So the license condition starts out very similar to Vogtle and Summer.

Pre-service testing, all the squib valves shall be pre-service tested by verifying operational readiness of the actuation logic and electrical circuits.

A sample of 20 percent of the charges shall

be tested with one squib valve from each redundant safety train. All the corrective actions will be applied to resolving any deficiencies.

And if a charge fails to fire or its capability is not confirmed, all charges within that same batch number shall be replaced with a different batch that satisfied the 20 percent sampling.

Now for operational surveillance, the squib valves shall be subject to the following after commencing plant operation with appropriate corrective action.

First, at least once every two years each squib valve shall undergo visual external examination and remote internal examination.

Second, at least once every ten years each squib valve shall be disassembled for internal examination of the valve and actuator to verify valve operational readiness and component integrity, and to remove any foreign material, fluid or corrosion.

Okay. Then third, for squib valves selected every two years per the OM Code, because this is a supplement to the OM Code, the OM Code is a two year sampling frequency.

Operational readiness of actuation logic

and electrical circuits shall be verified. And as fourth, for squib valves selected every two years per the OM Code, sampling must select at least one valve from each redundant safety train. Each sample, and each sample valve shall be tested to confirm charge capability.

Now, this license condition will have the sunset clause in it where it will expire when these provisions are incorporated into the Fermi IST program or the incorporation of the ASME OM Code requirements for squib valves in new reactors per 10 CFR 50.55(a) into the Fermi IST program. And --

CHAIRMAN CORRADINI: Can you say that again slower?

MR. SCARBROUGH: Okay.

CHAIRMAN CORRADINI: I didn't understand. So this operation surveillance program is similar to Vogtle? I'm just trying to summarize so I got it all. It's similar to Vogtle and Summer.

And you walked through a pre-service and then in-service and operational surveillance. And then it expires. And then you had two conditions.

MR. SCARBROUGH: Yes. There is, this condition will expire upon one of two conditions. One

is a if this license condition is folded into the IST program, then it expires.

The other is the fact that the 2012 edition of the OM Code includes these conditions.

CHAIRMAN CORRADINI: Okay, that's --

MR. SCARBROUGH: Okay. And so if they, once this plant gets to the stage where they are using the 2012 edition of the OM Code, which we're in the process now of preparing the 55(a) rulemaking to incorporate by reference that 2012 edition.

So within like a year to a couple years, it will be mandated. And so when it's mandated, and at that time Fermi, the Fermi program is referencing the 2012 edition of the OM Code, this license condition expires.

(Off microphone comments)

CHAIRMAN CORRADINI: Thanks. John remembered what you were saying. I didn't.

MR. SCARBROUGH: All right, so, okay. That's the squib valve license condition. Now the steam dryer license condition, now this condition is consistent with the extended power uprate license conditions we've had for steam dryers.

It was accepted as part of the ESBWR design

certification review, so it looks very similar to what you've seen before. But the license condition specifies that the licensee shall use 33312 and 33313 in implementing the following conditions.

First, the steam dryer monitoring plan has to be provided to NRC 90 days before startup. The power ascension test procedures have to be available to the NRC inspectors no later than ten days before startup.

And then the individual license conditions that are specified, for example, here Item Number 2. The initial hold point during first power ascension shall be no more, shall be at no more than 75 percent power. Then it cross references back to Section 10.2 in 33313.

And that was done to make sure we didn't inadvertently pull in some proprietary information, so that you recall there are some limited aspects of the 33313 power ascension procedure that is proprietary.

And so what Fermi did is they referenced back to that, but basically Item 2, just to give you an idea, it's recorded data. Develop the load definitions, prepare predicted the measured, computer the maximum stress.

Update the limit curve, trend to the next point and make it available to the NRC. So that's basically Condition Number 2. Condition Number 3 is power ascension. And this sends you back to 33313 again.

Basically, 5 percent increments you record and evaluate your data. You trend to the next point, and you make it available to the NRC staff. The fourth condition is power ascension monitoring, sends you back to 10.2.

And this is that you address any expected load increases and fatigue damage due to variable plant conditions.

So if you have a situation like Grand Gulf did where they adjusted their pressure regulator, right, in the middle of all this, right, you have to evaluate what that did to your analysis of the steam dryer.

So that's the purpose of that condition. Condition 5 is the flow-induced resonances, and what that will involve is if you exceed your criteria, you have to stop power ascension.

You have to evaluate the steam dryer. You have to revise your limit curves if necessary. If you

exceed Level 1 of the limit curve, you reduce your power.

If you exceed Level 2, which is typically like 85 percent level, you have to reevaluate before you go further. And then Item Number 6 are the limit curve modifications.

You have to evaluate your end-to-end bias and uncertainties at each hold point. You have to adjust your responses based on your bias and uncertainties.

And if your data exceeds your predictions, you have to evaluate your steam dryer. And then Item Number 7 is physically the hold point to 75, 85 and 95 percent power.

You cannot proceed for at least 72 hours after making the data analysis available to the NRC project manager. And eight is that during power maneuvering testing, data shall be recorded from on-dryer instrumentation across the range of steady state operating conditions.

And the dryer structural response over the plant operating conditions shall be included in the stress analysis report. So this, once again, is talking about things where you may be maneuvering in terms of your pressures and such.

Make sure to evaluate your dryer. Item 9 is that once you get the full power, you have to provide the data to NRC within 72 hours.

You have to provide the stress report within 90 days, which includes the minimum offhand stress ratio with load definition and demonstrate the structure integrity of the dryer over its entire design life.

And then Item 10 are the periodic steam dryer inspection program items. During the first two refueling outages, you conduct a visual steam dryer inspection of all accessible areas and susceptible locations using accepted industry guidance.

And the results provided to the NRC within 60 days after startup, and at the second refueling outage you update your steam dryer monitoring program reflecting the long-term inspection plan and provide that within 180 days following the startup.

And then, in conclusion, we found that this Fermi COL applicant had provided reasonable assurance that the mechanical system and components will have structural integrity and functional capability to perform their design functions for the safe operation of Fermi.

And the NRC staff is completing the ESBWR design certification final rule with a supplemental FSER on ESBWR steam dryer and some other issues. That is my presentation.

CHAIRMAN CORRADINI: Questions by the committee? Any questions? Okay. Thank you very much.

MR. SCARBROUGH: Thank you.

CHAIRMAN CORRADINI: So at this point I don't think we have any outstanding questions that we've asked staff or the applicant that we haven't heard back on.

So I think we're done there. So I think is the time we want to open the line and get any sort of comments from those listening in. So Chris, can you ask? So if there's anybody out there on the line, could you at least acknowledge that you're there just so we know it's open?

MR. KEEGAN: Hello. This is Michael Keegan with Don't Waste Michigan.

CHAIRMAN CORRADINI: Okay. Mike, so Mr. Keegan, thank you. Just hold on a second. Are there others that want to make comments from the public?

MR. SCHONBERGER: Yes. This is David

Schonberger from Ann Arbor, Michigan.

CHAIRMAN CORRADINI: Okay. Mr. Schonberger, hang on. Anybody else? Okay. So why don't we go with Mr. Keegan. Why don't you go ahead first and hear your comments, and then we'll go on to Mr. Schonberger.

MR. KEEGAN: Okay. Very good. Thank you. I'm Michael Keegan. I'm with the organization, Don't Waste Michigan. We are part of a coalition of interveners in the COLA proceeding on the Fermi 3.

And I appreciate the opportunity to present today or make comment. I very much want the ACRS to be aware that the Fermi 3 is being challenged on quality assurance issues.

And I'm frightened by the prospect that there is lack of quality assurance by Detroit Edison, lack of quality assurance by General Electric Hitachi, and a lack of quality assurance at the NRC.

These were all findings that occurred in the fall of 2009 and are well documented. And I would invite the ACRS to visit the public document hearing regarding our contention on quality assurance.

We are currently before the NRC commissioners appealing an ASLB ruling, which seemed

to decide that quality assurance wasn't that high on their priority list.

So I just want to alert you to that. I did have the opportunity to sit on an ITAAC scoping hearing for how the ITAAC will be developing the procedures, and I can tell you that the opportunity, the window of opportunity is about the size of a keyhole.

And every opportunity leads to the off ramp, and anybody who tries to bring anything forward will be whacked. There will be nothing coming out of the ITAAC that will bring about any kind of a hearing process.

So I'm disturbed by the fact that ACRS will have to sign off on the COLA plan prior to all resolved issues knowing that the ITAAC is purposefully designed to lock the public health.

On to the steam generators, I'm sorry the steam dryers. It seems to me that essentially destructive testing is being authorized on the steam dryers, and relying on General Electric work that's been done years ago.

And just this past January I think it was that a revelation came forward that GE had falsified a document on the steam dryer from 2007 to 2012 and

they ended up getting a fine of $2.7 million.

So those are some of my concerns. I do welcome the opportunity to work with the ACRS and ask how is it best that the public could actually have participation in this process and access to these documents.

Because the historical records, the inefficient records is what the public, the change of underwear at the NRC and at the utility happen with some frequency.

But it's the public who's been vigilant for decades on these issues. So those are my concerns, and I look forward to the August 22nd meeting. And I wonder if there is a liaison person who I might reference regarding the ACRS.

CHAIRMAN CORRADINI: Sir, Mr. Keegan, Christopher Brown is the federal designated official that you can work with for the August 22nd meeting so you can get details on it.

MR. KEEGAN: Very good.

MEMBER STETKAR: One thing also, Mr. Keegan, that we should alert you to. This is, this meeting, this is John Stetkar. I happen to be a member of the subcommittee, but I'm also chairman of the ACRS.

The meeting that we're having today and the meeting in August are subcommittee meetings, so they're not formal ACRS meetings. You should monitor and do contact Chris Brown.

The formal ACRS meetings where the ACRS develops their, our opinions and indeed our findings on specific issues are the meetings where you want to be interested in terms of making comments or interactions with us because the subcommittee meetings are simply gathering information for deliberation by the full committee.

So, our subcommittee meetings are open, and in fact, all of your comments and concerns are on the record of the subcommittee meeting. What I'm saying is that you want to also be interested in interacting with the full committee at our full committee meetings.

And Chris can keep you apprised of that schedule.

MR. BROWN: That's correct.

MR. KEEGAN: Okay.

MEMBER STETKAR: So just keep that in mind.

MR. KEEGAN: Okay. Very good.

CHAIRMAN CORRADINI: Okay. And I

apologize. I didn't write down the name of the next commenter.

MEMBER BROWN: Mr. Schonberger.

CHAIRMAN CORRADINI: Schonberger. Mr. Schonberger, are you still on the line?

MR. SCHONBERGER: Yes, sir.

CHAIRMAN CORRADINI: Okay. Why don't you go ahead, please?

MR. SCHONBERGER: Okay. So my name is David Schonberger, D-A-V-I-D, S-C-H-O-N-B-E-R-G-E-R, and I'm calling from Ann Arbor, Michigan speaking today for myself as an individual member of the general public.

So, with reference to today's meeting, discussion pertaining to the revision to Section 8.2, I agree with the gentleman who expressed disappointment that the NRC staff does not follow their own guidance.

Unfortunately, the previous ASLB hearing on Fermi 3 explicitly indicates that Mr. Adrian Muniz' NRC staff team believes it can actually get away with that type of behavior. So I think you'll see a pattern if you investigate the history here.

I'd like to bring to the attention of this ACRS subcommittee that Mr. Adrian Muniz' project team

was resoundingly repudiated by the Atomic Safety and Licensing Board administrative judge panel in October 2013 at an evidentiary hearing in October 2013 on a major contention pertaining to safety and quality assurance issues, which Mr. Keegan just referred you to.

So at this point, the ACRS, your subcommittee and the full committee has a wonderful opportunity as an independent committee outside of the NRO to challenge the internal decision at the NRO to allow Mr. Adrian Muniz to continue to serve as the lead project manager overseeing the safety review of the Fermi 3 COLA.

The ACRS ultimately makes recommendations to the NRC commissioners on COLA approval, and the ACRS was very prescient, very correct and prescient back in the 1950s when they rejected the Fermi 1 license application.

Fermi Unit 1, sadly, was allowed to be constructed and subsequently Fermi 1 had a partial core meltdown. So the history is not very positive with that facility.

Finally, I'd like to submit my opinion that DTE Electric Company, along with the complicity of Mr.

Adrian Muniz' NRC staff team, has failed to adequately consider, assess and plan for the real possibility of catastrophic failure of mission critical systems at the Fermi nuclear power plant involving multi-unit issues, both Unit 2 and Unit 3 concurrently, including reasonably foreseeable ways in which synergistic, compounding and emergent scenarios could rapidly spiral out of control, requiring abandonment and mandatory, widespread evacuation of major metropolitan areas located within a 50 mile radius of the facility, including Ann Arbor, Michigan where I personally live.

So thank you for your attention, and I've concluded my comments.

CHAIRMAN CORRADINI: Okay. Thank you very much. And we have, let me just verify. Is there anybody else on the phone line who wants to make comments? Hello?

MS. BORSH: Hi. This is Dana Borsh from Dominion.

CHAIRMAN CORRADINI: Okay.

MS. BORSH: But I don't have any questions.

CHAIRMAN CORRADINI: Okay. Fine. All right, anyone else who has any oral comments on the phone line? Okay. We have someone in our subcommittee

room I'm told. Okay. Go ahead, sir.

MR. KAMPS: Thank you very much. My name is Kevin Kamps with Beyond Nuclear, and I'm also on the board of Don't Waste Michigan.

And the only additional comment in addition to the my two colleagues from the public who just spoke would have to do with the irradiated nuclear fuel pool instrumentation.

So the portion of this meeting today that addressed that did leave me with some concerns because that Fukushima lesson learned commitment by the NRC to the public is being held up as something that should instill confidence in the public that lessons were learned from the Fukushima catastrophe and are being applied to not only operating reactors but proposed new ones like Fermi 3.

And I did hear a lot of concern and unanswered questions from the ACRS today on that subject matter. And we'll certainly be monitoring that issue as well as all the rest going forward.

So we look forward to the August meeting, and I guess I'll just end with something that Mr. Schonberger just said.

Being from Don't Waste Michigan, being from

Michigan, being very familiar with Fermi 1 partial core meltdown, we do look to the ACRS to serve the public interest and to call the NRC staff and the companies involved on these issues when necessary.

As happened at Fermi 1, unfortunately the ACRS was overruled in that circumstance. And only a few years later proven, unfortunately, correct in its assessment that that design had some real problems.

And we certainly, from the public perspective, have real concerns about the ESBWR. And as Mr. Keegan indicated on the quality assurance issues some real concerns with how this whole licensing proceeding is moving ahead at this time. So thank you for this opportunity.

CHAIRMAN CORRADINI: Okay. Thank you very much. Other comments from members of the public here? Okay. With that, let me go around the subcommittee and ask them for their final comments. Bill? No comments.

CONSULTANT HINZE: No comments.

CHAIRMAN CORRADINI: But you'll be here on the 22nd. Steve?

MEMBER SCHULTZ: I will be here on the 22nd and look forward to the discussions at that time.

MEMBER STETKAR: Nothing more.

MEMBER BALLINGER: I'll be here on the 22nd as well.

MEMBER BROWN: Subject to unforeseen circumstances, I will also be here.

CHAIRMAN CORRADINI: Okay. I wanted to thank the applicant and the staff for their presentations.

I think the one thing I guess I want to at least identify that still I'm not very clear on is the what I hear is somewhat of a not on the same page relative to Fukushima issues relative to 4.2 and addressing the initial phase, transition phase and final phase of any sort of action for a station blackout.

And so I think I'm going to talk with the staff, and we will expect to hear something back in August about that just so I better understand how the applicant is proposing to deal with it in comparison to how the staff is, as I understand it, is essentially putting it as a potential item that would be handled via ITAAC subsequent to our review.

That's the only one that at least personally troubles me that I want to make sure I understand. Anything else from the committee?

MEMBER SCHULTZ: The other topic that may come up in August based on the topic then is what was raised in the public comments. And that is the multi-unit emergency planning issues. We would expect to hear some more about that at that time.

CHAIRMAN CORRADINI: Okay. I don't think that's, I have to look around. I think that's actually planned to have discussion anyway, so.

MEMBER SCHULTZ: Good.

CHAIRMAN CORRADINI: John? I think was postponed, or it's going to be brought up in the August 22nd discussion. That's my remembrance. Am I remembering correctly, Adrian?

MR. MUNIZ: For the August meeting, what we have in the queue is the Section 2.5, which includes the evaluation of Recommendation 2.1 --

CHAIRMAN CORRADINI: And 3.7 and 3.8.

MR. MUNIZ: And 3.7 and 3.8. That's all we have.

MEMBER STETKAR: Those are all seismic structure stuff.

CHAIRMAN CORRADINI: Oh okay.

MEMBER STETKAR: That gets into, it's a gray area between current operating reactors because

it affects when we queue it. I don't know how we address that.

CHAIRMAN CORRADINI: Well, let's talk about it, and then we'll be back together for a splendid eight hours on the 22nd.

MEMBER SCHULTZ: Sounds good.

CHAIRMAN CORRADINI: Okay. With that, we'll adjourn the subcommittee meeting. Looking forward to all the subcommittee meetings tomorrow. Mr. Brown, Mr. Schultz.

(Whereupon, the above-entitled matter went off the record at 4:14 p.m.)

DTE Energy®

# Fermi 3 COLA
# Presentation to ACRS Subcommittee
# Chapter 1

# Fermi 3 Site

# Chapter 1, Introduction and General Description of Plant

- ESBWR DCD Revision 10 Incorporated by reference
- Standard Material incorporated (including supplements and one departure)
- Additional site-specific material contained in Sections:
  - 1.2 – General Plant Description
    - Radwaste Building Reconfiguration Departure
  - 1.4 – Identification of Agents and Contractors
    - Changed Company name to DTE Electric Company
  - 1.5 – Post-Fukushima Near-Term Task Force Recommendations
    - Recommendations 4.2(Mitigating Strategies) and 7.1(SFP Instruments)
  - 1.8 – Interfaces with Standard Design
    - Radwaste Building Reconfiguration Departure
  - 1.12 – Impacts of Construction Activities on Fermi 2
    - Management and Administrative Controls (ISG-22)

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# Presentation to the ACRS Subcommittee

**Fermi Unit 3**
**COL Application Review**

**Chapter 1**
**Introduction and Interfaces**

July 7, 2014

# Staff Review Team

- Technical Staff
  - Andrea Kock, NRR, Branch Chief
  - Mike Dusaniwskyj, NRR, Technical Reviewer
  - William Gott, NSIR, Branch Chief
  - Al Tardiff, NSIR, Technical Reviewer
- Project Manager
  - Lynnea Wilkins

# FSER Chapter 1 Technical Topics of Interest

- Impact of Construction of New Nuclear Power Plants Units on Operating Units at Multi-Unit Sites
- Departures and Exemptions
- Financial and Technical Qualifications Review
- Special Nuclear Material Control (SNM) Material Control & Accounting (MC&A) Program

# FSER Chapter 1 Technical Topics of Interest

**10 CFR 52.79(a)(31)**

- The COL applicant must evaluate the potential hazards from constructing new plants on SSCs important to safety for existing operating plants that are located at the site.

- The COL applicant must evaluate the potential hazards from constructing new plants on SSCs important to safety for newly constructed plants that begin operation at the site.

- (ISG) COL ISG-22, “Interim Staff Guidance on Impact of Construction (under a Combined License) of New Nuclear Power Plants Units on Operating Units at Multi-Unit Sites”

# FSER Chapter 1 Technical Topics of Interest

**10 CFR 52.79(a)(31) (Cont'd)**

- The staff issued RAI 01-5 on July 7, 2011 (ML111880181) requesting the applicant to address the requirements of 10 CFR 52.79(a)(31).
- The applicant responded on July 13, 2011 (ML11195A330).
- The NRC staff's evaluation found that the applicant's Supplemental Information EF3 SUP 1.12-1 in FSAR Section 1.12 is acceptable and consistent with the six program elements of 10 CFR 52.79(a)(31) as expressed in COL ISG-22.

# FSER Chapter 1 Technical Topics of Interest

- **Departures**

  Long-Term, Temporary Storage of Class B and C Low-Level Radioactive Waste.” The staff evaluated and reviewed this departure in SER Chapter 11.

- **Exemptions**

  From requirements of 10 CFR 70.22(b), 70.32(c), and 10 CFR 74.31, 74.41 and 74.51(Section 1.5.4)

# FSER Chapter 1 Technical Topics of Interest

**Financial and Technical Qualifications Review**

- Technical qualification review in accordance with 10 CFR 52.97(a)(1)(iv) ---(Section 1.5.1)
- Evaluates financial resources to build, operate and eventually decommission a nuclear facility in accordance with 10 CFR 52.97(a)(1)(iv)--(Section 1.5.1)
- The staff's evaluation concludes that:
  - reasonable assurance that the applicant is financially qualified to engage in the proposed activities regarding Fermi 3
  - There are no problematic decommissioning funding assurance issues, foreign ownership issues, or nuclear insurance and indemnity issues.

# FSER Chapter 1 Technical Topics of Interest

**Special Nuclear Material (SNM) Material Control & Accounting (MC&A) Program**

- In accordance with 10 CFR 74 Parts A and B, the SNM MC&A program will be developed for control and accounting of SNM and will be consistent with ANSI 15.8-2009.
- The SNM MC&A program meets reporting and recording requirements of 10 CFR 74.11, 74.13, 74.15 and 74.19.
- The Physical Security Plan will be implemented prior to receipt of fuel onsite in accordance with 10 CFR 73.55.
- The program will be implemented prior to receipt of SNM at the plant site.
- Based on the above considerations, the staff finds the program acceptable

# FSER Chapter 1 Technical Topics of Interest

**SNM MC&A Program (cont'd)**

**Exemption**

- The provisions of 10 CFR 70.22(b) requires an application for a license for SNM to include a full description of the applicant's program for MC&A of SNM under 10 CFR 74.31, 10 CFR 74.33, 10 CFR 74.41, and 10 CFR 74.51.

- Nuclear reactors licensed under Part 50 are explicitly excepted from 10 CFR 70.22(b), 10 CFR 70.32(c), 10 CFR 74.31, 10 CFR 74.41, and 10 CFR 74.51.

- The applicant requested an exemption from requirements of 10 CFR 70.22(b), 70.32(c), 10 CFR 74.31, 74.41 and 74.51.

# FSER Chapter 1 Technical Topics of Interest

**SNM MC&A Program (cont'd)**

**Exemption**

- The NRC staff reviewed the subject exemption, which will allow the applicant to have a similar exception for the COL under 10 CFR Part 52, such that the same regulations will be applied to the SNM MC&A program as nuclear reactors licensed under 10 CFR Part 50.

- NRC staff's evaluation concluded:
  - that this requested exemption will not present an undue risk to the public health and safety and is otherwise in the public interest.
  - In addition, this exemption is consistent with the Atomic Energy Act or any other statue and is therefore authorized by law.
  - Granting this exemption will not adversely affect the common defense and security.

- Vogtle – December 15-16, 2010 (ML111151226)

# Questions

# Backup Slides

# FSER Chapter 1 Technical Topics of Interest

**(ISG) COL ISG-22, "Interim Staff Guidance on Impact of Construction (under a Combined License) of New Nuclear Power Plants Units on Operating Units at Multi-Unit Sites"**

- A discussion of the construction activity identification process and the impact evaluation criteria
- A table of those construction activities and the potential hazards
- Identification of the managerial and administrative controls
- A discussion of the process for communications and interactions planned and credited between the construction organization and the operations organization
- A memorandum of understanding or agreement (MOU or MOA) between the COL applicant and the operating unit(s) licensee
- An implementation schedule

DTE Energy®

# Fermi 3 COLA
# Presentation to ACRS Subcommittee
# Chapter 20

# Introduction

Discussion Topics:

- Fukushima Near-Term Task Force Tier 1 Recommendations Applicable to the ESBWR.
  - Mitigation Strategies (4.2)
  - Spent Fuel Pool Instrumentation (7.1)
  - Emergency Preparedness Staffing and Communications (9.3)

# Chapter 20 – Request for Information (RAI)

DTE Electric received 5 RAIs to address the following Fukushima Near-Term Task Force recommendations.

| Recommendation # | Subject Matter | RAI # | Disposition |
|---|---|---|---|
| 4.2 | Mitigating Strategies for Beyond-Design-Basis External Events | 01.05-3<br>01.05-5 | FSAR Section 1.5.1.1.1<br>License Condition 3.8.2 |
| 7.1 | Reliable Spent Fuel Pool Instrumentation | 01.05-4<br>01.05-6 | FSAR Section 1.5.1.1.2<br>License Condition 3.8.3 |
| 9.3 | Emergency Preparedness | 01.05-2 | License Condition 3.8.1 |

# Mitigating Strategies
## (Recommendation 4.2)

1.5.1.1.1, “Recommendation 4.2, Mitigating Strategies for Beyond-Design-Basis External Events”

- Order EA-12-049 specifies a three-phase approach for mitigating beyond-design-basis external events.
  - **Initial Phase**: use of installed equipment and resources
  - **Transition Phase**: use of portable/FLEX equipment and consumables.
  - **Final Phase**: use sufficient offsite resources to sustain functions indefinitely.
- DTE follows the implementation guidance as applied to the passive ESBWR design.
  - JLD-ISG-2012-01, “Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events.”
  - NEI 12-06, “Diverse and Flexible Coping Strategies (FLEX) Implementation Guide.”

# Mitigating Strategies (cont'd)

ESBWR strategies for coping with extended loss of AC power events involving the three-phase approach

- **Initial Phase**: Installed plant equipment without AC power or makeup to ultimate heat sink (safety-related Isolation Condenser System, Passive Containment Cooling System pools or Gravity-Driven Cooling System)
  - For ESBWR, this phase is covered in standard design passive safety features for 72-hour period of passive systems performance for core, containment, and spent fuel storage pools cooling
    - 72-hours batteries
    - Passive core and containment cooling
    - Passive cooling in spent fuel storage pools based on required sufficient water levels

# Mitigating Strategies (cont'd)

ESBWR strategies for coping with extended loss of AC power events involving the three-phase approach (continued)

- **Transition Phase**: Following 72-hours passive system coping time, support systems continue cooling and makeup to pools with resources available onsite.
    - Nonsafety-related systems are used to replenish passive systems or to perform functions directly (DCD Sections 9.1.3 and 19A.3.1).
        - Post-72 hours, Regulatory Treatment of Non-Safety Systems (RTNSS) equipment provides core, containment, and spent fuel cooling functions (post-72 hour RTNSS structures, systems, and components have augmented design requirements to provide reasonable assurance of functioning when needed).
        - Makeup water can be provided through installed safety-related connections to the Fire Protection System or spent fuel storage pools with onsite portable equipment.

# Mitigating Strategies (cont'd)

ESBWR strategies for coping with extended loss of AC power events involving the three-phase approach (continued)

- **Final Phase**: Extend passive system cooling beyond 7 days to an indefinite time.
    - Commodities can be replaced or replenished from offsite sources.
      o Diesel fuel for ancillary diesel generator or diesel fire pump.
    - Plant conditions can be monitored to ensure that reactor, spent fuel pools, and containment conditions are stable (ancillary diesels power monitoring instrumentation).
    - Strategies include procedures, guidance, training, and acquisition, staging, or installation of equipment (including FLEX portable equipment) to maintain core, containment, and spent fuel storage pools cooling for extended period of time and will be implemented prior to initial fuel load.

# Mitigating Strategies (cont'd)

COLA Part 10 License Condition 3.8.2

Mitigation Strategies for Beyond-Design-Basis External Events, Compliance with Order EA-12-049 (Recommendation 4.2)

- The development of strategies and guidance for maintaining and, if necessary restoring core cooling, containment, and spent fuel pool cooling capabilities beginning 72 hours after the loss of all normal and emergency ac power sources. These strategies must be capable of:
  - Mitigating a simultaneous loss of all ac power sources, from both onsite and offsite power systems, and loss of normal access to normal heat sink.
  - Maintaining core cooling, containment, and spent fuel pool cooling capabilities for Fermi 3 during and after an event affecting both Fermi Units 2 and 3.
  - Being implemented in all plant modes.
- Strategies and guidance fully implemented before initial fuel load.

# Reliable Spent Fuel Pool (SFP) Instrumentation (Recommendation 7.1)

1.5.1.1.2, “Recommendation 7.1, Reliable Spent Fuel Pool Instrumentation”

- Order EA-12-051 specifies safety enhancements for reliable spent fuel pool instrumentation for beyond-design-basis external events.
- DTE follows the implementation guidance as applied to the passive ESBWR design.
    - JLD-ISG-2013-02, “Compliance with Order EA-12-051, Reliable Spent Fuel Pool Instrumentation.”
    - NEI 12-02, “Industry Guidance for Compliance with NRC Order EA-12-051, To Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation.”

# Reliable SFP Instrumentation (cont'd)

- ESBWR design provides reliable indication of water level in spent fuel storage pools for monitoring pool water level conditions by trained personnel.

- Areas of Storage for spent fuel assemblies are:

  - Spent Fuel Pool in Fuel Building.

  - Deep Pit Buffer Pool in Reactor Building for use during refueling.

# Reliable SFP Instrumentation (cont'd)

- Safety-related, Seismic Category I level instrumentation is installed in both pools to detect a low water level that would indicate a loss of decay heat removal ability.
  - Each pool has two wide-range safety-related level transmitters that transmit signals to the Main Control Room.
  - Signals identify collapsed water level indication and initiate high/low-level alarms, locally and in the Main Control Room.
  - Alarm set points alert operators of loss of inventory to ensure sufficient water level for passive cooling for 72 hours.
    - at an elevation just below normal water level.
    - at an adequate shielding level.
    - at the top of active fuel.

# Reliable SFP Instrumentation (cont'd)

- Instrumentation channels provide for power connections from sources independent of the plant power distribution systems.
- Normal power or onsite alternative power available using onsite resources from 72 hours to 7 days.
- Connections available for power from portable generator or replaceable batteries, consistent with guidance for use of portable equipment with offsite resources after 7 days.
- Minimum instrument accuracy of +/- 300 mm (1 ft), which is consistent with guidance in JLD-ISG-2012-03.
- Instrumentation designed to maintain accuracy following a power interruption or change in power source without recalibration.
- Section 3.7.5 of the Technical Specifications specifies periodic surveillance of fuel pools water level during movement of irradiated fuel assemblies.
- Operating, testing, and calibrating level instruments, training programs, and procedures are described (DCD Sections 13.2 and 13.6).

# Reliable SFP Instrumentation (cont'd)

COLA Part 10 License Condition 3.8.3

Reliable Spent Fuel Pool/Buffer Pool Level Instrumentation, Compliance with Order EA-2012-051 (Recommendation 7.1)

- Spent Fuel Pool/Buffer instrumentation shall be maintained available and reliable through the development and implementation of a training program. The training program shall include provisions to ensure trained personnel can route the temporary power lines from the alternate power source to the appropriate connection points, and connect the alternate power source to the safety-related level instrument channels.

# Emergency Preparedness
## (Recommendation 9.3)

COLA Part 10 License Condition 3.8.1

Emergency Planning Actions (Recommendation 9.3)

- At least two (2) years prior to scheduled initial fuel load, the licensee shall:
  - have performed an assessment of the on-site and augmented staffing capabilities to satisfy the regulatory requirements for response to a multi-unit event. The Staffing Assessment will be performed in accordance with NEI 12-01.
  - Revise the Fermi 3 Emergency Plan to include the incorporation of corrective actions identified in the staffing assessment.
  - Identify how the augmented staff will be notified given degraded communication capabilities.
  - Have performed an assessment of on-site and offsite communication systems and equipment required during an emergency event to ensure communication capabilities can be maintained during prolonged station blackout conditions in accordance with NEI 12-01.

- At least one hundred eighty (180) days prior to fuel load, the licensee shall complete implementation of corrective actions identified in the communications capability assessment.

# Conclusion

- The ESBWR passive safety and design features described in the DCD and proposed License Conditions are in accordance with industry documents and staff guidance.

- The Fukushima Near Term Task Force Recommendations 4.2, 7.1, and 9.3 are fully implemented.

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# Presentation to the ACRS Subcommittee

**Fermi Unit 3**
**COL Application Review**

**Chapter 20**
**Requirements Resulting from Fukushima Near-Term Task Force Recommendations**

July 7, 2014

# Staff Review Team

- Technical Staff
  - Antonio Dias, Branch Chief
  - Angelo Stubbs, Technical Reviewer
  - Raul Hernandez, Technical Reviewer
  - Chang Li, Technical Reviewer
  - Dan Barss, Technical Team Lead
  - Charles Murray, Technical Reviewer
- Project Manager
  - Tekia Govan

# Fermi Unit 3
# COL Application Review

## Sections 20.2 and 20.3
## Presented by Chang Li

# Fukushima Recommendation 4.2

**US NRC Order EA-12-049** requires nuclear facilities to implement mitigating strategies for beyond-design-basis external events (BDBEE) using a three-phase approach.

- The first (Initial) phase relies on the use of installed equipment and resources to maintain or restore core cooling, SFP cooling, and containment function
- The second (transition) phase allows for the use of portable, onsite equipment and consumables to maintain or restore core cooling, SFP cooling, and containment function until resources brought off site are available
- The third (final) phase requires obtaining sufficient offsite resources to sustain function indefinitely

# Fukushima Recommendation 4.2 (cont.)

**Fermi 3 uses ESBWR standard design** that includes passive design features that provide core, containment, and SFP cooling capability for 72 hours without reliance on AC power or operator action, and thus has a inherent 72 hour coping capability as part of its design basis.

# Fukushima Recommendation 4.2 (cont.)

**Staff Evaluation**

The Fermi 3 Mitigating Strategies for BDBEEs was evaluated by the staff with respect to NRC Order EA 12-049. Information reviewed included, DTE's responses to staff's RAI's, information in FSAR Section 1.5.1.1.1, and DCD information incorporated into the Fermi 3 FSAR by reference. The staff found that the Fermi 3 Mitigation Strategy to be based on:

- Both the initial and transition phase mitigation is accomplished without any AC power, or makeup to the ultimate heat sink, using installed plant equipment (i.e. safety-related isolation condenser system, and passive containment cooling system pools (PCCS) or Gravity-Driven Cooling System (GDCS) - 72 hour coping

- The final phase mitigation will address the indefinite extension of the coping and address offsite assistance requirements as well as procedures, guidance , training, acquisition, staging, equipment installation, etc. The staff imposed License Condition 20.2-1 to insure that the required strategies and guidance will be implemented to provide for post 72 hour coping.

# Fukushima Recommendation 4.2 (cont.)

**Staff Evaluation (cont.)**

- The staff found that the Fermi 3 mitigating strategies provide adequate initial and transition phase coping capability as required by NRC Order EA 12-049 since
  - The ESBWR design make use of passive system (safety-related ICS and safety-related PCCS) to achieve core cooling and containment integrity safety function without AC power or makeup for the 72 hour initial coping duration.
  - The inventory of water in the spent fuel pool is sufficient to provide passive heat removal in the pool for the first 72 hours following a loss of normal spent fuel pool cooling due to a loss of power.
- The staff found the Fermi 3 mitigating strategies provide for adequate final phase coping capability as required by NRC Order EA 12-049 since
  - License condition 20.2-1 will ensure that the required strategies and guidance be developed and implemented to provide for the required post 72 hour coping

# Fukushima Recommendation 4.2 (cont.)

**License Condition (20.2-1) Mitigation Strategies for Beyond Design-Basis External Events**

At least one (1) year before the latest date set forth in the schedule for completing the inspections, tests, and analyses in the ITAAC submitted in accordance with 10 CFR 52.99(a), DTE Electric Company shall use the guidance contained in JLD-ISG-2012-01, "Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," Revision 0 and the information presented in Fermi FSAR Section 01.05 to complete the development of strategies and guidance for maintaining and, if necessary, restoring core cooling, containment, and spent fuel pool cooling capabilities beginning 72 hours after loss of all normal and emergency ac power sources, including any alternate ac source under 10 CFR 50.63. These strategies must be capable of:

- Mitigating a simultaneous loss of all ac power sources, both from the onsite and offsite power systems, and loss of normal access to the normal heat sink,
- Maintaining core cooling, containment, and spent fuel pool cooling capabilities for Fermi Unit 3 during and after such an event affecting both Fermi Units 2 and 3, and
- Being implemented in all plant modes.

Before initial fuel load, DTE Electric Company shall fully implement the strategies and guidance required in this license condition, including procedures, training, and acquisition, staging or installing of equipment and consumables relied upon in the strategies.

# Fukushima Recommendation 7.1

- Commission Order EA-12-051 “Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation” requires reliable spent fuel pool instrumentation.

- JLD-ISG-2012-03 “Compliance with Order EA-12-051, Reliable Spent Fuel Pool Instrumentation” defines the design features and programmatic requirements credited in defining level instruments as reliable.

# Fukushima Recommendation 7.1(cont)

- The staff evaluated information on Fermi 3 SFP level instrument with respect to NRC Order EA-12-051. The information that was reviewed by the staff included: the applicant's responses to RAIs, information in FSAR Section 1.5.1.1.2 that summarizes the response to the NRC Order EA-12-051, and DCD information incorporated by reference in the Fermi 3 FSAR. Fermi 3 states that:
  - SFP level instrument meets all the design requirements of NRC Order EA-12-051,
  - FSAR Tier 2 Section 13.5 describes the development of procedures under the Plant Operating Procedures Development Plan which address the procedures, testing and calibration requirements of the installed instrument channels,
  - The propose License Condition ensures personnel will be trained in the provision to establish alternate power connections to the level instruments.

# Fukushima Recommendation 7.1(cont.)

- The staff found that the Fermi 3 SFP level instrument meets all the design requirements described in NRC Order EA-12-051,
  - ESBWR design of the safety related level instrument already addressed most of these features
  - Fermi 3 FSAR Section 1.5.1.1.2, expanded the level instrument design description to address the equipment power supply and accuracy
- The staff found that the Fermi 3 SFP level instrument meets all the programmatic requirements described in NRC Order EA-12-051,
  - The level instruments are permanently installed, and therefore, the development of procedures, testing and calibration requirements is within the scope of FSAR Tier 2 Section 13.5
  - License condition 20.3-1 addresses the development and implementation of a training program to ensure that personnel will be trained in the provision to establish alternate power connections to the level instruments.

# Fukushima Recommendation 7.1(cont.)

Prior to initial fuel load, DTE Electric Company shall address the following requirements using the guidance contained in JLD-ISG-2012-03, “Compliance with Order EA-2012-051, Reliable Spent Fuel Pool Instrumentation,”

Revision 0:

- License Condition 20.3-1

The spent fuel pool/buffer pool instrumentation shall be maintained available and reliable through the development and implementation of a training program. The training program shall include provisions to ensure trained personnel can route the temporary power lines from the alternate power source to the appropriate connection points and connect the alternate power source to the safety-related level instrument channels.

# Fermi Unit 3
# COL Application Review

## Sections 20.4
## Presented by Dan Barss

# Fukushima Recommendation 9.3

- The accident at Fukushima highlighted the need to determine the staff needed to respond to a multi-unit event. Additionally, there is a need to ensure that the communication equipment relied on has adequate power to coordinate the response to an event during an extended loss of ac power. (as described in SECY-12-0025)

- As result the staff issued RAI 01.05-2, that asked the applicant to assess the staffing needs and communications systems and equipment used during an emergency event.

- The applicant responded with the proposed license condition that was modified by the NRC staff and is being tracked as a confirmatory item for inclusion in Part 10 of the COL application. (Confirmatory Item 20.4-1)

# Fukushima Recommendation 9.3

## License Condition (20.4-1): Emergency Planning Actions

Prior to initial fuel load, Detroit Edison will fully implement the following requirements for emergency planning actions related to communications and staffing.

**Communications:**

At least two (2) years before the latest date set forth in the schedule for completing the inspections, tests, and analyses in the ITAAC submitted in accordance with 10 CFR 52.99(a), the Licensee shall have performed an assessment of on-site and off-site communications systems and equipment required during an emergency event to ensure communications capabilities can be maintained during prolonged station blackout conditions. The communications capability assessment will be performed in accordance with NEI 12–01, “Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities”, Revision 0.

At least one hundred eighty (180) days before the date scheduled for initial fuel load set forth in the notification submitted in accordance with 10 CFR 52.103(a), the Licensee shall complete implementation of corrective actions identified in the communications capability assessment described above, including any related emergency plan and implementing procedure changes and associated training.

# Fukushima Recommendation 9.3

## License Condition (20.4-1): Emergency Planning Actions (cont.)

**Staffing:**

At least two (2) years before the latest date set forth in the schedule for completing the inspections, tests, and analyses in the ITAAC submitted in accordance with 10 CFR § 52.99(a), the Licensee shall have performed assessments of the on-site and augmented staffing capability to satisfy the regulatory requirements for response to a multi-unit event. The staffing assessments will be performed in accordance with NEI 12–01, “Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities”, Revision 0.

At least 180 days before the date scheduled for initial fuel load set forth in the notification submitted in accordance with 10 CFR § 52.103(a), the Licensee shall revise the Fermi 3 Emergency Plan to include the following:

- Incorporation of corrective actions identified in the staffing assessments described above.
- Identification of how the augmented staff will be notified given degraded communications capabilities.

# Fukushima Recommendation 9.3

- The staff concludes that the applicant response to revise License Condition 20.4-1 in their FSAR and follow the terms of the license condition is an acceptable approach because it confirms to the guidance provided in:
  - SECY-12-0025 states, in part, that the staff will also request all COL applicants to provide information required by the orders and request for information letters described in this paper, as applicable, through the review process.
  - NEI 12-01, “Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities”, Revision 0 - By NRC letter from David Skeen, Director, Japan Lessons-Learned Directorate, to NEI, Susan Perkins-Grew, Director, Emergency Preparedness, dated May 15, 2012, NRC finds the guidance in NEI 12-01 to be an acceptable method for licensees to employ when responding to the 10 CFR 50.54(f) letters regarding NTTF Recommendation 9.3 (ML12131A043).
- Results addressed in Emergency Plan and Emergency Plan Implementing Procedures

# Questions

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# Fermi 3 COLA
# Presentation to ACRS Subcommittee
# Section 3.9

# Introduction

Discussion Topics:

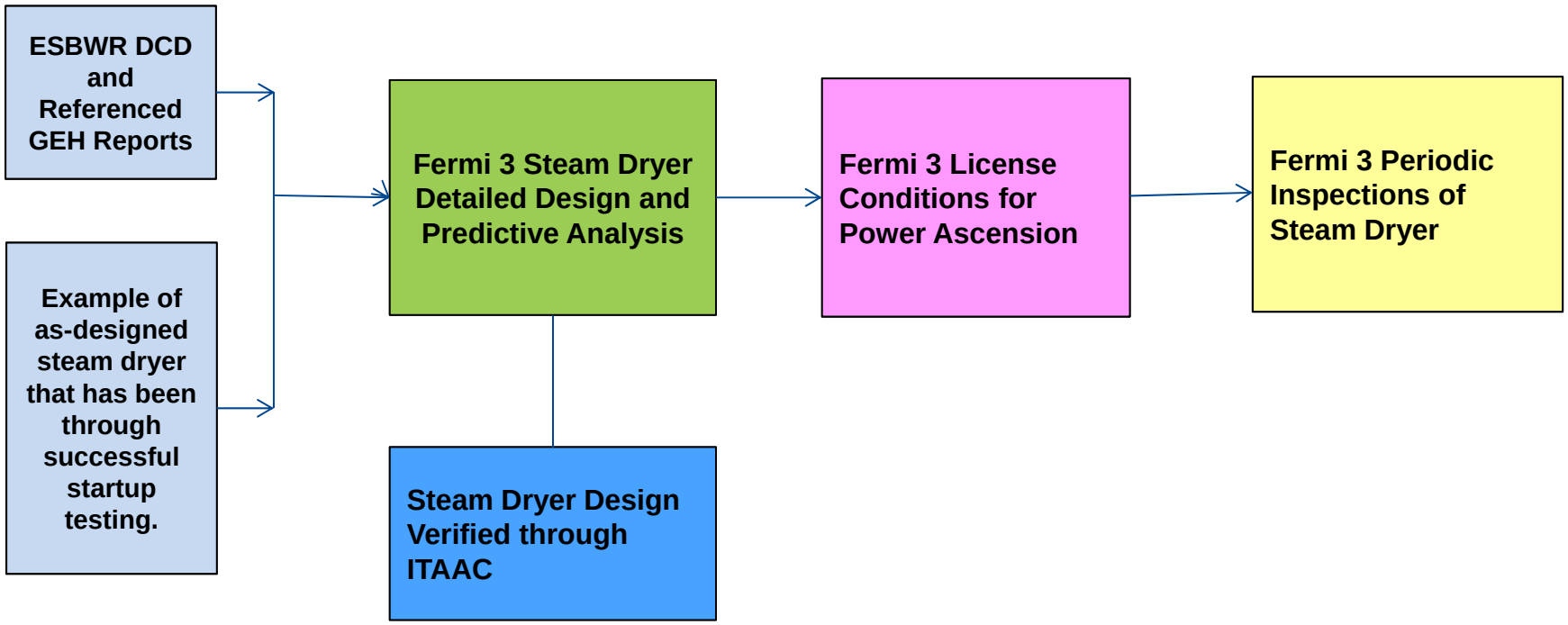
- FSAR Section 3.9.2.4, Initial Startup Flow-Induced Vibration Testing of Reactor Internals
- License Condition 3.10, Steam Dryer License Conditions

Note: Fermi 3 FSAR Section 3.9, except the Steam Dryer subsections, was presented during the August 16, 2012 ACRS Meeting

# Steam Dryer – Key Elements of COLA

- DTE follows the ESBWR DCD.
- FSAR Section 3.9.2.4 addresses DCD COL Information Item 3.9.9-1-A, and lists the applicable GEH reports for the Steam Dryer:
  - o Steam Dryer Structural Evaluation (NEDE-33313P).
  - o Plant-Based Load Evaluation Methodology (NEDE-33408P).
  - o Steam Dryer Acoustic Load Definition (NEDE-33312P).
- FSAR Section 3.9.2.4 states that the Steam Dryer will be treated as a prototype, with on-dryer instrumentation during initial power ascension for monitoring flow-induced vibration effects.

# Process for Ensuring Steam Dryer Structural Integrity



# Steam Dryer CVAP

- FSAR incorporates the four elements of the Steam Dryer Comprehensive Vibration Assessment Program (CVAP) described in Section 10.2 of NEDE-33313P, ESBWR Steam Dryer Structural Evaluation.
  - Steam Dryer CVAP follows the ESBWR DCD and referenced reports, which includes a Monitoring Plan submitted to the NRC 90 days prior to startup.
  - Detailed design follows approved methodology in DCD and referenced reports.
  - Startup program and licensing conditions include hold points, interactions with NRC, and stress analysis reporting requirements.
  - Periodic inspection during refueling outages.
- DTE follows the ESBWR DCD.

# COLA Part 10 - Steam Dryer License Conditions

- DTE License Condition follows the ESBWR DCD and referenced reports.

- Summary of Fermi 3 License Conditions for Power Ascension:
  - Prepare steam dryer monitoring plan.
  - Prepare power ascension test procedures (acceptance limits; hold points; activities; monitored parameters; actions to take if acceptance criteria not met; and verification of completion).
  - Initial hold point at 75% of full power.
  - Subsequent hold points, with data to NRC.
  - Monitor for flow-induced resonances.
  - Modify limit curves, if necessary.
  - Monitor over range of expected operating conditions.
  - Analyze results up to full power, verify acceptance, and prepare report.

- Summary of Fermi 3 License Conditions for Periodic Inspections:
  - 1st and 2nd RFO, visual inspection and report to NRC.
  - Update plan for future refueling outages and submit to NRC.

# Conclusion

- Assurance that the steam dryer structural integrity is maintained is provided by:
  - Steam Dryer will be subject to a Comprehensive Vibration Assessment Program for addressing flow induced vibration.
  - Steam Dryer will be treated as a prototype and will be monitored and tested during power ascension.
  - ESBWR DCD and GEH reports provide the elements of the CVAP, design and evaluation methodologies, and startup testing.

- DTE follows the ESBWR DCD.


# Presentation to the ACRS Subcommittee

**Fermi Unit 3**
**COL Application Review**

**SER with no OIs**
**Section 3.9**
**"Mechanical Systems and Components"**

**July 7, 2014**

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# Staff Review Team

- **Project Manager**
  - Tekia Govan
- **Technical Staff**
  - MEB, Chief, Theresa Clark
  - MEB, Technical Reviewer, Thomas Scarbrough
  - MEB, Technical Reviewer, Yuken Wong

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# Summary of Staff Review

- Fermi 3 Combined License (COL) Final Safety Analysis Report (FSAR), Revision 6, incorporates by reference ESBWR Design Control Document (DCD), Revision 10

- Fermi 3 FSAR Section 3.9 includes
  - 4 COL Information Items
  - 6 Commitments
  - 3 Supplemental Items

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# COL Information Items

COL Item 3.9.9-1-A: Reactor Internals Vibration Analysis, Measurement and Inspection Program

COL Item 3.9.9-2-A: ASME Class 2 or 3 or Quality Group D Components with 60-Year Design Life

COL Item 3.9.9-3-A: Inservice Testing (IST) Programs

COL Item 3.9.9-4-A: Snubber Inspection and Test Program

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# COL Item COL 3.9.9-1-A

Reactor Internals Vibration Analysis, Measurement and Inspection Program

- Reactor Internals (other than steam dryer) Comprehensive Vibration Assessment Program (CVAP) in DCD Appendix 3L and NEDE-33259P
  - Fermi 3 reactor internals (other than steam dryer) classified as prototype if no prior ESBWR
- Steam Dryer CVAP in DCD Appendix 3L, NEDE-33312P, NEDE-33313P, and NEDE-33408P
  - Fermi 3 steam dryer classified as prototype

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# COL Item COL 3.9.9-1-A

## Reactor Internals Other Than Steam Dryer

In addition to referencing CVAP in ESBWR DCD and NEDE-33259P, Fermi 3 FSAR specifies

- Commitment COM 3.9-001: CVAP will be developed and implemented as described in DCD with no departures. Vibration and inspection programs will comply with Regulatory Guide 1.20 (Rev. 3). A summary will be submitted 6 months prior to implementation.
- Commitment COM 3.9-006: Preliminary and final vibration reports will be submitted 60 and 180 days following program completion.

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# COL Item COL 3.9.9-1-A

Fermi 3 Steam Dryer CVAP

In addition to referencing steam dryer provisions in ESBWR DCD, Fermi 3 FSAR specifies

1. Steam Dryer CVAP described in DCD and NEDE-33313P with Steam Dryer Monitoring Plan (SDMP) submitted 90 days prior to startup
2. Detailed steam dryer design will follow methodology in DCD and GEH reports with example application provided in NEDE-33408P
3. Startup Program and license conditions established as described in NEDE-33313P
4. Periodic steam dryer inspection during refueling outages as described in NEDE-33313P

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# COL Item 3.9.9-3-A

## Inservice Testing Programs

In addition to referencing the IST provisions in ESBWR DCD Tier 2, Section 3.9.6, Fermi 3 FSAR includes

- Valve preservice testing (PST) provisions
- Valve exercise testing provisions
- Squib valve design and qualification provisions
- Power-operated valve (POV) periodic verification provisions
- Check valve testing provisions
- Valve reference value provisions

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# Squib Valve Design and Qualification Provisions

- Industry and regulatory guidance is considered in development of IST program for squib valves.
- IST program for squib valves incorporates lessons learned from squib valve design and qualification process such that surveillance activities provide reasonable assurance of operational readiness of squib valves to perform their safety functions.

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# NRC Staff Review of Fermi 3 FSAR Section 3.9.6

- Fermi 3 COL applicant adopted RAI responses from previous ESBWR R-COLA
- ESBWR DCD specifies use of ASME QME-1-2007 accepted in RG 1.100 (Rev. 3)
- NRC staff audited ESBWR design specifications in July 2009 at GEH office in Wilmington, NC
- ESBWR DCD specifies ASME OM Code (2001 Edition through 2003 Addenda) with 50.55a requirement for latest edition 12 months before fuel load
- Fermi 3 FSAR supplemental provisions consistent with ASME OM Code requirements

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# License Condition 03.09-01
## Operational Program Schedules

- FSAR Table 13.4-201 lists operational programs, regulatory basis, implementation milestones, and applicable FSAR section.
- Licensee will submit schedule that supports planning and conducting NRC inspections.
- Schedule must be submitted 12 months after COL issuance and updated every 6 months until 12 months before fuel loading, and every month thereafter until fully implemented or plant enters commercial operation.

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# License Condition 03.09-02 Squib Valves

Before initial fuel load, licensee shall implement surveillance program for squib valves in the Gravity Driven Cooling System (GDCS) and Automatic Depressurization System (ADS) with specific provisions in addition to ASME OM Code incorporated by reference in 10 CFR 50.55a as summarized on the following slides.

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# License Condition 03.09-02 (continued)

a. Preservice Testing
   - All squib valves shall be preservice tested by verifying operational readiness of actuation logic and electrical circuits.
   - A sample of 20% of charges shall be tested with 1 squib valve from each redundant safety train.
   - Corrective action resolves any deficiencies.
   - If charge fails to fire or capability not confirmed, all charges with same batch number shall be replaced with different batch that satisfies 20% sampling.

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# License Condition 03.09-02 (continued)

b. Operational Surveillance

Squib valves shall be subject to the following after commencing plant operation with appropriate corrective action:

1) At least once every 2 years, each squib valve shall undergo visual external examination and remote internal examination.
2) At least once every 10 years, each squib valve shall be disassembled for internal examination of valve and actuator to verify valve operational readiness and component integrity, and to remove any foreign material, fluid, or corrosion.

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# License Condition 03.09-02 (continued)

b. Operational Surveillance (continued)

3) For squib valves selected every 2 years per OM Code, operational readiness of actuation logic and electrical circuits shall be verified.

4) For squib valves selected every 2 years per OM Code, sampling must select at least one valve from each redundant safety train. Each sampled valve shall be tested to confirm charge capability.

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# License Condition 03.09-03 Steam Dryer

Licensee shall use NEDE-33312P and NEDE-33313P in implementing the following conditions:

1.a SDMP shall be provided to NRC no later than 90 days before startup.

1.b Power Ascension Test (PAT) procedures with specified items for steam dryer testing shall be provided to NRC inspectors no later than 10 days before startup.

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# License Condition 03.09-03 (continued)

2. Initial hold point during first power ascension shall be at no more than 75% power. Licensee shall complete actions in Item 2 in Section 10.2(c) in NEDE-33313P.
3. Continue power ascension: Licensee shall complete actions in Item 3 in Section 10.2(c) in NEDE-33313P.
4. Power ascension monitoring: Licensee shall complete actions in Item 4 in Section 10.2(c) in NEDE-33313P.

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# License Condition 03.09-03 (continued)

5. Flow-induced resonances: Licensee shall complete actions in Item 5 of Section 10.2(c) in NEDE-33313P.
6. Limit curve modifications: Licensee shall complete actions in Item 6 of Section 10.2(c) in NEDE-33313P.
7. At 75, 85, and 95% levels, power ascension shall not proceed for at least 72 hours after making data analysis available to NRC project manager.

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# License Condition 03.09-03 (continued)

8. During Power Maneuvering testing, data shall be recorded from on-dryer instrumentation across the range of steady state operating conditions. Dryer structural response over plant operating conditions shall be included in stress analysis report.
9. Full power achievement: Licensee shall complete actions in Item 9 of Section 10.2(c) in NEDE-33313P.

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# License Condition 03.09-03 (continued)

10. Periodic steam dryer inspection program shall be implemented as follows:
    a. During first 2 refueling outages, visual steam dryer inspection shall be conducted of accessible areas and susceptible locations using accepted industry guidance. Results provided to NRC within 60 days after startup.
    b. After second refueling outage, updated SDMP reflecting long-term inspection plan shall be provided within 180 days following startup.

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# Fermi 3 SER Section 3.9 Conclusion

- Fermi 3 COL applicant has provided reasonable assurance that mechanical systems and components will have structural integrity and functional capability to perform their design functions for the safe operation of Fermi 3
- NRC staff completing ESBWR design certification final rule with supplemental FSER on ESBWR steam dryer and other issues.

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# Questions

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# Fermi 3 COLA
# Presentation to ACRS Subcommittee
# FSAR Section 8.2.1.2.2
# Monitoring of Transformers for Open Circuit

# Introduction

Discussion Topics:

- Section 8.2.1.2.2, Monitoring of Transformers for Open Circuit
  - NRC Bulletin 2012-01, “Design Vulnerability in Electric Power System,” July 27, 2012.

Note: Fermi 3 FSAR Chapter 8 was presented during the May 26, 2011 ACRS Meeting.

# Chapter 8 – Request for Information (RAI) 08.02-18

DTE Electric received RAI 08.02-18 to address the monitoring of transformers for open circuit, which relates to NRC Bulletin 2012-01.

| FSAR Section | Subject Matter | RAI # | Disposition |
|---|---|---|---|
| 8.2.1.2.2 | Monitoring of Transformers for Open Circuit | 08.02-18 | A new section was added to the FSAR and Design Information IBR from DCD Rev 10. |

# Chapter 8 – Request for Information (RAI) 08.02-18

DTE Energy

8.2.1.2.2 Monitoring of Transformers for Open Circuit

- Incorporated by reference the new section to ESBWR Design Control Document to address NRC Bulletin 2012-01 in response to NRC RAI to GEH (RAI 8.1-22).

- **FSAR COM 8.2-001** commits to developing plant operating procedures, including off-normal operating procedures, associated with monitoring system.

- **FSAR COM 8.2-002** commits to developing maintenance and testing procedures, including calibration, set point determination and troubleshooting procedures, associated with monitoring system.

- **FSAR COM 8.2-003** commits to developing Control Room operator and maintenance technician training associated with the operation and maintenance of monitoring system for Reactor Operators and for Non-Licensed Plant Staff.

# Conclusion

- ESBWR design features address NRC Bulletin 2012-01.
- DCD ITAAC verify acceptance criteria for as-built design.
- FSAR Commitments ensure that procedures, maintenance and testing, and operator training actions for monitoring and alarms during plant operation are established and implemented prior to fuel load.
- DTE follows the ESBWR DCD.

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# Presentation to the ACRS Subcommittee

**Fermi Unit 3**
**COL Application Review**

**Chapter 8 Electric Power, Section 8.2**
**Offsite Power System**

July 7, 2014

# Staff Review Team

- Technical Staff
  - Bob Fitzpatrick, NRR
- Project Management
  - Jessica Umaña, Projects

# Byron Open Phase Event

- Occurred January 30, 2012, at Byron Unit 2
- Not immediately detected
- Both offsite and onsite electrical power systems were not able to perform their intended safety function
- Presented a potential common cause failure event
- Therefore, needed to be addressed across the entire reactor fleet.

# NRC Staff Actions

- Special Inspection at Byron [ML12087A213]
- Information Notice 2012-03 [ML120480170]
- Bulletin 2012-01 [ML12074A115]
- Summary Report including recommended actions [ML13052A711]
- Staff issued RAI 08.02-18 to Fermi 3

# NRC Requirements for Passive Plants

- Provide detection of single/double loss of phase events with/without a high impedance fault across all operating modes of the plant
- Detection to be located on the high voltage side of the transformer(s) that feed offsite power into the plant's electrical distribution system
- Provide dedicated alarm in the control room
- Provide plant personnel (operations, maintenance) with training and procedures

# ESBWR Design Solution

Design Certification Document (DCD) Rev. 10 formalizes the ESBWR design approach (accepted by the staff as part of that review) and includes the following:

- Identified existing relays within their Distributed Control & Instrumentation System (DCIS) that can detect loss of loss of phase events with/without high impedance faults
- These relays are located on the high voltage side of the Unit Auxiliary Transformers (UATs) and the Reserve Auxiliary Transformers (RATs)

# ESBWR Design Solution (cont.)

- Design utilizes these programmable relays to monitor both current and potential transformer outputs, per phase, on each of the three phases.
- DCD includes Inspections, Tests, Analyses and Acceptance Criteria (ITAAC) to demonstrate that proper set points have been developed and that testing demonstrates full functionality.
- DCD also includes Interface Requirements for the Combined Operating License Applications (COLAs) to establish training and procedures per the Staff's position.

# Fermi 3- Specific Design Solution

COLA Rev. 6 documents the following with respect to the loss of phase event:

- The ESBWR design solution is incorporated by reference (DCIS plus ITAAC).
- COM 8.2-001: Plant operating procedures, including off-normal operating procedures, associated with the monitoring system will be developed in accordance with FSAR Subsection 13.5.2.1 at least six months prior to fuel load.

# Fermi 3- Specific Design Solution (cont.)

- COM 8.2-002: Maintenance and testing procedures, including calibration, set point determination and troubleshooting procedures, associated with the monitoring system will be developed in accordance with FSAR Subsection 13.5.2.2.6.1 prior to fuel loading.
- COM 8.2-003: Control room operator and maintenance technician training associated with the operation and maintenance of the monitoring system will be developed in accordance with FSAR Section 13.2.1 for Reactor Operators and FSAR Section 13.2.2 for Non Licensed Plant Staff. Training will be completed prior to fuel loading.

# Summary

- NRC staff has required the passive design plants to provide detection and alarm for a single or double loss of phase event with attendant procedures and training of plant personnel.
- Fermi 3 has incorporated the ESBWR design solution by reference and has committed to developing procedures and training.
- NRC staff finds this issue acceptably resolved.

# Questions